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A study to Assess the Knowledge Regarding the Care of Patients on Mechanical Ventilation and Prevention of VAP among Nursing Students of a Selected Nursing College

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ABSTRACT

Introduction: Ventilator Associated Pneumonia is the commonest nosocomial infection diagnosed in ICU and in spite of advances in diagnostic technique and management it remains a common cause of hospital mortality and morbidity.[1]

Purpose: It is important for the nurses to foresee the complications and prevent them which arise during the care of patients on mechanical ventilator. Nurses should possess a thorough knowledge about the mechanical ventilator, the settings and maintenance and as well as the precautions that are to be taken while providing caring to the client on ventilator.

Setting of the Study: Selected Nursing College affiliated to a Tertiary Care Hospital

Sample: Students attending Basic BSc Nursing course (2nd and 3rd year) with equal distribution of 21 students from each batch.

Result: The study revealed that maximum 22 (52.4%) subjects had good knowledge, 14 (33.33%) subjects had excellent knowledge, 6 (14.3%) students had average knowledge on care of patients on mechanical ventilation. The study also revealed that maximum 24 (57.1%) students had good knowledge, 2 (4.8%) students had excellent knowledge, 15(35.7%) students had average knowledge and 1 (2.4%) student had poor knowledge regarding VAP prevention. Thus the study showed that third year students had more knowledge than the second year students regarding care of patients on mechanical ventilator and VAP prevention but the results were statistically insignificant .

Conclusion: The study found that the majority of the subjects under the study had an above average knowledge about VAP prevention and the care of a patient on mechanical ventilation. The study also found out that third years had a better knowledge regarding VAP prevention and the care of a mechanically ventilated patient as compared to second year basic BSc which also indicates the role of experience in the knowledge improvement

Keywords: *VAP, Ventilator, Tracheostomy*

INTRODUCTION

A nurse is an integral part of the health care system.[2]A critically ill patient presents a major challenge and the nurse should provide essential individualized care directed towards the survival of the patient.

Mechanical ventilation is a process by which gases are moved into and out of the lungs by means of a ventilator, a machine that delivers a flow of gas to a patient's airway.[5] Ventilator Associated Pneumonia is defined as pneumonia that occurs 48 hours or thereafter following endotracheal intubation, characterised by the presence of a new or progressive infiltrate, signs of systemic infection(fever, altered WBC count), changes in sputum characteristic, radiological findings and detection of a causative agent.[9]

To prevent the ventilator associated pneumonia, there is a recommended guideline in the form of VAP bundle. The components of VAP bundle are elevation of head of bed, Daily "sedation vacations" and assessment for readiness to extubate, peptic ulcer disease prophylaxis, deep venous thrombosis prophylaxis &daily oral care with chlorhexidine.[14]

Problem Statement: A study to Assess the Knowledge Regarding the Care of Patients on Mechanical Ventilation and Prevention of VAP Among Nursing Students of a Selected Nursing College.

OBJECTIVES

1. To assess the knowledge level of nursing students regarding care of patients on mechanical ventilation
2. To assess the knowledge level of nursing students regarding prevention of VAP
3. To compare the knowledge level among the third year and second year nursing students regarding care of patients on mechanical ventilation and prevention of VAP

METHODOLOGY

The research approach adopted for this study is a quantitative one. The research design adopted for this study is a descriptive one.

Variables: in this study the variables used are year of study, duration of experience and number of patients nursed on ventilator during their rotation in ICU

Sample: For the present study, 21 students each from second and third year undergoing Basic BSc nursing course in a selected college were taken as sample.

Sampling technique: For the present study, a systematic random sampling was used. The study population was identified and lottery method was used to select the samples.

Tool: The tool consisted of the following parts.

Part I: Demographic data

1. Year of study
2. Duration of experience and
3. Number of patients nursed on ventilator during their rotation in ICU

Part II: Consists of 13 questions on various aspects regarding care of patients on mechanical ventilation

Part III :Consists of 12 questions regarding VAP prevention Poor

RESULTS

Demographic Characteristics of Study population: The study conducted revealed the following demographic characteristics of the respondents who participated in the study.

There were 21 students each from I year & II Year Basic BSc Nursing .The majority of students 45.2% had 2-4 wks of ICU experience and only 9.5% had more than 6 wks of ICU experience.

The majority of sample 50% had nursed less than 5 patients on ventilator , 45.2% about 5-10 patients and 4.8% had nursed more than 15 patients.

Table 1: Socio-demographic data n = 42

Parameters		No of cases
Basic BSc Nursing	II year	21(50.0)
	III year	21(50.0)
Duration of ICU experience	<2 weeks	14(33.3)
	2–4 weeks	19(45.2)
	5–6 weeks	5(11.9)
	>6 weeks	4(9.5)
Number of patients on ventilator nursed in the ICU during the clinical rotation in ICU	<5	21(50)
	5–10	19(45.2)
	11–15	0(0)
	>15	2(4.8)

n = 42

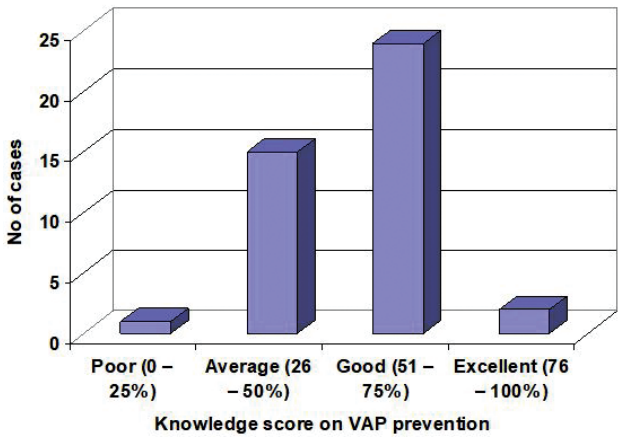

Figure 1: Distribution of study population as per the knowledge score on VAP prevention

Table 2: Comparison of knowledge regarding care of patients on mechanical ventilator according to nursing students of II year and III year n = 42

Mechanical ventilator	Nursing students				MW test Z Value	P Value
	II year (n = 21)		III year (n = 21)			
	Mean	SD	Mean	SD		
Knowledge score	15.89	4.08	17.91	3.04	1.61	0.11

The table shows that the knowledge regarding care of patients on mechanical ventilation was high among the third years with a mean value of 17.91 and standard deviation of 3.04 and second years with mean value of 15.89 and a standard deviation of 4.08 which was not statistically significant.

Table 3: Comparison of knowledge regarding VAP prevention according to nursing students of II year and III years n = 42

VAP prevention	Nursing students				MW test Z Value	P Value
	II year (n = 21)		III year (n = 21)			
	Mean	SD	Mean	SD		
Knowledge score	12.63	3.27	14.78	3.18	1.945	0.052

The knowledge regarding VAP prevention was highest among the third years with a mean value of 14.78 and standard deviation of 3.18. At the same time, second years had mean value of 12.78 with a standard deviation of 3.27.

Table 4: Comparison of knowledge regarding care of patients on mechanical ventilator and VAP prevention according to nursing students of II year and III year n = 42

Mechanical ventilator & VAP prevention	Nursing students				MW test Z Value	P Value
	II year (n = 21)		III year (n = 21)			
	Mean	SD	Mean	SD		
Knowledge score	28.53	5.20	32.70	4.03	2.60	0.009

Table 4 shows that the highest knowledge regarding care of patients on mechanical ventilation and VAP prevention was among the third years with a mean value of 32.70 and standard deviation of 4.03. At the same time, second years have mean value of 28.53 with a standard deviation of 5.20. Thus it shows that even though third years had high knowledge in comparison to second years it was proved to be statistically insignificant with p value of 0.009.

DISCUSSION

The majority of the subjects (45.2%) had 2-4 weeks of ICU experience, followed by (33.3%) of subjects having 2 weeks of ICU experience, (11.9%) having 5-6 weeks of ICU experience and (9.5%) having more than 6 weeks of experience.

According to the Indian Nursing Council, the duration of experience in critical care unit is recommended as 2 weeks or above. In our study, the samples were selected with the inclusion criteria of students with at least 2 weeks of ICU experience.

In our study, majority of subjects (45.2%) have nursed 5 patients on mechanical ventilation, followed by (45.2%) of subjects who have nursed 5 -10 patients on mechanical ventilation, whereas (4.8%) subjects have nursed more than 15 patients on mechanical ventilation.

The study shows that maximum 22 (52.4%) students had good knowledge, 14 (33.33%) students had excellent knowledge and 6 (14.3%) students had average knowledge on care of patient mechanical ventilation. This study is slightly different from the study conducted by Ally Joseph in Tanzania (2014) regarding the knowledge of ICU nurses in providing care to mechanically ventilated patients.

It further revealed that 64 (54.2%) subjects had excellent knowledge, 19(16.1%) had very good knowledge, 23 (19.5%) subjects had good knowledge,

while only 10(8.5%) had average knowledge regarding care of mechanically ventilated patients. The present study shows that maximum 24 (57.1%) subjects had good knowledge, 2 (4.8%) subjects had excellent knowledge, 15(35.7%) students had average knowledge and 1 (2.4%) subject had poor knowledge regarding VAP prevention.

The present study showed that the knowledge regarding care of patients on mechanical ventilation was high among the third years with a mean value of 17.91 and standard deviation of 3.04. At the same time, second years had mean value of 15.89 with a standard deviation of 4.08. Thus the results show that there is no significant difference in the knowledge score between the third and second year nursing students at a P value of 0.11.

CONCLUSION

The study found that the majority of the subjects under the study had an above average knowledge about VAP prevention and the care of a patient on mechanical ventilation. The study also found out that third years had a better knowledge regarding VAP prevention and the care of a mechanically ventilated patient as compared to second year basic BSc. Nursing students of a selected nursing college.

The findings of this study can be used to focus on those areas which are responsible for low knowledge scores of VAP prevention and the care of a mechanically ventilated patient. It can be used as a guideline to hold workshops and increasing duration of critical care nursing experience in the curriculum.

Ethical Clearance: Not required

Source of Findings: Self

Conflict of Interest: Nil

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A Study on Job Satisfaction among Employees in Quick Service Restaurants

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ABSTRACT

The study aims to evaluate the job satisfaction of employees at quick service restaurants, the fast growing outward appearance of hospitality industry. To accomplish this, a pragmatic study was conducted among 250 employees at national and international branded Quick Service Restaurants in Chennai. A methodical questionnaire was distributed among employees, data collected and a series of statistical test are done with SPSS (21.0) statistical tool. The study exhibits, job satisfaction among the employees at quick service restaurants is directly proportional to their remuneration, promotions and work opportunities. Employees on full time are more satisfied than the part time employees. Enhancement of personal satisfaction and periodic training for employees improves the job satisfaction.

Keywords: *Employee, Job Satisfaction, Restaurant & Salary*

INTRODUCTION

The quick service restaurants are emerging trends into the sector provides a meal or chat for the guest the industry is more dependent on employees; their business goal is to provide the best and quick service of any food or beverages for the guest. Quick Service restaurant are a part of hospitality industry that leads the world's economy.[1] Employees always plays a vital role in business promotion of the industry as they act as the end sales person or service person of the hospitality products. The service rendered by these employees could never be replaced by any technological developments. Thus the industry has to be more committed to maintain an inborn happiness or satisfaction in employees to replicate in their service to the guest.

The situation is considered more critical in hospitality industry than other sector, the employee turnover rate rises every year[2] as there always exist problems like long hour duties, cultural clashes, inequality in employees, less wages, training, work safety, job security, etc.[3] Human resource professional always play an active role to correlate the work force in a positive manner maintain the relationship between the employee and employer for the smooth running of the system. They have the responsibility to promote a positive attitude in employees towards their job; a satisfied employee is always a productive employee and considered the most valuable asset of the industry.[4]

Satisfaction in job can be termed as an intangible behaviour in employees being always affected and altered by many internal and external factors. Job satisfaction is a composite feel of positive or negative attitude towards their job, management, workplace, etc. [5] Fulfilment of needs or expectation of an employee from his working concern brings in a satisfaction in the employees that improves his job performance and attain job satisfaction.[6]

Job satisfaction is mere dependent upon the satisfaction of the guest the guest being served by the employees. Beside, also depends upon the factors like the job itself, the working environment, hierarchical pressures, remuneration, facilities offered and the professional attitude and the activity of the organization.[7]

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Long hour duties, repetitive and monotonous nature of the hospitality job makes the employees tiresome and bored. The employees have the pressures in satisfying the hierarchical officials and the guest as they act as the endpoint service person for the guest.[8] Remuneration, incentives and facilities offered by the organization is always directly proportional and determines the employee's satisfaction and the level of performance.[9]

Dissatisfaction in the job results in an increase in absenteeism, turnover of employees, stress level of employees, a decrease in level of motivation, performance and productivity.[10] In present scenario the hospitality industry are looking for the promotion of job satisfaction among the employees in terms of promoting their experience changing their attitude and perception, increasing transparency and access and make the employee so close to the employer side.

The study serves as a basic platform for the employers of quick service sectors to identify the interest of the employee feel them comfortable with the job and motivational factor which are to be adapted in term of fulfilment which in turn increase the job satisfaction. This study emphasis on the main components of job satisfaction which is considered as an important one in hospitality industry.

MATERIAL AND METHOD

The research methodology refers to the steps taken by the researcher to solve the research problems. It facilities the research to be as efficient as possible yielding maximal information. In other word its function is to provide for the collection of relevant evidence with minimal expenditure of effort time and money.

The study involved both primary and secondary data collected for making out the study structure. Primary data collection was followed to carry out this research project. The respondents were met personally and a direct interview method was conducted to collect the data and the questionnaire method is also being used to collect data. Secondary data include the data, which is collected for some earlier research work and are applicable or usable in the study, research has presently undertaken. Secondary data was collected from journals, previous studies done within and outside the company and various website.

The research involving qualitative data is of a descriptive type. It includes surveys and fact- finding enquires of different kinds. The main purpose of descriptive research is description of the state of affair as if exist at present in the organization. The total combination of convince sampling combined together with satisfied random sampling technique is applied for the study. Stratified random sampling is applied to stratify the employees toward the job satisfaction of employees in the hotel. The samples are only the employees working in the entire section of quick service restaurants.

The study which is done among the employees helped in founding the needs facilities, which employees expected, so that feed back given a clear information how to perform in future in order to invoke a job satisfaction of the employees and for future development. The total employees of the target segment of the organization is around 250 employees out of the total inverse employees were selected and data was collected from those respondents.

A structured undisguised questionnaire containing 54 questions was prepared and distributed to the employees. As a result, some of the open-ended questions that were not responded were eliminated and the final questionnaires contain 21 questions were used for survey.

Statistical Analysis: The data collected from the employees are analyzed with the statistical analysis tool SPSS(21.0). Beside chi-square test, independent t-test, correlation analysis to find the relationship between the factors influencing the job satisfaction among the employees. Friedman's test was done to rank the factors that influence more on satisfaction among the employees.

RESULT AND DISCUSSION

The data collected are checked for the reliability that shows the data are reliable with cronbach's alpha value (0.731). The test shows the study is more reliable to be carried.

Chi Square test: Chi square test was done to check whether the employees working on part-time basis or full time basis is more satisfied. The test proves the full time employees are more satisfied with chi-square value (751.21) significant at (0.05) level. The employees on full time basis are more satisfied as they are primly considered for welfare schemes, promotions and training provided.

T-test: Gender and Job Satisfaction is statistically analysed with t- test and it was found that the satisfaction in job is not depend upon the gender of the employees as the *t*- value is 2.2305 and *p* value is 0.044781 ($p<0.05$) which is significant.

Correlation Analysis: Pearson correlation was done to check the relation between the time management with salary and promotion. The analysis exhibits the employee works sincere with no restricted to time bonds are more paid and promoted there exist a positive correlation between time management with salary (r = 0.481) and promotions (r = 0.265) and are significant at p (0.00) level.

Friedman test: Factors influencing the job satisfaction of employees working in quick service restaurants are ranked with Friedman test, table 1 and table 2 exhibits the ranking position of the factors. The test is more significant with greater chi-square value 863.214, significant at (0.00) level. Among the factors the salary or remuneration paid for the employees' ranks first among the factors with the mean rank value (4.09).

Table 1: Ranks of factors influencing job satisfaction

Factors	Mean Rank	Positions
Challengeable Job	6.94	Rank 6
Time Management	5.55	Rank 3
Work Allocation	7.98	Rank 10
Salary	4.09	Rank 1
Supervisor Co-Ordination	7.53	Rank 9
Decision Making Authority	7.98	Rank 8
Welfare Schemes	7.09	Rank 7
Safe Environment	4.60	Rank 2
Training Provided	5.64	Rank 4
Promotion & Rewards	6.03	Rank 5

Table 2: Test Statistics

N	250
Chi-Square	863.214
Df	9
Asymp. Sig.	.000

CONCLUSION

From the study it is concluded that the job satisfaction in the organization quick service restaurant seems to be a challengeable one with regard to employees, in hospitality industry the situation is still more critical. The study has got an impact with regard to the working hours, monotonous work career development, etc results in dissatisfaction with regard to the job. The hospitality sector has identified some measures to improve the employees motivation in terms of career development and it make the employees to sustain in the job. What is expected from the employee side is a proper recognition, promotion, injustice , appreciation which plays a vital role in improving job satisfaction in this industry.

Suggestions: It is suggested that the job satisfaction of the employees should be evaluated without any partiality or injustice. An identification of proper training for employees should be recognized. More improvement in work environment which is conducive. More research could be identified in terms of Health and Welfare benefits of the employees. The employees must be motivated to avoid stress, monotony of work, boredom etc. Hospitality sector should take possible steps to retain the employees.

Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: Nil

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Comparitive Evaluation of the Fluoride Release and Rechargability of Chitosan Modified Glass Ionomer Cement and a Glass Ionomer Cement–An in Vitro Study

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ABSTARCT

Objective: To evaluate the effect and pattern of fluoride release of a chitosan incorporated glass ionomer cement (10v/v %) before and after application of topical fluorides.

Method: Chitosan was incorporated within glass ionomer cement (10v/v %) and packed within standardised moulds. Fluoride release was estimated for a period of 21 days using ion specific electrode method. After these samples were divided into two groups, one group was recharged using 220 ppm mouthwash daily for 7 days and the other using 1000 ppm toothpaste for the same time. Fluoride release from the two groups was analysed using thge same method for 7 days.

Results: The results of the present study showed that chitosan incorporated specimens released more fluoride both before and after application of topical fluoride; however the pattern of release was similar to glass ionomer cements.

Keywords: *Glass ionomer cements, Fluoride, Chitosan, Ion selective electrode.*

INTRODUCTION

Glass ionomer cements are clinically accepted preventive restorative materials because of their fluoride releasing property; aesthetics, biocompatibility and chemical adhesion to enamel and dentin. The fluoride-induced caries inhibition at the restoration margins decreases due to loss of fluoride to the oral fluids over a period of time, however these cements can be converted to fluoride reservoirs by subsequent topical fluoride application[1,2].

It has been seen that the property of increased fluoride release at low pH from glass ionomer cement is generally associated with decrease in physical properties and also increased fracture susceptibility[3]. Current research aims to create an ideal glass ionomer cement with significant fluoride release and high flexural strength and low occlusal wear but the major drawbacks still remains the relatively low fracture strength and a higher occlusal wear rate in comparison to amalgam and modern resin composite materials.

Chitosan, a biopolymer obtained from deacetylation of chitin, the structural element in the exoskeleton of crustaceans such as crabs and shrimps has been used as a drug delivery vehicle. Petri et al in 2007 added 0.0044 wt. % (10 v/v %) of chitosan to glass ionomer cements, significant increase in flexural strength along with fluoride release was seen over a short period of time[7].

The present study was used to determine the fluoride release and recharge pattern after addition of 10 v/v% chitosan in glass ionomer cements (Fuji IX)before and after application of topical fluorides.

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MATERIALS AND METHOD

Incorporation of Chitosan Powder in the Polyacrylic Acid Liquid: 0.3Normal(N) Glacial acetic acid was used to dissolve the chitosan powder. 10 mg chitosan

was weighed and dissolved in 0.3N acetic acid, and made up 0.1 mg/ml chitosan solution.

1ml of 0.1mg/ml of chitosan solution was added to 9ml of glass ionomer liquid to get 10 v/v% chitosan modified glass ionomer cement[7].

Moulds for Specimen Preparation: The specimens were prepared in two groups group I (n = 30) GC IX glass ionomer cements and group II (n = 30) chitosan incorporated glass ionomer cement. Powder and liquid were mixed according to the manufacturer's instruction in standardised ratio 3.6:1 for 25 seconds and inserted within standardised circular teflon moulds(10mm×3mm)[5]. The samples were stored in deionized water at 37º C and 95% humidity in an incubator for a total period of 24 hours for complete setting to occur.

Methodology for Fluoride Estimation: The samples were kept in 2 ml of deionized water which was used for fluoride ion estimation. Quantification of fluoride in the solution was carried out by using an ion-selective electrode (96-09 BNWP Thermo Orion Ion plus Star series) for a period of 21 days which was calibrated according to the manufacturer's instructions using five standard fluoride solutions(0.1ppm, 1ppm, 10 ppm, 20 ppm and 100 ppm NaF). Prior to fluoride estimation the media solutions were buffered with (TISAB III ORION ion plus, Thermo) at a ratio of 1: 10. This reagent matches the ionic background of standards to sample & helps fix the ionic strength at a stable value.

Methodology for Fluoride Estimation after Recharging the Sample with Topical Fluorides: Following 21 days of initial fluoride release, samples in each group were divided into two subgroups (n = 15). The sample in subgroup 1 was immersed in 220 ppm sodium fluoride (NaF) containing mouthwash for 2 minutes and samples of the second subgroup was hand brushed with toothpaste containing 1000 ppm sodium fluoride (NaF) for 2 minutes.All the samples were then rinsed in deionized water for 10 seconds and then dried. The samples were moved to a new container containing 2 ml de - ionized water and the storage media was changed daily for 1 week. Fluoride release was measured again daily for a period of 7 days.

The results for daily fluoride release was reported in units of ppm (parts per million). The data was statistically analyzed using SPSS version 11. For intra and inter variable analysis two way ANOVA (Analysis of Variance) was used ($p > .05$, considered significant).

RESULTS

Analyzing the data showed that there was significant difference in fluoride release between the two groups both before and after application of topical fluorides.

The mean fluoride release between the two groups prior to application of topical fluoride is shown in table 1.

Table 1: Shows the Initial Fluoride Release from the Two Groups

Day	Mean Fluoride Release ± S.D. (Fuji IX +10 v/v % Chitosan-Group I)	Mean Fluoride Release ± S.D. (Fuji IX- Group II)	P value set at 95% Confidence
1	35.33 ± 5. 683	32.33 ± 5.074	<0.05 Significant
2	32.33 ± 5.683	21.00 ± 6.618	
3	20.33 ± 4.90	16.93 ± 4.777	
4	15.90 ± 5.122	12.73 ± 6.411	
5	8.20 ± 2.552	3.57 ± 1.455	
6	5.67 ± 2.670	2.10 ± 0 .803	
7	2.63 ± 1.790	0.71 ± .166	
14	0.253 ± 0.0860	0.162 ± 0.1217	
21	0.0730± 0.04435	0.0693 ± 0.04927	

The mean Fluoride release from the two groups after application of 1000ppm NaF toothpaste is shown in table 2.

Table 2: Fluoride release among different subgroups in each study group after recharging with 1000 ppm NaF toothpaste.

Day	Mean Fluoride Release ± S.D. (Sub group I-Fuji IX +10 v/v% Chitosan	Mean Fluoride Release ± S.D. (Sub group III-Fuji IX)	p Value Set At 95% Confidence Limit
22	.813 ±.1457	.727±.1486	<0.05 (Sig.)
23	.540 ±.1242	.353 ±.0516	
24	.273 ±.0704	.253 ±.0516	
25	.180 ±.0561	.247 ±.0516	
26	.0827 ±.01831	.0660 ±.01682	
27	.0480 ±.01082	.0560 ±.00828	
28	.0413 ±.01125	.0507 ±.00961	

The mean fluoride release from the two groups after application of 220ppm NaF toothpaste is shown in table 3

Table 3: Fluoride release following re-charge with 220 ppm NaF mouthwash

Day	Mean Fluoride Release ± S.D. (Sub group II-Fuji IX +10 v/v % Chitosan	Mean Fluoride Release ± S.D. (Sub group IV-Fuji IX)	p Value Set At 95% Confidence Limit
22	.853 ± .1727	.700 ± .1604	<0.05 (Sig.)
23	.573 ± .1438	.333 ±.1113	
24	.233 ± .0816	.203 ±.0737	
25	.199 ±.0776	.133 ±.0737	
26	.0813 ±.03623	.0787 ±.01959	
27	.0673 ±.02120	.0573 ±.01486	
28	.0627 ±.02344	.0527 ±.01580	

DISCUSSION

The advent of fluoride in preventive dentistry as well as in restorative dentistry has yielded the development of a new concept in dental therapy. There are three discrete mechanisms by which fluoride is known to act on the tooth structure

(1) Prevention of demineralization

(2) Enhancement of remineralization

(3) Inhibition of cariogenic bacterial enzymes[6]

Fluoride ion concentrations needed for antimicrobial effects mostly surpass the concentration needed to reduce the solubility of hydroxyapatite. Addition of an antibacterial substance within fluoride releasing materials would offer additional benefits. Materials with high fluoride release however have lower compressive strength. A continuum of such fluoride-releasing restorative materials exists. In this continuum conventional glass ionomer restorative are placed at one end of the spectrum while resin composite materials are at the other end. Filler composition and particle size also significantly influence the fluoride release of the material. When we move from glass ionomers to composite resins, the resin contents of each class of material increases and so does the compressive strength. On the other hand, the barrier through which water and fluoride diffuse out also increases, which leads to a decrease in fluoride release[3].

Petri in 2007 evaluated short term fluoride release within chitosan incorporated glass ionomer cements (10 v/v %).In the present study we have evaluated the pattern of fluoride release over a period of time after incorporation of chitosan in glass ionomer cements (10 v/v %) and whether this system constitutes a rechargeable fluoride-release system.

Chitosan is a deacetylated derivative of chitin consisting of β-1, 4-N-acetyl glucosamine. Limapornvanich in 2009 suggested that chitosan added in GIC did not increase the cytotoxicity to pulp cells[6].

Chitosan has been used in different formulations, such as toothpaste (Chitodent®), mouthwash,chewing

gum & inserts for treating periodontal infections. In all forms chitosan has shown antibacterial action against Streptococcus bacteria, inhibiting the growth and adherence of cariogenic bacteria in the demineralization process of dental enamel in vitro, and stimulating salivation in vivo. The mechanism of antibacterial action of chitosan has been postulated to be enzyme inactivation, chelation of essential metal ions, and formation of polyelectrolyte complexes between bacterial surface components. Thus chitosan represents itself to be a successful candidate, used for controlled drug release combining the unique physicochemical properties of different polymers with the advantage of having chitosan's biocompatible characteristics[7,8].

In the present study GC IX has been used as it has been recommended by WHO to be the material of choice for atraumatic restorative treatment technique in developing countries.Regarding the topical fluoride used, the rationale for this protocol is that most people expose their teeth to topical fluoride by brushing their teeth with a fluoride containing toothpaste or a fluoride containing mouth rinse[10].

The results for daily fluoride release was reported in units of ppm (parts per million). The data was statistically analyzed using SPSS version 11. For intra and inter variable analysis two Way ANOVA (Analysis of Variance) was used. ANOVA is used to determine whether there is a significant difference in mean scores between the 2 groups. ($p < 0.05$ was considered to be significant).

In this study an increased fluoride release was seen from the chitosan modified glass ionomer when compared to Fuji IX, on all the 21 days prior to application of topical fluorides ($p < .05$). The increased fluoride release by chitosan incorporated glass ionomer was in accordance with a previous study by Petri[4]. The reason for an increased fluoride release by chitosan incorporated glass ionomer restorative is attributed to the formation of poly electrolyte complexes; formed by the electrostatic interactions between chitosan and polyacrylic acid. The structure of poly acrylic acid is such that the acrylic acids cross links with divinyl glycol to form Carbopol. The main mechanism of complexation between chitosan and carbopol was found to be the electrostatic interaction between the NH^{3+} groups of chitosan and the COO^{-} groups of carbopol..These reinforced complexes that are formed contain multiple ionisable groups which dissociate into ions such as fluoride ions. The release of fluoride ions from the inorganic matrix seems to be favoured when reinforced complexes have been formed and is related to entropy gain. The results of the present study seems to follow Kuhn and Wilsons explanation regarding fluoride release within glass ionomer where the immediate short term burst effect of fluoride release seen for the initial 3 days (after preparation of the specimen) is due to the massive liberation of surface fluoride ions, followed by the diffusion through the pores which accounts for the fluoride release seen after 3 days lasting till the topical fluoride is applied[13].

When topical fluorides were applied chitosan modified glass ionomer cements released more fluoride as compared to Fuji IX glass ionomer ($p< 0.05$) cements irrespective of the type of topical fluoride used.

The increased fluoride release after application of topical fluorides for chitosan modified glass ionomer restoratives is because there exists a positive correlation between the quantity of initially release fluoride and the fluoride released after application of topical fluoride. The fluoride taken up after recharging occupies the same sites which were previously occupied by the fluoride ions that were earlier released; thus influencing the potential to be released back into the solution[11]. The mechanism of fluoride release after refluoridation has been explained by Hatbovic [13]. If the fluoride concentration in the surrounding of the glass ionomer restorative is more than that in the pores and cracks of the restoration the flow of ion reverses such that fluoride can flow into the pores and cracks and be harboured there until the concentration of fluoride in the surrounding of the GIC is negative and fluoride can be released again. The results of this study show that fluoride release from refluoridated specimens was lower than that from the freshly mixed material. This means that exposure of the specimen to topical fluorides of different concentration cannot completely restore the initial fluoride release rate. Increasing the recharge time may increase the amount of fluoride release by allowing more fluoride to diffuse into the material. In conclusion the present work supports the fact that the chitosan incorporated glass ionomer restorative can be maintained as a better oral reservoir of labile fluoride when topical fluorides are applied as compared to Fuji IX glass ionomer cement.

Coming to the final objective of this study; the pattern of fluoride release exhibited by chitosan modified GIC specimens was similar to Fuji IX glass ionomer cements characterized by an initial burst of fluoride release seen for a period of 2-3 days; followed by a decreased but sustained amount of fluoride release throughout the entire 21 day test period up until the application of topical fluorides. Also the fluoride release seen after application of topical fluoride (irrespective of the type) followed the same pattern of an initial high release, followed by a decreased but sustained release of fluoride ions. The slower release of fluoride during subsequent days has been attributed to the slower dissolution of glass particles into the acidified water of the hydrogel matrix[13]. Release of fluoride by diffusion through pores and cracks is smaller but at a more constant level. This is presented in the reduced but sustained fluoride release seen 7- 21 days after preparation of the specimen and 2 – 5 days after each refluoridation.

CONCLUSION

In the present study the effect of addition of 10v/v% chitosan on the fluoride release and rechargability of GC IX glass ionomer cements was evaluated. Within the limitations of this study it can be said that the chitosan modified glass ionomer cement presented a pattern of fluoride release parallel to the Fuji IX control group.

Ethical Clearance: Presentation and clearance taken on 24.11.2011 from Christian Dental College Research Committee.

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A Study on Determinants of Agricultural Productivity in Tamilnadu

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ABSTRACT

Agricultural sector is the primary sector of the economy and it is the spring-board for overall development of a country. In the process of economic development, the tempo of development is initiated first in the primary sector which in turn facilitate the development in the secondary or industrial sector ultimately it develops the service sector. Developing countries like India where there is over population, it is a challenge for India to produce more food grain and enhance agricultural productivity so as to feed ever - growing population. That is why more outlay was allotted for agriculture during the first plan. Green Revolution was introduced and mechanization and modernization were encouraged. Specialized financial institutions like NABARD and lead bank schemes were introduced and implemented, to increase input-use efficiently in agriculture. With all these efforts still there is a gap between the demand for and supply of food grains production in Tamilnadu and India.

Keywords: *Determinants of agriculture, net area cultivated, total fertilizer used and Agricultural productivity.*

INTRODUCTION

All the activities that take place in the economy are classified under three different categories namely agricultural, industrial and service sector. Agricultural sector is the primary sector of the economy and it is the spring-board for overall development of a country. In the history of mankind, the agricultural activities are considered as the way of life and everybody works in the primary sector in the initial stage of development. Agricultural sector is the matter of survival because it supplies food items to mankind as well as to the domestic animals. The agricultural activities required minimum capital to start production, whereas the industrial sector demands more capital initially. Therefore, it is more appropriate to initiate the development in the primary sector as the available capital is very much limited and the available surplus labor in the developing countries may be used to generate more employment. Hence, the primary sector is the lead sector in the most of the countries in the world. That is why the world popular eminent economist T.W.Schultz rightly said that agriculture is the model sciences and mother of all sciences. It is also right to quote that the government of India put more emphasis on agriculture as well as initiated the development activities in the name of first five year plan after the independence of India in 1950-51. In the process of economic development the tempo of development is initiated first in the primary sector which in turn facilitate the development in the secondary or industrial sector ultimately it develops the service sector. In the history of mankind, the agricultural activities are considered as the way of life and everybody works in the primary sector in the initial stage of development. Agricultural sector is the matter of survival because it supplies food items to mankind as well as to the domestic animals. The agricultural activities required minimum capital to start production, whereas industrial sector demands more capital initially. It is more appropriate to initiate the development in the primary sector as the available capital is very much limited and the available surplus labour in the developing countries may be used to generate more employment. Therefore, the primary sector is the lead sector in most of the countries in the world. That is why the world popular eminent economist T.W.Schultz rightly said that agriculture is the model science and mother of all sciences . It is also right to quote that the government of India put more emphasis on agriculture as well as initiated the development activities in the name of first five year plan after the independence of India in 1950-51.

SIGNIFICANCE OF AGRICULTURAL PRODUCTIVITY

Developing countries like India where there is over population, it is a challenge for India to produce more food grains and enhance Agricultural productivity so as to feed ever - growing population. That is why more outlay was allotted for agriculture during the first plan. Green Revolution was introduced and mechanization and modernization were also encouraged. Specialized financial institutions like NABARD and lead bank schemes were established and implemented, to increase input-use efficiently in agriculture. With all these efforts still there is a gap between the demand for and supply of food grains production in Tamil nadu and India.

Agriculture is always a back bone of Indian economy. It plays a pivotal role by development of other sectors like manufacturing, industrial and territory sectors. The agricultural sector contributes to the economic development in terms of income towards GNP, employment generation and towards the development of trade and commerce. .The agricultural productivity is determined by number of factors such us distribution of operational holding, rain fall pattern, availability of water, sources of irrigation, level of net area available for cultivation., total fertilizer used, application of inputs and market network. This study analyses the determinants of agricultural sector in terms of net area cultivated and fertilizer used in Tamilnadu.

In the process of economic development, economic growth is determined by the output per unit of inputs. Kuznets finding has confirmed that total factor productivity growth determines the rate of growth in developing countries, because total factor productivity shows the efficiency with which all inputs are used in a production function. Many studies shows that, rate of growth in productivity increases accounted for anywhere from 50% to 70% of the growth of per capita output in developed countries. If development is to take place and becomes self-sustaining in the low income countries, it will have to enhance agricultural productivity, but the role of agriculture in economic development has been viewed as passive. The core problems of wide spread poverty, growing inequality and raising unemployment find their origins in the retrogression in agriculture in the rural villages. Of late the development economist have come to realize that agricultural sector in particular and rural economy in general must play an indispensable role in the process of economic development.. The major objectives of agricultural development in developing countries is the progressive improvement in the standard of living condition of rural people achieved primarily through increases in small farm – incomes, output and productivity. It is important to identify the sources of agricultural progress and the basic conditions essential to its achievement. Therefore the study made an attempt to estimate the efficiency of agricultural inputs in Tamilnadu. A linear regression model has been used to estimate the impact of land and fertilizer used on the total agricultural output.

STATEMENT OR ORIGIN OF THE PROMBLEMS

There are several practical obstacles that should be arrested to the development of agricultural sector. But its development depends upon various determinants of agricultural yield. , In this study a determinants like Net area cultivated and usages of fertilizer are considered with yield of agriculture and this forms the reason for this study.

HYPOTHESIS

H0: There is no association between agricultural yield and the Net area cultivated and quantity of fertilizer used.

H1: There is very strong association between the agricultural yield and its determinants of net area cultivated and quantity of fertilizer used.

This paper aims at testing the above hypothesis on the basis of secondary data collected for this research work. The paper involves the application of statistical tools such as regression and correlation. The secondary data constitute the major data source of study which was collected from various articles, books, Economic survey, and Tamilnadu Economic appraisal.

REVIEW OF LITERATURE

Boris E, Bravo-Ureta and Antonio E. Pinherio[1]: This article reviews and critiques the frontier literature dealing with farm level efficiency in developing countries. A total of 30 studies from 14 different countries are examined. in India, rice has been the most studied agricultural product. The average Technical Efficiency (TE) index

from all the studies reviewed is 72%. The few studies reporting that allocations and economic efficiency show an average of 68% and 43%, respectively. These results suggest that there is considerable room to increase agricultural output without additional inputs and given existing technology. Several of the studies reviewed have sought to explain farm level variation in TE. The variables most frequently used for this purpose have been farmer‘s education and experience, contacts with extension workers, access to credit, and farm size. With the exception of farm size, the results reveal that these variables tend to have a positive and statistically significant impact on TE. .**Aigner and chu** [2] reviews as Agricultural method and estimated a deterministic parametric frontier using a homogeneous Cobb-Douglas production function. Later, **Timmer** (1971) [3] converted the deterministic frontier into a probabilistic frontier method. However, this approach has some limitations. All farms share a common frontier and any variations in farm efficiency are measured relative to this frontier.This approach ignores any random factors that can influence the efficiency of a farm(such as climate). Moreover, the results of this approach are highly sensitive to variable selection and data errors.. Later, **Aigneret al**. [4] (1977) and **Meeusen and Broeck** [5] (1977), independently developed a stochastic frontier approach to measure TE. This approach introduces TE as a multiplicative (neutral) shift variable within a production function framework. This means that the input coefficients of the conventional production function and that of the frontier function are the same and only the intercept term changes. Also, it introduces health status as one of the determinants of efficiency in addition to education, land holding, agro-climatic zone, etc. Cross-country and micro level evidences clearly indicate that health significantly influences economic performance (**Barro and Xala-i-Martin**,[6] 1997; **Bloom et al**. [7], 2001)

Table 1: Index number of area,yield and production of crops Tamil Nadu

Period	Agriculture Yield in Tonnes	Netarea Cultivated in Hectares	Fertilizers Used in Tonnes
	Y	X^1	X^2
1990-91	74.95	55.78	83.1
1991-92	82.65	57.26	83.9
1992-93	83.58	58.14	79.9
1993-94	82.57	59.01	76.2
1994-95	86.88	60.19	74.6
1995-96	89.26	61.24	72.1
1996-97	91.64	62.31	69.6
1997-98	94.02	63.36	67.1
1998-99	96.4	64.41	65.1
1999-00	88.42	54.64	105.2
2000-01	86.16	86.16	96.3
2001-02	99.07	86.84	148
2002-03	83.34	70.68	118
2003-04	80.2	75.22	124
2004-05	96.27	83.32	184
2005-06	98.46	85.36	184
2006-07	121.64	82.67	187
2007-08	111.09	82.28	184
2008-09	107.07	82.41	166
2009-10	113.53	78.83	160
2010-11	111.72	81.39	197
2011-12	120.02	81.39	213
2012-13	100.65	64.85	161
2013-14	113.89	80.33	236
TOTAL	2313.48	1718.07	3135.1

Table 2: Regression analysis on Agricultural determinants

Model	Sum of squares	Df	Mean Square	F	Sig
Regression	5310.095	2	2655.047	41.121	0.000*
Residual	1355.9142164.567				
Total	6666.009	23			

Table 3 : Annova Model Summary

Model	R	R^2	Adjusted R^2	S.E. of estimate
1	0.893[a]	0.797	0.777	8.035

Predictors: (Constant), Fertilizer, Net Area

Table 4: Impact of Net Area and Fertilizer (Coefficients [a]) on agricultural production

Model	Unstandardised Coefficients		Std. Coefficient	T	Significance
	B	Std. Error	Beta		
(Constant)	41.461	10.778		3.847	0.001
Net Area	0.539	0.171	0.345	3.155	0.005
Fertilizer	0.129	0.021	0.686	6.275	0.000

a. Dependent Variable: Agricultural Yield3.87

$Y = a + b1x1 + b2x2 + u$

Y = agricultural yield, X1 = Net area cultivated and X2 = quantity of fertilizer used

In the above table the agricultural yield(Y) is considered as dependent variables, Net area cultivated(X1) and the quantity of fertilizer used(X2) are independent variable .In this model net area cultivated and quantity of fertilizer used as a determinants of agricultural yield .As per the analysis there is very strong association between the agricultural yield and determinants (X1 X2). .As per the estimations 1 unit increase in the input X2 influences the yield by 3 units and 1 unit increase in the quantity of fertilizer used increase the agricultural yield by 6.3 units. As the estimated value is greater than table value, we accept the alternative hypothesis and reject null hypothesis.

CONCLUSION

This paper shows that considerable effort has been devoted to measuring efficiency in agriculture using a wide range of frontier models. Despite all this work the extent to which efficiency measures are sensitive to the choice of methodology remains uncertain. The study concludes that the influence of Net area cultivated and fertilizer consumption on agricultural yield in Tamilnadu is statistically significant. The contribution of net area cultivated and fertilizer consumption towards the total agricultural produce is significant. The yield rate may also be influenced by quality of soil, irrigation facility, annual rain fall, quality and quantity of seeds, mechanization and modernization.

Ethical Clearance: completed. (Dept. level committee at VELS)

Source of Funding: Self

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Susceptibility of Gender Entrepreneurship Gap in India– A Preview

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ABSTRACT

Prosperity of an economy relies on the equality of genders in all aspects. The aggregation of self-discipline paves way for proper civilization. Where there is egalitarianism, there is always the sign of Prosperity. The modus operandi of this study is to project the gender gap existing in the society. Chapter one provides basic information about entrepreneurship gap. Chapter two envisages the methodology of the study. Chapter three lists the review of literature. Chapter four recites the history of gender disparity from the last century. Chapter 5 estimates the level of entrepreneurship gap in post-liberlisation period of India. Last chapter concludes with the findings, suggestions and scope for the future studies.

Keywords: *Global Gender Gap, entrepreneur, women employer, working women, generation*

INTRODUCTION

The post-independence era of Indian economy has witnessed that she had failed to augment the gender gap in the field of entrepreneurship. The subsequent doses of reservation policy has brainwashed the community think astutely. The policy makers tried their level best to achieve the targeted economic growth nevertheless unable to meet both ends of targeted and actuals. They still talk about the percentage of women reservation in all fields rather than equality. The social security is colossal evil which castigate an unsecured state of affairs. After completing 69 years of independence and entry to the completion of 7th decade, it is the need of the hour to think and exert for finding a solution to susceptibility of Gender entrepreneurship Gap in India which may be a key to overcome the problems of gender related issues. According to WEF report, global gender gap has been widened. The encouraging progress on eradication of gender gap in the last decade has a twist, because the gender inequality has widened during 2017. World Economic Forum has witnessed in its Global Gender Gap report 2017, that India ranked 108 in GGG Index. The Robust challenges are ahead for the economic participation as our neighboring countries Bangladesh and China are ranked 47 and 100 respectively. In that report, they have considered four pillars namely, Health, Education, the work place and Political representation.

The current study focuses on the fifth pillar, the gender entrepreneurship gap. There are four elements that are to be considered to calculate the value of gender entrepreneurship gap-

1. Family brought up
2. Socio economic status of the parents
3. Working environment
4. Nature of business.

METHODOLOGY

Research gap: Why there is a poor growth in women entrepreneurship in India.

Pilot study: The current research was started with a pilot study of 25 random samples, in order to find out the feasibility of data collection and provisions for selection key factors to calculate the gender entrepreneurship gap. Based on the result of pilot study, the structured questionnaire was framed.

REVIEW OF LITERATURE

World Economic forum[1] exhibited its report on Global Gender Gap 2017, in which India is deteriorating in her position to 108th rank among 144 countries. During 2016, India got 87th position and during 2017, GGG Index moved to 108th position. The following table extracted from WEF Reports.

Down from 87 to 108									
Global Index		**Economic Participation & Opportunity**		**Educational Attainment**		**Health and Survival**		**Political Empowerment**	
2017									
Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
108	0.669	139	0.376	112	0.952	141	0.942	15	0.407
2016									
Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
87	0.683	136	0.408	113	0.950	142	0.942	9	0.433

Source : WEF report 2017.

It is unfortunate that our nation is facing the challenges both in (i) Economic participation and opportunity and (ii) Health and survival pillars, as she secured 139th and 141st rank among the total of 144 countries. This means that India is a third world country as for as Health and education is concerned which is the key factor for the entrepreneurship. However, we are having encouraged sign in political empowerment.

Sarah Kaplan[2], in her view, people may think that women entrepreneurship programmes (accelerators) with the best practices for women would be the right choice for the augmenting the gender gap in entrepreneurship, but it is actually a wrong presumption that many such programmes tried to made special efforts in participating women, failed due to disservice of female participants and they are exposed to hyper-competitive with men.

Mathew Lee et al.,[3] in their study, while describing about the hybrid ventures, they emphasized that the presence of women business owners in the community encourages female social entrepreneurs to pursue hybrid ventures business model A hybrid business model is a one in which the venture engages commercial activities in order to support its social mission.

Karen Bonner[4] in his research, elicited the fact that the number of women that went into business rose by 45 percent over the last decade, compared to just 27 percent among men.

Dr. S. Chandrachud[5], in my research article, mentioned that there is a disparity in the wage rate for the women employee. Due to lesser wage fixation for the women employee in leather industry, more and more young and unmarried women employees are preferred, as they never claim for the labour rights and submissive in the work place. Out of seven leather units inside the Special Economic Zone, MEPZ, not even a single woman employer is present irrespective of more than 70 percent are women employees in the zone

Evolution of Gender gap in post-independence period: Single hand never reach applaud but boo. If you want to clap, both hands should come together, likewise if you want welfare in the ecosphere, both genders should improve together. In the words of Swami Vivekananda, the Indian Philosopher, 'It is impossible to think about the welfare of the world unless the condition of women is improved. It is impossible for a bird to fly with only one wing'. The status of women in the initial stages of post-independence era makes us to regret that they were forced to fill the household space only. Irrespective of lot of debates over several decades, the folklore of patriarchy has subjugated the law of equality in gender participation. However, with subsequent doses of reservation policies, favorable to women participation, there were few pockets of improvement in their status. But still there is a wide gap between the genders with respect to health, brought up, infanticide, wage discrimination, nature of work, social security and so on. Even though, the literacy level of women is increasing with inception of professional participation of women, the expected rate of women liberlisation is not yet achieved due to lack of awareness about their privilege, hesitation to come out from nutshell, fear of parents about their daughters marriage, prevention of right opportunities to become professional, condition of age difference between the genders for marriage and rituals of social life. There are lots of legislations that have enforced the rights of women, which failed in their purpose, due to social and political factors. For example, election in the women constituency contested by a woman candidate who is proxy of the respective male candidate.

Right from Dowry prohibition act 1961 to Sexual harassment of women at workplace–Prevention, Prohibition and Redressal Act 2013, there are number

of legislations to protect the interest of the feminine gender such as National commission for women Act, the commission of Sati Prevention Act etc. that have been implemented[6]. However, there is no permanent solution for the protection of women welfare. The current study tries to find out a solution for the women welfare through the inception of women entrepreneurship to eradicate the susceptibility of gender entrepreneurship gap.

Women Entrepreneurship gap in post-liberlisation era: In present day, women participation has considerably increased in most of the field. But still, there are many arena, in which, the role of women is NIL. (Nothing Is Listed). Especially, on the grounds of women entrepreneurship in selected labour intensive industries. For instance, the most successful export oriented and labour intensive industry in India–the leather industry is lacking with women entrepreneurship. As a matter of fact, more than 70 percent of the workers are women employees and many illegal issues against women is regarded, right from wage disparity, non-implementation of labour welfare act and sexual harassment of women in work place etc. In order to overcome all these problems, the best solution is to give privilege of women entrepreneurship in this industry. If the employer is women, a considerable reduction of women problems in work place will be reduced as the respective employer can understand the problem of the same gender and there is no question of sexual harassment and wage disparity. Providing education to women alone will not bring the fruitful result in the equal gender participation.

CONCLUSION

The present study has the following findings

1. Number of women employees is more than 70 percent in Chennai leather cluster.
2. There is no women employer in the leather cluster
3. Non-implementation of labour laws is prevalent
4. There is a wage disparity between men and women employee

The current study has listed the following suggestions

1. The government may come forward to solve the problem of non-implementation of labour laws
2. The government may lay a provision of privileged women entrepreneurship
3. The Encouragement of women entrepreneurship in leather industry may pave way to get appropriate solution for eradication of susceptibility of gender entrepreneurship gap.

Ethical Clearance: completed. (Dept. level committee at VELS)

Source of Funding: Self

Conflict of Interest: NIL

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Analysis of Medical Tourism and its Economic Impact

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ABSTRACT

People travel from their native to abroad to obtain treatment as well as site seeing. MT is not a new one; in olden days spa and mineral contained water are used to treatment; like air (ozone), sea water which is rich in iron and sulphur, hills, temples thermal water, mud are used to treat the patient. But Allopathy treatment is universally accepted. Developing countries very less amount are invested but they encourage private and corporate more for health care and NABH gives accreditation to the hospitals who maintains optimum quality and care, and get accreditation from JCI. Ministry of Medical Tourism provide Fiscal incentives, develop infrastructure, ease medical visa, transport, skilled professionals, and most importantly consume reasonable or less cost,. MT is recognized as export Industry. Comparative to other countries MT in India is unique one, has variety of Alternative medicine, the things which they used are very natural like plants, leaves, seeds ,etc… and has no side effects, it is preventive and curative and promotive methods. Meditation for mind peacefulness, yoga for fitness Ayurveda and Siddha keeps the body healthy. India is an exotic destination landscape with beaches, ancient ruins, pilgrimage, huge mountains, star hotels so many beautiful places which attracts numerous foreign medical tourists. The persons who are not affordable or uninsured and underinsured from developed countries come to India to get treatment.

Keywords: *M T- Medical Tourism, JCI- Joint Commission International, CII- Confederation of Indian Industry, NABH- National Accreditation Board of Health*

INTRODUCTION

Medical tourism is travelling across the borders to obtain health care obtain elective surgery or for treatment along with site seeing. It is facilitated by private, corporate sectors in collaboration with tourism industry. Exorbitant cost of healthcare in developed nations, and ease affordability of international travel, currency exchange rate in the global economy, rapid improving technology and standard care are led to medical tourism[1]

Genesis- Medical tourism is not new one, thousand years back first medical tourism was held on Greek. Pilgrims travelled to a small territory in the sardonic gulf called Epidauria.[1]

Spa towns and sanitarium may also be considered an early form of medical tourism. Connell says in 1700 BC the healing power in water has been discovered. Activities including massage, reiki, shiatsu, acupuncture, aroma therapy, reflexology, spiritual and tarot reading, Persian steam, mud bath, Thermal springs in Himachel Pradesh are considered as Health caring resources[2].

Privatization of health care in postindustrial economics, MT increases many niche Tourism industry. Infrastructure supports and promotes the growth of this industry. Cost of the medical procedures in medical societies is the major increase of medical tourism.

OBJECTIVES

- To analyze factor behind, and influencing Medical Tourism
- To analyze Economic Impact
- To analyze Government participation and Planning
- SWOT analysis of Medical Tourism
- Medical Tourism Life Cycle

Exotic India–Your Gateway to Good Health: India is promoting “high tech healing” of its private health care sector as a tourist attraction merging medial expertise and hence tourism became government policy. Finance minister Jaswant Singh in this year’s budget said India to become ‘global health destination’

Points to Consider on Deciding MT

- Recognized international accreditation and certification
- Doctors in the hospital are board certified
- Understanding the language
- Hospital quality indicators
- Potential saving
- Short wait list
- Insurance coverage
- Surgical options luxury accommodation

Forces and drivers behind the medical tourism[1]

- Rising health cost, millions of foreigners being uninsured or underinsured...
- Health holiday is to offer patients an opportunity to get away from their daily routine and relaxing.
- People from developed countries come to India for rejuvenation promised by yoga and ayurvedic massage and few consider destination for hip replacement and brain surgery.
- Hospitals provide for foreign patients with world class facilities and professionals, technology. accredited by JCI..

Tapping the tourism benefits: According to a study by the Confederation of the Indian Industry (CII) and McKinsey, medical tourism will bring $2.2 billion in revenues for Indian hospitals by 2021. To capitalize on the comparative cost advantage enjoyed by domestic health facilities in the secondary and tertiary sectors, the policy will encourage the supply of service to the patients of foreign origin on payment. **The rendering of such services on payment in foreign exchange will be treated as 'deemed exports' and will be made eligible for all fiscal incentives extended to export earnings.** This formulation shows the influence of corporate sectors as does the 'policy frame work for reforms in health care.[1]

Policy for Tourism Promotion[3]: National policy for tourism was formulated in 1982- promoting international to central and domestic to state.

- Tourism was given a status of an **'Industry'** in 1986. Eligible for incentives, facilities, tax incentives, subsidies, loans, preference in providing electricity and water.
- Tourism was made a priority- **foreign direct investment** in 1991- automatic approval up to 51% of the equity.
- National Strategy for Tourism Development- 1996 **– destination promotion** of private sector
- **'Export House'1998-** transport, hotels, Liberalized economic regime

India offers a unique basket of services: Yoga is an essential spiritual discipline and subtle science, which focus harmony between mind and body and art and science of healthy living its dating back 2700 BC and proven itself both material and spiritual uplift, its preventive method [11]. Mental health has almost become an epidemic. President Ramnath Kovind said India runs shortage of mental health professionals and addressed its priority. Union Health and Family Welfare Minister J.P. Nadda said will focus clinical and ancillary service. Medical Education minister Sharanpraksh.R. Patel said Karnataka was first state in country to monitor district health program

According to CII, Medical tourism industry is expected to be worth US$ 4 billion by 2017. India has a potential to attract 1 million health tourists per annum which will contribute US$ 5million to the economy. Interestingly medical packages are combined with leisure activities, fun, fitness to make it a complete tourism material for patients across the globe.

ECONOMIC IMPACT OF TOURISM

Economic knowledge: Tourism is labor oriented component that is highly skilled professionals, semi-skilled, housekeeping, general etc... Buyer component is patient[4].

Multiplier effect: All type of economic activity involved or come in to operation that results any kind of expenditure involve quick circulation of money. Spending other area thus in the economy as a whole each action of spending involved in one party but indirectly involves many. Each person receives money and spends some amount to other reasons[4]

Tourism is consider export Industry: When purchase made by foreign tourist in the host country and the

expenditure affects production and distribution system these leads to adverse economic impact happened[4].

Derived demand: Treatment is direct demand and others transport, accommodation, etc. are derived demand. Supply curve will be vertical straight line[4]

Demand Estimation and Promotion: The concept of latent demand is rather subtle, demand is the notion of the economic quantity that a target population or market requires under different assumption of price, quality, distribution, among other factors. The latent demand for medical tourism is not actual or historic sales nor is the latent demand future sales. Its influence arises from number of factors lack of international openness, cultural barriers to consumption, regulations and behavior on the part of firm. Generally latent demand is larger than the actual sales [1] Two sectors combined MT so that if faces high income elasticity of demand both are labor intensive and both are rely high on internet to spread information. , tourism has high price elastic demand. One is price decision making and other one is ephemeral and exotic medical tourism became a leading economic force, travel and tourism accounts for $4.4.trillion of economic activity worldwide. UNCTA call it has largest industry in the world.[9]

Reverse Brain Drain: As the medical tourism sectors grows the health workers who are migrating to economies where salaries are higher and carrier opportunities more attractive will stay in India if they can work in the medical tourism sector [1].

Benefits Go Beyond the Cost: In US the most of the elective surgeries covered by insurance plans. They need to become more efficient and affordable to avoid losing business overseas. But US employers concern about their high cost[1].

Financial resources: The public health investment in the country is low and has a percentage of GDP, the aggregate expenditure is out of packet.

Role of Government: Ministry of health and family welfare together with Ministry of tourism of the government of India set up a task for accrediting the healthcare institution in the country. It classify the providers and on the basis of infrastructure and quality of service and standardized the procedure and facilitate the foreign patients, and government of India reinforce to get quick visa, improved flight connectivity and develop infrastructure.

AIMA said India is the second most populated country in the world riding on the technology enabling health care in innovation waves. . Health care market worth among $10 billion expected to grow up to $280 billion by 2020. Compound Annual Growth Rate is increased. HCIT market value at 1 billion expected to grow up to 1.5 times by 2020.

Health Apps makes the diagnoses easier. It provides real time monitoring and data collection. Cost efficient options for the patient access the social strata like smart phone penetration. E.g. open source mobile platform **Comm Care (CC)**. It allows anyone to build the app, Comm Care Provides: to monitor patients, provide counseling, follow-up, reminders. **Cloud Computing** enables to increase the business and software for data collection.[5]

Controversy: The government believe that the Revenue earned by the health care will strengthen the country

- Corporate hospital repeatedly dishonored the conditions for receiving government subsidies by refusing to treat poor patients free of cost and they have got away without punishment.

The extra revenue from medical tourism could benefit the health care in India if it were taxed adequately to support public health instead the medical tourism provided tax concession to lower the import duties and increased the rate of depreciation (25% to 40 %) for life saving medical equipment. **VAT is not levied on health care service Article 26.1.2 of the Value Added Tax Act[1]**

SWOT ANALYSIS

Strength: More mature tourism markets, Facilities and practice, Public private partnership and country/regional cooperation to woo foreign medical tourists, Government sponsored tax breaks Foreign private investment.[1]

Some are uninsured and not able to afford health care in their home settings so they travel to developing countries. Medical tourism is resource of development, economic inequality and undermines the health equity[11]

Major partner hospitals are ISO-9000-2001 AND JCI Accredited Qualified doctors

Infrastructure development in Mumbai, star hotels

flooring pattern, escalator etc... And increasing number of private hospitals and she mentioned India earned Revenue on $2 billion US dollars. In India medical tourism is emerging market[7].

- Milica Z. said in middle east countries, government promoting private sector with capacity and incentive to invest in medical tourism and they have domestic source of human capital, their political economic institution are developed and they have an extensive infrastructure[9].
- Exotic tourist places, Asians known for their culture of hospitality and service.
- patient from developed countries travel to developing country for their health procedure – it shows the cost savings for the patients as well as revenue potential for the host countries[12]

Weakness

- Length of travel[1]
- Social violence and terrorism, corruption and poverty/disease
- Occidental culture
- Malpractice
- The health sector merely in monetary terms of trans national trade represent the contradiction [1]
- Health tourism is potential revenue source and also compete with domestic health sectors due to limitations of measuring economic progress in monetary terms the contradiction occur For Doctors and ethicist the lack of regulation is alarm bells , duty of health care is murky issue[7].

UHC provides frame work in which the best issues of access quality and cost integrated. Managing cost– drawbacks of insurance–Insurance can cover only small segment of people with small risk pool. Government funded social insurance schemes access to advance care. They do provide financial protection as they cover only part of the hospitalization cost. None gives out patient care cost which forms a higher **out of pocket** spending. The success of UHC depends on effective regulations.[6]

Opportunity: Low cost of labor, More health care professionals, Strength and diversity, Government supporting medical tourism, Emphasize on education and health care, Shrinking cost of fuel and airfare, Strong private investment will build the infrastructure of the region[1].

Mental health has almost become an epidemic. India runs shortage of mental health professionals and addressed its priority. We have 5000 psychiatrists and less than 2000 clinical psychologist and our country has 10% of people have mental Health problems and in 2022 it increases more.NIMHANS treated about 7 lakhs patients every year[8]

Threat

- Disease (pandemic) ,Social unrest, and terrorism
- Limited number of insurance carriers that have comprehensive relationship with medical providers
- The Tamil Nadu government doctors association had decided to boycott against the audit. The state health department has introduced a system a monthly review of the reason for maternal death. The state conducts two kinds of audit- state and district level., But the Doctors felt that they are insulted by the patients family members, main reason is in adequate professionals[6]

Srinath said provides frame work in which the best issues of access quality and cost integrated. In Delhi corporate hospitals alleged Distrust and despair: due to lack of professional standards and compassion and high medical bills are stocked anger at perceived corporate addiction. Three major are involved health care access, quality and cost. While the corporate hospitals boast of high quality advanced care and compete with each other. For significant share of medical tourism but these are inaccessible in urban and poorer and suffer from low budget

Steps To Improve the Access: Expanding the access network of public sector at all levels, this calls for public financing, investment, training, incentivized placement more health personals. These measures have been envisaged in the national health policy in 2017. And need urgent and earnest implementation health care providers in private and voluntary sectors till the gaps carefully crafted contracting mechanism that best serve public interest[6]

MEDICAL TOURISM LIFE CYCLE

Tourism is a longitudinal investigation, it provides focal point of discussion, and leads to the destination

change, and it informs the development and generation of tourism knowledge and it explains implications for the social and political dynamics which exist within the destination, and give s empirical study of Rejuvenation stage (Ref Fig 1).

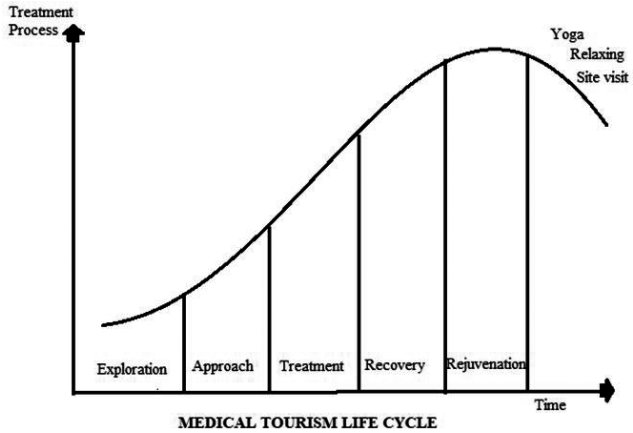

Fig. 1: Medical Tourism Life cycle

My perception bout Indian medical tourism and health: In my point of view Indian medical systems is unique, the best in the world because of many alternative medicine which has no side effects, preventive and curative as well as promote methods and India has variety of exotic destination, more over Indian doctors incorporate alternate medicine

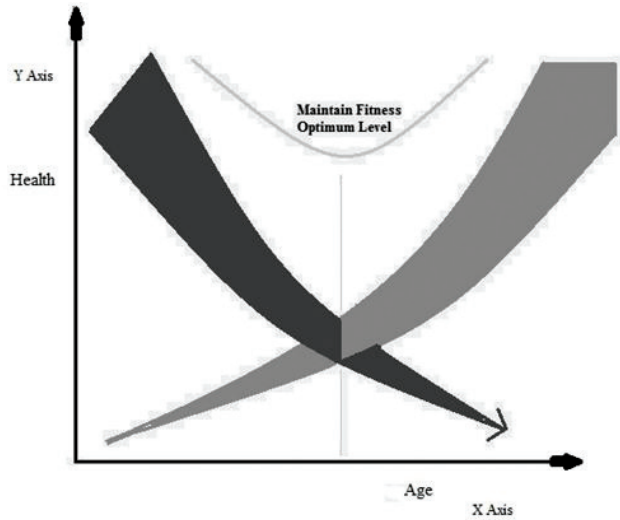

Fig. 2: Optimum fitness level

When age increases health deteriorates its natural phenomenon so to keep up the optimum level of health need to maintain our body fitness for this have to practice yoga, meditation, follow hygiene habits, balanced nutritional food, and exercise keep our body healthy (Ref Fig .2).

CONCLUSION

Leading a healthy life is everyone's wish. In India there is very less investment on Health service so the Government need to spend more Investment on health service and then only poorer can get good benefits especially MT is Labor component need more human resource. Public health service has been below the desirable standard because of less investment. Even though MT is booming in India because of quality of treatment, cost, skilled professional etc... And have so many positive sides which help the rise of MT in India.

Ethical Clearance: Nil

Source of Funding: Self

Conflict of Interest: Nil

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Occurrence of Menstrual Irregularities among Adolescent Girls in Selected Area, Dehradun, Uttarakhand

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ABSTRACT

Introduction: Menstrual cycle is defined as normal physiological process that is characterized by cyclic shedding of endometerium accompanied by loss of blood in adolescent and young girls. Menstrual irregularities which include polymenorrhoea, oligomenorrhoea, dysmenorrhea , amenorrhea, menorrhagia and premenstrual syndrome. Menstrual irregularities frequently affect the quality of life of adolescence girls. Menstrual irregularities have been found to occur with increased frequency in women who deviate considerably from normal weight.

Methodology: A Quantitative research approach with Descriptive research design was used for this study to assess occurrence of menstrual irregularities among adolescent girls in selected rural area, Dehradun, Uttarakhand. The population comprised of adolescent girls having age group between 10- 19 yrs. The study was conducted in selected rural area of, Dehradun , Uttarakhand. Purposive Sampling technique was used to select the 250 subjects from the population. Self developed structured questionnaire related to sociodemographic variable and menstrual status of adolescent girls were developed and administered to the respondents through interview method, Verbal Multidimensional Scoring System of Dysmenorrhea was used to the grade the dysmenorrhea.

Results: The results of the study shows that 60.8% having menarche age was 14- 16 yrs, 77.2% of adolescent girls were having normal BMI, 78.4% reported normal cycles and 21.6% had abnormal cycles in the form in the form of polymenorrhoea 14% or oligomenorrhoea 7.6%. Dysmenorrhea 61.6% , premenstrual symptoms 31.6% were the most frequent menstrual abnormalities observed in the present study.

Conclusion: The study results indicate that very few adolescent girls were having menstrual irregularity whereas dysmenorrhea was common in all. Obesity is common in adolescent girls but in the selected area where research was done all the girls were having normal BMI (18.5 – 24.9).

Keywords: *BMI , Dysmenorrhea ,, menstrual irregularities , occurrence*

INTRODUCTION

In the journey of life every individual passes through different stages .These stages include infancy, early childhood, adulthood and old age. Age group of the adolescent is not well defined but many literature support the age group of 10-19 yrs old.[1] Menstrual cycle is defined as normal physiological process that is characterized by cyclic shedding of endometerium accompanied by loss of blood in adolescent and young girls. It is the monthly series of changes a women's body goes through in preparation for the possibility of pregnancy.[2]

Puberty in females is associated with menarche that is starting of getting menses which is of 21- 35 days cycle approximately usually of 28 ± 2-3 days quite common. The duration of bleeding is about 3-5 days and estimated blood loss is between 50 - 200ml implies changing of three to five pads per day indicates normal flow.[3] Social ,

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reproductive, psychological and physical problem such as obesity, excessive workload and anxiety in professional lives causes menstrual irregularities which include polymenorrhoea, oligomenorrhoea, dysmenorrhea, amenorrhea, menorrhagia and premenstrual syndrome.

Dysmenorrhea is the major cause of activity restriction and college absence in adolescent girls. However, this condition is often considered as physiological pain and ignored by adolescents and only few Adolescents need to consult a physician for menstrual pain. Menstrual cycle irregularities have been found to occur with increased frequency in women who deviate considerably from normal weight.[4] Menstrual irregularities frequently affect the quality of life of adolescence girls. It hinders academic achievements and employment prospects. Menstrual irregularity over prolonged periods of time can lead to development of infertility.

OBJECTIVES

To assess the occurrence of menstrual irregularities among adolescent girls.

MATERIALS AND METHOD

A Quantitative research approach with Descriptive research design was used for the study to assess the occurrence of menstrual irregularities. The population comprised of adolescent girls . Mothers of pre-school children were selected from rural area, Dehradun, Uttarakhand. Adolescent girls of age group between 10-19 yrs who communicate in Hindi or English, who were willing to give consent and participate in the study, who were having menstruation, who were available at the time of data collection were included in the study. The adolescent girls were selected by purposive Sampling technique. On the basis of standard sample size calculation total 250 subjects were recruited for the study. Self developed structured questionnaire related to sociodemographic variable, physiological parameters and menstrual status of adolescent girls were developed (Reliability of the questionnaire was established using test-retest method and internal consistency cronbach's alpha was 0.89) and then the tool was administered to the respondents through interview method. After explaining the purpose of the study written consent was taken from the participant before starting data collection. Assurance was given to the subjects that the anonymity of each individual will be maintained.

RESULTS

Table 1: Frequency (f) and percentage (%) distribution of samples according to their selected demographic variables N = 250

S. No.	Variable	Frequency	Percentage
1	**Age**		
	11-13 yrs	15	6
	14-16 yrs	109	43.6
	17-19y	126	**50.4**
2	**Menarche age**		
	11-13 yrs	98	39.2
	14-16 yrs	**152**	**60.8**
3	**Educational status**		
	Informal education	4	1.6
	Primary education	22	8.8
	Secondary education	107	42.8
	Higher education	**117**	**46.8**
4	**School going**		
	Yes	201	80.4
	No	49	19.6
5	**Type of family**		
	Joint	79	31.6
	Nuclear	167	66.8
	Extended	4	1.6
6	**Religion**		
	Hindu	208	83.2
	Muslim	34	13.6
	Sikh	6	2.4
	Christian	2	0.8
7	**Mother's education**		
	Informal	79	31.6
	Primary	67	26.8
	Secondary	73	29.2
	Higher	31	12.4
8	**Education on menstrual hygiene**		
	Yes	215	86
	No	35	14

Table No. 1 Conted…

9.	**Source of education**		
	Mother	**115**	54
	Friend	33	15
	Neighbor	0	0
	Sister	67	31
	Mass media	0	0
10.	**Toilet facility**		
	Yes	229	91.6
	No	21	**8.4**
11.	**Change your pad in school/workplace**		
	Yes		
	Sometimes	34	13.6
	No	52	20.8
	Not applicable	129	51.6
		35	14

Table 2: Frequency (f) and percentage (%) distribution of samples according to physiological parameters N = 250

S. No.	Variable	Frequency	Percentage
1.	**Height**		
	125- 135cm	39	15.6
	136-145cm	102	40.8
	146-155cm	**10**	**43.6**
2.	**Weight**		
	35-40 kg	74	29.6
	41-45kg	57	22.8
	46-50 kg	**111**	**44,4**
	51-55 kg	8	3.2
3.	**BMI**		
	≤ 18.5	48	19.2
	18.5-24.9	**193**	**77.2**
	25-29.9	9	3.6

Table 3: frequency (f) and percentage (%) distribution of samples according to occurrence of menstrual irregularity N = 250

S. No.	Variable	Frequency	Percentage
1.	**Duration of menses**		
	≤ 2 days	25	10
	3-5 days	**187**	**74.8**
	≥ 6 days	38	15.2

Table No. 3 Conted…

2.	**Using number of pad per day**		
	≤ 2 pads	109	43.6
	3-5 pads	**128**	**51.2**
	≥ 6 pads	13	5.2
3.	**Length of menstrual cycle**		
	≤ 20 days	35	14
	21-35 days	**196**	**78.4**
	≥ 35 days	19	7.6
4.	**Having premenstrual syndrome**		
	Yes	79	31.6
	No	**171**	**68.4**
5.	**Having dysmenorrhea**		
	Yes	**154**	**61.6**
	No	96	38.4
6.	**Menstruation on same date**		
	Always	8	3.2
	Sometimes	**169**	**67.6**
	Not at all	73	29.2
7.	**Feeling stressed**		
	Very often	65	26
	Fairly often	**129**	**51**
	Almost never	39	15.6
	Never	17	6.8
8	**Family history of menstrual irregularity**		
	Yes		
	No	18	7.2
		232	**92.8**

Table 3(a): Frequency (f) and percentage (%) distribution of samples according to grades of dysmenorrheal N = 250

S. No.	Variable	Frequency	Percentage
1.	**Dysmenorrhea**		
	Grade 0(No pain)	96	38.4
	Grade 1(Mild pain)	102	40.8
	Grade 2(moderate pain)	28	11.2
	Grade 3(Severe pain)	24	9.6

Table no 3(a) Illustrates that approximately half (40.8%) of participants were having grade I Dysmenorrhea according to Verbal Multidimensional

Scoring System of Dysmenorrhea. One third (38.4%) participants were having Grade 2 dysmenorrhoea.

DISCUSSION

Findings related to socio demographic variables and menstrual characteristics of present study are supported by different studies such a**s** N. Karout, S.M. Hawai and S. Altuwaijri[5], also stated the similar findings that menarche age was 14 years. And maximum of girls were having age between 17- 19 yrs and their educational status was higher education.

Findings of physiological parameters was supported by Nirmala Jaget Lakkawar, Jayavani R. L., Nivedhana Arthi P, Padma Alaganandam, Vanajakshi N[9] reported similar findings that majority of the girls were normal BMI. Findings of the study reveal that majority of participants were having 3- 5 of duration of menses. Approximately half of the participants were using 3 -5 pads / day. Approximately half of participants were using ≤ 2 pads per day .Majority of participants were having normal menstrual cycle length that is 21 -35 days. Two third of participants were not having premenstrual syndrome, One third of participants were premenstrual syndrome. Two third of participants were facing the problem of dysmenorrhea .One third of participants were not having dysmenorrhea and of girls were having premenstrual syndrome. Two third of participants have fairly felt the stress during menses. Approximately one fourth have very often felt the stresses during menstruation. Majority were having family history of menstrual irregularity.

Recommendations: (1) A similar study can be conducted on a large sample. (2) A survey can be conducted among adolescent girls to identify the factors responsible for menstrual irregularity. (3) A comparative study on life style pattern of adolescent girls having regular menstrual cycle and irregular menstrual cycle.(4) A cross sectional study to assess the prevalence of dysmenorrhea and its association with physiological parameters.

Limitations: The study was confined to specific adolescent girls and with small sample size and limited area. Hence the generalization of the findings outside of the study area is limited.

CONCLUSION

It was concluded that Very few adolescent girls were having menstrual irregularity whereas dysmenorrhea was common in all. Obesity is common in adolescent girls but in the selected area where research was done all the girls were having normal BMI(18.5 – 24.9).

Ethical Clearance: Ethical committee permission was obtained from the Ethical committee of Swami Rama Himalayan University, Dehradun.

Source of Funding: Self

Conflict of Interest: Nil

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Mother's Knowledge on Nutrition and Incidence of Malnutrition

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Abstract

Background: Malnutrition "the silent emergency" is an dreadful condition which is one of the leading cause of at least half of the 10.4 million child deaths in each year.[1] Infants and young children are most susceptible to protein energy malnutrition characteristic growth impairment because of their high energy and protein needs and their vulnerability infection. Globally, children who are poorly nourished suffer up to 160 days of illness.[2]

Purpose: The main purpose of the study is to assess the relationship between mother's knowledge on nutrition and incidence of malnutrition among Under-five children

Methodology: A descriptive correlational study was conducted on 100 under-five year children and their mothers from Mutha village of Pune from Oct 2015 to July 2016. Non-probability convenience sampling technique was used to select the samples. Sample size was calculated by power analysis. Demographic characteristics, structured questionnaire and UNICEF Criteria were used to collect data from the subjects.

The obtained data was analyzed by using descriptive and inferential statistics. Frequencies, percentage, mean and standard deviation was used to explain demographic variables and to assess the mother's knowledge on nutrition and the incidence of malnutrition among under-five children. p value was calculated for the association between mothers knowledge on nutrition and incidence of malnutrition

Result and Discussion: One of the majority finding was that the mothers of under- five children had average knowledge regarding nutrition of under-five children and the incidence rate of malnutrition out of 100 samples was 64 and only 36% were healthy as per Gomez's classification.

There is strong association between mothers knowledge on nutrition and incidence of malnutrition in Under-five children ($p<0.05$). Demographic age, education and dietary pattern were found to have significant association with incidence of malnutrition. It is concluded and recommended that mothers should be educated about nutrition so that incidence of malnutrition can be decreased.

Keywords: *Malnutrition, Nutrition, Mothers knowledge, Rural Health*

INTRODUCTION

Malnutrition "the silent emergency" is a dreadful condition which is one of the leading cause of at least half of the 10.4 million child deaths in each year.[1] Infants and young children are most susceptible to protein energy malnutrition characteristic growth impairment because of their high energy and protein needs and their vulnerability infection. Globally, children who are poorly nourished suffer up to 160 days of illness.[2]

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Malnutrition is more common in India than in Sub-Saharan Africa. One in every three malnourished children in the world lives in India.[3] Malnutrition limits development and the capacity to learn. It also costs lives: about 50 per cent of all childhood deaths are attributed to malnutrition. In India, around 46 per cent of all children below the age of three are too small for their age, 47 per cent are underweight and at least 16 per cent are wasted. Many of these children are severely malnourished.[4] The prevalence of malnutrition varies across states, with Madhya Pradesh recording the highest rate (55 per cent) and Kerala among the lowest (27 per cent).[5]

In 2011, the infant mortality rate, expressed as the number of children younger than 1 who died per 1,000

live births, was 44 in India, which translates into 1.19 million infant deaths, according to data collected by the Registrar General of India. In 2010 the under-5 mortality rate stood at 59, one of the highest in the world. (WHO report 2011)[6]

OBJECTIVES

- To assess the mother's knowledge related to nutrition of under-five children.
- To determine the incidence of malnutrition in under-five children.
- To identify the association between mother's knowledge on nutrition and incidence of malnutrition in under-five children.
- To determine the association between mother knowledge on nutrition and incidence on malnutrition with selected socio demographic variables

Assumptions:

1. The under-five children mothers may not have adequate knowledge regarding malnutrition & nutrition
2. The under-five children mothers will willingly participate & give reliable information needed for study.
3. Knowledge of the under-five children mothers vary according to socio-demographic variables.

Hypothesis

- Research hypothesis (H1): There is a relationship between the mother's knowledge on nutrition and incidence of malnutrition in under-five children.
- Null hypothesis (H0): There is no relationship between the Mothers knowledge on nutrition and incidence of malnutrition in under-five children.

METHODOLOGY/PROCEDURE

The descriptive correlational research design was used for this study Under-five year children and their mothers are constituted as subjects. The sample consisted of 100 under-five year children and their mothers.

Sampling Technique: Non-probability convenience sampling technique was used to select the samples who met the inclusion criteria

Study Tools: The tool has 3 sections

- Demographic characteristics (age, gender, occupation, education, type of family etc)
- Structured questionnaire to assess the mothers knowledge
- UNICEF Criteria to find out the incidence of malnutrition in under-five children.

RESULTS

- Majority of the mothers of under five children had average knowledge (score9-16) regarding nutrition of under-five children, 34% of them had good knowledge (Score 17-24) and 3% of them had poor knowledge (Score 0-8) regarding nutrition of under five children. (figure no. 1)

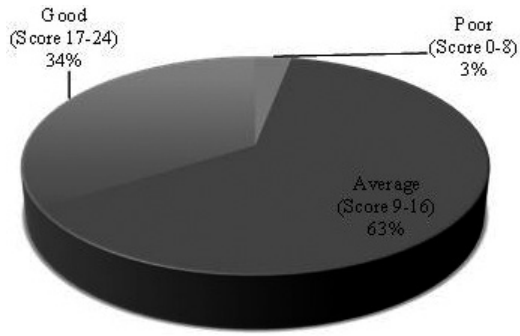

Fig. 1: Knowledge of mothers regarding nutrition of Under Five Children

- According to Gomez's classification of malnutrition, 36% of the under-five children were healthy, 35% of them were Grade I malnourished (weight between 75-90% expected for the age), 20% of them were Grade II malnourished (weight between 61-75% expected for the age) and remaining 9% of them were Grade III malnourished (weight less than or equal to 60% expected for the age). (figure no 2)

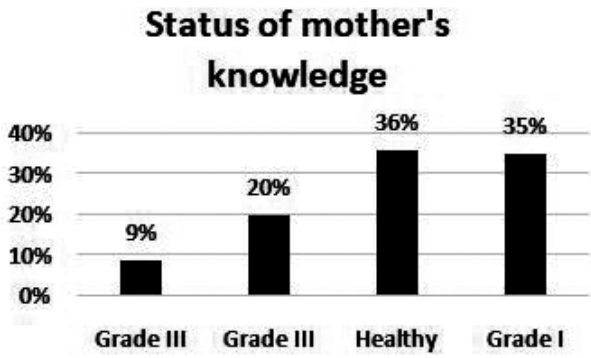

Fig. 2: Status of malnutrition as per Gomez's Classification

- Since all the p-values are smaller (lesser than 0.05), there is strong evidence against hypothesis. There is an association between malnutrition and knowledge of mothers of under five children regarding nutrition. (table no 1)

Table 1: Association between malnutrition and knowledge of mothers

Demographic variable		Knowledge			p-value
		Poor	Average	Good	
Gomez classification	Grade I	0	23	12	0.437
	Grade II	1	11	8	
	Grade III	0	7	2	
	Healthy	2	22	12	

- Since p-values corresponding to age, education and dietary pattern are small (less than 0.05), the null hypothesis is rejected. Demographic age, education and dietary pattern were found to have significant association with incidence of malnutrition. Also, p-value corresponding to religion is 0.051 which is very close to 0.05, which indicates that religion has marginally significant association with knowledge of mother's knowledge on nutrition and incidence on malnutrition.

Research Implication: The significant associations can be taken care of for the prevention of incidence of malnutrition by promoting health education, change in the dietary pattern which will further help in reducing the mortality and morbidity rate.

CONCLUSION

Malnutrition has been identified as a major health and nutrition problem in India. It not only leads to childhood morbidity and mortality but also leads to permanent impairment of physical and possibly of mental growth of those who survive. Good Knowledge of mothers on nutrition is most essential for better growth and development of under-five year children. Mothers and care takers sound knowledge helps to keep their children physically and mentally healthy. Live demonstration of health information is one method that provides adequate knowledge about nutrition and care of under-five year children.

Ethical Clearance: Taken from Institute Research Committee (IRC) Symbiosis International (deemed University)

Source of Funding: Self

Conflict of Interest: Nil

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Mortality Pattern amongst Patient Admitted in Tertiary Health Care Center, Rajnandgaon (C.G.)

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ABSTRACT

Introduction: Mortality data provides the starting point for many epidemiological studies, and are the major resource in explaining trends, differentials of overall mortality. The basis of mortality data is death certificate recommended by WHO. Hospital-based death records provide information regarding the causes of deaths, case fatality rates and age and sex distribution. The present study was planned to determine the frequency, pattern, distribution and causes of non medico legal inpatient mortality occurring in the Government Medical College, hospital, Rajnandgaon (C.G).

Materials and Method: A record based cross sectional study was conducted, based on the data available in the MRD section of this hospital. All the deaths occurred in the hospital during the 1-year period, i.e., March 16 - Feb 17 were considered for analysis. The system involved and the underlying cause of death was recorded and was classified according to International Classification of Diseases (ICD) 10th revision.

Findings: The mortality rate was 20 per 1000 IPD patients. Maximum deaths were in the age group of 41-60 years (35%). Majority (32%) deaths occurred in the quarter i.e, June 16 to August 16. 27.8% patient's deaths involved circulatory system. According to ICD10 classification, 71 deaths occurred due to cerebro- vascular accidents which were more in males (44) as compared to females (27).

Conclusions: Epidemiological transition is evident from the study findings which suggest that there are more deaths from non communicable diseases than communicable diseases. Diseases of circulatory system is a leading cause of death.

Keywords: *Mortality data, Trends, Cause of death, International Classification of Diseases (ICD), Medical Records Department (MRD),*

INTRODUCTION

Mortality data provides the starting point for many epidemiological studies. In fact, they are the major resource for the epidemiologist in explaining trends, differentials in overall mortality and monitoring of public health problems and programmes. The basis of mortality data is death certificate recommended by WHO for ascertaining the frequency of diseases in a population.(1) The International classification of diseases (ICD) produced by WHO is accepted for National & International use. The ultimate purpose of ICD is to contribute to a uniform classification that can be used throughout the world to make accurate comparisons of morbidity and mortality data for decision making in prevention and management of health problems.(2) The pattern of diseases in developing countries is very different than those in developed ones. Many parts of India are undergoing rapid epidemiological transition as a consequence of economic and social changes. Increasing life expectancy and the ageing of the population go along with the increasing prevalence of non communicable diseases. (3) As these changes occur ongoing modification of the health system is required to ensure that the services provided address the main diseases suffered by the population. Mortality statistics from hospitalized patients reveal much about the health of the population reflect

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the causes of major illnesses and the standard of care being provided.[4] Hospital-based death records provide information regarding the causes of deaths, case fatality rates and age and sex distribution, which are of great importance in planning health care services.[5]

Government Medical College Hospital, Rajnandgaon is a tertiary care hospital of Chhattisgarh. It provides tertiary care to urban, rural as well as tribal population. The hospital was operational as district Hospital since long ago and was attached to GMC in the year 2013 when it started providing tertiary health care. This hospital has average OPD of 450 on daily basis. The total 428 beds are available in the hospital and average Bed Occupancy Rate is 71% per day. There is lacuna on hospital mortality rates in health care sectors in India. So, the present study was planned to determine the frequency, pattern, distribution and causes of non medico legal inpatient mortality occurring in the Government Medical College, hospital, Rajnandgaon (C.G).

MATERIALS AND METHOD

A record based cross sectional study was conducted, based on the data available in the Medical Record Department (MRD) section of this hospital, which keeps the case record of indoor patients after discharge as well as death record of the expired patients. All the deaths that occurred in the hospital during the 1-year period, i.e., March 2016- February 2017 were considered for analysis. Medico legal deaths were excluded from the study. The system involved and the underlying cause of death was recorded and was classified according to ICD 10th revision. [2] Data was obtained from the Medical Record Department register after the study was approved by the Institutional Ethics Committee. Data was checked for completeness and correctness and entered in MS excel sheet. The statistical analysis was done using SPSS version 21. Statistical tools applied were percentages, Chi-square test and confidence level.

FINDINGS

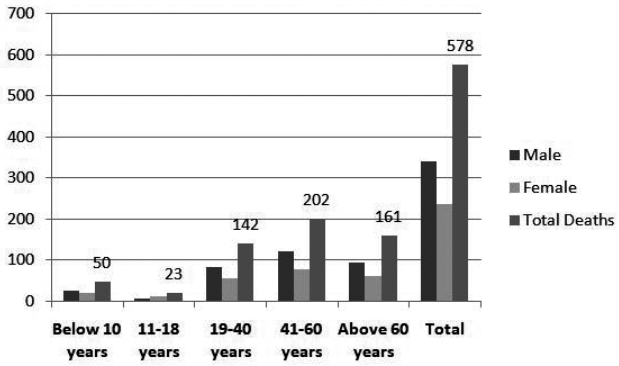

Figure 1: Age-wise and gender-wise distribution of total deaths

During the study period of 1 year, 28199 patients were admitted and total no. of deaths were 578, so the mortality rate was 20 per 1000 IPD patients. Among all the death, 59 % were males and 41% were female patients. Maximum no. of deaths was in the age group of 41-60 years (35%), followed by geriatric age group (28%) and early adulthood (25%) group. Adolescent's deaths were less as compared to other age group people (4%).

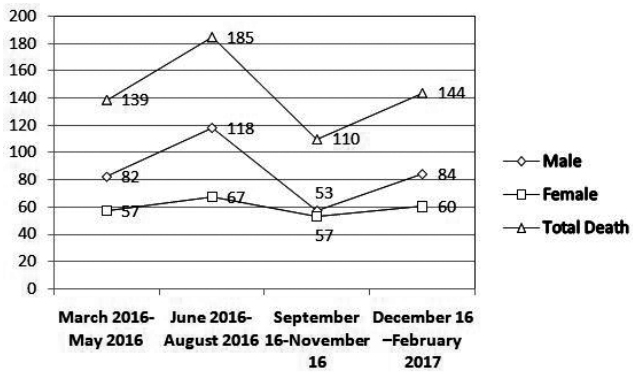

Figure 2: Line diagram showing distribution of total deaths quarterly

Majority (32%) deaths occurred in the quarter i.e June 2016 to August 2016, followed by the months December 2016 to February 2017 (25%), March 2016 to May 2016 (24%) and no. of deaths occurred in the months September 2016 to November 2016 were19%. In the quarter September 2016 to November 2016, death occurred in male and female were nearly equal as compared to other quarters where males deaths were more than female. Department wise, 38% death occurred in ICCU, followed by Casualty 22%, Male Medical Ward 12%, 9% deaths were from Pediatrics ward, 4% were from Male Surgical Ward, 3% from Female Surgical Ward, Female Medical Ward 6%, TB Ward 3%, 8 deaths from Maternity and Orthopedic ward each, PNC 2 deaths and ENT and Ophthalmology ward observed zero deaths.

Table 1: System wise distribution of Deaths

Sr. No.	System involved	Total Deaths	Percentage	95% Confidence limit
1.	Infectious and parasitic diseases	75	12.97	10.23-15.71
2.	Neoplasm	1	0.17	0.17-0.51
3.	Blood and immune mechanism	52	8.99	6.66-11.32
4.	Endocrine, nutritional and metabolic diseases	51	8.82	6.50-11.13
5.	Mental and behavioral disorder	5	0.865	0.11-1.62
6.	Nervous System	17	2.94	1.56-4.32
7.	Eye and adnexa	-	-	-
8.	Ear and mastoid process	-	-	-
9.	Circulatory system	161	27.85	24.19-31.50
10.	Respiratory system	74	12.80	10.07-15.52
11.	Digestive system	19	3.28	1.83-4.73
12.	Skin and cutaneous tissue	3	0.51	0.07-1.09
13.	Musculoskeletal and connective tissue	5	0.865	0.11-1.65
14.	Genitourinary system	18	3.11	1.69-4.52
15.	Pregnancy, child birth and puerperium	6	1.03	0.21-1.85
16.	Perinatal period condition	2	0.34	0.13-0.81
17.	Congenital malformation, chromosomal abnormality	-	-	-
18.	Not elsewhere classified sign, symptoms, clinical, lab finding	77	13.32	10.55-16.09
19.	Injury, poisoning, other consequences of external cause	08	1.38	0.43-2.33
20.	External causes of morbidity and mortality	02	0.34	0.13-0.81
21.	Factors influencing health status, contact with health services	2	0.34	0.13-0.81

System wise, 27.8% patient's deaths involved circulatory system, 13% death involved not elsewhere classified signs, symptoms, clinical & lab finding, 13% death involved infectious and parasitic system, 13% respiratory system, 8.8% death involved endocrine, nutritional & metabolic diseases and 9% deaths involved blood and immune system.

As per the cause of death, ICD10 classification, 71 death occurred due to cerebro- vascular accidents, 43 deaths were directly due to acute myocardial infarction, 26 deaths were due to Pulmonary TB, 23 deaths due to pyrexia of unknown origin, 18 deaths were due to septicemia, 14 deaths were because of gastroenteritis, 9 deaths were due to malaria, 11 deaths were due to pneumonia, 13 deaths due to asthma and breathing disorder and 5 deaths due to sickle cell disease.

It was found that deaths due to Gastroenteritis were more in the quarter June to August 2016 and Sept–Nov 2016 as compared to other quarters, which corresponds to monsoon and post-monsoon season. Deaths due to malaria were seen in 2 quarter i. e from March to May 2016 & June to August 2016 and in other 2 quarter no death was noted. Deaths due to pyrexia of unknown origin were more in quarter September 2016 to November 2016.

Deaths due to acute myocardial infarction were more in males (30) as compared to only 13 female but was statistically non significant. Death due to cerebro-vascular accident were more in males (44) as compared to 27 females but was statistically non significant. Deaths due to Pulmonary TB were more in males (23) as compared to only 3 female which was found to be statistically significant. Deaths due to acute myocardial infarction and cerebro-vascular accident were found more common in the age group above 40 years of age. Deaths due to Pulmonary TB were found common in the adulthood, as compared to children. There was no age difference in the death in case of pyrexia of unknown origin, septicemia and gastroenteritis.

Table 2: Gender-wise distribution of common causes of Death

Sex	AMI	CVA	Gastroenteritis	Malaria	PUO	P TB	Septicemia
Male	30	44	10	5	13	23	12
Female	13	27	4	4	10	3	6
Chi-square value, p value	2.22, p>0.05	0.296, p>0.05	0.916, p>0.05	0.044, p>0.05	0.060, p>0.05	9.770, p<0.001	0.451, p>0.05

Table 3: Age-wise distribution of common causes of Death

Age group	AMI	CVA	Gastroenteritis	Malaria	PUO	P TB	Septicemia
Below 18 years	0	0	5	3	6	1	6
19-40 years	5	5	4	5	5	13	7
41-60 years	18	37	2	0	6	6	5
Above 60 years	20	29	3	0	6	6	0
Chi-square value, p value	13.00, p<0.001	29.09, p<0.001	5.568, p>0.05	8.813, p<0.05	2.727, p>0.05	7.99, p<0.05	10.03, p<0.05

DISCUSSION

The in-hospital mortality rate of the current study (20 per 1000 IPD) was lower than that found in similar studies, Kulkarni SK and Doibale MK[6]. Male deaths were more than female deaths, similar to the present study, was a finding of other authors. [7,8] In the present study a major proportion of hospital deaths were in 41 – 60 years age group patients, followed by above 60 years and 19-40years. A similar finding was reported by Godale et al[8], Bhatia et al.[9] and Holambe *et al* [10]. 32% death occurred in the quarter i.e June 2016 to August 2016, followed by the remaining quarter's of the year. Similar trend was also reported by many authors. [11,12,13] The present study revealed that diseases of "circulatory system" were the leading cause of death (28%), which was in agreement with similar studies made by Joshi *et al*.(32%) [14] by Luiz Cesar Peres (21.3%). [15] Bhatia *et al*.,[9] Mari Bhat,[16] Saha *et al*.[17] found that the percentage of deaths due to communicable diseases was decreasing and that of non-communicable diseases were increasing, a finding similar to the present study. Report on Medical Certification of cause of death 2013, office of the Registrar General, GOI, reported that 29% death attributed to diseases of Circulatory System, 12% deaths involved Infectious and Parasitic Disease System, 8.3% involved Respiratory System, 8.1% certain conditions originating in Prenatal Period, 4.6% involved Digestive system and 13.3% involved Symptom, Sign and Abnormal clinical findings not elsewhere classified System.[18] Similar findings were observed in the present study. In the preset study it was found that deaths due to Pulmonary TB were more in males (23) as compared to only 3 female which was found to be statistically

significant. Report on Medical Certification of cause of death 2013, also stated percentage of tuberculosis deaths in females was 27.0 per cent as against 35.4 per cent for males out of their respective total. [18] Report also confirmed that death due to Ischemic Heart Disease in male were 28% as compared to 24% in female. In present study, deaths due to acute myocardial infarction were more in males (70%) as compared to only (30%) female. Half of the CVD-related deaths (i, e, 52% of CVDs) in India occur below the age of 50 years, and about 25% of acute myocardial infarction in India occurs under the age of 40 years. [19] In the present study also, it was found that deaths due to acute myocardial infarction and cerebro-vascular accident were found more common in the age group above 40 years of age.

CONCLUSION

Epidemiological transition evaluated as cause of death is evident from the study findings which suggest that there are more deaths from non communicable diseases than communicable diseases due to many reasons such as change in lifestyle and behavior. The deaths due to non communicable diseases show homogenous distribution throughout the year, but deaths due to communicable diseases fluctuate seasonally. Age specific mortality pattern shows increasing death rates as the age of the patient increases, from pediatric to geriatric age group, indicate the emerging burden of NCDs. There is conclusive evidence that, death rates in males are more than in females due to overall causes. The system wise distribution shows that diseases of circulatory system is a leading cause of death, and appropriate interventions to focus on diseases of the circulatory system should be undertaken.

Limitation of the study: Single cause of death was considered for one case and other conditions which could contribute to patient's death were not tabulated. Only few risk factors were analyzed to find out association with common causes of death.

Future Implication of the study: This study and further research in this field can be helpful in innovating simple, reliable, and affordable systems for measurement of mortality. Such systems would be able to monitor health conditions, epidemiological transitions, evaluate the outcome of disease control programmes and ensure accountability for the resources provided.

Conflict of Interest: None

Source of Funding: self

Ethical Clearance: sought before the conduct of the study.

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Effectiveness of Self-Instructional Module on Knowledge Regarding Post-Partum Psychiatric Disorders

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ABSTRACT

The postpartum psychiatric disorders are prevalent among the postnatal mothers. Nurses are the workers, whose main responsibility is to provide safe and effective care within constantly evolving health care systems, also should be alert for the signs of postpartum psychiatric disorders and be prepared to help, promote attachment between mother and baby, referral of the mother and the family for support services and counselling, and assisting the family in prioritizing and performing necessary family functions. The nurse can help the mother acknowledge her new staff and new role and to maintain support maternal role and bonding. To provide optimum care to postnatal mothers, the nurse should have adequate knowledge in postnatal mental health and its management. The result shows in pre-test, out of 60 subject's majority of them 61% had inadequate knowledge, 29% of them had moderate knowledge and 10% of them had adequate knowledge. In post-test, majority of them 73.70% had adequate knowledge, 26.30% had moderate knowledge and none of them had inadequate knowledge. There is statistically significant association found between demographic variables and the pre-test and post- test level of knowledge of the nurses on PPD. The variables showed significance at $P < 0.05$ level.

Keywords: *Knowledge; Self- instructional module; postpartum psychiatric disorders (PPD), effectiveness.*

INTRODUCTION

Motherhood is essential to society's survival. Without mother one would not exist. Mother's only have the unique privilege of nurturing the foetus for nine months, of nursing the child for much longer, of doing the work that consists of thousand details both practical and spiritual that children require, and the work of raising adolescents and later, often of looking after their children in turn.[1]

Early studies found that 50 % to 75% of women experience postpartum blues during the first few weeks after delivery. In India, the prevalence of postpartum psychiatric morbidity was 33.4% and6.5% of cases had major illness with postnatal depression and psychosis. In India, the incidence of depressive disorders are more in the states of Goa and rural South India are detected depressive disorder in 23%and 16% respectively, with depression persisting six months after child birth in 11-14%of women.[2]

Postpartum psychiatric disorders can be viewed as a spectrum of conditions that present with an onset as early as the first postpartum day and as late as several months after delivery, which includes postpartum blue, postpartum depression and postpartum psychosis. Postpartum blues appears during the first few weeks after delivery.[3]

Postpartum depression occurs in 10% to 20% of women who have recently given birth, but fewer than half of cases are recognized. The purpose of this review is to discuss the potential benefit of mass screening for improving postpartum depression recognition and outcomes.[4]

The burden is greatest for women, with a lifetime risk for major depressive disorder of 20% to 25%, approximately twice the 7% to 12% rate seen with men.4

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In the first 3 months after childbirth, 14.5% of women have a new episode of major or minor depression 5 and 10% to 20% of mothers are believed to suffer with depression sometime during their postpartum course, making postpartum depression the most common serious postpartum disorder.[4]

The symptoms of postpartum psychiatric disorders usually start suddenly within the first two weeks after giving birth and the symptoms include feelings of sadness, mood liability, tearfulness, anxiety or irritability in postpartum blues, depressed or sad mood, tearfulness, loss of interest in usual activities, feelings of guilt, feelings of worthlessness or incompetence, fatigue, sleep disturbance, change in appetite ,poor concentration, suicidal thoughts in postpartum depression and rapidly shifting depressed or elated mood, disorientation or confusion, and erratic or disorganized behaviour, delusion, hallucinations and behaving in a way that is out of character in postpartum psychosis.[4]

NEED FOR THE STUDY

The postpartum psychiatric disorders are prevalent among the postnatal mothers. The nurse can help the mother acknowledge her new staff and new role and to maintain support maternal role and bonding. To provide optimum care to postnatal mothers, the nurse should have adequate knowledge in post-natal mental health and its management. Postpartum depression is a traumatic event that can have lasting effects on a woman's confidence in herself as a mother and on her infant's social, emotional and cognitive development. Infants as young as three months of age are able to detect the affective quality displayed by their mothers and modify their own affective displays in response to it.[5]

First, most women expect a period of adjustment after having a baby. Second, societal pressures to be a "good mother" are such that if a woman does recognize that something is wrong, she is loath to admit it out of shame and fear. Moreover, women with PMD frequently think they are "going crazy" and worry that if they share these thoughts with a health care professional, they will be "locked up" or someone will take their baby away from them.[6]

A self-instructional module is a self-contained instructional unit that includes one or more learning objective, appropriate learning material and methods and associated criterion reference measures. According to this study the self- instructional module consists of definition, aetiology, classification, clinical features, prevention and treatment of selected postpartum psychiatric illness.[7]

Postpartum depression can interfere with mother's ability to function, including your ability to take care of yourself and your child needs. Baby will be affected if the depression is left untreated. Children of depressed mothers are more likely to have delayed psychological, cognitive, neurological, and motor development, and are at higher risk of avoidance and distressed behaviour. The withdrawn, unresponsive, or negative behaviour of a depressed mother early in the infant's life seems to affect maternal infant attachment and result in fussier infants who vocalize less and make fewer positive facial expressions than infants of mothers who are not depressed.[7]

Statement of the Problem: "A study to assess the effectiveness of self- instructional module on knowledge of staff nurses regarding postpartum psychiatric disorders in selected hospitals of Pune, Maharashtra."

Objectives of the Study:

1. To assess the pre-test knowledge score of staff nurses regarding postpartum psychiatric disorders in selected hospitals of Pune.
2. To re-assess the nurse's knowledge score of staff nurses regarding postpartum psychiatric disorders after administering self -instructional module.
3. To evaluate the effectiveness of self- instructional module on knowledge of staff nurses regarding postpartum psychiatric disorders in selected hospitals of Pune.
4. To find out the association of pre-test knowledge score of staff nurses regarding postpartum psychiatric disorders with selected demographic variables.

Operational Definitions:

1. Effectiveness: Effectiveness is defined as the capability of producing a desired effect. In this study effectiveness refers to the efficiency of the self -instructional module in increasing the staff nurse's knowledge regarding selected postpartum psychiatric disorders.

2. Knowledge: Knowledge is familiarity with someone or something, which can include information, facts, descriptions, and/or skills acquired through experience or education. In this study, knowledge refers to the scores, the staff nurses are able to obtain in response to the questions relating to the selected postpartum psychiatric disorders.
3. Postpartum psychiatric disorders: Any psychiatric symptoms appearing within six weeks period after delivery are called postpartum psychiatric disorders, if they do not fulfil the criteria of major psychiatric disorders. In this study, postpartum psychiatric disorders refer to the mental health alterations that are experienced by the postnatal mothers such as postpartum blues, postpartum depression and postpartum psychosis.
4. Self- instructional module: Self – instructional module is an educational material which aids in individualized learning. In this study, self -instructional module is an educational material on post-partum psychiatric disorders which is designed with the sole purpose to guide and educate the learners on definition, Etiology, types, clinical features, prevention and treatment of postpartum psychiatric illness.[11]

METHODOLOGY

Research approach: The research approach adopted for this study was an evaluative approach to test the effectiveness of staff nurses regarding postpartum psychiatric disorders.

Research design: The research design used in this study was Pre - experimental - one group pre- test and post-test design.

In pre-experimental design, the investigator selected the Non-probability convenience sampling technique and introduced base measure before and after planned exposure which is depicted as O1 and O2 respectively. In this study the base measure was self -administered questionnaire used to assess the knowledge of staff nurses. The administration of self- instructional module is depicted as X.

Variables:

Dependent variable: Knowledge level of the staff nurses regarding postpartum psychiatric disorders.

Independent variable: Self Instructional Module prepared to enhance the knowledge of staff nurses on postpartum psychiatric disorders.

Extraneous variables: The demographic variables of the staff nurses such as age, educational status (degree or diploma), and area of working.

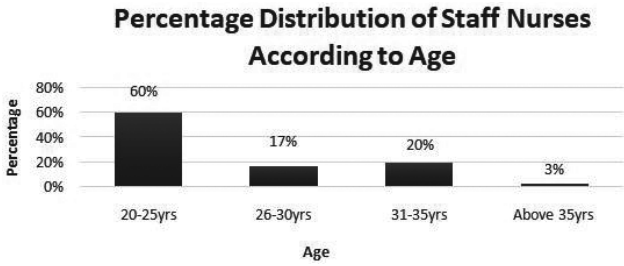

Figure 1: Percentage distribution of staff nurses according to Age.

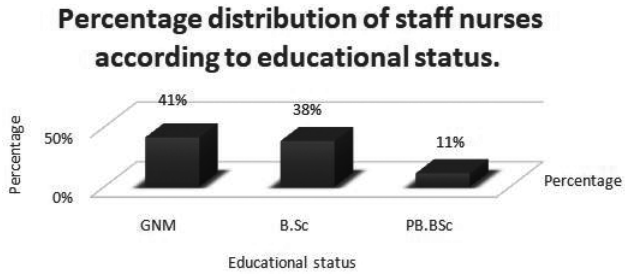

Figure 2: Percentage distribution of staff nurses according to educational status

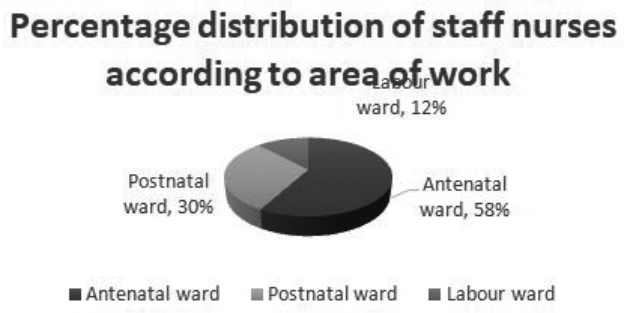

Figure 3: Percentage distribution of staff nurses according to area of work.

Setting of the study: The setting was chosen on the basis of feasibility in terms of availability of the subjects, who were the nurses of gynaec hospitals.

Sample and sampling technique: 60 nurses were selected by using non-probability convenience sampling technique.

Sample size: A sample size of 60 nurses were selected based on the inclusion and exclusion criteria.

Criteria for sample selection

Inclusion criteria: The Study includes,

1. Nurses who were working in the selected maternity hospitals of Pune.
2. Nurses who have completed degree or diploma in nursing.

Exclusion criteria: The study excludes,

1. Nurses who were not available at the time of data collection.

Development and description of tool: In this study, self- administered questionnaire was prepared to assess the knowledge of staff nurses on post -partum psychiatric disorders. A self-administered questionnaire was developed by the investigator in order to obtain exact and complete response from the nurses.

The following steps were carried out while preparing the tool.

- Review of literature
- Based on expert opinion
- Investigative personal opinion

Description of the tool: The tool consists of two sections:

Section A: An interview schedule to assess the demographic data. It includes items of demographic variables (age, education (degree or diploma), area of working)

Section B: Structured self -administered questionnaire to assess the knowledge of staff nurses on postpartum psychiatric disorders. It is divided into 3 sub-sections.

Knowledge questionnaire are subdivided under following aspects:

Aspect	Number of items
● General Information on postpartum psychiatric disorders	04
● Characteristics of postpartum psychiatric disorders	09
● Management of postpartum psychiatric disorders	17

There were totally 30 items of multiple choice questions. Every correct response is given a score of one and every incorrect response is given a score of zero. The caregivers were expected to choose the correct response.

Scoring: The knowledge regarding postpartum psychiatric disorders was measured in terms of knowledge scores. Every correct response is given a score of one and every incorrect response is given a score of zero. The maximum score was 30. To interpret level of knowledge the score was distributed as follows:

Interpretation

1. Inadequate knowledge <50%
2. Moderate knowledge 51-75%
3. Adequate knowledge >75%

Development of Self Instructional module: The self-instructional module was based on the objectives of the study and was given to 3 experts in the field of mental health Nursing, 1 expert in the field of gynaec and 1 expert biostatistician along with objectives and rating scale. Based on their suggestions and recommendations the final draft of the self- instructional module was prepared. The self -instructional module consists of general information on postpartum psychiatric disorders, types of postpartum psychiatric disorders, Signs and symptoms, onset, causes, diagnosis, medical management, nursing management, and prevention of postpartum psychiatric disorders.

Content validity: The first draft of the tool consists of demographic data and the second draft of tool consists of knowledge questions on postpartum psychiatric disorders. The developed tool was given to 3 experts in the field of mental health Nursing, 1 expert in the field of gynaec and 1 expert biostatistician for content validity. Based on their suggestions and recommendations the tool was modified and final draft of the tool was prepared and it consist of 30 knowledge items.

Reliability: The reliability of the tool was established by using split half method (odd-even method) for knowledge. Using these values coefficient correlation was done with the help of Karl Pearson's and Spearman Brown formula. The reliability score obtained was $r = 0.855$, indicating that knowledge questionnaire was highly reliable. Hence the tool was considered as statistically reliable for main study.

Descriptive statistics

- The data was organized in master coding sheet. Frequency and percentage distribution was used to analyse the demographic variables of staff nurses such as age, education (degree or diploma), and area of working.
- Frequency, percentage distribution, mean and standard deviation were used to analyses level the knowledge on postpartum psychiatric disorders.

Inferential statistics

- Paired 't' test was used to determine effectiveness of self- instructional module on knowledge of staff nurses regarding postpartum psychiatric disorders.
- Chi-square test was used to associate between the pre-test and post-test level of knowledge with selected demographic variables.

RESULT

- In pre-test, out of 60 subject's majority of them 61% had inadequate knowledge, 29% of them had moderate knowledge and 10% of them had adequate knowledge.
- In post-test, majority of them 73.70% had adequate knowledge, 26.30% had moderate knowledge and none of them had inadequate knowledge.
- There is statistically significant association found between demographic variables and the pre-test and post- test level of knowledge of the nurses on PPD. The variables showed significance at P <0.05 level.

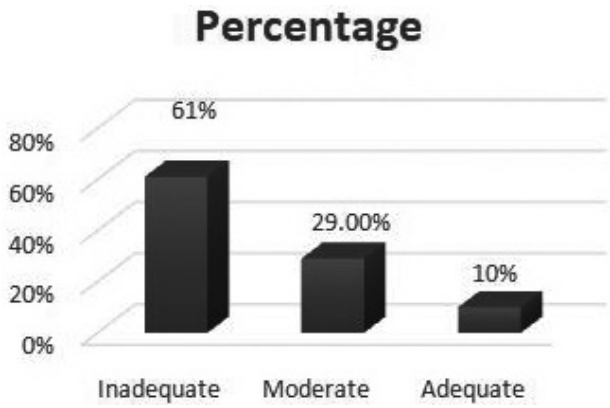

Figure 4: Distribution of nurses according to knowledge regarding postpartum psychiatric disorders before administering self- instructional module.

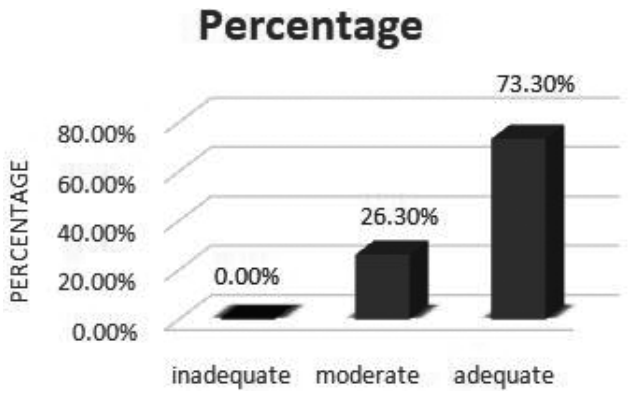

Figure 5: Percentage distribution of level of post-test level of staff nurses on postpartum psychiatric disorders after administering self -instructional module.

DISCUSSION

The postpartum psychiatric disorders is prevalent among the postnatal mothers. Nurses are the workers, whose main responsibility is to provide safe and effective care within constantly evolving health care systems, also should be alert for the signs of postpartum psychiatric disorders and be prepared to help, promote attachment between mother and baby, referral of the mother and the family for support services and counselling, and assisting the family in prioritizing and performing necessary family functions. The nurse can help the mother acknowledge her new staff and new role and to maintain support maternal role and bonding. To provide optimum care to postnatal mothers, the nurse should have adequate knowledge in post-natal mental health and its management.

The present study was conducted to evaluate the effectiveness of self-instructional module on knowledge of staff nurses regarding postpartum psychiatric disorders. The problem stated is "A study to assess the effectiveness of self-instructional module on knowledge of staff nurses regarding postpartum psychiatric disorders in selected hospitals of Pune, Maharashtra."

In order to achieve the objectives of the study a pre-experimental one group pre- test & post-test design with evaluative approach was used. Non-probability convenience sampling technique was used to select the samples.

The data was collected from 60 staff nurses before and after the administration of self- instructional module by using a structured knowledge questionnaire.

The findings of the study have been discussed with reference to the objectives, hypothesis.

CONCLUSION

The core features of PPD are an early and rapid onset, accompanied by profound confusion, delusional beliefs, mood swings, and inability to function that represent a major change from baseline. Postpartum psychosis is one of the most severe manifestations of postpartum mental illness. A psychiatric emergency, the prompt recognition and treatment of postpartum psychosis is essential in insuring maternal and infant well-being and safety.

Non-probability convenient sampling technique was used to select the samples. The data was collected from 60 staff nurses with the help of structured questionnaire before and after administration of Self- instructional module. On the basis of the findings the following conclusions were made. The findings of the study revealed that there was a marked increase in overall knowledge level scores (76.30%) of post-test than the pre-test (61%). The overall improvement in the mean score was 34.2% with the paired t value 9.50 which was highly significant at $P<0.05$. Thus the administration of self- instructional module was significantly effective in improving the nurse's knowledge on postpartum psychiatric disorders.

Ethical Consideration: For the current study, the investigator took in to consideration the ethical issues. There were no ethical issues confronted while conducting the study.

Conflict of Interest: NIL

Source of Funding: Self

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A Study to Evaluate the Effectiveness of Structured Teaching Programme on Obesity & its Consequences among Adolescents in Selected Private High Schools in Pune

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ABSTRACT

Introduction/Background: The WHO has already says that Obesity a global epidemic biggest current health problem in children as well as adolescents[1]. Overweight and obesity are a matter of growing concern in India[2]. Obesity is associated with increased morbidity and mortality in adolescents. So it's important to educate about obesity and its consequences to improve health of the adolescents[3].

Methodology: The study was conducted using pre experimental one group pretest-posttest design. The research variable was knowledge regarding obesity and its consequences, while the demographic variables were age, gender, religion, educational status of parents and monthly income of family, food pattern and source of information. The study was conducted on 120 adolescents using simple random sampling. The data obtained was tabulated and analyzed in terms of objectives of the study using descriptive and inferential statistics.

Results & Discussion: The findings on assessment of knowledge regarding obesity and its consequences showed that 69 (57.5%) adolescent had average knowledge and 30 (25%) had poor knowledge. After the administration of structured teaching programme, the pre-test and post-test data analysis revealed that the mean post-test score (24±2.68) was higher than the mean pre test score (15.59±3.16).

Conclusion: The study concluded that structured teaching programme was effective for high school students to gain knowledge regarding obesity and its consequences.

Keywords: *Effectiveness, Obesity, Consequences, Adolescents*

INTRODUCTION

Increasing rates of obesity was reached epidemic proportions in developed countries and is rapidly increasing in many middle-income and less-developed countries.[1] Obesity is now recognized as the most prevalent metabolic disease world-wide, reaching epidemic proportions in both developed and developing countries and affecting not only adults but also children and adolescents. The WHO has already declared obesity a global epidemic that constitutes one of the biggest current health problems.[2] Childhood obesity is one of the most serious public health [3, 4] challenges of the 21st century .The problem is global and is steadily affecting many low- and middle-income countries, particularly in urban settings.[5, 6]

Most individuals develop their eating and activity patterns during childhood. The transition in nutrition and lifestyle, e.g. popularity of fast foods, soft drinks, sedentary lifestyle, and lack of exercise, increased television watching and computer use are the common trends adopted by adolescents today. These may be the causes for overweight seen in children of urban areas. In addition to this; cultural factors such as dietary practices, attitudes towards food are changing which ultimately contribute to the prevalence of incidence of obesity.[7]

Indian population compresses of adolescents in the age group of 10-19 years which represent almost 22.8% that is nearly 230 million. This is almost 2/3 of the world adolescent population. Adolescence is generally understood as the period of transition from childhood to adulthood. Adolescent is frequently exposed to rapidly-

changing values, modernized means of communication and hostile culture which affects their health.[8]

The prevalence of obesity in India ranges from 10–25% in men and 10–30% in women. In the past 10 years the prevalence of obesity has increased by 10–40% in the majority of Asian countries. The prevalence of obesity in Maharashtra among men is 14% & 17.3% in women. Likewise in Pune district, the prevalence of obesity is 5.5% in boys and 6.4% in girls. Obesity is responsible for about 80% of cases of type 2 diabetes, 35% of Ischemic Heart Disease and 55% of hypertensive disease among adults in India.[9]

Obesity is also associated with increased morbidity and mortality in their adulthood. Studies revealed that adolescents will often experiencing social problems, prejudice and discrimination; not only from general public, but also from health professionals and this may make them reluctant to seek medical advice. So it is important to educate about obesity and its consequences and how to maintain weight in order to improve their health.[10]

Based on the above statistics & the investigator's experience in the community, investigator strongly feels to undertake this study in order to understand the seriousness of obesity and its consequences among adolescents which will help the adolescents to protect their health.

MATERIAL AND METHOD

The sample size considered for the study was 120 students of 8th and 9th std studying in selected English medium private high schools of Pune. The sampling technique used for the study was Stratified random sampling.

The structured questioner method is used in the study consist of two section, section A consisted of 9 question seeking the demographic data of the subjects. Section B consists of 30 multiple choice items related to knowledge items with 4 options. A scoring system is developed for the items. Each correct answer is assigned a score of 'one' and wrong answer a score of 'zero'. The total score of section B is 30. The collected data was tabulated and analyzed in terms of descriptive and inferential statistics.

RESULTS

The major findings of the study were as follows,

1. **Findings related to socio demographic variables of High School Adolescents:** In the present study it was found that out of 120 Private high school adolescent, 60 (50%) of the subjects were in the age group of 14 years and 60 (50%) in the age group of 15 years. Majority of adolescents were male was 61 (50.83%) & female was 59 (49.16%). Majority of adolescents belonged to Hindu religion 72 (60%) & minimum was Jain religion 7 (5.8%). Most of education among both 8th & 9th std was 60 (50%). Most fathers educational status 38 (31.66%) was higher secondary while minimum of 6 (5%) father had completed primary education. Most mothers educational status 41 (34.16%) was higher secondary education while a minimum of 8 (6.6%) mothers had completed primary education. Most of family income was in between rs 5001-10000 49 (40.83%) while minimum 15 was bellow rs 5000 15 (12.5%). Maximum of the adolescents consumed mix diet 86 (71.66%) while only 34 (28.33%) consumed vegetarian. Most of the adolescents getting information from neighbor, friends, family members 45 (37.5%) minimum 22 (18.33) mass media.

2. **Findings related to pre test and post test knowledge scores of high school adolescents:** Based on the analysis pre test knowledge scores of high school adolescent, revealed that most of them 30 (25%) had poor knowledge, 69(57.5%) had average knowledge and 21 (17.5%) had good knowledge. Post test knowledge scores of high school adolescent, revealed that most of them 118(98.33%) had good knowledge, 2(1.66) had average knowledge.

3. **Findings related to the Effectiveness of planned teaching programme in terms of gain in knowledge regarding obesity & its consequences:** In the present study comparison of pretest and post test knowledge regarding Obesity & its consequences among adolescents in selected high schools revealed that the post test score was significantly higher than the pretest score. Calculated paired't' value was t=62.22, which is statistically significant at $p<0.05$ level. This proved that the structured teaching programme

was effective method in improving the knowledge of private high school adolescents.

4. **Findings related to association of knowledge of Private high school adolescent with selected demographic variables:** Chi-square test was computed to find out the association of knowledge of private high school adolescent with selected demographic variables. Test results were, Chi-square value at (5.99) for age of adolescent was (0.308), for education of adolescent at (0.308), food pattern at (4.71) was (5.99) respectively, for education of father at (8.132), mother education at (9.01) was (18.31) respectively, family income at (5.50), sources of information at (7.412) was 12.59 respectively. The computed values were not significant at 0.05 level of significance. Hence, there was no statistically significant association between knowledge and selected demographic variables.

DISCUSSION

Majority of adolescents were male was 61 (50.83%) & female was 59 (49.16%). Majority of adolescents belonged to Hindu religion 72 (60%). Most of education among both 8th & 9th std was 60 (50%). Most fathers educational status 38 (31.66%) was higher secondary. Most mothers educational status 41 (34.16%) was higher secondary education. Most of family income was in between rs 5001-10000, 49 (40.83%). Maximum of the adolescents consumed mix diet 86 (71.66%) while only 34 (28.33%) consumed vegetarian. Most of the adolescents getting information from neighbor, friends, family members 45 (37.5%) minimum 22 (18.33) mass media.

In the pre test knowledge scores of high school adolescent, revealed that most of them 30 (25%) had poor knowledge, 69(57.5%) had average knowledge and 21 (17.5%) had good knowledge regarding obesity & its consequences.

CONCLUSION

Based on the findings of the study the following conclusions were drawn,

1. Overall pre test knowledge of high school adolescents regarding obesity & its consequences was low, which suggested there is need for planned teaching programme on obesity & its consequences among adolescents in selected high schools.
2. Post test results showed that there is significant improvement in the level of knowledge regarding obesity & its consequences among adolescents, it can be concluded that structured teaching programme was an effective method of teaching high school adolescents to improve knowledge on obesity & its consequences.
3. Pre test results revealed that majority of the socio demographic variables didn't have statically relation with the knowledge & socio demographic variables of adolescents.

Ethical Clearance: It is been taken from Research Advisory Committee (RAC), Symbiosis College of Nursing, Pune

Source of Funding: Self

Conflict of Interest: Nil

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Assessment of the Awareness about Effects of Cell Phone Radiations amongst Students at Symbiosis International (Deemed University) Hill Base Campus

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ABSTRACT

In the 21st century, mobile phones are extensively used beyond communication for camera, internet, music and GPS navigation. However, the increased usage of cellular phones have led to exponential increase in the detrimental phone radiations. Reports have shown health issues such as headache, dizziness and local burning after prolonged cell phone usage. The present study was conducted to evaluate the awareness about cell phone radiations and their effects among students from Symbiosis International (Deemed University) hill base campus. The study was conducted in a cross sectional descriptive manner using Google forms and perception questionnaire. In total 352 students were enrolled for the study. The survey showed that majority of students (59.7%) spent less than four hours on phones everyday however 19.5% participants were spending more than eight hours on their phones. Although, 82% were aware of Specific Absorption Rate only 62% participants were taking precautionary measures of using headsets and speaker mode during long duration calls. The students also complained of heat sensation, headache, fatigue and dizziness after using phones continuously for long hours. The present study inferred a positive correlation between students' awareness about cell phone radiations and their duration of cell phone usage concluding that majority of students were taking precautionary measures against harmful effects of cell phone radiations.

Keywords: *Mobile phones, Questionnaire, SAR*

INTRODUCTION

Cell phones have emerged as one of the most vital technological advances in the current generation. According to reports, total wireless phone subscribers in India are almost 1099.51 million with a monthly growth rate of 1.96% [(1)]. However the increased use of cell phones is accompanied with detrimental effects of emitted radiations on human health as well as the ecosystem on the whole. The health hazards reported due to radiations from cellular phones include headache, infertility, ear problems, depressive tendency, fatigue, sleeping disorder, difficulty in concentration and cardiovascular problems [(2-12)].

Internal Agency for Research on Cancer (WHO) has declared electromagnetic fields as Class B carcinogen based on available research[(13)]. According to the exposure limits for mobile hand-sets in India, the whole body average SAR limit has been set as 0.08 W/kg, and the localized SAR limits for head and trunk and for limbs have been set as 2 W/kg and 4 W/kg respectively where Specific Absorption Rate (SAR) is a measure of the rate of Radiofrequency energy absorption by the body from the source being measured–in this scenario, a cell phone. However, majority of phone users are still widely unaware of the harmful effect of radiations on their bodies.

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Thus the present study was designed to understand the pattern of usage of mobile phone amongst students and also to assess their knowledge about the effects of mobile phone radiations.

MATERIALS AND METHOD

The study was a descriptive cross sectional survey set amongst full time (UG/PG/Doctoral) students (n = 352) from Symbiosis School of Biological Sciences (SSBS) and Symbiosis Institute of Technology (SIT) of Symbiosis International (Deemed University) Hill Base Campus at Lavale, Pune. Unit for the study was an individual student. A self-administered questionnaire was used for data collection. The main objectives of the study were:

1. To understand mobile usage pattern among participant students.
2. To assess the level of knowledge related to effect of cell phone radiations amongst enrolled students.

The study included students using mobile phones for a minimum period of more than one year. A pretested, structured and self-administered questionnaire was used as a data collection tool distributed by mode of printed questionnaires or Google forms and the data was analysed in Microsoft Excel (2007).

FINDINGS

According to the survey conducted among students in the Symbiosis International (Deemed University) Hill base campus, the following results were recorded and analysed in Microsoft Excel.

Table 1: General information of mobile usage among participant students

(a) General information on mobile phone usage

a.	**Are you male or female?**		
i.	Male	248	70.45%
ii.	Female	104	29.55%
b.	**Types of Phones (Operating system used)**		
i.	Android	274	77.84%
ii.	iOS	44	12.5%
iii.	Others	14	3.98%
iv.	Windows	20	5.68%
c.	**Years since usage of mobile phones**		
i.	Less than 5 years	116	32.9%
ii.	Between 5 to 10 years	233	66.2%
iii.	Greater than 10 years	3	0.9%

Out of 352 students, 248 were male and remaining 104 were female respondents. Majority of the students preferred Android OS (77.84%) followed by iOS (12.5%) and Windows OS (5.68%). Only 3.98% respondents were seen using other operating systems in their phones. Around 66% of the participants have been using mobile phones between 5 to 10 years while only 32.9% of the participants have been using phones for less than five years (Table 1).

Table 2: Time duration of mobile phone usage for different activities of participant students

(b) Usage of mobile phones

Activity / Duration	Calls		Messaging		Internet		Games/Camera/ Music	
Less than 30 minutes	201	57.1%	135	38.35%	51	14.49%	128	36.36%
From 30 min to 1 hour	84	23.86%	73	20.74%	78	22.16%	90	25.57%
From 1 to 2 hours	42	11.93%	81	23.01%	105	29.83%	65	18.74%
From 2 to 3 hours	11	3.13%	22	6.25%	44	12.5%	25	7.1%
From 3 to 4 hours	7	1.99%	8	2.27%	29	8.24%	15	4.26%
More than 4 hours	7	1.99%	33	9.38%	45	12.78%	29	8.24%

Research suggests that a person should not use cell phone for more than 18-24 minutes per day[14]. Our results showed, 201 students limited their phone usage for calls to less than 30 minutes while only 7 students

claimed that they spent more than 4 hours on calls. Of 352 students, 38.35 % students claimed that they spent less than thirty minutes on messaging however, 9.38 % students responded that they used their cell phones for more than four hours every day for messaging. 33.52% students spent more than 2 hours daily for internet while only 8.24% students used mobiles for more than four hours for other applications (Table 2).

Table 3: Response of participant students based on awareness about cell phone radiations

(c) Awareness

a.	**What is the full form of SAR?**		
i.	Not answered	22	6.25%
ii.	Slow Absorption Rate	25	7.11%
iii.	Specific Absorption Rate	292	82.95%
iv.	Specific Adherent Rate	10	2.84%
v.	Slow Average Rate	3	0.85%
b.	**Use of Bluetooth/wired headsets to reduce exposure to phone radiations?**		
i.	Not answered	6	1.71%
ii.	Yes	221	62.78%
iii.	No	125	35.51%
c.	**Will using my mobile phones on speaker mode reduce my exposure to its radiations?**		
i.	Yes	204	57.95 %
ii.	No	148	42.05 %
d.	**Are you aware of any Governmental regulations with respect to mobile radiations?**		
i.	Yes	125	35.55 %
ii.	No	227	64.49 %
e.	**Where do you put your mobile phones while it is in standby mode?**		
i.	Trouser pocket	271	76.99 %
ii.	Shirt pocket	4	1.14 %
iii.	Purse/bag	33	9.38 %
iv.	In hand	13	3.69 %
v.	Tied to the arm	2	0.57 %
	Others (More than one option from above)	29	8.23%

Conted…

f.	**Are there any commercial devices available in the markets which are specially developed to decrease mobile phones effect on health?**		
i.	Yes	234	66.48%
ii.	No	103	29.26%
iii.	Not sure	15	4.26%
g.	**How far do you keep your phones while sleeping?**		
i.	Close to body (Minimum 30 cms)	166	47.16 %
ii.	At a distance (More than 30 cms)	186	52.84 %

Among participants, 82.95% students knew about SAR. However, only 221 students considered using headsets for reducing mobile phone radiation exposure. Around 58% students stated that using mobile phones on speaker mode reduces the exposure to phone radiations. Only 48% students were aware of commercial devices available in the market developed to decrease mobile phones effect on health.52.84% students preferred keeping their mobile phones at a distance of more than 30 cm while sleeping (Table 3).

Table 4: Symptoms experienced by participant students after long duration phone calls

(d) Symptoms

a.	**Symptoms experienced during long duration calls?**		
i.	Heat Sensation	113	32.1%
ii.	Headache	46	13.07%
iii.	Fatigue	6	1.7%
iv.	Dizziness	5	1.42%
v.	Euphoric	1	0.28%
vi.	Heat sensation and Headache	21	5.99%
vii.	None of the above	129	6.65%
viii.	Others (More than one option from above)	31	8.79%

In a study conducted by Oktay and Dasdeg (2006), more than 100 cell phone studied for a period of 1 year showed a remarkable decrease in degree of hearing in the time period [15,16]. Students experienced similar symptoms such as heat sensation, headache, fatigue, dizziness and euphoric during long duration calls while 6.65% students did not experience any symptoms during long duration calls (Table 4).

Table 5: Response of participants based on factors and reasons for purchasing and using mobile phones

(e) Factors and reasons for purchasing mobile phones

a.	**Factors considered while purchasing mobile phones:**		
i.	Brand	103	29.26%
ii.	Price	37	10.51%
iii.	Aesthetic value	22	6.25%
iv.	SAR	10	2.84%
v.	Status symbol	9	2.56%
vi.	All of the above	27	7.67%
vii.	Brand and Aesthetic value	54	15.35%
viii.	Brand and Price	25	7.1%
ix.	Others (More than one option from above)	65	18.46%
b.	**Reasons for using mobile phone**		
i.	Socializing	127	36.08%
ii.	Safety	44	12.5%
iii.	Privacy	19	5.4%
iv.	Status Symbol	2	0.57%
v.	All of the above	22	6.25%
vi.	Others (More than one option from above)	138	39.20%

Most students preferred brand, Price and aesthetic value over SAR values while purchasing mobile phones [17-20]. Out of 352 students, 127 students used their cell phones for socializing, 19 students for privacy, 44 students for safety and 2 as status symbol [21-24] (Table 5).

Table 6: Level of addiction for cell phone usage in participant students

(f) Level of addiction

a.	**Do you switch off your phone when need arises?**		
i.	Yes	132	37.5%
ii.	No	220	62.5%
b.	**Do you use your mobile phones while driving?**		
i.	Yes	46	13.07%
ii.	No	306	86.93%
c.	**Do you feel uncomfortable/restless when your mobile phone is not with you? If no, select 0. If yes, do you feel addicted to your mobile phones (On a scale of 1 to 5, where 1 is very less and 5 is maximum).**		
i.	No	58	16.48 %
ii.	Level 1	52	14.78 %
iii.	Level 2	92	26.14 %
iv.	Level 3	89	25.28 %
v.	Level 4	34	9.66 %
vi.	Level 5	27	7.66 %

Psychiatrists have even considered mobile phone obsessions among major non-drug addictions in the 21st century [25]. Among participants, 132 students claimed that they would switch off their mobile phones if need arises (lectures/cinemas) while 220 students stated that they would never switch off their mobile phones. Despite of the known risk factor for road traffic accidents, 13.07% students used mobile phone while driving. Surprisingly, 16.48% students were at peace without their phones while 83.52% students felt restless without their cell phones (Table 6).

CONCLUSION

The present research was carried out to assess knowledge about cell phone radiations amongst students at Symbiosis International (Deemed University) Hill Base campus. 77.84% of respondents were Android users and most of the students considered using their cell phones for socializing, safety and privacy purposes. We found that 32.01% students experienced headache after long duration calls. The survey concluded that 57.71% spent less than thirty minutes on long duration calls to avoid the resulting possible health issues because of the SAR radiations. 62.5% subjects responded that they never switched off their phones and 26.14% claimed that they felt second level addiction to their cell phones and felt restless without their phones. Most of the Participants preferred using mobile phones on speaker mode/headsets to reduce their exposure to the radiations. The students had knowledge about SAR, cell phone radiations, and related health issues to its exposures. Hence, we inferred a positive correlation between students' awareness about cell phone radiations and their duration of cell phone usage concluding that students were completely conscious of the radiations emitting from their cell phones and took precautionary measures to avoid long duration exposure to the radiations by restricting their duration of mobile usage.

Conflict of Interest: The authors report no conflicts of interest in this work.

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Ethical Clearance: The study was approved by the Institutional Ethics committee and has been performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. Informed consent was obtained from all the students.

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A Study to Estimate the Level of Physical Activity and Perceived Benefits and Barriers to Exercise among Women in Coastal Karnataka

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ABSTRACT

Background: Insufficient physical activity is a known risk factor for major non-communicable diseases. While the health benefits of physical activity are well established, women are known to have suboptimal levels of physical activity. Studying the perceived benefits and barriers to exercise can help to improve physical activity among women.

Objective:

To study the perceived benefits and barriers to exercise and the associated factors among women

To assess the level of physical activity among the women

Methodology: A community based cross sectional study was conducted among women aged 18-49 years. The Exercise Benefits and Barrier Scale (EBBS) was used to assess benefits and barriers to exercise. International Physical Activity Questionnaire (IPAQ) was used to assess physical activity.

Results:

The study included 181 participants with mean (SD) age of 35.2(8.4) yrs. Enhancement of physical endurance (98.4%) and improvement of overall body functioning (97.8%) were the most commonly perceived benefits. Tiredness (52.5%) due to exercise and lack of convenient schedules in exercise facilities (52.0%) were the most common perceived barriers. According to IPAQ, (17.1%) were considered physically inactive. The level of physical activity showed a positive association with mean total and barrier EBBS score ($p < 0.01$).

Conclusion: Women perceived the benefits of exercise positively, however, they identified certain barriers to the same. The presence of inactivity and obesity among a considerable proportion, requires further action with specific intervention.

Keywords: *Exercise, benefits, barriers, physical activity, women*

INTRODUCTION

Globally, inadequate physical activity is one of the ten leading risk factors for mortality [1]. In 2010, 23% of adults aged 18 years and over were insufficiently physically active with women being less active than men (27% Vs. 20%) [2]. As per the *Global Status Report on NCDs-2014,* 3.2 million deaths were attributed to physical inactivity each year. Regular physical activity (at least 150 minutes of moderate intensity per week for adults) reduces the risk of cardiovascular disease,

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diabetes, cancer and all-cause mortality [3]. In spite of health benefits, level of physical activity among women is suboptimal. Several barriers to physical activity have been reported among women including lack of time and motivation, lack of inexpensive facilities[4]. It is important to understand these patterns, facilitators and barriers of physical activity to devise effective interventions among women. With a limited information on this issue in Indian context, the present study was planned to assess the level of physical activity among women and understand the perceived barriers and benefits to exercise.

METHODOLOGY

A community based cross sectional study was conducted in a village in Udupi district of coastal Karnataka. The study included rural women aged 18-49 years. Women with physical disabilities and pregnant women were excluded. Anticipating a standard deviation of 13.4 of the EBBS score based on a pilot study, precision of 10%, considering a 95% Confidence Interval, the sample size of was calculated to be 111. Data was collected by making house visits. In every household not more than two women were interviewed. In case of more than two women willing to participate, the eldest and youngest among the women were requested to participate. After obtaining consent, socio demographic information was collected using a structured proforma. EBBS was used to assess the benefits and barriers to exercise[5]. This scale has 43 items with each having four response, Likert type format with responses ranging from 4(strongly agree) to 1(strongly disagree). It has 29 items on benefits and 14 items on barriers. Barrier Scale items were reverse-scored. The scores on the total instrument can range from 43 to 172. While higher total and benefit scores represented, greater positive perception of individual towards exercise, a higher barrier score meant the participants had lesser barrier towards exercise. The benefit and barrier scales have five and four domains respectively as shown in box no.1.

Box 1: Scales and Sub-scales of the Exercise Benefits/Barriers Scale.

Perceived Benefits	Perceived Barriers
Life enhancement (8 items) Physical performance (8 items) Psychological outlook (6 items) Social interaction (4 items) Preventative health (3 items)	Exercise milieu (6 items) Time expenditure (3 items) Physical exertion (3 items) Family discouragement (2 items)

IPAQ was used to assess the level of physical activity of the participants and it was categorized as inactive, minimally active and Health Enhancing Physical Activity (HEPA)[6].

The anthropometric measurements such as weight, height, waist and hip circumference were measured. The Body Mass Index (BMI) was calculated and the World Health Organisation (WHO) criteria for Asian Indians was used to define obesity[7]. A waist hip ratio (WHR) of >0.85 was considered as abnormal.

Data was entered and analysed in Statistical Package for Social Sciences (SPSS) version 16. Results were expressed in frequencies and percentages for categorical variables. Continuous variables were expressed by mean and standard deviation. Student t test and ANOVA was used to compare EBBS scores with background characteristics. A p value of less than 0.05 was considered statistically significant.

RESULTS

The study included a total of 181 participants with a mean (SD) age of 35.2(8.4) years and 70.2% of the participants in the age group of 18-40 yrs. Among the participants, 151 (83.4%) of them were currently married and 48.6% had 8-12 years schooling. According to modified BG Prasad Scale, 80.7% belonged to upper socio economic status and 19.3% belonged to middle class. The study participants were predominantly homemakers (74%). While 40 (22.1%) of the study participants were employed, 7(3.9%) were students. About 17.7% of the participants had one or more associated morbidity which included–hypertension (6.6%), diabetes (3.3%), asthma (3.3%), hypothyroidism (2.8%) and cardiovascular diseases (1.7%). More than half of the participants belonged to nuclear families. The mean (SD) BMI of the participants was 24.3 (4.9) kg/m^2, 61.9% of the participants had a BMI $\geq$ 23.0 kg/m^2 and 68% were found to have an abnormal waist hip ratio. According to IPAQ, 74 (40.9%) belonged to HEPA and 31(17.1%) were considered physically inactive.

Table 1: Distribution of EBBS frequencies and percentages of benefit items among the study participants (N = 181)

EBBS items	Strongly agree	Agree	Disagree	Strongly Disagree
	n (%)			
Life enhancement				
My disposition is improved with exercise.	14(7.7)	156(86.2)	11(6.1)	0(0)
Exercising helps me sleep better at night.	44(24.3)	130(71.8)	7(3.9)	0(0)
Exercise helps me decrease fatigue.	8(4.4)	148(81.8)	25(13.8)	0(0)
Exercising improves my self-concept.	18(9.9)	155(85.6)	8(4.4)	0(0)
Exercising increases my mental alertness.	15(8.3)	160(88.4)	6(3.3)	0(0)
Exercise allows me to carry out normal activities without becoming tired.	11(6.1)	146(80.7)	23(12.7)	1(0.6)
Exercise improves the quality of my work	25(13.8)	148(81.8)	7(3.9)	1(0.6)
Exercise improves overall body functioning for me.	21(11.6)	156(86.2)	4(2.2)	0(0)
Physical performance				
Exercise increases my muscle strength.	25(13.8)	144(79.6)	11(6.1)	1(0.6)
Exercising increases my level of physical fitness.	25(13.8)	145(80.1)	11(6.1)	0(0)
My muscle tone is improved with exercise.	12(6.6)	160(88.4)	9(5.0)	0(0)
Exercising improves functioning of my cardiovascular system.	19(10.5)	149(82.3)	13(7.2)	0(0)
Exercise increases my stamina.	27(14.9)	146(80.7)	8(4.4)	0(0)
Exercise improves my flexibility.	19(10.5)	158(87.3)	4(2.2)	0(0)
My physical endurance is improved by exercising.	13(7.2)	165(91.2)	3(1.7)	0(0)
Exercise improves the way my body look	28(15.5)	141(77.9)	12(6.6)	0(0)
Psychological outlook				
I enjoy exercise.	27(14.9)	138(76.2)	15(8.3)	1(0.6)
Exercise decreases feelings of stress and tension for me.	29(16.0)	141(77.9)	11(6.1)	0(0)
Exercise improves my mental health.	35(19.3)	137(75.7)	9(5.0)	0(0)
Exercise gives me a sense of personal accomplishment.	25(13.8)	132(72.9)	23(12.7)	1(0.6)
Exercising makes me feel relaxed.	30(16.6)	145(80.1)	6(3.3)	0(0)
I have improved feelings of well-being from exercise.	19(10.5)	155(85.6)	6(3.3)	1(0.6)
Social Interaction				
Exercising lets me have contact with friends and persons I enjoy.	19(10.5)	118(65.2)	42(23.2)	2(1.1)
Exercising is a good way for me to meet new people.	11(6.1)	130(71.8)	37(20.4)	3(1.7)
Exercise is good entertainment for me.	22(12.2)	135(74.6)	23(12.7)	1(0.6)
Exercising increases my acceptance by others.	9(5.0)	125(69.1)	45(24.9)	2(1.1)
Preventive sub-scale				
I will prevent heart attacks by exercising.	25(13.8)	123(68.0)	29(16.0)	4(2.2)
Exercising will keep me from having high blood pressure.	25(13.8)	125(69.1)	29(16.0)	2(1.1)
I will live longer if I exercise.	32(17.7)	115(63.5)	34(18.8)	0(0)

Table 1 shows the domain wise frequencies and percentages of various items of benefit subscale among the study participants. After combining the responses of women who either strongly agreed or agreed to the various items, the top two and least two perceived benefit items were identified. While improvement of physical

endurance (98.4%) and overall body functioning (97.8%) were highest perceived benefits; increase of social acceptance by others (74.1%) and exercise as a means to have contact with friends and others with whom they enjoy (75.7%) were the least two perceived benefits of exercise.

Table 2: Distribution of EBBS frequencies and percentages of barriers items among the study participants (N = 181)

EBBS items	Strongly agree	Agree	Disagree	Strongly Disagree
	n (%)			
Time expenditure				
Exercising takes too much of my time.	9(5.0)	75(41.4)	90(49.7)	7(3.9)
Exercise takes too much time from family relationships.	7(3.9)	63(34.8)	106(58.6)	5(2.8)
Exercise takes too much time from my family responsibilities.	3(1.7)	60(33.1)	111(61.3)	7(3.9)
Exercise milieu subscale				
Places for me to exercise are too far away.	12(6.6)	63(34.8)	100(55.3)	6(3.3)
I am too embarrassed to exercise.	6(3.3)	41(22.7)	115(63.5)	19(10.5)
It costs too much to exercise.	5(2.8)	21(11.6)	128(70.7)	27(14.9)
Exercise facilities do not have convenient schedules for me.	7(3.9)	87(48.1)	85(47.0)	2(1.1)
I think people in exercise clothes look funny.	7(3.9)	43(23.8)	118(65.2)	13(7.2)
There are too few places for me to exercise.	10(5.5)	72(39.8)	94(51.9)	5(2.8)
Physical exertion				
Exercise tires me.	5(2.8)	90(49.7)	77(42.5)	9(5.0)
I am fatigued by exercise.	2(1.1)	85(47.0)	86(47.5)	8(4.4)
Exercise is hard work for me.	4(2.2)	65(35.9)	100(55.2)	12(6.6)
Family discouragement				
My spouse (or significant other) does not encourage exercising.	9(5.0)	32(17.7)	118(65.2)	22(12.2)
My family members do not encourage me to exercise.	7(3.9)	28(15.5)	122(67.4)	24(13.3)

Table 2 shows the domain wise frequencies and percentages of various items of barrier subscale among the study participants. After combining the responses of women who either strongly agreed or agreed to various items, the top two and least two perceived barrier items were identified. While feeling of tiredness due to exercise (52.5%) and lack of convenient schedules in exercising facilities (52%) were highest perceived barriers; high cost involved in doing structured exercise (14.4%) and lack of encouragement by family members (19.4%) were the least two perceived barriers for exercise.

The total mean (SD) benefit score, barrier score and total EBBS score obtained was 87.67(6.64), 37.46(4.03) and 125.09(8.66) respectively.

Table 3: Background characteristics showing significant association between EBBS scores among the study participants (N = 181)

Variable	Category	Mean(SD) Total EBBS Score	p value	Mean(SD) Benefit Score	p value	Mean(SD) Barrier Score	p value
Education	Illiterate	132.00(10.44)	0.164	89.33(6.11)	0.663	42.66(4.72)	**0.02***
	Literate	124.98(8.61)		87.64(6.66)		37.36(3.97)	
IPAQ categories	Inactive	117.77(6.71)	**<0.01***	85.93(4.71)	0.09	31.83(3.54)	**<0.01***
	Minimal active	128.92(8.94)		88.81(7.21)		40.10(2.98)	
	HEPA	124.23(6.75)		87.21(6.58)		37.01(2.28)	

* Statistically significant

Except for literacy and the level of physical activity none of the baseline characteristics (age, gender, marital status, occupation, socio-economic status, type of family, presence of morbidity, BMI and waist hip ratio) were associated with the mean scores.

DISCUSSION

The present community based study found that EBBS scores are average. This indicates that women perceive the benefits of exercise positively nevertheless they identify certain barriers to the same.

While the benefits and barriers studied in studies are different, several common issues have also been explored. In this discussion, the benefits and barriers similar to those studied in the present study have been highlighted.

Benefits of exercise: A study by Duskapan A et al among women aged 24-63 yrs, found that 94.7% were aware of preventive benefits of exercise such as prevention of heart diseases. In the same study, women perceived that exercise improves well-being (86.1%), allows socialization (69.7%) and improves musculoskeletal health (94.7%) [8]. Anjana RM et al, found that over 90% of females agreed to benefits of exercise such as decrease in stress, enjoying exercise, prevention of heart attacks, improvement of mental health, muscle strength, sleep, longevity, overall body functioning and looks [9]. A study among employees of an educational institute in Mauritius, found that highest perceived benefits of exercise were improvement of physical fitness and getting better sleep at night [10].

Barriers to exercise: The reported barriers to exercise by Duskapan A et al among women were: tiredness caused by exercise (8.2%), exercise taking too much time from family responsibilities (3.4%), high cost (15.9%) and lack of encouragement from family members and friends (4.8%) [8]. A study among women aged 45-49 yrs in Malaysia, found that interference with social and family activities (26.7%), high cost (15%), lack of facilities (33.4%), being too tired to do exercise (48.3%) to be the barriers to exercise [11]. Anjana RM et al, identified the perceived barriers to exercise among women to be lack of encouragement from family members (17.1%), availability of few places to exercise (45.9%), exercise taking time away from family (42%), looking funny in exercise clothes (17.1%), high cost (13.7%), exercise places being located faraway (36.8%), tiredness caused due to exercise (40.7%), exercise taking too much of time (46.1%), embarrassment due to exercise(13.7%) [9]. A study in Southern California among 18 years and older Arab women, observed that: not having enough time (56.7%), exercise taking time away from family (15%), not having enough money (6.1%), absence of support from family/friends (3.9%) as barriers to maintain physical activity [12]. Sun MC et al found that highest perceived barriers to exercise were, being too embarrassed to exercise and people looking funny in exercise clothes [10]. A study from urban Kerala found that household chores, lack of interest and lack of encouragement were major perceived barriers[13].

Level of physical activity: According to Anjana RM et al, which included participants from four states of India, 63% of women were found to be inactive which is much higher than the present study (17.1%- inactive) [14]. Jayamani V et al found that high physical activity was seen among 50.7% rural and 14% urban 30-50 yr old women, [15]. A study by Giridhran P et al observed the low, moderate and high physical activity levels among women to be 52.6%, 40.6% and 6.6% respectively [13]. Another study by Thankappan KR et al, found that 7.1% of women to be physically inactive[16].

Since this survey was carried out during working hours, the study population predominantly consisted of homemakers which may have underestimated physical activity among this population.

CONCLUSION

Though this population perceives the benefits of exercise positively, the presence of inactivity among a considerable proportion and obesity among a large population, calls for action with specific intervention.

Conflict of Interest: None

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Ethical Clearance: Institutional Ethics Committee approval was obtained

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Effect of Dispositional Mindfulness on Perceived Stress Scores of Engineering Students: An Empirical Study

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ABSTRACT

The primary purpose of this paper is to study the relationship and effect of meditation on stress among engineering students along with the inclusion of suggestion related to mindfulness meditation practices techniques was a secondary purpose. A purposive random selection of 100 students in which 50 students were aware and practicing meditation to cope with stress on a daily basis and 50 students were not practicing any kind of meditation. Perceived Stress scale [PSS] and Mindfulness Attention Awareness Scale [MAAS] was administered on both the groups of students. Collected data was analyzed using SPSS version 20 in order to numerically understand the relationship between Dispositional Mindfulness and Perceived Stress level.Study showed significant decreases in stress perception level among those students who are practicing meditations and high level of stress perception level among those who are not practicing any techniques to cope with stress respectively. Overall, meditation in any form, be it Mindfulness, promise in reducing stress among college students.

Keywords: *Mindfulness; Mindfulness-techniques; Stress; College-students.*

INTRODUCTION

Mindfulness meditation is a non-sectarian, research based form of meditation derived from 2,500 year old Buddhist practice called Vipassana or Insight Meditation. Mindfulness is always mindful of something. It is a primary tool of meditation, the awareness that we apply to our breath (or to whatever our object-or-focus-of-meditation is, such as a word, image, sound, or physical sensation to which we return our attention after becoming distracted) can be expanded to include all physical and mental processes so that we may become more mindful of our thoughts and actions. Mindfulness is not thinking, interpreting, or evaluating; it is an awareness of perception. It involves accepting whatever arises in your awareness at each moment. It involves being kind and forgiving toward yourself. It can be cultivated through a systematic method of focusing one's attention.

The mind and the body are intimately connected, our physical health being greatly determined by our mental and emotional disposition. Stress takes a toll on a person's health and students are no exception. Students may exhibit stress by acting angry, moody or irritable, showing negative changes in behaviour, feeling sick a lot, and acting out in certain settings. Chronic stress can make a student feel stuck and overwhelmed, which can impact their ability to learn and thrive at school. It also exerts a strong and adverse effect on the brain even altering brain cells, brain structure and brain function.

Since 1967, over 1500 studies have been conducted by over 250 independent research institutes showing Mindfulness Meditation to be clinically effective for the management of stress, anxiety and panic, chronic pain, depression, obsessive thinking, strong emotional reactivity, and a wide array of medical and mental health related conditions. Among its theorized benefits are self-control, objectivity, affect tolerance, enhanced flexibility, equanimity, improved concentration and

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mental clarity, emotional intelligence and the ability to relate to others and one's self with kindness, acceptance and compassion.

A study in the journal Psychological Science shows that mindfulness can help us conquer common "blind spots", which can amplify or diminish our own flaws beyond reality. "Our results suggest that cultivating mindfulness is an effective and efficient technique for improving cognitive function, with wide-reaching consequences," the researcher wrote in the Psychological Science study.

Research found that premedical and medical students reported less anxiety and depressive symptoms after participating in an eight-week mindfulness-based stress reduction training compared with a waiting list control group[1]. The control group evidenced similar gains after exposure to mindfulness-based stress reduction training. Similarly following such training, therapist trainees have reported decreased stress, rumination and negative affect[1]. In addition, when compared with a control group, mindfulness-based stress reduction training has been shown to decrease total mood disturbance, including stress, anxiety and fatigue in medical students[2].

Evidence suggests that mindfulness meditation has numerous health benefits, including increased immune functioning[3], improvement to well-being[4] and reduction in psychological distress [5]. In a study researcher compared a group of experienced mindfulness meditators with a control group that had no meditation experience. They found that the meditation group had significantly better performance on all measures of attention and had higher self-reported mindfulness. Mindfulness-meditation practice and self-reported mindfulness were correlated directly with cognitive flexibility and attentional functioning [6]. Several studies have shown that mindfulness reduces rumination [7]. In 2010, Hoffman et al. conducted a meta-analysis of 39 studies that explored the use of mindfulness-based stress reduction and mindfulness-based cognitive therapy. The researchers concluded that mindfulness-based therapy may be useful in altering affective and cognitive processes that underlie multiple clinical issues. Farb et al., 2010, found that the participants who experienced mindfulness-based stress reduction had significantly less anxiety, depression and somatic distress compared with the control group. A 2010 study by Jha et al., for example, documented the benefits of mindfulness meditation among a military group who participated in an eight-week mindfulness training. Meditation practice was directly related to self-reported positive affect and inversely related to self-reported negative affect. Researchers from the University of California, Santa Barbara, found that college students who were trained in mindfulness performed better on the verbal reasoning section of the GRE, and also experienced improvements in their working memory. Stemming from religious and spiritual roots, mindfulness draws an explicit value system that emphasizes wholesome attitude including generosity, kindness, equanimity, compassion and appreciative joy [8].Overall a number of studies have found that mindfulness based stress reduction reduces self-reported levels of anxiety[1, 9], depression[1, 8, 10, 1115], anger[10], rumination [10, 12], general psychological distress, including perceived stress[13, 14]. In addition to the academic and vocational concerns, college students frequently report distress related to issues in interpersonal relationships[16]. This can become troublesome when students resort to unhealthy methods to cope with stressors, such as alcohol abuse and other self-destructive behaviours. Mindfulness meditation, a method of bringing awareness to the present situation, has been found to be effective in reducing stress.

Amid this background, the present study is taken up to identify the relationship between mindfulness and level of stress perception.

OBJECTIVES

1. To study the relationship between level of perception of stress and level of dispositional mindfulness among male and female engineering students.
2. To suggest mindfulness meditation techniques as stress coping strategies for engineering students.

Hypothesis

H1. There is a significant correlation between the scores of Dispositional Mindfulness and Perceived stress Scale among male and female engineering students.

H0. There is no significant correlation between the scores of Dispositional Mindfulness and Perceived Stress Scale among male and female engineering students.

METHOD

To answer the questions made in hypotheses, data will be collected from 100 randomly selected students with the help of two Self-administered tests (PSS and MAAS). Students will be divided into two groups, meditation habitual group (50 students) and non-meditation habitual group (50 students). Students those are aware to practice meditations for some time every day will be in meditation habitual group and those who are not practicing will be in non-meditation habitual group. Data will be analyzed using SPSS 20 in order to numerically understand the relationship between Dispositional Mindfulness and Perceived Stress level.

Tools

1. PSS is a self-report questionnaire originally designed by Sheldon Cohen et al in 1983. The questions in the PSS is to measure a person's perception of Stress over the past month and to determine the likelihood of whether perceived stress might be making them more susceptible to stress-induced compromise of their health. The PSS is the only empirically established index of general stress appraisal. Scores can range from 0 to 40, with higher scores indicating greater stress. Higher scores are associated with an increase in a person's vulnerability to compromised health, especially if a big life stresses (loss of a job, end of a relationship, death of a loved one, etc.) occurs in a near future. Higher scores are also associated with increased insusceptibility to stress induces illness.

   Internal Consistency: Cronbach's alpha co-efficient for internal reliability = 0.75.

   Construct Validity: PSS score moderately related to responses on other measures of appraised stress, potential sources of stress as assessed by event frequency.

2. The trait MAAS is a 15-item scale designed to assess a core characteristic of mindfulness, namely, a receptive state of mind in which attention, informed by a sensitive awareness of whatis occurring in the present, simply observes what is taking place. Across many studies conducted since 2003, the trait MAAS has shown excellent psychometricproperties. The MAAS has demonstrated high test-retest reliability, convergentvalidity, and criterion validity. Correlational, quasi-experimental, andexperimental studies have shown that the trait MAAS taps a unique quality of consciousness that isrelated to, and predictive of, a variety of emotion regulation, behavior regulation, interpersonal,and well-being phenomena. The measure takes 5 minutes or less to complete.Brown & Ryan, (2003)has been validated the trait MAAS for use with college student and community adults.For scoring the scale, simply have to compute the mean of obtained score of 15 questions. Higher score reflects higher levels of dispositional mindfulness.

Procedure: A samples of 100 college students were taken from KIET engineering college, Ghaziabad. All students had a similar educational background. Participants were between the ages of 17 to 21 so the mean age of respondents from Meditation group was 18.94and mean age of respondents from Non-Meditation group was 19.14 (Table no. 1).

Table 1: Mean of Age of respondents

Statistics			
		Age of Meditation Group	**Age of Non Meditation Group**
N	Valid	50	50
	Missing	0	0
Mean		18.94	19.14

Students were taken from various faculties of engineering. All students received a summary of research procedures and were asked for their written consent in order to participate in the study. Their demographic details were taken on specially designed data sheet followed by two Self-Administered Questionnaires, PSS (Perceived Stress Scale) and MAAS (Mindfulness Attention Awareness Scale).Appropriate statistical analysis will be done of the collected data using IBM SPSS 20.0.0.

RESULTS

The objective of this study was to find out the relationship between the level of perception of stress and the level of dispositional mindfulness among female and male engineering students. As data shown in the table no. 2, the mean score of MAAS of Non-Meditation group is 3.30 which states that very less dispositional

mindfulness towards the present activities taken by the group members whereas the mean score of MAAS of the Meditation group is quite high as 5.50 that shows the students of this group are performing any activity mindfully. Mean of PSS score of Non-Meditation group is 24.84 which shows high level of stress perception whereas mean score of PSS of Meditation group is 14.62 that states the low level of stress perception.

Table 2: Mean score of MAAS and PSS on Meditation and Non-Meditation groups

Statistics					
		MAAS of NonMeditation group	**MAAS of Meditation group**	**PSS of nonmeditation group**	**PSS of meditation group**
N	Valid	50	50	50	50
	Missing	0	0	0	0
Mean		3.36	5.50	24.84	14.62
Std. Deviation		.598	.505	5.516	4.342

In order to examine the hypotheses,the correlation was calculated using SPSS between the score of MAAS and PSS administered on the Meditation and Non-Meditation group of students. As shown in the Table no. 3 there is significant correlation between the scores of MAAS and PSS among Meditation and Non-Meditation group.

Table 3: Correlation between the MAAS and PSS scores of Meditation and Non-Meditation group

Correlations					
		MAAS of NonMeditation group	**PSS of nonmeditation group**	**MAAS_ Med_Group**	**PSS of meditation group**
MAAS of NonMeditation group	Pearson Correlation	1	.018	-.068	.132
	Sig. (2-tailed)		.902	.641	.359
	N	50	50	50	50
PSS of nonmeditation group	Pearson Correlation	.018	1	.029	.106
	Sig. (2-tailed)	.902		.840	.462
	N	50	50	50	50
MAAS_Med_ Group	Pearson Correlation	-.068	.029	1	-.247
	Sig. (2-tailed)	.641	.840		.084
	N	50	50	50	50
PSS of meditation group	Pearson Correlation	.132	.106	-.247	1
	Sig. (2-tailed)	.359	.462	.084	
	N	50	50	50	50

The data present in the Table no. 3 depicts high correlation that means those students who were practicing meditation in any form has shownlow level of stress perception and those students who were not practicing any sort of meditation in daily life has shown a high level of stress perception. Again, the students practicing meditation has shown higher mindfulness attention awareness towards the present situation they are in whereas the students not practicing meditation in any form has shown lower mindfulness attention awareness towards the present situation they are in.

DISCUSSION & CONCLUSION

The purpose of this study was to find out the relationship between Dispositional Mindfulness and Perceived Stress of young students. This study examined and reached on the statement that those students who were practicing meditation in any form have perceived low level of stress. Whereas those students who were not practicing meditation in any form have perceived high level of stress. With the findings of this study we can say that meditation in any form helps in reducing

stress level. Mindfulness meditation shows promise in reducing stress and anxiety in college students.

Our review indicates that meditation programs can reduce the negative dimensions of psychological stress. Mindfulness meditation programs, in particular, show small improvements in anxiety, depression, and pain with moderate evidence and small improvements in stress/distress and the mental health components of health related quality of life with low evidence when compared with non-specific controls.

Applying Mindfulness Principles for Stress relief: Mindfulness based meditation techniques draws an eastern meditation traditions, specifically the practice of Mindfulness. One can apply mindfulness to many aspects of life. Here is a list of activities that one may try.

- Pay attention to breathing, nothing else, just breathing in and out.
- Notice sounds around. What can one hear at present?
- Notice what one can feel, e.g. the feeling of the clothes, air on the skin, etc.
- Really listen to the friend or whoever one is talking to!
- Taste the food. What are the flavours? Smells? Colours? Textures?
- Read slowly and try to focus. If the mind wanders, slowly return back toattention.
- Walk with purpose and notice the body and surroundings.
- Pay attention when driving. Take the mind away from impatient/angry thoughts

Limitation of this study are in terms of small sample size, short study duration, etc. for generalizability and to study durability of this study bigger sample size with different socio-demographic background are required.

Future research should include objective measures of physiological stress also in addition to subjective self-report measures of perceived stress and burnout.

Conflict of Interest: Nil

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Ethical Clearance: This study is approved by Ethics Committee of KIET, Ghaziabad, UP.

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Confocal LASER Scanning Microscopy (CLSM) for Evaluation of Endodontic Microflora-A Review

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ABSTRACT

Thorough knowledge of endodontic microbiology is essential to eradicate the microbes from root canal system. The advent of Confocal LASER scanning microscope (CLSM) is of great advantage in visualizing the endodontic microflora. Through this, it is not only possible to visualize the spatial distribution of microorganisms, but can also obtain extremely high resolution images. Since digitization of images is possible with this technique, it allows three dimensional view of endodontic biofilm. Thus it has wide application in dental research.

Keywords*: CLSM, Endodontic Microflora, Root canal system.*

INTRODUCTION

Microorganisms are the major causative factor for pulp and periradicular pathologies.[1-4] Studies have shown that these microorganisms exist in oral cavity as biofilms.[5] The main advantage for the microorganism to stay in biofilm is that, it resists the host immune response and renders them more resistant to a variety of disinfecting agents.[6]

Thorough knowledge of endodontic microbiology is essential to eradicate the microbes from root canal system. Traditionally, various techniques like culturing and histological sections were used to visualise the endodontic microbes.[7-9] However, these methods fail to demonstrate the three dimensional structure of endodontic biofilm. The advent of Confocal LASER scanning microscope (CLSM) is of great advantage in visualizing the endodontic microflora. Through this, it is not only possible to visualise the spatial distribution of microorganisms, but can also obtain extremely high resolution images.[10-13]

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Confocal LASER Scanning Microscope: The Confocal LASER Scanning Microscope (CLSM) is an optical microscope that was invented by Marvin Minsky in the year 1955. It consists a LASER light which acts as a light source and an electronic system which in turn processes the image. High-resolution optical images can be obtained in extremely thin sections (0.5-1.5 µm) and also eliminates the interference produced by the light arising from different optical fields across the thickness of the sample. [13]

Working Mechanism of Confocal Laser Scanning Microscope: CLSM is a non-invasive fluorescent imaging technique which produces images of high resolution. It consists of a laser light. It passes through a narrow aperture which is called the 'pin hole' and is mirrored against the specimen. The light that is reflected, returns to it and gets refocused and transmitted through a pinhole. The reflected light is subsequently detected with the aid of scanning mirrors. The position of the pin hole can be adjusted based on exactly which layer of the specimen to be seen in the microscope. There is a common focus for the apertures of both the lighting and the return of the image. Hence the name Confocal Microscope.The CLSM focuses on a single plane. It produces focused images of specimens that are relatively thick by a process called as "optical sectioning". It blocks the light that is scattered or emitted by the points outside the image plane. Therefore, an image of high contrast

and definition is obtained, that is not affected by the regions which are out of focus. Images taken of several layers of a sample are combined using a computer, and this produces three dimensional reconstruction of complex structure of the biofilm.[13-15]

In dentistry, confocal microscope has been used to depict the resin dentin interface, study the effect of bleaching agents on enamel, effect of desensitizing dentifrice on dentinal tubules and effect of remineralizing agents on the enamel.[16-31] It is used to study the quantitative and qualitative analysis of dental hard tissues, bone mineral intensity of peri-implant bone and the fibro-osseous integration of implants, and study of root resorption related to orthodontics.[32-36]

Various methods for visualisation of endodontic microflora: ecrosis of the dental pulp, root canal infection, and apical periodontitis (1). Procedures such as histologic sections, scanning electron microscope observation, and microbiological analyses at different levels of the root canal can be routinely done. The bacteria's ability to penetrate into the dentin can be determined through microbiological analyses by the number of colony-forming units (CFUs) (2, 3), the number of tubules infected in the histologic sample (4), or the presence of bacteria in the root canal walls (5).

Each one of these methods has its advantages and disadvantages. Microbiological sampling techniques can estimate the number of colony-forming units of cultivable bacteria and the quantitative analysis of the dentin infection can be done. However, this method does not give clear information about the spatial distribution of bacteria inside the dentin. Histologic sections show the distribution of the bacteria in infected dentin but do not give information about the viability of the bacteria. Both techniques are often used to determine the antibacterial activity of dental materials and for clinical research.

Transmission electron microscope has been used for visualization of infected tubules in carious lesions and in root canal infection on clinical specimens (6, 7), providing high resolution images of the bacteria inside dentinal tubules. However, this technique spends time and requires multiple steps for specimen preparation.

In the last years efforts have been done to show viability of bacteria using fluorescent labels on infected dentin (8 –13). However, the distribution of live and dead bacteria inside the dentinal tubules of unprocessed specimens in a high optical resolution which allows the differentiation of the bacterial cells is not described.

Confocal laser scanning microscopy (CLSM) allows getting a series of optical sections as thin as 0.3 m of intact undisturbed biological samples. A CLSM analysis is used commonly with vital staining techniques to determine the viability profile, architecture, and spatial distribution in microbial biofilms (14).

The aim of this study was to explore the potential of CLSM for in situ identification of live and dead bacteria inside infected dentinal tubules and to describe the distribution and vitality of the bacteria Enterococcus faecalis in infected dentin of bovine origin acterial invasion of the dentin caused by caries or fracture results in inflammation, necrosis of the dental pulp, root canal infection, and apical periodontitis (1).

Procedures such as histologic sections, scanning electron microscope observation, and microbiological analyses at different levels of the root canal can be routinely done. The bacteria's ability to penetrate into the dentin can be determined through microbiological analyses by the number of colony-forming units (CFUs) (2, 3), the number of tubules infected in the histologic sample (4), or the presence of bacteria in the root canal walls (5).

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Confocal laser scanning microscopy (CLSM) allows getting a series of optical sections as thin as 0.3 m of intact undisturbed biological samples. A CLSM analysis is used commonly with vital staining techniques to determine the viability profile, architecture, and spatial distribution in microbial biofilms (14)

Bacterial invasion of dentin in endodontic infection can be demonstrated by various methods like scanning electron microscope observation, histologic sections and microbiological analyses at various levels of the root canal system. Each of these procedures has its own advantages and disadvantages. The number of colony-forming units bacteria(CFUs) can be measured through microbiological sampling techniques and thus the quantitative analysis of the number of dentinal tubules infected and the existence of bacteria in the root canal walls can be assessed .[37,38]But this method does not provide the spatial scattering of bacteria inside the dentin. The distribution of bacteria in infected dentin can be seen from histologic sections but there is no information about the viability of the bacteria. [39,40] Use of transmission electron microscope helps visualization of infected dentinal tubules by providing high resolution images. But, this technique is time consuming and also requires multiple steps for preparation of the specimen.[41,42]

How is Confocal Laser Scanning Microscope better than other techniques?

The main advantages of CLSM are:[43-45]

1. Specimens are maintained under constant humid conditions in CLSM.
2. Confocal microscope enables to visualise images under higher resolution. The resolution increases with the shorter wavelengths and is higher as the numerical aperture of the object increases.
3. With this microscope, we can obtain thin optical slices in different planes.
4. Regions that are outside the in-focus plane are not imaged thus we can obtain an image with high contrast.
5. Three dimensional reconstruction is possible with optical slicing. With the slices obtained in the different focal planes, it is possible to create a three dimensional image of the specimen under study.
6. It is possible to digitalize the image and helps in better visualisation of endodontic biofilm.

Disadvantages of confocal microscopy are as follows[43-46]:

1. LASER lines or excitation wavelengths occur over extremely narrow bands and are costly to produce in the ultraviolet region. In comparison, conventional wide field microscopes use mercury or xenon based arc-discharge lamps that provide excitation wavelengths in the visible, ultraviolet, and near-infrared spectral regions.
2. The Laser light of high intensity that is used in Confocal Microscopy can have damaging effect on the living tissues.
3. High cost is also one of the factor that has limited its use in dentistry.

CONCLUSION

Confocal Laser Scanning Microscope is a powerful tool to study endodontic biofilm. It has various advantages over optical microscopy such as high resolution of the images, maintains specimens under constant humid conditions and thus avoids the artefacts. Moreover, it is non-invasive method which allows spatial distribution of endodontic microbes. Since digitization of images is possible with this technique, it allows three dimensional view of endodontic biofilm. Thus it has wide application in dental research.

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Source of Funding: Self

Ethical Clearance: Not required as it is a review article.

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Effective Recruitment and Selection System for the IT Software Industry in India

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ABSTRACT

The Information Technology (IT) Software Industry in India has attracted worldwide attention recording phenomenal rates of growth, achieving the status of an economy driver for a country, emerging as a superpower of the Twenty First Century. It is equally vital that this trend continues in the midst of global challenges and competition. While the system in vogue has been meeting the current challenges, little research has been done to determine the effectiveness of recruitment and selection system for the IT Software Industry in India. The purpose of this research was to determine an effective recruitment and selection system and assist the IT Software Industry in India in meeting the challenges of the future. The data was collected from the IT Software Companies in India, with a structured questionnaire, using online survey. Of the approximately 105 IT Software Companies that were addressed in the final questionnaire, 78 responded and only 50 of these responses were found to be complete.

Multivariate analysis, linear regression, Independent Samples Kruskal-Wallis Test and Independent Samples Mann-Whitney Test were used to evaluate, how well the objective was met.

Such people also have lesser mobility and rely on sales commissions for career growth. The data pertaining to hypotheses that most factors companies evaluate are not relevant to output variables, taking into account the company turnover revealed a mixed result of two output variables retaining the hypotheses (net profit margin, and average profit per employee) and two variables rejecting the hypotheses. These results are significant and would help identify the model, IT Software Companies require, to make the recruitment and selection system effective.

Keywords: *Effective, recruitment, selection system, IT Software Industry, India*

INTRODUCTION

The contribution of the Information Technology (IT) Industry in business and management has been recognized the world over and India is no exception. A paper on Indian Software Industry and its evolving service capability has stated that the success when measured against growth in sales, employment and exports contrasts sharply with other industrial sectors (Suma. S. Athreye, 2005).[1] Another revised exports predictions of NASSCOM expects a turnover of $56-57 billion in 2010-11, marginally less than the $60-62 billion projected earlier (NASSCOM, 4 Feb 10). While this is only one side of the coin, it has simultaneously awakened some sleeping nations like China, who too seem to be taking rapid strides in attempting to replicate the Indian model and herein lays the necessity to look into the future.[4]

RESEARCH OBJECTIVES

In order to accomplish the research, the objectives formulated are:

- To evaluate the various recruitment and selection techniques that IT software companies in India employ. These include interviews, group tests, psychological tests, intelligence tests, technical tests and others.[3]
- To determine key employee skill gauges, like academic record, socio-economic conditions,

overall work experience and experience in a specific field.

- To determine key company performance metrics, like growth in sales, net profit margin, revenue/ profit growth and average net profit per employee[4].
- To determine the relationship between key company performance metrics to selection techniques, thereby obtaining key variables in an effective recruitment and selection.

REVIEW OF LITERATURE

In today's rapidly changing business environment, organizations have to respond quickly to requirements for people. With technology and processes undergoing rapid transition, the investment in human resource and its development can reap rich dividends. Consequently software firms chose the high road to export competitiveness, investing in developing organizations capabilities (Suma.S.Atherye, 2005, p. 9).[4]

The past few years have been the most threatening period for enterprises that use, manage or deal in IT services. The source of the tumult has been IT employees as people – i.e. the demand, supply, selection, recruitment and especially retention of IT professionals, worldwide (L.Ermel and D.Bohl 1997, p. 25-29). India as a country had tided over the problem much better than many others in the IT field.

There are several other issues that require to be addressed if The industry has gained confidence in its ability to compete, with skilled professionals and excellent management capability. Today, a majority of the companies in India have already aligned their internal processes and practices to international standards, PC World (2007).[7]

The Psychometrics testing has several scholars having differing views and their applications. A statement that—Psychometrics is pathology of science‖, is in contrast with conventional definitions provided by leading texts (J.Michell, 2000).

Conceptual Framework: Purpose Statement and Research Objectives

- **Pilot Questionnaire: Identifying Key Variables:** Broadly the recruitment and selection system could be analyzed in terms of their criteria for selection, methodology of testing to include number of tests conducted, the preference given to academic qualification/experience.
- **Job Specification**: Amongst the most important criteria considered is if the recruitment and selection by the IT Software Companies is based on any scientific system and for that, stating a proper job specification is considered essential.[10]
- **Attributes for Recruitment and Selection**: Due to lack of uniformity in the Recruitment and Selection system followed by the IT Software Companies, companies gave several qualities as attributes they considered essential/desirable for potential candidates for their companies[7]
- **Number and Type of Tests for the Recruitment and Selection System**: Having arrived at the criteria for recruitment and selection systems, the number of tests IT Software Companies were conducting appeared as they met their operational requirement. A scientifically designed set of tests for the recruitment and selection did not appear in the responses from a majority of the software companies.[17]

HYPOTHESES FORMULATION

H1: Increased combination of interviews, psychological tests, intelligence tests, technical tests and others taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of growth in sales of IT Software Companies.

H2: Increased combination of interviews, psychological tests, intelligence tests, technical tests and others taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of net profit margin of IT Software Companies.

H3: Increased combination of interviews, psychological tests, intelligence tests, technical tests and others taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of revenue/profit growth of IT Software Companies.

H4: Increased combination of interviews, psychological tests, intelligence tests, technical tests and others taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of average net profit per employee, of IT Software Companies.

H5: The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects growth in sales of IT Software Companies.

H6: The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects the net profit margin of IT Software Companies.

H7: The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects the revenue/profit growth of IT Software Companies.

H8: The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have more effect on the recruitment and selection for the IT Software Companies in India that affects the average net profit per employee, of IT Software Companies.

H9: The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects growth in sales of IT Software Companies of all the factors considered for evaluation of the output variables of most factors did not affect the growth rate and revenue / profit growth.

H10: The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects net profit margin of IT Software of all the factors considered for evaluation of output variables, factors and affect the net profit margin and net profit per employee of IT Companies.

H11: The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects revenue/profit growth of IT Software Companies of all the factors considered for evaluation of the output variables of most factors did not affect the growth rate and revenue/profit growth.

H12: The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects net profit margin of IT Software of all the factors considered for evaluation of output variables, factors and affect the net profit margin and net profit per employee of IT Companies.

DATA ANALYSIS

The data gathered from the online questionnaire were entered into a computer database and then analyzed using Statistical Package for Social Sciences (SPSS.10). The statistical software used for the research analysis (SPSS 10.0) can undertake complex analyses on large data files. It can run multiple SPSS sessions simultaneously on the same desktop computer, making it possible to analyze more than one data file at the same time.

Reliability of Instrument and Testing: A hypothesis test tells us the probability of our result (or a more extreme result) occurring, if the null hypothesis is true.

Sample Size: A larger sample size leads to more accurate parameter estimates, which leads to a greater ability to find what we were looking for. Effect Size: The effect of size the in the population. Whatever we are looking for is always going to be there – it might just be there in such small quantities that we are not bothered about finding it, (J Cohen, 1989).

A key factor in avoiding these small quantities is— Sample Size.

ANALYSIS RESULTS AND DISCUSSIONS

The Independent Samples Kruskal-Wallis Test for the hypotheses H1 to H4 retained the null hypotheses for all the four output variables growth in sales, net margin of profit, revenue/profit growth and average net profit per employees of the IT Companies. The significance level being kept at .05, the asymptotic significance levels for the output variables were growth in sales (.054), net margin of profit (.619), revenue/profit growth (.164) and average net profit per employees (.447).

Table 1: Growth in Sales, Independent Samples Kruskal-Wallis Test

Total N	50
Test Statistic	5.829
Degrees of Freedom	2
Asymptotic Significance (2 sided)	0.054

Table 2: Hypotheses Test Summary

S. No.	Null Hypothesis	Test	Sig.	Decision
1.	The distribution of Y1 is the same across categories of Group Q4	Independent Samples Mann-Whitney U Test	0.002	Failed to accept
2.	The distribution of Y2 is the same across categories of Group Q4	Independent Samples Mann-Whitney U Test	0.741	Accepted
3.	The distribution of Y3 is the same across categories of Group Q4	Independent Samples Mann-Whitney U Test	0.892	Accepted
4.	The distribution of Y4 is the same across categories of Group Q4	Independent Samples Mann-Whitney U Test	0.397	Accepted

RESULTS

Table 3: Hypothesized Relationships and Summary of the Results Hypothesized

H1. Increased combination of interviews, psychological tests and intelligence tests taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of growth in sales of IT Software Companies.	Accepted
H2. Increased combination of interviews, psychological tests, intelligence tests, technical tests and others taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of net profit margin of IT Software Companies.	Accepted
H3. Increased combination of interviews, psychological tests, intelligence tests, technical tests and others taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of revenue/profit growth of IT Software Companies.	Accepted
H4. Increased combination of interviews, psychological tests, intelligence tests, technical tests and others taken at the time of recruitment and selection for the IT Software Companies in India does not improve the relationship of average net profit per employee, of IT Software Companies.	Accepted
H5. The academic record has no domination while overall work experience, experience in field and socio-economic conditions, have less effect on the recruitment and selection for the IT Software Companies in India that affects growth in sales of IT Software Companies.	Failed to Accept
H6. The academic record, socio-economic conditions, overall work experience and experience in field have no domination during the recruitment and selection for the IT Software Companies in India that affects the net profit margin of IT Software Companies	Accepted
H7. The academic record, socio-economic conditions, overall work experience and experience in field have no domination during the recruitment and selection for the IT Software Companies in India that affects the revenue/profit growth of IT Software Companies.	Accepted
H8. The academic record, socio-economic conditions, overall work experience and experience in field have no domination during the recruitment and selection for the IT Software Companies in India that affects the average net profit per employee, of IT Software Companies.	Accepted
H9. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects growth in sales of IT Software Companies of all the factors considered for evaluation of the output variables of most factors did not affect the growth rate and revenue/profit growth.	Failed to Accept
H10. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects net profit margin of IT Software of all the factors considered for evaluation of output variables, factors and affect the net profit margin and net profit per employee of IT Companies.	Accepted
H11. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects revenue/profit growth of IT Software Companies of all the factors considered for evaluation of the output variables of most factors did not affect the growth rate and revenue/profit growth.	Failed to Accept

Conted…

H12. The combination of various factors considered in the study at the time of recruitment and selection for the IT Software Companies in India affects net profit margin of IT Software of all the factors considered for evaluation of output variables, factors and affect the net profit margin and net profit per employee of IT Companies.	Accepted

CONCLUSION

Indian Software Industry has acquired a household name the world over. It has transformed a populous nation striving for economic growth into an informational super power of the century. This revolutionary change has met the ever growing demand for employment, the social aspirations of the people and given the young populace a direction for the future. All this has also seen the Government helping in providing assistance to the industry in terms of a coordinating agency like NASSCOM, helping formulate policies that will foster growth and also giving necessary incentive for the industry to truly become an economy driver for India.[4]

IMPLICATIONS

- To determine key employee skill gauges, like academic record, socio-economic conditions, overall work experience, experience in a specific field etc.
- To determine key company performance metrics, like growth in sales, net profit margin, revenue/ profit growth and average net profit per employee etc.
- To determine the relationship between key company performance metrics to selection techniques, thereby obtaining key variables in an effective recruitment and selection.
- Most IT software companies that were surveyed employ conventional job search methods that have either been instated due to legacy processes or picked up from other professions.

Ethical Clearance: NIL

Source of Funding: SELF

Conflict of Interest: NIL

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A Study on Innovative Recruitment Techniques and It's Impact on Job Seekers

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ABSTRACT

Recruitment processes begins after human resource planning and then deep job analysis and job description kind of activities conduct and afterwards try to attract no of applicants to fill the open vacancy in less time. Functions like recruitment, human resource planning are parts of in human resource management. To manage all human resource in an organization effectively for organization's proper growth is called as human resource management. Human resource management is a set of all man power which is working for a common goal of success of an organization. It is an important function which provides a structured approach to recruit or maintain available human resource of an organization. It covers all fields related to human resource like compensation recruitment, retirement, insurance, performance management, skill development, training, wellness, motivation, administration and communication of an organization. It gives strategic direction and means of work with potential work force with one objective of organizational growth. To find a right candidate for an organization is important for successive growth. All organizations tries that they will get most potential workforce among a wide pool of candidates for them to work for their organizational overall growth. Now, organizations are fully dependent on human work force and now organizations are treating them as human capital management. It is termed as talent management.

Keywords: *Human resource Planning, Innovative, Job seekers, Recruitment, Skill, Selection,*

INTRODUCTION

Whenever an organization identifies new assignments which require additional labour than what it presently has, it looks at various means of organization acquiring this new resource like contracting, internship, hiring and outsourcing has to hire a new person.[5] Recruitment can termed as a hiring of a new person to fill organizations need for future needs.[4]

Overall recruitment process is described as under–

- Recruitment is a process of identifying applicants to close any vacant position.
- Recruitment generally chooses all available sources to attract applicants.[3]
- Recruitment process tries to get more applications among potential applicants.
- In conclusion it can be said that

Recruitment Process and Its Benefits

Recruitment process comprises the following steps:

Step 1– Fill Requisition form (RFP)

Step 2–obtaining hiring approvals

Step 3–sourcing of applications

Step 4–screening and short listing

Step 5–conduct interviews

Step 6–Reference and background checks

Benefits of Good Recruitment Process

- It provides higher number of qualified candidates
- It gives higher possibility of hiring the right people at right job
- It increases the employer's choice because of reputation
- It increases the number of referral of qualified candidates

- It is able to get more number of diverse candidates
- It increases the job acceptance rate with hired candidates
- If it follows then the whole recruitment process should take lesser cost

Main Stakeholders in Recruitment

There are 3 main stakes holders of full recruitment process which are as under–

- Hiring manager
- Recruiter/consultants
- Job seeker

In full recruitment process three people directly affected with the all activities. They affect with all those activities which are formulating in recruitment process to choose a right person on right place and even on right time.[8] To study in detail we can explain this as following:

Need for Innovative Recruitment Techniques

- Multitude of options for any particular position
- Accessibility problems like national or international reach for suitable candidate
- Long process of recruitment leading to more time consumption
- Time wastage in screening or short-listing
- Older methods of interviewing
- Long-time taking process of offer to shortlisted candidate

To recover from all these problems latest innovative recruitment techniques have come into light and are getting used by employers as well as employee[4]. Most of the companies want to reduce the full time cycle process of recruitment that is why various innovations are getting done.[7]

LITERATURE REVIEW

Missy Bowen (2013) says that any candidate should not be judged on interview only, there are several other fields are there by which also an applicant can be judged according to his/her qualification or experience level other capabilities.

Nancy R. Lockwood (2006) says that talent management is another or new name of human resource management which basically insists that the possibility of maximum utilization of available work force in the organization of productive growth. It says that frequently new challenges and reduction in cost of hiring of talent is the main two challenges for talent management these days.

Vijay kumar Thota (2013) says that for more productive results in an organization it is important to develop or implement proper plans for human resource or talent management. Misconnections between human resource and talent management lead to failures of mismatch and even the supply and demand of work force also. Author explains that proper human resource and talent management helps organizations to achieve organizational objectives without any obstacle of talent shortage which directly or indirectly beneficial for organizations to get more talented workforce with them.

Saul Fine (2013) says that integrity test is good tool in screening, but there is one sensitive issue with integrity test is mislabeling of low scorer candidates. While training companies have to decide their own policies related to integrity test. It says that all low scorer candidates are not dishonest for their work, should be understood by all employees.

Ileana Georgiana Gheorghe (2013) says that Neuro logistics programming is new concept of acquisition of efficiency in management communications or change in organization. This NLP is very useful in study of organization culture also, all the principals of NLP is based on behavior patterns and now because of complex problems in organizational recruitment process of large organization this NLP is becoming essential tool for all.

Christine Andrews (2012) says that social media is great tool of recruitment and there are many advantages of social media in recruitment. Author says that social media is giving big impact on money as it is cost effective approach of recruitment.

OBJECTIVES OF THE STUDY

- Primarily the research activity aims to study new innovative recruitment techniques and their impact on job seekers.[2]
- To identify various innovative recruitment techniques being used today and differentiate them from the traditional recruitment methods.

- To identify various types and groups of job-seekers as seen in Indian scenario.
- To assess the impact of innovative recruitment techniques on recruitment process in general and job-seekers in particular.[5]
- To identify the most effective innovative recruitment techniques from jobseekers point of view.
- To identify the wide area of social networking sites in jobseekers pool.

HYPOTHESIS

This research is based on the following hypothesis

Null hypothesis (H0): There is no significant impact of innovative recruitment techniques being used today on the job-seekers.

Alternative hypothesis (Ha): The innovative recruitment techniques being used today have significant impact on the job-seekers.

METHODOLOGY

This research is related to the impact of latest innovative recruitment techniques on job-seekers in India. For assessing the overall impact of these techniques, it was important to collect the response of all types of job-seekers of different genders; different experience levels and different job-functions located across multiple locations have to be covered. Therefore four major locations with very different densities of all types of job-seekers were selected.

FINDINGS OF THE STUDY

Following are the conclusions that have been arrived upon based on analysis of the job seekers' responses to survey:

1. Job seekers use online job portals and corporate career websites frequently and find them useful and easy to use.
2. Online job portals are being used by job seekers more than half the time. 64% of the job seekers visit online job portals about half the time or more, 28% visit these job portals very rarely while 9% never visited these online job portals at all. Online job portals need to find innovative techniques to get more visits from passive job-seekers and job-seekers with higher job experience.
3. Uploading resume on online job portals is considered useful by most job seekers with 86% of the job seekers who feel that uploading their resume on online job portals highly increases their chances to get interview calls.
4. Job search on online job portals is considered easy by most job seekers with 75% of the job seekers finding job search on online job portals easy while 17% finding it difficult.
5. Job recommendations provided by online job portals are considered relevant by job-seekers in general with 90% of the job seekers responding that they found job suggestions provided by online job portals relevant.
6. However there needs to be improvement to make them more helpful by addressing the concerns of 28% of job-seekers who found them only slightly helpful.
7. The "future salary calculators" and "salary benchmarking data" data provided by websites like Glassdoor, Naukri & Monster are considered useful by job-seekers with overall 81% of the job seekers who find these salary related analytics useful out of which 26% find them only slightly helpful.
8. Corporate career websites are being used by job seekers more than half the time though they need to find innovative techniques to get more visits from passive job-seekers and job-seekers with higher job experience.
9. Corporate career websites are considered moderately easy for job search by most job seekers from all experience levels and job-functions.
10. Job-seekers are using online shopping websites often and this is not linked to their job functions or experience levels.
11. Most job-seekers think it will be very helpful if job portals or corporate career websites provided information on how well a person's resume fits a specific job opening before he/she applies for it.
12. Job-seekers think it will be very helpful if job portals or corporate career websites provided information on when a specific job opening that is not currently available will be available in future.

13. Job-descriptions given in corporate career websites and job portals provide correct and complete information about the job most of the time as per job-seekers with 87% of the job seekers thinking that these job-descriptions provide correct and complete information about half the time or more.
14. Online resume builders are not very popular among job-seekers.
15. The resume-templates offered on resume builders are only slightly useful to average job-seeker though lower experience job-seekers and active job seekers find them very useful. 47% of job-seekers find these resume templates extremely useful or very useful.
16. Online resume builders are considered only slightly effective in saving time to build resume with most job-seekers responding as "can't say".
17. Job seekers customize their resumes about half the time though active job seekers and those with lower experience do this more frequently.
18. Job seekers were neutral on whether tailoring or customizing their resumes using online resume builders is easy or difficult. 46% of job-seekers find it easy to customize their resumes with online resume builders, 20% find it difficult while remaining 34% can't say.
19. Job seekers agree that their chances of getting shortlisted at companies using "Automated Resume Screeners" or "Applicant Tracking Systems" are lower than at companies not using them. 66% agree, 18% disagree, while remaining 17% don't know.
20. Job-seekers are asked to fill survey about their satisfaction with the hiring process after completing the interviews and selection process less than half the time though there is a higher presence of such surveys in recruitment of lower work experience candidates and engineering / IT professionals.
21. Job seekers receive and read only few e-newsletters sent by companies, where they worked earlier or attended an interview, promoting their products, processes and successes. 22. 44% of job-seekers have attended interviews over video conference using apps like Skype etc.
23. Job seekers find video interviews better than interviews conducted at employer's office premises and telephonic interviews.
24. 62% job-seekers think video interviews are better than interviews conducted at employer's office, 22% think they are about the same while 9% think they are worse than interviews conducted at employer's office.
25. 78% job-seekers think video interviews are better than telephonic interviews, 14% think they are about the same while 3% think they are worse than telephonic interviews. Therefore most job-seekers find video interviews slightly better than telephonic interviews.
26. Most job-seekers think that company's internal job posting and referrals claim for most of the jobs filled at their respective levels more than half the time.
27. Most job-seekers find searching and applying for jobs on their present company's internal job posting website moderately easy.
28. Social networking is widely popular among 0 to 3 years experienced job seekers. They use it to share job openings related information, follow companies of interest, as means to get contacted by companies and to some extent also to promote their present employer's products, services or events.
29. LinkedIn is the most widely mentioned social networking site in job seekers' resumes followed by Face book, Google+ and then Twitter.
30. Job-seekers share job openings related information over social networking websites about half the time with comparatively higher usage from active jobseekers and lower experience job seekers.

Recommendations for Further Research

This research was focused on dealing with the impact of innovative recruitment techniques on job seekers. While this is a topic with wide coverage, there are still some adjacent areas which were noted but not probed in great detail in order to not digress from the original scope of research. I would like to recommend the following areas for further research:

1. The recruiters are also constantly searching for ways to avoid extra expense of hiring consultants for getting the right candidates. The impact of these techniques on recruitment consultants therefore needs to be studied further
2. This study has revealed the immense impact of data analytics provided by various websites and job portals on job-seekers.
3. During this research, I came in contact with recruiters from various organizations. During the discussions that took place, I found out that there is a high interest among large organizations to improve their workforce diversity ratio.
4. With the advent of Open Source operating systems like Linux and Android combined with the applications being developed by software developers around the world, more and more open source communities are emerging to which software engineers contribute with code snippets which are helping solve complicated problems in a short time.

Ethical Clearance: NIL

Source of Funding: SELF

Conflict of Interest: NIL

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Emotional Intelligence and Performance of Manager in Manufacturing Industries (With special reference to Automobile Industry)

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ABSTRACT

The Indian automobile industry has gained its importance as it is one of the largest automotive industries at global perspective which accounts for manufacturing 23.96 million vehicles during 2015-16. More than 7 percent of GDP was contributed by automobile industry. In order to manage the large scale production process and service required for the maintenance of vehicle, the human capital is in demand. The modus operandi of this study is to calculate the impact of emotional intelligence of the managers who are working in the manufacturing industries. For this purpose, a sample survey conducted in Indian automobile industry. Chapter one provides basic idea about the emotional intelligence. Chapter two lists the review of literature. Chapter three describes the methodology of the study. Chapter four analyses the impact of emotional intelligence of manager in automobile industry and the last chapter concludes with the findings and suggestions.

Keywords: *Automobile, Emotional Intelligence, Performance, Psychology, Empathy*

INTRODUCTION

Success of any business rely on the able administration which in turn handling the employees judiciously and empathically. The term Emotional intelligence refers to the capability to be aware of, rheostat, express one's emotion and to handle relationships judiciously, sensibly, rationally and empathically. There are three basic qualities that are mandatory for efficient manager for the current scenario are emotional awareness, emotional peace and emotional management. The emotional awareness is learned skill applied for thinking and inducing the problem solving attitude; the emotional peace is an ability to cheer up or pacify other people; and the emotional management is psychological gizmo to manage emotion. He who possesses these three skills can achieve the targeted management goal in any organization.

Problem Statement: In the current corporate scenario, smooth running of production process with the inception of different labour issues is a difficult task. The patience and skill of the manager is the key factor which catalyst the level of production.

The current study tries to check whether the Emotional Quotient or Emotional Intelligence of the manager improves the skill and development.

Hypothesis

H_0: There is no significant difference in performance with respect to Emotional Intelligence

H_1: There is a significant difference in performance with respect to Emotional Intelligence

The current study throws light on the emotional intelligence of manager with level of performance who is working in the automobile industry. This study based on sample survey of 80 managers and executives in Kanchipuram District, who are engaged in automobile sector. The present study has used the statistical tools, both Karl Pearson's coefficient of correlation and one way ANOVAs to express the significance of emotional intelligence on performance.

The annual performance appraisal was collected from April 2016 to March 2017. 360 degree appraisal format is used to measure the performance. Points of scale are from 1 to 5, where 1 indicates low and 5 indicates high. Performances of the managers are rated by self, employees and higher officials.

REVIEW OF LITERATURE

John D Mayar[1] in his research article on Emotional intelligence, he has listed many situations where the

intelligence is emotional or artificial. The study also tried to prove, does the emotional intelligence exist? If so what is its significance? Is it of any importance?

David L[2], this article suggests, 'To be effective, leader must have a solid understanding of how their emotions and actions affect the people around them. The better a leader relates to and works with others, the more successful he or she will be".

Kendra Cherry[3], in his article, he explain the components of Emotional Intelligence, such as self-awareness, self-regulations, Social skills, Empathy and motivation

Praveen N. Kulkarni, B.Janakiram and D N S Kumar[4], this research study found out that the emotional intelligence has a significant impact on the performance level of the Manager and Supervisors

Dalip Singh[5] In his study, he mentioned that application of emotional intelligence supports the managers and employees to recognize and understand emotions and using emotional intelligence to manage oneself and his/her relationship with others

Consistency of Emotional Intelligence: The consistency of Emotional intelligence is measured by considering 5 components of Emotional Quotient. Right from Self-Awareness, it continued with Self-motivation, Social-motivation, Empathy and cordial relation. The consistency of these variables emotional scale are ranged from 0.742 to 0.903 (acceptable range) and overall consistency of coefficients of the scale is 0.817 which indicates the consistency of emotional intelligence scale is good and it provides room for further study

One way ANOVA has been applied to measure the level of emotional intelligence with level of experience. For this purpose, the same five components of emotional intelligence are considered. The mean values are ranging from 2.5 to 3.9. Lower the mean value lower will be emotional intelligence and vice versa.

Table 1 portrays the mean value for the respondents of various experience groups ranging less than 5 years, 5 to 10 years, 10 to 15 years, 15 to 20 years and above 20 years with self-awareness 3.43, 3.98, 3.82, 3.76 and 3.71 respectively. The standard deviations are ranging between 0.5 to 0.6. The F value is 2.428 and with .091 significant level which indicates there is significant difference between level of experience and self-awareness.

In case of self-motivation also there is no significant difference between level of motivation and self-motivation. The mean values of respondents of various level of experience are 3.61, 3.49, 3.96, 3.46 and 3.73 with Standard deviation 0.564, 0.561, 0.531, 0.518, 0.594 respectively. The F value is 2.348 with 0.062 **level** which indicates there is no significant difference between level of experience and self-motivation.

There is a significant difference between level of experience and social motivation as the F value is 9.469 at 0.000 significant level in 1% degree of freedom. The mean values of respondents are more or less nearer to 3 and the S.D is higher compared to self-awareness and self-motivation

As far as the Empathy factor of emotional intelligence is concerned, the mean value of respondents are 3.48, 3.29, 3.58, 3.63 and 3.24 with standard deviations 0.562, 0.536, 0.526, 0.561 and 0.506 respectively for the years of experience of the respondents with interval of 5 years. The F Value is 3.107 at 0.068 significant levels. This shows there is no significant difference between empathy and work experience.

Table 1: Emotional Intelligence level with experience

Factors	Experience	N	Mean	S.D	F Value	Sig (2 tailed)
Self-awareness	< 5 years	29	3.43	0.564	2.428	0.091
	5 to 10 years	24	3.98	0.543		
	10 to 15 years	16	3.82	0.522		
	15 to 20 years	7	3.76	0.497		
	> 20 years	4	3.71	0.582		
	Total	80	3.77	0.549		

Conted…

Self-motivation	< 5 years	29	3.61	0.564	2.348	0.062
	5 to 10 years	24	3.49	0.561		
	10 to 15 years	16	3.96	0.531		
	15 to 20 years	7	3.46	0.518		
	> 20 years	4	3.73	0.594		
	Total	80	3.64	0.557		
Social-motivation	< 5 years	29	3.08	0.752	9.469	.000
	5 to 10 years	24	3.21	0.816		
	10 to 15 years	16	2.96	0.793		
	15 to 20 years	7	2.76	0.748		
	> 20 years	4	2.95	0.594		
	Total	80	2.98	0.748		
Empathy	< 5 years	29	3.48	0.562	3.107	.068
	5 to 10 years	24	3.29	0.536		
	10 to 15 years	16	3.58	0.526		
	15 to 20 years	7	3.63	0.561		
	> 20 years	4	3.24	0.506		
	Total	80	3.44	0.537		
Cordial relation	< 5 years	29	2.87	0.763	17.293	.000
	5 to 10 years	24	2.49	0.827		
	10 to 15 years	16	2.48	0.704		
	15 to 20 years	7	2.97	0.759		
	> 20 years	4	2.91	0.634		
	Total	80	2.71	0.737		

Source : Computed

There is a significant difference between level of experience and cordial relation as the F value is 17.293 at 0.000 significant level in 1% degree of freedom. The mean values of respondents are less than 3 and the S.D is higher compared to self-awareness, Self-motivation and empathy.

CONCLUSION

The present study is witnessing that there is a significance difference in performance with emotional intelligence with respect to two components such as social awareness and cordial relation. However there is no significance difference in performance while comparing the level of experience and emotional intelligence with respect to self-awareness, self-motivation and Empathy.

Ethical Clearance: completed. (Dept. level committee at VELS)

Source of Funding: Self

Conflict of Interest: NIL

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Mechanically Induced Stump Dermatoses: High Prevalence Concern and Measures of Prevention

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ABSTRACT

Prosthetic sockets, after fitting, prevent flow of air around the residual limb. It results in trapping of sweat, creating ideal conditions for bacteria and fungus to thrive. This can lead to skin irritation, abrasion and skin breakdown. Various factors make the stump vulnerable to skin diseases, which can hamper quality of life (QoL) of an amputee. *Amputation stump dermatoses (ASD)* can occur immediately after socket fitting, or many years after amputation. It has been reported that *Amputation stump dermatoses* affects 34-78% amputees. Of these ~29% are caused due to *mechanically induced stump dermatoses*. The design of the stump is a major contributor to stump dermatoses as improper design results in poor fitting, trapping of sweat in closely fitted socket of prosthesis, close contact of materials leading to irritation or an allergy. The high prevalence of stump dermatoses has let to there being a growing importance given to prevention, early management and advanced treatment of skin diseases. The use of new edge technologies in designing the stump socket helps to a greater extent in preventing skin diseases resulting from the above mentioned factors. Biomaterials used in the prosthesis further reduces the risk of these skin diseases. This paper discusses the design techniques and considerations of the stump socket as key measure in prevention of the mechanically induced stump dermatoses.

Keywords: *Amputee, Biomaterials, Dermatoses, Prosthesis, Stump Sockets*

INTRODUCTION

The number of amputees resulting from accidents has doubled over the previous decade. Current report states that every year 23,500 amputees are added to the amputee population in India(0.001% of total population of India), of which 20,200 are males and 3,300 are females. However, these recorded figures may not be accurate seeing the 1.3 billion population of India. The most common reason for amputation are vascular complications (mainly diabetes), cancer, and trauma. Amputation thus, is often seen as a life-saving procedure. Potential wound-healing complications associated with limb amputation stumps include infection, tissue necrosis, pain, problems associated with the surrounding skin, bone erosion, haematoma, stump oedema and dehiscence[1]. Irrespective of the cause of amputation, it affects quality of life (QoL) of an amputee to such an extent that amputation is referred as a triple insult bringing loss of function, loss of sensation and loss of body image. Adding to the woes of amputees, dermatoses poses a new problem. Prosthesis helps lower limb amputees to regain the loss mobility, avoids postural deformities or balance problems which can arise due to the missing weight of your amputated leg[2] . Though it does not come as a complete solution. Stump dermatoses are skin diseases that affect the stump following the amputation of the limb.

The main goal of this study was to find out factors that affect the QoL of an amputee post rehabilitation and evaluate the influence of engineering techniques in preventing these factors.

Amputation Stump Dermatoses: The process of fitting prosthesis starts once the residual limb is healed and amputee is in good health. Table 1 shows the conditions associated post transfemoral amputation.

Table 1: Stump conditions for transfemoral amputation

Stump Condition: Transfemoral Amputation	
Bony Outgrowth	Possible
Thigh Muscles	Partially Preserved
Shape	Conic

Surgical wounds post amputation are expected to heal successfully without complications, but there is little evidence to demonstrate that it actually happens in practice[2]. Typical waiting time is 6-8 months before the stump socket is designed for the amputee.

Stump socket often results in amputation stump dermatoses (ASD). ASD develop as the stump is exposed to unnatural conditions (shear, stress forces and increasing humidity) after fitting of the socket and prosthesis[3]. ASD can occur immediately after fitting of the socket or even after a few years. Unfortunately, the skin of the amputee may fail to adapt the varying mechanical pressures, materials and closed environment associated with the use of prosthesis[4]. Of the most commonly occurring skin conditions affecting the amputees mechanically induced dermatoses contributes to 21% of the lower limb amputees[5]. Mechanically induced dermatoses include pressure ulcers (Fig 1.), erosion and abrasions, corns, calluses, epidermoid cysts and sinues from rubbing/friction and can lead to various skin conditions[6]. A study carried out in the year 2008 on veterans reported 48% of the amputees suffer from at 'least one skin problem within preceding year[5]. The most common diseases were skin breakdown, rash and abrasion. These often result due to poor fitting of the socket and trapping of the sweat. Stump dermatoses limited or prevented prosthesis use in the preceding year for 55.6% and caused pain or discomfort at the stump site in 61.5%. 37% of the veterans had to alter or replace their prosthesis[5]. This creates an adverse physical, mental and emotional effect affecting the quality of life of an amputee post rehabilitation. Pain and irritation of the stump site led to reduced walking distance and also a reduction in the use of limb prosthesis, up to 53% of the amputees[3].

Fig. 1: Pressure ulcer developed on the amputee stump (http://dermnetnz.org/reactions/img/amputation-stump-02-s)

Technology: Regardless of the functions provided by modern sophisticated devices, the most important factors to bring out the usefulness of these prosthesis are fitting of the socket and alignment of various parts with respect to the body of amputee[7].

Prevention through design procedure: Fitting and aligning procedure requires great skill and can help in prevention of stump oedema to a great extent. Whereas improper fitting and alignment can cause skin complications at stump site which can often lead to stump socket alteration or abandonment[8]. Of 130 amputees that visited a prosthesis fitting camp (Amravati, India, 2015), 60% had come for alteration of the stump socket and 48 amputees reported stump dermatoses[2].

Apart from the fitting skills, another factor that may reduce mechanically induced stump dermatoses is the material and design procedure used in making of the stump socket. There are many shapes of sockets as there are prosthesis, and many clinicians are convinced that their design is best and hence dislikes changes[2]. The earlier sockets were made up of wood and leather, but these often led to stump oedema, a result of heavy weight of the built material and continuous friction with the skin. In 1930 suction sockets were introduced, but came into general use only at the time of World War II. These comprised of suction valves which helped keeping stump in close contact with the socket. This kind of fitting soon led to skin oedema. Existing vacuum below the stump draws blood and tissue fluids to lower part of the residual limb which results in a painful condition of the stump and may lead to reamputation[8]. Quality of the negative plaster mould was found to be an important criterion in orthodox design procedure of the socket[9]. The use of wooden as well as leather sockets is still seen in India, mainly for the technology is too expensive or hasn't reached the target amputees[2].

Total contact socket design was developed in 1950s to overcome the dermatoses problem induced by the use of suction socket. This design maintains entire contact between stump and wall of the socket. A suction valve is used in this design to create total contact of the skin with stump. It creates a pumping mechanism, which pumps blood and tissue fluid when the prosthesis is lifted and weight is put onto it. This prevents the pain usually observed at the stump site. A better circulation of blood and tissues fluids and stability of the stump sockets helps avoid painful conditions and dermatoses from being created.

With the varying physical characteristics of residual limbs, the stump design needs to be customised. In the period post amputation and final fitting of the customised socket, an interim prosthesis is fitted to the amputee. The time frame during which the interim prosthesis is used may also develop dermatoses. This is the period when muscle mass is highest in the residual limb. If an early dermatose appears, the socket must be removed and skin condition be studied to understand the reason for its cause. It's often found that the cause for early dermatose occurrence is pressure ulcers and corn developed from constant friction (Fig 2.).

Though the total contact design socket maintains an entire contact with skin and socket, the pressure is unevenly distributed, resulting in higher cases of pressure ulcers. In order to reduce these pressure ulcers and cysts being developed from constant rubbing, pressure mapping technology is used, where external geometry and stump-socket interface pressure of the residual limb is studied to design a custom socket. Ischial containment socket produced a more evenly distributed pressure profile than the quadrilateral containment socket[10]. This has been proved effective in preventing the mechanically induced dermatoses.

Fig. 2: Corn developed in the stump (Prosthesis Fitting Camp, Amravati, India 2017)

Software for socket design: Feasibility of computational simulation to aid the prediction of socket fit was first studied in 1997 and since then various software and techniques are being researched to help design stump sockets[10]. 3D anatomical design software provide a great advantage in the process of stump socket design. Muscle mass and bony contact tend to exert different pressure at the stump-socket interface. To achieve better accuracy of the digitized stump, contact sensors are used. However, whenever soft and fragile materials or non-reflective surfaces are involved, an optical system is recommended[11]. For scanning and mapping, non-contact sensors are used which plot a digital point cloud in X,Y,Z co-ordinates, into 3D polygon meshes[11]. Contour pattern of the residual limb is studied. This gives a clear idea of how the stump socket should be cushioned, thus helping reduce the friction and also the pressure exerted at a particular point of the socket light weight and comfort of such developed sockets help reduce the mechanically induced dermatoses. Fig 3. shows the 3D digitized stump in mimics software.

Fig. 3: A 3D digitization of stump of below-knee amputee using mimic biomedical software(http://biomedical.materialise.com/cases/step-forward-below-knee-prosthesis-socket-design)

FitSocket technology makes the use of linear actuators to detect the tissue properties resulting in the accurate mapping of areas of softness and stiffness in the amputee's limb[12].

Biomaterials: Stump and liner: For a proper fitting of the socket, selecting the right liner material is crucial. Liner protects the stump against pressure points and assure a better comfort for the amputee. More comfortable the liner material, less are the chances of developing the mechanically induced stump dermatoses. For stump with more of the soft tissue coverage, silicone liners are preferred as they provide high stability and better adhesion with soft tissues. For drier skin, co-polymer liners are the more comfortable option. Polyurethane liners provides even distribution and offers precise, comfortable fit for bony or scarred residual limbs. Stump socket when used in combination with above liners has helped in reducing the stump oedema cases in amputees.

Real time sensing and diagnostic: Regardless of the measures taken, there still exists the possibility of amputee developing the dermatoses no matter how

sophisticated is the prosthesis that is fitted. This can be due to loss of muscle mass post amputation or because of the different walking profiles of amputees. In other words the dynamic profile of the amputee must be studied in order to understand the pressure profiles at stump-socket interface and for early management and prevention of skin diseases resulting from above. Triaxial force transducer was first used to investigate stresses at the stump/socket interface[13]. Resistive sensors in mesh arrangement can be coupled with stump socket to monitor pressure at the stump/socket interface. Quantum Tunnelling Composite (QTC) is one such material developed which can be used to sense pressure applied by the limb against prosthetic stump (Fig 4.). This helps in evaluating pressure areas for improved comfort in future socket castings[14,15].

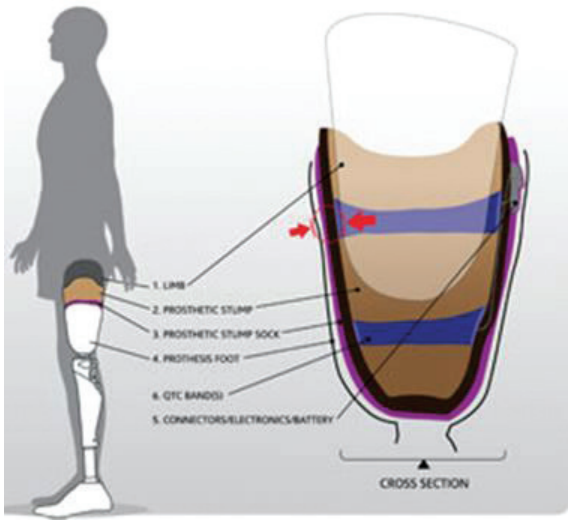

Fig. 4: Using the QTC technology for real time mapping of pressure points (http://www.peratech.com/medical.html)

Biomechanical modelling uses finite element modelling which requires information of external as well as internal geometry of the residual limb. Volumetric imaging methods such as CT, MRI and ultrasound have been used to obtain residual limb information[16,17]. Variable impedance prosthetic (VIPr) socket designed using computer-aided design and manufacturing (CAD/CAM) was able to achieve lower interface peak pressures over the bony protuberance's of stump by using biomechanical data acquired using surface scanning and MRI techniques[18,19]. VIPr indicated a 15% and 17% reduction in interface pressure at toe-off and heel strike, in comparison to socket developed by prosthetist using conventional method for the same amputee. This reduction in the pressure interface at stump and stump socket minimizes the possibility of developing mechanically induced stump dermatoses.

CONCLUSION

The prevalence of mechanically induced stump dermatoses in the amputees contribute largely to any skin diseases that develop over time. This affects the quality of life of an amputee who in turn is not able to experience the full features of sophisticated prosthesis. The prevention of these dermatoses can be reduced by significant numbers by studying the geometry of stump and pressure maps at stump-socket interface. As there is loss of muscle mass in the residual limb over a time period post amputation, re-designing the complete socket is a better approach to avoid the development of dermatoses. Data from real time diagnostics of pressure map helps in designing of future stump socket. Thus the mechanically induced dermatoses, like pressure ulcers, abrasion from skin friction, corns and calluses etc. can be prevented with proper use of above mentioned technologies. Use of these sophisticated design measures, software and real time diagnostics of pressure at stump-socket interface is limited to developed countries, making the fitting skills of clinician an important criteria in prevention of mechanically induced stump dermatoses in developing countries.

DISCUSSION

For able bodied persons, the foot pressure mapping technique brings forth the fact that every individual has a different walking pattern, and hence there is varying pressure distribution at various gait stages. The prosthesis, like feet and knee joints, are commercially developed. Stump sockets are customized mainly for comfort and alignment with the rest part of prosthesis. Hence post fitting procedure, the gait pattern of amputees often result in minor discomfort leading to development of mechanically induced dermatoses over a brief period. Hence design considerations should take into account all the factors, viz. biomaterials, liners used, stump geometry (softness and stiffness), pressure at stump socket interface etc. This can be a lengthy procedure before final stump socket is developed. Moreover, the undeveloped countries fail to overcome the technology barrier (also for socio-economic reasons) and rely on orthodox style of design and development of prosthesis. Therefore having a higher prevalence of stump dermatoses.

Limitation: Concerning the prevalence of stump dermatoses and wider aetiology associated, this study has limitation; and a clinical assessment in co-ordination

with engineering design & techniques is needed for optimal results.

Source of Funding: Self-Funded

Ethical Clearance: No clinical trials were carried for this review. This study is a review article highlighting various technologies that can be used, at the time of stump design, to reduce the occurrence of amputation stump dermatoses. No ethical clearance was needed.

Conflict of Interest: Nil

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A Study on Universal Precautions and Needle Stick Injuries among Nursing Staff in a Tertiary Care Hospital, Davangere

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ABSTRACT

Introduction: Nurses play a pivotal role in care giving of the patients, hence are subjected to exposure to blood and body fluids. The nursing staffs in hospitals are frequently put through to provide care to patients whose infectious status is unknown. Universal Precautions prevent parenteral, mucous membrane, and non intact skin exposures to blood borne pathogens. Needle stick injuries are predominant occupational hazard that can have most dreaded outcomes.

Objectives: to study the Universal Precaution Practices and the Needle Stick Injuries among nursing staff in a Tertiary care Hospital.

Method: A cross sectional study was conducted among 214 nursing staff, working in a tertiary care hospital. Data was collected by personal interview method using a pre designed semi-structured questionnaire. Data was compiled in Microsoft Excel and SPSS software was used to analyze the data.

Results: In this study 214 nursing staff participated, whose mean age was 33.3(+/- 8.5) yrs. There were 196 (91.6%) female and 18(8.4%) male, with a mean work experience of 8.9 (+/- 7.3) yrs. The compliance towards hand washing was 96.7%, the practice of using personal protection equipments among nurses varied from 42.5% to 87.4% depending on the type of equipment. 57.5% had a needle stick injury at least once in past year. 87.4% reported recapping used needles.

Conclusion: Universal Precaution Practices showed good compliance towards hand washing and the practice of using personal protection equipments varied depending on the type of equipment, more than half of nurses had needle stick injury in past year.

Keywords: *Universal Precautions, Needle Stick Injuries, Nurses*

INTRODUCTION

Nurses play a pivotal role in care giving of the patients, hence are subjected to exposure to blood and body fluids. The nursing staff in hospitals are frequently put through to provide care to patients whose infectious status is unknown or those patients infected with Human Immuno deficiency Virus(HIV)/Hepatitis B virus (HBV) or Hepatitis C virus (HCV).[1] According to a WHO study, the annual estimate of health-care workers exposed to blood-borne pathogens globally were 2.6% for HCV,5.9% for HBV, and 0.5% for HIV.[2] Universal Precautions prevent parenteral, mucous membrane, and non intact skin exposures of health-care workers to blood borne pathogens.[2]According to Centre for Disease Control, Universal precautions are designed to prevent health care staff being exposed to blood and body fluids by applying the basic principle of infection control through hand-washing, utilization of appropriate protective barriers, such as gloves, mask, gown and eyewear, and safe handling of needles.[3]

Needle stick injuries represent a predominant occupational hazard that the nurses working in a hospital

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face daily, which are usually under reported by 10 fold.[4] Needle Stick Injuries can have most dreaded outcomes, both directly and indirectly on the health care system. If the Needle Stick Injuries are not attended appropriately they may have detrimental health consequences further causing emotional breakdown of the injured person.[5]

Information regarding the current practices of Universal Precautions and Needle Stick Injuries will be helpful in identifying the precise sections that have to be addressed and can effectively improve the safe practices among nurses, Hence the present study is designed with the objectives to study the Universal Safety Practices and Needle Stick Injuries among nursing staff in a Tertiary care Hospital.

METHOD

A cross sectional study was conducted among nursing staff, working in a tertiary care hospital, Davangere, Karnataka; during the months of September and December 2017. The sample size was calculated assuming that 50% of the nursing staff has right knowledge regarding universal safety precautions had a correct knowledge regarding the use of standard precautions. Taking 15% relative precision and confidence interval of 95% the sample size was calculated to be 178. Adding 20% as non-response error, final sample size was taken as 214. A total of 214 nurses were selected randomly for this study from various departments. The inclusion criteria for this study were all the nurses who were willing to take part in the study and who had work experience of minimum one year.

Data was collected by personal interview method using a pre designed semi-structured questionnaire, which was prepared based on the CDC guidelines on Universal Precautions.[3]The data which has to be conveyed by study participants was explained by the investigators. The questionnaire included demographic details of the participants like age, years of experience and questions on Hand Hygiene, Wearing Personal Protection Equipments, Immunization status against Hepatitis B and Needle Stick Injuries. “Any cut or prick to the respondents by a needle previously used on a patient is work related and sustained within the hospital premises” was considered as a Needle Stick Injury. Questions included frequency of needle stick injuries and the probable reasons for the same.

Study was initiated after approval from the Institutional Ethics Committee, JJM Medical College. Necessary permission to conduct the study was obtained from the respective authorities. Voluntary participation was encouraged and participants were free to withdraw from the study at any point. Written informed consent was obtained and study participants were ensured about anonymity and confidentiality of their responses.

Data was compiled in Microsoft Excel and Statistical Package for Social Sciences (SPSS) software was used to analyze the data. Continuous data is represented with mean and standard deviation and categorical data represented with frequencies and percentages. Relevant Statistical test like Chi Square Test were applied.

RESULTS

In this study 214 nursing staff participated, whose mean age was 33.3(+/- 8.5) yrs. There were 196 (91.6%) female and 18(8.4%) male. The work experience of the study participants ranged from 1-45 yrs, with a mean of 8.9 (+/- 7.3) yrs. The participants were from various Departments in the hospital that included casualty, intensive care units, pediatrics, orthopedics, ophthalmology and otorhinolaryngology and others.

In this study 176(82.2%) of the participants stated that they received training in Universal Safety Precautions, the main source of information being seminars and workshops 141(65.9%), followed by Colleagues/Seniors 32(15%).

Hand washing is one of the preliminary step of Universal Precautions, In this study we observed that, majority of the respondents i.e., 207(96.7%) stated that they always washed their hands after touching blood, body fluids, secretions, excretions, non-intact skin, and contaminated items. 209(97.6%) responded that they always wash hands after drawing blood or other procedures like catheterization. 203 (94.9%) participants stated that they always practice the routine of hand washing even after removal of hand gloves. 154(72%) of them use soap and water to wash their hands where as 60(28%) of them use a hand rub or a hand sanitizer.

Table 1: Use of Personal Protection Equipments

Sl. No.	Variable	Number (%)
1.	Wear gloves always when touching blood/ body fluids/ secretions	167(78%)
2.	Wears gown always when in contact with potentially infectious material	158(73.8)
3.	Cover broken skin always before coming to work	187(87.4%)
4.	Wear eye gear/goggles always while doing invasive procedures	91(42.5)
5.	Wear face masks always when in contact with potentially infectious material	181(84.6%)

The practice of using personal protection equipments among nurses varied from 42.5% to 87.4% depending on the type of equipment (Table 1). If the infectious state of the person is identified (HIV infection, Hepatitis B or Hepatitis C) the study participants (77.1%) stated that they would take special caution when in contact with the patient. In this study only 182(85%) of the respondents stated that they are vaccinated against Hepatitis B.

We found statistical significant association among work experience and use of personal protection equipments as wearing gloves (p= 0.03) and face masks (p = 0.01), however no statistical significant association was found between uses of gown, eye gear/safety goggle and covering broken skin before attending work.

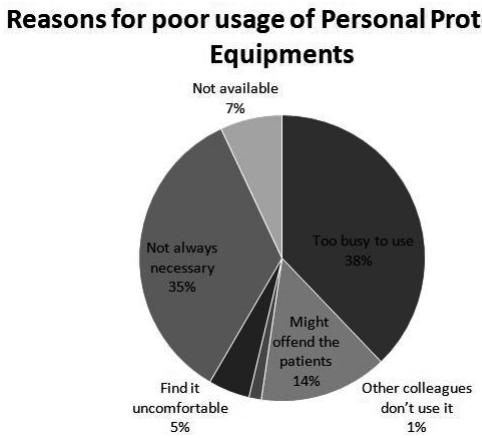

Figure 1: Reasons for poor usage of Personal Protection Equipments

In this study, 123(57.5%) of the participants stated that they had a needle stick injury once or more than once in the past one year. Majority of the participants reported that they recap used needles before disposing that is 187(87.4%). In this study only 108(50.5%) of the respondents stated that they reported their needle stick injury to seniors/authorities.

On the Question, what is their response to a needle stick injury, majority of the participants stated that they washed the injury with soap and running water 194(90.7%), 13(6.1%) of the participants ignored the needle stick injury and very few respondents that is 7(3.2%) of them were willing to take post exposure prophylaxis.

Table 2: Reasons for Needle stick Injuries

Sl. No.	Variable	Number (Percentage)
1.	Lack of assistance	27(12.6)
2.	Fatigue	2(0.9)
3.	In a hurry	147(68.7)
4.	Couldn't have been prevented	38(17.8)

DISCUSSION

Universal Precautions helps in prevention of transmission of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and Other Blood borne Pathogens in Health-Care Settings.[3]Nurses account for a large proportion in health care setup, their job demands results in frequent exposure to blood and body fluids which may result in occupational risk of exposure to health hazards.[6] Following simple techniques of universal precautions nurses can avoid dangerous occupational hazards and be confident to deal with patients suffering from HIV, HBV and other infectious blood borne diseases. Hence this study intended to study the universal safety precautions among nurses.

In this study we had 214 participants whose mean age was 33.3(+/- 8.5) yrs, there were 91.6% Female and 8.4% Male. In a similar study conducted by Kaur R et al.[7] among nursing students mean age was 20 yrs and there were 99% female and 1% male participants. We observed, 96.7% of the participants had always washed hands after touching blood, body fluids / secretions, which varied among different studies, a similar study conducted by Saddoh W E et al.[8] reported 94% and a study conducted by Singh S et al.[9] reported 64%. Soap

and water is used for hand washing hands among 72% of the respondents which was similar to the finding of a study Saddoh W E et al.[8]i.e., 74%.

On practice of usage of personal protection equipments, our study showed the practice of using personal protection equipments among nurses varied from 42% to 84%, depending on the equipment, (Table 1). Which was similar to a study conducted by Singh S et al.[9]Common reasons for poor compliance towards use of personal protection equipments were, too busy followed by belief that use of personal protection equipments was not always necessary. A study conducted by Kotwal A et al.[10] reported the perceived barriers to be, too busy to use personal protective equipment and not using as colleagues do not use it.

This study, the study participants 77% of them stated that they would take special caution when the infectious condition of the patient is known(HIV infection, Hepatitis B or Hepatitis C).A study conducted by Shivalli S.[11] reported discriminatory measures of safety precautions were used based on sero status of the patient. This practice showed the number of accidental exposures to blood/ body fluid reduced drastically (to fifth) while nursing HIV patients. This study 85% of the respondents stated that they are vaccinated against Hepatitis B, Kotwal A et al.[10] reported that 23% of the study participants were not immunized against hepatitis B.

In this study, 57.5% of the participants stated that they had a needle stick injury once or more than once in the past one year. A similar study conducted by Kaur R et al. [7] among health care workers reported that 54% of the participants had needle stick injury.

Universal Safety Precautions recommends no recapping of used needles, yet our study reported majority of the participants recap used needles before disposing that is 87.4%. similar other studies, Saddoh W E et al.[8] reported 31.9% and Singh S et al.[9] reported 62% among nurses. A study conducted by Sharma R et al.[12] stated that in their study most of the injuries (34.0%) occurred during recapping. In this study only 50.5% of the respondents stated that they reported their needle stick injury to seniors/authorities, which was found similar to the findings of other studies as 36%.[10] and 27.5%[12]. Majority of the participants in this study stated that their immediate response to a needle stick injury was they washed the injury with soap and running water 90.7%. which was similar to Sharma R et al.[12] Needle stick injuries are often under reported, hence low reporting rate must not be considered as low injury rate. This low reporting rate can be attributed to the fear of being judged by the colleagues or higher authorities. In this study, the most common reason for needle stick injury was the study participant was in a hurry 63%, however Sharma R et al.[12] reported the common reason to be fatigue 50.4%, this may be because the work pressure on the nursing staff either due to increased patient load or due to increased number of working hours.

The limitations of this study is that we collected data based on self reporting, ideally observation may be a better method to asses compliance of study participants as the participants may over exaggerate their positive attitude towards use of personal protection equipments and there is always a fear of being judged by seniors/ higher authorities.

CONCLUSION

Universal Precaution Practices in this study showed good compliance towards hand washing and the practice of using personal protection equipments varied depending on the type of equipment, more than half of nurses had needle stick injury in past year and there was severe under reporting of the incidents. The author would recommend different kinds of activities to be organized by the management exclusively for nurses that has their active contributions, which would include demonstrations, quiz, and debates. There is a need to constant surveillance for Needle Stick Injuries among nurses by hospital administration.

Conflict of Interest: nil

Source of Funding: nil

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Pattern of Employment and Consumption Expenditure in India

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ABSTRACT

Indian economy in the post-1991 period has grown at an average rate of over eight percent, an impressive rate considering the past performance. Employment opportunities have increased, though it has not been commensurate with the growth of labour force. Trend in employment in different sectors shows that the organized sector, which provides maximum security to the labour has witnessed only a marginal increase in employment, that too because of growing private sector. This analysis indicates that the declining rate of regular employment has been compensated by the rising rate of self employed and casual employment. In the case of females also, the proportion of casual labour has gone up. Thus, the degree of casualisation of workforce is especially felt among the rural workers. This clearly brings out the fact that in the two decades after 1991, casualisation of the labour force has gone up quite considerably, which will directly lead to the worsening of the income distribution in the country.

Keywords: *Reform, Employment, Sector, Pattern, Casual*

INTRODUCTION

Indian economy in the post-economic reform period has grown at an average rate of over eight percent, an impressive rate considering the past performance. Employment opportunities have increased, though it has not been commensurate with the growth of labour force[1]. Trend in employment at the sectoral level shows that the organized sector, which provides maximum security to the labour has witnessed only a marginal increase in employment in the 1990s, that too because of growing private sector (Sen, 2003). Hence, the burden of employing ever-growing labour force falls on the unorganised sector. It is noted that more than 95 percent of jobs created in the 1990s have been in the unorganised sector. The performance of rural and urban informal sector[2] has however been different; this can be accessed from the fact that urban employment in the recent decades has grown at a rate of more than 2 percent; while its rural counterpart at merely 0.5 percent (Basant et al, 1998).

Nature and Pattern of Employment in India: It indicates that the rate of labour force, which also includes who are not employed, has increased among rural males from 54.9 percent in 1991-92 to 56.1 percent in 1993-94, but has come down to 55.6 percent in 2009-10, though it has gone up to the level of 79.4 percent in 2011-12. In the case of rural females, it has declined from 34.3 percent in 1991-92 to 30.2 percent in 1999-2000, but has gone up to the level of 33.9 percent in 2011-12[3].

In the case of urban males, the labour force rate has moved up from 53.1 percent in 1991-92 to 54.2 percent in 1999-2000 and further up to 73.7 percent in 2011-12 and among the urban females, the rate has decreased from 16.2 percent to 14.7 percent, but has gone up to

Employment and Unemployment reports of NSSO, Govt. of India: 19.1 percent in the same period. This suggests that while the labour force rate has gone up among the males in both the rural and urban areas, it has gone up in the case of urban females quite considerably; it has been only marginal among the rural females.

The workforce rate differs from that of the labour force rate, since the former includes only those who are employed, while the latter also includes those who want to be employed, but has not been employed as such. Presents the area-wise and gender-wise workforce in India since 1991-92.

Employment and Unemployment reports of NSSO: It is noted that as in the case of labour force rate, there have been similar fluctuations in the case of workforce rate also in both rural and urban areas. For instance, in the case of rural males, the workforce rate has declined

from 53.9 percent in 1991-92 to 53.1 percent in 1999-2000, but it has gone up to 77.5 percent in 2011-12. In the case of rural females too, the rate has declined from 32.3 percent to 29.9 percent during the 1990s, but has gone up to 32.5 percent in 2011-12.In the case of urban males, the workforce rate has gone up from 50.6 percent in 1991-92 to 51.8 percent in 1999-2000, and further up to 71.3 percent in 2011-12 and as far as the urban females are concerned, the rate has declined from 15.2 percent to 13.9 percent, but has moved up to 17 percent in 2011-12. This shows similar trend, as in all the cases, the workforce rate has declined during the 1990s, but has increased during the 2000s[4].The nature of employment in which the workers are engaged differs as it includes self employed (SE), regular employed (RE) and casual labour (CL). Table–1 presents the area-wise and gender-wise nature of employment in India since 1991-92.

Table 1: Area-wise and Gender-wise Nature of Employment in India, 1991-92 to 2011-12

Year	Male						Female					
	SE		RE		CL		SE		RE		CL	
	Ru	Ur	Ru	Ur	Ru	Ur	Ru	Ur	Ru	Ur	Ru	Ur
1991-92	58.6	41.7	10.0	43.7	31.4	14.6	60.8	47.1	3.7	27.5	35.5	25.4
1993-94	57.7	41.7	8.5	42.0	33.8	16.3	58.6	45.8	2.7	28.4	38.7	25.8
1999-2000	55.0	41.5	8.8	41.7	36.2	15.8	57.3	45.3	3.1	33.3	39.6	21.4
2004-05	58.1	44.8	9.0	40.6	32.9	14.6	63.7	47.7	3.7	35.6	32.6	16.7
2009-10	53.5	41.1	8.5	41.9	38.0	17.0	55.7	41.1	4.4	39.3	39.9	19.6
2011-12	53.3	43.0	8.0	40.4	38.7	16.6	57.3	43.2	4.2	41.3	38.5	15.5

Note: Figures in percentages. SE – Self Employed; RE – Regular Employed; CL – Casual Labour.

Source: Employment and Unemployment reports of NSSO, Govt. of India, various years: It is observed from the table that in the case of rural males, the proportion of workers who are engaged as SE has decreased from 58.6 percent in 1991-92 to 55 percent in 1999-2000 and further down to 53.3 percent in 2011-12; in the case of urban males, the rate of SE has moved up from 41.7 percent in 1991-92 to 43 percent in 2011-12. The rate of RE has declined in the case of rural males from 10 percent in 1991-92 to 8 percent in 2011-12 and similarly from 43.7 percent to 40.4 percent among urban males in the same period; in the case of CL, the rate among rural males has gone up from 31.4 percent[5] to 38.7 percent between 1991-92 to 2011-12 and from 14.6 percent to 16.6 percent in the same period among their urban counterparts. This suggests that among rural males, the rate of SE and RE has declined, while that of CL has increased, in the case of urban males, the declining rate of RE has been compensated by the rising rate of SE and CL.

In the case of rural females, the share of SE has declined from 60.8 percent in 1991-92 to 57.3 percent in 2011-12 and as far as urban females are concerned, it has fallen from 47.1 percent to 43.2 percent in the same period, though there have been inter-temporal variations. The share of CL has gone up among the rural females from 35.5 percent to 38.5 percent, while in the case of urban females it has declined from 25.4 percent in 1991-92 to 15.5 percent in 2011-12. This suggests that in the case of females also, the proportion of SE has come down, as in the case of males[6], while proportion of RE has increased among the females in both areas and that of CL has gone up among the rural females, but has declined among their urban counterparts. Thus, the degree of casualisation of workforce is especially felt among the rural workers, while that of SE has come down during the post-reform period.Table – 2 presents the area-wise and gender-wise sectoral employment in India since 1991-92.

Table 2: Area-wise and Gender-wise Sectoral Employments in India, 1991-92 to 2011-12

Sector	Year	Rural		Urban	
		Male	Female	Male	Female
Primary	1991-92	75.2	85.1	10.4	30.2
	1993-94	74.8	86.6	10.3	25.3
	1999-00	72.0	85.7	7.5	18.1
	2004-05	67.1	83.6	7.0	18.3
	2009-10	63.6	79.7	6.7	14.2
	2011-12	62.3	75.8	6.8	12.2

Conted…

Secondary	1991-92	11.4	9.6	32.7	30.9
	1993-94	10.5	7.9	31.6	28.5
	1999-00	12.0	8.7	31.9	29.0
	2004-05	14.9	9.9	33.5	32.2
	2009-10	18.5	12.7	33.9	33.0
	2011-12	19.4	13.5	34.6	33.8
Tertiary	1991-92	13.3	5.2	56.4	38.5
	1993-94	14.7	5.6	58.0	46.3
	1999-00	16.1	5.8	60.8	52.9
	2004-05	18.0	6.6	59.5	49.5
	2009-10	17.8	7.6	59.3	52.8
	2011-12	18.3	10.7	58.6	54.0

Note: Figures in percentages.

Source: Employment and Unemployment reports of NSSO, Govt. of India, various years.

It is noted that the share of primary sector employment among the rural males has declined from 75.2 percent in 1991-92 to 62.3 percent in 2011-12; in the case of rural females, it has come down from 85.1 percent to 75.8 percent in that period. As far as urban males are concerned, the primary sector's employment share has decreased from 10.4 percent in 1991-92 to 6.8 percent in 2011-12; among urban females, it has declined from 30.2 percent to 12.2 percent in the same period. Thus, the dependence on the primary sector is quite considerable particularly in the rural areas, where even now more than 62 percent of the males and around 75 percent of the females are engaged in this sector[7].

The share of employment in the secondary sector has gone up among the rural males from 11.4 percent in 1991-92 to 19.4 percent in 2011-12; in the case of rural females, it has gone up from 9.6 percent to 13.5 percent in the same period, though not consistently. The share of secondary sector employment among the urban males has increased only negligibly, from 32.7 percent in 1991-92 to 34.6 percent in 2011-12 and in the case of urban females, it has increased from 30.9 percent to 33.8 percent in the same period. Thus, the share of secondary sector has increased considerably in the rural areas, though it is not so in the urban areas.

The proportion of workers engaged in the tertiary sector has undergone major change, since in the case of rural males, it has gone up from 13.3 percent in 1991-92 to 18.3 percent in 2011-12 and among rural females, it has moved up from 5.2 percent to 10.7 percent in that period. As far as urban males are concerned, it has increased from 56.4 percent in 1991-92 to 58.6 percent in 2011-12, though there has been some fluctuation. Among urban females, the share of tertiary sector employment has gone up from 38.5 percent in 1991-92 to 54 percent in 2011-12. Hence, the contribution of tertiary sector is more than 50 percent among both males and females in the urban area, while it is comparatively less in the rural areas. Moreover, the share of primary sector in total employment has declined even in the rural areas, which has not been adequately compensated by the secondary sector.

Pattern of Employment among Major States in India: It is noted that the share of primary sector employment among rural males during 2011-12 at the national level stands at 63.6 percent which ranges from a low of 32.6 percent in Kerala to a high of 79.9 percent in Madhya Pradesh, while in Tamil Nadu it stands at 57.5 percent. Moreover, in four out of the 17 states, the dependence on the primary sector is more than 70 percent, this includes Gujarat, Karnataka, Madhya Pradesh and Maharashtra. The share of secondary sector at the national level stands at 18.5 percent, which ranges from a minimum of 8.3 percent in Assam to a maximum of 33.1 percent in Himachal Pradesh and in the case of Tamil Nadu, its share among rural males is 23.1 percent. Thus, the dependence on primary sector is still quite high among rural males, as it is more than 60 percent in Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa and Uttar Pradesh[8].

The share of primary sector employment among rural females is even higher obviously, as it is 79.7 percent at the national level, with a low of 42.4 percent in West Bengal and a high of 92.2 percent in Gujarat[9], while in Tamil Nadu, it is 72.4 percent. The proportion of secondary sector employment is quite low, since the national average stands at 12.7 percent, which ranges from a minimum of 3.5 percent in Maharashtra and a maximum of 39.6 percent in West Bengal, and in Tamil Nadu it is 19.6 percent. Thus, the dependence on primary sector is much higher in the case of rural females, since in 11 out of 17 states, it is more than 80 percent and hence, the contribution of secondary and tertiary sectors is quite limited.

The sector-wise employment among the urban workers in the major states during 2011-12 is presented in Table–3

Table 3: Gender-wise and Sector-wise Employments in Major States of Urban India, 2011-12

States	Male				Female			
	P	S	T	Total	P	S	T	Total
Andhra Pradesh	3.9	34.9	61.2	**100.0**	10.2	40.9	48.9	**100.0**
Assam	2.6	20.8	76.6	**100.0**	5.5	24.3	70.2	**100.0**
Bihar	12.5	25.3	62.2	**100.0**	35.2	15.2	49.6	**100.0**
Gujarat	4.0	38.6	57.4	**100.0**	10.6	30.3	59.1	**100.0**
Haryana	3.9	45.9	50.2	**100.0**	11.9	31.6	56.5	**100.0**
Himachal Pradesh	5.3	23.8	70.9	**100.0**	20.2	24.4	55.4	**100.0**
Jammu & Kashmir	8.5	33.8	57.7	**100.0**	21.7	33.3	45.0	**100.0**
Karnataka	8.0	34.4	57.8	**100.2**	15.2	37.1	47.7	**100.0**
Kerala	11.9	34.2	53.9	**100.0**	9.4	25.9	64.7	**100.0**
Madhya Pradesh	8.7	31.9	59.4	**100.0**	14.3	39.8	45.9	**100.0**
Maharashtra	4.1	33.8	62.1	**100.0**	7.8	21.9	70.3	**100.0**
Orissa	7.4	33.0	59.6	**100.0**	24.3	44.2	31.5	**100.0**
Punjab	6.0	38.8	55.2	**100.0**	21.0	25.1	53.9	**100.0**
Rajasthan	2.8	34.0	63.2	**100.0**	25.9	31.3	42.8	**100.0**
Tamil Nadu	10.1	37.4	52.5	**100.0**	24.3	40.0	35.7	**100.0**
Uttar Pradesh	8.5	34.7	56.8	**100.0**	13.8	44.1	42.1	**100.0**
West Bengal	3.4	33.6	63.0	**100.0**	4.7	36.1	59.2	**100.0**
All-India	6.7	33.9	59.4	**100.0**	14.2	33.0	52.8	**100.0**

Note: P–Primary; S–Secondary; T- Tertiary. Figures are in percentages.

Source: Govt. of India, "Employment and Unemployment Situation in India, 2011-12" NSSO, 2012.

The table indicates that in the case of urban males, the contribution of the primary sector in total employment is quite less, since the national average stands at 6.7 percent, which ranges from 2.6 percent in Assam to 12.5 percent in Bihar, and it is 10.1percent in the case of Tamil Nadu. Hence, the dependence on the tertiary sector employment is the highest among the urban males, since the national average stands at 59.4 percent during 2011-12, with a minimum of 50.2 percent in Haryana to a maximum of 76.6 percent in Assam, which is 52.5 percent in Tamil Nadu. In 7 out of the 17 states, the share of tertiary sector employment is more than 60 percent[10].

As far as urban females are concerned, the contribution of primary sector is higher than that their male counterparts, which is 14.2 percent at the All-India level and it is 4.7 percent in West Bengal and 35.2 percent in Bihar, while in Tamil Nadu, it stands at 24.3 percent. The share of secondary sector employment in the case of urban females is mostly similar to that of urban males, as the national average stands at 33 percent, though its range suggests that the Tamil Nadu, it is 40 percent. Hence, among urban females, the share of tertiary sector's employment is the highest, as in 8 out of 17 states it is more than 50 percent.

CONCLUSION

This analysis indicates that the labour force rate has gone up among the males in both the rural and urban areas, it has gone up in the case of urban females quite considerably, it has been only marginal among the rural females. Among rural males, the rate of SE and RE has declined, while that of CL has increased, in the case of urban males, the declining rate of RE has been compensated by the rising rate of SE and CL. In the case of females also, the proportion of SE has come down, as in the case of males, while proportion of RE has increased among the females in This clearly brings out the fact that in the two decades after 1991, casualisation of the labour force has gone up quite considerably, which will directly lead to the worsening of the income distribution in the country.

Ethical Clearance: Yes

Source of Funding: Self

Conflict of Interest: Nil

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A Study on Women Domestic Workers in M.g.r.nagar in Kanchipuram District

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ABSTRACT

Domestic workers, most of them are female are hired to work in private houses. Women's participation in the labor force has always been under reported. One area where women from low income group have regularly been harmed is the area of women domestic workers. Domestic work in private household differs from all other industrial and firms, in that it presents certain distinct characteristics of its own not found in any other trade or occupation. The chief point of its uniqueness lies in its total indefiniteness regarding wages, working hour and conditions of work. The uncertainty and indefinites of working condition varies greatly from one place to another and from one house to another. Large differences are seen in the same places or community according to the occupation income and status of the employers.

Keywords: *Domestic Workers, Wages, Working Hour.*

INTRODUCTION

The motivation as search to innovate the new spheres of women participation. Therefore, what they need at the moment to have a better life is to have access to proper education and training. "Women workers are mostly engaged in one household's job like scrubbing utensils, washing clothes, sweeping the house, mopping the floor, cooking or assisting the employer in the kitchen going to the market etc".

Unorganized or informal sector accounted for about 92 percent of the Indian economy during period 1992-2000. Generally, a major section of the informal labour is absorbed either in the agriculture sector or in traditional crafts of village and cottage industries or the migrate to cities to engage in different type of informal jobs like those of rickshaw pullers, weight carries, waiters in different restaurants, vendors and so on. In 2001, the workforce participation rate for women in the urban areas was 11.5percent. Almost 80percent of that workforce is working in the unorganized sector. Domestic workers are paid a monthly salary of a amount ranging from Rs.800 to Rs.1000 per month depending on the type of work involved. The hours of work and nature of work depend on the full time or part time availability of the workers. In Karnataka, Delhi and Maharashtra a large proportion of full-timers work between 8 and12 hours. In Tamil Nadu most full-timers work for approximately 8-10 hours[1].

Domestic worker in the city want the government to fix minimum wage for them at the earliest as the rise of prices of essential commodities was hurting them badly. Domestic workers union and Center for Women's Development and Research (CWDR) said "though rice is available for free in fair price shop, others daily use commodities such as pluses bought from other shops have become unaffordable for the poor domestic workers"[2]. Though there are estimated 20 lakh domestic workers in the state, only around 80,000 women are enrolled in the board.

A study in 2010 reflected that, there has been significant numbers of people opting to be domestic workers and led to growth of the sector but domestic workers are slow in receiving recognition as professional worker or a skilled occupation. Collecting accurate and comparable data the number of domestic workers throughout the world is extremely difficult.

After the Act in 2010 the Government brings change and policy to regulate the work life of the domestic workers. The issue of exploitation of domestic workers is frequent and regularly reported. With the no rights and rules to fall back on, most of the domestic helps have become contemporary slaves. It is also a known fact that many women and children are trafficked and exploited by the placement agencies which operate openly without any form of restrictions and regulations. In 2011 the

government act for domestic workers applies to only those registered as a beneficiary under this Act.

The central advisory committee function to the advice the board at the state level regarding schemes for benefit and welfare of domestic workers such as social security, health, medical, education and other beneficial schemes[3]. The function of the board at state level is to prescribe the fees to be charged from the employers, service provides/placement agencies and domestic workers from time to time. Prescribes fee for registration as beneficiaries under the fund and ensures decent condition of service, including rates of remuneration, hours of work and work conditions and so on.

The Act includes the domestic workers training, imparting skills, establishing of funds, regulation of the working condition like working hours, wages for overtime work[4], internal of rest, minimum of wages, weekly holiday to the domestic workers and so on.

In 2013, to improve women's job security, pay and condition as the global economy remains highly unstable.

ANALYSIS OF DATA

The present chapter is data analysis and it takes into the objectives of the study for evaluation with the data collected for the purpose. The analysis of data was mainly done based on the objectives. It is an established fact that age plays a dominant role in shaping the personality and values of work responsibility; to participate in different walks of life. Caste is one of our unique social institutions which establish its own kind of working and living values among its members. Traditionally, because of this very face one finds socio-economic difference between one caste to another[5]. The age group 20-40 respondents are in SC caste. 40% SC caste Respondents are work as Domestic worker.

The majority of married women go to domestic work is mainly due to the liking of needy married women to take up this job and the preference of the employers for married women as domestic workers. And mainly if married women are the sole bread winners of the family[6]. Hence most of the women aged between 20-40 years in the area of study have joined as domestic workers. This shows that women between 20-40 years are more engaged in domestic work which may be due to increasing family needs and economic necessity to run their famil.giving lot of incentives to SC people to get education but they are not using this opportunity properly.

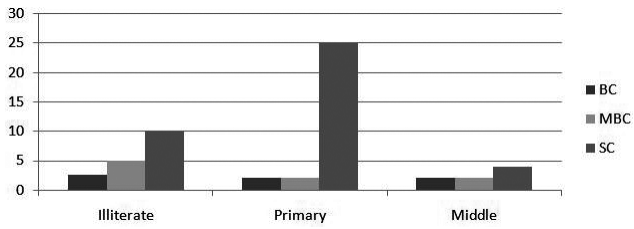

Figure 1: Level of Education

Large families with comparatively less income cannot have a happy life[7]. As a result, they cannot afford good shelter, education and other opportunities to their dependents. On the other hand family with its limited size and well-planned future will not force its women to undertake job. Increasing cost of living and low paid job[8]. Compel all the members of poor families to earn something more so as to supplement their family income.

Majority of the respondents are part time workers because they work in more than one number of houses and earn more income and other incentives by the house owners. This shows flexibility in working hours and also times enough for the women to finish all their work at their own houses. Majority of the Respondents are from nuclear family[9].

Figure 2: Level of Working Hours

Majority of the Respondents doing part time job, they are getting more benefits from part time job than full time, the rules and regulations and are often willing to oblige by doing extra work and staying for longer hours[10]. They are well aware that the conditions are unfair and exploitative, but have learned to cope with it as conditions at home and society too are similar as far as exploitation is concerned.

CONCLUSION

Domestic workers welfare and social security Act 2010, in this Act government as formed advisory board

for state, union territory. In which welfare fund is provided for the domestic workers. By register them as domestic workers they can get benefits from the government. Even though government as given the details of wages and working time in the act it is not reached to them properly. Awareness and guideness should given to the properly about the act. The government also takes more effective step to make sure that everyone from rural area should also be aware of the enacted for promoting their welfare.

Ethical Clearance: YES

Source of Funding: SELF

Conflict of Interest: NIL

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Influence of Emotional Intelligence on Employee Performance among Seleced Restaurants, Chennai.

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ABSTRACT

The intent of the present study is to explore the factors and relationship of emotional intelligence towards employee performance. To analyze employees whether they work in same area or would like to change to other area. The sample size considered for the current studyis 125 and the data was collected from selected top two chettinad restaurants in Chennai, through structured questionnaire. Emotional intelligence(Self-awareness, teamwork, stress and service orientation) as exogenous variable, Motivation and commitment as mediating variables and performance as the endogenous variable was considered to develop a conceptual model. The findings of the study indicate that the factors of Emotional intelligence, commitment, motivation and performance are significant and accepted. There is significant relationship between Emotional intelligence, commitment, motivation and performance where Emotional intelligence plays a vital role in employee performance and the regression model is significant.

Keywords: *Emotional Intelligence, commitment, motivation, performance.*

INTRODUCTION

Restaurant market industry in India, is one of the fastest growing service sector which is because of number of people eating out. Changing demographics, raising income levels and increasing urbanization has also fuelled market growth. A restaurant's primary goal is to earn profitability. The two key ingredients impacting this are great food and great service. In case of service industry like restaurant Emotional Intelligence is not out of the game in fact it deals with consumer emotions. The more relationship is strong the more emotional connection will be there to the brand. Employees has to create friendly culture within the restaurant. This can be exhibited only through team work.

When employee recognition is done right in a right manner, which ultimately leads for employee performance in a better way. Appreciating employees for their hard work leads them to do good service to the customer, which finally leads to the profitability.

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OBJECTIVES OF THE STUDY

- To analyze the factors for emotional intelligence.
- To know the relationship between emotional intelligence, commitment and motivation towards employee performance.
- To examine whether employees like to be in the same field they work or would like to change to other area which they currently work.

RESEARCH METHODOLOGY

The research design of the study is descriptive. Sample technique is simple random sampling. The primary data is collected through the structured questionnaire which comprises of demographic variables in section A, Emotional Intelligence variables (self awareness, stress, teamwork and service orientation),Motivation, commitment and employee performance questions in section B. 125 employees from top two chettinad restaurants in chennai.

SCOPE OF THE STUDY

The scope of the study is to know the factors and relationship between emotional intelligence and employee performance. The top management should concern about the factors of employee performance which will affect the entire restaurant. Every organization must know the variables of employee performance which may help them in tuning the area required. To retain the existing customers the restaurant should enhance employee performance to provide high quality service. For this purpose the employer ought to know the factors of emotional intelligence towards employee performance.

LITRATURE REVIEW

Hari Harasudha.H and Krishnapriya V(2017)[1] has articulated that Emotional intelligence factor team work is mostly related to commitment and there is no gender influence towards emotional intelligence and commitment.

Ivan Vratskikh(2016)[2] opines that mediatory role of job satisfaction in relationship between Emotional Intelligence and job performance. It is suggested that Emotional Intelligence can be used to predict job performance and job satisfaction, therefore the understanding of Emotional Intelligence theory and its applications can be promoted for managerial and human resource practices throughout public sector organizations.

Vanitha(2014)[3], noticed in her study on the topic, Emotional Intelligence of employees in textile industry in Coimbatore, that emotional intelligence has the major contribution when it comes to promotion, performance and hiring employees

Suvarna Saritha(2013)[4], noticed in her study on the topic, Impact of Emotional Intelligence on performance of employees working in selected banks, that there is no significant difference in the mean scores of EI of employees based on their gender. Analysis of variance with respect to different components of Emotional Intelligence of employees based on their gender shows that there is a significant inequality in the mean scores of value orientation and commitment of employees whereas the other components are insignificant.

Zakieh Shooshtarian, Fatemeh Ameli, Mahmood, Iran(2012)[5] in their study stated that there is siginificant relationship between labour's emotional intelligence and job performance.

Samoneh Aghdasi, Ali Reza Kiamanesh, Abdolrahim (2011)[6] opines that Emotional Intelligence does not have any absolute or unabsolute possessions on occupational stress, job satisfaction and organizational commitment.

Anton F Schlechter and Jacoba J Strauss(2008)[7], notified that the Emotional intelligence of leader and transformational leadership are firmly associated with team commitment and also it highlights the endurance of effective leadership behaviour in team dynamics and performance.

D.A.Adeyemo (2007)[8] in his study, stated that the relationship between job satisfaction and organizational commitment were mediated by emotional intelligence.

Malcolm Higgs(2004)[9] notified that there is a strong relationship between overall Emotional Intelligence and performance of the individual and also there was a relationship between age and performance and along with gender differences.

ANALYSIS AND INTERPRETATION

Factor Analysis

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.672
Bartlett's Test of Sphericity	Approx. Chi-Square	151.354
	Df	6
	Sig.	.000

From the above KMO and Bartlett's test table it can be inferred that the value is .672 which is accepted. The p value is .000 which less than .05 and hence the null hypothesis is rejected and the alternate hypothesis can be accepted, that is the factors are significant.

Table 2: Communalities

	Initial	Extraction
Emotional intelligence	1.000	.766
motivation	1.000	.856
commitment	1.000	.901
performance	1.000	.678
Extraction Method: Principal Component Analysis.		

In the above table the extraction values are more than 0.5. For emotional intelligence the Extraction value is .766, for motivation the Extraction value is .856, for commitment the

Extraction value is .901 and for performance the extraction value is .678 and it is good score and can be taken for further analysis.

Table 3: Rotated Component Matrix[a]

	Component	
	1	2
Committment	.948	
Motivation	.920	
Emotional Intelligece		.870
Performance		.780
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
Rotation converged in 3 iterations.		

Looking at the above table, we can see that Commitment and motivation are loaded in component 1 which is mediating factor of this study and Emotional intelligence and performance are the factors loaded in component 2. These factors can be used as variables for further analysis

Multiple Regression:

H_0: There is no significant relationship between Emotional intelligence, motivation, commitment and employee performance.

Table 4: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.491[a]	.241	.222	.280
a. Predictors: (Constant), avg commit 10 ques, avg of ei, avg of moti 8 ques				
b. Dependent Variable: avg of perf 7 ques				

And the R^2 value which is the degree of determination in the model summary is 0.241 greater than Zero and hence the regression model is significant.

Table 5: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.001	3	1.000	12.791	.000[b]
	Residual	9.465	121	.078		
	Total	12.466	124			
a. Dependent Variable: avg of perf 7 ques						
b. Predictors: (Constant), avg commit 10 ques, avg of ei, avg of moti 8 ques						

From the ANOVA table, it is inferred that the p values is less than 0.05 and hence the regression is significant and the null hypothesis can be rejected. That is there is significant relationship between Emotional intelligence, motivation, commitment and employee performance.

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1.	(Constant)	3.585	.301		11.894	.000
	Ei	.318	.063	.408	5.046	.000
	Motivation	.069	.058	.151	1.174	.243
	commitment	-.164	.051	-.414	-3.239	.002

From the above table, it is inferred that the Independent variable Emotional intelligence gives the p value as .000 which is less than .05. Hence the H0 can be rejected, which says that there is significant relationship between Emotional intelligence and performance. The motivation has the p value .243 and hence it says that there is no relationship between motivation and performance. The variable commitment gives the p value.002 and hence it says that commitment has significant relationship with employee performance.

The model predicts, that 1 unit increase in independent variable emotional intelligence the dependent variable performance will increase by .318 units holding motivation and commitment. 1 unit decrease in commitment will decrease the performance of employees by -.164 units holding the other units.

For one Standard deviation increase, in emotional intelligence the model predicts that the performance will increase by .408 Standard deviation.

MULTIPLE RESPONSE ANALYSIS

Multiple response analysis showing whether the employees like to be in the current position or would like to move to other areas:

Table 7: Field Frequencies

		Responses		Percent of Cases
		N	Percent	
Current field[a]	Current position	52	41.6%	41.6%
	Service	15	12.0%	12.0%
	Production	24	19.2%	19.2%
	Cash handling	8	6.4%	6.4%
	Admin	26	20.8%	20.8%
Total		125	100.0%	100.0%
a. Dichotomy group tabulated at value 1.				

From the above Multiple response frequency table it can be inferred that 41.6% of the employees would like to be in their same position they currently work. And 12% of the employees would like to move to service field of work, 19.2% of the employees would like to move to the production field of work, 6.4% of employees would like to move to the cash handling field of work and 20.8% of the employees would like to move to the administration field of work.

Multiple Response Analysis: Multiple Response analysis showing the reason for the preference of working or preferred area:

Table 8: Reason Frequencies

		Responses		Percent of Cases
		N	Percent	
Reason for position[a]	WLB	40	32.0%	32.0%
	Salary and perks	18	14.4%	14.4%
	Growth opportunities	26	20.8%	20.8%
	Status	3	2.4%	2.4%
	Experience	38	30.4%	30.4%
Total		125	100.0%	100.0%
a. Dichotomy group tabulated at value 1.				

From the above Multiple response frequency table it can be inferred that 32% of the employees reason for the preference of working or preferred area is Work Life Balance. The secondary reason is to gain experience as 30.4% of the employees feel it. 20.8% of the respondents feel that growth opportunities is the reason for the preference or working area.14.4% of the respondents feel that salary and perks is the reason for the preference or working area. And the least 2.4% only feel that the reason for current or preferred area is for status.

FINDINGS

- Majority 41.6% of the employees would like to be in the same position they are currently working.
- Majority 32% of the employees reason for the preference of working or preferred area is Work Life Balance.
- The factors of emotional intelligence, commitment, motivation and performance are significant as the KMO and Bartlett's test value is 0.672 which is accepted.
- The extraction value of commitment shows 0.901 which is a good score.
- Commitment and Motivation are loaded as one factor.
- Emotional intelligence and performance are loaded as yet another factor.
- There is significant relationship between Emotional intelligence, motivation, commitment and performance as the p value is <0.001**
- Degrees of determination R^2 is 0.241 and the regression model is siginificant.
- There is high significant relationship between emotional intelligence and performance as the p value is <0.001**

DISCUSSIONS AND CONCLUSION

The result of the study shows that there is significant relationship between the independent variables(Emotional intelligence, motivation and commitment) and dependent variable (performance). And hence to improve employee performance of restaurant employees one must improve the variables such as Emotional intelligence, motivation and commitment of

employees. Emotional intelligence has high relationship with employee performance. One of the emotional intelligence components of this study is teamwork. Teamwork can expose KSA of employees and it helps in achieving organizational goals(Khalid,2008). Motivation and commitment of employees are loaded as one factor, and can improve employee performance as they have significant relationship.

Ethical Clearance: Self

Source of Funding: Self

Conflict of Interest: Nil

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Preferences and Problems of Agri-Based Enterprises of Guntur (A.P., India): An Empirical Study of Farmers Advisory Committees Under Atma

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ABSTRACT

Need-based extension services have become indispensable to cope up with challenges in the environment. In order to promote agri-business and to bring transformation in agriculture sector it is significant to develop a business enterprise. There should be a shift in approach in agribusiness to promote it not only in big cities and state capitals but also at the block level and if possible at grass root level too. To make it happen and examine agencies which can participate in the task of bringing radical changes in promoting agri-based enterprises, in 1998 the concept of ATMA (Agriculture Technology Management Agency) was evolved. ATMA has its governing board at the district level under that there is FAC (farmers advisory committee) which works in parallel with block technical team. While planning strategies allied to agricultural products, agri-business activity groups like FAC can play a critical role therefore they should be taken care of. Keeping these aspects in consideration the present study was carried out in district Guntur.

Keywords: *Agri-Business, ATMA, Farm Advisory Committee, Strategic Research and Extension Plan, Public-Private Partnership*

INTRODUCTION

Roy (1980)[1] defines agribusiness as an industry that coordinates input of science, supplies agricultural production inputs and subsequently producing, processing, and distributing food and fiber. Agriculture and agribusiness is undergoing a huge transformation. Davis and Goldberg (1957)[2] has defined agribusiness consists of all operations involved in the manufacture and distribution of farm supplies; production operations on the farm; and the storage, processing, and distribution of farm commodities and items. Ricketts and Rawlins (2001)[3] has given another definition describing it as profit-motivated enterprises involved in providing agricultural supplies and/or in the processing, marketing, transport, and distribution of agricultural materials and consumer products. All structural changes are in response to the new economic environment emerged as an outcome of liberalization and globalization. Post-harvest losses in India are too high, i.e., about 65 million tones which is more than the consumption in U.K. The extent of these wastages depends on the nature of food raw materials, i.e., whether it is perishable, semi-perishable or durable (e.g., about 10% of food grains, 25-30% of horticultural crops and 10-15% of animal and fishery products) are vanished in various operations. Out of these losses, approx. 50 percent can be reduced by adopting the post-harvest processes/technologies (Khan, 2001)[4]. Farm production, processing, and trade are increasing gradually. As a result of that word 'supply chain' is gaining importance and often talked. Organizations, people, activities, information, and resources are indispensible components of supply chain. Supply system is involved in moving a product or service in physical or virtual form from supplier to the customer (Acharya, 2007)[5]. There have been very less control over marketable supplies and insignificant market power on account of their poor financial position in agribusiness. The WTO Agreement on Agriculture is stipulated to bring efficacy in agribusiness for the first time under the regulation of a multilateral trading system. The WTO Agreement on Agriculture didn't deliver what was promised and the shortcomings in performance can broadly be attributed to the fact that developed countries could manage to take benefit of some loopholes existed in form of ambiguities of the agreement to maintain protection level of

developing countries. Promoting agribusiness in the context of globalization is not an easy task because the majority of the cultivators belong to small and marginal categories. They are unorganized, illiterate and live in perpetual debt. They have a negligible contribution to marketable surplus and insignificant market power on account of their poor financial position. Food security and livelihood are consistently remained one of our major concerns (Mahendra Dev, 2012)[6].

Under the concept of ATMA (agriculture technology management agency) emerged in 1998. It is an autonomous organization supported by flexible working environment at District level. The major focus of ATMA is to develop interfaces at various level, develop research-extension linkage and to explore and utilize the Agri-based enterprise opportunity. Mishra et al. (2003)[7] reported that respondents have opinion that the "Agri-based enterprises are more profitable, use family labour and thus save labour expenditure, does not have complex production process, best use of locally available resources and can change the socio-economic status of their family with good income". With invent of the open market, new avenues are open for Agri-based enterprises. This is only one facet of the coin. Many people who are engaged in agriculture actually do not work on farms but they are doing many other related businesses like seeds, fertilizers, agro-chemical, farm machinery, food processing and so on (Gandhi,2014)[8].

OBJECTIVES

1. To study socio-economic characteristics of FAC members.
2. To study preferences of FAC members towards some Agri-based enterprise.
3. To study problems associated with Agri-based enterprises as perceived by FAC members.

MATERIAL AND METHOD

District Guntur, Andhra Pradesh selected as locale. The district Guntur, Andhra Pradesh comes under the agricultural region, where water is available at the depth of 2 to 5 meters below the ground level. The availability of groundwater facilitates the timely sowing of crops, which further helps in the production of field crops. The district has a significant stake in food grain production of Andhra Pradesh. The district is divided in Farmer Advisory Committees which was constituted for providing a formal feedback mechanism in each block. It was constituted to represent all major stakeholders and farmers' representation of FOs within block. The FAC would help set block extension priorities and recommend resource allocation program across areas. Those farmers are purposively selected who are already engaged in some or other kind of Agri-based enterprise and is a member of FAC. From Guntur district (Andhra Pradesh) 11 entrepreneurs were taken for present study from blocks. The proposed study is focused on finding out the preferences and problems of Agri-based entrepreneurs towards some Agri-Based enterprises exploratory research design was used to serve the purpose. Total 76 respondents were taken and their responses were recorded both qualitatively as well as quantitatively. The data were further analyzed in the light of objectives of the study.

RESULT AND DISCUSSION

(a) Profile of the respondents: An attempt has been made to describe the profile of the FAC members in terms of age, education, occupation, family size, Annual income, family type, land holding, Mass media Exposure, sources of information and sources of financial assistance. These socio-personal associated characteristics have been presented and discussed as follows:

Age: Age is one of the determining factors of individual status and role in the society. The maturity of age certainly has a bearing on the thinking and action of the respondents that he/she achieves at different stages of life. Total respondents: 76 in all cases were taken and analysed. No respondents were in the age group of 0-20 and above reason behind that for FAC membership enrollment the age should be less than 21 years. In age group 21-40 numbers of respondents were 32 and in the age group 41-60 number of respondents were 35. Here, it may be implied that the members of the age group of 40 to 60 are more interested in such kind of participation.

Education: Nobody was found illiterate. Most of respondent i.e. 32 out of 76 (42.10%) had done intermediate followed by graduates 30 out of 76 (39.47 %). It may be implied that the education level

plays an important role in awareness generation and increases the racial participation. It may also be implied that farmer's level of education plays important role in adoption behavior.

Occupation: Occupational categorization of FAC members: Major occupation was the combination of farming and private service (21 out of 76 i.e. 27.63%) followed by farming and government service (15 out of 76 i.e. 19.73%) and Private Service (13 out of 76 i.e. 17.10%). It reveals that only farming or running only an enterprise is not going to support economically and to be economically sound, there has to be more that one enterprise in parallel.

Land Holding: Distribution of the FAC members on the basis of landholding: Most of the respondents were having marginal land holding (33 out of 76 i.e. 43.42%) followed by large (27 out of 76 i.e. 35.52%) and small land holding (16 out of 76 i.e. 21.05). Nobody was found as a landless labourer. Results reveal that small and marginal landholder respondents were more willing to start an enterprise. The fact may be marginal landholder having some infrastructure and willingness to increase their socio-economic status.

Annual Income: Distribution of FAC members according to their annual income: Most of the respondents (30 out of 76 i.e. 39.47%) found to have annual income in between the range of 41,000-60,000 per annum followed by 35.52% (27 out of 76) respondents who have annual income in between 21000-40000 Rs. Yearly income of the family is on the lesser side due to the fact that only one or two family members are engaged in some or other kind of occupational farming is mainly subsistence due to marginal land holding.

Family Size: Distribution of FAC members on the basis of family size: 52 out of 76 (68.42 %) of the respondents were found to have medium family size (5-8 members). It is basically due to the fact that most of the families are having nuclear structure.

Annual expenditure: Distribution on the basis of annual expenditure: Most of the respondents (40 out of 76 i.e. 52.63%) having expenditure equal to income followed by more than income (25.00%). It reveals that most of the respondents are at the bottom line of sustainability. They need to think about some new avenues of income generation.

Mode of communication: Categorization on the basis of mode of communication: Mode of communication utilized by them are friend (62 out of 76 i.e. 81.57 %) letter (60 out of 76) 78.94%, Phone (30 out of 76) 39.47%, News paper (22 out of 76) 28.94%. One of the interesting facts is (8 out 76) 10.52 % of the respondents were found using internet services. In spite of all the advancements in technology, still for the rural people letters and interpersonal communication are the best mode of communication.

Table 1: Source of information: FAC members on the basis of sources of information they use

S. No.	Items	Respondents	
		Number	%
1.	Scientist of G.B.P.U.A.&T., Pantnagar	40	52.63
2.	ATMA	76	100
3.	Radio	30	39.47
4.	T.V.	56	73.68
5.	Newspaper	22	28.94
6.	Books	37	48.68
7.	Friend	62	81.57
8.	Relatives	12	15.78
9.	Internet	8	10.52
10.	Any other	0	0

Regarding the source of information most credible source (100%) for them is ATMA (Agriculture technology Management Agency) after that friend (81.57%), T.V. (73.68%) and scientist of G.B.P.U.A. & T. (52.03%). Fact it reveals that ATMA is the most credible source of information for them and plays an important role in information dissemination in that locality.

Mass Media Exposure: Categorization of FAC members on the basis of mass media exposure: Majority of the respondent found having moderate (48.68%) media exposure (This is on the basis of frequency of utilization). Due to remote location and some other technicalities involve into it most of the respondents having moderate mass media exposure.

Motivation: Economic & Psychological motivation for FAC members: Additional income (92.10%), financial stability (78.94%), saving for future (65.78%) and lack of financial support farm others (26.3%) were stated to be major motivating factors for FAC members to start agribusiness activity.

Due to the fact that they involve in contractual job and most of the season are lean period.

Major psychological motivations were to use spare and leisure time 68.42% followed by to achieve something through agribusiness 46.05% and to be own boss 35.52%.

Professional training: Categorization of FAC members on the basis of training attended: Only 17.10 % of the respondents have attended any professional training regarding Agri based enterprises. Now, there is a tremendous shift in approach as focus is on diversified agriculture. ATMA is also starting to give professional training in this direction.

(b) Preferences of Agri-based entrepreneurs towards some Agri-based enterprise

Table 2: Preference of Agri-based entrepreneurs towards some Agri-based enterprise

S. No.	Items	Respondents in		Ranks
		Numbers	Percentage	
1.	Vegetable gardening	22	28.94	2
2.	Tomato production	37	48.68	1
3.	Dairy management	37	48.68	1
4.	Dairy produce	20	26.31	3
5.	Bamboo/jute craft	2	2.63	-
6.	Poultry	22	28.94	2
7.	Duck rearing	5	6.57	-
8.	Rabbit rearing	0	0	-
9.	Piggery	2	2.63	-
10.	Sericulture	3	3.94	-
11.	Floriculture	11	14.47	-
12.	Apiculture	4	5.26	-
13.	Dehydrated products	1	1.31	-
14.	Organic manure	13	17.10	-
15.	Vermin-compost	18	26.31	3
16.	Horticulture	37	48.068	1
17.	Any other	-	-	-

According to the preferences of respondents, most of the FAC members put first preference to tomato production (48.68%), dairy management (48.68%) and horticulture (48.68%); second preference to vegetable gardening (28.94%) and poultry (28.94%); and third preference to dairy produce (26.31%) and vermi compost (26.31%). It may be implied that due to the climatic conditions, availability of raw material, less technical complication in production process and immediate market are some of the important factors which drive the preference of respondents. Some of the respondents were also found interested in floriculture (14.47%) and organic manure production (17.10%) also.

(c) Problems with Agri-based enterprises as perceived by Respondents: Based on the responses received from 76 respondent of Guntur district (Andhra Pradesh), major issues of agri-based enterprises are tabulated as below-

Table 3: Major problem related with Agri-based enterprises

Problem	Issue	Respondents	
		Number	%
Technical	Lack of experience in management	41	53.94
	Problem of transport	56	73.68

Conted…

Managerial	Lack of training on Agri-enterprises	58	76.31
	Lack of experience in managing agribusiness	60	78.94
	Ansence of agencies to support	55	72.36
Socio-personal	Lack of Support from other community members		68.42
	Lack of confidence	28	36.84
	Lack of Respect for women	18	23.68
	Difficulty in Production process	30	39.47
Input Related	Price of Raw material	35	46.05
Finance Related	High interest rate	65	85.52
	Inadequate loan facility	52	68.42
Market Related	Transportation Cost	56	73.68
	Fluctuation in demand	38	50.00

SUMMARY AND CONCLUSION

The significance of agribusiness gets highlighted in a situation when agricultural and allied products have enough potential to fetch export earnings. With the possibility of a globalization of Indian agriculture, production, as well as marketing, needs to be re-oriented to meet the objective of agribusiness. This district where the study had been conducted has huge potential for the Agri-based enterprise. This district has an important position in agriculture production not only in the state of Andhra Pradesh but also on a country level. The small district is known for its tomato production in India. The results of the study are motivating. The only thing which is required is to make a concentrated effort and also linkage mechanism to support farmers from the grass root to higher level. Problems started by the farmers cannot be ignored but can be easily covered. There is a need to look into this field having vast potential. Market is also found to be one of the major considerations. 73.68 per cent of the respondents stated that transportation cost up to the market minimizes their profit. Fluctuation in the demand of the product (50%) may also be one of the major market problems. Besides all these, 100 percent of the respondents stated that lack of government assistance is major drawback and acts as barrier in initiating any kind of enterprise.

Ethical Clearance: Ethical Clearance taken from by MITS Business School, Chittor (A.P.), India

Source of Funding: Self

Conflict of Interest: NIL

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Effects of Strength Training Exercises on Physical Parameters and Quality of Life among Older Adults in Selected Geriatric Homes in Kerala, India

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ABSTRACT

Background: Falls and consequent injuries in older people are a significant public health problem among older adults in Kerala. Thirteen percent of people in Kerala state are over age 60; the highest among all states in India. Since many older individuals are physically weak and frail, they may not be strong enough to move their own body weight. For these individuals, aerobic activities can be extremely difficult to perform. With more strength, older adults have better health, quality of life and physical function and fewer falls. Therefore, strength training can be vital in restoring independence and functionality.

Objectives: 1) Assess the effects of strength training exercise (STE) on physical parameters, 2) Compare the effectiveness of STE between experimental and control groups, 3) Assess the association between effectiveness and demographic variables and 4) Assess quality of life.

Methodology: The study had a quasi-experimental, non-randomized pre/post design. The data was collected using structured questionnaire on demographic variables, clinical variables (blood pressure (BP), Body mass index (BMI) were measured , and the Senior Fitness Test by Rikli and Jones. Quality of life was assessed by McGill Quality of Life Questionnaire. The elderly people in the experimental group received six weeks of intervention.

Results: Senior STE had a significant effect on the following physical parameters: chair stand/lower body strength (p=0.0001), chair sit and reach/lower body flexibility (p value=0.006), back scratch/upper body flexibility (p =0.004), and 8-foot up-and-go/agility and dynamic balance (p=0.0001). There was no significant difference with regard to the 2-minute step test/aerobic endurance or arm curl/upper body strength in the experimental group. The 8-foot up-and-go test (p=0.0001) was the only test significantly different between the two groups. In addition, there was no significant difference in BMI after the intervention, however STE had an effect on BP (p=0.001). Quality of life improved in the experimental group (p =0.0001), but not in the control group.

Interpretation and Conclusion: Progressive strength training in the elderly is efficient to retain motor function. It is apparent that strength training can enhance musculoskeletal fitness and increase overall quality of life.

Keywords*: Elderly people, Strength training exercise (STE), BMI (Body mass index), Blood pressure (BP), Senior fitness test and quality of life (QOL).*

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INTRODUCTION

The proportion of older persons is growing globally. Two-third of older persons in the world are in developing countries that do not recognize falls as a public health problem.[1]

Loss of muscle strength might be problematic for older adults who have pain and stiffness, and mechanical changes

to their joints complicate their ability to mobilize, making them particularly vulnerable to changes in their physical status. This muscle loss results mainly from inactivity[2].

Strength training is one of the best ways to combat loss of muscle strength that occurs with aging. Performed regularly, strength training builds bone and muscles and helps to preserve strength, independence, and energy. With increased strength, older adults have better health, quality of life, and physical function and fewer falls.[2]

Thirteen percent of the population of Kerala state consists of older persons, the highest proportion among all states in India. A cross-sectional study of 200 adults over age 60 in India found that 52% of respondents had fallen, 21% reported fractures, and, of those who had fallen, 80% reported other injuries. Fractures were reported more frequently among females (26%) than males (16%) and by urban adults (29%) than rural adults (13%).[3]

Strength training is an integral component of health; implementation of exercise helps individuals enjoy physical and emotional benefits and become stronger and more independent. The present program aims to help older adults adopt senior strength training exercises as a lifelong habit[2].The elderly need strength training more and more as they grow older to stay mobile for their everyday activities.[4]

Many studies were conducted to assess risk factors of falls among older adults, but only a few studies have been conducted on assessment of senior fitness and techniques/ programmes to improve strength, flexibility and balance as well as its association with quality of life in developing countries. So, it is plausible to conduct studies to assess not only effects of strength training exercises but also its impact on quality of life in older adults.

OBJECTIVES

The objectives of this study were as follows: 1) assess the effects of strength training exercise on physical parameters, 2) compare the effectiveness between an experimental and control group, 3) assess the association between effectiveness and demographic variables, and 4) assess changes in quality of life.

METHOD

This study had a quasi-experimental design: two non-randomized groups tested pre- and post-intervention. Participants were 60 years or older, via purposive sampling, without severe cardiac disease, orthopaedic or neurological disorders that resulted in mobility impairment, or severe audio or visual impairment. They were recruited from geriatric homes [Home for the aged and infirm(Experimental group) &Augusti Nivas, Senior citizen home (Control group)], Ernakulam, Kerala.

Data collection instruments: A questionnaire was used to collect basic demographic and mobility/exercise information, including age, gender, marital status, education, previous occupation, type of family, length of stay in old age home, ability to perform activities of daily living (with/without assistance), and exercise habits. Height, weight, blood pressure, and heart rate were measured. BMI was calculated from measured height and weight.

The Senior Fitness Test by Rikli and Jones includes six test items to assess strength, flexibility, and aerobic fitness: chair stand (lower body strength), chair sit and reach (lower body flexibility), back scratch (upper body flexibility), 8-foot up-and-go (agility/dynamic balance), 2-minute step (aerobic endurance), and arm curl (upper body strength).[5]

McGill's Quality of Life Questionnaire consists of Principal components: physical symptoms, psychological symptoms, outlook on life and meaningful existence.[6]

Intervention: Exercise was taught to the experimental group and they performed it in a progressive manner like part I in first week, II in second and third week, and III sessions for last 3 weeks. Part I includes 5 – minute walk, squats, wall- push ups ,toe stands and finger marching, part II comprises biceps curl, overhead press, side hip raise and part III consists of knee extension, knee curl and pelvic tilt together with cool down exercises like chest and arm stretch. Exercises were based on those described in the book Growing Stronger: Strength Training for Older Adults[2]. Participants were provided with a diary to track their progress.

STATISTICAL ANALYSIS

Analysis done by: Descriptive statistics ; Frequency and percentage distribution for demographic variables, Mean and standard deviation for BP , BMI , six test items of SFT and quality of life as well as Inferential statistics

; paired T test for comparing pre-post test values within group I(n= 35) and independent t–test for comparing effectiveness of STE between groups, Wilcoxons signed ranks test between pre and post test in group II (n = 29) and further for association with demographic variables ANOVA (oneway) and t- test.

RESULTS

Sixty-four older adults participated: 35 in the experimental group and 29 in the control group. About half (51%) of participants in the experimental group were males, while only 14% of the control group was males. The majority of participants in both the experimental and control groups (89% and 90% respectively) reported that they perform activities of daily living [ADL] without assistance. Sixty percent of experimental group participants and 97% of control group participants reported that they exercised regularly.

Table 1: Baseline characteristics of participants by intervention group

Demographic variables	Experimental group [n = 35]	Control group [n = 29]
	Frequency [percent]	Frequency [percent]
Age (years)		
60-65	8 [23]	5 [17]
66-70	9 [26]	9 [31]
71-75	12 [34]	8 [28]
76-80	5 [14]	4 [14]
> 80	1 [3]	3 [10]
Gender		
Male	18 [51]	4 [14]
Female	17 [49]	25 [86]
Religion		
Hindu	12 [34]	1 [3]
Christian	23 [66)]	28 [97]
Muslim	0 [0]	0 [0]
Other	0 [0]	0 [0]
Education		
Illiterate	2 [6]	0 [0]
Primary level	25 [71]	11 [38]
Secondary level	6 [17]	5 [17]
Diploma/degree	2 [6]	12 [41]
Post-graduation	0 [0]	1 [3]
Previous occupation		
Daily wages	8 [23]	4 [14]
Retired from Govt: service	2 [6]	8 [28]
Private sector	5 [14]	17 [59]
Unemployed	20 [57]	0 [0]
Marital status		
Married	20 [57]	19 [66]
Unmarried	15 [43]	10 [35]
Type of family		
Nuclear	29 [83]	20 [69]
Joint	5 [14]	9 [31]
Extended	1 [3]	0 [0]
Length of stay in old age homes		
0-1 years	13 [37]	5 [17]
1-2 years	5 [14]	2 [7]
2-3 years	6 [17]	3 [10]
Greater than 3 years	11 [31]	19 [66]
Able to perform activities of daily living		
With assistance	4 [11]	2 [7]
Without assistance	31 [89]	27 [93]
Do exercises regularly		
Yes	21 [60]	28 [97]
No	14 [40]	1 [3]

Conted…

Table 2: Within and between group changes for BMI, blood pressure, quality of life, and Senior Fitness Test items

	Within Group						Between Group	
	Experimental Group N = 35			Control Group N = 29				
	Pre	Post	p	Pre	Post	p	Difference	p
BMI	24.94	24.94	1.000	26.55	26.62	0.593	-1.678	0.187
Blood pressure	134.57	124.57	0.0001**	132.76	130.69	0.186	-6.118	0.058*

Conted…

Quality of Life								
Physical	5.49	7.40	0.0001**	6.05	6.90	0.010*	-.500	0.438
Psychological	10.20	17.46	0.0001**	8.70	9.50	0.091	-.608	0.543
Outlook on life a	64.14	60.49	0.039*	68.00	68.45	0.615	7.964	0.008**
Senior fitness test								
Chair stand	10.20	12.60	0.0001**	9.55	10.90	0.003	1.015	0.232
2 minute step test	20.74	20.06	0.531	18.97	18.93	0.677	1.229	0.377
Back scratch	13.09	10.66	0.004*	10.17	9.62	0.267	2.986	0.432
8 foot up and go	16.17	10.80	0.0001**	14.41	15.48	0.551	1.028	0.0001**
Arm curl	11.83	12.54	0.241	12.14	13.31	0.157	1.079	0.396
Chair sit and reach	6.74	5.74	0.006*	5.70	5.38	0.342	1.896	0.971

*= significant at 0.05 level , ** = highly significant at 0.01 level

It is apparent from Table 2 that there was no significant difference in BMI after the intervention, however strength training exercises had an effect on blood pressure (p=0.0001). Blood pressure decreased from an average of 134 in pre-test to 124 at post-test. Of the six senior Fitness Test items, the only significant change in the control group was for chair stand. For the experimental group, significant increases were found for chair stand, back scratch, 8-foot up-and-go, and chair sit and reach. Corresponds to the quality of life former group has improved in post-test. Conversely, latter group has shown no apparent changes except for physical aspects.

Table 3: Association between demographic variables and post-test values of Senior Fitness Test in two groups

	Experimental group				**Control group**			
	Age	**Gender**	**ADL**	**Do exercise regularly**	**Age**	**Gender**	**ADL**	**Do exercise regularly**
	p	**p**	**p**	**p**	**p**	**p**	**p**	**p**
Chair stand	0.073	0.005*	0.265	0.066	0.412	0.200	0.297	0.828
2 minute step test	0.678	0.471	0.758	0.786	0.253	0.355	0.154	0.966
Back scratch	0.027*	0.004*	0.303	0.201	0.253	0.651	0.258	0.759
8 foot up and go	0.090*	0.872	0.915	0.333	0.110	0.293	0.503	0.207
Arm curl	0.044*	0.916	0.604	0.834	0.605	0.161	0.250	0.345
Chair sit and reach	0.271	0.051	0.559	0.510	0.011*	0.179	0.294	0.483

*=Significant at 0.05 level

Table 3 represents the association of selected socio-demographic characters with the effects of strength training. The data derive that as age advances arm curls decreases, back scratch becomes difficult and more time needed for 8 foot up and go test. Regarding gender, there was a significant difference between males and females for chair stand (p=0.005) and back scratch (p=0.004).

DISCUSSION

Overall, there was substantial improvement in lower body strength and flexibility, upper body flexibility as well as agility among participants in the experimental group. However, on comparison the experimental group improved more in only one Senior Fitness test item than the control group [8-foot up-and-go; Agility/ dynamic balance].

Strength training, also known as resistance training, is one of the best ways to decrease the weakness and frailty that can come with age[2]. The Senior Fitness Test can motivate older adults to pay more attention to their fitness and physical activity level[4]. This study assessed the effects of strength training on physical parameters including upper and lower body strength, upper and lower

body flexibility, and balance and aerobic endurance via the Senior Fitness Test.

There was no significant difference in BMI after the intervention, however, strength training had a significant effect on blood pressure. In the experimental group, average blood pressure decreased from 134 mmHg to (SD=11.46) to 124 mmHg (SD=12.448) pre- to post-program.

Unlike intervention group there was only negligible change in physical parameters assessed by the Senior Fitness Test in the control group; only chair stand change was significant. The experimental group significantly improved four of the six Senior Fitness Test items than their counterparts. Interestingly, regarding quality of life, the control group slightly improved in physicalaspects, on contrary the experimental group improved in all three parts: physical, psychological, outlook on life and meaningful existence.

Majida and Kutty [2015] conducted a randomized controlled study on core strength training in 48 community-dwelling adult males aged 50 to 70. Participants in the experimental group performed core strength training exercises three times per week, for 45 minutes per session, for six weeks. Compared to a no intervention control group, the experimental group significantly improved in the timed up-and-go and functional reach tests.[7] The test items timed up and go is same as 8 foot up and go as well as functional reach is similar to chair sit and reach used in this study

Katula and colleagues [2008] conducted a randomized controlled trial with 45 older adults, looking at the effect of a 12-week, three times a week program of progressive strength training or high velocity power training on quality of life in older adults. Participants in the power training group improved significantly more in self-efficacy, satisfaction with physical function, and satisfaction with life than the control group. The strength training group improved more than the control group for self-efficacy only. Thus, it appears that high velocity power training may increase quality of life more than traditional strength training.[8] Likewise in this study Strength training exercises enhanced a sense of well-being in participants and improved quality of life as evidenced by statistical analysis.

CONCLUSION

The aim of this study was to explore the effectiveness of strength training on selected physical parameters. The findings of the study suggest that strength training can avert weakness and frailty among older adults and thereby reduce the risk of falling. It also shows that a blood pressure can be maintained within normal range with strength training. Moreover, the findings indicate that strength training exercises enhance quality of life. Another noticeable change is that their frequent visits to nearby hospitals and clinics comparatively reduced when they started doing exercises.

There may be some limitations in this study as sample size differs between groups and the duration of intervention was merely for 6 weeks. In fact, hardly similar studies are done in developing countries like India.

Ethical Clearance: The study has been conducted after obtaining ethical clearance from ethical committee of Amrita Hospital.

Conflict of Interest: Nil

Source of Funding: Self

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Study of MRSA and ESBL Organisms Isolated from Infected Wounds

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ABSTRACT

Background: Recent trends in Extended spectrum β-lactamase(ESBL)&MR Producing bacterial pathogen causes various life threatening infections lead to sepsis related Mortality. The ESBLs can makes the infection caused by the bacteria much harder to treat.

Method: pus Aspiration taken from various anatomical sites of wound area was collected using sterile swab under aseptic Conditions and further processed by doing Grams stain and culture. Culture was done on Blood agar,Brain Heart Infusion agar, Mac Conkeys agar, incubated at 37^0c for 24hrs.Isolates confirmed by biochemical tests, antibiotic susceptibility testing was done using muller Hinton agar by Kirby Bauer's method as per standard CLSI guidelines.

Results: out of 396 pus samples, 236 were culture positive. Most common organisms isolated was *MRSA* 81(34.3%) followed by MRCons & Other isolates included were *,ESBL E.coli, ESBL Klebsiella. and Pseudomonas.*

Conclusion: Present study observed bacteria causing wound infection. High Percentage of bacterial growth were seen in samples drawn from surgery wards and dialasis ward, labour ward followed by orthopedics. *S.aureus* (34.3%)was the predominant isolated followed by MRCoNS (15.8%), *E.coli*(10.5%) . MRSA incidence in our study was 10% and ESBL's detected in 20% of *E.coli* strains and 6.6% *Klebsiella* strains.

Keywords*: Wound infection, Pus, MRSA, ESBL E.coli & Klebsiella.*

INTRODUCTION

Wound infection could result in prolonged hospital stay, increase trauma care, and high treatment costs if not properly attended to Gram negative bacteria have been reported to be the major etiologies of wound infections.[1] Extended spectrum β-Lactamases (ESBL) are enzymes produced by pathogens belonging to Enterobacteriaceae, most commonly Escherichia coli and Klebsiella pneumonia.[2]

The potential for infection depends on a number of patients variables such as the state of hydration nutrition and existing medical conditions as well as extrinsic factors such as pre, intra and post operative care if the patient has undergone surgery. Thus it is difficult to predict which wound will become infected.[2] The overall incidence of wound sepsis in India is from 10-33%. Relative resistance to antibiotics relatively more virulent strains and capacity to adapt quickly to changing environment make the pathogens acquired in hospitals a matter of concern.[3]

Wound infection is one of the most common hospital acquired infections and important cause of morbidity and accounts for 70-80% .[4] The importance of wound infections in both economic g in serial human terms, should not be underestimated.[5] a study on an average, patients with wound infections stays about 6-10days more in hospital than if wound had heel without infections.[6] This additional stay doubles the hospital cost. Wound infections can be caused by different groups of microorganisms, most commonly isolated aerobic microorganisms includes *S.aureus,CoNs, Enterococci,*

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E.coli, P.aeurginosa, *Klebsiella pneumoniae*, *Enterobacter, Pr.mirabilis,*other *streptococci, Candida, Acinetobacter*.[7]

MATERIALS AND METHOD

The study was done over a period of time of 1year from Nov 2015 to Dec 2016.A total of randomly selected 396 samples received by bacteriology section of microbiology department from various department of SRLIMS Osudu hospital were processed. Pus samples were collected with sterile syrenges & disposable cotton swabs and immediately inoculated onto Blood agar & Mac Conkeys agar media and incubated at 37^0c for 24hrs. After incubation, identification of bacteria from positive cultures was done with standard a microbiological technique which includes AES(Vitec-II Campact) Grams stain, biochemical reactions.[8]

The antibiotic sensitivity testing of all isolates was performed by modified Kirby Bauers disc diffusion method on Muller hinton agar using antibiotics of Hi media as per the CLSI guidelines.

MRSA was detected using cefoxitin disk(30µg) according to CLSI guidelines. ESBL was detected using ceftazidime (30µg) as indicator drug by disc diffusion as per CLSI guidelines as a screening method and confirmation was done by phenotypic disc confirmatory test using Ceftazidime (30µg) and Ceftazidime/clavulanic acid combination disk(20µg/10µg). *Klebsiella* ESBL ATCC (700603) as a positive control and *E.coli* non ESBL strain ATCC 25922 as a negative control were used.

RESULTS

A total of 396 samples received by the laboratory of which, 137 were from different wards and 76 from OPD, were randomly selected for study. Out of 238 samples 137 showed aerobic growth & 106 remained sterile even after 48hrs incubation. High rate of bacterial growth was seen in sample collected from surgical wards followed by orthopedics. (Table 1).

Majority of wound were infected with single organism. Gram possitive cocci 64% and Gram negative bacilli 36%. Most frequently isolated organism was *S.aureus* 81(34.3%) followed by S*taph.epidermidis*, other isolates included *Enterococci, E.coli, Klebsiella, Pseudomonas*, and *Proteus spp*. (Table 2) 8 were MRSA out of 81 S*taph.aureus* strains. ESBL were reported 13*E. coli* and 4 K*lebsiella* strains.

Table 1: Ward Wise Distributation of Samples

Surgical			Medical			Others		
WARD	NO	%	WARD	NO	%	WARD	NO	%
GSW	117	39.3%	GMW	10	3.3%	SPL W	14	4.7
GOW	48	15.4%	GDMW	14	4.7%	NICU	1	0.3
GENT	3	1%	MICU	12	4%	PICU	2	0.6
			TB CHEST	1	0.3%	CTICU	3	1
			PSYCHATRY	1	0.3%	LR & GY	36	12.1

Table 2: Name & Number of the Organism Isolated

Isolates	Total No.	Percentage
S.aureus	81	34
Cons	44	18.6
E.coli	25	10.5
Klebsiella spp	15	6.3
P.aureginosa	8	3.3
Acinetobacter	1	0.4
Total	169	100

Table 3: Antibiogram of wound infection

S. No.	Name of the Antibiotic	S.aureus	CoNS	E.coli	Klebsiella	Pseudomonas	Acinetobacter
1.	penicillin	1	4	-	-	-	-
2.	gentamicin	28	13	6	8	11	-
3.	cotimoxazole	-	-	4	8	4	-
4.	Cefuroxime	4	2	-	-	-	-
5.	Erythromycin	37	26	-	-	-	-
6.	Vancomycin	29	14	-	-	-	-
7.	Cefoxitin	8	2	-	1	-	-
8.	Ampicillin	-	-	-	-	-	-
9.	Amikacin	66	40	12	15	16	-
10.	Cefotaxime	33	12	8	7	13	-
11.	Piercillin-tazobactum	41	19	15	20	19	-
12.	Ciproflox/levoflox/lomeflox	15	11	5	11	12	-
13.	Amoxy-clav	43	36	-	-	-	-
14.	Caz	16	12	8	2	8	-
15.	Imipenem-	-	-	-	3	3	-
16.	Cephlexin	4	2	-	3	3	-

DISCUSSION

As wound infection is becoming the major hospital acquired infection, hospital environment plays a major role for causing wound infection. In the our study, 58% of pus samples showed bacterial growth with 9 different bacterial species and the most common isolate was MRSA(34.3%) followed by MRCoNS (28.6%) and *E.coli* (10.5%). It correlated with the study conducted by Tapan at Navoday Medical college, Raichur who also reported *S.aureus* (27.5%) as the most common isolate followed by CONS (8.5%) [9] In a similar study conducted at Kathmandu model hospital, 50% of Pus samples showed bacterial growth with 15 different species and the most common isolate was *S.aureus* (41.31%) followed by *E.coli* (20.89%) CoNS (15.44%)[10] similar study was conducted in TUTH showed 82.5% bacterial growth and 13 different bacterial species of which *S.aureus* was predominant (57.7%) followed by *E.coli* (11%) and CoNS (3%) .[11]

Similar studies conducted at Dhiraj general hospital, Sri Ramchandra medical college and at Namakkal showed *S.aureus* as predominant isolate [3,12,13]

In our study most of the Enterobacteriaceae members and Pseudomonas were susceptible to Amakicin, 3rd generation Cephalosporins and Pipercillin with Tazobactam in case of gram positive bacteria the highly effective antibiotics were Oxacillin, Erythromycin, Vancomycin, amoxy-clav least effective antibiotics were Penicillin & Cephalexin.

The incidence of methicillin-resistant *S.aureus* in our study was 8(10%).This finding is in agreement with the reported incidence of 10% MRSA in a study which was conducted by Agarwal and Khanna[14]. A similar study conducted by Gaythree naik at kasturba medical college,Mangalore showed an incidence of 9.6%[15] In our study ESBL were reported in 5 strains of **E.coli** (20%) & 1 strain of K*lebsiella*(6.6%)

CONCLUSION

This study revealed the presence of wound infection causing bacteria. High rates of bacterial growth were seen in samples collected from surgery wards followed by Dermotology. *S.aureus* (34.3%)was the predominant isolated followed by CoNS (15.8%), *E.coli*(10.5%). MRSA incidence in our study was 10% and ESBL's detected in 20% I strains and 6.6% *Klebsiella* strains. Due to increased morbidity and mortality which are associated with these drug resistant organisms an early detection and intervention is a prerequisite in surgical patients. The government should take proactive steps in setting up hospital antibiotic policy guidelines in instituting hand washing among health care personnels.

Hospitals should screen MRSA among their staff and treat those who are affected.

Ethical Clearance: Taken from SRILAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES, Institutional Ethics Committee(Human Studies) Ref.no. IEC/C-p/49/2014.

Source of Funding: Nil

Conflict of Interest: Nil

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Prevalence of Angles Malocclusion Traits in 7-16-Year-old School Children of Mewar Region, India

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ABSTRACT

Objective: the study aimed to check the prevalence of Angles classification of malocclusion in the school children of age 7-16 years in the Mewar region, India.

Materials and Method: cross sectional multistage sampling was performed on a sample of 1029 school children aged 7 to 16 years (661 males and 368 females). The children were examined for the different variants of the angles classifications of malocclusion. The variants included were angles class I, class II division 1, class II division 2, class III, class II and class III subdivisions. The collected data was subjected to chi- square test to obtain the age-wise and gender-wise difference for the prevalence of different malocclusion groups.

Results: Angles class I malocclusion was most prevalent with 62.8%. Second most prevalent malocclusion was the class II and its variants with 34% prevalence rate and class III malocclusion was least prevalent with 1.4%. Statistically significant difference was noted for the prevalence of class I (0.03) and class II division 1 malocclusion (0.01) in different age groups with 15-year-old children showing the greater prevalence of these malocclusions.

Conclusion: the high prevalence of malocclusion in the current population warrants the need for dental education camps to impart the knowledge related to the deleterious effects of the malocclusion and the patients should be motivated to opt for the treatment.

Keyword: *Angles classification, malocclusion, occlusal traits, prevalence, school children*

INTRODUCTION

Malocclusion is certainly not a life threatening diseases as such. However, increasing mental ill health concerns associated with it is certainly a problem which is in the lime light and it is the central concern for the international scientific community.[1,2,3] Malocclusion can be the etiological factor for such mental illness caused owing to the psychosocial issues.[4-7] It can affect the individual's perception about himself or herself, thus compromising the very productivity of the person's performance in day to day life.

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The increasing genetic mutation due to raise in the interracial and interethnic marriages as contributed much to the increase in the prevalence of the malocclusion.[8-9] The globalization has gifted the genetic pooling and the consequence of the same is increase in the different characteristic traits of the malocclusion.

The literature is explicit with the prevalence of the malocclusion and the orthodontic treatment needs on different population groups.[10-15] Nevertheless, this should not discourage the researches from gathering the fresh data to keep the record of the trend in the changing prevalence rate of malocclusion traits. There are studies of the similar nature on the adult population of India as well.[15-22] But none of the studies explored the prevalence of Angles classification of malocclusion in school going children specially in the Mewar region of India. The present study was carried out to determine the prevalence of malocclusion in 7-16-year-old school children belonging to the Mewar region, India.

MATERIALS AND METHOD

A cross section study was done on the 1029 school going children of 7 to 16 years' old who belonged to the Mewar ethnicity. The sample included 661 males and 368 female children. The target population was selected randomly by utilizing the multiple stage stratified sampling from the urban and rural population of the Mewar region. Mewar is a region of south-central Rajasthan state in western India, its inhabitants are called Marwaris or Marwadis. Their staple food includes mainly vegetarian dishes.

The ethical clearance for the study was taken from the institutional ethical committee. Total seven schools were selected randomly. Prior written permission was obtained from the head of each school before conducting the survey. The children and the parents of the children were informed about the purpose of the study and a written informed consent was obtained before examining the children.

Type III ADA examination was carried out on the selected sample. All the children were examined using the mouth mirrors by the single examiner in the sitting position in the broad day light. If the light was not sufficient the aid of the battery operated troch was taken. The examined information was recorded in the pre-prepared chart by the other researcher. Inclusion criteria like completely erupted 1st molar in permanent dentition and no history of prior orthodontic treatment was prime for the selection of the children for the examination. The subjects with craniofacial anomalies (syndromes) were excluded from the study.

Occlusal relationships: Depending on the molar sagittal relationships findings were classified in the following categories: Class I, Class II division 1 and Class II division 2, Class II subdivision, Class III, Class III subdivision malocclusions[17] and Asymmetries (Facial). Subjects presenting facial asymmetries were included in the group 'Asymmetries'.

Statistical Analysis: The data for 10 subjects was collected consecutively within the period of a week and it was subjected to intraexaminer variability test and the kappa accounted for the same was 90%.

The collected data was tabulated in the Microsoft excel and the data was subjected to descriptive statistics. The difference between the prevalence of Angle's classification for the age wise the gender wise comparison was analysed using Pearson's chi-square test. P value for statistical significance was set at 0.05. All the statistical analysis was done using the SPSS software version 21.

Table 1: Composition of the sample

Age (Years)	Total Sample		
	Male	Female	Male + Female
	N	N	N
7	22	8	30
8	14	14	28
9	18	11	29
10	44	23	67
11	43	19	62
12	94	48	142
13	79	61	140
14	101	79	180
15	150	74	224
16	96	31	127
Total	661	368	1029

Table 2: Prevalence of malocclusion in the total sample (n = 1029)

Malocclusion	Number	Percentage %
Class I	646	62.8
Class II Div 1	219	21.3
Class II Div 2	38	3.7
Class II Sub- Division	93	9.0
Class III	8	0.8
Class III Sub Division	6	0.6
Facial Asymmetries	19	1.8
Total	1029	100.0

Table 3: Prevalence of malocclusions by Gender (p = 0.894)

Malocclusion	M n %	F n %	P value
Class I	415 (62.8)	231 (62.8)	0.997 (NS)
Class II Div. 1	143 (21.6)	76 (20.7)	0.712 (NS)
Class II Div. 2	25 (3.8)	13 (3.5)	0.839 (NS)
Class II Sub Division	56 (8.5)	37 (10.1)	0.396 (NS)
Class III	4 (0.6)	4 (1.1)	0.399 (NS)
Class III Sub Division	4 (0.6)	2 (0.5)	0.901 (NS)
Facial Asymmetries	14 (2.1)	5 (1.4)	0.386 (NS)
Total	661 (100.0)	368 (100.0)	

Table 4: Prevalence of malocclusions by Age (7 to 16 years)

Malocclusion by Age	Class I n %	Class II Div. 1 n %	Class II Div. 2 n %	Class II Sub division n %	Class III n %	Class III Sub division n %	Facial Asymmetries n %	Total n %	P value
7 yr	17 (2.6)	8 (3.7)	2 (5.3)	2 (2.2)	0 (0.0)	0 (0.0)	1 (5.3)	30 (2.9)	0.72 (NS)
8 yr	13 (2.0)	12 (5.5)	0 (0.0)	2 (2.2)	0 (0.0)	1 (16.7)	0 (0.0)	28 (2.7)	0.02 (S)
9 yr	18 (2.8)	6 (2.7)	0 (0.0)	5 (5.4)	0 (0.0)	0 (0.0)	0 (0.0)	29 (2.8)	0.47 (NS)
10 yr	34 (5.3)	19 (8.7)	1 (2.6)	10 (10.8)	2 (25.0)	0 (0.0)	1 (5.3)	67 (6.5)	0.04 (S)

Conted…

11 yr	42 (6.5)	17 (7.8)	0 (0.0)	2 (2.2)	0 (0.0)	1 (16.7)	0 (0.0)	62 (6.0)	0.11 (NS)
12 yr	78 (12.1)	39 (17.8)	7 (18.4)	14 (15.1)	1 (12.5)	0 (0.0)	3 (15.8)	142 (13.8)	0.25 (NS)
13 yr	94 (14.6)	27 (12.3)	3 (7.9)	11 (11.8)	2 (25.0)	0 (0.0)	3 (15.8)	140 (13.6)	0.49 (NS)
14 yr	124 (19.2)	28 (12.8)	12 (31.6)	13 (14.0)	1 (12.5)	0 (0.0)	2 (10.5)	180 (17.5)	0.03 (S)
15 yr	150 (23.2)	41 (18.7)	6 (15.8)	22 (22.7)	1 (12.5)	1 (16.7)	3 (15.8)	224 (21.8)	0.52 (NS)
16 yr	76 (11.8)	22 (10.0)	7 (18.4)	12 (12.9)	1 (12.5)	3 (50.0)	6 (31.6)	127 (12.3)	0.01 (S)
Total	646 (100.0)	219 (100.0)	38 (100.0)	93 (100.0)	8 (100.0)	6 (100.0)	19 (100.0)	1029 (100.0)	
P value	0.03 (S)	0.01 (S)	0.12 (NS)	0.40 (NS)	0.67 (NS)	0.07 (NS)	0.40 (NS)		

RESULTS

The demographic data of the study population is shown in the table 1. A total of 1029 subjects, 661 males and 368 females of 7 to 16 year-old were examined from urban and rural schools of Mewar region of Rajasthan.

Table 2 show the distribution of the sample according to the prevalence of malocclusions. Findings indicated that the maximum subjects had Class I malocclusion (62.8%) which was followed by Class II Division 1 malocclusion (21.3%). Class III malocclusion was least prevalent (0.8%).

Prevalence of malocclusions by gender is shown in Table 3. Class I malocclusion was more prevalent in both the genders (62.8% males and 62.8%females) which was followed by Class II Division 1 (21.6% in males and 20.7% in females). Facial Asymmetries was least prevalent in both males and females with 2.1% and 1.4% respectively. But none of the difference were statistically significant.

The prevalence of malocclusions by age is described in Table 4. The class I malocclusion was the most prevalent followed by class II division 1 malocclusion for all the age groups. There was significant age wise difference for the prevalence of class I and class II division 1 malocclusion.

DISCUSSION

The prevalence studies are done in anticipation to serve the community by knowing burden of ill health condition and by suggesting the measures to counteract such conditions. The current study was done to check the burden of malocclusion in the school children of Mewar ethnicity.

The results of the current study suggest that the highly prevalent malocclusion was Class I with 62.8% of the total sample showing the same. Similar prevalence of Class I malocclusion was seen in few of the studies on different population groups like 67% in Vietnamese population,[23] 68.5% in Syrian population[14] and 69.15% in the different region of India.[22] The evidence of higher prevalence of class I malocclusion is seen in some of the earlier studies, which include the study on Brazilian children (76.7%)[24] and in Indian populations of Pune city (75.2%).[21] In contrast to the results of the current study, lesser prevalence of class I malocclusion was also reported in few of the earlier studies. [13, 24, 25]

The probable reason for the high prevalence of class I malocclusion in the present population group might be the absence of underlying skeletal discrepancy. Moreover, class I malocclusion can occur in variety of forms like crowding, increased overjet, increased over bite, midline shift and the different varieties of cross bites. These different traits of malocclusion can occur under the environmental influences like oral habits, malnutrition and the neglected oral health. Irrespective of the etiological factor, this large percentage of malocclusion requires immediate attention of the local dental bodies to increase the awareness regarding the side effects of the malocclusion.

Three different variations of Class II malocclusion like Class II division 1, Class II division 2 and Class II subdivision were prevalent by of 21.3%, 3.7% and 9% respectively. On contrary to the results of the present study, the literature survey shows the reports of lesser prevalence of class II malocclusion in the different population groups.[21, 23, 24, 25, 26, 11] The Probable reason for this might be the underlying genetic traits for the skeletal problems in craniofacial region.

Such high prevalence of class II malocclusion is a concern, as it can development into full-fledged malocclusion. In future the correction of the same can require invasive techniques. However, if the affected population is motivated to take the growth modification treatment the problem can be restrain in the beginning itself.

Subjects having Class III malocclusion were only 14 (1.4%) including Class III Subdivision in 6 (0.6%) subjects of our sample. This is the least incidence of Class III malocclusions reported with the closest prevalence being reported 1.8% in Pune population.[21] The literature also suggests that the class III malocclusion is the least prevalent of angles malocclusion in comparison to other types.[11, 13, 23, 26]

There was no statistically significant difference between genders and the different age for the distribution of malocclusions except for age-wise difference between the prevalence of class I and class II division 1 malocclusion. Both of the malocclusion were more prevalent in 15-year-old children. The nature and nurture factors like growth spurts and the oral habits might have influenced the development of this malocclusion in this age group children.

CONCLUSION

The high prevalence of malocclusion in the current study group warrants the need for the frequent educational dental camps to motivate the population to visit the dental hospital for taking the early orthodontic treatment.

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A Study on Marketing Prospects in Promoting Cultural Tourism in Tamil Nadu

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ABSTRACT

Globally Tamil Nadu is well thought-out to be a place of cultural and historical values. Promotion of these cultural tourism products enhances the respect of the state among the domestic and foreign touristers. This tentative study was anticipated to enumerate the cultural importance and significance of the state and understand the promotional actives to develop the marketing strategies. Interviews were conducted among the tourist, tourism employees, agencies and other government tourist personnel to bring out the possible understandings and developing the strategies about cultural tourism in Tamil Nadu. The study invokes an outcome to develop knowledge and inhibit the importance of these cultural sites among the youngsters and modernisation of these tourism products with an appropriate market mix upon the customer requisition improves the cultural tourism in Tamil Nadu.

Keywords: *Culture, Marketing, Promotion, Tourism & Tamil Nadu*

INTRODUCTION

Culture puts in the picture about the heritage and customs of the land and its society. Cultural tourism is a part of tourism exploring to a place to learn and know about the culture and societal behaviour or history of the place. Cultural tourism can be defined as a exceptional travel around places nationally or internationally to lean and experience about a new culture or a cultural attraction.[1] Promotion of cultural tourism invoke the cultural importance of a place to the world. Tamil Nadu a southern end state of India is a place with rich values of customs and heritage importance. Tamil Nadu owes a culture of few thousand years past that still flourish with all rich valued feathers in its crown.

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Cultural tourism have both the social and economical benefits, it develops the cultural heritage image of a place. Cultural tourism develops a country's economical facts with employment and development of infrastructure of the place. Beside the advantages if being over used they also exploits the cultural value of a place.[2] tourism product are the packages of businesses with sub-services including travel, accommodation and food being a intangible product requires more skill to sell in the tourism market.[3] The paper involves the cultural tourism products of Tamil Nadu, state policies in promotion of these products domestically and internally, evaluation and suggestion of problems involved in marketing the cultural tourism products.

OBJECTIVE

To reveal the cultural products, promote and identify the difficulties in marketing the cultural tourism products of Tamil Nadu. Exhibit the positive advantages in promoting and marketing the cultural tourism products of Tamil Nadu.

Scope: Promotion of marketing activities to market the cultural products of Tamil Nadu brings in a high number of domestic and foreign tourists. Helps in development of Tamil Nadu socially and economically.

Data Collection: Primary and secondary data for the study involves in collections of information from government tourism policy manuals and personal opinions of the experts, magazines, journals and websites.

Concepts of Cultural Tourism: Tourism is a concept of travelling from one place to another nationally or internationally with no expectation of monetary benefits, cultural tourism is a compartment of tourism being defined by World Tourism Organization as a visit to a place with cultural features and heritage and historical value.[4] The WTO also exhibits that globally 37% of tourist travels as a cultural tourist.[5] Cultural tourism is segmented upon the tourist attitude toward his travel to the cultural place as purposeful cultural tourism as the tourist immensely travels to these sites, tour-amateur the person's travel oriented towards the travel agents decision, occasional and incidental cultural tourist travels upon the situation and finally the accidental cultural tourist who travels upon a sudden or unintentional situation.[6] Cultural tourism endows with all indispensable values of historical and heritage value of a particular tourist site. It carries out these values worldwide and to the future generation to develop and protect their cultural values.[7]

Cultural Tourism in Tamil Nadu: Tamil Nadu is a land of ancient and rich heritage in the world. A diversity of living tradition and culture spread all over the state. Tamil Nadu is a place with a diversity of living tradition and culture with historic temples, mosque and churches being found all over the state. All these places are famous for their artistic works, cultural, religious, colourful fairs and festivals. The state is a reserve for all man-made and natural attractions that brings in domestic and international tourist visiting the state throughout the year.

Beside religious spots various historical monument and buildings are found in all parts of the state right from Chennai to Kanyakumari being built by the rulers of Tamil Nadu at different periods of ages. Tamil Nadu takes the second position among the states in India with a positive growth rate of 16 percentages with regard to tourism industry.[8]

Many annual events, functions and fairs like National Cultural Festival at Kanyakumari, Chettinad Heritage Seminar, Chidambaram Natyanjali Festival, Mamallapuram Dance Festival, Harvest Festival Pongal, Jallikattu, etc are periodically conducted to enhance the cultural importance of the state.

Impact of Cultural Tourism in Tamil Nadu: Tamil Nadu is a home town of many natural and man-made amenities constituting a multi-religious pilgrimage spots, UNESCO approved heritage sites of cultural and architectural importance. It brings in 25.6% of domestic touristers and 20.6% of foreign touristers contributing a largest share of foreign exchange to the country.[9] A recent survey states that the foreign arrival to Tamil Nadu has been significantly increased earning a income about 14,354 crores about 32.56% of whole nations income.[10]

The cultural tourism enhances and betterment the cultural value of the place among the domestic and foreign touristers. It professionally develops the management of tourism and creates a new segment of consumers and expands the market.[11] Beside the economical development of people, infrastructural development of the destination the cultural tourism brings into a respect about the destination to the younger and future generation to protect and preserves these cultural heritages and sites.

Challenges and marketing strategies in promotion of cultural tourism in Tamil Nadu

The tourism sector has to spare more concentration in the promotion of cultural tourism in Tamil Nadu new market policies must be formulated and also need more market researches to endow the data on tourist visiting Tamil Nadu to learn the cultural interest.

Product: Basically the local touristers has to be educated more about the cultural sites and their importance, new measures to be done to maintain peaceful atmosphere and cleanliness.[12] The cultural tourism product, the packages must also constitutes some adventurous activities beside the historical monuments and pilgrimage centres. The package has to be altered and designed according to customer the tourist preferences upon the possible criteria.

Price: Tourism in India is more oriented towards cultural and heritage than recreational grounds. In Tamil Nadu all range of products are available not concerned or restricted to any price discrimination for example a traveller can accommodate in any place upon his spending capacity as there is a wide range of accommodation is available starting from a simple lodge to star properties.

Place: Here the place may be concerned towards the cultural tourist destinations to be explored. The tourist sites have to be well mannered with good infrastructure facilities like roads, hotels, sanitation, water supply, electricity etc.

Promotion: Promotion involves a good master plan in marketing the sites around the world. New products, the packages have to be developed by the agencies and new market segment has to be created among the customers.

Activities to Market Cultural Tourism in Tamil Nadu: The cultural importance of the state has to more spoken among the younger generations at schools and colleges. Histories of the cultural spots has to be spoken to these generation and bring in a respect towards these sites.

Seminars, cultural events, trips has to be arranged to these people to bring into a knowledge about the cultural importance and knowing one's own culture and respect others.

Conduction of fairs and festivals like food festivals, dances, dramas, music, and exhibitions attracts more tourist nationally and internationally. These activities brings in a new generation of travellers into the sector.

Encouragement of tourism literatures like books, articles, documentaries about a cultural site helps the tourist to know more about the destination. This enhances the interest to travel to those sites.

Travel agencies have to be promoted by the state government in developing their contacts to sign bilateral or multilateral memorandum of understanding between foreign nations to bring in the foreign travellers.

Promoting educational courses for tourist personnel like package developers and tourist guides to improves their knowledge about the tourist destination and maintain a hospitality attitude towards the travellers.

More funds to be invested by the government sector in developing the destination either man made or natural amenity. The place has to be connected to all nearby major cities.

More websites and pages to be created to explain all possible description about these cultural places has to done. This self markets the cultural destination worldwide. Maintenance of call centres and tourism offices at these sites improves the provision of information about the site to the local and foreign visitors.

Suggestion: Tamil Nadu is a state of prosperous cultural and heritageous values improvement of infrastructure, incorporation of knowledge of these culturally valued places among the upcoming generation will keep these sites thrive more years. More archaeological studies has to be promoted, awareness about the protection of these sites has to be invoked among the localities. Development of new marketing strategies brings in a new segment of people to visit these sites to make them live and flourish more years.

CONCLUSION

Tamil Nadu has a wide scope of cultural tourism with an endeavour of historical sites and ancient culture, not being overrun by any cultural invasions. There exists a steady increase in foreign and domestic travellers that improves the socio-economic potentiality. A well defined marketing strategies always improves the tourism in turn enriches the cultural values of the state.

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An Objective and Subjective Evaluation of Dental Implant Impressions using Vinylsiloxanether and Polyether Impression Materials−An *in Vivo* Study

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ABSTRACT

Purpose: This invivo study was planned to subjectively and objectively evaluate dental implant impressions using Vinyl Siloxanether& Polyether impression materials.

Method: Two master impression were made for each of the 20 subject, with Vinyl Siloxanether 'ID' and Polyether 'IM' using the closed tray impression technique after adequate healing.These were subjectively and objectively evaluated using preset standardised criteria. The results were statistically analyzed for non-inferiority of 'IM' and 'ID' by using the Chi – Sqaure test and Fisher's exact test for the subjective evaluation and for objective evaluation Analysis of Variance (one way ANOVA) was used.

Results: On the basis of the subjective assessment of the two impressions ID showed superior ratings in terms of taste (p=0.19) as evaluated by the patient, tear resistance upon removal from mouth (p=0.018) and tear resistance upon removal from stone cast (p=0.046) as evaluated by the operator. However , in terms of clinical handling, hydrophilic properties (p=0.376) and total setting time(0.147) there was no statistical difference between ID and IM impression materials. On the basis of objective evaluation of the two impression materials, vinyl siloxaneether appears to be a good alternative to polyether in terms of transfer accuracy from oral to model situation with respect to dental implants as there was no statistical difference between the two groups.

Conclusion: Vinylsiloxanether which is a chemical combination of polyether and vinylpolysiloxane has superior mechanical and hydrophilic properties while achieving its final hardness, thereby providing accurate implant impressions for the fabrication of successful implant prosthetic restorations

Keywords: *Implant impressions , vinylsiloxanether, polyether, closed tray.*

INTRODUCTION

Intra-oral implant impressions requires capture of the three dimensional orientation of dental implant. The transfer of the exact position of the implants to the working cast is critical, because implants lack the mobility of the natural teeth resulting in loss of fixture integration & progressive treatment failure.[1]

Among the numerous impression materials used for dental implants, Polyether (PE) impression material and Vinyl Polysiloxane (PVS) are the most commonly used materials.[2,3]

PVS in an addition silicone available in different viscosities and can accommodate several techniques. In contrast to the condensation silicones, these materials are dimensionally accurate because there are no by-products

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produced during the polymerization reaction. They are dimensionally stable, have adequate tear strength, neutral odor, and taste and is a material of choice .The major limitation of PVS is its hydrophobicity, which requires a dry environment for achieving an accurate impression. [4]

Polyether (PE) is also dimensionally stable and often preferred by some clinicians because of its inherent hydrophilic nature and enhanced wettability. However, rigidity of the material is a shortcoming. Efforts to overcome the disadvantages have been made in the most recently developed PE. Another approach to reduce the stiffness of the polymerized material is by adding low-viscosity softeners.

Recently, a new impression material, classified as VinylSiloxanether ("IDENTIUM", KETTENBACH COMPANY,GERMANY) by the manufacturer, has been commercially available. Being a chemical combination of Polyether & A- Silicone, it has introduced various advantages over the traditional impression materials.

The composition is intended to incorporate the natural hydrophilicity and flowability of conventional PE materials along with the desirable properties of PVS materials, such as elastic recovery, tear strength and dimensional accuracy and stability. The potential advantages of a recently marketed VPES are: 1) intrinsic hydrophilicity without using surfactants; 2) handling characteristics similar to PVS; 3) high tear strength with flexibility; 4) predictable subgingival flowability, and 5) a mild mint taste

Although numerous studies comparing the accuracy of various elastomeric impression materials have been published,[5-8] only a few have studied the accuracy of Vinyl Siloxanether and compared it with the traditionally used elastomeric impression materials for making implant impressions.

Hence, in the light of the above findings, this invivo study was planned to subjectively and objectively evaluate dental implant impressions using Vinyl Siloxanether& Polyether impression materials.

METHOD

The study was conducted following approval from the Institutional Ethics Committee and informed consent from the participants. Twenty apparently healthy subjects with successfully osseointegrated one or more single tooth (MIS) implants that are referred for prosthetic restorations to the department of Prosthodontics were included in the study.

Two master impression were made for each subject, one using Vinyl Siloxanether 'ID' and a second one with Polyether 'IM' using the closed tray impression technique after adequate healing. Thus, a total of 40 master implant impressions were made, reassembled according to standard protocol , visually inspected and evaluated subjectively and objectively by two qualified prosthodontists prior to pouring the impressions with Type 1V Die stone.

The subjective evaluation of the impressions and corresponding definitive casts was done using the quality rating scale, numerical three point rating scale with anchors: (1- Excellent, 2- Acceptable, 3-Poor). The evaluation was based on handling of impression material, overall quality of the impression, time required to make the impression, hydrophilic properties of the impression material, tear resistance upon removal from the mouth and stone cast and the taste of the impression material as evaluated by the patient. For the objective clinical evaluation, the model situation was compared to the clinical situation. For this procedure, the measurements were obtained using a digital vernier calliper instrument directly from the patient mouth and the master model to compare both the situations.

The measurements were recorded intra orally after fixing the patient's head to the headrest of the dental chair in a situation that ensures parallelism between the occlusal plane with the floor by using fox plane to get this situation.

Certain reference points were detected on the occlusal plane in order to obtain the measurements of the three axes X, Y and Z. This reference points were detected according to each clinical case separately, and were compared with the measurements performed on stone dies using similar reference points.

The results were statistically analyzed for non-inferiority of 'IM' and 'ID' by using the Chi – Sqaure test and Fisher's exact test for the subjective evaluation and for objective evaluation Analysis of Variance (one way ANOVA) was used.

RESULTS

Subjective evaluation: In terms of handling, the results obtained by ID and IM were similar. Both the groups received "excellent" ratings.In terms of overall assessment of impression, ID was found to be superior than IM. 83.3% of impressions obtained from ID were rated excellent whereas only 58.3% of impressions obtained from IM were rated as excellent. However, the difference is not statistically significant. (p =0.178). In regard to the time required to make the impression, Vinylsiloxanether impressions (ID) set faster when compared to impressions made from Polyether (IM). 16.7% of impressions of ID group were rated excellent and 83.3% of impressions of ID group were acceptable whereas 100% of impressions of IM group were rated acceptable.In terms of impression materials' hydrophilic properties, which were evaluated on the basis of number of voids, ID showed superior results than IM. 100% of impressions of ID group were rated as excellent while only 66.7% of impressions of IM group were rated as excellent. However, there was no statistical difference between the two. (P=0.093). On basis of tear resistance upon removal from the mouth and stone cast, the results were highly significant ($P < 0.001$). 83.3% of impressions of ID group were rated as excellent while 100% of impressions of IM group were rated as poor.The test subjects perceived the taste of ID as rather positive, while IM received substantially more negative ratings. 33.3 % of impressions of ID group were rated excellent while only 8.3% of impressions of IM group were rated excellent. However, the difference was not statistically significant. (p=0.145).

Objective evaluation: There was no significant differences between the ID and IM at the three axis of dimension (x, y, z axis) when measured and compared intra orally and on the mounted stone casts.

X axis: The intra oral mean value was calculated as 40.8665. The mean value measured of ID group and IM group was 40.8565 and 40.8595 respectively.

Y axis: The intra oral mean value was calculated as 9.1540. The mean value measured of ID group and IM group was 8.1465 and 8.1485 respectively.

Z axis: The intra oral mean value was calculated as 5.2035. The mean value measured of ID group and IM group was 5.1990 and 5.2010 respectively.

DISCUSSION

Based on the results of the subjective evaluation, in terms of handling, the results obtained by ID and IM were similar. Both the groups received "excellent" ratings. The materials 'ID' and 'IM' were manipulated using the automated mixing device 'PENTAMIX – 2'. Both impressions were made using the one step single viscosity (Monophase) impression technique. The handling of impression materials using the automated mixing device was excellent as it provided a homogenous mix of the impression material and allowed a convenient mode of dispensing and loading the custom tray.

In terms of overall assessment of impression, ID was found to be superior than IM. 83.3% of impressions obtained from ID were rated excellent whereas only 58.3% of impressions obtained from IM were rated as excellent. However, the difference was not statistically significant. The number of defects (tears, voids, bubbles) were found to be more in impressions made from "IM.

In reference to the time required to make the impression, Vinylsiloxanether impressions (ID) set faster when compared to impressions made from Polyether (IM). The total setting time of ID was around 5 minutes and 30 seconds while total setting time of IM was approximately 6 minutes.

In terms of impression materials' hydrophilic properties, which were evaluated on the basis of number of voids, ID showed superior results than IM, though the results were not statistically significant. Hydrophilicity influences the accuracy of impressions and can result in an improved flow and finer detail of the impressions made in moist areas and areas of gingival sulcus.

Comparing the two groups on basis of their tear resistance upon removal from the mouth and tear resistance upon removal from the stone cast, the results were highly significant. ID showed superior results when compared to IM. Once an impression undergoes hardening, it must be strong enough to resist tearing during removal (tear resistance). IM proved to be stiffer (more rigid) compared to ID when removed from the mouth, especially in areas of undercuts resulting in more number of tears in those areas of the impression.

Also, ID allowed easy separation from the stone die without fracture of die model or tearing of the impression as it is less stiff when compared to IM. Hence, multiple pouring of impressions was possible with ID.

The test subjects perceived the taste of ID as rather positive, while IM received substantially more negative ratings. ID has virtually no odor or taste of its own while a few test subjects found the taste of IM to be slightly bitter. But the results were not statistically significant.

Based on the results of objective evaluation, the results were obtained from the measurements of the digital vernier calliper. Certain reference points were detected on the occlusal plane in order to obtain the measurements of the three axes X, Y and Z. This reference points were detected according to each clinical case separately, that is to say that each clinical case had its own reference points on the occlusal plane that differed from another case.

These measurements were to compare with the measurements performed on stone dies which have been resulted from impressions taken from the patient's mouth using two impression materials mentioned before. Objective evaluation shows no significant differences between the ID and IM at the three axis of dimension (x, y, z axis) when measured and compared intra orally and on the mounted stone casts. Vinyl siloxanether (ID) appears to be good alternative for Polyether in terms of transfer accuracy from oral to model situation with respect to dental implants.

CONCLUSION

Within the limitatons of this study , the following conclusions were drawn

1. On the basis of the subjective assessment of the two impression materials vinylsiloxanether showed superior ratings in terms of taste, tear resistance upon removal from the mouth and stone cast. However in terms of clinical handling , hydrophilic properties and total setting time, there was no statistical difference between vinylsiloxanether and polyether impression material
2. On the basis of objective evaluation of the two impression materials vinylsiloxanether appears to be a good alternative to polyether in terms of transfer accuracy from oral to model situation with respect to dental implants as there was no statistical differences between the measurements of the two groups.

Limitations

1. The maxillary and mandibular casts were mounted on a mean value articulator in a conventional manner in centric occlusion.
2. The sample size was smaller.

3.Closed tray implant impression technique was used.

Conflict of Interest: Nil

Source of Funding: Self

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Comparison of Serum Calcium Levels in Euthyroid, Subclinical and Overt Hypothyroid Women in the Tribal Belt of West Midnapore, West Bengal

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ABSTRACT

Background: Thyroid disease has wide spread manifestation on bone metabolism and serum calcium levels. There has been wide attention on thyrotoxicosis and calcium metabolism but less study has been done on subclinical and overt hypothyroidism and its effect on calcium level. Our study was done to assess calcium levels and compare it between euthyroid, subclinical and overt hypothyroidism.

Study Design: Prospective Cross-sectional study

Materials and Method: With prior consent, 300 women were selected, between 20 to 60 years of age, from the tribal belt of Midnapore districts who attended the medicine OPD of Midnapore Medical College over the period of six months. The serum calcium was measured by ion selective electrode method and was analyzed by chemical analyzer. Free T4 were estimated by equilibrium dialysis and TSH was estimated by immunoassay method.

Results: It was found that 48 women were found to have hypothyroidism, out of which 18 women were found to have overt hypothyroidism and 30 had subclinical hypothyroidism. FT4 levels showed positive correlation with serum calcium levels in Euthyroid, Subclinical and Overt Hypothyroid, but the correlation was significant only with free T4 levels in overt hypothyroidism. The comparison of values of freeT4, TSH and Calcium levels in subclinical and overt hypothyroid were highly significant.

Conclusion: This study shows that there exists a positive relationship between free T4 and serum calcium levels in overt hypothyroidism.

Keywords: *Serum Calcium, subclinical and overt hypothyroidism, tribal belt, women, Midnapore.*

INTRODUCTION

Thyroid disorders are the most common endocrine disorders with its prevalence being very high in India. Previous studies have showed that thyroid disorders affects calcium levels in blood, but no clear information has yet being obtained. Though conflicting reports have shown different calcium levels in Hyperthyroidism, very few studies have compared the calcium levels in Subclinical and Overt Hypothyroidism. A study had showed that hypothyroidism does not cause any abnormality in serum Calcium levels and was found to be associated with low trabecular resorption surface and increased bone cortical thickness[1]. Subclinical Hypothyroidism is biochemically diagnosed when there are high TSH levels while free T4 hormones are within normal limits. Although progression of subclinical to overt hypothyroidism is very high in prospective studies with 10 years of follow up period[2], ours was a onetime study diagnosing subclinical and overt hypothyroidism. Thyroid hormones are known to have its effect on

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normal growth of skeletal system including its effect on bone resorption [3], so its disorders definitely presume to affect calcium levels. This study was thus conducted to compare serum calcium in Euthyroid, Subclinical Hypothyroid and Overt Hypothyroid female patients and to show its relation with free T4 and TSH levels in these three groups.

MATERIALS AND METHOD

This study was conducted in Midnapore Medical College and Hospital over a period of 6 months from July to December 2017. The study constituted of 300 women who consented for the tests, from age group of 20 to 60 years, from the tribal belt of Midnapore districts who attended the medicine OPD of Midnapore Medical College. The inclusion criteria of selecting the study group were non-pregnant and non lactating females, not taking any medicine for thyroid disorders or taking any calcium supplements. They had no parathyroid or any renal dysfunction and were not taking any drugs that could affect their blood calcium levels. The participants were classified using the following definitions- *Overt Hypothyroid:* Serum – free thyroxine (FT4 <0.89ng/dl and thyroid stimulating hormone (TSH) >5.50 µU/ml, *Subclinical hypothyroidism*: Normal serum FT4and TSH> 5.50 µU/ml.

After 8 hours of fasting overnight, 3 ml of venous blood was drawn from both control i.e. euthyroid and cases .Full proof aseptic conditions were maintained. The serum was separated by centrifugation and was stored at -20° until estimation. The serum calcium was measured by ion selective electrode method and was analyzed by chemical analyzer. Free T4 were estimated by equilibrium dialysis and TSH was estimated by immunoassay method. Statistical analysis was performed with the help of Epi info (Tµ) 7.2.2.2. Descriptive statistical analysis was performed to calculate the mean and corresponding standard database. Pearson correlation coefficient was calculated to find correlation between two variables. P<.05 was taken to be statistically significant.

RESULTS

The mean age of the subjects was 41.46 ± 9.33 years and median age was 42 years. Free T4 levels showed positive correlation with serum calcium levels in Euthyroid, Subclinical and Overt Hypothyroid, but the correlation was significant only with free T4 levels in Overt hypothyroidism while all other values were not significant.

TSH levels in all the three groups showed negative correlation with serum calcium level but the values were not significant.

Table 1: Correlation of serum calcium with free T4 and TSH in Euthyroid, sub-clinical Hypothyroid and Overt Hypothyroid subjects

	Euthyroid		Subclinical Hypothyroid		Overt Hypothyroid	
	r	P	r	P	r	P
Free T4	0.016	.934	0.053	0.789	0.381	0.045
TSH	-0.157	.416	-0.303	0.116	0.147	0.455

(P<.05- Statistically significant), r = correlation coefficient.

Comparing the values of free T4,TSH and Calcium levels in subclinical and overt hypothyroid in the table below, it was found that all the values were highly significant.

Table 2: Inter-relation of FT4, TSH and Calcium levels in Subclinical and Overt Hypothyroidism

	Sublinical Hypothroid	Overt Hypothyroid	P Value
fT4	1.26±.21	.64±.15	<.001
TSH	8.12±3.01	14.99±4.92	<.001
Calcium	8.432±.87	7.93±.79	<.030

Calcium levels according to age of subjects showed no significant change.

DISCUSSION

Thyroid hormones have important actions on bone metabolism. (Dhanuka et al)[4], so its deficiency might have some role to play in levels of serum calcium. Serum calcium level has always been used as an index of bone resorption.(Rizzoli R)[5].In this study in both subclinical and overt hypothyroidism, calcium levels showed significant decrease P<.03.This decrease in calcium levels might be due to defective mobilization of calcium from bone. However comparing the correlation of thyroid hormones with calcium levels in individual groups we found free T4 to be significant with calcium levels only in overt hypothyroidism. This also supports the theory that thyroxine hormone is responsible for releasing calcium from bone cells and as it level in overt hypothyroidism decreases so the calcium level in serum also decreases. Though Al-Hakim[6] showed significant decrease in calcium levels in hypothyroid cases which is similar to our findings, there was significant decrease in calcium levels between subclinical and overt hypothyroidism also.TSH levels in the entire three groups showed negative correlation with the serum calcium level but the change was not significant in any of the group. This might be due to the prompt action of the parathormone action to normalize the calcium levels. Our findings were also in accordance with the study done by Hassan et al [7].

CONCLUSION

- This study shows that there exists a positive relationship between free T4 and serum calcium levels in overt hypothyroidism.
- Free T4 levels in overt hypothyroidism could be used as a marker for initiating calcium therapy in hypothyroidism.
- Although negative correlation exist between serum calcium and TSH levels in hypothyroidism, the decrease is not significant.
- There are some short fall of this studies like ionized serum calcium measurement would have been better index of measurement and bigger size of the population and prospective study with serial measurement of TSH levels would have given more accurate result as TSH is prone to change with pituitary adrenal axis function.

Ethical Clearance: Taken from Institutional Ethical Committee.

Source of Funding: Self

Conflict of Interest: Nil

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Role of Whistle Blowers in Health Care Industry: An Empirical Study

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ABSTRACT

This research paper is moving around malpractices reported in health care industry in 21st century, quantum of corruption has increased and especially people from the same organization found indulging. Although detection of such problems is difficult to control for the authorities in health care industry. Research question in this study is associated with the problems identified, until and unless on what extent it difficult to judge this concept or mere practice of Qui Tam or Whistle-blower in organisation. This is quite subjective and required more effort to explore motives behind the problems existing in health care industry. In this research paper we will try to analysis how the whistle-blower policy adopted by healthcare industry in India which are playing crucial role so for. This is a quantitative study where researchers used exploratory research design to analyse various factors required for whistleblowing.

Keywords: *Health-Care Industry, Whistle-blower, Malpractices, Policies, Governance*

INTRODUCTION

Continuing the case of Ranbaxy India, when whistle-blower exposed regarding compliance and quality issues in the company, it lost its major import which was barred from Food and Drug Administration, United States with fine of five hundred million dollars, in the recent times this whistle-blower wants is government to create a single regulator in the country. Question can be raise as to why big giants with large individual research centres around the globe and world-wide reach, have ample number of journals in their names but still is enough evidence that show that in developing countries many non-serious clinical trials are done by western researches without the consent by experiment host such as on us or patients who are not even informed, but it's through the journal that Qui Tam or Whistler-blower is able to prove that patient have no idea about it[1] .

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Now suppose a nurse in the hospital, it is believed that whistle-blower is the one who's voice to is protect and somewhat disclose malpractices and he may think that the patient interest should be protected in such a way that nurses of the health institutions should provide first hand protection from unethical practitioners , but there can also be non-whistle blowers who more likely to be a traditional thinker who considers nurses must firstly follow orders what doctors therefore up to great all the medical say therefore in India nursing is no such centralised regulation followed which more less control by bureaucrats and medical institutions having full control of demand of both skilled (professional or qualified)and unskilled (unregistered)[2].

In US, under Federal Whistle-Blower act which provides protection p ranging from staff members of hospital to other medical representative such as surgeons and physicians, some main reason why such type laws exist but not always having such laws will still won't guarantee success for instance most drugs only when approved by Food And Drug Administration are allowed to be sold in the U.S[3]..Market let's take a look at case Merck's Vioxx a painkiller which can in U.S. market 1999 ,initially a scientist named Nissen raised concerns that the drug can cause heart disease such as stroke

and attack, but when drug was rolled out in 2004, once again Food And Drug Administration Whistler-Blower proved that company had failed despite of several warnings, proves that Food and Drug Administration blindingly allows circulation of such type of drugs on basis of clerical tests and only when are adverse effects on billions of people arises them only action is taken[4].

Coming to India which nearly produces ten percent of world's medicines , each state has its own regulator for healthcare institutions which is more like a fractured system which makes monitoring practices each state difficult, past several years with Food and Drug Administrator, United States penalizing over on manufacturing lapses and fail quality standards has resulted in fall of sale of Indian generic medicines in the U.S. market and there only a whistle-blowers protection bill 20 11 which passed in 2014 was weak in the sense that it neither it penalizes the harassment on whistle-blower nor does it cover corruption in the private sectors, therefore no doubt there is no proper protection person who exposes[5].

REVIEW OF LITERATURE

There will always been a conflict of interest between surgeons, physicians and workers under the healthcare industry, with complex relationship is present, which result in biasness not to remove or simply eliminate arbitral practices. Further Consistent promotion of such type practices results in lack of collaboration between them which gives further raise of malpractices, but only brave enough people will use this opportunity to disclose them and become whistle blower therefore should be provide with some legal protection to blower until proper legal proceedings are done[6].

Many firms carry out internal investigations to find out any malpractices in the company, if it's true moreover discovered by employee of the organisation will be referred as whistle-blower, even true when such type of investigation is done independent government body[7].But in case of India 2011 whistle-blowers act, still impact of this whistler will take years is quite doubtful, surprisingly ninety-six per cent of Indian think corruption is holding the country backwards therefore such act is more of mixed thing. Only thing which is good about the act is that penalty which is imposed on disclosure of identity of whistle-blower up to prison for 3 years and fine of only fifty thousand rupees only[8].

Do investigations from individuals which are often referred as whistle-blower really tell corporate malpractices especially which are hidden in nature or are sources creditable enough to investigate, we know government do itself carry out investigation to check the same especially in allegation for, manufacturing of fake generic products and failure to maintain quality standards[9].

Reports on more whistle-blowing in U.S., suggest quality measures such type of practice is quite low which makes it difficult for observers to notice these practices, he/she may receive mass attention, but there is ignorance to measure greater risk of blower have to bear and higher cost for the organisation in case investigations done by U.K. health-care companies at times of external and internal audit. In U.K. companies follow more focus is given on conflict avoidance and unofficial form of resolution of disputes something like anonymous informal talks which are mostly presented in form of hotlines which it makes it easy to monitor internally. For individuals there are given protection, but there is no finical award for whistle-blower[10].

Many cases explain that fraud can be when health institution provides certain service to its patients but charges a higher price for the single set of services by issuing separate bills which is known as upcoming but when there is group of related services is billed in single bill is referred as unbounding. It is also seen that a hospital or the doctor given a finance bribes for prescribing medicines generally such practices are not allowed legally. On the other hand, we have frauds which off-label market this happen when medicines are made with any compliance of drug regulator of the country; it is these areas where whistle-blower says its problematic area to disclosure[11].

So, when to believe that whistle-blowers information first source can be internal reports when large of doctors or employers of the hospital establish a mechanism more of confidential type of reporting system where through easy channels within the internal environment of the organisation. Secondly proper handling of evidence such invoices, bills, agreements, payment information, etc. should take care which can be helpful for investigation against the offenders. Finally, one should always consult with legal law authorises, in such a way that it is confidential in the sense that name should not be disclosed, rather focus should to investigate irregularities in the companies[12].

We have seen cases were workers, who knows whatever goes on in the hospital in case of divulge wrong practices in the hospitals in U.S. get thirty percent of penalty fees paid by doctors on grounds of fraud by law. For instance, if normal bill collector earns ten dollars in an hour, if he is able to prove malpractices let's say two million dollar and able to prove in court of law he is legally entitled to get sixty thousand dollar relief as reward from government from fine received from healthcare institution[13].

Should there be proper protection been given to them, of course there can be dissent between one of best practice manage this issue, so once may say that system in which doctors do agree the medicines at times are not correctly manufactured the way they should be , generally public may even think twice about talking about whistler-blower especially at health-care institution but when there negligence form the institution people will always blame them and whether his right to ask for compensation, this could seriously raise the question, if the doctors knowingly aware of medicine are fake dose not wants disclose this patient this will raise high of fatality in the future[14].

Again, the argument arises with the increase on healthcare institutions, nearly everyone trying to reduce low maintains to be more competitive in the industry, and therefore many people may believe that whistle blower practice is getting worse[15].So ethics can play crucial role with age of digital era promoting virtue ethical practice for healthcare agency, passing and asking of order with proper conscience from main distributor via online portal, may give some hope for whistle-blower provide solid prof evidence yet very little legal support[16].

Many may face difficulties to comply with some in different situation at same time certain consensus can be done to overcome resolution of situations. Understanding human being in sense of morally accepted practices both professional and personal setting is the source to understand relationship nature of different individual. Keeping this in mind ethics for nurses to protect and integrity is critical important to judge the owners of institutions to make standards in accordance something is morally right for them in this every changing ecological change in the minds of owners to support trust in order to build social acceptance[17].

The concept of the human factor become more important in today's healthcare delivery systems where the usage of the technology devices has increased the patient safety and better patient outcome but this has led to the system related errors and human errors[18].

RESEARCH METHODOLOGY

Study was conducted within major private and public hospitals within the territory of NCR, Delhi, hence primary data was collected in the form of structured questionnaire with few question based on rating scale. So, study itself is exploratory in nature where different parameters of whist blower practises in supportive with malpractices and standard of services is covered. Respondents were selected subject to their availability and a pilot survey was done in major hospitals of private and government hospitals of Delhi NCR.

TOOLS FOR DATA ANALYSIS

Research has covered wide range of problems existing the field of whist blower practises in health care institutions, so comparison of means is helpful to understand for our analysis, hence hypothesis testing is done in order to check as to population means are equal to two sample means in case of assumed variance of two means are equal hence T-test is framed for further analysis

Hence basis of two sample t-test are follows

Ha: $\mu = \mu a$ (in words: the population mean is equal to the hypothesized value μa).

Hb: $\mu \neq \mu a$ (the population means is not equal to μa).

Here, μ is the population means from the sample selected, μa is the hypothesized value of the mean.

OBJECTIVES OF THE STUDY

- To explore the role of whistle blowers in Indian health care industry.
- To analyse the impact of whistle blowing in prevention of medical mall practices.

Moreover, over this study has been concluded with the help of structured questionnaire in which researcher prepared set of questions which include dichotomous and Likert based question for the responses. Respondents were enjoyed the level of questions and respond like anything. We had overall 400 responds, were we selected 300 questionnaires randomly and data analysis has been done based responses of 300 respondents.

Hypothesis Formulation for the study

Hypothesis 1: Medical malpractices may have prevented with the help of whistle blowing policies in India.

H0: There are no significant relationships between whistle blowing and medical malpractices in health care industry.

H1: There are significant relationships between whistle blowing and medical malpractices in health care industry.

Table 1: Paired Sample Correlation

	N	Correlation	Sig.
Pair 1 Whistle Blower & medical Practices	300	.065	.102

Table 2: Paired Sample Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Whistle Blower & medical Practices	2.1043	300	0.91799	.04332

Table 3: Paired Samples Correlations Paired Samples Test

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			

Since proposed hypothesis is to study medical malpractices may have prevented with the help of whistle blowing policies within the institution are required for ensuring patient safety in the healthcare systems, since the p value is 0.008 is less than the standard value of 0.05 hence null hypothesis will be rejected

Hypothesis 2: Whistle blowing impact plays an important role in health care industry.

H0: There are no significant relationship between whistle blowing and standard of services in health care industry.

H1: There are significant relationship between whistle blowing and standard of services in health care industry.

Table 4: Paired Samples Correlations

	N	Correlation	Sig.
Pair 2 Whistle blower & standard of services	300	.17	.601

Table 5: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 2	whistle blower	1.1031	300	.30472	.01460
	standard of services	1.1427	300	.36008	.01722

Table 6: Paired Samples Correlations Paired Samples Test

	Paired Differences					t	Df.	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Differences				
				Lower	Upper			
Paire 2 whistle blowers–standard of services	-.0482	.47589	.02294	-.09231	-.00341	-2.109	299	.032

While testing the second hypothesis we got the p value is .032 which is less than standard p value of .05, hence we will reject the null hypothesis, thus statistical there is significantly relationship between whistle blower and standard of practices in Indian hospitals.

RESULT AND CONCLUSION

Malpractices indeed resulting of bad clinical practice and bad outcome/unsafe care are the double-edged sword which kills the patient safety increasing therefore results. Even though Hypothesis proposed in this study Medical malpractices[19] may have prevented with the help of whistle blowing policies in India. In this hypothesis the calculated value of the p is 0.008 which is less than the standard value (alpha: 0.05). So, in this hypothesis researcher reject to accept null hypothesis.

Standard of services utilizes their skill set, knowledge, competence, hospital system and technology in treating the patient. Patient safety and patient recovery fully depend upon the nurses and staff, while depend upon the available tools and technology within the hospital. In the testing of second hypothesis calculated value of p is 0.035 which is less than the table value which known as the standard value 0.050. Here once again researcher is failing to accept the null hypothesis. Thus, it has come out after the analysis that there is significance relationship between whistle blower will improve standard of services in India hospitals.

Limitation of the study: Analysis of health care industry is slightly crucial than other industries. Since whistleblowing is a new terminology in India so literature is not available in prompt. Such crucial services are the fort ray of new word which define by many parameters and analysed based on dependent variables including health care industry and legal frameworks. Apart from that several other political and economic issues are least contemporise for this study. Whistle blowing concept is merely used in corporate governance but sometimes it has been observed that on few places, medical sciences related research are using this concepts in their studies.

Conflict of Interest: We authors hereby declare that there are no conflicts of interest in this work.

Source of Funding: There are no sources of funding in this work.

Ethical Clearance: No ethical issues has been reported so for.

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Management of Talons Cusp in a Primary Maxillary Central Incisor: A Rare Case Report

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ABSTRACT

Talon cusp is a rare dental anomaly that manifest's as an accessory cusp like structure most commonly seen on the crown of the anterior teeth. This report describes the conservative management of a tooth with a Talon cusp with pulp extension. A 5-year-old female reported to our department with the chief complain of decayed teeth. On examination Talon cusp was noticed on the palatal aspect of 51. Caries excavation followed by restoration and fluoride varnish was applied. Cusp reduction was done to avoid occlusal interference. Depending on the type of Talon cusp a proper diagnosis and treatment plan needs to be formulated. Treating a tooth with talon does not always require endodontic management and can be treated conservatively. Clinical significance: Early diagnosis of this anomaly and management of the same by the clinician will help prevent further complications.

Keywords: *Deciduous tooth, Talon, Central incisor, Management*

INTRODUCTION

Talon cusp is an accessory cusp-like structure which projects from the lingual surface of a primary or permanent anterior tooth and extends at least half the distance from the cementoenamel junction to the incisal edge[1]. It was first described by Mitchell in 1892 as a horn-like process seen on the lingual surface of a maxillary left central incisor, which thereafter was termed as a "Talon Cusp" by Mellor and Ripa[2]. Henderson in 1977 reported the first case of a talon cusp in a 4-year-old Filipino girl which was seen on the deciduous maxillary central incisor[3]. It is thought to be due to the outfolding of the enamel organ or hyper-productivity of the dental lamina which arises during the morpho-differentiation stage of tooth development[4,5].

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Talon cusp are three times more prevalent in permanent dentition and rarely found in primary dentition and shows a higher incidence in males when compared to females with a ratio of 16:9[5]. The most commonly affected teeth with Talon cusp are the maxillary central incisor in the primary dentition and the maxillary lateral incisor in the permanent dentition[5]. The present case report describes the clinical management of a talon cusp with caries involvement in a primary maxillary right central incisor.

CASE REPORT

A 5-year-old female reported to our Department of Paedodontics and Preventive Dentistry with the chief complaint of decayed teeth and food lodgement in the upper front and back teeth. No history of pain and swelling with no relevant medical history was reported. On intraoral examination, Class I caries in 55, Class II caries in 54, 64, 74 and 84, Class III caries in 52, 61, 71 and 81 and Class V caries was seen in 53, 73 and 83. The maxillary right deciduous central incisor had a Class IV carious lesion involving the enamel and dentin. On the palatal aspect of the same tooth an anomalous structure was noticed. The anomalous structure exhibited an

enamel projection, conical in shape, projecting from the cemento-enamel junction and extended till the middle third of the crown (Figure 1a, b,c). An intraoral periapical radiograph revealed a V-shaped cusp-like structure with a pulpal extension within it (Figure 2). Based on its characteristic features and radiographic finding, diagnosis of talon cusp was made.

Figure 1a: Frontal view showing Class IV caries in 51, 1b: Proximal view of 51 with caries involving enamel and dentin, 1c- Occlusal view showing class I Talon's cusp on the palatal aspect of 51

Figure 2: Intraoral periapical radiograph of 51 with talon cusp

Caries along the walls was excavated in 51under local anaesthesia using round diamond bur. A sharp spoon excavator was used to excavate the soft caries along the axial wall till a hard base was felt. Remaining dentin thickness was approximately 1 mm, so Dycal was placed followed by composite restoration (Figure 3a). Gradual reduction of the Talon's cusp was done followed by application of Fluoride varnish, and instructions were given to the patient to maintain good oral hygiene (Figure 3b).

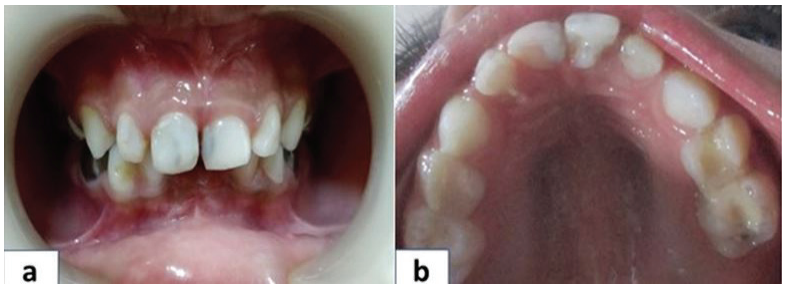

Figure 3 a: Frontal view of 51, 61 post treatment Figure 3 b: Occlusal view of the Talon's cusp after gradual reduction of the cusp

Gradual reduction of the Talon cusp was done, using a water- cooled diamond bur in a high- speed handpiece. This reduction was done on consecutive visits at an interval of 8- weeks, to allow deposition of reparative dentin[6]. Fluoride varnish was used as a desensitizing agent onto the exposed surface following each grinding procedure and the patient was recalled after 3 months for review.

DISCUSSION

Talon cusp is an accessory, cusp-like structure that varies in size, which ranges from an enlarged cingulum to a well-delineated anomalous cusp and extends to at least half of the crown height, usually occurring on the occlusal or lingual surfaces[7,8]. The aetiology of this condition is unknown however it is believed to be a combination of both genetic and environmental factors, occuring during the morphodifferentition stage of tooth development. It was suggested by Hattab et al. that this might occur due to the out- folding of the enamel organ or hyperproductivity of the dental lamina[5]. Sicher and Bhasker suggested that any disturbance during the morphodifferentition stage may affect the size and shape of the tooth without impairing the function of the odontoblasts or ameloblasts[9]. Hattab et al[5] classified Talon's cusp based on the degree of formation and extension as **Type 1 (Talon)-** A well-delineated projection from the palatal surface of a permanent or primary anterior tooth, extending at least half the distance from the cementoenamel junction to the incisal edge, **Type 2 (Semi Talon)-** Additional cusp of a millimetre or more, the extent of which is less than half the distance from the cementoenamel junction to the incisal edge. This additional cusp may blend with the palatal surface or stand away from the rest of the crown, **Type 3 (Trace Talon)**- A prominent or an enlarged cingulum and may vary in shape i.e. conical, bifid, tubercle like. Henderson in 1977 first reported the presence of a talon cusp in a 4-year-old Filipino girl present on the deciduous maxillary central incisor[3]. In 2006 Batra P et al. reported the presence of a Talon cusp in two non-syndromic cleft lip and palate cases on the facial aspect of primary lateral incisors[10] and Siraci et al. reported a case of both facial and a palatal talon present on a supernumerary tooth in a 3.5-year-old boy with cleft lip and palate[11]. The management of this rare anomaly varies depending on its individual presentation and complications if any.

Treatment of a Talon cusp may not be always necessary especially when it does not cause any clinical problems[12]. Maia RA in 2015 reported a case of a Type I Talon's cusp in 11 and 21 in an 8-year-old. These teeth were extracted as it caused occlusal interference and was Grade I mobile[13]. Gupta R in 2013 reported a case in a 9-year-old child where there was labial tipping of the maxillary right permanent central incisor and the talon cusp was interfering during chewing as mandibular right central incisor was striking against it. The Talon's cusp was grounded to disocclude it followed by application of Flucal Solute[14].

Talon cusp when present may cause compromised aesthetics, problems in the periodontium, soft tissue irritation during mastication, interference in occlusion, trauma to the tongue and lips. The presence of the deep grooves that join the cusp and the tooth, act as stagnation areas for debris and plaque, and if oral hygiene is not maintained, these areas may become carious and subsequently lead to periapical pathology. In our case report there was an existing carious lesion involving the Talon's cusp. Utmost care was taken during caries excavation to avoid pulp exposure, as radiograph revealed the presence of pulp horn extending into the talon cusp. Following restoration of the tooth the bulk of the cusp was reduced gradually to prevent any occlusal interference following which fluoride varnish was applied to reduce post-operative sensitivity and stimulate reparative dentin formation.

CONCLUSION

Early recognition and diagnosis of dental anomaly is important so that intervention can be done at an initial stage itself. The treatment objectives for a tooth with Talon cusp differs depending upon the presentation and complications in each case. However, a large and a prominent talon cusp, as in this case will require definitive treatment in order to overcome the problems related to esthetics, occlusion, periodontium and carious involvement.

Conflict of Interest: Authors have no conflict of interest.

Source of Funding: Self-funded.

Ethical Clearance: The present case report has been approved by institutional ethics committee.

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Two Way Analysis of GST : With Reference to Healthcare and Pharma Sector

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ABSTRACT

The day has become historic on which GST bill was passed, as it is one of the major step taken by the Indian Government since the independence of the country. It will be the drastic change for the pharma and healthcare industry, which just touched the bar of $70 Billion from 2012. Earlier with 17 federal and state taxes, this sector will be replaced with one uniform tax. When we see the positive side of the bill, it has just turned the tax paying process into efficient one. According to the expert's impact of GST on Healthcare and Pharma Sector has both pros and cons in the industry.

Keywords: *Tax, GST, Healthcare, Pharma, Economy.*

INTRODUCTION

Goods & Services Tax Law in India is a comprehensive, multi-stage, destination-based tax that is drafted on every value addition. In simple words, Goods and Service Tax (GST) is an indirect tax which makes the tax paying process efficient and that is drafted on the supply of every goods and services. This law has altered many indirect tax laws that existed previously in India. GST is one indirect tax for the entire country. Under the GST regime, the tax will be levied at every point of sale. There are 3 taxes applicable under this system: CGST (Central GST), SGST (State GST) & IGST (Integrated GST).

This indirect tax system under GST improve the collection of taxes as well as boost the development of Indian economy by removing the indirect tax barriers between states and integrating the country through a uniform tax rate.

The healthcare industry is one of the world's largest and fastest-growing industries. Consuming over 10 % of gross domestic product (GDP) of most developed nations, health care can form an enormous part of a country's economy.

As the GST arrived in, all the healthcare and pharma companies have to invest more in cost of manufacturing as raw material cost has goes up by 7% and hence product MRP need to be changed to absorb that impact. While speaking about the overall impact of GST to end consumer, as manufacturing cost is between 10-15% of product MRP, the GST impact to the end consumer is less than 1% by cutting C&F cost, yet paying higher GST on finished product, the total net impact resulting to almost 4% to the end consumer. Thus in the coming days we can expect MRP on medicines revised by 5%, as pharmaceutical companies decide to pass the complete burden to the end consumer. Government has taken steps in ensuring drug price controlled medicines and also capping MRPs of certain salts/compounds, resulting in a loss of 2-3% by pharmaceutical manufacturers and marketing companies losing.

OBJECTIVES

- To evaluate the advantages and challenges of GST in Healthcare and Pharma Sector
- To finish information for further research work on GST in Healthcare and Pharma Sector

RESEARCH METHODOLGY

Being an explanatory research it is based on secondary data of journals, articles, newspapers and magazines. Considering the objectives of study descriptive type research design is adopted to have more accuracy and rigorous analysis of research study.

Effects of GST in Healthcare and Pharma Sector: These research-directed pharma companies can affect a country's economy by developing innovative therapies

that replace conventional and less effective. The largest portion of funds allocated to healthcare sector continues to be devoted to the advancing pharmaceutical sector. Thus, the implementation of GST would be having a great impact on pharmaceutical sector as compared to the other sectors.

Medicinal services and pharma benefits by a clinical institution, an affirmed restorative specialist or paramedics are freed administrations given by method for transportation of a patient in a rescue vehicle when attemptedtore-establishortorecreatecytologyorelements of body influenced because of inborn imperfections, formative irregularities, damage or injury are likewise freed. GST has now opened life-sparing medications for Diabetes, Malaria, TB, HIV-AIDS necessarily under the 5% section, while classifying definitions into the 12 % piece (up from nine percent). 18% chunk of GST will be charged for furniture of healing centres and facilities, for example, beds, dental practitioner's seat and surgical table and so forth. Diagnostics has been placed in 18% and 12% assessment sections; it was 16% preceding GST. Under the administration of GST a few prescriptions have turned out to be more costly, the expense of MRI (Magnetic reverberation imaging) and X-beams may increment imperceptibly. Additional income is created for Healthcare industry by restorative the travel industry; it has developed from $334 million out of 2004 to $2 billion this year. With the landing of GST, restorative the travel industry is additionally anticipated to develop complex because of freedom. Under the new GST administration the redistributed administrations, feel and outpatient drug stores are liable to GST inconvenience. The expansion in assessment on most completed medication definitions is just 1.8 %, and organizations are probably going to retain the extra weight. Presently, 5 percent of the nation's GDP is used on the Healthcare part [1].

GST is required to be advantageous for pharmaceuticals on account of following reasons: From the buyers point, the cost of the meds will fall as 8 diverse charges will be subsumed into one under GST. CST will be ceased which will be a noteworthy favourable position as it will prompt decrease in the exchange cost.

The present indirect tax system in India is a multistage taxation, which impose taxes not only at the central level but also at the state level. Central excise is imposed on manufacture, Customs duty on imports, service tax on provision of services and central sales tax (CST)/ value-added tax (VAT) at the time of sale. Other taxes which include entry tax, octroy and cess are also levied by the local and municipal authorities. It is not possible to credit CST against VAT, service tax against CST/VAT. In GST, significant increase in cost of taxes has been registered as the taxpayer has to file several returns every month with distinct authorities.

The government is charging 12 percent GST rates on Platelet Carry Bag. HB Kit being charged 18 percent GST rates, earlier it was 5.5 percent. 18 percent GST Rates being levied on Glass slide, earlier it was 14 percent. Test Tab being charged 18 percent GST rates, earlier it was 14.5 percent.12 percent GST being levying on tracer tape, earlier it was 5.5 percent. Banded being charged 12 percent tax rates under GST, earlier it was 5.5 percent. In GST, all businesses, manufacturers and traders with an annual turnover of more than twenty lakh will pay tax. But there will be enough procedural and legal wrangles between tax payers and the governments that collect the tax, increasing the burden on courts and increasing the work, and income, of at least two professions: chartered accountants and lawyers. Absolute tax revenues will increase in the country. How such increased revenues are used for people's welfare depends on the governments[2].

Many Ayurvedic products are falling in the slab of 12% to 15% as many of the ayurvedic products falling under cosmetic range. GST is said to increase the indirect tax paid by pharma companies by 60 %and MRP by 4 percent. Thus, leaving a Tax rate of 15% which is said to be 18% for diagnostics and reagents. Other pharma drugs, medicines, Pharma products, and medical technology products are ranged between 5% or 12% with mostly being a total tax (including VAT) of 11.5 to 12.5 percent to 18%.

Major Concerns of GST in healthcare and pharma sector: There is an uncertainty if the life-saving drugs, Healthcare services, and medical devices would continue to be tax-free once GST comes into force. Till now, life-saving drugs are exempted from the Excise and Customs Duties. Some of the States charge 5 percent taxes on the medicines; it might change once GST comes to play. The Government must continue the duty and tax incentives which are in place already. As the Goods and Services Tax is applicable on all the stages of the supply chain, it is still unclear how this would influence the bonus schemes, free drug samples and the inter-state movement of the expired products or the stock transfers[3].

One of the major query for the healthcare sector is the inverted duty structure that majorly effects the native manufacturers. The cost of inputs is much more than output, i.e., the raw materials are more expensive in terms of duty than the finished product itself hence poor investments from the manufacturers. For addressing this issue, the GST structure proposes either to dispose of the inverted duty structure or bring in a refund of the accrued credit. If this is implemented, it would prove to be the biggest advantage for the healthcare sector and would be a booster for the development of healthcare industry.

Impact on Various Healthcare Products: Health-care is being spent on with 5.5% of India's GDP – in which the private division contributes to almost 4.3%. The Ministry of Health is focused on the development of 50 new innovations before the current year's over to treat ailments, like cancer and tuberculosis. To get more foreign direct investment (FDI), the Government did raise the FDI top for brown-field Pharmaceutical investments to 72% in July. Perhaps, past 74% under government endorsement in brown-field Pharmaceutical investments a100% FDI is allowed in Greenfield Pharmaceutical investments [4].

Seventeen items are there in the depreciating list in the present state in which there is no service tax levied on the items. Including approximately 60 services similar to pilgrimage, health-care, education and skill development, journalistic activities which are relieve from the service tax duty and are not bound to the sudden taxation.

Two main key points in relation to the pharma industry have changed. First is the price of manufacturing, as a matter of fact many raw materials for medicines have been renewed to the 12% GST bracket from the 5% VAT bracket. Secondly, many medicinal salts and compounds have been totally moved to 12% GST rate from 5% VAT on pharma industry. Additionally, a number of health supplements that were earlier in the 12% to 15.5% tax bracket are now in the 18% to 28% GST bracket. The net total effect of all these changes has led to a significant increase in the cost of medicines [5].

Table 1: The GST rates have included numerous categories from the wide range of healthcare amenities

Tax Rate	Healthcare Commodities
0%	Contraceptives, Human Blood
5%	Medicines, Animal or Human Blood Vaccines
12%	Ayurvedic Medicines, Medicinal Grade Hydrogen Peroxide, Anaesthetics, Potassium Iodate, Iodine, Steam, Glands And Other Organs For Organo-Therapeutic Uses, Ayurvedic, Unani, Homoeopathic Siddha Or Biochemical Systems Medicaments, Sterile Suture
18%	Tampons, Disinfectants

The health-care industry is being struck by the GST tax rates and many other rules and regulations. But the goods and services tax has formed a lethal situation for the normal person who has come under the monstrous fate. As the tax charges are moved up to a thick number. It seems that the GST has led to the change more in a negative way than a positive one. It has led to the hike of cost for various medical equipment which are required for day-to-day life.

Table 2: List of expensive category items

Items	Pre-GST	Post-GST
Surgical Item	5.5%	12%
Wing Scale	5%	28%
HOTWATER BAG	5.5%	28%
WHEEL CHAIR	5%	18%

GST is relied upon to positively impact the Pharmaceutical part. It will help the business by streamlining the tax structure since 8 different taxes are implied in the Pharmaceutical Industry currently. A unification of all these into one tax would led to a unified work as mitigate the falling effects of numerous taxes connected to one item. Aside from this, GST will likewise bring about yielding proficiency by streamlining the store network which can alone add 2% to India's Pharmaceutical market measure. Since GST will help Pharmaceutical companies rationalize their production network, they should audit their circulation systems and technique[6].

Table 3: Revised hospital room rent with GST tax slabs

Hospital Room Rent	Applicable Gst Rates
Below ₹10000	0%
₹1000 to ₹2499	12%
₹2500 to ₹7499	18%
Above ₹7500	28%

Table 4: The general rate of medicines etc., inter alia is covered under the following classification

Item Description	CGST	SGST	IGST
Drugs or medicines including their salts and esters & diagnostic test kits.	2.5% or 6%	2.5% or 6%	5% or 12%
Dutiable drugs and medicines (imported by post or air) including their salts and esters and diagnostic test kits specified in list 1, given at chapter 30, and Formulations specified in list 2 given in chapter 30, intended for personal use.	2.5%	2.5%	5%
Other Dutiable drugs and medicines intended for personal use.	6%	6%	12%

The Government has also taxed implants such as artificial limbs which is a necessary and integral part of health care services in relation to loss of limbs. Such artificial limb is recommended as a post health care to restore life or to at least provide a workable living means so that one is not left to miseries.

From the viewpoint of wholesalers and retailers, the earning margins may not drop immediately, and supplies will be stabilised soon. The bigger concern will be the inventory held by them, on which the new GST rates will apply, although these goods were bought at the older VAT rates. In this case, the distributors and retailers will lose about 3% to 4% on their entire inventory [7].

MEDICAL TOURISM

By January 2016, the medical tourism sector of India was thought of to have a value of US 3 billion dollars. It was projected to grow to $7.5-$8.5 billion by the year twenty-twenty. Numerous studies have indicated that the cost of healthcare services in India along with the travelling and housing costs is around 25% to 35% less than similar medical procedures in developed countries such as the US, Canada, Australia and most Western European countries. The advancement in the Healthcare Industry has resulted in increased profitability and development of medical tourism.

With the arrival of GST, Medical Tourism has grown manifold. Also, the formation of National Medical Tourism Board has initiated their policies for solving the issues which are faced by the medical travelers. The Board under the Ministry of Tourism would go a long way to solve the challenges in coordination across different ministries. With the roll out of GST, the cost of insurance, pharmaceuticals, and international travel together with quality health care is expected to reduce which would culminate into better prospects of medical tourism in the country.

ST will also help our Medical Tourism industry in an indirect way. India has benefit over the developed countries as the same medical procedures here as of just 30-40% cost as they are in the developed countries. With GST, the cost of healthcare package including insurance, pharmaceuticals, and international travel is expected to reduce which would culminate into better prospects of medical tourism in the country [8].

Currently, there exists an inverted duty structure in this sector. It adversely affects the domestic manufacturers as this means the raw materials are costlier in terms of duty than finished products. Under GST, either disposal of this structure or bringing in a refund of the accrued credit is proposed. This would prove to be a huge benefit for pharmaceutical sector.

Ayurveda, Unani, Acupuncture, Siddha, Yoga, Homeopathy are the alternative medicine practices which are native to India and famous among the foreigners. GST has led to the development of the medical tourism and also increased the importance and reachability of these alternate medicinal practices [9].

CONCLUSION

GST is expected to have a developing effect on the Healthcare Industry specially the pharma sector. It will streamline the taxation structure of our country since about 8 different types of tax are of imposed as of now. the merging of all taxes into one would lead to simplification of the whole process as well it would lead to minimization of the depreciating effect that is applied to one product.

The impact of GST on the pharmaceutical industry is still not very transparent. But both end consumers and industry players hope this to culminate in a win-win situation. With reduced complexities and overall reduction in cost this translates to be a profitability and promising development.

The Industry believe that after implementation of the GST, on the customers and the industry players are in a win-win situation. The healthcare industry has benefitted from the GST as it has led to simplified taxation structure and removed the elements which led to hindrance of the growth of this industry. Development and profitability have both carved their way through GST in the Healthcare Industry.

Conflict of Interest: The authors declare that there is no conflict of interest in the present work.

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Comparison of Serological Tests in the Diagnosis of Leptospirosis in a Tertiary Care Hospital at Chidambaram, Tamilnadu, India

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ABSTRACT

Background: Leptospirosis a zoonotic disease of the tropics is under reported mainly due to its protean clinical manifestation and ambiguity of several serological tests available. The current study was designed to find out the incidence of leptospirosis in and around Chidambaram and to compare the three different serological tests used in the diagnosis of leptospirosis.

Methodology: A total 1356 individuals were enrolled for this study. They weredivided into 2 categories based on the clinical manifestation i.e., Category A included group I icteric patients (n= 112), Group II non-icteric patients (n=156) and Category B includes Patients with other clinical manifestations (n=988) and 100 health controls were also enrolled for this study. Serum samples were collected from all the patients enrolled for this study and analyzed using three serological tests MAT, MSAT and DOT assay.

Results: A total of 196 cases were positive either by MAT/ MSAT/ DOT Assay. In icteric cases MAT showed highest positivity with 53.57 % ,followed by MSAT with 49.10 % and DOT Assay 47.32 % . In non-icteric cases MSAT showed the highest positivity with 96.15 % followed by MAT with 80.76 % and DOT Assay with 62.82 % . Among the Category B positivity by MAT was the highest with 0.56 % lowest shared with MSAT and DOT Assay with 0. 40 %. In controls of 100 healthy individuals 3 were positive by MAT and DOT Assay whereas only 2 were positive by MSAT.

Conclusion: Our study concludes that MSAT and Dot assay can be performed for the diagnosis of Leptospirosis and can useful to the clinician especially in resource limited settings. The incidence of Leptospirosis in our setting was found to higher hence there is need for implementation of quicker diagnostic methods for leptospirosis.

Keywords: *Icteric Leptospirosis, serodiagnosis, MAT, MSAT, DOT assay*

INTRODUCTION

Leptospirosis, an endemic zoonotic disease of the tropics affects nearly 5,00,000 cases annually with upto 70 % case fatality in different cohorts[1,2] . The clinical manifestation of the disease varies from a simple febrile illness to a potentially fatal illness characterized by acute kidney injury, liver damage, pulmonary hemorrhage, bleeding, and cardiac involvement. In most clinical settings, due to limited availability of specific diagnostic tests, treating physicians often rely on clinical features

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to make a probable diagnosis of the leptospirosis[3]. In the past two decades, clinical cases have been increasingly reported and repeated direct and indirect exposure to leptospira has been noted[4] . In most areas the incidence of leptospirosis is under reported mainly due to its protean clinical manifestations and due to ambiguity of several serological tests available[5] . Isolation of leptospira from clinical samples has low diagnostic sensitivity and takes too long to be of use to the clinician[6]. PCR , immunostaining and histochemical techniques used for detection of leptospira antigens are currently unsuitable for routine laboratory use due to technical limitations, high cost and low sensitivity[7]. Microscopic Agglutination Test (MAT) is considered to be the reference test that detects both IgG and IgM antibodies against leptospira[8] . However the test requires high level of technical expertise and maintainance of large panel of pathogenic live leptospira. Macroscopic Slide Agglutination Test (MSAT) has been found to be as sensitive as MAT[9] . The sensitivity of this test is increased by adding local serovars. Few studies has reported DOT ELISA as having high specificity and sensitivity , easier to perform and giving quick results. When compared to MAT facilities to perform this test are widely available at reasonable cost in many laboratories in tropical countries[10]. The current study was planned to find out the incidence of leptospirosis in and around Chidambaram and to compare the three different serological test in thediagnosis of leptospirosiswith their possible outcome of specificity and sensitivity.

MATERIALS AND METHOD

The study was conducted on patients with fever and clinically suspected cases of leptospirosis attending the outpatient and inpatient department of medicine, in Rajah Muthiah Medical College and Hospital for the period of two years. A total of 1356 individuals were enrolled in this study which comprise of 1256 clinically suspected cases and 100 normal healthy controls. In all patients, detailed h/o of illness was taken to through clinical examination. Clinically the patients were categorized into category A and B of suspected leptospirosis cases. Category A comprised of acute cases (symptoms <15 days duration) and further divided into group I of icteric type and group II of of anicteric type. Category B had patients of headache / chronic fever / arthritis / joint pain of longer duration of more than 15 days to 2 months. Serum sample was collected from all the patients included in the study and analysed by MAT , MSAT and DOT assay.MAT was performed from all serum samples using genus specific MAT (Leptospira biflexa serovar patoc-I strain) following standard procedure. Titres greater than or equals to 1:200 weretaken as Positive. MSAT was performed following standard procedure using the pooled antigen containing local serovars belonging to Patoc, Ictrohaemorrhagiae, Hebdomadis, Australis, Autumnalis , Louisiana &Pomona. DOT Assay was performed by using SD BIOLINE LEPTOSPIRA Test kit following kit procedure and the results were interpreted according to manufacturer's instructions.

RESULTS

A total of 1356 subjects were enrolled in this study which includes 1256 patients clinically suspected with leptospirosis and 100 healthy controls (Table 1).

Table 1: Study Subjects enrolled for the study

S. No.	Group	Number
1.	Patients Group (Clinically suspected with Leptospirosis)	1256
2.	Controls	100
3.	Total	1356

The 1256 patients clinically suspected with Leptospirosis were further categorized in to Category A comprising Icteric patients and Anicteric patients which was to the tune of 8.9% and 12.4% respectively. The category B includes 78.7% clinically leptospirosis suspected cases with clinical manifestations for longer duration (Table No.2).

Table 2: Categorization of cases suspected with Leptospirosis based on symptoms

Category	CLINICAL GROUPS (Suspected with Leptospirosis)	Number of cases (%)
Category A	Group I–ICTERIC cases	112 (8.9%)
	Group II–ANICTERIC cases	156 (12.4%)
Category B	Patients with clinical manifestations for long duration	988 (78.7%)
Total		1256 (100%)

From Table 3 below, we can see that out of 1256 clinically suspected cases a total of 191 (15.2%) cases were positive by MAT , whereas 159 (12.6%) were positive by MSAT and nearly 155 (12.3%) were positive by DOT assay. Among the control group 3 subjects showed positive by MAT and Dot assay whereas only 2 subjects were positive by MSAT. In the group II, MSAT showed highest positivity rate compared to MAT and Dot assay. Whereas among the icteric group MAT revealed highest Positivity compared to MSAT and Dot assay. In category B patients similar positivity was obtained using MSAT and Dot assay whereas MAT revealed a slight higher positivity rate. Among the control group MAT and DOT assay revealed similar positivity rate whereas by From MSAT the positivity rate was slight lower (Table No.3).

Table No.4 it is evident that a total of 196 cases were positive either by MAT/MSAT /DOT assay in which Majority of cases presented with fever followed by cases of myalgia and headache. (Table No 4). In the present study 8 positive cases were also HIV +ve and 9 cases were also HBsAg +ve Associated cormorbidities such as acute renal failure was found in 9 positive cases, arthritis among 9 patients, Meningitis in 9 cases and Myocarditis in nearly 8 positive cases (Table No.4).

Table 3: Comparison of MAT, MSAT & DOT assay results with patient group & control group

Patients groups		Total No. of cases	MAT Positive (%)	MSAT Positive (%)	DOT Assay Positive (%)
Category-A	Group-I	112	60(53.57%)	55(49.10%)	53(47.32%)
	Group-II	156	126(80.76%)	150(96.15%)	98(62.82%)
Category-B		988	5(0.56%)	4(0.40%)	4(0.40%)
Control group		100	3	2	3

Table4: Comparison of MAT, MSAT and DOT assay positivity with Clinical symptoms and associated co-morbidities presented by cases clinically suspected with Leptospirosis

S. No.	Symptoms and associated comorbidities	No. of cases Positive by either MAT /MSAT /DOT assay
1.	Fever	57(29.08%)
2.	Fever and Jaundice	22(11.22%)
3.	Myalgia and Headache	26(13.26%)
4.	Joint pain	15(7.65%)
5.	Nausea and Vomiting	24(12.24%)
6.	Acute Renal Failure	9(4.59%)
7.	Arthritis	9(4.59%)
8.	Meningitis	9(4.59%)
9.	HbsAg +ve	9(4.59%)
10.	HIV +ve	8(4.08%)
11.	Myocarditis	8(%)
Total		196

DISCUSSION

A longitudinal institution bound description study was performed to find out the incidence of n leptospirosis in and around Chidambaram and an attempt was made to compare 3 serological methods MAT, MSAT and DOT assay in the diagnosis of leptospirosis among the clinically suspected cases. In this study the clinically suspected cases were categorised into icteric , an-icteric and patients with other clinical manifestations . The incidence of icteric type in the present study was 128 which turned out to be 8.9% were as non icteric was 156 cases 12.4% In this study nearly 988 (78.7%) cases presented with other clinical manifestations such as chronic joint pain, myalgia, unexplained fever. In the present study a total of 196 cases were positive either by MAT/MSAT /DOT assay and majority of the cases presented with fever followed by myalgia and headache. In Sritharan M et al[11] study all the patients had fever with chills and myalgia (100%). In De Varaiya A et al study fever was present in all cases (100%), myalgia in 51.35%, jaundice and conjunctival suffusion in 32.43% and altered sensorium in 13.51% of patients[12]. Definitive and early diagnosis of leptospirosis is an essential guide to the clinician to start the appropriate treatment and for management of complications. In the present study MAT being the gold standard immunological test showed highest positivity15.2% compared to MSAT and DOT assay being 12.6% and 12.3% respectively. Whereas there was not much significant difference between

MSAT and DOT assay. The usefulness of MSAT as a screening test has been evaluated by Sumathi et al[10] . They have concluded that MSAT is a simple, quick and sensitive test which can be used as a screening test for laboratories in developing countries. Levett P et all also concluded that DOT assay is a simple test suitable for use in diagnostic laboratories for screening sera from acutely ill patients[5].

CONCLUSION

Our study concludes that MSAT and DOT assays can be useful tools in diagnosing leptospirosis in resource limited settings. This study also recommends further studies on proper evaluation of serological methods used in the diagnosis of leptospirosis in different localities and clinical settings based on the needs of the clinician and resources available. Moreover the incidence of Leptospirosis in our setting was found to higher hence there is need for implementation of quicker diagnostic methods for leptospirosis.

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Traditional Use of Medicinal Plants in Puducherry for Treatment of Urinary Tract Disorders

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ABSTRACT

A survey of Medicinal plants was conducted at Puducherry union territory to medicinal value of plant resources. The study revealed that 42 plant species belonging to 30 families are used as urolithiasis in traditional ways. The information on medicinal uses is based on the interviews with the local peoples, herbalists and practicing Indian systems of medicine. Details of the plants, part used method of preparation; dosage and mode of administration have been reported. Tribulusterriteris, Musa pradasacica, Aervalanata are most effective and commonly used in treatment of Urinary tract infection and Urolithiasis. These may prove precious potential source and bioactive compounds of therapeutic value against UTI and Urolithiasis and hence we need further critical scientific testing and clinical evaluation for the purpose.

Keywords: *Medicinal plants, Indian system of medicine, Urolithiasis, Urinary tract infection, Puducherry union territory.*

INTRODUCTION

Kidney stones, one of the most painful urologic disorders, have beset humans for centuries. A large number of people, nearly 4-15 % of the human populations are suffering from urinary stone problems all over the globe [1, 2]. Ancient siddha literature describes stones as Ashmari or Kalladaippunoi. The occurrences of these calculi has been increasing in both urban and rural societies (Misra A etal & Zaida SMA etal.,) Calcium-containing stones, especially calcium oxalate monohydrate, calcium oxalate dihydrate and basic calcium phosphate are the most commonly occurring ones to an extent of 75-90% Magnesium ammonium phosphate (Struvite) of about 10-15%, uric acid 3-10% and cystine 0.5-1% [3].

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Endoscopic Stone Removal and Extracorporeal Shock Wave lithotripsy (ESWL) have revolutionized the treatment of urolithiasis but do not prevent the likelihood of new stone formation. Various therapies like thiazide diuretics and alkali-citrate are being used in attempt to prevent recurrence of hypercalciurea and hyperoxalauria induced calculi but scientific evidence of their efficacy is less convincing [4, 5].

In addition recent treatment procedures for renal stones are costly for the developing countries like India and also painful and require prolonged maintenance. Till date no satisfactory prevention and treatment is there for Kidney stones in modern medicine [6-10].

Herbal medicines are efficacious and have lesser side effect as compared to modern medicines. Actually so there is a need for study on herbal drugs which are already in prolonged use but unfortunately scientific data is not yet available due to lack of research work.

METHODOLOGY

The study was conducted as per standard methodology by ethno botanical studies. Frequent field visits were regularly conducted throughout the year

The team of Siddha doctors and local people having the medicinal plants knowledge, the frequent field visits were made to throughout Puducherry and particularly the villages Poornamkuppam, Pudukuppam, Thirukanur, Karayamputhur, Katterikuppam, Madagadipet, Osudu and Bahour.

The information were collected by the team and discussed with the local people in their local language (Tamil) and referred to Siddha text for documentation.

A total of 41 medicinal plants species distributed in throughout Puducherry are collected for documentation. The details of the medicinal plants are given below with Botanical name, Family name, Part used and Medicinal uses.

ABOUT PUDUCHERRY

The union territory of Puducherry comprises of four regions via Puducherry, Karaikal, Mahe and Yanam. Puducherry is located on the East coast about 162 kms from south Chennai. Puducherry is situated the coastal area of Bay of Bengal. Summer starts from April to early June the maximum temperature is 41°C. The average maximum temperature is 36°C. The minimum temperatures are 28 - 32°C.

The North east monsoon starts in during the middle of October and Puducherry get the annual rainfall during the period from October to December. The average rainfall is 1,240mm.The average rainfall is highly favoured to grow the medicinal plants in Puducherry.

Table 1: Family and Local Names of the Medicinal Plants

Sl. No.	Plant Name	Local Name	Family Name
1.	*Ficusracemosa*	Aathii	*Moraceae*
2.	*Pistiastratiotes*	Anthartamarai	*Araceae*
3.	*Nympheanouchali*	Alli	*Nympheace*
4.	*Ricinuscommunis*	Amanakku	*Euphorbiaceae*
5.	*Cassia auriculata*	Avarai	*Caesalpinaceae*
6.	*Agave americana*	Anaikartazhai	*Asparagaceae*
7.	*Bombaxmalabaricum*	MulIlavu	*Bombacaceae*
8.	*Euphorbia ligularia*	Ilaikkalli	*Euphorbiaceae*
9.	*Phoenix sylvestris*	Chittrueehchu	*Arecaceae*
10.	*Citrus medica var. acida*	Elumichai	*Rutaceae*
11.	*Ocimumgratissimum*	Elumichantulasi	*Lamicaeae*
12.	*Sccharumofficinarum*	Karumbu	*Poaceae*
13.	*Benincasahispida*	Kaliyanapushnikai	*Cucurbitaceae*
14.	*Erythrina variegate*	Kaliyanamurukku	*Fabaceae*
15.	*Melothriaheterophylla*	Karkovai	*Cucurbitaceae*
16.	*Aloe vera*	Katazhai	*Liliaceae*
17.	*Commelinabenghalensis*	Kanamvazhai	*Commelinaceae*
18.	*Amaranthustricolor*	Chirukirai	*Amranthaceae*
19.	*Portulacaquadrifida*	Pasarai	*Portulaceae*
20.	*Basella alba*	Kodipasalai	*Basellaceae*
21.	*Portulacaoleracea*	Parppukirai	*Portulaceae*
22.	*Amaranthusspinosus*	Mullukirai	*Amranthaceae*
23.	*Portulaca strum*	Vankaravallikirai	*Portulaceae*
24.	*Amaranthusgangeticus*	Thandukirai	*Amranthaceae*
25.	*Caryitaurens*	Kuntharpanai	*Palmaceae*
26.	*Coccineagrandis*	Kovai	*Cucurbitaceae*
27.	*Azimatetracantha*	Changan	*Salvadoraceae*

Conted…

28.	*Trianthemadecandra*	Satthicharanai	*Aizoaceae*
29.	*Pvoniaodorata*	Paramutti	*Malvaceae*
30.	*Tinosporacardifolia*	Seendil	*Menispermaceae*
31.	*Lagenariasiceraria*	Churai	*Cucurbitaceae*
32.	*Indigoferaenneaphylla*	Cheppunerunjil	*Fabaceae*
33.	*Hemidesmusindicus*	Nannari	*Apocyanceae*
34.	*Hygrophilaauriculata*	Neermulli	*Acanthaceae*
35.	*Tribulusterrestris*	Nerunjil	*Zygophyllaceae*
36.	*Aervalanata*	Chirupeelai	*Amaranthaceae*
37.	*Boerhaaviadiffusa*	Mukkirattai	*Nyctaginaceae*
38.	*Musa paradisiaca*	Vazhai	*Musaceae*
39.	*Pedalium murex*	Aanainerunjil	*Pedalicaeae*
40.	*Crataevanurvala*	Mavilingam	*Capparaceae*
41.	*Cynodondactylon*	Arugampul	*Poaceae*
42.	*Coccusnucifera*	Thennai	*Palmaceae*

DISCUSSION

Ethnomedicinal properties of the plants being used in the treatment of urinary tract and kidney stones is given mentioning plant names, families, local names (Table 1) and their medicinal uses, including plant parts used, method of recipe preparation, dose regimen and mode of administration as reported by the local people.

Some of these plants have also been reported earlier, being used in anti-urolithiatic and lithotriptic preparations from different parts of the country[1, 23-29]. A survey of *Vedic* literature was conducted to elucidate pharma- cognostic aspects of herbal crude drugs of plant sources for the cure of urinary tract stones[1]. *Boerhaaviadiffusa* Linn. was among the important medicinal plants used for the treatment of stones during *Vedic* period. Decoction of *B. diffusa* Linn. whole plant is employed in the treatment of calculi by tribal people of Saurashtra, Gujarat, while its roots are used in the treatment of urinary stones by tribals of Akola and Sangamnertalukas of Ahmednagar, Maharasthra[23, 24].

Fruit decoction of *Tribulusterrestris*Linn.or their powder is taken in the treatment of renal calculi by tribal people of Gwalior and Saurashtra [23, 25]. Decoction of its roots and leaf is used to cure kidney stones by local communities of Kanyakumari district of Tamil Nadu[26]. Bark decoction of *Crataevanurvala*Buch-Ham is also given in calculi treatment by Saurashtrian tribals[23]. Seeds of *Abutilon indicum*(Linn.) Sw. are employed by tribals of Saurashtra for stone problems[23]. Leaf and tender shoots decoction of *Aervalanata*(Linn.)Juss. are taken for the treatment of urinary bladder stones in Kanyakumari[26]. Fruits of *Solanumsurattense*Burm. are used in controlling calculi and stones in urinary bladder in Talajataluka of Bhawnagar district of Gujarat and some other placesinIndia[27,28]. Decoctionof *Trianthemaportulacastrum*Linn.is given in calculi treatment by rural and tribal people of Talaja*taluka*,Gujarat[27].

In some rural areas of Aligarh district in Uttar Pradesh, tassels (female floral parts) of *Zea mays* Linn.is used for treating kidney stones. Decoction of corn silk (modified style) is taken daily for few days to break kidney stones and help to pass out with urine[29]. *Crataevanurvala*Buch-Ham.and*Tribulusterrestris*Linn. are already tested for their efficacy against nephrolithiasis and urolithiasis[30-32]. However, other plants reported here are not mentioned in literature for their anti-urolthiatic activity and can be tested with scientific experimentation for their efficacy and safety[33-36]. Among all the plants surveyed, *Equisetum debile* Roxb. And *Gomphrenacelosioides* Mart. are most effective and most commonly used preparations for their anti-lithiatic properties by the local people of the area due to their prompt action and positive results.

The study During ethno botanical survey of Puducherry union territory, 42 plant species belonging to 30 families were recorded as effective remedies used by

local people to treat and cure stone ailments of urinary tract and kidney. These crude drug preparations inhibit further stone formation and their enlargement, dissolve or break the calculi and a stone, expelthem emphasizes the need for the critical scientific examination and proper clinical evaluation of these plant species for their therapeutic ingredients, which could be used against different stone disorders and diseases.

CONCLUSION

We aimed to illustrate that naturally available herbal drug had more significance, due to modern world the herbal scenario has been worsen with lack of knowledge. The current study reveals clearly that Tribulusterriteris, Musa pradasacica, Aervalanata are most effective and commonly used in treatment of Urinary tract infection and Urolithiasis, which were commonly available at all part of the Asian continents. This study also explains that the various herbal drug and the benefits in and around Pondicherry for the future betterment of the modern and healthy community.

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Awareness of Cervical Cancer among HIV Positive Women in Southern India

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ABSTRACT

Background: Cervical cancer is a major problem in developing countries. Women with HIV have a higher risk for the development and progression of cervical cancer.Combination anti retroviral therapy (cART) is freely available in our country since 2004 through antiretroviral therapy (ART) centres. It is expected that HIV-positive women attending ART centres should have good knowledge of cervical cancer. There is hardly any data from India regarding awareness of cervical cancer among females attending ART centre. This study was done to assess the awareness of cervical cancer among HIV positive women attending ART centre in Southern India.

Methods: Using a cross-sectional study design, 111 HIV positive females attending ART centre in South India for at least 6 months were interviewed using a questionnaire. Descriptive statistics was calculated with the mean for variables that were normally distributed. To compare proportions, chi-square ($\chi 2$) statistics was used. Statistical analyses were performed with SPSS software. A p value < 0.05 was considered statistically significant.

Results: The mean age of the study population was 39.12± 7.49 years. Majority of the study population 89 (80.1%) was literate. In our study 62 (55.9%) were housewives.

Out of 111 patients only 27 (24.3%) had heard about cervical cancer. In our study 20(74.1%) had heard about cervical cancer from the treating doctor. Counselor in ART centre did not give them information about cervical cancer during post HIV test counseling or during subsequent visits. Out of 27, 15 (55.55%) of them had heard about Pap smear test , only 6 (22.22%) out of 27 had a Pap smear done. 6 (22.22%) out of 27 had heard about the HPV vaccine. Housewives were more aware of cervical cancer than working women which was statistically significant.

Conclusions: The awareness of cervical cancer among patients attending the ART centre was low ,It is clear from our study that educating women about cervical cancer is not a priority at HIV clinics and ART centres. HIV counselors and doctors must educate HIV positive women attending ART centre about cervical cancer.

Keywords: *HIV, Cervical cancer, India, Awareness*

INTRODUCTION

Breast and cervical cancer are the most frequently occurring cancers in women. Majority (85%) of deaths due to cervical cancer occur in the developing world. [1] Risk factors for cervical cancer are early age of first intercourse, multiple sexual partners and smoking. [2] High risk human papillomavirus (HR-HPV) is associated with cervical cancer. [2] Invasive cervical cancer is preventable through early screening. The goal of routine screening is to detect early cytological changes so that invasive cancer can be prevented. Precancerous lesions exist for around 15 years during which they can be easily detected. [3] In developed countries due to timely and widespread screening the incidence of cervical cancer has reduced.

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HIV infection, is a predisposing factor for persistent infection with HR-HPV. [4]Women living with HIV infection have a higher risk for the development and progression of HPV-induced lesions and cervical cancer. [4-6] With the advent of combined anti retroviral therapy (cART), HIV has become a chronic illness like diabetes and hypertension, where people will live longer. As HIV-infected women live longer they are at risk of developing cervical cancer.cART does not reduce the risk of developing cervical dysplasia or cancer, nor has it been shown to improve outcomes. [7] Cervical cancer prevention and treatment services are inadequate in developing countries and often compete with other public health programmes for funding. [8]

In India cART is available freely through ART centres since 2004. ART centres are an entry point to avail HIV related prevention and treatment services. Doctors and HIV counsellors in ART centres must educate patients regarding cervical cancer.It is expected that HIV-positive women attending ART centres should have good knowledge of cervical cancer. There is hardly any data regarding awareness of cervical cancer among females attending ART Centre from South India. This study was thus conducted to assess the awareness of cervical cancer among HIV positive women attending ART centre associated with a tertiary care institution in Southern India. We also tried to find out the determinants of awareness of cervical cancer among HIV positive women.

MATERIALS AND METHOD

Study setting and design: This descriptive cross sectional study was done in the hospital attached to Kasturba Medical College (KMC), Mangalore, India. KMC Hospital is a 500 bedded tertiary care referral institution. The anti-retroviral clinic associated with this hospital has more than 2000 registered HIV patients. An ART centre is also associated with our institution where free cART, pre and post test counseling is done. Patients attending the ART centre meet the doctors in the anti-retroviral clinic at regular intervals.

Sample size, sampling technique,study duration and study population: Expected proportion of HIV positive females aware of cervical cancer was taken as 25% based on previous studies and taking absolute precision of 9% and confidence interval of 95% the sample size was found to be 89. On adding 20% as the non response rate sample size was 111. PLHIV of age more than 18 years who gave written informed consent and who had attended ART centres for at least six months participated in the study. Study participants were selected by convenience sampling. Participants were recruited between May and June 2012. During the study period 111 consecutive patients who consented for the study were enrolled. Ethical approval from the institutional ethics committee of K.M.C., Mangalore was obtained.

DATA COLLECTION

The data was collected by face-to-face interview held in a private room at the study site. The interviews lasted for 10- 20 minutes. Data collection was guided by a pretested, semi structured questionnaire consisting of both open as well as closed questions.The questionnaire had three parts. They were,socio-demographic characteristics of the study population, HIV related details and Cervical cancer related details.

DATA ANALYSIS

Data collected was analyzed using SPSS Version 11.5 statistical software. Descriptive statistics was calculated with the mean for variables that were normally distributed. To compare proportions, chi-square ($\chi 2$) statistics was used. A p value < 0.05 was considered statistically significant

RESULTS

The mean age of the study population was 39.12± 7.49 years. Majority of the study population, 89 (80.1%), was literate. In our study 63 (56.8%) subjects are married. Out of 111, 62 (55.9%) were housewives (Table 1).

Only 27 (24.3%) out of 111 had heard about cervical cancer. Out of 27, 15 (55.55%) had heard about Pap smear. Doctor was the main source of information regarding cervical cancer (Table 2).

Out of 27, 15 (55.55%) heard about Pap smear test. 10 (66.7%) of 15 had undergone Pap test. 6 (22.22%) out of 27 had heard about the HPV vaccine. Housewives were more aware of cervical cancer rather than the working women and it was statistically significant. (Table 3)

Table 1: Sociodemographic and clinical characteristics of study subjects (n = 111)

Age (years)	n (%)
<30	17 (15.3)
30–40	51 (45.9)
41–50	37 (33.3)
>50	6 (5.4)
Duration of HIV (years)	**n (%)**
<1	30 (27)
1–5	43 (38.7)
> 5	38 (34.2)
Educational status	**n (%)**
Illiterate	22 (19.8)
Class 1st to 10th	74 (66.7)
12th and above	15 (13.5)
Occupation	**n (%)**
Working	48 (43.2)
Housewife	63 (56.7)
Marital status	**n (%)**
Married	63 (56.8)
Divorced	6 (5.4)
Widowed	40 (36.0)
Unmarried	2 (1.8)

Table 2: Awareness of Cervical Cancer and source of information

Have you heard about Cervical Cancer? (n =111)	n (%)
Yes	27 (24.3)
No	84 (75.7)
Have you heard about the Pap test (n = 27)	**n (%)**
Yes	15 (55.56)
No	12 (44.4)
Source of information (n = 27)	**n (%)**
Gynaecologist/doctor	20 (74.1)
Friends/relatives	6 (22.2)
Television	6 (22.2)
Magazines	5 (18.5)

Note: More than one answer is possible and hence the sum may be greater than 100%.

Table 3: Determinants of awareness of cervical cancer among HIV positive women

Baseline characteristic	Aware (n = 27) n (%)	Not aware (n = 84) n (%)	p value
Age (years)			
<30	2 (7.4)	15 (17.9)	0.196
30–40	10 (37.0)	41 (48.8)	
41–50	13 (48.1)	24 (28.6)	
>50	2 (7.4)	4 (4.8)	
Educational status			
Illiterate	2 (7.4)	20 (23.8)	0.089
Class 1 to 10	19 (70.4)	55 (65.5)	
Class 12 and above	6 (22.2)	9 (10.7)	
Occupation status			
Working	6 (22.2)	42 (37.8)	0.030
Housewife	21 (77.7)	42 (50.0)	
Marital status			
Married	18 (66.7)	45 (53.6)	0.602
Divorced	1 (3.7)	5 6.0)	
Widowed	8 (29.6)	32 (38.1)	
Unmarried	0	2 (2.4)	
Duration of HIV (years)			
<1	8 (29.6)	22 (26.2)	0.940
1–5	10 (37.0)	33 (39.3)	
>5	9 (33.3)	29 (34.5)	

DISCUSSION

The awareness of cervical cancer among patients attending the ART centre was low, as only 27 (24%) of the participants reported having "ever heard about cervical cancer". Doctor was the main source of information regarding cervical cancer.

In a study by Dim CC et al [9] from Nigeria, 33 (22%) of 150 HIV-positive women attending post-HIV test counselling were aware of cervical cancer. None of the study participants had received information on cervical cancer and its screening during post-HIV test counselling. In the same study only 6 (4.0%) HIV positive women were aware of the Pap smear. According to Rabiu et al [10] 76 (25%) out of 300 subjects had heard about cervical cancer. In the same study none of the respondents received any form of counselling about cervical cancer during their post HIV test counselling. In a study done by Sichanh et al 177 (55.3) of 320 HIV positive patients had heard

about cervical cancer. [11] According to Ezechi et al 56.2% of women in Nigeria were aware of cervical cancer. [12] In a study done in Morocco 24 (20.9%) women had heard of cervical cancer.In the same study the major source of information about cervical cancer was mass media (radio/ television) (n=20, 17.4%), followed by friends/family (n=3, 2.6%).[13] In their study younger and women who never attended school were less aware about cervical cancer compared with educated women.In a study done in Nigeria media was the main source of information regarding cervical cancer.[14] Ideally all HIV positive women should receive information about cervical cancer during post-HIV testing counseling in ART centres. [9]

Effective coverage rates for cervical cancer screening services are very low outside developed countries. [14] Cervical cancer screening programs in low-income countries are difficult to implement and maintain due to cost related issues, lack of trained personnel and insufficient lab support. [15] Studies done in our country show high prevelance of precancerous cervical lesions. According to a study done in Pune, the overall prevalence of any HPV genotypes was 52.5% and prevalence of any 'carcinogenic' HPV genotypes was 35.3% in a cohort of HIV-infected women.CIN2+ was detected in 11.2% while CIN3 was present in 4.7% participants.[16] As cART has limited effect, on HPV persistence HIV positive women will still need to be screened for cervical cancer even while on treatment. Screening for tuberculosis and other opportunistic infections is done religiously by doctors in all ART centres and HIV clinics, but cervical cancer is neglected.It is clear from our study that educating women about cervical cancer is not a priority in HIV care.

Our study has some limitations. This study was performed at a single tertiary care centre; thus, our results might not be generalizable.Our study population was predominantly urban and our sample size was small.

More efforts have to be channeled towards prevention of cervical cancer among HIV positive females attending HIV clinics and ART centres. Providing free ART drugs alone is not enough, free pap smear facilities must be provided to all HIV positive women at initial diagnosis of HIV and at periodic intervals. If this is not done cervical cancer will become a major threat to the success story of our ART programme. Integration of cervical cancer screening with HIV control programmes is the need of the hour.Vaccinating all women against HPV is another strategy to prevent cervical cancer.

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Conflict of Interest: None

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Correlates of Hope and Depression among People Living with Human Immunodeficiency Virus in Chhattisgarh State

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ABSTRACT

Depression is one of the most usually diagnosed psychiatric disorders among AIDS patients. The objective of this study was to explore hope and depression among people living with HIV/AIDS under follow up in ART center Bilaspur. Purposive sampling technique was the method adopted in the study for data collection. Study was conducted between June to December 2017 on 133 (69 Male & 64 Female) respondents under antiretroviral therapy (ART). Depression Scale and Hope Scale were the tools used in the study for data collection. Results analyzed using advanced statistical software Smart PLS v3 with variance based Structural Equation Modeling (SEM) technique. The outcome of the analysis found that R^2 coefficient of the model is 0.463 ($P < 0.01$) which indicates that the developed model has a significant impact on depression. Furthermore, the mediating variable hope was found to have significant effect on the link between education and depression, income and depression respectively. However, age and gender did not contribute significantly.

Keywords: *Hope, Depression, Antiretroviral therapy, HIV/AIDS, Structural equation model.*

INTRODUCTION

Since last few decade there has been steady increase in the number of HIV infected people in India. According to National Aids Control Society 21.40 Lakh (Estimation rate 15.90 - 28.39 Lakh) people were infected with HIV till year 2017 in the country. Similarly, in context of Chhattisgarh state over 26.20 thousand (Estimation rate 19.39 - 41.53 thousands) people living with HIV. [1]

The excursion of life is someway or rather related to hope and thus being hopeful in life makes the process easy. Some people, more than others, have a consistent tendency to think, feel and behave, regarding most aspects of their lives, in a way that is unbalanced and inclined toward one of the extremes on the hope scale; we call them optimists and pessimists. A hopeful individual sees good things everywhere, is usually confident and hopeful of what the future holds.[2] Over-hopefulness may encourage one to take uncalculated financial risks that will end up unfortunate.[3]

Hope is more likely to obtain direct action and plan to solve troubles, understand the realities and optimize the outcome of a complicated situation.[4] In general, hope is linked to numerous positive physiological health outcomes including: cardiovascular health and blood pressure,[5] immunity,[6] and demise, pain, and physical functioning.[7]

Hope is positively associated with quality of life.[8] HIV positives community has been associated to hope,[9] and decreased demise rate. [10] Optimism theory posits that just as people can learn to be helpless.[11] When we think of hope we instantly presume it to be an optimistic concept. In fact, hope usually refers to a trait of the personality.[12] Patients on antiretroviral treatment (ART) show moderate levels of negativity in the short-term may slow progression of the human immunodeficiency virus. [13] Study revealed extreme hope may lead to decreases in perceived risk of HIV. [14] Hope plays vital role for managing HIV.[15] HIV positive people think about the future in a positive way increases hope.[16]

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The past literature showed that psychological beliefs, such as hope, act as wealth which may not only protect mental health in the context of painful situation but are protective of physical wellbeing as well.[17] A link among hope and happiness for the period of early phase of therapy was also evidence.[18] Higher level of hope was associated with lower level self- care and quality of life.[19] Thus, hopeful people generally did not use emotional worry in relation to chronic illness.[20] A lack of hope is linked with worse psychological health outcomes such as depression.[21]

The screening and healing of depression should be considered as a crucial element of HIV care and support.[22] Depression positively affects HIV progression,[23] and carefulness is negatively associated with depression.[24]

Researches also revealed that positive intervention influence HIV patients to decrease the level of depression.[25,26] Findings suggests self-help programmes or self-management increase the hope, and reduce the depressive symptoms. [27]

Studies showed role of appropriate screening and treatment are essential factors for decreasing depressive symptoms. In addition, gender, education, and income also influence patients health.[28] HIV positives women showed higher level of depression than men.[29,30]

This review indicates some sorts of contradictory findings related to depression among HIV infected peoples in the context of their hopes and socio-demographic variables. The present study was conducted to throw some light on this controversy. The objective of the present research was to find out the effect of hope, gender, education, age and income on depression among HIV positives in Chhattisgarh state.

MATERIAL AND METHOD

Subjects and procedure: The participants for the study were those who were living with HIV and had a link in ART center Bilaspur, Chhattisgarh, India; their consent was obtained prior to commencement of the study. In total, 142 questionnaires were distributed among the subjects in the first phase, only 133 completed the questionnaires (valid response rate: 93.66%). Among them 69 (51.9%) were men and 64 (49.1%) were women. The age of those participants ranged between 20 and 50 (M = 33.47, SD = 8.02) years. Participants included were literate, and had CD4+ count between 150 -500.

Measurement of the variables: *Depression:* The Beck Depression Inventory (BDI-II) [31] was used to measure the current depression. The scale has demonstrated good reliability and validity. Cronbach α for the data collected during study was found to be 0.86.

Hope: OPAS scale [32] was used to measure the hope. Internal reliability Cronbach α coefficient of the scale was found to be 0.87 and thus was a reliable and valid measure suitable for the subjects.

Socio-demographic Details: The Socio-demographic details include age, gender, educational qualification and monthly income in the study. A detailed description was obtained from each of the participants related to these variables.

STATISTICAL ANALYSIS

A correlational design was used to construct the research model. SPSS licensed version 25.0 (SPSS Inc., Chicago, IL, USA) and Smart PLS v3 [33] was used for analysis of data through Partial Least Square Method which is a variance based Structural Equation Modeling technique.[34]

FINDINGS AND DISCUSSION

The summary of socio-demographic details and average of hope and depression among the subjects as under:

Table 1: Socio-demographic information of the participants (N = 133)

Variables	Frequency	Percentage	Mean	SD
Gender				
Male	69	51.9	33.47	8.024
Female	64	48.1		

Conted…

Age (Years)				
20-35	83	62.4	8170.68	8484.56
36-50	50	37.6		
Monthly Income (INR)				
No Income	45	33.8		
1000-15000	65	48.1		
15001-30000	24	18.1		
Education				
High School	51	38.3		
Higher Secondary	38	28.6		
Graduate	29	21.8		
Post Graduate	15	11.3		
Mode of Infection				
Through partner	112	84.2		
Injection drug users (IDUs)	6	4.5		
Men having sex with men (MSM)	4	3		
Female sex worker (FSW)	2	1.5		
Through blood transfusion	9	6.8		
Job Profile				
Government	22	16.5		
Private	50	37.6		
Self employed	16	12.1		
Home maker	43	32.3		
Student	2	1.5		

In PLS – SEM the structural equation model is assessed on basis of examining criteria that are determined by the models. This involves evaluation of path coefficient, Mean, Standard deviation, R - square, effect size and model fit index. The result is presented below:

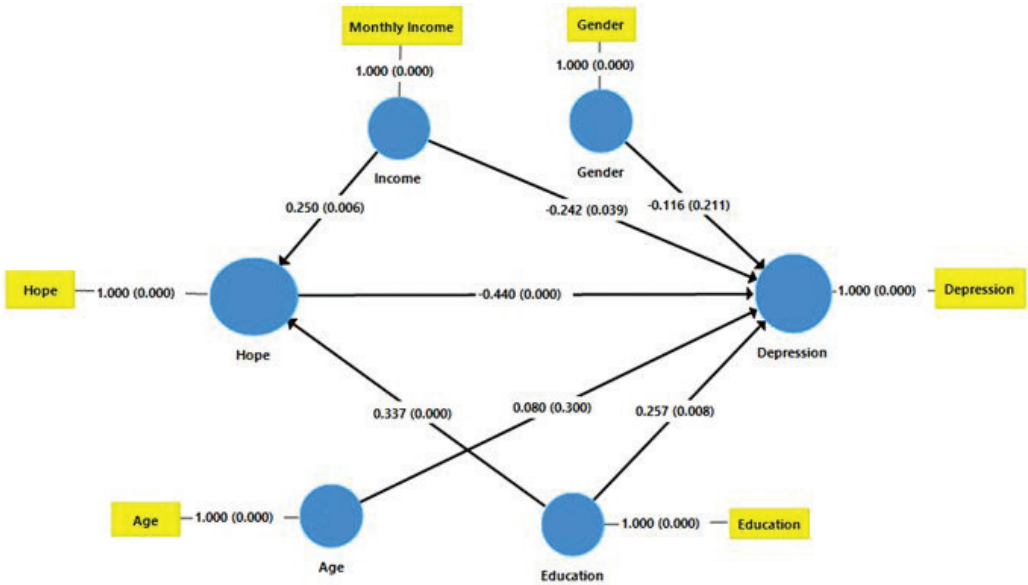

Figure 1: structural equation Model of all the variables

As demonstrated in Table 2 most of the path coefficients in the model have significant coefficient indicating association among respective variables. The Smart PLS bootstrapping outcomes show the t – value for each variable. Table also clears that t - values are greater than the critical value (2.58 = $p < 0.01$, 1.96 = $p < 0.05$) indicating hope, education and income path coefficients are significant at 99% and 95% confidence level.

Table 2: Path coefficients (Total effect), Mean, Standered deviation, t-values

Variables	Path Coefficients (β)	Mean (M)	Standered deviation (SD)	t-value	VIF	p-value
Age -> Depression	0.080	0.082	0.077	1.038	1.295	0.300
Education -> Depression	0.257	0.263	0.096	2.669	1.489	**0.008****
Education -> Hope	0.337	0.340	0.089	3.778	1.285	**0.000****
Gender -> Depression	-0.116	-0.118	0.093	1.251	1.536	0.211
Hope -> Depression	-0.440	-0.448	0.093	4.735	1.360	**0.000****
Income -> Depression	-0.242	-0.240	0.117	2.065	1.920	**0.039***
Income -> Hope	0.250	0.252	0.091	2.735	1.285	**0.006****

Hope (R^2 = -0.255), In overall model (R^2 = - 0.463)

$p < 0.05$*, $p < 0.01$**

Based on the result in Figure 1 and Table 2; R^2 value is 0.463 signifying that all the variables i.e. education β = 0.257, $p < 0.01$, hope β = -0.440, $p < 0.01$ and, income β = -0.242, $p < 0.05$ explain 46.3 % of criterion variable on depression of participants. Education was found to have significant relationship with depression.[28] Furthermore, hope and income were negatively associated with depression. [42] In addition, education (β = 0.337, $p < 0.01$) and income (β = 0250, $p < 0.01$) showed direct effect on predicting variable hope.[9] The study showed hope has direct negative link with depressive symptoms of HIV patients.[21] It means hopeless individual posses more depressive symptoms in his life.

Variance inflation factor (VIF) ranged from 1.285 to 1.920, which was distant from the 1.0 to 4.0, criteria that may show multicollinearity concern.[35]

Table 3: Path coefficient (Indirect effect)

Variables	Path coefficients (β)	Mean	SD	t-value	p-value
Education -> Hope -> Depression	-0.148	-0.153	0.053	2.826	0.005**
Income -> Hope -> Depression	-0.110	-0.115	0.052	2.102	0.036*

$p < 0.05$*, $p < 0.01$**

In (Table 3) results found significantly indirect negative effect of hope through education (β = -0.148, $p < 0.01$) and income (β = -0.110, $p < 0.05$) on depression of the participants.

Table 4: F square/Effect size of constructs of the structural equation model

Variables	Depression	Effect size
Age	0.006	None
Education	0.119	Small

Conted…

Gender	0.011	None
Hope	0.180	Medium
Income	0.065	Small

The Table 4 shows that participant depressive symptom explained by effect size (f^2) of education (0.119) and income (0.065) respectively, indicated both the factors have small effect size. But hope factor (0.180) indicated medium level of effect on people living with HIV/AIDS.[34]

Table 5: Model fit index

	Good fitting values	Result values	Decision
SRMR	< 0.080	0.018	Good fitting
d_ULS		0.007	Good fitting
d_G1		0.003	Good fitting
d_G2		0.002	Good fitting
Chi-Square		1.705	Good fitting
NFI	0.90 to 1	0.991	Good fitting

The structural equation model showed statistical good model fit of data like SRMR = 0.018, $Chi^2 = 1.705$, NFI = 0.99.[34,36,37]

CONCLUSION

This paper discussed the use of a multivariate data analysis method of Structural Equation Modeling (SEM), with a focus on variance based Partial Least Square (PLS) which is an emerging path modeling approach. The finding indicated that hope played a vital role as a predictor of depression and was statistically significant. That means HIV positive individuals become more hopeless which increases the propensity of depression among them. In addition, socio-economic factors i.e. education and income of the HIV positives also had significant association with the depressive symptoms. Another important aspect was to note that depression symptom was found to be higher with increasing in the level of education. Also, with the high income, individuals were more likely to have lower depression. The demographic factors like age and gender were found to be insignificant. The study also found significant indirect negative effect of hope through education and income on depression. Thus, it can be concluded that hope mediates the link between income and depression, education and depression respectively. Based on the above facts, it could be recommended to frame appropriate measures for people living with HIV; which can increase their level of hope for healthy mental health of HIV positive groups in Chhattisgarh state.

Conflict of Interest: No

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Vitamin C Intake Improve the Anthropometric Measurements, Lipid Profile and Atherogenic Indices in Obese and Non Obese Females

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ABSTRACT

Background: Obesity and associated comorbidities are grave problem in India. Vitamin C intake seems beneficial to deal with obesity and associated complications.

Aim and objectives: To study effect of vitamin C intake on anthropometric measurements, lipid profile and atherogenic indices in obese and non obese females.

Material and Method: Total 41 females; (22 obese and 19 non obese), enrolled in this study who received 500 mg vitamin C, thrice a day for 3 months.

Results: Significant decrease in all anthropometric measurements (Except for WHR in obese females), TG, TC, LDL-C and VLDL-C (Except for TC in non obese females), all atherogenic indices and significant increase in HDL-C was observed in all study participants.

Conclusion: Intake of 500 mg of vitamin C, thrice a day for 3 months is effective enough to improve anthropometric measurements, lipid profile and curb atherogenic indices in obese and non obese females.

Keywords: *Obesity, Vitamin C, Body Adiposity Index, Castelli's Risk Indices, Atherogenic Coefficient.*

INTRODUCTION

Obesity is a major health challenge of the modern world, with increasing rate in adults and children[1]. This rate is rapid in both developed[2] and in developing countries like India[3]. Women are more prone to develop obesity than men[1] and obesity has been stigmatized as most serious public health concern of the era[4-5].

Dieting and exercise are two main treatments,[6-7] but maintenance of weight loss becomes difficult and requires adoption of lifestyle modifications as an eternal part,[8-9] still success rates with such modifications are low[7]. Medication is an another option[10] but concerns are raised due to their side effects on many organs[11-12]. Bariatric surgery seems useful but it is expensive[13] and complications occur in most of the cases undergoing surgery[14].

So, effective yet invasive solution needed to treat obesity. These days, use of antioxidants becoming popular approach to counteract obesity and associated morbidities[15]. Therefore, present work was designed to study effect of vitamin C on anthropometry, lipid profile and atherogenic indices in obese and non obese females.

MATERIAL AND METHOD

Study design: This randomized trial, was performed during 2015-2016 on participants selected from Krishna Institute of Medical Sciences deemed to be University. Their written informed consent obtained. Utmost care in accordance with Helsinki Declaration[16] practiced during work.

Inclusion criteria: Non-alcoholic, non-smoker, apparently healthy, 22 obese and 19 non obese females aged 20-45 years were selected.

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Exclusion Criteria: Subjects with diabetes mellitus, tuberculosis, malignancy, hepatitis, renal diseases, hypothyroidism, pregnancy, infectious diseases, subjects taking medication or any supplement also excluded.

Anthropometric measurements: Body height measured with standard stadiometer and weight on weighing scale. Waist circumference (WC) and hip circumference (HC) recorded in duplicate to the nearest 0.10 cm with a stress resistant tape to ensure constant tension during measurement. WC measured at midpoint between lower margin of last palpable rib and top of iliac crest. HC measured around the widest portion of buttocks, with tape parallel to floor. BMI calculated as weight in kilogram divided by height in square meter (Kg/M^2) and subjects considered obese if their BMI was ≥25 and non obese if their BMI was ≥18.5 up to 22.9[17], WHR calculated as waist circumference (cm) divided by hip circumference (cm).

Body adiposity index (BAI) was calculated as, [HC (cm)/Height $(m)^{1.5}$-18][18] and waist to height ratio (WHtR) as waist circumference (cm) divided by their height (cm).

Blood collection and biochemical analyses: After 12 hours of overnight fast, from antecubital vein 5 ml of blood collected in clot vial bulb. Serum separated within 1 hour at 3500 rpm and used for determination of lipid profile, using commercially available kits (ERBA-Mannheim) on EM-360 fully automated analyzer.

Intervention: Participants provided to take 500 mg vitamin C tablets thrice a day for 3 months. Weekly follow up was taken either meeting them or through phone calls.

By using standard methods Triglyceride (TG)[19], total cholesterol (TC)[20-21] and HDL-C[22] determined. Plasma very low-density cholesterol (VLDL-C) and LDL-C were calculated by using Friedewald equation as follow: VLDL-C = TG/5 and LDL-C = [(TC)-(HDL-C+VLDL-C)][23]

Calculation of atherogenic indices: Atherogenic indices calculated as; Castelli's Risk Index-I (CRI-I) = TC/HDL-C, Castelli's Risk Index-II (CRI-II) = LDL-C/HDL-C[24], Atherogenic Coefficient (AC) = (TC-HDL-C)/HDL-C[25] and Atherogenic Index of Plasma (AIP) = log (TG/HDL-C)[26].

Statistical analysis: Data analysed using SPSS version 20, applying two-tailed paired and unpaired 't' tests. Differences are considered significant if $p<0.05$.

Table 1: Vitamin C intake caused improvement in anthropometric measurements, lipid profile and atherogenic indices in obese and non obese females

Variables	OF (N=22)		t-test value and p-value	NOF (N = 19)		t-test value and p-value
	Baseline Mean ± SD	End Mean ± SD		Baseline Mean ± SD	End Mean ± SD	
Age (Yrs)	**38 ± 7**			**34 ± 8**		
Anthropometric measurements						
BMI (Kg/M^2)	29 ± 4	28 ± 4	t=16.931, p<0.0001	21 ± 1.5	21 ± 1.6	t=3.770, p=0.0014
BAI (Body fat %)	38 ± 6	37 ± 6	t=13.797, p<0.0001	28 ± 4	27 ± 4	t=8.780, p<0.0001
WC (cm)	91 ± 6	89 ± 6	t=13.667, p<0.0001	75 ± 7	73 ± 7	t=10.875, p<0.0001
HC (cm)	110 ± 8	108 ± 8	t=14.039, p<0.0001	93 ± 7	92 ± 7	t=8.952, p<0.0001
WHR	0.83 ± 0.05	0.83 ± 0.05	t=1.578, p=0.1294	0.81 ± 0.05	0.80 ± 0.05	t=2.111, p=0.0491
WHtR	0.58 ± 0.04	0.57 ± 0.04	t=10.844, p<0.0001	0.47 ± 0.04	0.46 ± 0.04	t=10.205, p<0.0001
Lipid profile						
TG (mg/dl)	137 ± 46	117 ± 34	t=3.307, p=0.0034	88 ± 20	77 ± 18	t=2.239, p=0.0380
TC (mg/dl)	184 ± 32	176 ± 24	t=2.366, p=0.0277	167 ± 29	162 ± 20	t=1.456, p=0.1625
LDL-C (mg/dl)	108 ± 30	96 ± 25	t=3.889, p=0.0008	97 ± 25	83 ± 20	t=4.596, p=0.0002
VLDL-C (mg/dl)	27 ± 9	24 ± 7	t=2.987, p=0.0070	18 ± 4	15 ± 4	t=2.239, p=0.0380
HDL-C (mg/dl)	49 ± 9	56 ± 8	t=4.801, p<0.0001	52 ± 7	63 ± 8	t=7.819, p<0.0001

Conted…

Atherogenic indices						
CRI-I	3.83 ± 0.71	3.20 ± 0.67	t=5.788, p<0.0001	3.21 ± 0.54	3 ± 0.45	t=9.345, p<0.0001
CRI-II	2.24 ± 0.66	1.75 ± 0.61	t=5.903, p<0.0001	1.87 ± 0.47	1.34 ± 0.41	t=9.103, p<0.0001
AC	2.83 ± 0.71	2.19 ± 0.67	t=5.788, p<0.0001	2.21 ± 0.54	1.6 ± 0.45	t=9.345, p<0.0001
AIP	0.43 ± 0.20	0.31 ± 0.16	t=4.497, p=0.0002	0.22 ± 0.11	0.08 ± 0.13	t=4.889, p=0.0001

OF-Obese females, NOF- Non obese females

Vitamin C intake caused significant decrease in BMI, BAI, WC, HC and WHtR (p<0.0001) in obese females (OF) and BMI (p=0.0014), BAI (p<0.0001), WC (p<0.0001), HC (p<0.0001), WHR (p=0.0491) and WHtR (p<0.0001) in non obese females (NOF) (Table 1).

There observed significant decrease in TG (p=0.0034), TC (p=0.0277), LDL-C (p=0.0008), VLDL-C (p=0.0070) and significant increase in HDL-C (p<0.0001) in OF. Likewise, in NOF; TG (p=0.0380), LDL-C (p=0.0002), VLDL-C (p=0.0380) decreased and HDL-C increased significantly (p<0.0001) after intake of vitamin C (Table 1).

Vitamin C intake caused significant decrease in CRI-I (p<0.0001), CRI-II (p<0.0001), AC (p<0.0001) and AIP (p=0.0002) in OF and CRI-I (p<0.0001), CRI-II (p<0.0001) AC (p<0.0001) and AIP (p=0.0001) in NOF (Table 1).

Table 2: Comparison of baseline and end values between obese and non obese females

Variables	Baseline values		t-test value and p-value	End values		t-test value and p-value
	OF (22) Mean ± SD	NOF (19) Mean ± SD		OF (22) Mean ± SD	NOF (19) Mean ± SD	
Anthropometric measurements						
BMI (Kg/M²)	29 ± 4	21 ± 2	t=8.193, p<0.0001	28 ± 4	21 ± 2	t=7.636, p<0.0001
BAI (Body fat %)	38 ± 6.2	28.12 ± 4	t=5.700, p<0.0001	37 ± 6.2	27.3 ± 4	t=5.702, p<0.0001
WC (cm)	91 ± 6	75 ± 7	t=8.040, p<0.0001	89 ± 6	73 ± 7	t=8.058, p<0.0001
HC (cm)	107 ± 6	95 ± 4	t=6.896, p<0.0001	105 ± 5	94 ± 3	t=6.937, p<0.0001
WHR	0.83 ± 0.05	0.80 ± 0.05	t=1.656, p=0.1057	0.83 ± 0.05	0.80 ± 0.05	t=1.582, p=0.1217
WHtR	0.58 ± 0.04	0.47 ± 0.04	t=8.331, p<0.0001	0.57 ± 0.04	0.46 ± 0.04	t=8.210, p<0.0001
Lipid profile						
TG (mg/dl)	137 ± 46	88 ± 20	t=4.367, p<0.0001	117 ± 34	77 ± 18	t=4.589, p<0.0001
TC (mg/dl)	184 ± 32	167 ± 29	t=1.781, p=0.0828	176 ± 24	162 ± 20	t=1.927, p=0.0613
LDL-C (mg/dl)	108 ± 30	97 ± 25	t=1.234, p=0.2246	96 ± 25	83 ± 20	t=1.724, p=0.0926
VLDL-C (mg/dl)	27 ± 9	18 ± 4	t=4.367, p<0.0001	24 ± 7	15 ± 4	t=4.805, p<0.0001
HDL-C (mg/dl)	49 ± 9	52 ± 7	t=1.340, p=0.1879	56 ± 8	63 ± 8	t=2.775, p=0.0084
Atherogenic indices						
CRI-I	3.83 ± 0.71	3.21 ± 0.54	t=3.129 p=0.0033	3.2 ± 0.67	2.6 ± 0.45	t=3.290, p=0.0021
CRI-II	2.24 ± 0.66	1.87 ± 0.47	t=2.013 p=0.0511	1.75 ± 0.61	1.34 ± 0.41	t=2.482, p=0.0175
AC	2.83 ± 0.71	2.21 ± 0.54	t=3.129 p=0.0033	2.19 ± 0.67	1.59 ± 0.45	t=3.290, p=0.0021
AIP	0.43 ± 0.20	0.22 ± 0.11	t=4.197 p=0.0002	0.31 ± 0.16	0.08 ± 0.12	t=5.001, p<0.0001

Compared to NOF, in OF the BMI, BAI, WC, HC and WHtR found significantly higher at baseline and in end values with p<0.0001, while no difference in WHR (p>0.05) (Table 2).

TG, and VLDL-C significantly high in OF at baseline and end (p<0.0001) and HDL-C in end value (p=0.0084), while no significant difference in TC and LDL-C in baseline and end values (Table 2).

At baseline CRI-I (p=0.0033), AC (p=0.0033) and AIP (p=0.0002) and at end; CRI-I (p=0.0021), CRI-II (p=0.0175), AC (p=0.0021) and AIP (p<0.0001) significantly high in OF as compared to NOF (Table 2).

DISCUSSION

It observed that, plasma vitamin C is inversely correlated with BMI, WC[27] and WHR[28]. In present study vitamin C caused significant decrease in all anthropometric measurements and ultimately the body mass (Table 1). This finding is supported by previous studies[27,29]. Vitamin C is a key factor in degradation of fatty acids[30-31], which could have reduced fat mass in all study participants.

Higher WHtR indicates greater cardiovascular hazard[32]. Therefore, people under age of 40 years should have WHtR <0.5 and for people aged 40–50 years the WHtR <0.6[33].

Accordingly, present study indicates higher cardiovascular risk in OF than in NOF and vitamin C intake caused significant decrease in WHtR in all of them (Table 1). This signifies beneficial effect of vitamin C on WHtR and prolonged vitamin C intake may rationalize insane WHtR.

A study showed, association of reduced HDL-C and increased TC, TG and LDL-C with raised coronary artery disease risk[34]. In present study, vitamin C intake provided significant increase in HDL-C in OF and NOF (Table 1), which is supported by previous study[35]. Some studies showed reduction in TC with intake of vitamin C[29,36], our result coincides with them (Table 1). A reduction in TG supported by study of Afkhami-Ardekani M. et al (2007)[37]. Vitamin C is essential for cholesterol[38] and fatty acids,[30-31] metabolism which would have decreased TG, TC, LDL-C and VLDL-C in all participants.

Rise in LDL-C is associated with atherogenesis[39]. There observed inverse association of high LDL-C with low plasma vitamin C[40]. In present study LDL-C decreased significantly with intake of vitamin C in both OF and NOF.

These days some novel indices like CRI-I[41], CRI-II[42], AC[43] and AIP[44] are used and values of CRI-I >3.5 in males, >3 in females, CRI-II >3.3 and AC >3.0 determine cardiovascular health[45] whereas, AIP between -0.3 to 0.1 indicates low, ≥0.11 to 0.24 medium while >0.24, indicates high cardiovascular risk[46].

In present study all atherogenic indices reduced with intake of vitamin C, which disagree with previous results[29]. It might be possible that, vitamin C and estrogen had collective effect on atherogenic indices in females.

CONCLUSION

1500 mg/day of vitamin C intake for 3 months is effective enough to sane body mass, lipid profile and curb atherogenic indices in obese and non obese females.

Conflict of Interests: None

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Effect of Vitamin C Supplementation on Insulin Resistance, β-cell Function and Insulin Sensitivity in Obese and Non Obese Individuals

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ABSTRACT

Background: Insulin resistance (IR) is common pathological feature of most of the metabolic disorders including obesity. Vitamin C intake seems useful to counteract obesity and associated complications.

Aim and Objectives: Present research was aimed to study the effect of vitamin C intake on fasting blood glucose, insulin, Homeostatic Model Assessment (HOMA) of Insulin Resistance (HOMA-IR), β-cell function (HOMA- β) and Quantitative Insulin Sensitivity Check Index (QUICKI) in obese and non obese subjects.

Material and Method: Total 80 subjects; (42 centrally obese and 38 non obese) were involved in the present study, they received 500 mg vitamin C thrice a day for 3 months.

Results: Significant decrease in fasting blood glucose, serum insulin, HOMA-IR and significant increase in QUICKI in all obese subjects and non obese males, except serum insulin in non obese males. No significant change in any of the parameters in non obese females and in HOMA- β, in all subjects was observed after vitamin C intake.

Conclusion: This study indicates three months of 1500 mg/day of vitamin C intake is helpful to revert obesity and otherwise induced insulin resistance and increase insulin sensitivity index.

Keywords: *Obesity, HOMA-IR, HOMA- β, QUICKI, Waist circumference.*

INTRODUCTION

Obesity is a major health threat all over the world and it may be associated with complications like hypertension, type 2 diabetes, cardiovascular events etc.[1-3]

WHO, accounts nearly 650 million obese individuals all over world[4] and numbers are rapidly growing in South East Asia.[5] India is becoming a hub of obese people [6] and Indians are more prone to develop abdominal obesity, which is known as Asian Indian phenotype.[7,8]

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Obesity and associated complications result in development of insulin resistance (IR). [9,10] This relationship is seen across all ethnic groups and evident over full range of body weights.[11,12]

IR develops when insulin responsive tissues become resistant and unable to use insulin effectively.[13-14] which results in decreased glucose phosphorylation and metabolism in targeted tissues. [15] IR increases proportionate to body fat content [11, 16] and centrally obese individuals develop IR rapidly than generalized obese people.[17-18]

Homeostatic model assessment is a measure of insulin resistance and β-cell functions.[19] Higher the value of HOMA-β, more the β-cells have to secrete insulin to handle existing glucose load.[20] QUICKI is a measure of insulin sensitivity and is inverse to IR. Lower numbers in QUICKI reflect greater IR.[21]

There observed inverse association between plasma vitamin C and IR.[22,23] Intake of vitamin C increases antioxidant enzymes[24,25] and decreases various health complications.[26]

Present work was therefore designed to study the effect of vitamin C on fasting blood glucose, serum insulin, HOMA-IR, HOMA- β and QUICKI in obese and non obese individuals.

MATERIAL AND METHOD

Study design: This randomized trial, was performed during 2015-2016 on participants selected from Krishna Institute of Medical Sciences deemed to be University. Their informed written consent was obtained. Utmost care in accordance with Declaration of Helsinki [27] practiced during research.

Inclusion criteria: Apparently healthy non-alcoholic, non-smoker, males and females were selected. 80 subjects; 42 centrally obese (20 males and 22 females) and 38 non obese (19 males and 19 females), aged 20-45 years, were participated.

Exclusion criteria: Subjects with diabetes mellitus, tuberculosis, malignancy, hepatitis, renal diseases, Cushing's syndrome, hypothyroidism, pregnancy, infectious diseases, subjects on medication or taking supplements were excluded.

Waist circumference (WC) measurement: WC was measured at the midpoint between lower margin of last palpable rib and top of iliac crest using stretch resistant tape. Subjects were considered obese with their WC ≥90 cm and ≥80 cm for males and females respectively otherwise considered non obese.[28]

Blood collection and biochemical analyses: After 12 hours of overnight fast, by puncturing antecubital vein 3 ml blood was collected in clot vial and 2 ml in potassium oxalate bulb. Serum separated at 3500 rpm and used within 1 hour for determination of insulin, by ST AIA-PACK IRI on TOSOH AIA analyser. Plasma glucose estimated, using commercially available kit (ERBA diagnostics Mannheim GMBH, Germany), on EM-360 fully automated analyser.

Intervention: Participants provided to take 500 mg vitamin C tablets thrice a day for 3 months. Weekly follow up was taken either meeting them or through phone calls.

Calculation of HOMA-IR, HOMA-β and QUICKI: HOMA-IR was computed as: [(fasting glucose $_{(mg/dl)}$ × fasting insulin $_{(\mu U/ml)}$) /405]. HOMA- β was calculated as: [360 × fasting insulin $_{(\mu U/ml)}$ / fasting glucose $_{(mg/dl)}$ − 3.5].[19] QUICKI was derived as: 1 / (log (fasting insulin $_{(\mu U/ml)}$) + log (fasting glucose $_{(mg/dl)}$).[21]

STATISTICAL ANALYSIS

Data analysed using SPSS, version 20, applying two-tailed paired and unpaired 't' tests and Pearson correlation. Differences and correlation coefficients considered significant if $p< 0.05$.

RESULTS

Vitamin C intake decreased FBG significantly in obese males (OM) (p=0.0329), obese females (OF) (p=0.0206) and in non obese males (NOM) (p=0.0017) (Table 1).

Similarly it reduced serum insulin significantly in OM (p=0.0349) and OF (p=0.0254) but not in NOM (p=0.0533) and non obese females (NOF) (p>0.05); HOMA-IR in OM (p=0.0277), OF (p=0.0109) and in NOM (p=0.0311) but not in NOF (p=0.1167); while, it increased significantly QUICKI in OM (p=0.0209), OF (p=0.0006) and in NOM (p=0.0311) (Table 1).

Vitamin C intake caused insignificant changes in all these parameters in NOF as well as in HOMA- β in all participants, as shown in table 1.

Table 1: Effect of vitamin C intake on FBG, insulin and its indices in obese and non obese subjects

Variables	Obese males (n = 20)	Obese females (n = 22)	Non obese males (n = 19)	Non obese females (n = 19)
	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)
Age (Years)	**34 ± 6**	**38 ± 7**	**35 ± 9**	**34 ± 8**
FBG (mg/dl)				
Baseline	94 ± 13	97 ± 19	101 ± 19	87 ± 10
End	89 ± 9.5	90 ± 9	89 ± 10	84 ± 3
't'-test value	2.301	2.503	3.686	1.582
'p'-value	0.0329	0.0206	0.0017	0.1311

Conted…

Insulin (µU/ml)				
Baseline	18.45 ± 14.55	13.46 ± 5.60	12.18 ± 10.74	7.56 ± 3.58
End	14.05 ± 14.26	9.76 ± 6.69	6.84 ± 3.53	6.10 ± 3.34
't'-test value	2.272	2.406	2.069	1.528
'p'-value	0.0349	0.0254	0.0533	0.1440
HOMA-IR				
Baseline	4.25 ± 3.04	3.21 ± 1.40	3.20 ± 2.98	1.65 ± 0.85
End	3.05 ± 3.0	2.24 ± 1.71	1.53 ± 0.85	1.27 ± 0.78
't'-test value	2.385	2.792	2.339	1.648
'p'-value	0.0277	0.0109	0.0311	0.1167
HOMA-β				
Baseline	310.4 ± 535	177 ± 115	115.4 ± 90	130 ± 67.4
End	251.3 ± 294	130 ± 87.2	101.3 ± 50	125 ± 84
't'-test value	0.7049	1.608	0.6764	0.2887
'p'-value	0.4894	0.1227	0.5074	0.7761
QUICKI				
Baseline	0.32 ± 0.03	0.33 ± 0.02	0.34 ± 0.04	0.36 ± 0.03
End	0.35 ± 0.05	0.36 ± 0.04	0.37 ± 0.05	0.34 ± 0.12
't'-test value	2.519	4.052	2.324	0.81-96
'p'-value	0.0209	0.0006	0.0320	0.4231

Participants received 500 mg vitamin C/3 times a day/3 month. Results considered significant if $p<0.05$

Table 2: Comparison of baseline and end values in obese and non obese male subjects

	Baseline values				**End values**			
Variables	**OM (n = 20)**	**NOM (n = 19)**	**t-test value**	**p-value**	**OM (n = 20)**	**NOM (n = 19)**	**t-test value**	**p-value**
FBG (mg/dl)	94 ± 13	101 ± 19	1.379	0.1761	89 ± 10	89 ± 10	0.1510	0.8808
Insulin (µU/ml)	18 ± 15	12 ± 11	1.524	0.1359	14 ± 14	7 ± 4	2.140	0.0390
HOMA-IR	4.25 ± 3.04	3.20 ± 2.98	1.082	0.2860	3.05 ± 3	1.53 ± 0.85	2.137	0.0393
HOMA- β (% β)	310 ± 535	115 ± 90	1.568	0.1253	251 ± 294	101 ± 50	2.195	0.0345
QUICKI	0.32 ± 0.03	0.34 ± 0.04	1.371	0.1787	0.35 ± 0.05	0.37 ± 0.05	1.579	0.1228

Results expressed as mean ± SD, OM-Obese males, NOM-Non obese males.

There observed insignificant difference in baseline value of FBG (p=0.1761), insulin (p=0.1359), HOMA-IR (p=0.2860), HOMA-β (0.1253) and QUICKI (p=0.1787) between OM and NOM (Table 2). While, in end serum insulin (p=0.0390), HOMA-IR (p=0.0393) and HOMA- β (p=0.0345), found significantly high in OM as compared to NOM (Table 2).

Table 3: Comparison of baseline and end values in obese and non obese female subjects

	Baseline values				**End values**			
Variables	**OF (n = 22)**	**NOF (n = 19)**	**t-test value**	**p-value**	**OF (n = 22)**	**NOF (n = 19)**	**t-test value**	**p-value**
FBG (mg/dl)	97 ± 19	87 ± 10	2.030	0.0492	90.2 ± 9	84 ± 10	2.110	0.0413
Insulin (µU/ml)	13.46 ± 5.6	7.56 ± 3.58	3.938	0.0003	10 ± 7	6.1 ± 3.34	2.166	0.0364
HOMA-IR	3.21 ± 1.40	1.65 ± 0.85	4.226	<0.0001	2.24 ± 1.7	1.27 ± 0.78	2.273	0.0286
HOMA-β	130 ± 67.4	177 ± 115	1.574	0.1235	130 ± 87.2	125 ± 84	0.2089	0.8356
QUICKI	0.33 ± 0.02	0.36 ± 0.03	4.525	<0.0001	0.36 ± 0.04	0.34 ± 0.12	0.5892	0.5591

Results expressed as mean ± SD, OF- Obese females, NOF-Non obese females

In OF, baseline values of FBG (p=0.0492), serum insulin (p=0.0003) and HOMA-IR (p<0.0001) were significantly high and QUICKI (p<0.0001) was significantly less, compared to NOF. There was no significant difference in baseline value of HOMA- β between OF and NOF (Table 3).

End values of FBG (p=0.0413), serum insulin (p=0.0364), HOMA-IR (p=0.0286) were significantly high in OF compared to NOF, while insignificant changes in their end values of QUICKI and HOMA-β (Table 3).

DISCUSSION

In this study vitamin C intake reduced FBG to the significant extent in OM, OF and in NOM (Table 1), which is supported by various other studies.[29-31] The possible mechanism behind reduction in FBG is either vitamin C positively affect β-cells and other targeted tissues [30] or it modulates insulin action and improves nonoxidative glucose metabolism.[32]

Similarly, vitamin C intake decreased HOMA-IR and increased QUICKI, in all centrally OM and OF and in NOM. These findings certainly link the beneficial effect of vitamin C on obesity and otherwise induced insulin resistance in humans.

HOMA-IR value of 2.5 is taken as an indicator of IR in adults [33] and in present study all OM, OF and NOM were found with IR. But intake of vitamin C brought their HOMA-IR down significantly (Table 1).

IR is the main pathology in type 2 diabetes (T2D) and prevention from IR is primary motive in controlling T2D.[34,35] Therefore, these findings suggest that, intake of vitamin C has ameliorating effect on the obesity and therefore diabetes mellitus, which is supported by its effect on IR and QUICKI in present study.

In previous studies [22,36] vitamin C decreased IR in non-diabetic subjects and reduced risk of higher HOMA-IR in second tertile diabetic patients and this might attribute to enhanced antioxidant enzymes and reduced oxidative stress.[29] In another study, vitamin C supplementation improved insulin signaling and insulin sensitivity by inhibiting the activation of IRS/JNK signaling in high fat fed rats.[37]

Surprisingly, we did not find significant changes in the values of FBG, serum insulin, HOMA-IR HOMA-β and QUICKI in NOF and this might be due to their rational biochemical values as compared to NOM (Table 1).

CONCLUSION

This study indicates three months of 1500 mg/ day of vitamin C intake is helpful to revert obesity and otherwise induced insulin resistance and increase insulin sensitivity index.

Conflict of Interests: None

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Serum VEGF and TNF-α Correlate Bacterial Burden in Pulmonary Tuberculosis

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ABSTRACT

Background: Pulmonary tuberculosis (PTB) is one of the predominant causes of death worldwide. The tissue hypoxic condition seen in PTB induces the increased expression of vascular endothelial growth factor (VEGF) and the inflammatory cytokine tumor necrosis factor-alpha (TNF-α). In the present study we aimed to evaluate the role of serum VEGF, TNF-α and their correlation with bacterial burden measured in terms of sputum acid fast bacilli (AFB) grading in PTB.

Method: The study included 120 newly diagnosed PTB cases and 60 healthy controls. Sputum samples from cases were subjected to microscopy for the detection of AFB. Demographic and anthropometric characteristics were recorded. Serum VEGF and TNF-α were estimated by ELISA method.

Results: Serum levels of VEGF and TNF-α in PTB patients were significantly higher compared to controls ($p<0.001$ & $p<0.001$ respectively). BMI of PTB cases was lower than controls ($p<0.001$).We observed significant positive correlation between serum VEGF and sputum AFB grade ($r=0.773$, $p<0.001$) and serum TNF-α and sputum AFB grade ($r=0.662$, $p<0.001$). We also noted a significant positive correlation between serum VEGF and serum TNF-α ($r=0.763$, $p<0.001$) in PTB patients.

Conclusions: The increased serum levels of VEGF and TNF-α were associated with bacterial burden in PTB. Hence, positive sputum smear for AFB, low BMI and increased serum VEGF and TNF-α could be early diagnostic markers and may help immediate treatment regimen for PTB.

Keywords: *Angiogenic biomarker; Body mass index; Hypoxia; Inflammatory cytokine; Pulmonary tuberculosis; Sputum acid fast bacilli grading.*

INTRODUCTION

Pulmonary tuberculosis (PTB) is one of the predominant causes of death worldwide. Among the estimated global incidence of 10.4 million new tuberculosis (TB) cases, India alone accounted for approximately 2.2 million cases[1].

Several socioeconomic factors contribute towards the occurrence of TB like poverty, poor nutrition, illiteracy, poor housing, overcrowding, immigration and poor access to the health[2, 3]. The increased risk of progression from TB infection to active disease is associated with deficiencies of essential macro and micronutrients leading to a negative impact on cell mediated immunity[4]. A low body mass index (BMI) is another individual risk factor for the development of active TB[5].

The microenvironment is a characteristic feature of tissue hypoxia during inflammation and is associated with bacterial infection such as PTB. The increased

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oxygen demand and its decreased supply may result in hypoxia, which is observed during bacterial infection[6]. In mammalian cells response to hypoxia is mediated by hypoxia inducible factor-1α (HIF-1α), a transcription factor which is found to be a potent stimulant to express vascular endothelial growth factor (VEGF), erythropoietin, basic fibroblast growth factor, glycolytic enzymes and glucose transporters synthesizing genes involved in the regulation of metabolism, angiogenesis, apoptosis and cellular stress[7, 8].

VEGF is also considered as one of the major mediators of angiogenesis and vascular permeability. VEGF has multiple roles in lung development and is expressed in many parts of lungs and pleura[9]. Low oxygen microenvironment which can alter expression of VEGF and inflammatory marker like tumor necrosis factor-alpha (TNF-α) has been interest of research in TB. It has also been observed that stimulation of HIF-1α by hypoxia and bacterial exposure can also induce the production of TNF-α[8, 10].

The objective of the study is to evaluate the role of oxygen sensing cellular biomarkers like VEGF and TNF-α in the progression of PTB in a semi-urban backward area of North Karnataka, India.

MATERIALS AND METHOD

Study design and population: 120 newly diagnosed sputum positive PTB patients were enrolled prospectively in this cross sectional study as cases. The study was conducted at Navodaya Medical College Hospital and Research Centre Raichur, Karnataka, India from Jan 2016 to Jan 2017. All the cases were clinically diagnosed by pulmonologist and PTB was confirmed by microscopic examination of sputum specimen for the detection of acid fast bacilli (AFB). Age and sex matched 60 healthy individuals were included in the study as controls. Ethical clearance from the Institutional Ethics Committee was obtained. The participants enrolled as cases and controls in this study were explained in detail about the study procedure. The written informed consent was taken from all the study participants

Inclusion criteria: Cases diagnosed as "new case" of TB, possessing at least two sputum smear test positive for AFB were included as cases in the study. Healthy individuals with no previous history of any major diseases were included as control.

Exclusion criteria: Patients with extra pulmonary TB and/or patients requiring surgical intervention, chronic PTB (receiving at least two courses of anti TB treatment for more than six months), patients with other lung disorders, such as chronic obstructive pulmonary disease asthma, bronchitis and lung cancer, HIV, with organ transplantation, treatment with corticosteroids, chronic renal disease, liver failure and recent myocardial infarction were excluded from the study.

Physical anthropometry: Body mass index (BMI): All the study participants were weighed barefoot with minimum clothing using an electronic weighing machine. Body weight was recorded to the nearest of 0.1kg. Height was measured to the nearest of 0.1cm using standard measuring tape. BMI was calculated using the formula BMI=Weight (kg)/Height^2 (m). The cases and controls were classified based on BMI (kg/m^2) as per WHO criteria[11].

Waist to hip ratio: Was obtained by dividing the waist circumference by hip circumference

Molecular markers: From all the study subjects about 5 ml of venous blood samples were collected in plain vial from median cubital vein under aseptic condition which were allowed to clot for 30 minutes and then centrifuged at 3000 rpm for 10 minutes. Separated serum samples were stored at -80°C until assayed. Serum VEGF levels were measured by using commercially available VEGF ELISA kit (RayBiotech, Norcross, GA) and serum levels of TNF-α were measured by using commercially available TNF-α ELISA kit (Diaclone, France) according to manufacturers' instructions.

STATISTICAL ANALYSIS

The results were analyzed with descriptive statistics, wherever appropriate. The student unpaired "t" test, Spearman's rank correlation coefficient test, chi-square test and Pearson's correlation coefficient test were used to evaluate the statistical significance in the results. The *p value* of <0.05 were considered statistically significant. Statistical analysis was performed by using SPSS version 16.0 software.

RESULTS

In the present study, demographic and anthropometric characteristics of PTB cases and controls were shown in Table-1. About 81 (67.5%) PTB cases were from age groups between 25 and 54 years. Among these 81 cases, 33 (27%) cases constituted age group between 35 and 44 years.

Among 120 PTB cases, BMI of 110 PTB cases (91.67%) were lower (<18.5kg/m^2) than the controls. Further it was observed that, out of 110 PTB cases, 32 PTB cases (26.67%) were having <16.0kg/m^2 BMI. Waist to hip ratio of PTB cases was also found to be lower as compared to controls (p<0.001).

Table 1: Demographic and Anthropometric characteristics of PTB cases and controls

Characteristics	Controls n (%)	PTB Cases n (%)	Chi square (x^2)/t value	*p* value
Age (years) mean ± SD	**44.8 ± 16.9**	**42.5 ± 15.3**	**t = 0.7704**	**0.451***
Age groups (years)				
15-24	7(11.67)	14(11.66)	x^2=5.534	0.345*
25-34	8(13.33)	19(15.83)		
35-44	10(16.67)	33(27.50)		
45-54	14(23.33)	29(15.83)		
56-64	13(21.67)	18(15)		
≥65	8(13.33)	17(14.16)		
Sex				
Male	32(53.33)	75(62.50)	x^2=3.069	0.080*
Female	28(46.67)	45(37.50)		
BMI (Kg/m^2)				
Severely under weight (<16)	00	32(26.67)	x^2=115.3	<0.001**
Moderate under weight (16-16.9)	00	34(28.33)		
Mild under weight (17-18.49)	00	44(36.67)		
Normal (18.5-24.9)	57(95)	10(8.33)		
Over weight (≥25)	03(05)	00(00)		
Waist hip ratio				
Male (mean ± SD)	0.91 ± 0.03	0.82 ± 0.05	t=6.9452	<0.001**
Female (mean ± SD)	0.86 ± 0.04	0.78 ± 0.03	t=8.6684	<0.001**

**p* value (>0.05) not significant. ***p* value (<0.001) highly significant.

Serum levels of VEGF and TNF-α in PTB patients were significantly higher compared to controls (p<0.001) as shown in Table-2.

Table 2: Statistical comparison between PTB patients and control regarding serum VEGF (pg/ml) and TNF-α (pg/ml)

Parameters	Control	PTB Cases	t value	p value
VEGF (Mean ± SD)	26.36 ± 10.59	604.89 ± 323.43	10.557	<0.001**
TNF-α (Mean ± SD)	14.01 ± 3.59	92.79 ± 38.57	12.045	<0.001**

***p* value (<0.001) highly significant

Distributions of PTB cases based on bacterial load were illustrated in Fig.1.

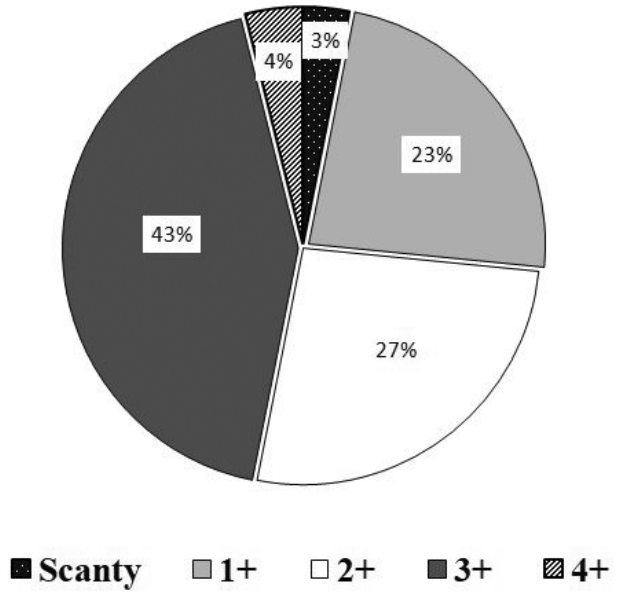

Fig. 1: Distribution of Pulmonary Tuberculosis cases based on bacterial load.
Scanty, 1+, 2+, 3+ and 4+ are AFB grading.

We observed significant positive correlation between serum VEGF and sputum AFB grade (r=0.773, p<0.001) in PTB (Fig. 2) and also between serum TNF-α and sputum AFB grade (r=0.662, p<0.001) in PTB (Fig. 3). Serum VEGF levels were more pronounced than serum TNF-α levels. Further, we have also found a significant positive correlation between serum VEGF and serum TNF-α (r=0.763, p<0.001) in PTB cases (Fig. 4).

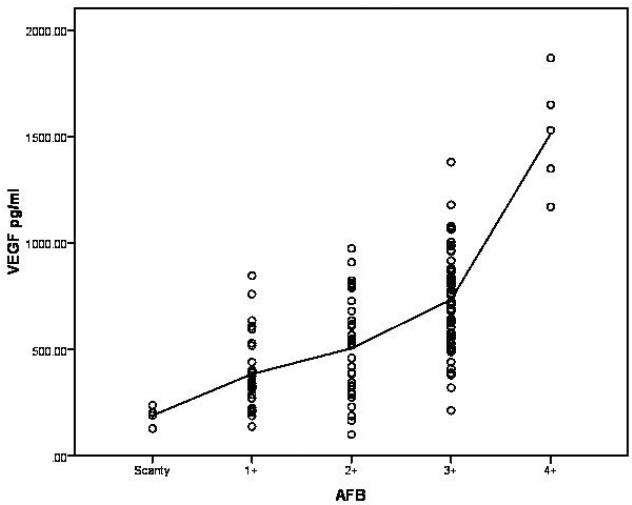

Fig. 2: Correlation between VEGF and sputum AFB grading in PTB cases, (r=0.773, p<0.001).

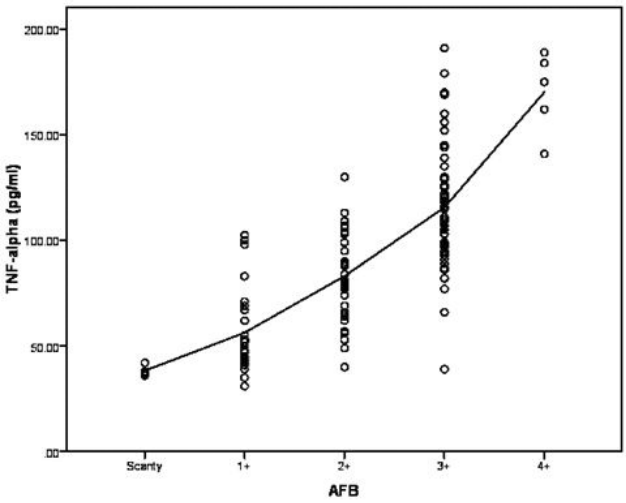

Fig. 3: Correlation between TNF-α and sputum AFB grading in PTB cases, (r=0.662, p<0.001).

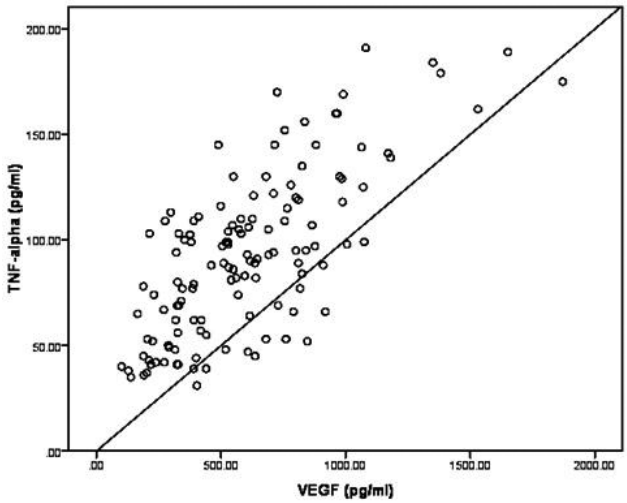

Fig. 4: Correlation between VEGF and TNF-α in PTB cases, (r=0.763, p<0.001).

DISCUSSION

Results from our study on BMI indicate a poor nutritional status in PTB. Previous studies showed that reduced BMI is a significant risk factor for PTB due to the induced impairment of cellular immunity[4, 12]. Further BMI was an important marker for the assessment of nutritional status in PTB patients[13]. In the present study waist to hip ratio of PTB patients was also found to be low when compared to control, which was in agreement with the study conducted by Tungdim *et al*[14].

Our study showed that serum levels of VEGF and TNF-α in PTB patient were significantly higher compared to controls. There was an increasing trend of hypoxia markers (VEGF and TNF-α) in agreement with severity

of PTB. As the bacterial burden increased the expression of VEGF and TNF-α were also increased. Tissue Hypoxia is a common feature in bacterial infection which induces increased expression of HIF-1α transcription factor which in turn increases the expression of VEGF gene by up regulating NF-κB[15]. Several factors regulate VEGF gene expression; among these hypoxia plays a key role in PTB. The activated alveolar macrophages are the main cells which secrets VEGF in PTB[16]. Few studies have indicated higher levels serum VEGF in PTB patients [17-20]. Our findings on serum VEGF corroborate with Alatas *et al*, who concluded increased activities of serum VEGF in PTB patients may be an indicator of active PTB[17]. VEGF might associate with pathogenesis of PTB and measurement of serum VEGF may be a useful screening marker of active PTB and also useful for the prognosis and monitoring the clinical effect of anti tuberculoses therapy[18]. VEGF could be used to indicate bacterial burden in addition to know the disease severity, extent of disease and therapeutic monitoring. Our study was in accordance with previous studies by researchers wherein we have showed, increased bacterial burden measured in terms of sputum AFB grade resulted in increased activity of VEGF in PTB cases[19]. It can be further stated that increased expression of VEGF probably increased the supply of blood and oxygen to affected lung tissues and develop angiogenesis to protect PTB patients from low oxygen sensing microenvironment[20]. It has been reported that circulating levels of angiogenic biomarker VEGF in individual with PTB, latent TB (LTB) or no TB infection (NTB) confirmed that VEGF was an important biomarker to distinguish PTB from LTB and NTB[19].

In the present study along with VEGF, the serum levels of inflammatory cytokine TNF-α were also increased in proportion with bacterial load suggesting a possible pathophysiological role of both VEGF and TNF-α in PTB. The low BMI observed in our study was probably due to the increased production of TNF-α. In PTB, TNF-α induces muscle and fat tissue catabolism resulting in weight loss[21]. This suggests that increased bacterial load increases TNF-α which may further lower BMI in PTB patients. The TNF-α increases early in TB and performs complex role in the host response to *Mycobacterium tuberculosis* by exhibiting antimycobacterial activity and promoting the formation of granuloma in PTB patients[22]. The high levels of TNF-α observed in PTB patients in our study were in agreement with other studies[23-26]. Few studies have indicated hypoxia can also induce TNF-α production in diseases[8, 10]. A significant positive correlation between VEGF and TNF-α in the present study indicate their association with bacterial burden and also shows their important pathophysiological role in PTB.

CONCLUSIONS

The present study concludes that bacterial burden increases concurrently with induction of hypoxia resulting in the increased expression of both VEGF and TNF-α. However among low oxygen sensing microenvironment markers, serum VEGF found to be relatively more pronounced when compared to serum TNF-α in PTB. It may be further concluded that positive sputum smear for AFB, low BMI along with increased serum levels of VEGF and TNF-α could be useful in the early diagnosis of active PTB and also it could be used as marker of early detection of tissue damage in PTB which could help in the immediate initiation of treatment regimen and propagation of PTB.

Conflict of Interest: The authors have none to declare.

Source of Funding: Self funded study.

Ethical Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Online Sales Promotions of Herbal Products and Its Effectiveness towards Tanisha.com

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ABSTRACT

According to the sources, the Internet today connects more than six billion people worldwide. The internet plays a vital role in all the sectors from private to government scales, the promotions of a product through online goes viral with the help of few advertisements and single display coverage pamphlets, with this incredible technology aspects, internet has been considered as a easy channel for marketing the products and implementing their online sales promotions activities, with this as a source the article implies some of the herbal products for online sales in self maintained website – Tanisha's.com, where the finding from this study will prove the online sales promotions of herbal products and its conflict management towards customers to choose appropriate herbal product which eventually induce the customer for an often purchase intention.

Keywords: *Effectiveness, FMCG, Herbal products, Online sales promotions.*

INTRODUCTION

With the explosion of Internet user, several portals have created several websites which has been the new channel for multiple companies from private to government sectors implementing their sales promotion activities through online. Online Sales promotions are generally made as a conflict management tool that determine the brand; yet a tool that is necessarily meant to speed up sales by attractive promos. From buying an electronics goods to apparels, and from flowers to gifts online purchase have made a quite a common phenomenon for net savvy consumers[1]. However, now the recent trend on buying their favorite herbal products from skincare – fitness products and from herbal food products to household products they are very quite interested about their hygiene and lifestyle by making them going to pick herbal products which has no adverse side effects and harm, thus, they make them get ready to receive the herbal products like food items and other FMCG products like shampoo, soap clothing and accessories at their doorstep. Similarly, selling these kinds of herbal products in markets and shops with their own samples has emerged several retailers gearing up to facilitate grocery and other FMCG herbal products through online[2]. As of now, there are very few retailers providing grocery including other FMCG herbal products in online, the current trend propelled to sell herbal products of several brands and own customized handmade herbal products under Tanisha's.com portal, with the present success of customers and consumers of Tanisha's.com it further typically intended to fine its impact and effectiveness towards the promotions under Tanisha's.com with a data survey.

Reasons why FMCG markets thrive online: The reasons why retailers–consumers–customers prefer FMCG products to thrive online

- Rapid growth of Internet
- Retailers are looking for newer verticals to promote their grocery & FMCG products since online marketing have huge potential marketing facilities.
- More than 60 percent of the consumers in FMCG are multinational, so, they will not have any hesitation in coming online.
- Newer generation prefers to shop online rather than to drive to physical store and most of the FMCG products are attractive with off-sale promos, fairly, it is being purchased by people with age group from 18 to 35.
- Discount offer will certainly make customers to shop online, with effective witness through the success of apparel, electronic gadgets, computer peripherals and many more products buying online through affordable discounts.

- Online availability of the grocery and FMCG product would help consumers to save time and avoid rush and hassle of processes like standing in queue.
- Investment of retailers in offline medium is high, however in online medium they do not have to go for huge investment. Etc.,

These are very few kind of hacky reasons where bulk of reasons left to you view, Several FMCG companies from small-scale to large MNC's entrepreneur have intimated their own online marketing not only for promoting the brands of several brand names and for individual sales of any kinds of brands or products but under their online ports, however, it is a validation of category to split the products through online sales, many retailers and entrepreneur achieve their effectives to do so, some of the small online marketing companies around Chennai are:

1. Chennaionlinegrocery.com
2. Spencers.in/grocery.com
3. Maligakadai.com
4. Farmfreshhandpicked.com
5. Krocery.com

Scenario of buying herbal products in online: Regardless of age or gender, many of us have one thing in common: we want to be healthy. And for some people, that means constantly being on the lookout for ways to improve and maintain overall health[3]. Considering that an increasing number of people turn to the Internet for ideas, marketing herbal products and supplements online can be a great way to reach new customers.

Sales of teas and other herbal products have climbed steadily over the last several years, so the marketplace is growing all the time. However, the number of herbal product suppliers is growing as well. This means that if you want to stand out from your competitors, you have to develop a robust marketing strategy. Moreover, that strategy needs to include a number of channels.

Create useful guides: Consumers are rapidly turning to herbal products for their health and beauty needs, but that doesn't mean they know what they need or the potential side effects that may come from taking certain herbs[4]. The best way to do this is to provide extensive information for all of your products. In addition to an A-to-Z guide to herbs and supplements, you should also answer consumer questions such as:

- How should I use this herb? Can I drink it or use it as aromatherapy?
- How much can I use at one time?
- Are there any side effects?
- Can I use it with certain medications?

Going into this level of detail not only establishes your credibility—it also protects you and your customers from potential harm.

Start a newsletter: A definitive guide is useful for lead generation and building your reputation. Once you've initiated a relationship, regular email correspondence keeps it going. Email newsletters allow you to share news and updates and provide special deals to loyal customers[5].

Marketing via email was one of the first digital advertising methods, but it's still one of the most effective. It's cheaper, faster, and easier to track than direct mail, and considering that it's only sent to people who have willingly signed up, you can be confident that you're reaching people who actually want to hear from you.

Run PPC ads: There are millions of searches for herbal products every month—not just the category in general, but for specific herbs and remedies for specific ailments. If you run PPC, or pay-per-click ads, for keywords related to these searches, you can generate clicks from people looking for exactly what you're selling.

Do some keyword research to determine the most popular searches related to your products, along with possible variations. "Herbal supplements" might be a common search term, but you don't want to exclude people who search for things like "herbal teas" and "herbal remedies."

Be active on social media: Traditional advertising costs a lot of money, whether you generate a healthy return on investment or not. If you don't make much money, you simply don't get much from the campaign. Social media, on the other hand, costs far less and offers additional benefits besides revenue. When it comes to Internet marketing for herbal products (and most other types of products), the work is almost always carried out by businesses[6]. Social media allows consumers to

get involved in the process. Whenever you post a news story, special sale, or other interesting content, it has the potential to be shared by hundreds or even thousands of followers. Each of those recipients can then share it with their networks, reaching a larger audience than a traditional marketing campaign ever could. If you update your social channels regularly, and post content that is interesting and engaging, social media can be an extremely effective way to build a loyal customer base. Make sure that your content caters to your target audience, ask for their feedback, and take the time to respond. If customers see that you actually care about what they have to say, you'll stand out from companies who are just looking to make money[7].

Optimize for mobile: Mobile devices are quickly becoming standard tools for web users. Because of that, the most successful businesses are those whose online properties are optimized for smart phones and tablets. When designing your site and SEO strategy, keep mobile in mind.

Many of the same internet marketing rules apply on mobile, but location is an important factor as well. If your products are available in various retail locations, create a store directory on your site or a tool that points them to the nearest retailer selling your products[8].

In addition to being helpful once visitors are already on your site, being mobile-friendly can also help them find you in the first place. Considering that mobile-friendliness is now a ranking factor for Google, it can help you rank above your competitors that aren't compliant—and stand a chance at competing with the ones that are.

"Success is possible, and many herbal product companies have increased their revenues and attracted new customers online" with these as a trial lines i introduced some herbal products in Tanisha's.com portal, let's see below how the online promotions and sales made effectiveness towards Tanisha's products too.

Online sales promotions towards Tanisha's.com: The methodology on online sales promotions strategy criteria is to offer insight into how popular online sales promotions herbal products towards the consumer (price-discount, coupon and free shipping) influence consumer's quality perception and purchase intentions. Moreover, herbal brand awareness especially Tanisha's. com was expected to moderate the relationship between promotion and consumer responses. To achieve this objective, a 3 (promotions: price-discount / coupon / free shipping) x 4 (brand: well-known / new arrivals / ethical / handmade own retailers) between-subjects the factorial design experiment was conducted to give an empirical data analysis and results.

The depth of the online herbal products sales promotion had to give insight into the relationship between a deeper discount and its effect on different aspects of the products. The condition with zero percentage was mentioned (only an 'action' sign) served as an indicator of whether the percentage itself (promotion framing) had a negative or positive effect on the different aspects of the products[9].Thus, the online sales promotion of herbal products depth in this condition was comparable to the off sale and cash back discount. An online questionnaire was used to test the different analysis. In January 2018 a total number of 50 respondents participated in this study, which included 38 were female and 12 male participants.

The questionnaire: The respondents in study had to answer all the questions on a random analysis. (e.g. 1 = totally disagree, 7 = totally agree), unless indicated differently in the following paragraph.

Perceived fairness of the herbal products in Tanisha's.com: To test the perceived fairness of the online sales promotion on the herbal products, participants were asked the following three questions (≈ 50); the questions were based on research by Peine, Heitmann and Herrman (2009) and Kampmann (2010)[10].

1. The promotions on price you have to pay for the Tanisha's.com products is a fair price,
2. The consumer is treated fairly, and
3. I think the price of the particular herbal products in Tanisha's.com is very high.

Trustworthiness of the promotion: The trustworthiness of the deal was measured via three items (≈ 50), the items read;

1. I do not trust the herbal product… discount of Tanisha's.com product,
2. There is probably something wrong with the herbal product, and
3. Because of the discount I am reticent for buying the herbal product.

Favorability towards the promotion: To check the favorability towards the Tanisha's.com deal the following questions were asked (≈ 50):

1. I appreciate the discount towards the herbal products in Tanisha'c.com, and
2. I am pleased with the herbal products discount.

Price affect: The way participants emotionally reacted to the different price promotions was measured via price affect. Eight emotions were used to test the feelings participants had when they saw the discount, based on the emotions Peine, Heitmann and Herrmann (2009)[10] used in their research. The participant was asked. E.g. When I see the offer, I feel, six emotions were selected from a larger list of emotions and two emotions were added because they were suitable for this research. The other emotions were not selected, because they were not applicable for this research (such as sleepy, sluggish, or drowsy). Therefore, consumers could become mindful and alert when products are promoted with such a cash back offer.

Perceived quality: The perceived quality was measured via four items (≈ 50), these items were based on research of Zeithaml (1998), Montaner and Pina (2008) and Kampmann (2010)[11]. Examples of items were

1. I think thisTanisha's.com herbal product has a very good quality, and
2. It would be a wise choice to buy this herbal product on Tanisha's.com.

Product evaluation: The evaluation of the product was also measured via four items (≈ 50), all the items were derived from research by Montaner and Pina (2008)[12]. Example questions were

1. The Tanisha's.com herbal product does not disappoint his customers, and
2. It is probably one of the best products in the e-store market.

Brand image: Three questions were asked to check the general assumptions about the two different brands (50). Via these questions it was possible to find out what the respondents thought about the brand image in general[13]. The three items were

1. In general I am very positive about Shahnaz husain herbal products brand in Tanisha's.com,
2. The brand Shahnaz husain herbal products in Tanisha's.com is a brand with a good quality, and
3. The brand Shahnaz husain herbal products is an attractive brand.

The results revealed significant main effects for promotion and brand awareness on consumers' perceived quality. Specifically, in contrast with coupon promotion, price-discount revealed greater impact on consumer's perceived quality. In addition, well-known brand has successfully played a moderating role in the relationship between promotions and consumer responses. The data finding suggested that promotional strategies used by well-known brand/online retailers are more possible to result in more favorable responses.

RESULTS

Data Analysis: The respondents (approximately 50 members) in study answered all the questions on a random analysis. (e.g. 1 = totally disagree, 7 = totally agree), and it is indicated differently in the following data analysis as a result of Tanisha's.com towards the online growth sector.

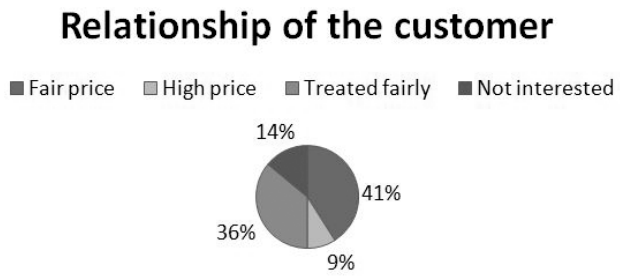

Figure 1: Perceived fairness of the herbal products in Tanisha's.com

Figure 2: Trustworthiness of the promotion

Table 1: Price affect

Price affect (vs.) Consumers' Emotions	Answered Respondents	Total No. of. Respondents
	32	50
	4	50
	31	50
	44	50
	1	50

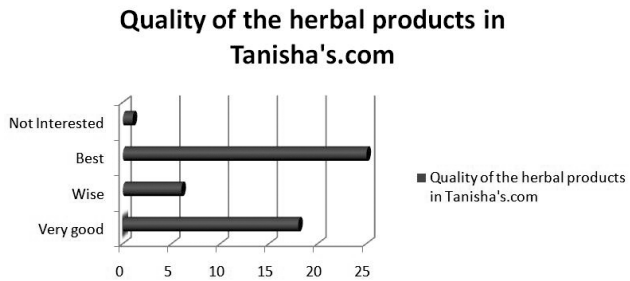

Figure 3: Perceived quality

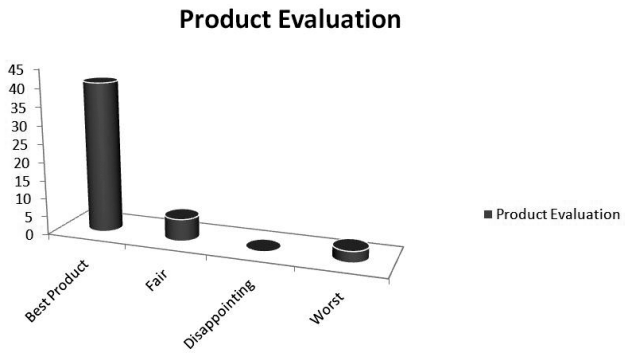

Figure 4 : Product evaluation

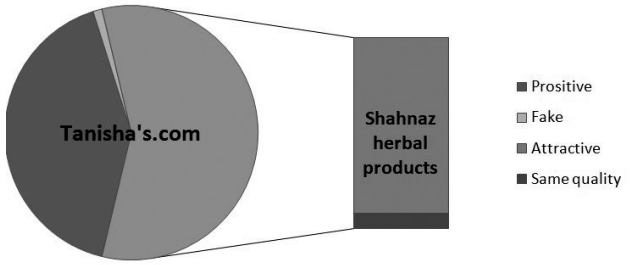

Figure 5: Brand image

DISCUSSION

The methodology on online sales promotions strategy criteria is to offer insight into how popular online sales promotions herbal products towards the consumer (price-discount, coupon and free shipping) influence consumer's quality perception and purchase intentions. Moreover, herbal brand awareness especially Tanisha's. com was expected to moderate the relationship between promotion and consumer responses. At the same time, it propels some disadvantages too,

- Many websites have arose their own herbal products
- Less number of respondents
- Consumer relationship and retailer's communication is less
- More investment and less purchase will face standardization of the sales

CONCLUSION

With this incredible technology aspects, internet has been considered as a easy channel for marketing the products and implementing their online sales promotions activities, with this as a source the article implies some of the herbal products for online sales in self maintained website-Tanisha's.com, where the finding from this study proved the online sales promotions of herbal

products and its conflict management towards customers to choose appropriate herbal product which eventually induce the customer for an often purchase intention.

Ethical Clearance: Since the article studies about online promotion on herbal products there is no need of clearance.

Source of Funding: Self

Conflict of Interest: NIL

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Effects of Strength Training Exercises on Physical Parameters and Quality of Life among Older Adults in Selected Geriatric Homes in Kerala, India

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ABSTRACT

Background: Falls and consequent injuries in older people are a significant public health problem among older adults in Kerala. Thirteen percent of people in Kerala state are over age 60; the highest among all states in India. Since many older individuals are physically weak and frail, they may not be strong enough to move their own body weight. For these individuals, aerobic activities can be extremely difficult to perform. With more strength, older adults have better health, quality of life and physical function and fewer falls. Therefore, strength training can be vital in restoring independence and functionality.

Objectives: 1) Assess the effects of strength training exercise (STE) on physical parameters, 2) Compare the effectiveness of STE between experimental and control groups, 3) Assess the association between effectiveness and demographic variables and 4) Assess quality of life.

Methodology: The study had a quasi-experimental, non-randomized pre/post design. The data was collected using structured questionnaire on demographic variables, clinical variables (blood pressure (BP), Body mass index (BMI) were measured , and the Senior Fitness Test by Rikli and Jones. Quality of life was assessed by McGill Quality of Life Questionnaire. The elderly people in the experimental group received six weeks of intervention.

Results: Senior STE had a significant effect on the following physical parameters: chair stand/lower body strength (p=0.0001), chair sit and reach/lower body flexibility (p value=0.006), back scratch/upper body flexibility (p =0.004), and 8-foot up-and-go/agility and dynamic balance (p=0.0001). There was no significant difference with regard to the 2-minute step test/aerobic endurance or arm curl/upper body strength in the experimental group. The 8-foot up-and-go test (p=0.0001) was the only test significantly different between the two groups. In addition, there was no significant difference in BMI after the intervention, however STE had an effect on BP (p=0.001). Quality of life improved in the experimental group (p =0.0001), but not in the control group.

Interpretation and Conclusion: Progressive strength training in the elderly is efficient to retain motor function. It is apparent that strength training can enhance musculoskeletal fitness and increase overall quality of life.

Keywords: *Elderly people, Strength training exercise (STE), BMI (Body mass index), Blood pressure (BP), Senior fitness test and quality of life (QOL).*

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INTRODUCTION

The proportion of older persons is growing globally. Two-third of older persons in the world are in developing countries that do not recognize falls as a public health problem.[1]

Loss of muscle strength might be problematic for older adults who have pain and stiffness, and mechanical

changes to their joints complicate their ability to mobilize, making them particularly vulnerable to changes in their physical status. This muscle loss results mainly from inactivity[2].

Strength training is one of the best ways to combat loss of muscle strength that occurs with aging. Performed regularly, strength training builds bone and muscles and helps to preserve strength, independence, and energy. With increased strength, older adults have better health, quality of life, and physical function and fewer falls.[2]

Thirteen percent of the population of Kerala state consists of older persons, the highest proportion among all states in India. A cross-sectional study of 200 adults over age 60 in India found that 52% of respondents had fallen, 21% reported fractures, and, of those who had fallen, 80% reported other injuries. Fractures were reported more frequently among females (26%) than males (16%) and by urban adults (29%) than rural adults (13%).[3]

Strength training is an integral component of health; implementation of exercise helps individuals enjoy physical and emotional benefits and become stronger and more independent. The present program aims to help older adults adopt senior strength training exercises as a lifelong habit[2].The elderly need strength training more and more as they grow older to stay mobile for their everyday activities.[4]

Many studies were conducted to assess risk factors of falls among older adults, but only a few studies have been conducted on assessment of senior fitness and techniques/ programmes to improve strength, flexibility and balance as well as its association with quality of life in developing countries. So, it is plausible to conduct studies to assess not only effects of strength training exercises but also its impact on quality of life in older adults.

OBJECTIVES

The objectives of this study were as follows: 1) assess the effects of strength training exercise on physical parameters, 2) compare the effectiveness between an experimental and control group, 3) assess the association between effectiveness and demographic variables, and 4) assess changes in quality of life.

METHOD

This study had a quasi-experimental design: two non-randomized groups tested pre- and post-intervention. Participants were 60 years or older, via purposive sampling, without severe cardiac disease, orthopaedic or neurological disorders that resulted in mobility impairment, or severe audio or visual impairment. They were recruited from geriatric homes [Home for the aged and infirm(Experimental group) &Augusti Nivas, Senior citizen home (Control group)], Ernakulam , Kerala.

Data collection instruments: A questionnaire was used to collect basic demographic and mobility/exercise information, including age, gender, marital status, education, previous occupation, type of family, length of stay in old age home, ability to perform activities of daily living (with/without assistance), and exercise habits. Height, weight, blood pressure, and heart rate were measured. BMI was calculated from measured height and weight.

The Senior Fitness Test by Rikli and Jones includes six test items to assess strength, flexibility, and aerobic fitness: chair stand (lower body strength), chair sit and reach (lower body flexibility), back scratch (upper body flexibility), 8-foot up-and-go (agility/dynamic balance), 2-minute step (aerobic endurance), and arm curl (upper body strength).[5]

McGill's Quality of Life Questionnaire consists of Principal components: physical symptoms, psychological symptoms, outlook on life and meaningful existence.[6]

Intervention: Exercise was taught to the experimental group and they performed it in a progressive manner like part I in first week, II in second and third week, and III sessions for last 3 weeks. Part I includes 5 – minute walk, squats, wall- push ups ,toe stands and finger marching, part II comprises biceps curl, overhead press, side hip raise and part III consists of knee extension, knee curl and pelvic tilt together with cool down exercises like chest and arm stretch. Exercises were based on those described in the book Growing Stronger: Strength Training for Older Adults[2]. Participants were provided with a diary to track their progress.

STATISTICAL ANALYSIS

Analysis done by: Descriptive statistics ; Frequency and percentage distribution for demographic variables, Mean and standard deviation for BP , BMI , six test items of SFT and quality of life as well as Inferential statistics

; paired T test for comparing pre-post test values within group I(n= 35) and independent t–test for comparing effectiveness of STE between groups, Wilcoxons signed ranks test between pre and post test in group II (n = 29) and further for association with demographic variables ANOVA (oneway) and t- test.

RESULTS

Sixty-four older adults participated: 35 in the experimental group and 29 in the control group. About half (51%) of participants in the experimental group were males, while only 14% of the control group was males. The majority of participants in both the experimental and control groups (89% and 90% respectively) reported that they perform activities of daily living [ADL] without assistance. Sixty percent of experimental group participants and 97% of control group participants reported that they exercised regularly.

Table 1: Baseline characteristics of participants by intervention group

Demographic variables	Experimental group [n = 35]	Control group [n = 29]
	Frequency [percent]	Frequency [percent]
Age (years)		
60-65	8 [23]	5 [17]
66-70	9 [26]	9 [31]
71-75	12 [34]	8 [28]
76-80	5 [14]	4 [14]
> 80	1 [3]	3 [10]
Gender		
Male	18 [51]	4 [14]
Female	17 [49]	25 [86]
Religion		
Hindu	12 [34]	1 [3]
Christian	23 [66)]	28 [97]
Muslim	0 [0]	0 [0]
Other	0 [0]	0 [0]
Education		
Illiterate	2 [6]	0 [0]
Primary level	25 [71]	11 [38]
Secondary level	6 [17]	5 [17]
Diploma/degree	2 [6]	12 [41]
Post-graduation	0 [0]	1 [3]
Previous occupation		
Daily wages	8 [23]	4 [14]
Retired from Govt: service	2 [6]	8 [28]
Private sector	5 [14]	17 [59]
Unemployed	20 [57]	0 [0]
Marital status		
Married	20 [57]	19 [66]
Unmarried	15 [43]	10 [35]
Type of family		
Nuclear	29 [83]	20 [69]
Joint	5 [14]	9 [31]
Extended	1 [3]	0 [0]
Length of stay in old age homes		
0-1 years	13 [37]	5 [17]
1-2 years	5 [14]	2 [7]
2-3 years	6 [17]	3 [10]
Greater than 3 years	11 [31]	19 [66]
Able to perform activities of daily living		
With assistance	4 [11]	2 [7]
Without assistance	31 [89]	27 [93]
Do exercises regularly		
Yes	21 [60]	28 [97]
No	14 [40]	1 [3]

Conted…

Table 2: Within and between group changes for BMI, blood pressure, quality of life, and Senior Fitness Test items

	Within Group						Between Group	
	Experimental Group N = 35			Control Group N = 29				
	Pre	Post	p	Pre	Post	p	Difference	p
BMI	24.94	24.94	1.000	26.55	26.62	0.593	-1.678	0.187
Blood pressure	134.57	124.57	0.0001**	132.76	130.69	0.186	-6.118	0.058*
Quality of Life								
Physical	5.49	7.40	0.0001**	6.05	6.90	0.010*	-.500	0.438

Psychological	10.20	17.46	0.0001**	8.70	9.50	0.091	-.608	0.543
Outlook on life	64.14	60.49	0.039*	68.00	68.45	0.615	7.964	0.008**
Senior fitness test								
Chair stand	10.20	12.60	0.0001**	9.55	10.90	0.003	1.015	0.232
2 minute step test	20.74	20.06	0.531	18.97	18.93	0.677	1.229	0.377
Back scratch	13.09	10.66	0.004*	10.17	9.62	0.267	2.986	0.432
8 foot up and go	16.17	10.80	0.0001**	14.41	15.48	0.551	1.028	0.0001**
Arm curl	11.83	12.54	0.241	12.14	13.31	0.157	1.079	0.396
Chair sit and reach	6.74	5.74	0.006*	5.70	5.38	0.342	1.896	0.971

*= significant at 0.05 level , ** = highly significant at 0.01 level

It is apparent from Table 2 that there was no significant difference in BMI after the intervention, however strength training exercises had an effect on blood pressure (p=0.0001). Blood pressure decreased from an average of 134 in pre-test to 124 at post-test. Of the six senior Fitness Test items, the only significant change in the control group was for chair stand. For the experimental group, significant increases were found for chair stand, back scratch, 8-foot up-and-go, and chair sit and reach. Corresponds to the quality of life former group has improved in post-test. Conversely, latter group has shown no apparent changes except for physical aspects.

Table 3: Association between demographic variables and post-test values of Senior Fitness Test in two groups

	Experimental group				**Control group**			
	Age	**Gender**	**ADL**	**Do exercise regularly**	**Age**	**Gender**	**ADL**	**Do exercise regularly**
	p	**p**	**p**	**p**	**p**	**p**	**p**	**p**
Chair stand	0.073	0.005*	0.265	0.066	0.412	0.200	0.297	0.828
2 minute step test	0.678	0.471	0.758	0.786	0.253	0.355	0.154	0.966
Back scratch	0.027*	0.004*	0.303	0.201	0.253	0.651	0.258	0.759
8 foot up and go	0.090*	0.872	0.915	0.333	0.110	0.293	0.503	0.207
Arm curl	0.044*	0.916	0.604	0.834	0.605	0.161	0.250	0.345
Chair sit and reach	0.271	0.051	0.559	0.510	0.011*	0.179	0.294	0.483

*=Significant at 0.05 level

Table 3 represents the association of selected socio-demographic characters with the effects of strength training. The data derive that as age advances arm curls decreases, back scratch becomes difficult and more time needed for 8 foot up and go test. Regarding gender, there was a significant difference between males and females for chair stand (p=0.005) and back scratch (p=0.004).

DISCUSSION

Overall, there was substantial improvement in lower body strength and flexibility, upper body flexibility as well as agility among participants in the experimental group. However, on comparison the experimental group improved more in only one Senior Fitness test item than the control group [8-foot up-and-go; Agility/ dynamic balance].

Strength training, also known as resistance training, is one of the best ways to decrease the weakness and frailty that can come with age[2]. The Senior Fitness Test can motivate older adults to pay more attention to their fitness and physical activity level[4]. This study assessed the effects of strength training on physical parameters including upper and lower body strength, upper and lower body flexibility, and balance and aerobic endurance via the Senior Fitness Test.

There was no significant difference in BMI after the intervention, however, strength training had a significant

effect on blood pressure. In the experimental group, average blood pressure decreased from 134 mmHg to (SD=11.46) to 124 mmHg (SD=12.448) pre- to post-program.

Unlike intervention group there was only negligible change in physical parameters assessed by the Senior Fitness Test in the control group; only chair stand change was significant. The experimental group significantly improved four of the six Senior Fitness Test items than their counterparts. Interestingly, regarding quality of life, the control group slightly improved in physicalaspects, on contrary the experimental group improved in all three parts: physical, psychological, outlook on life and meaningful existence.

Majida and Kutty [2015] conducted a randomized controlled study on core strength training in 48 community-dwelling adult males aged 50 to 70. Participants in the experimental group performed core strength training exercises three times per week, for 45 minutes per session, for six weeks. Compared to a no intervention control group, the experimental group significantly improved in the timed up-and-go and functional reach tests.[7] The test items timed up and go is same as 8 foot up and go as well as functional reach is similar to chair sit and reach used in this study

Katula and colleagues [2008] conducted a randomized controlled trial with 45 older adults, looking at the effect of a 12-week, three times a week program of progressive strength training or high velocity power training on quality of life in older adults. Participants in the power training group improved significantly more in self-efficacy, satisfaction with physical function, and satisfaction with life than the control group. The strength training group improved more than the control group for self-efficacy only. Thus, it appears that high velocity power training may increase quality of life more than traditional strength training.[8] Likewise in this study Strength training exercises enhanced a sense of well-being in participants and improved quality of life as evidenced by statistical analysis.

CONCLUSION

The aim of this study was to explore the effectiveness of strength training on selected physical parameters. The findings of the study suggest that strength training can avert weakness and frailty among older adults and thereby reduce the risk of falling. It also shows that a blood pressure can be maintained within normal range with strength training. Moreover, the findings indicate that strength training exercises enhance quality of life. Another noticeable change is that their frequent visits to nearby hospitals and clinics comparatively reduced when they started doing exercises.

There may be some limitations in this study as sample size differs between groups and the duration of intervention was merely for 6 weeks. In fact, hardly similar studies are done in developing countries like India.

Ethical Clearance: The study has been conducted after obtaining ethical clearance from ethical committee of Amrita Hospital.

Conflict of Interest: Nil

Source of Funding: Self

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Impact of Quality of Work Life Dimensions on Organizational Performance: With reference to Jute Industry in Andhra Pradesh and West Bengal, India

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ABSTRACT

Quality work life is turning into a basic issue to accomplish the objectives of the employees' commitment, efficiency, organizational performance, etc. When an organisation gives a superior quality of work life then, it builds up the quality work environment and satisfies the employee aspirations. High quality of work life can give an outcome of better organizational performance, effectiveness, innovation, etc. This paper centres and analyses the literature review on the quality of work life and their measurements/dimensions.This paper establishes the relationship between quality of work life dimensions and the organizational performance in Jute industry. Chi-square test is used to measure the relationship in the study. Based on the results it is found that, quality of work life dimensions has significant impact on organizational performance (P-value is less than 5 percent level of significance). Thus, to contribute better life for every one of the employees, the quality of work life dimensions should be increased.

Keywords: *Quality of work life, Job satisfaction, Job Security, Training and development, Employees in jute industry, organizational performance, India.*

INTRODUCTION

A number of attempts have been made to identify various dimensions of quality of work life (QWL) by the "philosophers and research scholars". Some have highlighted the significance in working conditions prompting better nature of work life while others feel a reasonable pay and job security should be emphasized"(Mirza, S. Saiyadain, 1995[1]) , et.al described the QWL from various viewpoints: (i) from a professional viewpoint, it is an industrial democracy increased worker participation in corporate decision-making, or a a perfection of the objectives of human relations; (ii) from the management perspective, it is an assortment of endeavours to improve productivity through improvements in the human, rather than the capital inputs of production, (iii) from the point of view of the qualities of individual workers: it refers to the degree how much individuals of a work organization are able to satisfy important personal needs through their experience in the organization, (iv) from union's perspective: it is a more equitable sharing of the income and resources of the organization and human and advantageous working conditions, (v) as a theory, it means the quality of the substance of connection of relationship between man and his task in all its diversity; (vi) the relationship can be approached from disparate needs and values of human and societal concepts. Factors like social relevance, social integration, work and total life space, constitutionalism, opportunity for continue growth and security, opportunity to use and develop human capacities have a significant influence from the job satisfaction factors (Shahnaz Uddin and Dr. K.S. Sekhara Rao, 2018[2]).

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REVIEW OF LITERATURE

A number of researchers and theories observation in the Quality of work life concept and have tried to

find out the different kinds of dimensions that determine the Quality of work life (Che Rose, 2006 [3]; Stephen, 2012 [4]). Work environment is a place in which one works. It is professional environment where employees are assuming to work with a number of people, with one another. QWL for academicians is an attitudinal response to the prevailing work environment and posited five work environment domains that include role stress, job characteristics, supervisory, structural and sect oral characteristics to directly and indirectly shape academicians experiences, attitudes and behaviour . (Sirgy et al. 2009 [5]) identified seven major needs, each having several dimensions. These are: (a) health and safety needs (protection from ill health and injury at work and outside of work, and enhancement of good health), (b) and family needs (pay, job security, and other family needs), (c) social needs (collegiality at work and leisure time off work), (d) esteem needs (acknowledgment and admiration of work within the organization and outside the organization), (e) actualization needs (realization of one's potential within the organization and as a professional), (f) knowledge needs (learning to enhance job and professional skills), and (g) aesthetic needs . (Dr. K.S.Sekhara Rao et.al, 2018 [6]) said that, improved quality of work life leads to a higher level of job satisfaction, which in turn reduces the employee turnover rate associated with job satisfaction. (K.Hymavathi et.al,2018 [7]), examined the relationship between quality of work life dimensions and organizational effectiveness.

Organization culture and climate: Cultural diversity impacts level of mutual trust, friendliness among the team members, level of core competencies, etc. it also increases the employee motivation and importance to openness to employees' that leads to implement in quality of work life (Sahyaja and K.S.Sekhara Rao, 2017[8]).

Relation and co-operation: Relation and cooperation is a communication between management and employees, concerning workplace decision, conflicts and problem resolving. QWL is associated with career development and career is evolving from such interaction of individuals within the organizations (Che Rose et al., 2006[3]).

Training and development: According to (Raduan Che Rose et al. 2006 [3]) there is a relationship between QWL and career-related dimensions an empirical study done to predict QWL in relation to career-related dimensions with a sample of 475 managers from the free trade zone in Malaysian for both the multinational corporation (MNCs) and small-medium industries (SMIs).

Compensation and rewards: Quality of working life is associated with satisfaction with wages, working hours and working conditions, describing the "basic elements of a good quality of work life" as; safe work environment, equitable wages, equal employment opportunities and opportunities for advancement (Mirvis and Lawler, 1984[9]).

Job security: Job security is another factor that is of concern to employees. Permanent employment provides security to the employees and improves their QWL.

Equity, justice and grievance handling: The grievance process must be clear and simple. It must be well-defined. It must conform to the current legislation without any prejudice. There should not be any delay in the grievance process it a might result into a crisis. The sheer volume of grievances and disciplinary actions that arise will affect the costs of managing an organisation. (Katz et al, 1983 [10]).

Psychological factors: (Massaran Bamba, 2016 [11]), discussed very important aspect of quality of work life ensure the effective management of stress for employees. Psychological factors such as stress, unfriendliness, depression, hopelessness etc. which are associated with physical health. The literature would also reveal the contribution of the important components of QWL which associated with the employee satisfaction.

Job satisfaction: (Sunil Kumar Dhal,2013 [12]), "A study of jute industry employee's job satisfaction in costal district of Andhra Pradesh" given suggestions to the employees, employers, trade unions and governments to improve the industrial relations as follows participative management, role of trade union, salary &wage and employee job satisfaction must be given higher priority to improve the quality of the jute industry.

Research problem: The thorough review of literature found that, a job is compatible with an employee when it involves duties and assignments that the employee finds interesting. There is a need to address all the problems of the employees like, safety and healthy work environment in jute industry by improving the quality of work life dimensions of employees.

Objective of the study: The objective is to examine the relationship between quality of work life dimensions and organizational performance.

Hypothesis of the study

H1: Quality of work life dimensions influence the organizational performance

H1.1: Work environment influences the level of productivity of jute industry

H1.2: Relations and cooperation among employees influences the level of productivity of jute industry

H1.3: Training and development among employees influences the level of productivity of jute industry

H1.4: Compensation and rewards among employees influences the level of productivity of jute industry

H1.5: Job Security influences the level of productivity of jute industry

H1.6: Equity, justice and grievance handling among employees influences the level of productivity of jute industry

H1.7: Psychological factors influences the level of productivity of jute industry

RESEARCH METHODOLOGY

This study utilized the descriptive method of research. The following is the flow chart:

DATA ANALYSIS

Quality of work life which is influenced by few factors such as psychological factors, harmonious relationship, job security, grievances, compensation and rewards, work friendly environment, training and development etc. Betterment of dimensions of quality of work life which can provide a bright future for employees as and also organisational excellence in jute industries.

Table 1: Chi-square tests showing the responses on "work friendly environment and level of productivity"

	Value	df	Asymp. sig. (2-sided)
Pearson chi-square	170.029	16	0.00
Likelihood ratio	153.03	16	0.00
Linear-by-linear association	113.276	1	0.00
N of valid cases	541		

The table shows, chi-square test for independence outlined that relationship between work friendly environment and level of productivity of jute industry. Hence, there is relationship between work friendly environment and level of productivity of jute industry i.e. χ^2 (16, N = 541) = 170.029, $p < 0.05$ as p-value is .00. That means the association is at 95 percent confidence interval (α=0.05). The likelihood ratio is 153.03 that confirm the main chi-square result. Again the study is confident about the ordinal (linear) chi-square = 113.276. It is evident that the significance p-value is less than 0.05; it means that hypothesis is accepted. Hence, work friendly environment shows impact on level of productivity of jute industry.

Table 2: Chi-square tests showing the responses on "harmonious relationship and level of productivity"

	Value	df	Asymp. sig. (2-sided)
Pearson chi-square	141.131	16	0.00
Likelihood ratio	124.456	16	0.00
Linear-by-linear association	95.867	1	0.00
N of valid cases	541		

The table shows chi-square test for independence outlined that relationship between harmonious relationship and level of productivity of jute industry. Hence, there is relationship between harmonious relationship and level of productivity of jute industry i.e. χ^2 (16, N = 541) = 141.131, $p < 0.05$ as p-value is .00. That means the association is at 95 percent confidence interval (α=0.05). The likelihood ratio is 124.456 that confirm the main chi-square result. Again the study is confident about the ordinal (linear) chi-square = 95.867. It is evident that the significance p-value is less than 0.05; it means that hypothesis is accepted. Hence, harmonious relationship shows impact on level of productivity of jute industry.

Table 3: Chi-square tests showing the responses on "training and development and level of productivity"

	Value	df	Asymp. sig. (2-sided)
Pearson chi-square	169.437	16	0.00
Likelihood ratio	147.515	16	0.00
Linear-by-linear association	107.854	1	0.00
N of valid cases	541		

The table shows, chi-square test for independence outlined that relationship between training and development and level of productivity of jute industry. Hence, there is relationship between training and development and level of productivity of jute industry i.e. χ^2 (16, N = 541) = 169.437, p < 0.05 as p-value is .00. That means the association is at 95 percent confidence interval (α=0.05). The likelihood ratio is 147.515 that confirm the main chi-square result. Again the study is confident about the ordinal (linear) chi-square = 107.854. It is evident that the significance p-value is less than 0.05; it means that hypothesis is accepted. Hence, training and development shows impact on level of productivity of jute industry.

Table 4: Chi-square tests showing the responses on "compensation and rewards and level of productivity"

	Value	df	Asymp. sig. (2-sided)
Pearson chi-square	238.745	16	0.00
Likelihood ratio	218.358	16	0.00
Linear-by-linear association	118.338	1	0.00
N of valid cases	541		

The table shows, chi-square test for independence outlined that relationship between compensation and rewards and level of productivity of jute industry. Hence, there is relationship between compensation and rewards and level of productivity of jute industry i.e. χ^2 (16, N = 541) = 238.745, p < 0.05 as p-value is .00. That means the association is at 95 percent confidence interval (α=0.05). The likelihood ratio is 218.358 that confirm the main chi-square result. Again the study is confident about the ordinal (linear) chi-square = 118.338 It is evident that the significance p-value is less than 0.05; it means that hypothesis is accepted. Hence, compensation and rewards shows impact on level of productivity of jute industry.

Table 5: Chi-square tests showing the responses on "job security and level of productivity"

	Value	Df	Asymp. sig. (2-sided)
Pearson chi-square	209.034	16	0.00
Likelihood ratio	171.474	16	0.00
Linear-by-linear association	98.777	1	0.00
N of valid cases	541		

The table shows, chi-square test for independence outlined that relationship between job security and level of productivity of jute industry. Hence, there is relationship between job security and level of productivity of jute industry i.e. χ^2 (16, N = 541) = 209.034, p < 0.05 as p-value is .00. That means the association is at 95 percent confidence interval (α=0.05). The likelihood ratio is 171.474 that confirm the main chi-square result. Again the study is confident about the ordinal (linear) chi-square = 98.777 It is evident that the significance p-value is less than 0.05; it means that hypothesis can be accepted. Hence, job security shows impact on level of productivity of jute industry.

Table 6: Chi-square tests showing the responses on "grievances and level of productivity"

	Value	df	Asymp. sig. (2-sided)
Pearson chi-square	246.936	16	0.00
Likelihood ratio	246.012	16	0.00
Linear-by-linear association	150.126	1	0.00
N of valid cases	541		

The table shows, chi-square test for independence outlined that relationship between grievances and level of productivity of jute industry. Hence, there is relationship between grievances and level of productivity of jute industry i.e. χ^2 (16, N = 541) = 246.936, p < 0.05 as p-value is .00. That means the association is at 95 percent confidence interval (α=0.05). The likelihood ratio is 246.012 that confirm the main chi-square result. Again the study is confident about the ordinal (linear) chi-square = 150.126 It is evident that the significance p-value is less than 0.05; it means that hypothesis can be accepted. Hence, grievances shows impact on level of productivity of jute industry.

Chi-square tests showing the responses on "psychological factors and level of productivity": The chi-square test for independence outlined that relationship between psychological factors and level of productivity of jute industry. Hence, there is relationship between psychological factors and level of productivity of jute industry i.e. χ^2 (16, N = 541) = 213.176, p < 0.05 as p-value is .00. That means the association is at 95 percent confidence interval (α=0.05). The likelihood ratio is 203.448 that confirm the main chi-square result. Again the study is confident about the ordinal (linear)

chi-square = 117.043 It is evident that the significance p-value is less than 0.05; it means that hypothesis is accepted. Hence, psychological factors shows impact on level of productivity of jute industry.

Finally, from the above tables it shows that the result showing all the hypothesis are accepted

CONCLUSION

Quality work life (QWL) is seen as a contrasting option to the control approach of overseeing employees. The QWL approach considers employees as "asset" to the association instead of as "costs". Employees perform better when they are permitted to take an interest in dealing with their work and also involving in decision making. Positive consequences of QWL are diminished non-appearance, turnover, what's more, enhanced occupation fulfilment. As per analysis it concluded that that the improvement of the quality of work life on all aspects will result in the motivation and job satisfaction of the employees which gives the best end results for the organization.

Ethical Clearance: Research commitee

Source of Funding: Self

Conflict of Interest: Nil

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A Study on Customer Preferences on Green Marketing

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ABSTRACT

Environmental problem has led to the shift in the way of consumer go about their life. There is a dynamic change in the attitudes of the masses towards green life style agenda. People are carving to reduce their impact on the environment. There is not a complete shift in the green trend of marketing to cater the need of the dynamic society. Slow shift of green awareness among the consumer has brought the change in pivot attitude and trying to gain an edge in competitive market by exploiting the potential resources in green market sector. In the era of globalization it has been more competitive among the pivot society to meet up the dynamic demand of the society and consumer in a stabilized way and to try to meet boot the ends meet. Green Marketing is a vital activity in the modern market and it has becoming a vital element in India as it is in the phase of transformation from developing to developed nation. In this research paper main emphasis significance of Green Marketing in developing countries, factor comparison with the actual trend and sustainable impact on the marketing procedure of the dynamic society. Customer satisfaction level and the industrial presence to make a move towards the dynamic changes is measured. Data has been collected from multiple sources of evidence in addition to book, journals, website data analysis and newspaper. It explores how to market the green marketing strategy in depth. The paper describes the current scenario highlight the Green Marketing challenges in Indian Market.

Keywords: *Green Marketing, dynamic, environment, consumer market, traditional marketing*

INTRODUCTION

First of all, Green marketing has emerged as the result of environment and environmental problems. According to the American Marketing Association Marketing is the activity, set of Institutions and processes for creating, communicating, delivering, and exchange offering that have value for customers, clients, partners, and society as a large. Thus green marketing indulge a broad range of activities, which including product modification, changes to the production process, packaging changes, as well as modifying advertising pattern, educating the customers and enhancing the product knowledge . Green marketing refers to holistic marketing concept wherein the product, marketing consumption on disposal of products and services happen in a manner that is less detrimental to the environment with growing awareness about the implications of global warming, non-biodegradable solid waste, harmful impact of pollutants on society and resources etc., both marketers and consumers are becoming increasingly sensitive to the need for switch into green products and services to bring up. Many people believe and misconception that green marketing refers solely for the promotion and advertising of products with environmental characteristics. Generally terms like phosphate free, recyclable, refillable, ozone friendly and environment friendly are most common terms to which consumers are often associated with green marketing tag. Yes, green marketing is a golden goose. As per Mr. J. Polanski, green marketing can be defined as, "All activities designed to generate and facilitate any exchange intended to satisfy needs or wants such that satisfying of their human needs and wants occur with minimal detrimental input on the national environment." Green marketing is also called environmental marketing/

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ecological marketing. As resources are limited and human wants are unlimited, it is important for the marketers to utilize the resources efficiently without waste it to achieve the organization's objective and to take care of the sociological need of the society. So green marketing is in unavoidable and inevitable one. There is growing interest among the consumers all over the world regarding the protection of the environment. Worldwide evidence indicates people are concerned about the environment and are changing their behavior so as to leave a better environment for the future generation. As a result of this, green marketing has emerged which speaks for the growing market for sustainable and socially responsible products and services. Now this has become new mantra for marketers to satisfy the needs of consumers and earn better profits by taking care of environmental issues it act as the two side of the same coin. The term satisfaction is immeasurable in term of numerical. It is the sate of satisfaction that is derived after the consumption or usage of the particular event or product.

Business get benefit from the green marketing in a great way but general trends of transparency, connectivity with the and increased awareness of the evolving issues in the society add overall value the marketing phrases. Goods and service are being openly involved with environmental concerns accused of green marketing standard in the foothold to the standard mention by the premier organisation involved in the whole activities. (GBCI) Green Business Certificate Inc.

Green marketing is viewed as the type of marketing strategy and marketing philosophy and its linked to both industrial and services marketing as a whole. It is the Visionaries concept that deal the future world. Internal and External factor which act as the main element in the Green Marketing process. Internal factor that arise from with the business unit and are controllable and external factor which arise from outside the business unit and its influenced by the external factor and it has the commendable impact on the business.

REVIEW OF LITERATURE

Rashad Yazdanifard, Igbazua Erdoo Mercy (2011) The impact of Green Marketing on Customer satisfaction and Environmental safety. International Conference on Computer Communication and Management Proc .of CSIT vol.5 (2011) IACSIT. This paper can be used by researchers who need to find out the impact of green marketing on customer satisfaction and environmental safety[7].

Dr. Shruti P Maheshwari(2014) Awareness Of Green Marketing And Its Influence On Buying Behavior Of Consumers: Special Reference To Madhya Pradesh, India. Aima Journal Of Management & Research, February 2014, Volume 8 Issue 1/4, Issn 0974 – 497. The Paper Suggests That The Indian Market For Greener Products Could Be Exploited More Within Consumer Groups That Have Pro Environmental Values[8].

Narges Delafrooz et al (2014) Effect of green marketing on consumer purchase behavior . Delafrooz et al. QScience Connect 2014:5. The influence of green marketing tools have been analysed in this study, namely the eco-label, eco-brand and environmental advertisement. The results show that environmental advertisement had the most significant effect on consumer purchasing behavior and eco-brand had the least effect[5].

Prof. Jaya Tiwari,Green Marketing In India: An Overview Iosr Journal Of Business And Management (Iosr-Jbm), E-Issn: 2278-487x, P-Issn: 2319-7668. In This Research Paper, Main Emphasis Has Been Made Of Concept, Need And Importance Of Green Marketing. It Explores The Current Scenario In Green Marketing[3].

Wong Fuiyeng & Rashad Yazdanifard(2015) Green Marketing: A Study Of Consumers' Buying Behavior In Relation To Green Products. Global Journal Of Management And Business Research: E Marketing. Volume 15 Issue 5 Version 1.0 Year 2015. This Paper Will Be Discussing The Green Marketing And Its Sustainability As Well As The Tools And Marketing Mix Of Green Marketing. Other Than That, The Green Consumer And Branding Will Be Discussed In Further In This Paper As This Will Attract More Consumers[9].

Hristo Katrandjiev(2016)Ecological Marketing, Green Marketing, Sustainable Marketing: Synonyms or an Evolution of Ideas. Economic Alternatives, Issue 1, 2016. The article studies the origin and development of the ecological marketing concept. Based on the study of publications on the subject, four stages of development have stood out: (1) embryo stage (2) ecological marketing (1975-1989); (3) green marketing (1990-2000); (4) sustainable marketing[2].

Jeevarathnam P. Govender (2016)The Influence Of Green Marketing On Consumer Purchase Behavior. Environmental Economics, Volume 7, Issue 2, 2016. It Emerged That There Was No Significant Difference Between Low And High Income Earners In Terms Of Price Sensitivity, And No Significant Difference Between Lower And Higher Qualified Respondents In Terms Of Knowledge And Awareness Of Environmental Degradation And Green Marketing[4].

Pavan Kumar P S (2017) Green Marketing. National Conference on Marketing and Sustainable Development October 13-14, 2017. Green marketing incorporates a broad range of activities, including product modification, changes to the production process, packaging changes, as well as modifying advertising[6].

Devakumar et al. (2017)An Empirical Study on Green Marketing Strategies for Market Sustainability with Respect to Organic Products. RUAS UAS JMC 34 Vol. 03, Issue 02. To carry out literature survey on prevailing Green Marketing Strategies with respect to Organic Products. Introduction of various schemes and discounts on green products to encourage peoples to purchase products. Improve the quality of the packaging to recycling process[1].

Evolution of Green Marketing: First seminar on ecological marketing was organized by American Marketing Association (AMA) in 1975 and it took place in the literature. The concept gained significance in late 1980's and early 1990's. The first milestone in the journey of Green Marketing was achieved in the form of publication of Books Title Green Marketing written by Ken Pattie 1992 and Peattie 2001. The reach of the Green Marketing was restricted to the fixed zone till 1980's. There was a misconception that the concept was related to the agricultural sector. This was the reason of lack of awareness among the common masses and the business association, Green Marketing concept slowly gathered speed in the fast phase of the dynamic environment to cater the need of environmental and environmental issues related to it,

The evolution is characterized into three phase

Phase I: "Ecological" Green Marketing: focus on reducing Environmental Problems & providing Remedies.

Phase II: "Environmental" Green Marketing: focus on innovations through Clean Technology.

Phase III: "Sustainable" Green Marketing: focus on preservation of Environment through Sustainable Development.

Early research suggests that ads with green claims were more effective in generating favorable brand attitudes among the consumer than were advertisement without green claims.

OBJECTIVES OF THE STUDY

It is aimed to cover the following objectives:

1. To know the concept of green marketing.
2. To identify the significance and need of green marketing.
3. To know the impact of Green Marketing on the Society

Hypothesis of the Study

1. There is no significant difference among the factor of Green Marketing
2. There is no Significant relationship between usage of Green Marketing and impact of Green Marketing

Design/Methodology/Approach

Linear Multiple Regression Analysis.

This methodology is used in situation in which decision are made on the basis of multiple Cod able input. The model is based on four constraint a) Normatively b)contrast in decision maker c) Represent the decision maker d) booth start the decision making by replacing the factor with his representation

Influence of Green Marketing on Customer Satisfaction: The factors of green marketing consists of five variables and it subsequent influence over customer satisfaction is measured through linear multiple regression analysis. The results are presented below

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.979[a]	.958	.957	.265
a. Predictors: (Constant), F5, F3, F4, F2, F1				

The above table shows that R = .979 R square = .958 adjusted R square = .957. This implies that green marketing factors create 96% over customer satisfaction is ascertained through the following one way analysis of variance.

Table 2: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	785.777	5	157.155	2232.610	.000[b]
	Residual	34.773	494	.070		
	Total	820.550	499			
a. Dependent Variable: CS1						
b. Predictors: (Constant), R5, R3, R4, R2, R1						

The above table represents that F= 2232.610 and P = 000 are statistically significant at 5% level. This indicates that all the five variables cumulatively responsible for customer satisfaction. The individual influence of all the five variables is clearly presented in the following co-efficient table.

Table 3: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.376	.053		-7.077	.000
	Harmless	.097	.038	.099	2.531	.012
	Re-cyclable	.146	.043	.116	3.347	.001
	Hygiene	.298	.040	.244	7.371	.000
	Quality	.300	.032	.314	9.374	.000
	Eco-friendly	.227	.032	.241	6.988	.000
Dependent Variable: CS1						

It was presented in the above table Harmless (Beta = .099, t = 2.531, P = .000), Recyclable (Beta = .116, t = 3.347, P = .001), Hygiene (Beta = .244, t = 7.371, P = .000), Quality (Beta = .314, t = 9.374, P = .000) and Eco –friendly (Beta = .241, t = 6.988, P = .000) are statistically significant at 5% level. It highlights that customers are preferred green marketing especially for quality followed by hygiene factor.

FINDING OF THE RESEARCH

The Research content follow structural features in common, which are present in each factor of Green Marketing. Finding indicates that all the five variables cumulatively responsible for customer satisfaction .A conditional monotone relationship with the output is found among the factor. . It highlights that customers are preferred green marketing especially for quality followed by hygiene factor. 96% over customer satisfaction is ascertained through the research methodology. The above table represents that F= 2232.610 and P = 000 are statistically significant at 5% level. There is an error of measurement and deviation from optimal weighting does not make much practical difference in the results.

CONCLUSION

Green Marketing factor has sustainable impact on the satisfaction of the customers need and wants. A green future is now being created by visionaries with a competitive spirit in the soul and social activities in their hearts. While many business people may still be content to tweak product on manage cash quest for next quarters earning. Green leaders are now relaying new product and service to market , creating new industries and more inclusive work and management styles that didn't exist five or ten years ago. With ever increasing scientific understand of how earth work, a general movement toward safer, less polluting and more environmental sustainable practices is, inevitable. Marketer who takes the time now to court the deepest green consumer with truly innovative solution to environmental concern will

be the one who reap the biggest future opportunities. Business unit which in take the Green Marketing factor in to consideration will have long string of success, and will help to retain in the competitive market of ever changing customer needs.

Conflict of Interest: Nil

Ethical Clearance: Taken from UGC Committee

Source of Funding: Self

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Why Physician's Keep Coming Back to Telemedicine: Predicting Using Unsupervised Learning

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ABSTRACT

Telemedicine for health care delivery is growing at an explosion rate. The Theory of Planned Behaviour (TPB) model is extended to determine the predictors of adoption of telemedicine by physicians and explaining the importance of predictors. An Unsupervised learning model which is nonlinear is developed to understand the predictors of adoption of telemedicine. 145 physicians' using telemedicine were randomly sampled and surveyed. Neural network analysis was used to predict the adoption of telemedicine by physicians and the model was compared with the result of supervised learning using regression analysis. The neural network outperformed the regression model and established the non linear relationship between different predictors found significant. The framework offers an integrated view, taking into account the predictors, for physicians in explaining and validating the predictor's importance. The findings suggest that the proposed model offer a deeper understanding of the predictors that influence the adoption of telemedicine. Behavioral intention is high when they are associated with other predictors.

Keywords: *Telemedicine, TPB, Neural Network, Supervised learning.*

INTRODUCTION

Transforming healthcare with telecommunication technology requires devoted governmental policy, a willingness of physicians, patients to adopt the technology and the promotion of progress towards meeting of societal challenges in health care delivery. Prior literature reviewed many technology adoption theory different model have different strength and weakness in predicting behavioral intention to adopt the telemedicine. By 2022 healthcare market in India is expected to touch US$372 billion as per report India Brand Equity Foundation. . Telemedicine coined in 1970s by WHO as mode of valid exchange of medical information related to diagnosis, treatment and prevention of disease via information and communication technologies with the goal of improving patient's health status. It is considered as a tool to be used by healthcare providers to provide an alternate channel for delivery of health care service. [45][46] . The study tries to examine the physician's continuance participation intention and behavior towards telemedicine. It considers Information system continuance use as post adoption phenomenon needs further exploitation and the main motivation for the research. Theory of planned behavior (TPB) is used extensively in predicting human intentions and behavior towards predicting important predictors. TPB is extended in applying to predict health related behavioural intentions.

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LITERATURE REVIEW

Telemedicine services are defined as health services that enable patients to receive treatment in their daily living environment, whereby distance is bridged by ICT, and at least one healthcare professional is involved [2]. Technology Acceptance Model (TAM) model has wide applicability in explaining physician's decision to adopt telemedicine technology in the healthcare context in public and private hospitals[32][28][29].Perceived usefulness, attitude and intention[21][18][17][16][2][4][1][3][11][15][32][20][22], subjective norm and perceived behavioral control [18][17][6][14][25][44] , are the main determinants in adoption of telemedicine. Physicians who perceived

professional and social responsibilities regarding adoption of telehealth had stronger intention to adopt and use technology. Theory of Interpersonal Behavior (TPB) was to assess the physician's intention to use the Telemedicine in their clinical practice [1][4][9]. Attitude of users having experience positively affects and also have significant impact on the continuance intentions [42] [43]. Performance expectancy, effort expectancy , social influence , technology anxiety and resistance to change had a significant impact on the users' behavioural intention to adopt mhealth services particularly among elderly people aged above 60 years.Faciliating condition have no significant on the mhealth adoption[12][23] Service quality, innovativeness of technology, social influence has significant effects on perceived ease of use and perceived usefulness on the use of telehealth service.[13].

Research Model Development: Pre and Post adoption behavior of information system by users plays a vital role in acceptance of the technology as well as continued participation to use the system. Decision making related to pre and post adoption of technology are independent of each other. Prior knowledge of information system has a key point in consideration for the continued usage of the technology. The TPB model is extended to understand the decision making of the physicians to continue the usage of the technology. Perceived value is another predictor used by extending the TPB model. Post adoption is value creation through continuance use rather than simply adoption.

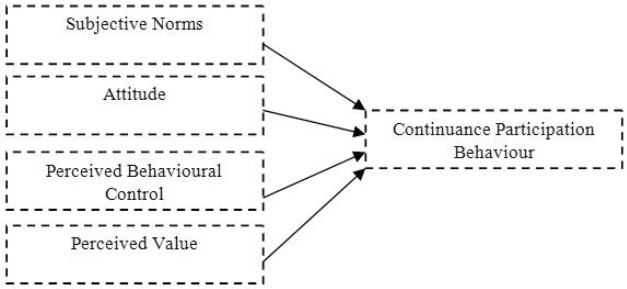

Fig. 1: Proposed Model

MATERIAL METHODS AND ANALYSIS

Physicians working in different private and public medical hospital were the sample considered for the study. Questionnaire instrument with Likert Scale ranging from 1 to 5 was used in collecting the data which consist of the determinants for adoption of telemedicine. Reliability of the instrument was found to be .79. Multiple regression analysis was carried out to find the important determinants of adoption of telemedicine. Then the results was compared with the non linear model i.e. Neutral network . Multicolineraity was absent from the data as per the VIF and Tolerance values . All determinants of the model was found to be significant.

Table 1: Multiple regression coefficient

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5.000	.708		7.058	.000		
	Behavioural Intention	.300	.096	.139	3.123	.002	1.583	.518
	Subjective Norm	.151	.099	.117	-1.532	.027	2.536	.680
	Perceived Behavioural Control	.373	.074	.377	-5.054	.000	1.650	.458
	Perceived Value	.128	.046	.140	-2.784	.006	1.770	.699
a. Dependent Variable: Continuance Participation Intention								

$R^2 = 0.717$, RMSE = 0.554.

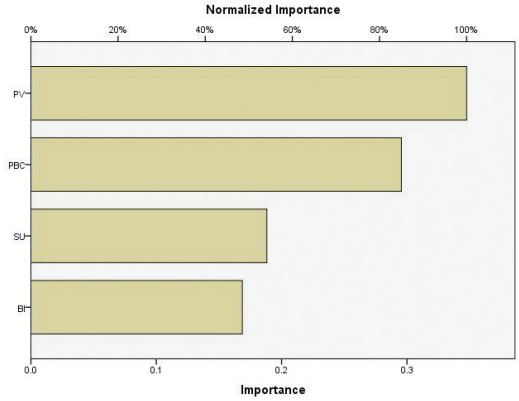

Fig. 2: Normalised Importance of ANN Model

Based on the neural network analyses, perceived value is the most significant predictor of telemedicine adoption, followed by perceived behavioural control, subjective norm and Behavioural intention

Table 2: Independent Variable Importance

Independent Variable Importance		
	Importance	**Normalized Importance**
Behavioural Intention	.169	48.5%
Subjective Norm	.188	54.1%
Perceived Behavioural Control	.296	85.0%
Perceived Value	.348	100.0%

RMSE (Root Mean Square Error) score in case of Artificial Neural Network(ANN) model was very less in comparison to regression model . The RMSE value was .303, .304 for training and testing data in ANN model whereas in regression model RMSE was .564. So it was concluded the ANN model outperformed the regression model and thus provided better fit for the Non linear ANN model. Normalised importance values were calculated in order to find the importance of the predictor in adoption of telemedicine. Perceived value was the most important predictor in adoption of telemedicine and has more predictive ability to explain in the continuance participation of physicians in usage of telemedicine. The ANN model provides more accuracy in accurately predicting the determinants of adoption of telemedicine and a better fit model. Perceived value is high predictor for the continuation participation behavior of telemedicine.

CONCLUSION

Extended TPB model has been validated and tested in predicting the physicians continuance adoption of telemedicine using multiple regression and ANN model .The non linearity outfitted the linear model. Attitude, Social norms, Perceived behavioural control and perceived value are the important predictors in determining the continuance adoption of telememdicne. PBC determines intention including both the determinant attitude and subjective norm. Perceived value and perceived behavioral control is the most important predictor in continuance participation behavior of telemedicine. Physician behavioural control proves them to easier to dominate the technology and allow them to share cognitive capacity of learning. Physicians have the ability to perform a given behavior and that is determined by their belief of the system and by which it will facilitate their continuance participation to use the system.

Ethical Clearance: Not Required (It does not involve any experimental data collected from human as well as Animals. The data is collected from Physicians working in different private and Public Hospitals which purely their personal view or opinion which does not violate the ethical standards.)

Source of Funding: Self

Conflict of Interest: Nil

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Practicing the Strategies of Interpersonal Conflicts Management in Business Organisations to Accede Development and Effectiveness in Personal Health

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ABSTRACT

At present the development and performance of business organisations worldwide is at stake. A number of factors like individual efforts, economical change, cultural impact, lack of people skills and other essential qualities are few of many reasons behind the unsuccessful growth and expansion of any business organisation. Conflicts arising in business organisations are also one of the many reasons that repudiate business organisations to flourish and succeed thereby causing health risk also. Conflicts can result a deep impact in the purpose of business organisations and terminate business deals thus following a radical dysfunctional in organisational management directly affecting health. This paper studies interpersonal conflict and its negative effects in business organisations and finally discovers some resolutions of conflict management practises to facilitate organisational performance and personal health.

Keywords: *Conflicts, organisations, types, causes, effects, conflict management styles, health*

INTRODUCTION

Health is one of the most important precious factors for survival and sustainability. But today with workplace stress, personal health gets challenged and shockingly deteriorating. Workplace conflicts are one of the many reasons for increasing health risks. Workplace conflicts generally arise when the members of any organisation are in a situation of discrepancy or misinterpretation which is a result of tangible or apparent disagreement of resources and relationships among themselves. Mismatch of opinions with regard to any particular task or decision come in contradiction with another which further results in conflicts in an organisation. In other words a large gap is created between goals to the much incompatibility with other people requirements. However, the fact that needs may vary should not be overlooked. The point is however hard one might try but conflicts are inevitable.

Dwyer talks about diverging interests and lack of cooperation which gives rise to conflicts in business organisations. Dwyer[(1)] claims that "diverging interests within an organisation may cause deep-rooted conflicts between departments, teams and individuals. Ambition, personal dislikes, authority and interpersonal workplace relationships are common motivators of conflicts where people are working together within an organisation. Incompatible objectives between departments and teams will lead to conflict if members cannot cooperate to find common values and goals".

As previously mentioned conflicts can take place in various levels associated with the organisation. O'Rourke and Collins tend to describe very briefly different levels where conflicts occur in relation with the organisation. Collins and Rourke[(2)] assert "four levels of conflicts like interpersonal conflict which occurs between two individuals and can be between any hierarchy like boss and employee or employee and employee. They also mention about intergroup conflict which can arise between groups at different levels in the organisational hierarchy or between groups at the same level".

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Researchers believe that whatever level the conflict may arise the outcome is always dysfunctional. There is breakdown in communication as the communication takes place trough disagreements. The intricacies and pressures of conflicts in organisation can stir and interfere in most of the executions and smooth running of business performance and also cause adverse health issues. Gamage elucidates the risk of personal glory during conflicts. Gamage[3] pacifies "conflicts becomes dangerous and disruptive force whenever personal glory is staked on the outcome and parties becomes hostile to each other. The further the conflict develops, the more 'glory' is staked, the bitter the conflict becomes and the less easy it is to achieve a solution".

In order to bring a constructive conflict handling system in business organisations, so that personal health stays benefitted, conflict management is a must and should be able to achieve the desired goals to resolute the conflict. Euson argues that a system that lacks conflict means the conflict has already been unravelled or solved but into vacuity or for a temporary moment. Euson[4] states that "if the removal of the symptoms of conflict does not remove the causes of conflict, then the solution reached is an illusory one. It may be better therefore to manage conflict rather than to simple solve or resolve it". Therefore, conflict management is all about managing and not simply resolving difficult situations.

Interpersonal conflicts: Interpersonal conflicts include two or more personalities clashing with each other. This conflict remains in opposition to each other. Hence, the level at which interpersonal conflicts occur is generally between subordinate and superior or between co-workers. It has been noted and proved by Cupach, Canary and Spitzberg[5] that "when superiors are in conflict with their subordinates, they tend to use forcing or competitive strategies that rely on their power within the organisation". Interpersonal conflicts between co-workers involve a lot of competition sometimes destructive, leading to anger, miscommunication, burnout and stress directly affecting mental, physical and emotional wellbeing. Pisanti, Montgomery and Quick[6] claim burnout to be "consisting of emotional exhaustion, feelings of depersonalization and awareness of reduced personal accomplishment". Today, the nature of the jobs depends on how people communicate with each other and how emotions are connected with each other. In many cases at least a minimal interaction is required. If there dwells interpersonal conflicts among each other workplaces can turn really stressful and unproductive thereby causing health hazards.

Negative Impacts of Conflicts: Conflicts harm interpersonal relationships which itself is contagious and may affect the whole group or department gradually. In such cases division of groups and then the winning-losing games begin to form. A series of negative emotions arise shadowing the complete organisation and if not checked on time the purpose of achieving goals gets blurred. Moshal[9] feels organisational conflicts may also tend to create the situation of goal displacement. It is because these conflicts become a part of organisational functioning. They require special attention, efforts and resources for amicable resolution. Sometimes, resolution of conflict becomes so important and crucial that it takes away resources and attention of members from the planned goal which ultimately causes displacement". However conflicts occurring at regular intervals may result in disorder, chaos and instability both professionally and personally. This can directly cause stress to employees and restrict productivity. Discussions change into arguments and cooperation into infighting. Short term goals are concentrated more on at the cost of long term goals. Communication, purposes and motives are distorted and according to Rao[10] "resolution of conflict is viewed as win-lose rather than win-win". The personal health starts deteriorating giving rise to tremendous stress to mind and body.

Conflicts are inevitable, however taking this fact for granted can be serious and can imbalance the equilibrium of the organisation. While the positive effects of conflict are many, the negative effects may not be overlooked. Conflict management is an art, a skill, a personality trait, an ability which is a constituent not in everyone but only in people who can manage, handle and resolute conflicts not temporarily but permanently. It must be understood first that conflict management requires different skill sets like good communication, patience, extra ordinary leadership skills, thorough decision making skills, dealing with fairness and most importantly promoting welfare. While managing conflicts is imperative and beneficial it is also important to proceed along with the organisations rules and regulations as violating them and administering can lead to damaging consequences.

Conflict Management Styles: Conflict management styles differ and the consequences are different too. Northhouse[11] defines "conflict style as a patterned response or behaviour that people use when approaching conflict". He also mentions about Kilmann and Thomas who developed the famous models of conflict styles in 1975 which is a reference of the study of Blake and Mouton in 1964. The model comprises of five conflict handling styles namely

accommodation, competition, avoidance, compromise and collaboration. Let's study each conflicts handling style in details so that the related health hazards can be identified and worked to improve upon.

A. Accommodation: Accommodation style is a cooperative style of handling conflict. It is an act of accepting others points of views while not expressing and neglecting one's own. It is an act of adjustment with the views and opinions of self or in other words when the views and opinions of self get dominated by others. The effect in such a style is a lose-win strategy as the person who is accommodating or the accommodator permits others to overrule his/her views. In a way the accommodator is sacrificing his/her feelings. Carell and Heabrin[12] elucidate "about accommodation as a strategy is known as open subordination, where a negotiator chooses a yield-win strategy to dampen hostilities, increase support, and foster more interdependent relationships". One advantage with this style is that the conflicts gets end soon and the accommodator is relieved from the uneasiness of the feelings that the conflicts generates. The accommodator remains submissive as for them relationships are important than achieving goals. However, the disadvantage of such a style is that accommodators remain losers and because they cannot stand up for their views their contributions are never considered or recognised.

B. Competition: Verderber, Verderber and Sellnow[13] state "competing style as a type of conflict style which involves more of satisfying our own needs with no concern for the needs of the others and no concern for the harm it does to the group dynamics or problem solving process". Unlike accommodation style where the behaviour remains submissive, in competition style the behaviour remains aggressive and uncooperative. In such a style the member is over confident and keeps forcing his/her wills over others in a group. For a competitor force is a weapon where he/she dominates others by not allowing them to express their views. When only the competitor is heard and others keep mum, not many solutions come out of a problem. In such cases it the group that suffers and the competitor do not still gets affected. Common behaviours of a competitor is forcing, threatening, intimidating, and typically bulling mainly the accommodators. In such a style a win-lose strategy is obtained. One of major advantage of such a conflict handling style is that if the competitor is correct in his/her terms and decisions then a lot of organisational problems get solved and good decisions are made, beneficial for the competitor and the organisation as a whole. At the other hand disadvantages are many. Competitors do not tend to maintain social skills and if their behaviour is not checked or controlled then a cloud of hostility and resentment is spread across the organisation.

C. Avoidance: Studies prove that avoidance is not a solution of handling a conflict neither it is the effective way to do so. The behaviour involved is both unassertive and uncooperative and that avoidance is equal to ignorance. Lussier and Achua[14] write the avoiding conflict style user attempts to passively ignore the conflict rather than resolve it. People avoid conflict by refusing to take a stance, or escape conflict by mentally withdrawing and physically leaving". Such behaviour does not resolve any conflict and the conflict keeps lingering. Hence, the strategy involved is lose-lose situation. However, much amount of arguments may get reduced thus not affecting or harming relationships and that is the only advantage in avoidance conflict style. Also avoidance requires a lot of tolerance because during the process of arguments when one tries to avoid one may have to keep quiet and put up with situations which may be annoying. One of the disadvantage of avoidance conflict style is conflicts remain as it is without getting solved and thus making them worse at times. However, Lussier and Achua[14] also believe that "avoidance conflict style can be appropriate to use when the conflict is trivial, our stake in the issue is not high, confrontation will damage an important relationship, we don't have time to resolve the conflict, or the emotions are too high". While it's fine to use avoidance conflict style in the aforementioned cases but its also unsuitable to continuously use avoidance conflict style as it causes outburst of emotions and that becomes so severe that it damages relationships.

D. Compromise: Compromise style otherwise known as negotiating style of conflict handling endeavours

to resolve conflict through the process of give and take. The behaviour is moderate accompanied with putting forth opinions and being cooperative at the same time. Each party come to a mutual decision by giving up on some issues. It may be also determined that adopting compromise conflict would let manage things in between the two parties and make compromises on each parties' demands. Greer, Charles and Richard[15] discuss that the compromise style is appropriate when there is insufficient means to pursue a collaborative approach or when it is unlikely that the parties are willing to share their real underlying needs in conflict situation. With compromise as an action, the parties typically obtain less than they desire, and there is incomplete satisfaction with the resolution". Though compromise style is considered as a valuable procedure, it is considered beneficial only when there are severe deadlines to achieve and also when an immediate resolution is demanded and achieved. Although the parties obtain a solution it is not a permanent one. This style involves no-win-no lose strategy. One of greatest advantage of negotiating style according to Lussier[16] is that "the conflict is resolved relatively quickly and working relationships are maintained. The disadvantage is that compromise often leads to counterproductive results, such as suboptimum decisions".

E. Collaboration: Of all the conflict handling style, the collaborative style is the most effective style research suggests. It applies the win-win strategy as this style makes sure that both the parties win and are satisfied with the outcome. In such a collaborative style, discussions are openly held, with open exhibition of views and opinions regarding the issues and the concerns. Solutions are mutually explored and determined. Communication takes place with an open mind and commitment to provide the best both the parties can get. Lane and Shelley[17] claim that "people who make use of the collaborations style realize that conflict is natural and can potentially strengthen a relationship". The collaborators understand the importance of work, goals and tasks at hand and also understand that relationships are equally important. Hence they do not give much importance to personal attacks and conflicts. The behaviour involved is high both on being assertive and cooperative. One of the advantages of collaborative style is that resolutions and relationships are not hampered. However it comes with its own disadvantage. Folger, Poole and Stutman describe collaborative style as not so easy as it seems to be. The collaborative style requires that each party needs to understand the other party equally well and the intensity of trust and honesty also demand to be equal. Only then both the parties would move forward to resolute problems. Folger, Poole and Stutman[18] write that "the collaborating style is not without challenges and difficulties. It requires great deal of time and energy. Creativity is not easy and parties may have to spend a considerable amount of time exchanging offers and ideas before an acceptable solution can be hammered out. Hence, collaborating is difficult when there is little time or when there is urgent pressure to act immediately".

CONCLUSION

This paper examined and explored interpersonal conflicts and the effects in organisational behaviour. Further, it delved into some of the best conflict handling techniques in order to accede development and effectiveness in organisation also reflecting personal health. Implementing conflict management styles can improve health and safety conditions. Proper guidance, training and coaching the various styles of conflict handling styles can be beneficial both for organisational success and personal health. Anger, depression, mental chaos, imbalance get appropriately overlooked with a tremendous advantage to the overall health. Though one can never detect the best conflict handling style as it varies from one organisation to another and one manger to another, however, the most effective conflict handling style must be recognised, approached and regarded to gain best of results.

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Ethical Clearance: Not Applicable

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Comparative Performance Analysis of Selected Large Cap Mutual Funds in India

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ABSTRACT

The present paper compares the performance of select five large cap mutual funds in India. Mutual Funds performance were analysed by using Sharpe, Treynor, Jensen's and Fama measure. The findings suggest that the four funds out of select five large cap mutual funds has outperformed the market return and has been formed the base for suggesting the investors the potentiality of mutual funds in respect of returns.

Keywords: *Mutual Fund, India, Market, Return, Potential*

INTRODUCTION

Mutual funds pool the savings of investors and invest in capital markets and generate returns and share with the investors. Today Mutual funds are popular investment options globally both as short-term and long-term investments. "The Indian Mutual fund will grow at the rate of 25 per cent in the next financial year from 14 per cent to 15 per cent in current year" predicts Leo Puri, managing director of UTI Asset Management, one of India's largest firms in this space. The Asset under Management (AUM) of Indian Mutual Fund Industry are expected to touch 20 lakhs crore INR sooner than expected with lower bank interest rates and demonetization.

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LITERATURE REVIEW

S.M.Tariq Zafar, Dr. D.S.Chaubey, Mr. Syed Imran Nawab Ali (2015)[1], in their study " "An Emperical Study on Indian Mutual Funds Equity Diversified Growth Schemes and their performance Evaluation" specifies that the Indian mutual fund industry experienced a tremendous growth due to financial infrastructural development, high saving and foreign participation. It is also observed that increasing income and financial awareness has created risk taking ability of common investors and thus the scope for mutual funds have increased

Syed Husain Ashraf and Dhanraj Sharma (2014)[2] in the paper "Performance Evaluation of Indian Equity Mutual Funds against Established Benchmarks Index" has compared the performance of equity funds with respect to benchmark indexes and observed that the result if regression analysis reveals that benchmark market return has significant impact on mutual fund return at 5 % level of significance.

Dr.Shantanu Mehta, Charmi Shah (2012)[3] Research Paper on "Preference of Investors for Indian Mutual Funds and its Performance Evaluation In India", undertakes 100 educated investors of Ahmedabad and Baroda city and the major findings reveals that the Investor can diviersify their investment by investing in a mutual fund scheme of varied equity stocks, balanced type and debt etc. so as to diversify the risk and maximize the profit.

Dr. Sarita Bahl; Meenakshi rani (2012)[4] has evaluated the Comparative Analysis of Mutual Fund Schemes in India and revealed that 14 out of 29 (48.28 percent) sample mutual fund schemes had outperformed the benchmark return. Some of the schemes had underperformed as these schemes were not diversified properly. The performance of the funds as per sharpe ratio and Jensen measure was good as all funds were positive.

OBJECTIVE OF THE STUDY

To study and compare the performance of Select Large Cap Mutual Funds in India by using Sharpe, Treynor, Jensen, and Fama measures.

RESEARCH METHODOLOGY

To evaluate the comparative performance analysis of select large Cap Mutual Funds in India, five large cap schemes Viz; SBI Blue Chip Fund – (G), Birla Sun Life top 100 – (G), Franklin India Flexi Cap Fund -(G), DSP block top 100 equity funds –(G) &Sundaram select focus fund Retail plan –(G) were selected on random basis. Daily NAV of select schemes for ten years (Jan 2007 to Dec 2016) is used in the study. Nifty 50 is used for market portfolio. The daily yield on 364-day treasury bills is used as risk free rate of return.

The study is purely based on secondary data, so data were obtained from the websites, reports and news papers, Mutual Funds journals, magazines, sponsoring agencies, online bulletins' brochures, and other published and online material.

Tools and Techniques: The following tools are used in the present study. The return of mutual funds is calculated with the following formulae

$$R_1 = (P_{1-}P_0)/P_0 * 100$$

Where,

R_1 = Return of fund, P_1 = Value of the fund at the period end, P_0 = value of the fund at the start of period.

Jensen measure is developed by Mitchel Jensen. Symbolically, it can be written as:

Jensen Measure = Rp-((Rf+β*(Rm-Rf))[5]

Where,

Rp = Portfolio return, Rf = Risk free interest Rate, Rm = Return on Market,β = Volatility of Portfolio return against that of market portfolio return, β_i is a measure of systematic risk of the portfolio and is calculated using following equation

$$\beta = Cov(Rp, Rm)/\sigma^2 m$$

Where, βp is systematic risk the portfolio

Cov (Rp,Rm) is covariance between the return of the portfolio and Market

$\sigma^2 m$ is variance of market return.

The Sharpe's Measure[6]

Sharpe index (SI) = (Ri-Rf)/Si

Where, Si is standard deviation of the fund.

The Treynor Measure[7]

Treynor's Index (Ti) = (Ri – Rf)/ β_i

Where, Ri represents return on fund, Rf is risk free rate of return and β_i is beta of the fund. All risk – adverse investors would like to maximize this value. While a high and positive Treynor's Index is an indication of unfavorable performance.

Fama Measure: Fama Measure breaks down the observed return into four components.

1. Risk free return R_f
2. compensation for systematic risk $\beta_i(R_m-R_f)$
3. Compensation for inadequate diversification (R_m-R_f) {(σp-σm) - (β)}
4. Net superior returns due to selective (R_p-R_f) {(σp-σm) (R_m-R_f) }

The 2nd and 3rd measures indicates the impact of diversification and market risk by altering systematic and unique risk portfolio can be rescheduled to get the desired return Fama Measure performance denoted by F_p are defined as:

F_p = Portfolio Return – Risk free return – return due to all risks.

$= (R_p-R_f)$ {(σp-σm) (R_m-R_f)}

β_i (Beta) is calculated as $\dfrac{N(XY) - XY}{N(X^2) - (X^2)}$

Calculation of Return and CAGR of Select Large Cap Mutual Fund Schemes

Table 1

Years	SBI Blue Chip Fund – G (Return)	Birla Sunlife Top 100 – G (Return)	Franklin India Flexi Cap – G (Return)	Dsp Block Rock Top 100 Eqity Funds – G (Return)	Sundaram Select Focus Fund Retail Plan – G (Return)	Nifty – 50 (Market Return)
2007	41.10	42.72	44.23	57.69	70.47	53.18
2008	-55.16	-51.09	-52.81	-45.33	-54.02	-51.51
2009	83.75	86.92	105.87	85.05	82.45	70.41
2010	10.95	16.12	16.96	15.74	9.55	16.62
2011	-24.65	-21.97	-22.73	-20.13	-23.55	-24.90
2012	38.23	36.49	31.21	27.82	21.62	27.35
2013	6.58	8.01	6.30	-0.13	3.64	5.93
2014	47.40	48.77	55.23	39.86	33.64	31.44
2015	7.89	-0.28	1.69	-2.72	-2.49	-4.08
2016	4.48	6.28	3.45	6.37	-50.18	2.80
CAGR	10.8	11.9	12.7	11.8	-0.04	8.3
MEAN	16.06	17.2	18.94	16.42	9.11	12.73
Std Dev	40.36	38.86	43.78	45.5	45.5	35.76

The above table-1 reveals the annual returns, compounded annual growth rate (CAGR), Mean and standard deviation of SBI Blue Chip Fund – (G), Birla Sun Life top 100 – (G), Franklin India Flexi Cap Fund -(G), DSP block top 100 equity funds –(G) &Sundaram select focus fund Retail plan –(G) and Nifty-50 as market return. In the year 2007, sundaram fund has earned highest return of 70.47 per cent which is greater than market return of 53.18 per cent. In the year 2008 all the funds including market has fallen down more than 50 per cent except DSP block which has fallen to 45.33 per cent. The reason is due to subprime crises in America which has affected almost all the stocks across the world. In the year 2010, the market has regained and the funds have also earned above 80 per cent return which is more than the market return of 70.41 per cent. The interesting point is the CAGR of 4 funds out of five have earned higher growth rate than the market CAGR in the study period. The mean returns for the period of ten years of five funds shows that four funds out of five have higher mean returns than the market which indicates that mutual funds are better options for investors as they are better managed.

Comparitive Performance Analysis of Select Large Cap Mutual Fund Schemes

To analyse the comparative performance of select large cap mutual fund schemes

Table 2: (Sharpe Measure)

Fund	SBI Blue Chip Fund		Birla Sun Life		Franklin India		DSP BLOCK Rock		Sundaram		Nifty-50 (Market)	
Year	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
2007	0.866	6	0.941	4	0.870	5	1.357	2	1.414	1	1.315	3
2008	-1.519	5	-1.473	4	-1.347	2	-1.355	3	-1.322	1	-1.612	6
2009	1.923	4	2.079	2	2.278	1	2.078	3	1.677	6	1.797	5
2010	0.119	5	0.257	2	0.247	4	0.253	3	0.075	6	0.293	1
2011	-0.763	5	-0.723	4	-0.659	2	-0.692	3	-0.653	1	-0.868	6

Conted…

2012	0.795	1	0.781	2	0.573	4	0.571	5	0.340	6	0.593	3
2013	0.011	2	0.048	1	0.004	3	-0.165	6	-0.055	5	-0.006	4
2014	1.022	3	1.097	2	1.121	1	0.888	4	0.604	6	0.707	5
2015	0.043	1	-0.165	3	-0.102	2	-0.233	5	-0.190	4	-0.286	6
2016	-0.041	3	0.004	2	-0.062	4	0.006	1	-1.238	6	-0.094	5
Mean	0.25	4	0.28	2	0.29	1	0.27	3	0.07	6	0.184	5

Sharpe ratio measurement in table -2 showed the positive sharpe index in all the years except in the year 2008 due to America sub-prime crisis. The mean of the funds and market shows that Franklin India fund is ranked first and is best of all the other select funds and better the market. The second, third, fourth, fifth and sixth rank goes to Birla sun life, DSP block rock, SBI blue chip, Nifty- 50 (market) and sundaram respectively. The analysis reveals that 80 per cent of large cap mutual funds have performed better than market. Investors can easily invest their hard money in large cap mutual funds to enhance their wealth.

Table 3: Treynor Measure

Fund	SBI Blue Chip		Birla Sun Life		Franklin India		DSP Block Rock		Sundaram		Nifty-50 (Market)	
Year	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
2007	32.90	5	34.38	4	32.25	6	49.02	2	55.02	1	47.04	3
2008	-57.70	6	-53.80	4	-49.92	2	-48.94	1	-51.45	3	-57.65	5
2009	73.04	4	75.93	2	84.45	1	75.04	3	65.26	5	64.27	6
2010	4.52	5	9.38	2	9.17	3	9.13	4	2.92	6	10.48	1
2011	-28.98	5	-26.42	4	-24.45	1	-24.98	2	-25.40	3	-31.04	6
2012	30.20	1	28.53	2	21.23	3	20.62	5	13.24	6	21.21	4
2013	0.41	2	1.75	1	0.14	3	-5.96	6	-2.13	5	-0.21	4
2014	38.83	3	40.07	2	41.58	1	32.07	4	23.52	6	25.30	5
2015	1.65	1	-6.04	3	-3.77	2	-8.43	5	-7.38	4	-10.22	6
2016	-1.56	3	0.13	2	-2.28	4	0.22	1	-48.16	6	-3.34	5
Mean	9.33	4	10.39	2	10.84	1	9.78	3	2.54	6	6.59	5

The Treynor ratio in Table–3 shows the same results as sharpe Index. The Franklin stood first and same as sharpe index. Here also four out of five funds have out-performed the market. Thus, once again it proves that large cap mutual funds are better options for the investors.

Table 4: Jensen Measure

Fund	SBI Blue Chip		Birla Sun life		Franklin India		DSP Block Rock		Sundaram	
Year	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
2007	-15.02	4	-13.47	3	-17.46	5	2.08	2	9.33	1
2008	-0.05	5	4.10	4	9.12	2	9.16	1	7.25	3
2009	9.32	4	12.40	2	23.83	1	11.32	3	1.15	5
2010	-6.33	4	-1.17	1	-1.55	3	-1.42	2	-8.84	5
2011	2.19	5	4.92	4	7.79	1	6.37	3	6.60	2
2012	9.55	1	7.78	2	0.02	3	-0.63	4	-9.32	5
2013	0.66	2	2.09	1	0.41	3	-6.06	5	-2.26	3
2014	14.38	3	15.71	2	19.22	1	7.12	4	-2.08	5
2015	12.60	1	4.44	3	7.61	2	1.88	5	3.32	4
2016	1.90	3	3.70	2	1.26	4	3.75	1	-52.41	5
Mean	2.92	4	4.05	2	5.02	1	3.36	3	-4.73	5

The table–4 represents the Jensen's measure. This measure is a risk-adjusted performance index which represents the average return on a fund above or below that predicted by capital Asset Pricing Model (CAPM) given the finds beta and market return. In the above table it is found that all most all the funds are having above returns than the predicted returns using CAPM model. Again Franklin India stood first among all the select large cap funds and second, third, fourth and fifth rank is Birla sun life, DSP block rock, SBI blue chip and sundaram respectively.

Table 5: Fama Measure

Fund	SBI Blue ChiP Fund		Birla Sun Life		Franklin India	DSP BLOCK Rock			Sundaram	
YEAR	Index	Rank	Index	Rank	Index	rank	Index	Rank	Index	Rank
2007	-18.12	4	-14.52	3	-19.49	5	1.59	2	4.49	1
2008	3.76	5	5.40	4	11.62	2	9.75	3	13.18	1
2009	5.08	4	10.96	2	21.06	1	10.66	3	-5.45	5
2010	-7.02	4	-1.41	1	-2.01	3	-1.53	2	-9.92	5
2011	4.24	5	5.61	4	9.12	2	6.69	3	9.80	1
2012	8.16	1	7.31	2	-0.89	4	-0.84	3	-11.50	5
2013	0.68	2	2.10	1	0.42	3	-6.05	5	-2.23	4
2014	12.71	3	15.14	2	18.12	1	6.85	4	-4.69	5
2015	13.28	1	4.68	3	8.06	2	1.99	5	4.37	4
2016	2.11	3	3.77	2	1.40	4	3.78	1	-52.07	5
Mean	2.48	4	3.90	2	4.73	1	3.28	3	-5.41	5

Eugene F Fama[8] (1972) developed another portfolio evaluation framework with a finer breakdown of the performance of the fund. It segregates the total return into risk free rate of return, return due to systematic risk, Compensation for inadequate Diversification and Excess returns gained from the stock selection ability (net selectivity) of the manager at a given level of risk. As per Fama, selectivity i.e. stock selection ability of the fund managers can again be decomposed in to two parts, compensation for Diversification and net selectivity. In fact, greater the diversification achieved by the fund, lesser would be the compensation for inadequate diversification and vice versa. This may be close to zero for a well diversified fund and will always take a non negative value otherwise (Kundu Abhijit[9], 2009). From the Table-5 it is found that Franklin India Fund has topped again and followed by Birla sun life, DSP Block Rock, SBI Blue Chip and Sundaram in second, third, Fourth and fifth place respectively.

CONCLUSION

From the above analysis the CAGR of four out of select five mutual funds have outperformed the Market return in the study period for ten years, which indicates that mutual funds are better options for investors as they are better managed. The sharpe ratio reveals that 80 per cent of large cap mutual funds have performed better than market thus, Investors can easily invest their hard earned money in large cap mutual funds to enhance their wealth.

Ethical Clearance: Not Applicable

Source of Funding: Self

Conflict of Interest: Nil

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Study of Morbidity Pattern among Women Beedi Rollers Residing in Urban Area of Mangalore

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ABSTRACT

Background: Women constitute a very high percentage of labour force in the *beedi* industry. Beedi rollers are exposed to unburnt tobacco dust through cutaneous and pharyngeal route. Beedi rolling is mostly made by women and girls sitting at home and is regarded as primarily as women's work. Objectives: 1. To study the morbidity pattern among women Beedi rollers Methodology: This cross-sectional study was conducted in the urban field practice area of the medical college in Mangalore from June-2016 to July 2016 among women who are Beedi rollers. A sample of 120 women Beedi rollers who are currently working from at least 6 months were included in the study. A pretested semi-structured questionnaire was administered for collecting the demographic profile and health problems of the study subjects. Results: Out of 120 of study subjects most common was musculoskeletal problem (38), followed by eye problem (28), respiratory problem (24) . Most common chronic illness among study subject was Hypertension in 24 followed by Diabetes Mellitus 16. Conclusion: Study subjects were most commonly suffering from musculoskeletal problem followed by eye and respiratory problems.

Keywords: *Women, Beedi workers, Urban, Mangalore, Morbidity profile.*

INTRODUCTION

Women constitute a very high percentage of labour force in the *beedi* industry.[1] *Beedi* rollers are exposed to unburnt tobacco dust through cutaneous and pharyngeal route.[2]

Most of the Beedi making is carried out by the contractual, home-based, daily base system. In this women and children are involved quite easily.[3]

Women spend hours sitting, rolling Beedi's, surrounded by this harmful tobacco dust.[4] Most of them live in one small room where they do the Beedi rolling along with cooking, sleeping and other daily activities.[5]

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The health hazards of tobacco exposure through smoking have been well documented and exposure to tobacco smoke, active and passive, has a significant impact on women's health. Beedi rolling cause's serious health hazards.[6]

Hence the study was carried out to understand the socio demographic profile and morbidity pattern among female Beedi rollers residing in an urban area of Mangalore.

METHODOLOGY

This cross-sectional study was conducted in the urban field practice area of the medical college in Mangalore from June-2016 to July 2016 among women who are Beedi rollers. A sample of 120 women Beedi rollers who are currently working from at least 6 months were included in the study. In the field practice area of Bengre, house to house survey was done. Women Beedi rollers who satisfied the inclusion criteria were taken. Assurance regarding the confidentiality of the data was given to the study subjects.

Informed consent was obtained after explaining to the subjects about the method of study and outcome. A pretested semi-structured questionnaire was administered for collecting the demographic profile and health problems of the study subjects. Data was collected by interview cum, clinical examination. The collected data was analysed using SPSS version 17 software. Results were tabulated, the frequency and respective percentages were calculated.

RESULTS

Table 1: Socio-Demographic Distribution of Study Population

Socio-Demographic variables	Variables	Frequency	Percentage
Marital status	Married	78	65
	Unmarried	22	18.33
	Widows	20	16.66
Age Group (Years)	15-25	18	15
	25-35	22	18.33
	35-45	42	35
	45-60	38	31.66
Religion	Hindu	88	73.33
	Muslim	28	23.33
	Christian	4	3.33
Education	Illiterate	26	21.66
	Primary School	75	62.5
	High School	10	8.33
	Graduate	9	7.5
Housing	Pucca	42	35
	Semipucca	51	42.5
	Kutcha	27	22.5
Socio-Economic Status	BPL	110	91.66
	APL	10	8.33

Table 1 shows that majority of the study subjects were married (65%), 35 % belonged to the age group of 35-45 years, 73.33% were Hindus, 74% were literate, 42.5% had semipucca houses and 91.66% belonged to BPL families.

Table 2: Morbidity pattern of the Study population (N = 120)

Morbidity Pattern	Number	Percentage
Musculoskeletal problem	38	31.66
Eye problem	28	23.33
Respiratory problem	24	20
Skin problem	12	10
Hypertension	24	20
Diabetes mellitus	16	13.33
Anaemia	12	10
Ischemic heart disease	06	5
Others	14	11.66

Note: Few subjects had more than one symptom.

Out of 120 study subjects, 98 were having health problems. Most common was musculoskeletal problem (38), followed by eye problem (28), respiratory problem (24) and Skin problem (12). Anaemia was present in 12 study subjects. Most common chronic illness among study subject was Hypertension in 24 followed by Diabetes Mellitus 16, Ischemic Heart Disease (6). Others include dental problems, gastritis, Migraine, menstrual problems, constipation.

DISCUSSION

In the present study 120 subjects were included and 98 were having health problems at present. In the present study common morbidity was musculoskeletal problem in 31.66% of the subjects. Among musculoskeletal problem most of the subjects had back pain and neck pain followed by shoulder pain and knee joint pain. Similar study done by Dr M.L. Surya Prabha et al in Kurnool towns showed musculoskeletal symptoms in 62.5% of subjects. Among musculoskeletal symptoms most of the subjects had shoulder pain, neck pain and back pain.

In the present study eye problem was seen in 23.33% of subjects. Among eye problem the most common problem was itching of the eye, watering of the eye followed by decreased vision. Similar study done by Dr M.L. Surya Prabha et al in Kurnool towns showed 40% of the subjects had eye symptoms. Among eye symptoms the most common was eye watering and poor vision.

In the present study respiratory problem was seen in 20% of the subjects. Among the respiratory problem

6 subjects had bronchial asthma. Similar study done by Dr M.L. Surya Prabha et al in Kurnool towns showed 35% had respiratory symptoms. Among the respiratory symptoms three patients had tuberculosis

In the present study skin problem was seen in 10% of subjects. Among skin problem 4 subjects had contact dermatitis followed by eczema and tinea infections. Similar study done by Dr M.L. Surya Prabha et al in Kurnool towns showed 7.5% had skin symptoms.

In the present study women with poor socioeconomic status were involved in Beedi rolling. Beedi rolling work was done at home on all days of the week along other daily activities. The average number of Beedi's made by a single woman were about 100 to 400 per day. The beedi rolling work was done with improper working condition like poor ventilation, inadequate lighting, lack of protective measures and poor hygiene was contributing to health hazards among Beedi rollers. Women were sitting in different posture for prolonged hours for Beedi rolling with less of physical activity was contributing to musculoskeletal problem and noncommunicable diseases like hypertension, diabetes mellitus and Ischemic heart disease.

CONCLUSION

Study subjects were most commonly suffering from musculoskeletal problem followed by eye and respiratory problems. This explains working condition of the study subjects in the urban areas was very unfavourable. Education of the study subjects regarding proper safety measures, proper posture and good working condition should be done to reduce the risk of health hazards. Beedi working is an organised sector and due to lack of available policies for home based Beedi workers, steps have to be taken by policy makers to include home based Beedi workers into the policy.

Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: Taken

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Perception, Attitude and Practices Regarding Climate Change among College Students in Coastal South India

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ABSTRACT

Introduction: From developing innovative practices to reduce the effects of changing climate, and to the implementation of legislations the young people can contribute immensely.

Materials and Method: In this cross-sectional survey 375 college students from Mangaluru city were assessed regarding their perception, and attitude towards climate change and their practices towards mitigating it. A pretested semi-structured questionnaire was used to collect the data. Institutional Ethics Committee approval was obtained prior to commencement of the study.

Results: The mean age of the student was 21.6 ± 2.6 years. Statistically significant differences were found between the two groups on impacts of changing climate such as Changes in population of certain species, rising sea levels, increase in diseases and increase in flooding. ($p<0.05$). Reducing the use of electricity, and water, walking or cycling to work were the most commonly followed practices

Conclusion: The study highlights the pressing need for changes in curricula in schools and colleges. Traditional diversion of students into science and non-science fields should be overcome by including climate change topics in junior school as part of subjects dealing with science and environment.

Keywords: *Weather change, Curriculum, Global Warming, Young adults, India.*

INTRODUCTION

The Inter-Governmental Panel on Climate Change (IPCC) describes climate change as an alteration in the weather pattern over time, which may be natural or man-made disasters.[1] Approximately 250000 deaths are expected between 2030 and 2050 because of global warming. Developing countries would face the maximum impact owing to weak infrastructure and unpreparedness to cope and respond to the problem.[2] Such is the gravity of the problem, that the coveted Nobel Peace Prize in the year 2007 was awarded to IPCC for their role in combating climate change.[3]

According to the Global Climate Risk Index (GCRI) 2018 Haiti, Zimbabwe, and Fiji were the most affected by climate change followed by Sri Lanka, Vietnam and India.[4] India, faced with rapid economic growth accompanied by its population explosion, must implement serious measures to take tackle the effects of climate change.[5]

Public recognition of problem is of utmost practical importance since emissions of greenhouse gases cannot be reduced until pubic appreciates the presence of man-made climate change and perceive the impending effect it will have on climate.[6.] Apart from the effect on environment and economy, climate change would drastically affect our health.[7] In the fight against climate change, the younger generation can play a pivotal role. From developing

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innovative technology and practices to reduce the effects of changing climate, and to the implementation of legislations at the household and community level, the young people can contribute immensely.

With this context our study assesses the perception, and attitude of students towards changing trends in climate and the measures practiced mitigating the effects of climate change in a coastal city of Mangaluru.

MATERIALS AND METHOD

This cross-sectional survey was carried out during the month of May -June 2016 in Mangalore a coastal town in South India having a literacy rate of 93.7%. [8] The college students from four colleges enrolled in specialties like medicine, physiotherapy, engineering, business management and social work were included in the study. Under the assumption that 50 % of the college students have a positive attitude towards climate change mitigation, 5% absolute precision, 95% Confidence Interval, a sample size of 375 was calculated. The colleges from the disciplines of medicine, physiotherapy, engineering, business management and social work were chosen using non-random sampling technique. In the selected colleges, multi stage random sampling was used to select the study participants, to reach an equal sample of 75 from each of them. The study participants were further divided into science students (SS) - medicine, physiotherapy, engineering and non-science students (NSS) - business administration and social work, for comparison of Perception, Attitude and Practices related to climate change and its effects. Ethics Committee of Kasturba Medical College, (Manipal Academy of Higher Education), Mangalore gave clearance to commence the study. Prior permission was obtained from the head of the institution of the selected colleges. A self-administered pretested semi-structured questionnaire was used to collect the data from the students after obtaining a written informed consent from them. Data was entered in and analyzed using SPSS (Statistical Package for Social Sciences) version 11.5 and described using descriptive statistics such as mean with corresponding standard deviation (SD) and proportions. Independent t test was applied to compare the difference in mean scores between science students (SS) and non-science students (NSS) and $p < 0.05$ was considered to be statistically significant difference between the two groups.

RESULTS

The study included 375 students from 5 specialties (75 in each group). The mean age of the student was 21.6 ± 2.6 years. Sixty percent of the participants (n=225) were from Science background.

Table 1: Impact of climate change as perceived by participants [N = 375]

Impact^	SS (N=225)	NSS (N=150)	Total (N=375)	p value*
	Mean (SD)	Mean (SD)	Mean (SD)	
Extreme changes in weather patterns	3.5(0.7)	3.5(0.6)	3.51 (0.6)	0.645
Drought and water shortage	3.3(0.7)	3.4(0.7)	3.34 (0.7)	0.663
Significant changes in population of certain animal species	3.1(0.8)	2.9 (0.7)	3.00 (0.8)	0.043
Rising sea levels	3.5(0.6)	3.2 (0.8)	3.35 (0.7)	0.001
Increase in sickness and disease	3.1(0.9)	3.3 (0.7)	3.23 (0.8)	0.031
Increase in flooding or erosion	3.4(0.8)	3.2 (0.7)	3.28 (0.7)	0.033
Decreased production of food by farming or fishing	3.1(0.8)	3.1 (0.8)	3.09 (0.8)	0.708

^ Score – 5 = extremely likely, 4=likely, 3= neutral, 2 =unlikely, 1 = extremely unlikely

*Independent t test ($P < 0.05$)

SS = Science students, NSS = Non-science students

The impact of climate change as perceived by students is given in Table 1. It was assessed using a 5 -point Likert scale where the scores were as follows: 5 = extremely likely, 4=likely, 3= neutral, 2 =unlikely, 1 = extremely unlikely. The group scoring above 3 were considered to have perceived that there was a likely impact of climate change on the mentioned items. Statistically significant differences were found between

the science students (SS) and non-science students (NSS) in their perception on impacts of changing climate such as changes in population of certain species, rising sea levels, surge in diseases, and increased flooding. ($p<0.05$). Overall both the groups perceived that climate change impacted various domains of our ecosystem.

Table 2: Attitude of the students towards climate change [N=375]

Attitudes#	SS (N=225)	NSS (N=150)	Total (N=375)	p value*
	Mean (SD)	Mean (SD)	Mean (SD)	
Not convinced climate change is a problem	3.0 (1.1)	2.5 (1.1)	2.7 (1.1)	0.0001
Changing my behavior will not make any difference	2.9 (0.9)	2.6 (0.9)	2.7 (0.9)	0.007
I don't have enough time	2.7 (0.8)	2.6 (0.9)	2.7 (0.9)	0.098
Ignorant about the things we can do to reduce the impact	2.6 (0.9)	2.3 (0.8)	2.5 (0.9)	0.027
Climate change is too big a problem	2.6 (1.0)	2.2 (0.9)	2.4 (0.9)	0.0001
Want to maintain a personal level of comfort	2.4 (0.9)	2.2 (0.7)	2.3 (0.8)	0.018
Believe that changing my behavior is too much trouble	2.7 (0.9)	2.6 (0.9)	2.7(0.9)	0.290
Don't believe climate change will occur in my life time	2.8 (0.9)	2.6 (0.9)	2.7 (0.9)	0.081
I am already doing everything	2.6 (0.9)	2.3 (0.8)	2.4 (0.8)	0.002

Score-5=strongly agree, 4=agree, 3=neutral, 2=disagree,1=strongly disagree

*Independent t test ($P<0.05$)

SS = Science students, NSS = Non-science students

Attitude of the students towards climate change and its mitigation was measured using 5-point Likert scale: Score-5=strongly agree, 4=agree, 3=neutral, 2=disagree,1=strongly disagree. All the statements depicted negative attitude towards climate change. Hence the group scoring less than 3 were considered to have a positive attitude towards mitigating the effects of climate change.

Even though both the group of students were convinced that climate change is problem, they disagreed to it being a big problem. (SS 2.6 vs. NS 2.2, $p<0.05$) (Table 2).

Table 3: Practices followed by the students to mitigate climate change [N=375]

Practices £	SS (N=225)	NSS (N=150)	Total (N=375)	p value*
	Mean (SD)	Mean (SD)	Mean (SD)	
Save electricity	4.4 (0.9)	4.4 (0.8)	4.4 (0.8)	0.860
Recycle paper, plastics, glass etc.	3.2 (1.2)	3.3 (1.3)	3.2 (1.2)	0.619
Reduce water use	4.1 (1.1)	4.3 (0.9)	4.2 (1.0)	0.030
Use public transportation	3.6 (1.2)	3.5 (1.1)	3.5(1.2)	0.270
Perform routine vehicle maintenance	3.4 (1.4)	3.6 (1.2)	3.5(1.3)	0.329
Walk or cycle	3.7(1.2)	3.6 (1.2)	3.7 (1.2)	0.562
Plant trees	3.0(1.3)	3.5 (1.1)	3.2 (1.2)	0.001
Decrease amount of personal garbage or trash	3.6(1.1)	3.6 (1.0)	3.6 (1.1)	0.879
Limit the burning of fossil fuels	3.5 (1.2)	3.5 (1.2)	3.5 (1.2)	0.650

£ Score-1=never, 2=rarely, 3=sometimes, 4=often, 5=very often.

***Independent t test ($P<0.05$)**

SS = Science students, NSS = Non-science students

Table 3 shows the practices followed by the students to mitigate climate change. The students were asked to rate the practices using a 5-point Likert scale: Score-0=never, 1=rarely, 2=sometimes, 3=often, 4=very often. The group scoring 3 and above were considered to follow the practices to mitigate the climate change. Reducing the use of electricity, and water, walking or cycling to work were the most commonly followed practices. Planting saplings and saving water were practiced more by the non-science students compared to science students. ($p<0.05$)

DISCUSSION

Our study findings suggest that students were aware about the 'climate change' and the fact that it can have a negative impact on health. The goal of preventing climate change is to secure a better livable world for the future generations and it appears it is the youngsters that have the biggest stake. While science students exhibit greater awareness of the impact and causes of climate change, it appears from the study that non-science students engage themselves more in activities like tree plantations and water conservation when compared to science students.

Studies from various parts of the world carried out among high school and college students have shown a wide variation in perception of students. In a study in Pune, India, most students attributed climate change to human activities and believed that youth had a key role to play in combating climate change effects. [9] In another study from Tamil Nadu, India the students had a poor attitude towards climate change with majority students feeling no personal harm because of climate change. However, there was a notable change in their attitude after they attended an education program which created awareness about the factors responsible for global warming, its effect on health and environment and measures to reduce global warming.[10] Similar observations were made in a study from United States where attitude of students about climate change improved after they were asked to read materials about the subject.[11] In a study in Czech Republic among high school students it was found that students had an extremely poor knowledge about climate change and it directly related to the amount and type of sources accessed for the information [12]. A study done in Philippines among high school students showed that the students have a correct perception on basic concepts of global warming and climate change, however on effects and mitigations of climate change their perception was lacking [13] In a study from Ethiopia among health science students it was observed that only those students with adequate knowledge about climate change perceived it has a problem with impact on health compared to those without adequate knowledge [14]. Similar observations were made in a study conducted among High school students in Denmark and Austria.[15,16] A study from Bahrain conducted among science students showed that fourth year biology student had good knowledge about climate change and its effect compared to their peers from physics chemistry and mathematics, attributing it to their curriculum. [17] Similar studies can be carried out in various parts of the country. The findings of the study can be incorporated in designing a curriculum covering the topic of climate change and the role of younger population in mitigating its effects.

Traditional diversion of students into science and non-science fields should be overcome by including climate change topics in junior school as part of subjects dealing with science and environment. Climate change and global warming should be made mandatory in colleges irrespective of the branch of science. It should also be part of the curriculum of Non-science students. Teachers can play an active role in inculcating positive attitudes among students. The best example highlighting the active involvement of teachers in climate change is the Sharing Perceptions of Adaption, Resilience and Climate Knowledge (SPARCK) project initiated by the UNESCO where teachers from the Pacific islands are consulted regarding possible modifications in the existing curriculum to incorporate content on climate change which can make way for an effective learning among students. [18]

Siamak Loni of the UN Sustainable Development Solutions Network recognizing the role of young people in finding solutions to climate change has quoted "Young people have certain qualities like creativity, energy, idealism which is good for transformative movements," "Climate change is something that needs transformative movements. When you give young people purpose and you empower them, they are able to use these qualities to achieve something positive." [19] The limitations of our study would be lack in generalizability of our study findings to the entire student population all over the country.

CONCLUSION

From the results of our study we conclude that that students have correct perception regarding climate change and its effect, and a favorable attitude towards recognizing the problem and working towards its mitigation. The study highlights the pressing need for changes in curricula in schools and colleges. This study provides an insight into the thinking of the students and their perception and attitude towards the imminent problem of climate change.

Details of ethical approval: Ethics Committee approval was obtained from the Institutional Ethics Committee of Kasturba Medical College, Mangaluru (affiliated to Manipal Academy of Higher Education), India prior to the commencement of the study.

Conflict of Interest: The authors have declared that no Conflict of interest exist.

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Evaluation of Thyroid Hormone Levels Before and After Thyroidectomy

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ABSTRACT

Thyroid hormone replacement therapy is required after the thyroid is completely removed surgically (i.e. total thyroidectomy). .All the patients had normal thyroid function before their thyroid surgery. Total thyroidectomy and thyroid hormone treatment with L-T4, we assessed thyroid profile parameters before and after. This study concludes patients with a thyroid remnant after a partial thyroidectomy have higher T3 levels than patients who have undergone a total thyroidectomy. Our results are that remaining thyroid remnant after a partial thyroidectomy continues to contribute to the maintenance of serum free T3 levels. These data may provide novel information on the management of patients following total thyroidectomy for thyroid cancer or benign thyroid disease.

Keywords: *Thyroid-stimulating hormone, Hyperparathyroidism, Thyroidectomy, Levothyroxine.*

INTRODUCTION

Thyroid-stimulating hormone (TSH) is synthesized and secreted by the anterior lobe of the pituitary gland. TSH acts on thyroid follicular epithelium and triiodothyronine (T3) and thyroxine (T4) hormones regulate the synthesis and release of TSH at the pituitary level and indirectly affect TSH production by their effect on TRH. These hormones act on diverse types of cells in human body and are involved in the maintenance of basic metabolism. TSH secretion is regulated by thyrotropin releasing hormone (TRH) secreted by hypothalamus. TSH belongs to a subset of the cysteine-knot growth factor super family. It is a heterodimer consisting of one alpha and one beta subunit associated by non-covalent bonds[1]. TSH is closely related to luteinizing hormone.

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Thyroid hormone replacement therapy is required after the thyroid is completely removed surgically (i.e. total thyroidectomy). Studies have shown that thyroid hormone replacement is also needed ~40% of the time after a partial thyroidectomy (i.e. removal of one thyroid lobe). It is unclear what the contribution to the levothyroxine dose is by the remaining thyroid remnant after a partial thyroidectomy. The authors of this study compared thyroid hormone blood levels after thyroid surgery in patients with papillary thyroid cancer who had normal thyroid function before their surgery to that of controls matched by serum TSH concentration.

All patients considering thyroid surgery should be evaluated preoperatively with a thorough and comprehensive medical history and physical exam, including cardiopulmonary (heart) evaluation. Any patients who has had any change in voice or who have had a previous neck operation should have their vocal cord function evaluated preoperatively. Possible risks of thyroid surgery include: 1) bleeding that can cause acute breathing difficulty, 2) injury to the recurrent laryngeal nerve that can cause permanent hoarseness, and 3) damage to the parathyroid glands that control calcium levels in the body, causing hypoparathyroidism and

hypocalcemia. The overall risk of complications should be <2% with an experienced surgeon.

Previous studies were reported[2-5] compared postoperative T3 levels in patients on levothyroxine (LT4) therapy with their own preoperative levels or those in euthyroid controls. These studies indicate that in the athyreotic condition after the total thyroidectomy during LT4 therapy patients with normal serum thyrotropin (TSH) levels had mildly low serum free T3 (fT3) levels, and patients with suppressed serum TSH levels had normal serum fT3 levels. The question arises over which of these two patient groups is in a euthyroid condition. In humans, it is unclear whether such mild T3 deficiency affects the thyroid hormone action in postoperative athyreotic patients on LT4 therapy. Based on this our study aim is to study patients who underwent total thyroidectomy before and after LT4 therapy in order to clarify whether a mild T3 deficiency affects thyroid function in postoperative athyreotic patients on LT4 therapy and which should not have an impact on conversion of T4 to T3 by thyroid tissue[6], were selected for the present study.

MATERIAL AND METHOD

Patients: This nonrandomized, controlled, prospective cohort study recruited euthyroid patients who underwent a total thyroidectomy for papillary thyroid carcinoma at Sri Lakshmi Narayana institute of medical sciences and Thanjavur medical college. Exclusion criteria were: (i) patients with thyroid malignancies other than papillary carcinoma; (ii) patients with thyroid dysfunction, such as Graves' disease, thyroid dyshormonogenesis, autonomously functioning thyroid nodules, or hypothyroidism; (iii) patients taking drugs known to affect thyroid function or thyroid hormone metabolism, such as a steroid, estrogen, amiodarone, lithium, b-blocker, sucralfate, iron, or iodine-containing drug; (iv) patients with chronic or serious diseases that affect lipid or bone metabolism such as cardiac, pulmonary, hepatic, renal, or pancreatic diseases, diabetes, or hyperparathyroidism; (v) patients taking a lipid-lowering agent during the study period; (vi) patients with a serum triglyceride level >400mg/dL; (vii) patients taking drugs known to affect bone metabolism, such as a calcium supplements, vitamin D, calcitriol, dihydrotachysterol, or bisphosphonates; (viii) pregnant, lactating, or perimenopausal patients; (ix) patients with abodymass index (BMI) <18 or >30kg/m; and (x) patients with a physical disability or participating in a competitive sport. Patients who had postsurgical hypoparathyroidism, those who had developed metastasis, and those who failed to achieve the target TSH levels were also excluded. The present study was approved by the Ethics Committee and taken patient informed consent in the study.

This study included 65 patients (22–60 years old) who underwent a total thyroidectomy for papillary thyroid carcinoma. All patients also underwent central node and/or modified neck dissection. An attempt was made to preserve parathyroid glands in situ with their blood supply. However, if they were resected or devascularized, they were minced and autotransplanted into the sternocleidomastoid muscle. The patients were initially administered 2.0lg/kg of LT4 daily after the total thyroidectomy. Thyroid function tests were performed one month after surgery. The target serum TSH levels were strongly suppressed TSH levels for the 40 high-risk patients, mildly suppressed TSH levels for the 25 intermediate-risk patients.

RESULTS

Our study results are reported that post-operative free T4 levels were higher and free T3 levels were lower in individuals who had a total thyroidectomy compared to controls matched by TSH level. In the patients who had a partial thyroidectomy and were on levothyroxine, thyroid hormone levels were not significantly different from controls. The patients who had partial thyroidectomy and were note on levothyroxine had significantly lower free T4 measurements but not significantly different free T3 measurements compared to controls.

TSH, fT4 and fT3 levels before and after the total thyroidectomy in the patient groups. In the patients with strongly suppressed TSH levels, the postoperative serum fT3 levels were significantly increased ($p<0.001$). However, 45 patients had serum fT3 levels higher than the normal upper limit. In the patients with mildly suppressed TSH levels the postoperative serum fT3 levels were equivalent to their preoperative levels.

The postoperative fT3 levels in each group stratified by TSH level were significantly different from those in the other two groups. The serum fT4 levels were significantly increased postoperatively in patients. However, the magnitude of increase varied according to the TSH levels.

Table 1: Thyroid Hormone Levels of Thyroid Function in Patient Groups Before and After Thyroidectomy (Mean ± SD)

Parameter	Before	After	p value
Body weight (kg)	56.5 ± 11.8	59.6 ± 9.9	p<0.001
TSH (lIU/mL)	1.48 ± 1.49	0.01 ± 0.01	p<0.001
fT4 (ng/dL)	1.07 ± 0.14	1.56 ± 0.20	p<0.001
fT3 (pg/mL)	2.79 ± 0.33	3.17 ±0.34	p<0.001

DISCUSSION

Thyroid needs to be told how much thyroid hormone to make. The instructions come from the pituitary gland. The system works as a feedback loop: special cells in your pituitary gland determine the normal T4 range for your body. This is known as your set point. As blood flows through your pituitary gland, these cells measure your T4 levels to determine whether they are at your set point. The pituitary cells communicate with your thyroid by sending their own hormone, TSH (thyroid-stimulating hormone), into the blood. When your T4 levels are at your set point, the pituitary gland sends out enough TSH to tell the thyroid to keep making the same amount of T4. If the T4 levels get low, the pituitary sends out more TSH to tell the thyroid to make more T4. The lower the T4 levels go, the higher the TSH goes. The opposite is also true: if the T4 levels get too high, the pituitary sends out less TSH, telling the thyroid to make less T4.

Thyroid operations are advised for patients who have a variety of thyroid conditions, including both cancerous and benign (non-cancerous) thyroid nodules, large thyroid glands (goiters), and overactive thyroid glands. Surgery is definitely indicated for a diagnosis of thyroid cancer or the possibility of thyroid cancer.

In the present study, the patients with normal TSH levels had serum fT3 levels that were significantly lower than the preoperative levels. The patients with mildlysuppressed TSH levels had serum fT3 levels equivalent to the preoperative levels. The patients with strongly suppressed TSH levels had significantly higher serum fT3 levels. Thus, the results obtained for the present patients who underwent a total thyroidectomy during LT4 therapy were consistent with the authors' previous studies [2,7] and with those of Gullo et al.[8], Hoermann et al. [9], and Werneck de Castro et al.[10]. These findings suggest that the reason underlying the decreased serum T3 levels in such patients is the lack of intrathyroidal T3 production caused by the absence of the thyroid gland.

Serum TSH measurement is the most sensitive screening test for thyroid dysfunction and for the diagnosis of subtle forms of hyper- and hypothyroidism[11]. Serum TSH has a loglinear relationship with circulating thyroid hormone levels; thus a small change in peripheral thyroid hormone concentrations, even within the normal laboratory reference range, may result in an increase or decrease in serum TSH outside its normal range[12]. The importance of having a consensus on the normal TSH range is that some authors have recommended routine screening for thyroid disease after age 35[13]and other societies for women above age 50[14]. For TSH levels between 4.5 and 10 mIU/liter, evidence for adverse effects and benefits of therapy are controversial[15].For the important subgroup of patients with serum TSH levels under 10 mIU/liter, some studies have shown no benefit of T4 therapy for metabolic parameters and/or quality of life[16]. In terms of adverse events, some studies have shown an association with atherosclerosis[17] and increased cardiovascular[18]or total mortality[19], whereas others have not[20-22].

More studies, including examining the quality of life of patients after undergoing thyroid surgery, needs to be done. Study findings are with mildly suppressed TSH levels were closest to euthyroid, whereas those with normal TSH levels were mildly hypothyroid, and those with strongly suppressed TSH levels were mildly hyperthyroid. These data may provide novel information on the management of patients following total thyroidectomy for thyroid cancer or benign thyroid disease.

CONCLUSION

This study concludes patients with a thyroid remnant after a partial thyroidectomy have higher T3 levels than patients who have undergone a total thyroidectomy. Our results are that remaining thyroid remnant after a partial thyroidectomy continues to contribute to the maintenance of serum free T3 levels even if the patient

is on levothyroxine. The clinical significance of these results is not known. There are some possible limitations; first, the limited number of study patients, unequal group distribution, and single time point reduced the internal validity of the study. Second, the follow-up period was not long enough to investigate the effect of the difference in postoperative T4 treatment on the endpoint of metabolic disorders such as atherogenesis, BMD, or bone fracture. Further well designed studies are necessary to clarify the long-term effect at multiple centers

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance No.: No.IEC/C-P/079/2017

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Impact of Ambidextrous Leadership on Firm Performance: A Study on IT Sector in Hyderabad, India

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ABSTRACT

Today's businesses are so complex; the organizations are striving to with stated in the competition with unique competency. Many organisations burning issue is ambidexterity, which means balancing both employees behaviors namely exploration and exploitation, and to boost innovative performance through behaviours such as opening and closing of leaders. Ambidextrous leadership is an advanced leadership style. The present study measured the influence of this ambidextrous leadership style on the performance of the organization, in Information technology (IT) sector in Hyderabad, India, with 156 employees from 15 different IT companies. For measuring the impact linear regression model was used. The result of the model shows that, 69 percent of variance (R square) is described by the variables namely "ambidextrous leadership" and "firm performance". The study shows the p-value is less than 5 percent level of significance. Hence, it is concluded that, the ambidextrous leadership has significant impact on firm performance.

Keywords: *Ambidextrous leadership, Ambidextrous organisation, Opening behaviour, Closing behaviour, Transformational leadership, Transactional leadership, Firm performance.*

INTRODUCTION

Leader is an individual who can guide, support, encourage and motivate the employees to achieve their goals in the organisation. The leadership is the act where employees are motivated by the leader. They are many leadership styles like autocratic style, democratic style, and free reign leadership style are key styles long ago. In the present era emerging styles are transformational and transactional leadership styles. This study is going to associate with both the styles namely transformational and transactional. [1-3]Leadership is vital aspect for the term innovation and Transformational leader is an individual who shows creativity, empowering, team building, equanimity, creating trust, and having justice, equality, peace and humanitarianism. Transactional leader is a person who strives for maximum efficiency and his main goal is reward and punishment whereas in transformational leadership leaders and followers' strive for morality and motivation and in transactional leadership leaders and followers strives for rewards and punishment and these two styles transformational and transactional are based on burns and bass in 1978. Transformational leader is a person who transforms the policies, rules and regulations in the organization. He motivates and guides the employees to succeed their goals effectively and efficiently. Transactional leader is a soul who follows the rules and regulations strictly and maintains discipline in the organisation. [4-8] Among all the leadership styles the most prime leadership style is transformational leadership style. Transformational leadership has a positive impact on improving exploration and also he opined that, transactional leader is a human who has a significant impact on improving exploitation.[7-8]

Ambidexterity is the term derived by schindler, as the ability to deal with both the hands and in the management point of view it is defined as balancing both the terms exploration and exploitation. The term "ambidextrous" word was first identified by Duncan where 'ambi' means both 'dexter' means skilful[9]. Ambidexterity is of three types' contextual, structural and sequential ambidexterity. It is best understood by achieving both alignment and adaptability where first is associated to exploitation and second is associated with exploration eventually, exploration is defined as search, increase in variance, taking risks in the organisation, experimenting the ideas, flexibly switching between the ideas, discovering and innovating with new ideas.[10] Subsequently exploitation is described as refining of goals, choosing the goals,

productivity, efficiency of goals, selection of goals and their implementation and execution is more important. Thus ambidexterity is defined not only as balancing both exploration and exploitation but also balancing both external and internal knowledge in the organisation. It was tested empirically the ambidextrous leadership by creation of model of elements like opening behaviour, closing behaviour, creativity, implementation, exploration and exploitation behaviours. [11]

REVIEW OF LITERATURE

The past literature and key contemporary issues revealed that, this topic is currently drawing more attention from scholars, academicians, professionals and many more. The organisation with ambidextrous leadership has positive impact on organisational performance[12]. For better firm performance the employees in the organisation need to be innovative and creative. Innovative ideas generated by the employee's leads to organisational success, prosperity and survival[13-14]. Leadership is the most important key driver in ambidexterity and enhancing firm performance.[15-22] As all know there are plenty leadership styles where each and every leader act in the organisation according to his own style[23-24].Leadership is assuredly related with both transformational leadership and transactional leadership. Transformational leadership has undoubted influence on exploratory innovation and transactional leadership has positive relationship with exploitative innovation. [25-26] Ambidextrous leadership has a positive connection with firm performance. Ambidextrous leadership is associated with exploration and exploitation activities of employees by opening and closing leader behaviour. Ambidexterity means balancing both exploration and exploitation activities. Exploration which is termed as search, discovery, experimentation, innovation has a positive bond on firm performance. Exploration and exploitation activities are influenced positively on firm performance. There is an impact of ambidexterity and firm performance. There is a pragmatic relationship between firm performance and exploration. Any organisation where ambidexterity is present that represents the organisation is enriched. Similarly, the organisation with ambidextrous leadership and ambidexterity provides high firm performance.[27]

Significance of the Study: IT sector is in recession, in recent past 56,000 employees were removed in different IT companies in India recession is affecting IT sector and it is causes loosing new talent. Keeping in view of this, the study set an aim of identifying and analysing the ways and means to protect the knowledgeable and talented employees, who are backbone to the organisation for many years. In the present era there are so many ways to protect employees one such way is creating new opportunities through efficient leadership. The existing leaderships are not up to the level, as they are not effective, a new type of leadership is evolved namely, ambidextrous leadership style to fill the gap. The present study tested its impact on IT industry recession i.e. to measuring the impact of ambidextrous leadership on firm performance, development of technology, innovation and handling the recession, through exploration and exploitation, opening and closing behaviours.

Research Gap: In India, there is no empirical study on the role of ambidextrous leadership on firm performance. This is only the study, which conduct the empirical analysis on the impact of ambidextrous leadership on firm performance.

Research Problem: It is evident from the review of literature; there is a decline in the performance of IT sector in India, due to several reasons. One of the paramount reasons is recession, which is a result of rapid change in technology. Due to this, the sector's revenue, profit and overall performance are declined. The performance of the sector can be turned up by adopting suitable leadership style namely, ambidextrous leadership which can balance both exploration and exploitation activities equally to resist the IT sector recession.

Research Objective: The main objective of the study is, "to examine the impact of ambidextrous leadership on firm performance in IT sector".

Hypothesis of the Study

H1: Ambidextrous leadership influences the level of firm performance

RESEARCH METHODOLOGY

The study is explorative in nature, it explored the innovative ideas of testing the impact of the ambidextrous leadership on firm performance, exploring innovative ways and means to resist the recession in IT sector in India. It also explores various innovative aspects of leadership. The methodology for the study includes, design of the study, population, sample size and sampling methods etc.

Research Design

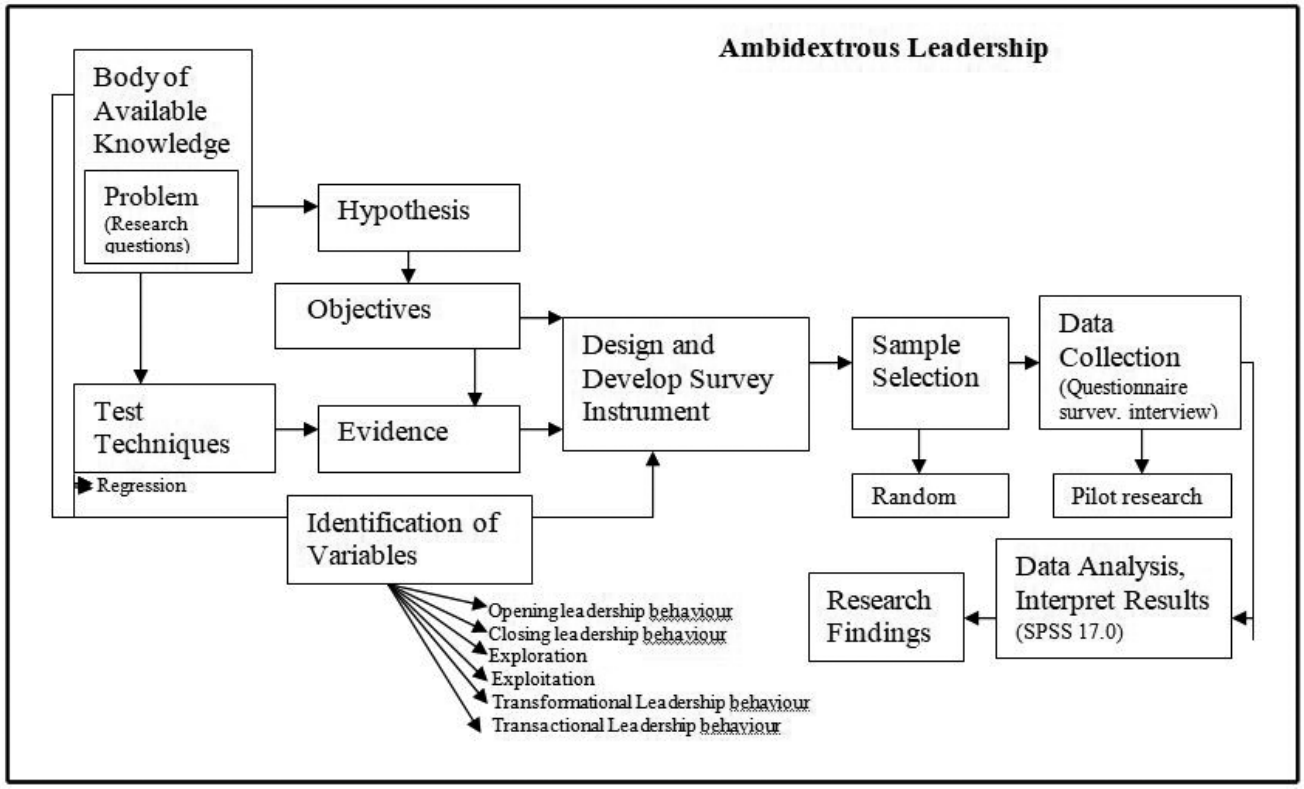

Fig. 1: Research design of the study

Population: The population of the study is IT employees from all levels in the hierarchy, such as, managers, team leaders and employees of IT sector in Hyderabad. The total population in Hyderabad is 916 companies. From the population, targeted population was identified based on revenue above $10billion USD per year. The total number of companies including all size, in Hyderabad is given below. The study selected only large companies, which are having the revenue above $10billion USD per year. The large companies are 143 in the total.

Sample size: From the total population, 10 percent of the companies are selected on random bases (i.e.) 15 companies i.e. 5 companies from Indian origin and 10 companies from foreign origin. From these companies 156 employees' responses are collected on ambidextrous leadership and firm performance. The details are given below.

Sampling Method: The sampling method used for the study is simple random sampling technique. It is more appropriate method for the study.

Data collection: The data collected for the study is by using a structured questionnaire. The questionnaire contains various questions related to ambidextrous leadership and the level of its implementation. It also contains the questions relating to the level of firm performance. The questions are designed on 5 point likert scale for measuring the opinion of the respondents. Total of 200 questionnaires distributed to respondents, but 156 responses get back.

Model of the Study

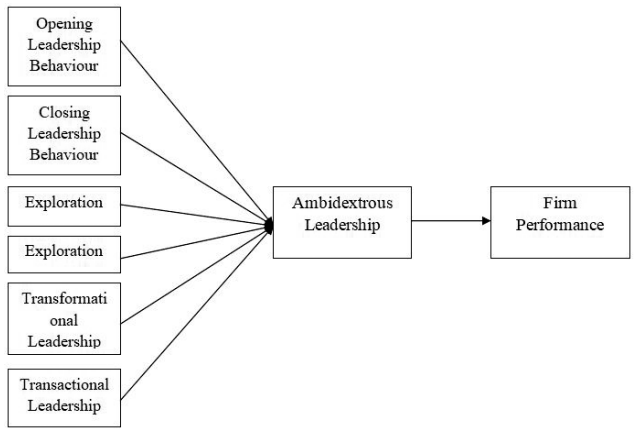

Figure 2: Figure shows the factors influencing the Ambidextrous Leadership and Firm Performance

DATA ANALYSIS

\Data analysis plays a key role in every study to test the variables and their valid test to prove the hypothesis is positive or negative. The study used "statistical package for social sciences", (SPSS) 17.0 for analysis of the data.

H1: Ambidextrous leadership influences the level of firm performance

The above hypothesis is meant for measuring the impact of ambidextrous leadership on firm performance. The level of ambidextrous leadership and firm performance measured on likert five point scale.

Table 1: The table shows the R-Square

Model Summary[b]				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.831[a]	0.691	0.69	0.60497
a. Predictors: (Constant), Ambidextrous Leadership				
b. Dependent Variable: Firm Performance				

The above table represents the model summary of both variables like dependent and independent variable. It represents R-Square value of 0.691 which represents 69 percent of variance explained by for ambidextrous leadership on firm performance.

Table 2: The table shows the ANOVA

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
	Regression	196.296	1	196.296	536.35	.000[b]
	Residual	87.836	240	0.366		
	Total	284.132	241			
a. Dependent Variable: Firm Performance						
b. Predictors: (Constant), Ambidextrous Leadership						

The above table represents ANOVA where its sum of squares for regression of firm performance and ambidextrous leadership is 196.296 and F-value is 536.35 and P-value is 0.000. It is less than 5 percent (i.e.) 0.005 level of significance. Hence, the hypothesis (H1) in the study can be accepted. the study shows the ambidextrous leadership is positively influencing firm performance.

FINDINGS & SUGGESTIONS

1. The table representing the model summary of both variables like dependent and independent variable which are firm performance and ambidextrous leadership represents R-Square value of 0.691 which represents 69% of variables for ambidextrous leadership variance influence on firm performance. And the remaining percentage variables are in need to influence leadership.
2. The table representing ANOVA where its sum of squares for regression of firm performance and ambidextrous leadership is 196.296 and F-value is 536.35 and significant value is less than 5% (i.e.) 0.005.

CONCLUSION

This study gives rise to the term ambidexterity by thorough literature applied to organisations which is therefore termed as ambidextrous organisation and the leader who facilitates this ambidexterity is called ambidextrous theory of leadership for innovation. Leaders opening and closing behaviour effects employee's exploration and exploitation behaviours at both high and low levels. And through this leadership, leaders opening and closing behaviour fosters employee's exploration and exploitation activities and hence leading to employee's high innovative performance. This study ambidextrous leadership is empirically tested at individual, team leaders and managerial level. This study also reveals how transformational and transactional leadership styles applicable for ambidextrous leadership and this study

predicts that transformational leadership is closely related to exploratory innovation and transactional leadership is related to exploitative innovation and finally ambidextrous leadership is combination of styles like transformational and transactional leadership styles and leaders opening and closing and employees exploration and exploitation activities summed up to ambidextrous leadership.

Conflict of Interest: Nil.

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Ethical Clearance: There is no ethical clearance as it is Review article.

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Prevalence of Halitosis among Preclinical Medical and Dental Students

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ABSTRACT

Halitosis is the unpleasant breath arising from a person's oral cavity. It is a global problem affecting people of all age groups. It is deemed by many as a psychosocial stigma that can change a person's social life. The objective of the study was to determine the prevalence as well as knowledge of halitosis among preclinical dental and medical students of Melaka Manipal Medical College, Manipal. A pre-validated questionnaire consisting of multiple choice questions about halitosis was distributed among the participants. For each question, the participants were to choose an appropriate response from the provided list of options. Data collected were subjected to statistical analysis. The responses of male and female subjects were compared using the Chi-square test. A p-value < 0.05 was regarded as statistically significant. The prevalence of self-perceived halitosis was high (60%) among students of both genders. Halitosis was reported to be worst on awakening and was found to have a negative effect on the social life and self-confidence of most of the afflicted students. The dental and medical students of both the gender had limited knowledge regarding the various factors which can cause halitosis. There is a need to improve the level of education and awareness of halitosis among these preclinical students as they are the health care providers of the future. Hence they should strive to be a health symbol and keep their mouth free from halitosis so that they can be an inspiration for their patients and the society on the whole.

Keywords: *Halitosis, Oral hygiene practices, Dental and, medical students.*

INTRODUCTION

Halitosis, commonly known as bad breath or malodor, refers to the unpleasant breath emanating consistently from a person's oral cavity. It has a multi-factorial etiology. In 90 % of cases, halitosis is caused due to intra-oral factors such as tongue coating, the presence of plaque, dry mouth and dental diseases like deep carious lesions, gingivitis and periodontitis.[1] Extra-oral factors such as upper respiratory tract infections, gastrointestinal tract disorders, as well as certain systemic diseases can also be associated with halitosis.[2]

Halitosis is a common global problem impacting individuals of all ages. Prevalence of halitosis in the general population is reported to be ranging from 22% to 50%.[3]

It is deemed as a psychosocial stigma and may have an adverse impact on a person's social well-being as well as their self-esteem and confidence.[4] Moreover halitosis can also be an indicator for some underlying diseases such as diabetes mellitus, liver cirrhosis, uremia and kidney failure.[5] Use of certain agents such as mouthwash and chewing gums mask halitosis temporarily thereby preventing the individual from seeking conclusive treatment from a health care provider. Since the medical and dental students of today are going to become the health care providers of tomorrow, it is imperative to assess their knowledge and awareness regarding halitosis.

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AIMS AND OBJECTIVES

The objectives of the study were to determine the prevalence of self-perceived halitosis among the preclinical medical and dental students and to assess their knowledge about halitosis and oral hygiene practices.

MATERIALS & METHOD

Ethical committee approval was taken for the study. Written informed consent was taken from all the participants before the initiation of the study. The study population consisted of 1st and 2nd year dental and medical students of Melaka Manipal Medical College. A total number of 323 subjects participated in the study, of which 203 were female, and 120 were male. A pre-validated questionnaire in English was administered to the subjects. The questionnaire was divided into three sections of multiple choice questions, in which the subjects were to choose appropriate response from the provided list of options. The first section was related to the subject's perception of halitosis, its history and its impact on their social life. The second section was concerned with their oral hygiene practices, and the third section was about the knowledge of subjects towards causes of halitosis. Questionnaires were collected upon completion and data collected was subjected to statistical analysis. The responses of male and female subjects were compared using Chi-square test. A p-value < 0.05 was regarded as statistically significant.

RESULTS AND DISCUSSION

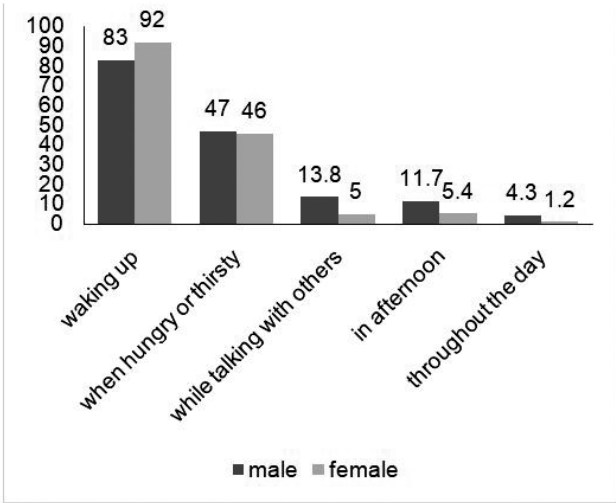
The prevalence of self-perception of halitosis was 61% among male and 59% among female subjects. Among subjects with self-perceived halitosis, a significantly higher number of female subjects (92%) reported to have experienced halitosis upon waking up in the morning compared to the male subjects (83%). No significant difference was found among the male and female subjects who experienced halitosis throughout the day or when hungry or thirsty. **(Graph 1)** These results are similar to findings of previous studies.[6,7.8] There is a reduction in the flow of saliva when we are thirsty or hungry as well as during sleep. This leads to a transient dry mouth which promotes anaerobic bacterial putrefaction, resulting in halitosis.[8]

A significantly higher number of female subjects with self-perceived halitosis (67%) were aware of their bad breath on their own compared to their male counterparts. (50%). Other studies have reported similar findings.[6,9,10] This can be explained by the fact that females are more aware and conscious regarding their oral health and appearance in general, which may enhance their awareness and perception of about presence of bad breath. The number of male subjects who became aware of their bad breath when told by others was also significantly higher compared to female subjects.**(Graph 2)** This suggests the role of other people in confirming whether an individual is afflicted with halitosis or not.[7]

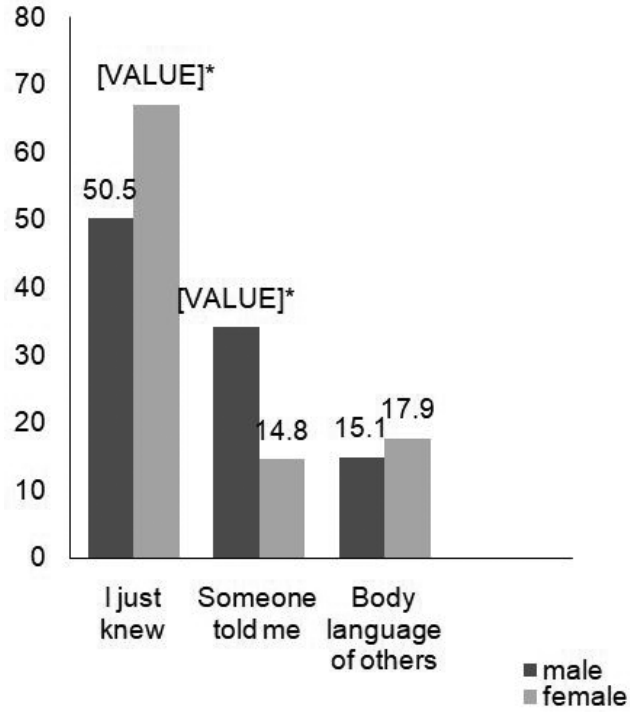
Halitosis was found to have negatively affected the social life of both male and female subjects whereby they felt shy around people, avoided talking to others, avoided speaking in meetings, could not start a relationship or felt alienated. **(Graph 3)** Previous studies have reported that halitosis lowers the self-esteem and confidence and may lead to social and personal isolation.[7,11]

The oral hygiene practices of both the male and female subjects were good with the majority of them brushing twice a day and cleaning their tongue daily. This result was expected as the study population was made up of dental and medical students. The usage of mouth rinses was significantly higher among females when compared with male subjects. **(Table 1)** This may imply that female subjects are more conscious about maintaining their oral health than their male counterparts.

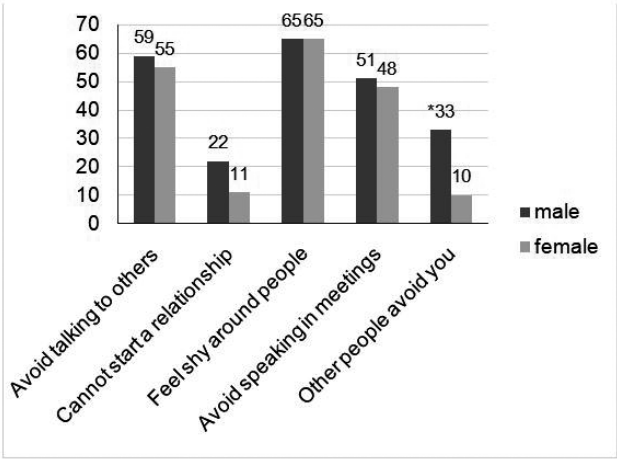
Our study revealed that the knowledge of both female and male subjects regarding the various intraoral extra-oral factors that may cause halitosis, was unsatisfactory. **(Table 2)** This could be due to the fact that topic of halitosis is not a part of their curriculum in their pre-clinical years. When these students go to clinical years, they will get more exposure and will have better knowledge about halitosis.



Graph 1: Time of the day when halitosis is worst



Graph 2: Ways in which subject became aware of halitosis



Graph 3: Effect of halitosis on the life of subjects

Table 1: Oral hygiene practices of the subjects

		Male	Female	p-value
Brush twice a day	No	7.6%	5.4%	0.442
	Yes	92.4%	94.6%	
Floss regularly	No	71.7%	66.0%	0.292
	Yes	28.3%	34.0%	
Use mouthwash regularly	No	63.9%	50.7%	0.022
	Yes	36.1%	49.3%	
Clean tongue daily	No	34.2%	26.6%	0.149
	Yes	65.8%	73.4%	

Table 2: Knowledge of the subject towards causes of halitosis

Causes of halitosis		Male	Female	p-value
Gum disease	Agree	73.3%	75.4%	0.023*
	Disagree	14.2%	5.9%	
	Don't Know	12.5%	18.7%	
Decayed teeth	Agree	75.8%	80.8%	0.105
	Disagree	13.3%	6.4%	
	Don't Know	10.8%	12.8%	
Tongue coating	Agree	66.7%	71.8%	0.591
	Disagree	8.3%	7.9%	
	Don't Know	25.0%	20.3%	
Dry mouth	Agree	66.7%	78.7%	0.002
	Disagree	21.7%	7.9%	
	Don't Know	11.7%	13.4%	
Caffeinated drinks	Agree	55.8%	57.9%	0.991
	Disagree	35.0%	22.3%	
	Don't Know	9.2%	19.8%	
Tonsil infection	Agree	58.3%	58.1%	0.007
	Disagree	19.2%	10.3%	
	Don't Know	22.5%	31.5%	
Sinus infection	Agree	43.3%	37.9%	0.039
	Disagree	32.5%	16.3%	
	Don't Know	24.2%	45.8%	
Gastric problem	Agree	56.7%	51.7%	<0.001
	Disagree	28.3%	18.4%	
	Don't Know	15.0%	29.9%	
Pulmonary problem	Agree	34.2%	23.6%	0.001
	Disagree	34.2%	22.7%	
	Don't Know	31.7%	53.7%	

CONCLUSION

The results of our study reveal that there is a high prevalence of self-perceived halitosis among the preclinical dental and medical students but their knowledge about the etiology of halitosis is limited. There is a need to enhance the knowledge of the students about potential causes of halitosis and its treatment. This can be brought about by organizing oral health education programs and seminars regarding halitosis in the preclinical phase. As the dental and medical students of today are going to become the healthcare providers of tomorrow, it is imperative that they strive to become a

health symbol and keep their mouth free from halitosis so that they can be an inspiration for their patients and the society on the whole.

Conflict of Interest: The authors declare that we don't have any conflict of interest regarding the publication of this paper.

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Ethical Clearance: Ethical clearance was obtained from the Institutional ethical committee

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The Effectiveness of Information, Education and Communication on Knowledge, Attitude, Practice Regarding Obesity among Adolescents at Selected Government Schools in Kancheepuram District

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ABSTRACT

A true experimental study to assess the effectiveness of information,education and communication on knowledge, attitude, practice towards obesity and obesity reduction among the obese adolescence population at selected government schools of kancheepuram district. A true experimental research design was adopted for the study. The study was conducted in 6 schools in government schools of kancheepuram district . The samples of the study were all obese adolescents between the age group of 12-15 years. The Probability multi-stage sampling technique was used to select the schools and samples for the study. The data collection instrument was the Structured Interview Questionnaire to assess the knowledge on obesity, five point attitude scale to assess the attitude towards obesity, Dietary, physical activity and lifestyle practices check list to assess the practice towards obesity, and bio physiological measurements of BMI, BMR and Fat percentage to assess the level of obesity. Regarding Obesity reduction, the analysis revealed that in the post-test of the experimental group, the overall mean BMI, was 25.52 with an S.D of 2.89. In the control group, the overall mean BMI was 28.00 with an S.D of 3.11. The unpaired‘t’ test value was t 6.12, t=2.52 and t=2.14 which was greater than the table value at p=0.001, p=0.01 and p=0.03 for all three components and revealed that there was a high significant difference between the experimental and control groups.

Keywords: *Information Education Communication on Obesity Reduction, Knowledge questionnaire, Attitude and lifestyle practices check list.*

INTRODUCTION

Obesity and Overweight are at the fifth position globally, as risks for death. At least 2.8 million adults die each year as a result of being overweight or obese. In addition, 44% of the diabetes burden, 23% of the ischaemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity.

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WHO’s global estimates of 2008 reported that more than 1.4 billion adults, 20 and older, were overweight and of these overweight adults, over 200 million men and nearly 300 million women were obese. Overall, more than 10% of the world’s adult population was obese. 35% of adults aged 20 and over were overweight in 2008, and 11% of them were obese [1-2].

In 2011, more than 40 million children under the age of five were overweight. Once considered as a high-income country problem, the problem of overweight and obesity are now on the rise in low and middle-income countries, particularly in urban settings. More than 30 million overweight children live in developing countries

and 10 million in developed countries. Overweight and obesity are linked to more deaths worldwide than underweight. For example, 65% of the world's populations live in countries where overweight and obesity kill more people than underweight [3].

Overweight and obesity are strongly associated with diseases such as diabetes, hypertension (HTN), cardiovascular disease (CVD) and the metabolic syndrome. Rising rates of obesity is an epidemic in most of the developed countries and is becoming a major health hazard in many developing nations as well. Rapid urbanization, modernization, adoption of a lifestyle with reduced physical activity and increasing intake of calories have resulted in rising rates of obesity in several developing countries [4-7].

Obesity levels in India are on the rise. If rising trends are to be halted and reversed, current approaches to addressing obesity need to be changed. The following are the suggested strategies to control obesity. (i) to educate obese clients and promote a healthy lifestyle (ii) early detection of persons with risk factors and (iii) cost–effective interventions for reducing risk[8- 10].

Adolescence is perceived as one of the healthy periods in the life. The transition through adolescence and into early adulthood is recognized as an influential age for excess weight gain, marked by poor dietary patterns and physical inactivity. They are fascinated by new tastes and have faulty eating habits along with physical inactivity which may lead to overweight. Adolescence is generally characterized as a period of growing independence, where individuals are increasingly beginning to make their own decisions about their day-to-day life ([11] Laska, 2012).

The investigator also observed the changing patterns of lifestyle habits, which in turn results in lifestyle diseases. School children are aware of anemia, and sanitation but they are not aware of the impact and complications of unhealthy dietary habits, physical inactivity and overweight. The investigator, having observed the changing trends, has come across many individuals who developed co-morbidities of Diabetes and hypertension, even at earlier ages because of obesity. So the investigator decided to conduct this particular study to assess the knowledge, attitude and practice on obesity, to ascertain awareness and habits, and to assess the prevalence of obesity in the government schools and also to educate and counsel them in order to bring behavioural changes towards healthy lifestyles and prevent the complications or impact of overweight and obesity.

OBJECTIVES OF THE STUDY

1. To assess and compare the pre-test and post-test level of knowledge, attitude, practice and obesity among the obese adolescents of the experimental and control groups.
2. To determine the effectiveness of a Information,Education and Communication on knowledge, attitude, practice towards obesity and obesity reduction of obese adolescents.
3. To identify the relationship between knowledge, attitude, practice in the pre and post- test of the experimental and control groups.
4. To associate the mean of differed knowledge, attitude, practice of obese adolescents of the experimental group with their selected demographic variables.

Null hypotheses:

NH1: There is no significant difference in the pre and post test level of knowledge, attitude, practice among the obese adolescents of the experimental and control group at $p<0.05$.

NH2: There is no significant relationship between the knowledge, attitude, practice in the pre and post test of the experimental and control groups at $p<0.05$.

NH3: There is no significant association of mean of differed knowledge, attitude, practice of obese adolescents of the experimental group with their selected demographic variables at $p<0.05$.

METHOD AND MATERIALS:

A true experimental research design was adopted for the study. The independent variable for the study was Information Education Communication on Obesity Reduction and the dependent variable for the study was knowledge, attitude, practice towards obesity and obesity reduction. The study was conducted in 6 government schools of kancheepuram district. The samples of the study were all obese adolescents between the age group of 12-15 years. The Probability multi stage sampling technique was used to select the schools and samples for the study.

The main study was conducted on 200 samples. Data collection was carried out in 3 phases namely the screening phase, assessment phase and intervention phase. Initially, in the screening phase, six schools were selected from 16 schools by Simple Random Sampling technique. Then the

selected six schools were screened for obese adolescents. Totally 3118 available adolescents were screened, of which 496 adolescents were identified as obese from six schools, of which three schools each were allocated to the experimental and control groups by using the Simple Random Sampling technique. A Computerized Random Generation method was used to select 110 samples for each, the experimental and control group.

In the assessment phase, the data collection for each sample was started with an introduction of the investigator. The investigator assured the clients about anonymity and confidentiality. After gaining the confidence of the obese adolescents, the pre-test was done (Assessment of knowledge on Obesity, Attitude towards obesity, dietary, physical activity and lifestyle practices and level of Obesity). The approximate time taken for data collection from each sample was 45 minutes.

The IEC package was administered to the obese adolescents in the experimental group on the same day of completion of the pre-test. It took nearly 20 minutes to deliver and discuss the IEC package. The dietary and physical activity modification was prescribed within two days of completion of IEC which took nearly 30 minutes. Following this, individual counseling was given to obese adults within a week. A minimum of 3 counseling sessions were given with duration of 30 minutes each, during the follow up. The same procedure was followed with the control group but no intervention was given after the pre-test.

Reinforcement of the interventions was given by the investigator throughout the data collection period, once every 15 days. The reinforcement was given by the investigator directly and also over telephonic conversation. After 3rd month, the post-test was done

RESULTS

Table 1: Comparison of level of knowledge in the pre and post test for experimental and control group

Variables	Pre Test				Post Test		
	Group	Mean	SD	t-value	Mean	SD	t-value
Knowledge	Control	8.68	5.41	3.009** (p=0.003)	17.36	6.36	8.935** (p<.001)
	Study	11.21	6.43		24.79	5.35	
Attitude	Control	18.18	13.51	1.005 (p=0.316)	31.13	15.25	11.566** (p<.001)
	Study	20.08	13.23		52.03	9.68	
Practice	Control	18.20	14.64	0.256 (p=0.798)	26.68	13.93	12.721** (p<.001)
	Study	17.67	14.61		49.57	11.38	

** Significant at 0.01% level

Table2: Frequency and percentage distribution of general demographic variables of obese adolescents in experimental and control group (N = 200)

Demographic variables		Study Group		Control Group		P Value & $\chi 2$ Value
		No	%	No	%	
1.	**Age in years**					
	13 yrs	31	31	9	9	$\chi 2 = 18.153$, D.F = 2, P = 0.000***
	14 yrs	43	43	44	44	
	15 yrs	26	26	47	47	
2.	**Gender**					
	Male	45	45	23	23	$\chi 2 = 10.784$, D.F = 1, P=0.001***
	Female	55	55	77	77	
3.	**Occupation of Father**					
	Employed	96	96	43	43	$\chi 2 = 66.258$, D.F = 1, P=0.000***
	Unemployed	4	4	57	57	

Conted…

4.	**Occupation of Mother**					
	Employed	43	43	97	97	χ 2 = 69.429, D.F = 1, P=0.000***
	Unemployed	57	57	3	3	
5.	**Diet**					
	Vegetarian	21	21	12	12	χ 2 = 2.940, D.F = 1, P=0.086 (N.S)
	Mixed	79	79	88	88	
6.	**How Going to School**					
	By walk	23	23	25	25	χ 2 = 18.542, D.F=2, P=0.000***
	By vehicle	50	50	70	70	
	By cycling	27	27	5	5	
7.	**Duration of watching TV**					
	1 hr/day on week days	60	60	47	47	χ 2 = 10.784 D.F=1, P=0.000***
	≥ 2hrs/day on week days	40	40	53	53	
	1- 3hrs/day on holidays	80	80	78	78	
	≥ 3hrs/day on holidays	20	20	22	22	

DISCUSSION

The study findings first of all suggest that the prevalence of obesity is more in girls than boys. It's been observed in many studies that the girls are more prone for childhood obesity. The present study data reveals that in study group 55% children are girls and in control group 77% children are girls. This finding is supported by a study done by, S.Kumar, D.K Mahabalaraju, M.S Anuroopa (2011). They assessed a total of 1496 children (975 boys, 521 girls). Among them 86 were obese (Boys 40, Girls 46). Prevalence was 5.74%. So, prevalence of obesity was more in girls (8.82%) than boys (4.10%) so, the difference observed in prevalence of obesity between boys and girls was highly significant.

In the demographic factors, we can obviously see that in control group 43% of the mothers and in study group 93% of mothers are working mothers. It is a highly significant factor that there is an association between child obesity and working mothers at the level of P<0.001. This findings also supported by a study done at American University, Cornell (2010) University and the University of Chicago (2010) which has analysed data on 900 school-age children, and found that the cumulative time a child's mother worked was associated with a small but measurable increase in the child's Body Mass Index (BMI).

Overall knowledge pertaining to childhood obesity concludes that none of the adolescents both in study group and control group have adequate knowledge during pretest. The overall post test score on knowledge of obesity for obese adolescents shows that 84% of them gained adequate knowledge and 16 % of them gained moderately adequate knowledge which suggests that IEC teaching was effective. Also the results are highly significant at the level of P<0.001.

The pretest attitude revealed mixed feelings of adolescents with obesity. Majority of them agreed with the fact that they can have a normal and healthy life. In both the groups in pretest about 93 % of the adolescents had favorable attitude about childhood obesity and only few (8 %) had most favorable attitude towards childhood obesity issues.

In post test it has been found that about 74 % of adolescents had most favourable attitude and 26% had favourable attitude towards childhood obesity and weight reducing measures of their children in study group However some of the adolescents expressed that though childhood obesity could be prevented through diet control and regular exercise, The score of overall attitude for study group and control group in pretest were not significant. Whereas after the IEC teaching in post test there was a significant level of increase in the attitude at the level of P<0.001 in study group, this shows the effectiveness of IEC given to the adolescents obese children.

The overall lifestyle practice on weight reducing measures suggested that all adolescents in control and study group were unhealthy practice during the pretest.

After administration of IEC package in post test, 45% of adolescents in the study group had moderate healthy practice and 7% had healthy practice towards weight reducing measures of adolescents. Among these 100 children comparatively with the pre test weight, 32 % of them had reduced less than 500 grams of weight and 7 children had reduced 500 to 1000 grams of weight after the post test.

Several studies conducted by experts also emphasized the importance of family's readiness to change the behavior of the child, involvement of school, family and community in promotion of physical activity among children and the importance of parental and child counseling. The present study also showed that an IEC module was an effective method for the obese children as well as their family members in order to have better awareness, favourable attitude and cooperation in following weight reducing measures.

CONCLUSION

Every human being wishes to have healthy children who would grow to be healthy adults and enjoy a long life. It is clear that in many countries this aim may be unachievable for number of years because many specific adult health problems have their origins in childhood. One such health problem is **"**Childhood Obesity "All mothers want to have chubby babies so, increasing prevalence of obesity has become a most common and serious nutritional disorder in children. Many mothers believe that childhood fat is puppy fat, which children will lose as they grow up. But children who are obese before age five seems to have greater risk of adult obesity. The finding of the study proved that there was a significant improvement in the level of knowledge attitude and practice among adolescent children in the study group after the administration of Information Education Communication Package. It's the responsibility of families, teachers and society to bring childhood obesity an end.

Ethical Considerations: The Ethical committee approval was received from IHEC, Meenakshi Academy of Higher Education and Research (MAHER). A formal written permission was obtained from the Chief Education Officer and each School Head masters. Individual permission was obtained from the samples. Content validity was received from the experts in the various field of Nursing, Psychology, Pediatric department and Nutrition.

Confidentiality: Confidentiality and anonymity pledge was ensured.

Justice: The obese adolescents of the control group were also given wait list intervention.

Source of Support: Nil

Conflict of Interest: None declared.

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Various Online Marketing and Promotions Strategies to Improve the Validation Towards the Organic Products in the Pharmaceutical Sectors

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ABSTRACT

The current and familiar expos of organic products in the markets have made everyone to indulge in buying the organic products, since it holds the name 100% pure organic. Thus in the developing countries due to the environmental scraps people love to "Go Green" to improve their lifespan, other than taking drugs to avoid side effects. With this organic cultural diversity, the organic markets offers export opportunities to the pharmaceutical field with the help of online marketing as pivotal role in improving the strategies and growth of organic products in incredible communication, at the same time it also plays an import role in production of organic products in reducing poverty in the rural sectors. However, in Indian online markets they accustomed a number of complications and obstacles to export and import the organic products along with pharmacy drugs in online which insist meeting retailers and buyers demands on quality, where a lack of information about requirements and standards, dealing with certification and hierarchy relationship is missing, thus, this paper implies on various online marketing and promoting strategies to improve the validation towards the organic products in the pharmaceutical sectors.

Keywords: *Marketing, Promotions, Organic, Pharmaceutical sectors, Validation.*

INTRODUCTION

"Go green" word has become an instinct among the people worldwide, in- day -today life, the organic awareness among people implemented to stick into organic culture, eventually about their health, nutrition supplements, beauty, fitness, hygiene and physical regime[1]. This major concern have appeared because of recurrent crises involving pesticides and harmful chemicals residues on fresh products to preserve foods, addition of more chemicals in beauty products, unregulated use of additives in food supplements etc., intake of these processed products leads to several health related problems such as obesity, diabetes and coronary heart disease on the rise, in these circumstances consumers prefer taking organic products for their healthy lifestyle. In addition, the increase in environmental awareness and threats posed by pesticide use are also related to the growing interest in organic food production. As a result, organic food is perceived as safer by consumers because they believe it is chemical-free when compared to products from conventional farming[2]. Therefore, health can be considered as an important factor and has a positive relationship to consumers' decision to buy organic food.

Although organic products comprises only a small fraction of the products in the market, its rapid growth has generated much interest among the consumers and business retailers as well as marketing sectors to team up these organic products with pharmaceutical sectors. Thus, the demand for organic products in India has increased tremendously, especially in rural sectors as entrepreneurr[3]. This trend has also moved as online marketing, this type of marketing organic products through online strategies increases the validation producing awareness among customers and increase in total sales. Thus, in Indian online markets they accustomed a number of complications and obstacles to export and import the organic products along with OTC (Over-The-Counter) drugs in online which insist meeting retailers and buyers demands on quality, where a lack of information about requirements and standards, dealing with certification and hierarchy relationship

is missing, thus, this paper implies on various online marketing strategies to improve the validation towards the organic products in the pharmaceutical sectors[4].

Organic products Vs OTC drugs in pharmaceutical sectors: Among the consumers the opportunity for organic products is huge, while the opportunities for OTC drugs is also vast, the entry level for pharmacy drugs comes with a brand and manufactured under a company name and reaches the market with a price tag with huge profit[5]. On the other side the organic products are much more affordable and since they do not need any chemicals they are available easily in the markets and in OTC counter with a low affordable price than pharmaceutical drugs, with these fair reasons organic products consumers are ready to hands on with pharmacy sector and ready to work with entrepreneur to make the standards of the organic products as a key in health and wellness industry.

Organic Online Market Vs Pharmaceutical Markets: Even though, the organic products have a separate web portal and websites with a separate marketing and promotion scales, linking the organic products with pharmaceutical sectors in the name of prescribed medicines and non-prescribed medicines (which with holds organic products) is a simple process to make awareness among people about the products without side effects along with the OTC drugs with good perspectives and perhaps an emerging idea with marketing trends is need for the products, well the questions raises as:

1. What is the link with organic (non-prescribed) and pharmaceutical (prescribed) products?
2. How they both are related in the field of medicine and sale promotions.

Thus, to answer your needs here are the few major points given below to explain briefly about organic online sales marketing Vs pharmaceutical online sales marketing in sales sector:

- Pharmaceutical is the field of science that links the health sciences with the chemical sciences and it is charged with ensuring supply of the safe and effective medicinal products to the patient[6]. Organic is the term used for pure form of herbal products extracted directly from plants, flowers, roots, leaves, tress and environment, those are used by consumers in day to day routine.
- Pharmaceutical online market deals with the supply or availability of drug or medicinal products used for diagnosis, prevention or treatment of specific medical conditions (Diseases). Organic products online market deals with the supply or availability of consumer products of the routine use.
- The Pharmaceutical online market is highly regulated market. Manufacturing, Supply or Use of pharmaceutical products are regulated by national regulatory laws and authority in order to ensure specified quality & standards of such products e.g. USFDS, CDSCO, GMP etc. Organic online market is not regulated market. There are no regulation apply in manufacturing, supply or use of OTC- Organic FMCG (Fast Moving Consumer Goods) products.
- Pharmaceutical goods are available on the retail drug stores and must be sold by qualified registered pharmacist with the prescription of Registered Medical Practitioner (Doctor)[7]. Organic products is available on every general stores and shops and also in online frequently can be sold and purchased by any consumer without any interference of any authority or law.
- The concept of Consumer and Customer is different base on prescription of or OTC pharmacy products. In case of prescription drugs, the doctor is actual customer and patient is consumer, as the sale of drug is only affected by prescription of doctors. In case of OTC drugs, the patient is customer as there is no prescription of doctor is required to purchase OTC drugs. In case of Organic products, the buyer has freedom to purchase and consume the product. There is no difference between customer and consumer.
- Price of the pharmaceutical products is regulated by NPPA & DPCO. However, this regulation on price applies to some lifesaving drugs only. There is no regulation on the price of Organic products depends upon the consumer and retailers fixed price and off-sales[8].

Organic products in India: In order to assess the online strategies of potential customers in domestic market in India, traders, exporters and producers were asked to indicate the type of customers who were interested in buying organic products. They were presented with a selection of 3 customer types: Upper class, Upper-middle

class and Lower-middle class. 90% of the respondents believed upper class consumers to be interested in buying organic products[9]. According to the interviewed FDA, growth in the online market for organic products among the pharmaceutical OTC products would be driven by:

- Health consciousness;
- Awareness about organic products;
- Marketing techniques adopted;
- Availability throughout the year.

Figure 1: Few of the Organic products in India

Organic product players among the pharmaceutical sectors in India: The Republic of India has got a number of Organic players (*Business maps of India, 2016*)[10]. To name some of the renowned Organic key players in this country are: Patanjali, Organic India, Khadi India, Dabur India Limited, Emami, Heinz India Private Limited, Himalaya Herbal Healthcare, Health Vit Limited, Kama, Forest Essentials, The Body Shop India, Noni Biotech, Personna.

Growth and challenges of Organic products among pharmaceutical sectors in India: According to the rules and regulations, organic products cannot be sampled to consumers directly through online marketing but sometimes for the promos it can given as free samples, when they buy some other organic products, It necessitates to be going through the level of a pharmacy for the first time to choose their own products. Thus, compared to the rapid growth of organic products, many Indian's choose home remedies than a prescribed drug. Some of the organic products brands lack consistent building of brand name during a specified time period because of high branding cost and name, thus we will see the current growth and further challenges to be faced in pharmaceutical sectors, which is list in table 1.

Table 1: Growth and challenges to be faced by the pharmaceutical sectors

Category	Current growth	Challenges needed
Government authorities	● So far low investment/high interest ● No subsidies provided to organic products (Since it is Natural) ● Easy policy implementation ● Targets export market ● Needs no marketing support	● Plans for organic farming ● Provide subsidies to organic producers ● Reduce documentation ● Education and training ● Awareness creation among Indian consumers (market promotion)
Certification organizations	● Rapid certification ● Standardization in terms of regulations is relavent	● Reduce cost of certification ● Link up with FDA ● Standardization of regulations
FDA	● Completely linked up with certification agencies ● Proper infrastructure ● Unorganized	● Availability of funds ● Improved infrastructure ● Organized operation
Traders – Pharma	● Level of awareness ● Online marketing ● Price realization ● Proper marketing network	● Create awareness (promotion) ● Increase retail chain of organic products ● Support for marketing initiatives

Conted…

Organization of organic producers	● Organized ● Growth expectations ● Modern technology ● Modern India ● Go Green ● 100% organic ● No Side effects	● Organized network ● Realistic information ● Support through modern technology

Strategies towards online marketing of Organic products with pharmaceutical products: One of the challenges of the organic products category as non-prescribed medicines holds the multi-dimensional benefits that exists across ailments and the difficulty of getting consumers to articulate what they desire in a remedy apart from 'quick relief'- and to some extent, softer qualities like safety, gentleness and trust[12]. Online retailers therefore often find themselves locked in a contest of 'quick-quicker-quickest'[13]. Thus, the strategy has four categories as an example based on the theme of online marketing with online pharmacy store (the prescribed drugs):

(i) Arthritis and Rheumatic agents, where intuitive logic is strong,

(ii) Systemic diabetes remedies, where it is relatively strong,

(iii) Some other instant relief from illness, and

(iv) A great deal with skincare products and fitness products.

With these data's as an example in online marketing and promotions lets comparatively find how our consequence framework succeeds with results among pharmaceutical sectors.

(i) Arthritis and Rheumatic agents: Here, I chose the arthritis joint relief products from Bio-Organics Glucosamine Forte 1500mg Tab X 200 product, which has been certified and standard by www.pharmacyonline.com.

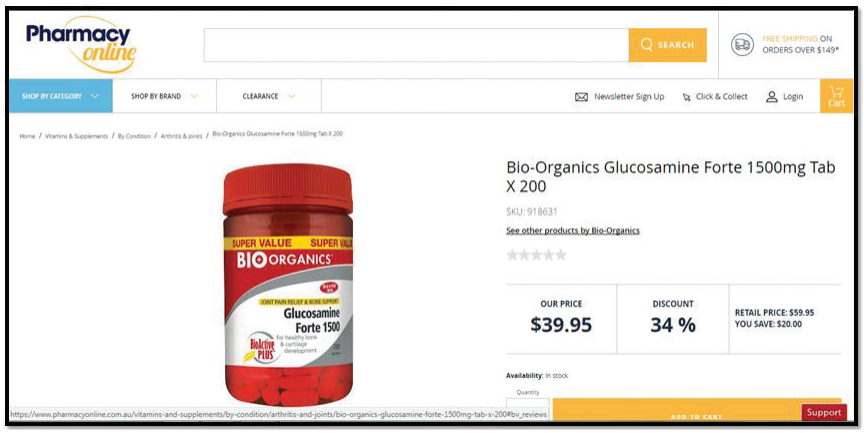

Figure 2: Online description and marketing promotions of the product:

- temporarily relieves osteoarthritis pain and supports joint health
- reduces joint inflammation and improves mobility

How this product works: Glucosamine Forte 1500 can provide temporary relief from the pain and joint inflammation associated with osteoarthritis, and improve joint mobility.

Each tablet contains: Glucosamine Hydrochloride (1.5g) 1500mg, No added preservatives.

(ii) Systemic diabetes remedies: Here, I chose the Nature Made Diabetes Health Pack Daily Supplement Packets which has been certified with www.walgreens.com.

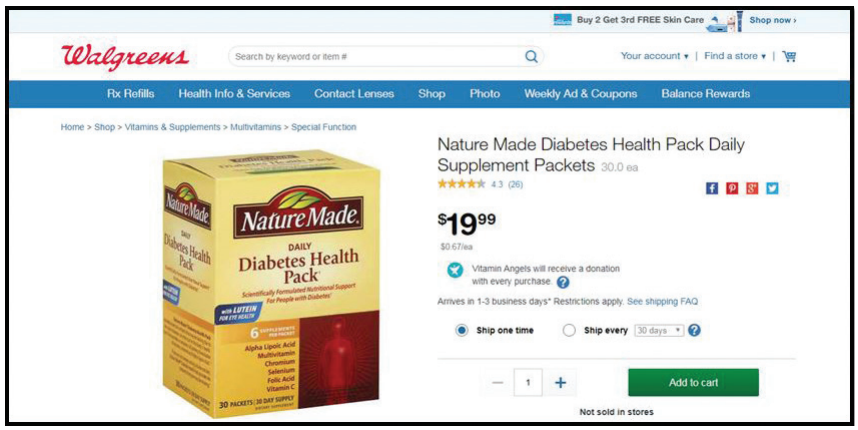

Figure 3: Online description and marketing promotions of the product:

- Contains sugar-free supplements
- Provides essential nutrients
- No artificial flavors or preservatives

How this product works: Nature Made® Diabetes Health Pack provides essential nutrients that may be lacking due to the strain diabetes can often put on the body's health.

Each capsule contains:

Alpha Lipoic Acid with Green Tea: Antioxidant - works with other antioxidants

Multivitamin/Mineral: High potency formula with Lutein

Chromium: Necessary for proper carbohydrate metabolism.

Selenium: Antioxidant - helps protect the body from free radicals.

Folic Acid: Helps maintain heart health.

Vitamin C: Antioxidant-helps boost the immune system.

(iii) Organic instant relief from illness: Here, I chose Bhumija Lifesciences Panch Tulsi 25Ml product which has been standard and certified with www.pharmacyonnet.com.

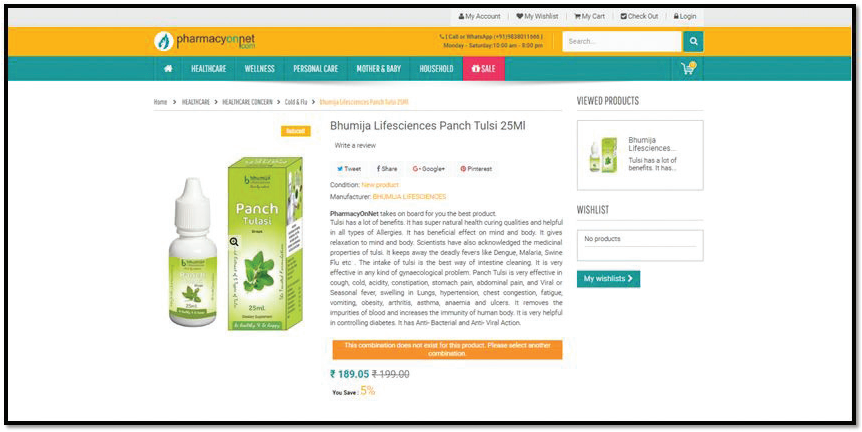

Figure 4: Online description and marketing promotions of the product:

PharmacyOnNet takes on board for you the best product. Tulsi has a lot of benefits. It has super natural health curing qualities and helpful in all types of Allergies. It has beneficial effect on mind and body. It gives relaxation to mind and body. Scientists have also acknowledged the medicinal properties of tulsi. It keeps away the deadly fevers like Dengue, Malaria, Swine Flu etc. The intake of tulsi is the best way of intestine cleaning. It is very effective in any kind of gynaecological problem. Panch Tulsi is very effective in cough, cold, acidity, constipation, stomach pain, abdominal pain, and Viral or Seasonal fever, swelling in Lungs, hypertension, chest congestion, fatigue, vomiting, obesity, arthritis, asthma, anaemia and ulcers. It removes the impurities of blood and increases the immunity of human body. It is very helpful in controlling diabetes. It has Anti-Bacterial and Anti- Viral Action.

(iv) Organic fitness products: Here, I chose Health buddy Honest Organic Tea, which has been standard and certified with www.sastasunder.com.

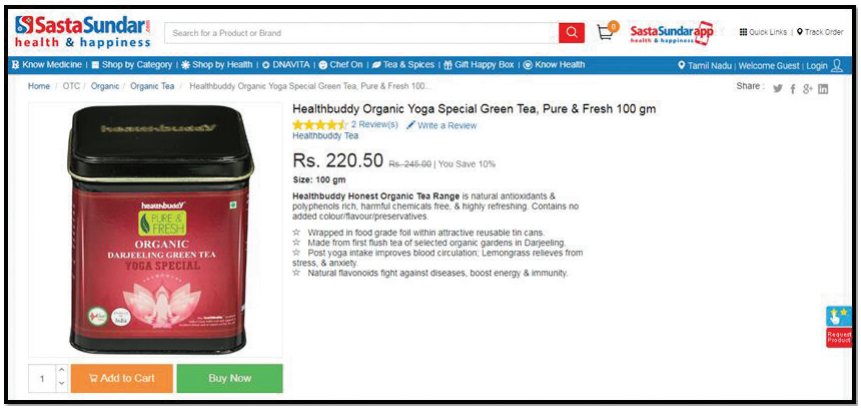

Figure 5: Online description and marketing promotions of the product:

Healthbuddy Honest Organic Tea Range is natural antioxidants & polyphenols rich, harmful chemicals free, & highly refreshing. Contains no added colour/flavour/preservatives.

- Wrapped in food grade foil within attractive reusable tin cans.
- Made from first flush tea of selected organic gardens in Darjeeling.
- Post yoga intake improves blood circulation; Lemongrass relieves from stress, & anxiety.
- Natural flavonoids fight against diseases, boost energy & immunity.

With the above data's of the online marketing and promotions our consequence framework of organic products succeeds among pharmaceutical sectors, where, the results on the validation is given below.

RESULTS AND DISCUSSION

Thus, the paper, implies on various online marketing and promoting strategies to improve the validation towards the organic products in the pharmaceutical sectors, where the final results have been validated towards consumer-customer-retailer relationship on the basis of five bias which has been illustrated below as a bar diagram Figure 6.

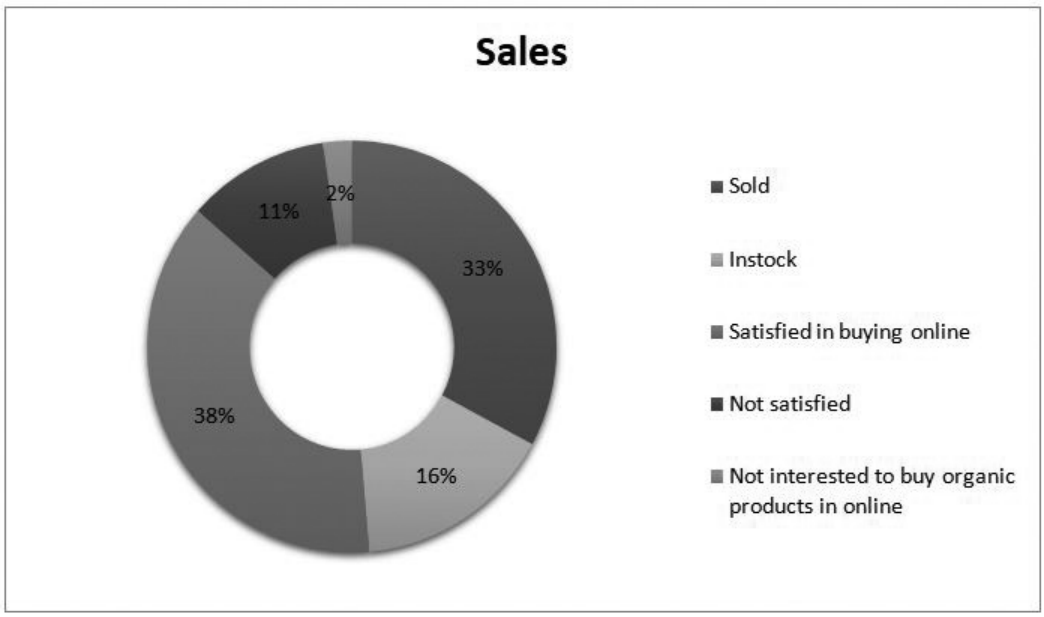

Figure 6: consumer-customer-retailer relationship on the basis of five bias

DISCUSSION

As we discussed above , one of the challenges of the organic products category as non-prescribed medicines holds the multi-dimensional benefits that exists across ailments and the difficulty of getting consumers to articulate what they desire in a remedy apart from 'quick relief'- and to some extent, softer qualities like safety, gentleness and trust. Online retailers therefore often find themselves locked in a contest of 'quick-quicker-quickest', the promise of speedy recover without no side effects formula is a fairly ubiquitous one, whether we are thinking of pain, fever, cold & cough, or acidity or beauty or fitness regime. Thus, the strategy with four categories as an example based on the theme of online marketing with online pharmacy store proved online marketing of organic products in pharmaceutical sectors with a validate data.

CONCLUSION

Well, the Indian online markets they accustomed a number of complications and obstacles to export and import the organic products along with pharmacy drugs in online which insist meeting retailers and buyers demands on quality, where a lack of information about requirements and standards, dealing with certification and hierarchy relationship is missing, thus, this paper implied on various online marketing and promoting strategies to improve the validation towards the organic products in the pharmaceutical sectors with few examples.

Ethical Clearance: Since the article studies about online promotion on herbal products there is no need of clearance.

Source of Funding: Self

Conflict of Interest: NIL

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Effect of Bidirectional Dyadic Association on Anxiety and Self Esteem among Patients Undergoing Mastectomy

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ABSTRACT

Objective: To determine the relation of Bidirectional Dyadic Association (BDA) with Level of Anxiety (LOA) and Level of Self esteem (LOS) among patients undergoing mastectomy

Method: The study was conducted for determining the association of BDA with LOA and LOS. A Quasi–experimental, two group pre-test post-test design was used with a purposive sampling technique

Results: Analysis of effectiveness of BDA in terms of change in LOA scores showed that , there is statistically significant difference in LOA of both experimental and control group ('t' = 5.171) and on the other hand LOS also showed a statistically significant difference as similar to LOA ('t' = 2.655) which indicates the significant decrease in LOA and LOS after BDA.

Conclusion: Based on the findings, the study indicated that the use of bidirectional dyadic association, which is a known psychosocial intervention, results in reduction of anxiety and increase in self esteem. The present study depicts the need for using various psychosocial interventions which are studied in the theory and not making use in the clinical practice, which actually finds a greater importance in the present era.

Keywords: *Bidirectional Dyadic Association (BDA) , Level of Anxiety (LOA) , Level of Self esteem (LOS)*

INTRODUCTION

Diseases are always a situation of instability for all human beings even if it is minor or severe in nature. Among all diseases, cancer is one among the most deadly diseases with high mortality and morbidity rates. World statistics showed that, approximately 14 million new cases and 8.2 million cancer related deaths in 2012. The number of new cases are expected to rise by about 70% over the next 2 decades.[1] These rates show the deadly nature of cancer. Among cancers in females, breast cancer is the second most common cancer with nearly 1.7 million new cases and contributing to more than 25% of the total number of new cases diagnosed in 2012 worldwide.[2]

Cancer cells are characterized by uncontrolled division leading to abnormal growth and the ability of these cells to invade normal tissue locally or to spread throughout the body, in a process called metastasis.[3] A number of treatment modalities may be used for treating breast cancer including surgery, radiation therapy, chemotherapy and targeted therapy. Types of surgery vary from breast – conserving to mastectomy.[4] The statistics also says that the average age of developing breast cancer has shifted from 50 – 70 years to 30 – 50 years and cancers in the young tend to be more aggressive.[5] In 2010, Kerala recorded a total of 1,618 breast cancer deaths among women. Breast cancer is the

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most common cancer among the women in Kerala, with 1,200 new cases registered at the Regional Cancer Centre alone annually. According to the data available with the Thiruvananthapuram Cancer Registry, the prevalence rate in rural areas is 19.8 per 100,000, while in the urban areas, it is 30.5 per 100,000. In 2010, Kerala recorded a total of 1,618 breast cancer deaths among women.[6]

The researcher noticed a communication gap between the medical staff and the patients who were undergoing mastectomy, which is causing anxiety among those patients. Hence the researcher enquired a strategy that helps the mastectomy patients to face the surgery more easily.

Dyad means two things of similar kind or nature or group and dyadic communication means the inter-relationship between the two, involving their mutual ideas, thought, behaviour, ideals, liking, disliking, and the queries and answers concerning life and living in nature. The pair of individuals in a dyad can be linked via romantic interest, family relation, interests, work, partners in crime, and so on. A dyad can be unstable because both persons must cooperate to make it work and it refers to the most immediate and concrete level of peer interaction.[3] Hence the dyadic support facilitation is used in this research as an intervention for the patients undergoing mastectomy.

A study done by Sutton LB et al examined the effects of a mutual dyadic support intervention between survivors and women newly diagnosed with breast cancer on the quality of life and interpersonal relationships of the participants. Most participants' (31 survivors and 31 newly diagnosed) dyadic conversations focused on the health and functioning of newly diagnosed partners, with survivors providing informational and emotional support. [7]

A study done by Markopoulos C et al in Greece about the impact of breast cancer surgery on self – esteem and sexual life of female patients. The researchers concluded that those with delayed reconstruction were more satisfied and reported a lower impact on their self–esteem and sexual life versus those who had only mastectomy, which reveals the importance of looking into the self esteem of patients undergoing mastectomy. [8]

The above mentioned research studies give an impression of effectiveness of dyadic association among patients who have undergone mastectomy. Even thought this effectiveness is proved among mastectomy patients and several other cancer patients in foreign set up, it is not much used in the care of mastectomy patients in India. Only limited studies have done in the mastectomy patients for improving their self esteem and reduction of anxiety using the dyadic interventions.

MATERIALS AND METHOD

Research approach: Quantitative research. Experimental studies are explicitly designed to test causal relationship to test whether the intervention caused changes in or affect the dependent variable.[9]

Research design: In this study, randomization was not done. Hence the approach is Quasi experimental.

Group	Pre test	Intervention	Post test
Experimental Group (30 patients posted for mastectomy)	O_1	X	O_2
Control Group (30 patients posted for mastectomy)	O_1	-	O_2

O_1: Assessment of existing anxiety and self esteem of breast cancer patients

X: Bidirectional Dyadic Association given by a post mastectomy educator

O_2: Assessment of anxiety and self esteem of breast cancer patients after mastectomy

Tools

Tool I: Tool I was a questionnaire to assess the demographic variables of the respondents through structured interview such as age, religion, educational qualification, marital status, occupation, support person available ; illness profile such as duration of diagnosis, duration of treatment, family history of breast cancer, history of hospitalization, availability of any similar information from outside sources and the side of surgery.

Tool II: The State-Trait Anxiety Inventory (STAI) is a standardised 20 item anxiety assessment tool which provides an accurate measure of anxiety level in a person. Highest score is 80 and the lowest score is 21. [10]

Tool III: State Self Esteem Scale is developed for measuring the self esteem of people. It is a 20 item scale that measures a participant's self – esteem at a given

point in time. It is subdivided into 3 components of self – esteem: Performance self – esteem, Social self – esteem and appearance self – esteem. Sum scores from all items and keep scale as a continuous measure of state self esteem. [11]

RESULTS

Section A: Analysis of demographic variables among experimental and control group: This section deals with the comparison of demographic variables among experimental and control group using Chi square and Fisher's exact test to prove the homogeneity. There is no significant difference between experimental and control group in terms of age, educational status, type of family, marital status, number of children, support person, duration of cancer, use of any other treatments, history of hospitalization and side of present surgery. Hence both the experimental group and control group are homogeneous.

Section B : Level of Anxiety among the subjects in the experimental group and control group

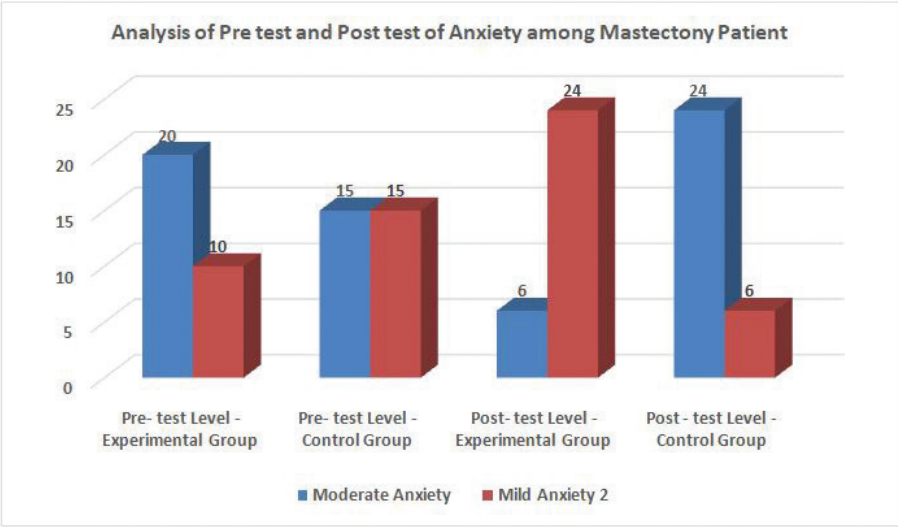

Figure 1: Analysis of pre test and post level of anxiety among mastectomy patients

Figure 1 shows that after pre test, majority (66.67%) of subjects in the experimental group and 50% of subject in the control group had moderate anxiety. After post test, majority (80%) of the subjects in the experimental group had mild anxiety and the same percentage of samples in the control group had moderate anxiety

Section C: Level of self esteem among the subjects in the experimental group and control group

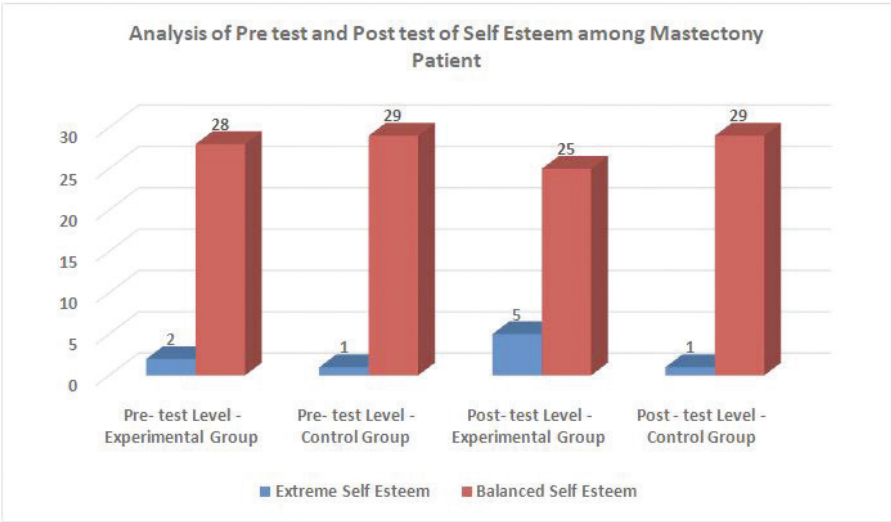

Figure 2: Analysis of pre-test and post–test level of self esteem among mastectomy patients

Figure 2 indicates that after pre test, in the experimental group majority (93.33%) of the subjects had balanced self esteem and in the control group also majority of the subjects (96.67%) had balanced self esteem. After post test, in the experimental group majority (83.33%) subjects had balanced self esteem and in control group majority (96.67%) had balanced self esteem.

Section D : Analysis of effectiveness of bidirectional dyadic association in terms of change in anxiety scores

Table 1: Mean standard deviation and 't' value of anxiety scores of subjects undergoing mastectomy in experimental group and control group

(n = 60)

Experimental group	Mean	SD	t value	p value
Pre Test Post test	42.10 35.97	5.448 5.611	8.194	0.0001**
Control group	**Mean**	**SD**	**t value**	**p value**
Pre Test Post test	41.83 40.87	2.102 2.651	5.281	0.01*

Table 1 reveals that the calculated t value is 8.194 and p value is 0.0001. So the difference between mean pre test and post test anxiety scores of the experimental group is statistically highly significant at 0.05 level and the calculated t value of control group is 5.281 and p value is 0.01. So the difference between mean pre test and post test anxiety scores of the control group is statistically significant at 0.05 level.

Table 2: Mean standard deviation and independent 't' value of anxiety scores of subjects undergoing mastectomy

(n = 60)

Group	Mean	SD	t value	P value
Experimental group Control group	35.97 40.87	5.611 2.751	5.171	0.0001**

**significant at 0.001 level

Table 2 reveals that the calculated t value is 5.171 and p value is 0.0001. So the difference between mean post-test anxiety score in the experimental group and control group is statistically highly significant at 0.001 level.

Section E : Analysis of effectiveness of bidirectional dyadic association in terms of change in self esteem scores

Table 3: Mean standard deviation and 't' value of self esteem scores of subjects undergoing mastectomy in experimental group

(n = 60)

Experimental group	Mean	SD	t value	P value
Pre Test Post test	74.03 76.33	3.837 3.574	4.970	0.0001**
Control group	**Mean**	**SD**	**t value**	**P value**
Pre Test Post test	74.73 73.60	3.796 3.297	2.568	0.016*

Table 3 depicts that the calculated t value is 4.970 and p value is 0.0001. So the differences between mean post-test and pre-test self esteem scores are statistically highly significant at 0.001 level and that of control group ,

calculated t value is 2.568 and p value is 0.016. So the difference between post test and pre test self esteem scores of samples in the control group is statistically significant at 0.05 level.

Table 4: Mean standard deviation and independent 't' value of self esteem scores of subjects undergoing mastectomy

(n = 30)

Group	Mean	SD	t value	P value
Experimental group	76.33	3.574	2.655	0.010*
Control group	73.60	3.297		

* Significant at 0.05

Table 4 reveals that the calculated t value is 2.655 and p value is 0.010. So the difference between mean self esteem score in the experimental group and control group is statistically significant at 0.05 level.

DISCUSSION

The findings of the study have been discussed in terms of the objectives and hypothesis.

Assessment of effectiveness of bidirectional Dyadic Association on Anxiety: The findings of the study in the control group showed that 50% of subjects had moderate anxiety and 50% had mild anxiety whereas, majority (66.66%) of subjects in the experimental group had moderate anxiety and 33.33% had mild anxiety in the pre –interventional period. This indicates that equal number of subjects in the control group had mild and moderate anxiety and majority in the experimental group had moderate anxiety in the pre-interventional period. The majority of subjects (80%) showed an increase in the level of their anxiety in the post – interventional period. But majority (80%) of subjects in the experimental group showed a decrease in the anxiety to mild anxiety level. This indicates that bidirectional dyadic association is effective in reducing anxiety among mastectomy patients.

The study findings were consistent with another study conducted by Ozkaraman A et al. It was done for establishing relationships between social support and social image. The mean score on Cancer Patient's Social Support Scale (CPSSS) was 134.85 ± 9.35. The mean Social Image Anxiety Scale (SIAS) score was found to be 34.30 ± 9.35. The CPSSS and SIAS scores of the participants were inversely correlated, and the SIAS score was found to decrease with the increasing CPSSS score but with no statistically significant difference (r = 0.110, p = 0.217). Study results shows social appearance anxiety is higher in patients with poor social support. [13]

Assessment of effectiveness of bidirectional dyadic association on self esteem: The findings in the control group showed that majority (96.67%) subjects had balanced self esteem and 3.33% had extreme self esteem in the pre-interventional period, which sustained in the post- interventional period also. But in the experimental group majority of the subjects (93.33%) had balanced self esteem and 6.67% had extreme self esteem in the pre – interventional period which was increased to a post – interventional percentage of 83.33% of balanced self esteem and 16.67% of extreme self esteem. Even though the change to extreme level is not intended, the investigator found a strong emotional support from the immediate relatives who are physically available and not available in the ward during and after the surgery, which made an increase in the self esteem within the small interval of research period. The subjects are still in the hospital setting is also a factor in masking the intended change.

This result is controversial with a study which was done by Sebastian J et al in Spain in the year 2008 for relating various aspects of body image and self esteem with a psychosocial intervention program. The results showed that when compared to control group the interventional subjects experienced a decrease in self esteem from the pre – treatment measures after an 8 year interventional program. This negative is justified by the researchers by pointing out the long duration of study and less efficacy of interventional program carried out. [13]

CONCLUSION

The present study a qualitative research approach, two group pre test – post test design was used in the study. A total of 60 subjects were selected. The samples were selected using purposive sampling technique. The data collected were analyzed using descriptive and

inferential statistics. The findings of the study revealed that there is significant reduction in anxiety and increase in self esteem among patients who have undergone mastectomy after bidirectional dyadic association.

The study indicated that the use of bidirectional dyadic association, which is a known psychosocial intervention, results in reduction of anxiety and increase in self esteem. Thus it depicts the need for using various psychosocial interventions which are studied in the theory and not making use in the clinical practice, which finds a greater importance in the present era. So further studies, awareness programmes and curriculum changes should be employed in the nursing practice.

Ethical Clearance: Taken from Institutional ethical committee Amala Institute of Medical Sciences (AIMSIEC/28/2014)

Conflict of Interest: Nothing specific–can use the study findings with proper citation of authors name

Source of Funding: Self finance

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An Empirical Study to Improve the Service Quality for Geriatric Patients in a Tertiary Care Hospital

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ABSTRACT

In this modernizing and technological era, everyone irrespective of any age group prefers good quality care and services. Rapid increase in the geriatric population worldwide as well as in India is expected to increase from 7.6% to 19.1% by 2050. This poses a great challenge for health care industry in order to be prepared for meeting the expectations of elderly patients and provide best care possible. With this background, a cross sectional study was conducted in a 750 bedded tertiary care teaching hospital in Bangalore focusing on improving the quality care for geriatric patients. This study aims at identifying the factors affecting the quality care and methods on improving the service quality for elder patients. The study was conducted for six months from February – July 2017 wherein 250 geriatric inpatients in various wards were assessed using SERVQUAL model. Direct observation and focussed group discussions methods were used to understand the existing facilities and expectations of elder people from the hospital. Based on the key elements obtained from the above methods, questionnaire was formulated in order to study patient's perception with respect to hospital services. The results obtained were analyzed using Descriptive statistics and two way Anova test. The statistical findings indicated that there was high significance among variables i.e., Wards and parameters respectively (1.2E and 3.69E) and the lowest mean obtained was for tangibles (3.74) and empathy (3.67). Based on the results obtained recommendations are given on how to improve the deficiencies and deliver best quality care to elderly patients.

Keywords: *Geriatric, Needs, Expectations, Hospitals, Quality Service*

INTRODUCTION

Hospital is a medical institution where people get treated for their illness or injuries. It provides comprehensive care to all patients who seek medical care through dedicated staffs. Each age group's demand and expectations from hospital differs. According to "National Policy on Older Persons" adopted by Government of India defines older persons or senior citizens as people who are aged 60 years and above. [1]

There is a rapid increase in the elder population worldwide. According to "An Aging World: 2015 report by National Institute on Aging, 8.5 % of people worldwide (617 million) is aged 65 and over". It is said that the population may jump to nearly 17 % of the world's population by 2050 (1.6 billion). It is also reported that the global population of people aged 80 and above (Oldest old) are expected to increase from 126.5 million to 446.6 million between 2015 and 2050. [2]

In India, it is expected to grow from7.6% to 19.1% by 2050. Elder population is at a high risk of depending on others for their basic daily living activities. With this increase in life span of elder people in India, they require more care. The hospitals must be prepared to provide best care to them. [3]

Need for Geriatric Care: Elderly individuals are at a high danger of being distinctly fragile, characterized as reliance on others for essential exercises of everyday living. With increasing life span of elders in India, there will be large fragile population requiring more care. Comparing the average length of stay in hospitals for elders, it is greater than that of general population. Therefore there is a need for medical services provided by hospitals for the increasing demand from fragile elder population. It is a challenge for Indian hospitals to prepare themselves to meet the demand of rising elders whose prevalence and morbidity is high and usage of hospital services are high. [3]

Quality in Health Services: Quality health care is defined as getting the health care services which you need at the right time to get best results using the suitable test or procedure. [4]

Hospital is the most essential service industry. Nowadays everybody is cautious about their health and expects superior health care services without compromising. The term "Quality" plays an important role in each and every aspect of the service.

SERVQUAL Model: SERVQUAL instrument is developed by Parasuraman et al., 1985 and is used to measure the service quality by capturing consumer's expectations and perceptions. It consists of five dimensions (RATER) which links to customer satisfaction.

Reliability(R)- includes ability to perform the guaranteed service accurately.

Assurance(A)- includes staff's knowledge and ability to develop trust and confidence in customers.

Tangibles(T)- includes appearance of staffs, physical environment, facilities and equipment.

Empathy(E)- includes affection and attention towards individual customers, caring and understanding the customers, access, and communication.

Responsiveness(E)- includes providing prompt service and help customers. [5]

SERVQUAL Gaps: This model is used as a conceptual framework to measure the quality service. It identifies the gaps as depicted in the figure 1.

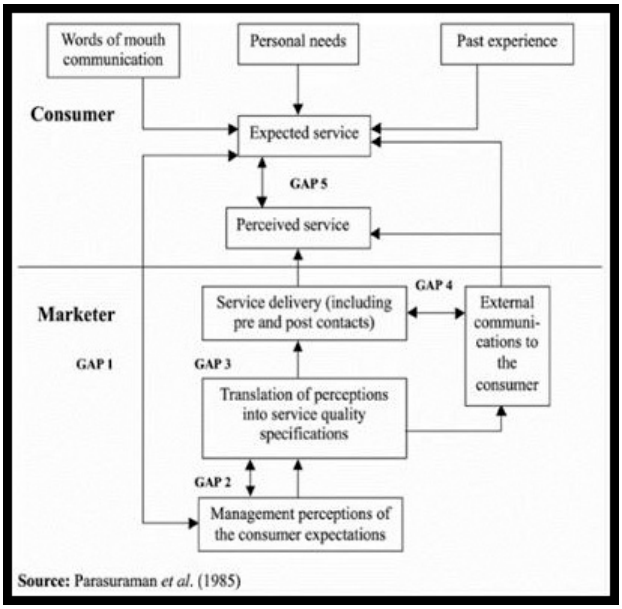

Figure 1: SERVQUAL Gaps

Aim: To study the existing facilities and quality care in the hospital for geriatric patients and identify the gaps to improve the area of defects and deliver best quality care to patients.

OBJECTIVES

1. To study the existing facilities in the hospital.
2. To identify the key factors for enhancing quality of life of geriatric patients in a tertiary care hospital.
3. To analyze the deficiencies in relation to the identified factors.
4. Recommendations for improving the service quality care and better infrastructure to give superior patient satisfaction.

METHOD

An empirical and cross sectional study was carried out in a tertiary care teaching hospital, Bangalore for a period of six months from February 2017 to July 2017. It is descriptive in nature. The study was mainly based on primary data collection using questionnaires. It was conducted in different wards of the hospital.

Exclusion Criteria includes: Psychiatric ward, Intensive care units, Oncology ward, Ophthalmology wards are excluded from the study to get reliable answers.

Sample Size: To calculate sample size for the study, past six months inpatient data i.e., from November 2016-April 2017 was taken. By taking the average population in a month with 95% confidence interval and 5% margin error, sample size was calculated. 237 sample size was obtained. Overall 250 samples were collected for the study to reduce errors.

METHODOLOGY

Firstly the process flow chart was mapped to study the existing facilities in the areas where senior patients seek treatment in the hospital. It helps to understand the movement and touch points/areas of patients.

Secondly Focused Group Discussion (FGD) was carried out for 5-6 geriatric OP and IP patients to identify the key factors for enhancing quality of life of geriatric patients. This was a slight deviation from the actual SERVQUAL study in which the questionnaire

is given to know the expectations of patients. In this study to understand the patient's expectations in broader perspective and to capture more factors, FGD was conducted.

Finally questionnaire was prepared using SERVQUAL questionnaire with the help of key elements derived from the FGD points. This helps to analyze the deficiencies in relation to the identified factors.

The questionnaire consisted of part A and part B. Part A had demographic details and part B had 39 questions with 5 point likert scale (Strongly agree (5) - Strongly disagree (1)). A pilot study was carried out with 20 samples. Face validation was done by experts. After the validation, some of the questions were added and final questionnaire was developed with 45 questions in bilingual language (Kannada and English) for easy understanding of the patients. The questionnaire was addressed to 250 samples in different wards.

DATA ANALYSIS

Among 250 samples, male respondents were 148 and female 102 respectively. The data obtained was computed in the excel sheet and mean was calculated. Descriptive statistics was done to see the overall performance of the hospital with respect to each parameter. Two way Anova test in Ms Excel was carried out to compare the wards with respect to each parameter.

FINDINGS

Direct observation and unstructured interviews were conducted for nursing staffs, MSW, House keeping people to know about the physical design and facilities available for geriatric patients. Some lacunas like inadequate toilets for patients, no separate queue for geriatrics in registration counter and pharmacy, no separate geriatric wards, absence of system of reaching out to patients after discharge, absence of recreational room. It was also seen that privacy was not maintained during some of the procedures because of negligence.

Some of the key factors identified during FGD were good and reasonable treatment, courteous and friendly staffs, friendly environment, sufficient drinking water, friendly toilets, hand grabs in beds and toilets, recreational room and place for patient attenders to stay and so on.

Descriptive statistics and two way Anova test was used to obtain results. Mean was calculated for each parameter. The lowest mean was seen in tangibles (3.741) and empathy (3.67).The parameters like hand grabs in beds and lifts (2.59), Geriatric friendly toilets (3.38), ATM facility (2.85) and Meditation room (1.64) had lower responses. This shows that there should be improvement in these areas. The table 1 shows the mean values of all the parameters.

Table 1: Mean Values of Parameters

Sl. No.	TANGIBLES	Mean Values
1.	Accessibility to hospital and other departments (T1)	4.16
2.	Facilities are adequate (T2)	3.85
3.	Geriatric friendly toilets (T3)	3.38
4	Hand grabs present in beds and lifts (T4)	2.59
5.	Good ventilation and clean environment (T5)	4.7
	Overall mean for Tangibles	3.741
RELIABILITY		
6.	Providing all the necessary information by the hospital (R1)	4.38
7.	Immediate response of the staffs (R2)	4.06
8.	Staffs assistance when patients are in need (R3)	4.11
9.	Delay in services (R4)	4.02
	Overall mean for Reliability	4.14
RESPONSIVENESS		
10.	Staffs show interest in solving problems (RES1)	4.25
11.	Prompt service by staffs (RES2)	4.24
	Overall mean for Responsiveness	4.24
ASSURANCE		
12.	Staffs are polite (A1)	4.65
13.	Staffs are knowledgeable in delivering their services (A2)	3.95
14.	Services provided are trustworthy (A3)	4.14
	Overall mean for Assurance	4.25
EMPATHY		
15.	Friendly approach from staffs (E1)	4.79
16.	Staffs listen patiently (E2)	4.76
17.	Staffs react to patient's problems and feel empathetic (E3)	4.32
18.	ATM present inside the hospital (E4)	2.85
19.	Prayer/Meditation room present (E5)	1.64
	Overall mean for Empathy	3.67

RESULT OF ANOVA TEST

Another statistical test, two way Anova test was carried out for the comparisons of ward with respect to parameters. The test showed that the calculated p value in both rows and columns (1.2E, 3.69E) is lesser than alpha value (α) i.e., level of significance 0.05. Therefore the test is significant. It shows that there is a scope for improvement in the wards with respect to parameters. Once it showed significant, further mean and Standard Deviation (SD) was calculated to compare each ward with each parameter. Mean plus SD and mean minus SD values were compared with mean values to know the performance of wards.

DISCUSSION

The results obtained from the current study shows that there should be improvement in the tangibles (physical environment) and empathy. The key factors obtained during FGD were clean and friendly environment, geriatric friendly toilets and floors, good ventilation, side rails in beds and corridors, good treatment, polite and friendly staffs, special attention. These are some of the factors which enhance the life of elder people in the hospital.

The study done by Sarah Barnes and et al., shows the similar results on how a hospital caring environment should be. It says that there are various tools to measure the quality care in hospitals and should focus on all the factors (physical, mental and social) which enhance the quality care. [6] The following graphs show the responses of patients for various parameters.

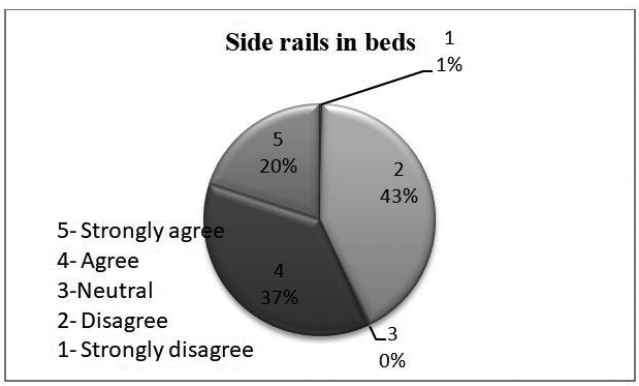

Figure 2: Graph showing response for Side rails in beds

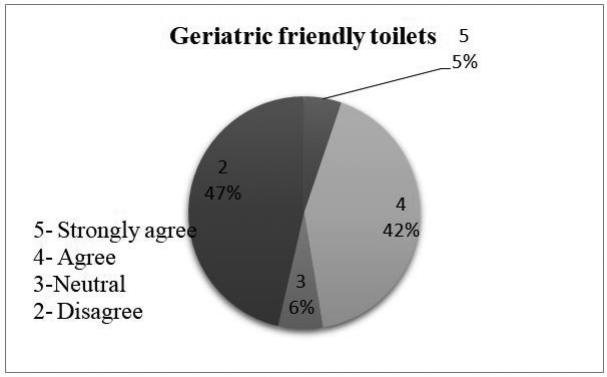

Figure 3: Graph showing response for Geriatric friendly toilets

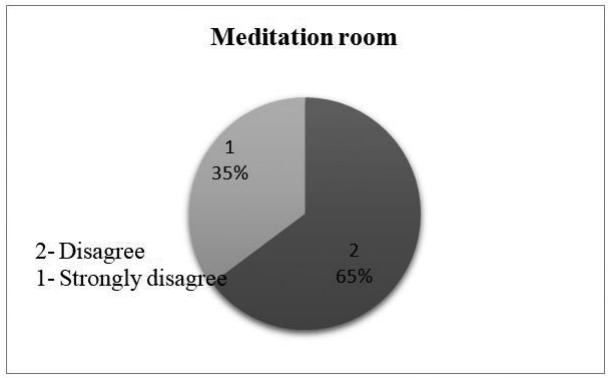

Figure 4: Graph showing response for Meditation room

Demographically India is witnessing a revolution, leading to a considerable increase in the proportion of older people in the population. According to census of India, 2001, India had 77 million persons aged 60 and older from the total population of more than 1 billion. Demographers predict that by the year 2025 the number of elderly in India will be about 177 million people. [7]

Having this situation, it is very much necessary to have hospitals with proper infrastructure and elder friendly physical environment. Many studies have been done on the hospital environment and care of elder patients. Guidelines have been given on how the physical environment should be incorporated in hospitals providing elder care.

Similar studies have been done worldwide and some of the studies are discussed below.

One of the paper by HarsvardhanR, et. al, 2012 states that the planning of the hospital should be done taking in to consideration of both present and future requirements. The designing of a new hospital should be a patient focused center, environment friendly technology, fulfill care provider's requirements, proper integration of clinical, diagnostic, administrative, therapeutic and hospitality dimensions. [8]

Another paper "Creating a Senior Friendly Physical Environment in our Hospitals" by O'Keeffe, J. talks about the requirements that should be present in a senior friendly hospitals. The guidelines are given for the planners and administrators to build new hospitals or for renovation of old buildings. It includes all the areas of the hospital like walls, floors, lighting, bathrooms, beds etc. [9]

Comparing these studies with the current study, it shows that the physical environment also plays vital role in delivering quality care.

RECOMMENDATIONS

- Separate geriatric ward: this helps the patients for easy access to other departments and reduces unnecessary movements. It should be ideally present in ground floor.
- Separate entrance, Separate queue in registration and other counters and system of priority in pharmacy counters for elders reduce the waiting time.
- Hospital can follow a system of reaching out to the patients through telephones after the discharge of patients.
- Separate speciality clinic for seniors.
- Separate toilets for geriatrics with hand grabs, calling bells, wide opening doors, non-slippery floors, clean and dry always.
- Presence of hand grabs put in the corridors of the hospital.
- Adjustable beds with side rails and minimal height should be present.
- Hospital can focus on extending care by having home health care services to elder patients.
- Space for patient's attenders so that elders can spend time with their relatives.
- Spiritual place/Meditation room/library can be provided to patients so that they feel relaxed and can have social interaction.
- Training/special certificate course can be given to nurses/health care providers to deliver quality care to patients.
- Training for staffs on how to handle geriatric patients because they are fragile and cannot be neglected.
- All the basic facilities like drinking water, toilet should available easily and within reach.
- ATM should be present inside the hospital. Extra nutritional support by providing bananas/eggs during lunch hours.

These recommendations are given based on the result obtained and study done on age-friendly hospitals in which checklist was developed by authors and checked its feasibility [3], other literature reviews, NPHCE (National Programme for Health Care of the Elderly). [10]

CONCLUSION

The results showed that the parameters tangibles and empathy needs to be improved and other parameters like reliability, assurance and responsibility have positive response. The lowest mean values are for parameters like side rails in beds and lifts (2.5), ATM not present inside the hospital (2.85) and absence of prayer/ meditation room (1.64). Overall low mean value was seen in tangibles (3.74) and empathy (3.67). These are the areas where the management has to look in to and make some physical environment changes to provide safe atmosphere to patients thereby enhancing the quality of care.

Whereas, the other parameters like reliability, responsiveness and assurance showed positive results. 81% patients agreed that the services are trustworthy and 80% replied that there is a friendly approach from staffs. 75% patients were happy with the services that are promptly delivered. The hospital can maintain these parameters and can have constant supervision on staffs to deliver best care and satisfy patient needs.

To conclude, with the growing population of elders in the country, it is necessary to provide a good senior friendly hospital and fulfill their needs and expectations.

Conflict of Interest: No such issues.

Source of Funding: Self funding.

Ethical Clearance: The ethical clearance is obtained from Ramaiah University of Applied Sciences Research Committee.

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Effects of Nudge and Purchase Intention in Online Purchasing of Electronic Products

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ABSTRACT

Online purchase of electronic product is very much preferred by consumers. It has become very popular as customers are able to have a very good experience by making a comparison of the features of different products available in the market and make an informed choice. Customers' intention to buy online is influenced by an array of factors. Nudges are interventions that are made in a specific direction but do not compel customers but allow them to make choices in their own way. This paper will concentrate on the effect of nudges on customer intention. It will explore the reasons for online purchase, the value it creates for customers and the effect of nudges. Statistical tools such as Regression and Correlation are used to analyse the effect of nudges and the results depict the extent to which demographic variables such as Occupation and Income influence nudges and purchase intentions.

Keywords: *Nudges, Online purchase, Purchase intention, Electronic Products*

INTRODUCTION

Online Shopping has gained momentum in the past few decades across the globe. Consumers increasingly seek variety, value and satisfaction through online shopping. Many studies have attempted to understand the customer value in online purchasing activities. The decision affects the purchasing process of the consumers when they make online shopping. The customer value nudges the changes in buying intention of electronic product in online. The need of the customer's trust in online shopping before choose electronic product in online. It is important to recognize about the factors that helps to make buying decision on purchasing electronic products through online shopping[8].

Online shopping is the process wherein the customer buys goods or services from the retailer directly without a mediator service, over the Internet. It is a form of e-commerce. The sales or purchase deal is completed electronically and interactively in real-time. Though in cases, an intermediary may be present in a sale or purchase transaction. Online shop, e-shop, e-store, internet shop, web shop, web store, online store or virtual store remind the physical equivalence of buying products or services at retailer or in a shopping centre. The process is called Business-to-Consumer (B2C) online shopping. A large percentage of electronic commerce is conducted entirely in electronic form for virtual items such as access to best content on a website, but mostly electronic commerce involves the shipping of material items in some way.

NUDGES

In 2008 the concept of 'nudging' has motivated a lot of discussion in academia, strategy and the general community. The Concept was conceived by Cass Sunstein and Richard Thaler (2008). The term stands for guiding principle intervention that aim at influencing people's behaviour without changing their choice sets. Through the design of the choice architecture (i.e., their own decision), agents are supposed to the particular direction, while retaining the freedom to choose.

Nudges can also be used for non paternalistic purposes, such as promoting pro-environmental behaviour[12]. Traditional economic theory says that all human beings act rationally when making purchasing decisions. In other words, we believe that people make enquiries in all other alternatives and choose that which provides the most economic benefit to them as individuals but if this was true we could be nudged. There are many studies which concentrate on the role of Nudges in online shopping.

Numerous studies in psychology and behavioural sciences have shown that individuals are influenced

by various psychological effects during their decision making consciously or unconsciously[13]. Actually, decisions are highly context-dependent in the sense that they are influenced by the choice environment. The trust on heuristics and the influence of psychological effects helps in the changing customers' assessment in online purchasing. Nudges either attempt to overcome or use specific psychological effects to guides individuals towards a predefined choice option. Nudges refer to the aspect of the choice architecture that alters individual's behaviour in an expected way without alarming any options or significantly changing.

REVIEW OF LITERATURE

Hennig Thurau; Gwinner; Walsh & Gremler (2004) highlight the achievement of online consumer reviews on buying intention helps the new consumer in the healthy and safer manner to make their shopping experience. Park; Lee & Han; Lee, Park & Han; (2007) feel that perceived values of online consumer reviews are worthy. Value is one of the main variables in trust in online shopping. Product value can be derived based on the website value or the review/feedback given by the previous buyer .

Mudambi & Schuff ; (2012) have addressed the important factors of online consumer reviews that helps to make healthier choice while doing online shopping. Cheung, Lee &Rabjohn ; Lee, Park & Han ; Park & Kim; Park & Lee; Sher& Lee (2008)in their research have combined both ranking and rating factors which examining the effect of online consumer reviews and make a repurchase according to it.

Gupta & Harris (2005) have examined how the dual-process theory works as a theoretical groundwork on by examining the message content and source factors affecting the ways individuals process online consumer reviews. Lee &Rabjohn ; Chu & Kamal (2002) elaborates on the trust created by the websites in the minds of customers created a good approach towards their sites because of it there was increase in the number of customers in online shopping by each passing day.

Cheung, Xiao & Liu; Duan, Gu & Whinston, Forman Ghose & Wiesenfeld ,Mudambi & Schuff Park, Lee & Han [4] (2007) have observed the consumer reviews in each stage of the process by providing analytical value. The purchasing decision process includes all fundamental methods like recognition, information search, and evaluation of alternatives, purchase decision, and post-purchase evaluation.

Kotler & Keller (2005) have found that when consumers browse through online consumer reviews; they may find some useful comments about a product and realize the need for it. Once the need is recognized, consumers are spending much time in searching for more information about the product by seeking other's comments and recommendations from online reviews. They can also use online consumer reviews to compare and evaluate the alternatives.

Sussman & Siegal (2003), Hausman and Siekpe (2009) opine that a good review in the shopping websites has a major part to increase the trust level on the buyers for analysing the desired product it is base on the rating and ranking of the products by giving star rating while giving customers review after making shopping through online.

Verhagen and Van Dolen (2009) identified factors like online store service, online store merchandise, online store atmosphere and online store navigation as important contributors of online purchase intentions. Similarly, Chiu, Lin, and Tang (2005) have proven some main factors which helps the buyer more convent to make a buying diction with the help of perceived usefulness, personal innovativeness, personal awareness of security, perceived ease of purchasing and attitude towards buying of intentions on online purchase.

Korzaan (2003) and Heijden (2001) indicate that attitude of the customer plays a vital role in online purchase decision making above and beyond on the trust and reputation of the e-store.

Bosnjak, Galesic, and Tuten (2007) argued that online purchase intentions help the buyer's personality by focusing more on the essential factors. It results in the effective shopping experience for the consumer.

Sinha and Swearingen (2001) found that there is a greater impact of advice from trusted members in same family and their friends about the particular product in online shopping websites. It helps to widen on trustworthy online recommendations on the websites.

Craig Jackson (2007) said that Nudging has the possibility to make changes in human behavior and improve safety enforcement on the decision. Nudging is

just an extra tool for safety managers to use to change behavioral actions, but the real achievement of them will materialize when the nudge is nature.

Paul Rainford and Jane Tinkler (2011) found that Nudges might involve hidden reminder for alternative choice or changes in the decision to make the purchase decision on the desired matter.

Gabriele, Pene lope Herna (2017) conducted a study and their results show that the emotional warning messages and placing information for the purchasing process were effective in reducing the purchase of incompatible goods. A relationship effect between nudges in emotional impact and nudges improve the effect of changes in purchase intention. This shows that the nudges can be a successful policy tool in online behavior, and highlight how nudges can reasonably has an effect of variables.

OBJECTIVES

- To study the influence of the purchase intention and nudging before choosing a electronic product through online shopping.
- To analyse the relationship between demographic variables and nudges.
- To examine the relationship between demographic variables and purchase intentions.

MATERIALS AND METHOD

The study was conducted among the consumers who are engaged in Online shopping in Chennai. Convenience Sampling was adopted to choose the respondents. A 5 point Likert Scale was used for getting response from the respondents; with answers ranging from (1 strongly disagree to 5 strongly agree) respectively.

Respondents were asked to rate their levels of agreement pertaining to various criteria, mainly reasons for online purchase, factors of buying decision, factors for switching over.

Statistical tools such as Reliability test, Pearson Correlation and Linear Regression are used to analyse the data. The result for reliability test statistics that is cronbach's alpha was .845.

Hypotheses

H01: There is no significant relationship between buying decision and purchase intention.

H02: Purchase intention does not depend on the factors of buying decision.

H03: Gender has no influence on reasons for online purchase.

RESULTS

Reliability Statistics

Reliability Statistics

Cronbach's Alpha	N of Items
.845	34

Interpretation: Cronbach's Alpha value is, a=. 845, which is quite good.

The questionnaire is reliable and the items internally consistent**.**

Table 1: Correlation between buying decision and online purchase

H01: There is no significant relationship between buying decision and purchase intention.

Relationship between buying decision and online purchase Correlations

		Buying decision	Online purchase intension
Buying decision	Pearson Correlation	1	.817**
	Sig. (2-tailed)		.000
	N	100	100
online purchase intension	Pearson Correlation	.817**	1
	Sig. (2-tailed)	.000	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Inference: A Pearson Product Moment Correlation was run to determine the relationship between buying decision and purchase intention. There was positive relationship between the variables. Where, the significance level is .871 (Table 1). It shows that there is a relationship between buying decision and purchase intention.

Table 2: Regression (NUDGE and Purchase intention)

H02: Purchase intention does not depend on the factors of buying decision.

Nudge and Purchase intention

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.757a	.573	.569	3.51094

a. Predictors: (Constant), nudge

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1.	Regression	1622.024	1	1622.024	131.586	.000a
	Residual	1208.016	98	12.327		
	Total	2830.040	99			

a. Predictors: (Constant), nudge

b. Dependent Variable: online purchase intension

This table indicates that the regression model predicts the dependent variable significantly well. Here p,.05 and indicates that, overall, the regression model statistically significantly predicts the dependent variables.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	8.968	2.198		4.080	.000	4.606	13.331
	Nudge	.762	.066	.757	11.471	.000	.630	.894

a. Dependent Variable: online purchase intension

Inference: Online purchase intention = 8.968+0.762 (nudge) or (factors of buying decision)

The regression equation can be presented as Purchase intention does not depend on the factors of buying decision = 8.968 + .762 Nudge.

The value of F is 131.586 and t is 4.080 and the p value is 0.000. As p=0.000<0.05, the hypothesis is rejected and purchase intention depends on the factors of the buying decision (nudge)

Table 3: Anova (Gender and purchase intention)

H03: Gender has no influence on reasons for online purchase.

Gender and purchase intention

Descriptives

online purchase intension

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Male	37	32.9459	4.56403	.75032	31.4242	34.4677	25.00	41.00
Female	63	34.3968	5.72358	.72110	32.9554	35.8383	25.00	45.00
Total	100	33.8600	5.34661	.53466	32.7991	34.9209	25.00	45.00

ANOVA

online purchase intension

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	49.069	1	49.069	1.729	.192
Within Groups	2780.971	98	28.377		
Total	2830.040	99			

Inference: The value of F is 1.729 and the p values are 0.192. As p=0.192>0.05, the hypothesis is accepted and there is no statistically significant relationships between gender and reason for online purchase. The online purchase intention is influenced by the gender of the respondents.

DISCUSSION

This study has some discussions that should be addressed by future research. In this study the individuals has very specific online decision- making and some people are strongly influenced by the review and rating of pervious customers. It helps to overlook on some hidden factors affecting perceived value. And the gender may not affect the intention to buy in online.

CONCLUSION

The study focussed on the influence of demographic variables on the purchase intention and purchase in online shopping of electronic items [9]. It has revealed that nudges have a very strong influence in the buying decision and the customers also get nudged based on their reason for online shopping[13]. Hence, online traders have to take into version that the variable of reason of nudging and position their purchase decision irrespective of the respondents. So, efforts have to be taken to understand the intention to obtain online shopping at different gender and value expected by customers[6]. But the impact of the gender does not the main influences in making decision on online shopping[7].

The customers of online shopping are mainly attracted by more choices, price discounts and offers, getting innovative products, service after sales, etc. Online shopping plays a major role in the economy than direct buying from shops[4]. The Online shopping companies have to ensure that they meet the customer expectations in terms of time, easy payment options, discounts and offers. Nudges can be very effectively used in this process.

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Discharge Planning Model with Approach of Method in Improving Patients' Readiness for Discharge in Hospitals

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ABSTRACT

Background: Discharge planning is one form of nursing service that is still a problem in Indonesia. That is because its implementation has not shown the patients' readiness when returning from a hospital. One solution is to develop a discharge planning approach to *Medication, Environment, Treatment, Health teaching, Outpatient referral, Diet* (METHOD).

Aim & Objectives: This study aimed to analyze the discharge planning model with the METHOD approach in improving the readiness of patients returning from hospitals in Surabaya, Indonesia.

Method: The study used a quasi-experimental design with 40 patients whom were diagnosed with diabetes mellitus and were selected by purposive sampling. The data was collected with observation and interviews to assess the implementation of discharge planning and patients' readiness models. There were 18 questions using a Likert scale with answers 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree. Moreover, patients' readiness was measured using 16 questions consisting of questions about readiness for control, treatment, diet, activity and rest.

Results: The Mann-Whitney test results showed p value = 0.000 ($p < 0.05$). The intervention group that applied the discharge planning model with METHOD approach had a greater influence on the patients' readiness behavior to go home compared to the control group.

Conclusion: The readiness of patients treated in hospitals in Surabaya, Indonesia before going home can be improved by applying a discharge planning model that used the METHOD approach.

Keywords: *Discharge planning, medication, environment, health, treatment, outpatient referral, diet*

INTRODUCTION

Discharge planning is a dynamic process to assess current and advanced care needs that are aimed to make patient independence. The current discharge planning implementation and provision of health education are still given for several hours before the patient returns home from a hospital. This can cause patient's anxiety about the care or activity done related to his condition after going home. Discharge planning is also still fragmented because nurses only carry out routine activities in the form of return control information. Moreover, nurses' compliance with policies and standard procedures are still low.

Discharge planning is very necessary in providing nursing care to patients in the hospital. Therefore, it needs to be prepared by the nurses and done as early as possible. Doing this earlier can reduce the length of hospital care, the cost of care, and the recurrence rates, also allow intervention home plans to be done on time. An important aspect of education and care coordination is to prepare patients and families to successfully manage themselves after hospital discharge. [1, 2]

The results of the study in the hospital wards of Islamic Hospital Surabaya showed that discharge planning was not carried out immediately when the patient was hospitalized. Thus, the length of treatment

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could not be confirmed. So far, the education that would be delivered in the discharge planning process has never been formulated before. The provision of health education was carried out on the day the doctor decided that the patient can go home. Evaluation on the patients' level of understanding is rarely done. The format of health education planning is incomplete. Hence, patients going home are less focused on METHOD. During this time, health education provided to patients during the hospital stay was not planned and documented because planning was only verbal.

The implementation of discharge planning has not been well implemented, causing the quality of service not in line with expectations. Besides that, there is no clear standard regarding discharge planning, which causes each hospital to have different discharge planning forms. The concept of the solution developed in this study is to develop discharge planning itself with the METHOD approach. METHOD is an abbreviation of aspects that need to be taught in the provision of health education. They aim to improve knowledge and understanding, also support for health conditions and follow-up care that must be done after patients go home. The purpose of this study is to analyze the effect of the discharge planning model with the METHOD approach in improving the readiness of patients returning home from hospitals in Surabaya, Indonesia.

METHOD

This is a quasi-experimental study. The research sample consisted of 40 patients whom were diagnosed with diabetes mellitus; there were 20 in the treatment group (Group A) and 20 in the control group (Group B). The sampling technique of purposive sampling was used to recruit respondents. The data were collected from participants who met the following inclusion criteria: (1) patients who need health education (2) patients who need continuity of care in Islamic Hospital of Surabaya, Indonesia, with a medical diagnosis of diabetes mellitus.

The data were collected by 18 questions using a Likert scale with answers 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree to assess the implementation of the discharge planning model. METHOD approach was used as measured by functionality, efficiency and usability. Meanwhile, patients' readiness was measured by using 16 questions about readiness to control, treatment, diet, activity and rest with yes = 1, no = 0.

Data analysis was used to determine the effect of discharge planning development with the METHOD approach on patients' readiness behavior using the Mann-Whitney test. The level of significance was set at $p < 0.05$.

RESULT

Table 1 shows the characteristics of respondents in the intervention and control group. Most of the respondents in the intervention group were aged between 40-59 years old (70%), women (80%), had primary school as the highest education (40%), and being hospitalized for the first time (55%). Whereas, age of the respondents in the control group were equally distributed between 40-59 and 60-79 years old. Most of the respondents in the control group were female (60%), had primary school as the highest education (50%), and being hospitalized for the second time (50%).

Table 1: Characteristics of respondents based on age, gender, latest education, hospital admission experience with the same disease

Characteristics of Respondents	Intervention Group		Control Group	
	n	Percentage	n	Percentage
Age				
40-59 Years	14	70.0	10	50.0
60-79 Years	6	30.0	10	50.0
Sex				
Female	16	80.0	12	60.0
Male	4	20.0	8	40.0
Education				
Elementary	8	40.0	10	50.0
Junior High School	4	20.0	7	35.0
Senior High School	6	30.0	2	10.0
Undergraduate	2	10.0	1	5.0
Experience of being hospitalized with the same disease				
Once	11	55.0	5	25.0
Twice	5	25.0	10	50.0
3 Times	2	10.0	2	10.0
More than 3 Times	2	10.0	3	15.0

Table 2 shows that there was an effect of discharge planning model with METHOD approach on patients' readiness behavior to go home. The mean rank value among the intervention group was 27.75, while among the control group was 13.25. The Mann-Whitney test results showed p value = 0.000 ($p < 0.05$). The results showed that the intervention group which was implemented with the METHOD approach as the discharge planning format, had a greater influence on the patients' readiness behavior to go home compared to the control group. It was concluded that statistically there were significant differences in the patients' readiness between the intervention group and the control group.

Table 2: Effect of discharge planning with the METHOD approach on the patients' readiness behavior to go home

	Group	N	Median (Min-Max)	p value
Patients' readiness behavior to go home	Intervention	20	93 (75-100)	0.000
	Control	20	75 (70-93)	
Mann-Whitney Test. *Mean rank* intervention group= 27.75; control group=13.25				

DISCUSSIONS

The implementation of the discharge planning model with the METHOD approach causes the patients to have a good readiness behavior in facing repatriation. The implementation of discharge planning with the METHOD approach was carried out since the patient was hospitalized. The discharge planning model with the METHOD approach contributed to the patients' willingness to go home. The METHOD aspects can provide an overview to the patients and families about drugs given. They also gave a good environment for patients, therapies and exercises necessary for patients' health, information on re-control and service in the community and diet [3].

The discharge planning helped the transition process of patients from one environment to another. The process can be seen with several indicators. Indicators of the results obtained should be aimed at the success of the patients' discharge planning, namely: (a) patients and families understand the diagnosis, anticipate the level of function, medication and treatment measures after the patients go home, advanced nursing, and the response taken in the emergency condition, (b) special education is given to patients and families to ensure proper care after the patients go home, (c) support systems in the community are coordinated to enable patients to go back to their homes, help patients and families coping with changes in the patients' health status, (d) conduct patients' relocation and coordination of support systems or move patients to other health services.

Discharge planning is a systematic process that is aimed to prepare patients to leave the hospital to continue ongoing care programs at home or with community care [4]. According to Almborg, [5] giving discharge planning before being discharged can improve patients' progress, and help patients achieve optimum quality of life. Patients who are not ready to face repatriation tend to return to the hospital (readmission), die or return to the emergency room within 30 days after discharge. The factors that caused unpreparedness of patients are lack of knowledge, low quality of service, low provision of health education and persistent symptoms [6]. According to Harrison, unpreparedness of patients in facing repatriation was due to lack of treatment plans and daily activities to be carried out at home [7].

The strategies that can improve patients' readiness to go home and patients' health are language use, use of leaflets or pictures. These are done to increase understanding, limit the provision of health information at one time, repeat instructions, use the teach back method, and have a respectful and sensitive attitude towards patient needs. [8] A simple strategy that can be implemented in a hospital is to improve repatriation planning. By developing a flexible planning that provides relevant information to anticipate future needs, it also tends to increase discharge planning and reduce long-term needs that are not met. [9]

The discharge planning was successful in improving patients' readiness in facing repatriation. It was a form of professional work from nurses because the implementation of good discharge planning was the duty of nurses. They played an important role in providing understanding and knowledge to patients and increasing patients' motivation to undergo the

optimal rehabilitation process. The patients' readiness to go home is an indicator of the success of discharge planning. Knowledge, understanding and skills of nurses in carrying out discharge planning affected the patients' readiness behavior to go home because nurses were educational providers and people who accompanied patients for 24 hours. Therefore, nurses were required to provide information needed by patients. Patients' readiness behavior to go home cannot be formed in a short time with short education. When individuals did not understand the health information, the consequences did not only affect the patients' perceived readiness for discharge, but can also lead to worse health outcomes, dissatisfaction, and medical errors. [10]

The level of readiness and awareness of patients and families in the involvement of patient care was an important factor in the discharge planning process. All things beyond the capacity of patients were the responsibility of health workers to communicate to be understood by patients or families. Communicating health information could be a challenge because health workers had to share complex information and included a lot of contents. The characteristics of patients with unique linguistic preferences, skills, cultural, physical and cognitive differences were related to changes in age, disability, and emotions. All these could influence the process of receiving education[11].

Less communication occurred in situations when health workers were in a hurry or patients were afraid, sick, and/or in various matters related to their disease problems. Combining the readiness scale of patients back into the discharge planning process can add alternatives to assess the risk of readmission events. This could be done by better identifying related characteristics of patients who tend to affect their ability to be involved in self-management at home. [12] The ability included symptoms reported, contacts that can be contacted, and control time [13].

The discharge planning implementation was carried out immediately when the patient was hospitalized. This could be one of the factors to improve the patients' readiness behavior to go home. Besides that, there were benefits obtained from the process of involvement and good coordination between nurses and patients in the planning activities. Ensuring that all patients understand and maintain actions for advanced home care was an important step in improving the patient's experience and reducing the incidence of readmission [4]. The discharge planning was needed by patients to ensure the smooth process of transferring patients from hospital to another environment. This was done so that the care provided while in the patients were in the hospital can be sustainable. The main key in the discharge planning process was communication between nurses and patients/ families in health education during the process. This would facilitate patients in receiving or understanding the instructions given while at home, so that the patients were able to independently maintain or improve their health.

CONCLUSION

The discharge planning implementation in Indonesia hospitals was still not effectively applied in the field as shown by the lack of patients' readiness to go home. The discharge planning model available in the hospital was complete, but the education aspect has not been planned and explained in detail to the patients. The intervention group that applied the discharge planning model with the METHOD approach had a greater influence on the patients' readiness behavior to go home compared to the control group. It was concluded that there were significant differences in the patients' readiness behavior to go home between the intervention group and the control group.

Recommendation: The METHOD approach can be used as an alternative to carry out discharge planning in hospitals, which focuses on the planning, implementation and evaluation stages.

Relevance of the study: Research findings have highlighted the problem of discharge planning whereby discharged patients were not well informed before they go home, so the incidence of recurrence is frequent.

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Study of Model Climate Maps Using Geographic Information System (G.I.S)

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ABSTRACT

Climate maps is one of the important roles in the expression of weather phenomena. Visually to understand and analyze mutual relationships. This research focused on to represent the elements of climate cartography and find the best ways to show. This study was based on modern techniques (G.I.S.) through the use of (ArcGis9.1 & ArcViwe3.3) software in modeling a sample of climate data. The results showed the importance of the use of geographic information systems in the mapping of lines of equivalence (climatic) compared to the engineering and sports methods (traditional methods). The research has found that this method is very easy to use and has a high degree of accuracy in climate mapping, accuracy, and clarity that it is better than conventional methods of mapping equal to the lines.

Keyword: *G.I.S, Equilateral Lines, Cantorial Separator, ARC GIS 9.1, ArcViwe3.3*

INTRODUCTION

Climate maps are important tools used by weather and climate specialists, such as geologists, geographers, planners and others, for the purpose of understanding and predicting future weather events. It should be noted that the climate map shows the rate of one phenomenon or more for a month or a year or more, where a long time series of climate can be studied for a region and therefore a climate classification [(1)]. Therefore, after the emergence and prevalence of the concept of geographic information systems G.I.S. And the great possibilities in making maps in various scientific fields, it became necessary to rely on them, because of the ease of work on them and their high accuracy and is less effort. Due to this, the researcher came to the topic design of climate maps using geographic information systems G.I.S., which can illustrate the use of this method and the accuracy of its results, so the purpose of this research is to replace the traditional methods in the manufacture of climate maps in the automatic way using GI.S. And to clarify the ways of using them and investing them to be available to all geographers and researchers to make new maps of their areas according to the desired scientific requirements, which may result in new classification of the climate of these regions [(2)].

Climate characteristics: The climatic characteristics of any region are an important and determinant factor of natural and human activity[(3)]. Climate influences significantly the identification of natural and cultivated plants in this or that region. The germination process is influenced by the available climatic characteristics, which affects the type of economic investment of any region [(4)]. Therefore, it is necessary to rely on meteorology and cartography to study and analyze their climatic characteristics in order to contribute to the knowledge of their current conditions and to predict their future, and thus planning their appropriate development and adaptation to their climatic conditions [(5)].

Equivalent lines: In order to identify the climatic characteristics of any region, the best scientific methods for processing, displaying and analyzing data are cartographic methods [(6)]. The most complete and accurate method is the lines method, which is one of the most successful ways to represent them. The boundary is clearly drawn on the basis of its passage by points of equal climatic values, whether real points (climatic stations) or interstitial points (between points of control that are extracted depending on the mathematical or engineering method). In this way, the climate maps of this study were based on 65 global stations, using ArcViwe3.3 (and 3DAnalyst1.0 Surface) to achieve accuracy in the paths of the equatorial lines [(7)]. And the use of ArcGis9.1 and create TIN to construct statistical surfaces accurately.

Geographical Information Systems G.I.S.: The initial idea of GIS was originally conceived and established in the early 1960s where the first GIS system was used the Canadian Geographic Information System (CGIS) in 1964. Despite some progress in the late 1960s and early 1970s on the technology it only expanded in the early 1980s when ESRI (Arc\info). Launched its huge potential in the areas of environmental studies urban and regional planning geology and geography [(8)]. This has brought more attention to geographic information systems especially in the mid-1980.

This research has been accompanied by the emergence of more modern support technologies such as multimedia, the Global Positioning System (GPS). The highway technology information super technology. The widespread use of the Internet and the widespread use of cyber space concepts. The interaction of these technologies in their integration and their coherence with geographic information systems have a great impact on the formation of more accurate, efficient and faster. More efficient and efficient systems as a result of this convergence and interaction [(9)].

To define the concept of geographic information systems (GIS) today, there is no fixed and specific definition of (GIS) due to the multiple applied fields on which it relies. The different views on the definition and classification of the practical application objectives of these systems and generally there are three main views on the GIS [(10)].

- From a spatial analysis point of view.
- From the perspective of database management.
- From the point of view of map production.

Generally, it can be summed up as an applied pattern of computer technology. Which is concerned with the achievement of special functions in the field of processing. The presentation and analysis of geographical, environmental and climatic information in accordance with the applied objective based on human and computer excellence.

MATERIALS AND METHOD

Meteorology is precisely atmospheric phenomenology the science of air, and it can be said that a physicist of the atmosphere, interest in the study of physical motion and its dynamics and chemistry, and the resulting patterns and forms of different weather conditions in this place or that another time. In the past determined Aristotle In his book "Meteorological" in 350 BC, the field of interest of this science was studied of atmospheric phenomena and their alterations affecting human, plant and animal life, which occur within the atmosphere of the Earth [(11)]. If the Earth's atmosphere extends up to about 1,000 km, meteorology has not been so widely reported in scientific processing, but only to the part of that atmosphere in which weather phenomena leave their effects on the surface of the earth, directly or indirectly, taking into account that Satellite data on the atmosphere were made at high altitudes and provided much information on the upper parts of the atmosphere [(12)]. This part of meteorology has evolved with the development of means of monitoring the upper parts of the atmosphere and its methods, the relationship between atmospheric phenomena at the surface, the air movements in the higher parts, especially in the stratosphere, Changes in the chemistry of that class and above, since 0.9 of the mass of the atmosphere is concentrated in the first sixteen kilometers close to the surface of the earth, while 0.99 of the mass of the atmosphere is below 35 km [(13)].

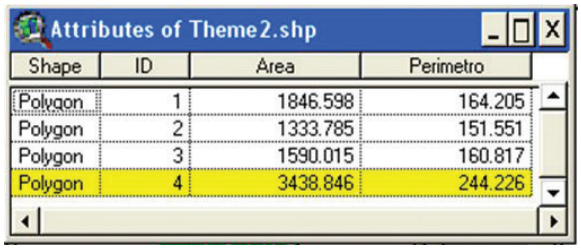
Thus, the field of interest in meteorology is almost determined by the troposphere and stratosphere (thickness of about 55 km), especially the troposphere (surface-12). Meteorology does not stop at showing the air's mobility and its physical and chemical properties, but rather to reveal the patterns of the atmosphere and its recurring phenomena in time and space, to determine its values, to explain the mechanism of its development and development, and to estimate future weather conditions[(14)].

This science is closely related to the different species of life on the Earth's surface, as the current (weather) and continuous (climate) weather conditions have direct effects on humans, plants, and animals. All of this has spread to the Earth's surface a lot of different meteorological stations that provide measurements of various weather elements temperature and humidity, atmospheric pressure, wind and fall, natural clouds cover, clouds of steam (smoke mixed with factory smoke), evaporation and so on. Analysis and interpretation of this large amount of data in traditional methods are impossible, so it is necessary to adopt automated methods in the analysis and display cartography [(15)].

RESULT AND DISCUSSION

There are many systems for processing and analyzing climate data, in particular, GIS. Which provides advanced systems for the management, processing, presentation, and analysis of climate data and to show high results in accuracy with ease, ease, cost, time and less. ArcGis9.1 & ArcViwe3.3 is based on the completion of research objectives, as well as on the construction of local climate maps (at the governorate level) and global (globally) [16].

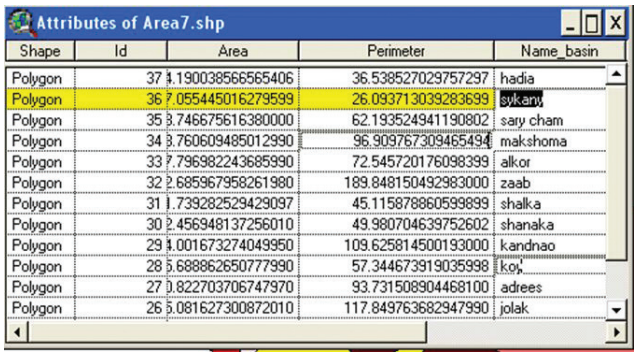
Arc View3.3: When a digital map is created in Arc View3.3. The map will be linked to a table showing its properties. When digital maps are exported as layers with their data drawn in another program such as Autodesk Map each cartographic layer will be linked to the table class this table is called the Attribute Table. When you create a project in Arc View the value of the declaration code is zero so the ID value for each geographic phenomenon should be given [17].


Attributes of Theme2.shp

Shape	ID	Area	Perimetro
Polygon	1	1846.598	164.205
Polygon	2	1333.785	151.551
Polygon	3	1590.015	160.817
Polygon	4	3438.846	244.226

Fig. 1: ID value for each geographic phenomenon[17]

To add fields or records to the base table, this is done through the menu bar from the table window, as we can add records and fields. Records represent the geographical phenomenon whether polygon or linear polyline or point. Fields are columns with geographic characteristics Properties may be salinity, area, wells, etc. Figure (2).


Attributes of Area7.shp

Shape	Id	Area	Perimeter	Name_basin
Polygon	37	3.190038566565406	36.538527029757297	hadia
Polygon	36	7.055445016279599	26.093713039283699	sykany
Polygon	35	3.746675616380000	62.193524941190802	sary cham
Polygon	34	3.760609485012990	96.909767309465494	makshoma
Polygon	33	7.796982243685990	72.545720176098399	alkor
Polygon	32	2.685967958261980	189.848150492983000	zaab
Polygon	31	1.739282529429097	45.115878860599899	shalka
Polygon	30	2.456948137256010	49.980704639752602	shanaka
Polygon	29	3.001673274049950	109.625814500193000	kandnao
Polygon	28	5.688862650777990	57.344673919035998	koy
Polygon	27	0.822703706747970	93.731508904468100	adrees
Polygon	26	5.081627300872010	117.849763682947990	jolak

Fig. 2: Records (rows) represent the type of phenomenon and fields (columns) characteristics of the phenomenon.[17]

Program ARC GIS 9.1: The program includes 1Arc GIS9. The main four programs are: (Arc View, Arc Editor, and Arc Info), and includes the same components with the increase of analytical tools for the third and fourth, the first is a reader and a viewer for maps only. It is one of the most recent versions of the ESRI software from the GIS software, which was the latest version of the Arc View software, which has now reached Arc View 9.3. This program consists of a set of integrated applications that work together in mapping, database management, and various analysis processes [18]. (Arc Scene, Arc Globe, Arc Tool Box, Arc Catalog, and Arc Map).

The number of Climate Maps in G.I.S.

Data entry stage and database configuration: This stage is one of the most important stages of the preparation of the map, depending on the factors of success or failure of the cartographic process. It includes in the thematic maps the processing of data entry according to their different locations and classification and the introduction of statistical data in the database. This stage also includes selecting the appropriate scale and map projection [19]. Usually, the geometric correction of the maps used in preparing this map is carried out at this stage. One of the most important processes carried out by the master of the map. Depending on the accuracy of the scale and the coordinate network in the final map and directing it to the north. At this stage, 65 major climate stations worldwide were selected and drawn in ArcGis9.1 with a point-point code. Then the introduction of climatic data to the Plymouth Center.

Processing and analysis of data: At this stage the process of different processors on the database of the collection, subtraction, conversion, and others. This is followed by the process of conducting the main analysis of the study. It draws lines automatically based on the input database. It was based on ArcViwe3.3, 3DAnalysis, Surface Analysis, and Create Contour [20]. The results of this analysis extracted by ArcGis9.1.

The results of the previous process are a process of conversion of quantitative climatic data collected by global climatic stations and marked with a dot matrix. An input to the database produced equal heat lines worldwide. The explained of the distribution of heat by lines carrying certain values and written directly on them. These values are any way of direct explanation in cartography and this method is one of the weakest

forms of cartographic representation. Therefore, the TIN method was used in ArcGis9.1 based on the resulting equal lines highlight the geographical distribution of the warm, warm and cold regions of the world [21].

CONCLUSION

GIS provides advanced systems for the preparation, management, and analysis of statistical data including climate. To be produced by various means and methods in line with the cartographic requirements that are characterized by the ease, accuracy, and simplicity in the visual distinction of their outputs to achieve the process of cartographic connection, which is the main objective of the map maker. The reliance on ArcGis9.1 is more accurate and easier in the process of introduction and management of statistical data and the formation of the climate information database, especially for metadata. While ArcGis3.3 is much easier in the process of automatic line construction because it requires only a Pointe bitmap, which contains in its database numerical values that are mainly used in the process of automated construction. While it is different in ArcGis9.1 as the program requires a layer surface or Raster or TIN and this layer contains an integrated database. In general, ArcGis9.1 was used for the final output of cartographic and cartographic displays. Due to the high accuracy in this as well as the possibility to show any data from within the database on the map directly. The names of stations the study climate and temperature degrees Celsius. It was also adopted in the construction of the TIN for the classification of climatic regions in the world.

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Impact of Terrorism Act on Child Psychology and Post-Traumatic Stress Disorder

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ABSTRACT

Direct or indirect acquaintance to terrorism violence aggravates a state of terror in the general public through the use of calculated acts of violence, which includes mutilation, murder, and explosions that affect acquitted people, often including children. In the present review, various medium through which the children get exposed to the terrorism acts and its effect on their mental health was summarized. Some leads towards their rehabilitation were also addressed. Some precaution measures should be taken for the child protection against terrorism or their rehabilitation. Children should have restricted media access which should not include any act of terrorism or any media coverage regarding it. Internalizing disorders such as post-traumatic stress disorder (PTSD), suicidal thoughts, anxiety and depression, as well as externalizing behaviors, are prevalent following exposure to war and terrorism. So, affords should be taken to minimize them.

Keywords: *post-traumatic stress disorder, externalizing behaviors, Internalizing disorders*

INTRODUCTION

More than 149 major wars occurred between 1945 and 1992, in this war more than 23 million people. In these situations children are always being coughed up in fighting. They usually have no choice other the experience the same horrors as their parents- as victims / sufferers or even soldiers. Recent developments in war considerably amplified the threats for children. Sivard[1] reported that during the last decade, about 5 million children have been disabled, 2 million children have been killed; more than 1 million separated from their parents or orphaned, and 12 million dislocated from their home[1,2].

According to the Federal Bureau of Investigation (FBI) terrorism can be defined as "the unlawful use of force or violence against persons or property to intimidate or pressure a government, the civilian population, or any segment thereof, in furtherance of social or political objectives"[3]. Direct or indirect acquaintance to terrorist violence aggravates a state of terror in the general public through the use of calculated acts of violence, which includes mutilation, murder, and explosions that affect acquitted people, often including children. Although the actions might no longer be in the news, the trauma and psychological scars caused by viewing the horrifying images and by the memories are pervasive and do not heal easily[4]. In 1996, former wife of Nelson Mandela, Graca Machel, released a UN report titled as "The Impact of War on Children," Getting international attention to the subject among policy makers and academics. The report made ten recommendations in international community to address issues of security, displacement, and human rights monitoring. However, less support has come to the educational and psychosocial needs of war-affected children. The usual tendency of adults to try to overlook about the complications, problems and move on with their lives often results in underestimating the significance and effect of the exposure on the psychosocial and emotional problems of children.

The effect of war can be observed in the adult and child. However the effect is different in children as

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compared to the adult. The children are more sensitive, they are dependent on the empathy, care and attention of adults who love them. But this normal phenomenon and/ or their attachment are often disrupted in war times, due to loss of parents, emotional unavailability of depressed or distracted parents and a greatly busy of parents in protecting and finding subsistence for the family. The child may be in temporary care with someone who cares for him or her only slightly – an orphanage or relatives. The maximum proportion of war affected children suffered from loss of all adult protection - "unaccompanied children," as they are also known in "refugee situations". This condition badly affects the child mentality and psychology.

There are many children who lose their education during war situation and are held back in their education. Many children are forced to move into displaced person camps or a refugee. These children wait for years in depressed circumstances for normal life to resume, if it ever does. However, after long waiting, some children are capable to go back to their normal lives. Provided, their parent comes home safely and simultaneously they should not have any major negative effects from the war and they are able to tend or love to the child as they were capable to do before the war occurred. But, the majority of children are not fortunate. They never get back to their normal life they once had before. Their parents do not return home and if return, then may be with some major medical problems, or they have a mental illness and are unable to attend to the child in normal day to day bases.

The war effect on the child, not only mentally and or psychologically, but also physical effect was also occuring. Many children get killed or seriously injured by the bullets or bombs. The worst scenario is that some children are placed directly in the firing line and are recruited to become soldiers.

With this background, in the present review, various mediums through which the children get exposed to the terrorism acts and its effect on their mental health was summarized. Some leads towards their rehabilitation were also addressed.

Availability and repetition on unrestricted media and television: Now a day, children have Children today have nearly unrestricted access to terrorism acts media coverage. Children's mental and emotional health get affected by viewing extreme violence and terrorism, either directly by witnessing acts (in war condition) or indirectly by watching them in the media, news, internet, or social media[5-7]. The effect of these acts vary among the children. Some children's are very sensitive and get negatively affected than others[8]. The mental health of children gets affected in both short and long-term ways and varies completely from the effects in adults. The effect will be vary with vulnerability, immaturity, and developmental state which change their perspective and the tools used to confront these issues do not affect each child equally[9-11].

One of the well-known examples is the study comparing drug cartel terrorism among children on both sides of the US–Mexican border[8,12]. These studies included children at different ages (1.5–5 and 6–16 years) and surveyed the cumulative effect of collective violence (terrorism) and poverty[8,12]. As compared to US equivalents (who were not threatened by this indirect mass media victimization), the younger Mexican children showed threefold increase in emotional and behavioral problems. Mexican children also had higher scores for mild/severe brain injury[13]; parental history of cocaine, alcohol, tobacco, and marijuana exposure[14]; single-suture cranio-synostosis[15]; maternal current and past depression[16]; prenatal cocaine exposure[17]; and hearing impairment[18].

Child Development: Chronic stress and Post-traumatic stress disorder (PTSD)

In the last two decades, there has been a visible increase in interest in the psychological impact of war on children[19]. Ample amount of literature available about the direct relationship between exposure to war trauma and consequential development of acute stress and / or posttraumatic stress disorder (PTSD)[19-27]. The symptoms of PTSD are re-experiencing the bad incidence, hyperarousal, frequent sleep disruption, restricted affect, dissociation, detachment and sadness. Chronic stress response is also one of the major causes for various serious conditions. Extreme or sustained activation of stress response in a child can have a serious damaging effect on behavior, learning ability, and health. The constant appearance of acts of violence creates a series of stress, which leads to increase in a heart rate, blood pressure and stress hormones. This will badly affect the brain and other organ development, subsequently causing emotional problems and physical cognitive[28-29]. Another effect of trauma is upsurges of both internalizing

and externalizing reactions in children. Internalizing reactions were reported by several authors[23,24,30,31]; includes suicidal thoughts, depression, worry, anxiety, etc. Borba[24] studied these internalizing reactions in the Liberian youths exposed to armed conflict. A similar study was reported in 300 Syrian refugee children in Turkey[23]. These children exhibited anxiety and excessive fears, clinging to parents and fear of being left alone, manifested by dependent behavior and sleeping in the dark[23]. The survey was carried out after 9/11 attacked; in New York City school children (15%) had developed symptoms of agoraphobia, generalized anxiety (10%), separation anxiety (12%) and panic attacks (9%)[30]. Bullying, delinquency, drug and alcohol use are the characteristics of externalizing behaviors, which appears to increase after trauma[32].

The methods that follow to prepare the child for obedience: Santa[33] reported three prevention methods of war and their consequence specially related to children. The Primary prevention is to avoid the war, secondary prevention is to make war with less damaging for children and tertiary prevention is to rehabilitate was-affected children[33]. The best method is a primary prevention method. The author also reported about the strategies for preventing the war[34].

In general, faster or later the child returns to good associations with the outer world. However, this recovery time depends on some factors like treatment in post-traumatic period, extent of damage, the coping competencies of the child which is further dependent on the age of the child.

CONCLUSIONS

The literature examining the effects of war and terror on children shows significant levels of psychiatric problems and psychological distress following disclosure of the conflict. Children should have restricted media access which should not include any act of terrorism or any media coverage regarding it. Internalizing disorders such as post-traumatic stress disorder (PTSD), suicidal thoughts, anxiety and depression, as well as externalizing behaviors, are prevalent following exposure to war and terrorism. So, affords should be taken to minimize them. Future research should investigate mediations to reduce a child's distress and improve resiliency.

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The Sociopragmatics of Preaching in an American Christian Sermon

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ABSTRACT

Studies on preaching have identified it as a communicative process through which preachers reflect their social position. Extending the findings of those studies, this paper discusses how American preachers construct the preaching stages, tactics, and strategies in sermons. The researchers make this point by developing a sociopragmatic model of preaching which illustrates the effect of the social variables of power and solidarity on preaching. To do so, an American Christian sermon by Pastor Alberta is analysed. While Pastor Alberta uses the tactics of preaching felicitously, effectively, appropriately, and persuasively, it is demonstrated that such use is affected by the social variables of power and solidarity. The analysis shows that there are three preaching stages; viz., 'opening', 'main', and 'concluding' in which Pastor Alberta tends to use pragmatic strategies that echo power over the congregation. Quite the opposite, he utilises other strategies to create a sense of solidarity with the congregation.

Keywords: *Sociopragmatics; Preaching; American Sermons; USA Elections 2016; Power; Solidarity.*

INTRODUCTION

Nowadays, religion has become more active as a system to address the existential issues of the members of a particular society [(1).] The role of religious discourse is undeniable and formidable as it has contributed to the spiritual, cultural, literary, linguistic, and political developments of modern civilizations [(2)]In view of the fact that the present study is concerned with preaching, the focus will be on the language of sermons. Preaching is germane to the sociopragmatic study because it can be seen as a social communicative process. Therefore, there is a promising significance in study preaching in relation to sociopragmatics [(3)].

The Pragmatic Structure of Preaching: A closer look at the general structure of preaching serves to illustrate its multi-faceted nature. In this sense, preaching can be viewed as a communicative process whose aim is to feed the congregation spiritually by providing them with religious information and by discussing the current social as well as political issues to help them conduct their life and making their decisions [(4).] Nonetheless, it is a one-way communicative process in which the sermon is delivered in one direction from the preacher to his congregation [(5)]. Preaching has a progressive structure which embraces three successive preaching stages; namely 'the opening stage', 'the main stage', and 'the concluding stage'. It is worth mentioning here that the terminology used in constructing the three preaching stages is attributed to the researchers [(6)]. Socially speaking, there are two main social variables that affect the language and the pragmatic strategies used by preachers which are power and solidarity. They are the social factors that operate the preaching process and maintain the continuation of the pragmatic strategies used in the sociopragmatic model of preaching in the present study. Pragmatically speaking, preaching is a communicative pragmatic process which is stretched over three stages that are constructed by a number of pragmatic strategies including SAs, CMs, PSs, and Pas [(7)].

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The first part, which is labeled as 'social variables', handles the effect of the two social variables of power and solidarity on preaching. With regard to the second part [8], it is labeled as 'preaching stages' which represent the skeleton of the model developed in the present study. Each preaching stage has its own sub-stages and pragmatic strategies except for the 'biblical text' sub-stage where there is only a biblical text where only its pragmatic function is considered. As such, each stage will be analysed in some detail in the forthcoming sections [9].

In brief, it is proposed here that preaching is realised as a multi-faceted sociopragmatic process because of the fact that it incorporates numerous pragmatic components spread over the three stages of preaching as well as a number of social variables that affect each stage. It is worth pointing out here that taxonomy of SAs is relevant to the study of preaching for its comprehensiveness [10]. CMs are expected to be utilised in the data under scrutiny in the present study [11], politeness theory is applicable due to its multitude of various pragmatic strategies that serve the analysis of the data scrutinised, and PAs by Aristotle are exploited by appealing to ethos, logos, and pathos [12].

Analysing Pastor Alberta's Sermon: The sermon selected in this study to be analysed is entitled "The Sins of the Amorites and the Election of 2016" preached by the American Pastor Alberta who is one of the well-known American preachers [13]. The sermon, which is retrieved from an official website source and transcribed by the researchers, is preached on the 6th of November 2016. The aim of this sermon is to preach the congregation in order to obey God's will in relation to the upcoming USA elections by equipping them with relevant religious insights. Prior to embarking on sociopragmatically analysing Pastor Alberta's sermon, it is worth mentioning that only eight extracts are chosen to be analysed according to the model developed in the present study whereby each extract stands for one sub-stage in the preaching process. The utterances in the extracts are numbered for the sake of ease of reference[14].

The Opening Stage

The Preambles

Extract No. 1

1. We are, as you know, living in what is sometimes called, often called a postmodern world.
2. We could talk all day about what that might mean, but at the very least it seems to me that all things are subject to review and there may not be very many permanent truths.
3. An absence of absolutes seems to be defining the culture into which we have entered.
4. For two hundred and fifty years since the American colonies, a lot of things were considered very clear and straightforward.
5. The beginning about fifty years ago, a movement settled in and maybe it was needed in some sense as it is just about everything can be questioned.
6. Well, one of the things that is absolutely not questionable in the Word of God is that sin has its consequences.
7. Sin remains sin, remains missing the mark of God.
8. Nobody gets away with anything, not individuals, not couples, not kids, and not nations.
9. Your sin will find you out.

In extract 1, Pastor Alberta uses the two pragmatic strategies of SAs and CMs. He exploits three Rep SA of stating, reporting, and asserting. In utterances 1, 2, and 3, Rep SA of stating is used. It has been observed that the felicity conditions of Rep SA of stating are satisfied. His statement about something that is well known to the congregation reflects the solidarity intended to be created by Pastor Alberta which is very clear from the very beginning of extract 1 when he uses the inclusive pronoun "we" in utterances 1, 2, and 3 and by talking about the postmodern world in which they all live. Another Rep SA; namely reporting, is utilised by Pastor Alberta in utterances 4 and 5 as he reports about the past of the American colonies and postmodernism and linked them to the present time. In utterances 4 and 5, Pastor Alberta reports on what has happened and predicates what will happen in relation to the lack of certainty at the time of his utterances. Which seems to be familiar to both the preacher and the congregation. In utterances 6 and 7, Rep SA of asserting is used by Pastor Alberta when he asserts that one of the things absolutely not questionable in God's words is that sin has its consequences. Similarly, asserting is felicitously performed by Pastor Alberta in utterances 8 and 9 to assert the fact that people will be judged in the court of God with no difference except for whether they are saved or not according to their deeds not according to their nations or other worldly issues.

Extract No. 2: Everything comes from Genesis chapter 13 verses 10 through 14. This is the word of the Lord: "As the Sun was setting, Abram fell into a deep sleep and a thick and dreadful darkness came over him. Then the Lord said to him "know for certain that your descendants will be strangers in the country not their own and they will be enslaved and mistreated for hundred years. But I will punish the nation they serve as slaves, and afterward they will come out with great possessions. You, however, will go to your fathers in peace and be buried at a good old age. In the fourth generation your descendants will come back here, for the sin of the Amorites has not yet reached its full measure. Though the grass withers and the flower fades word of our Lord stands forever".

The biblical text recited in extract 2 is taken from Genesis Chapter 15 Verses 10-14. This text depicts an encounter between the Lord and his prophet, Abram, when the Lord causes Abram to fall in a deep sleep in order to reveal a prophecy to him in relation to the future of his descendants. The prophecy reveals that Abram's descendants will spend hundred years as strangers in another nation and that nation will be punished and judged for their mistreatment. Then, Abram's nation will have great possessions. In consequence, Pastor Alberta resorts to this biblical text as a result of his religious power as a preacher and a religious guide of the congregation [15].

RESULTS AND DISCUSSION

The analysis of Pastor Alberta's sermon presented in the previous sections reveals the workability of the model developed by the present study and, thus, it validates its use as sociopragmatic instrument for analysing similar data. Similarly, the analysis illustrates the effect of the social variable of power and solidarity on the pragmatic strategies used by Pastor Alberta. The analysis and the results which are presented in Table 1 and Figure 1 and 2 show a wide range of Rep SA of asserting with 31 frequency and 44.93 percentage of use among the other types of SAs due to the effect of the social variable of power on Pastor Alberta's use of language.

Table 1: Speech Acts in Pastor Alberta's Sermon

Speech Act Category	Speech Act Type	Frequency	Percentage	Total Number	Percentage
Representative	Stating	16	23.19	61	88.41
	Asserting	31	44.93		
	Reporting	10	14.49		
	Criticising	2	2.9		
	Boasting	2	2.9		
Directive	Commanding	1	1.45	8	11.59
	Recommending	3	4.35		
	Advising	1	1.45		
	Praying	3	4.34		
Total Number				69	100

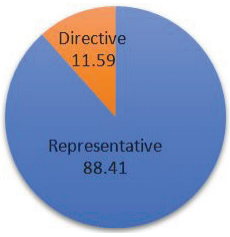

Fig. 1: Use of Speech Act Categories in Pastor Alberta's Sermon

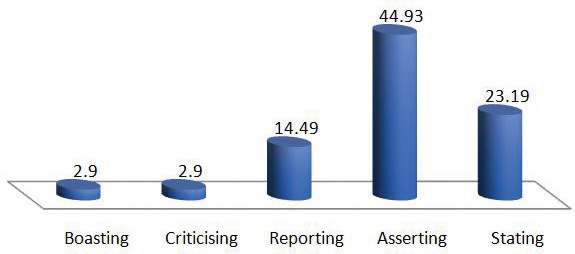

Fig. 2: Use of Representative Speech Acts in Pastor Alberta's Sermon

The social power of Pastor Alberta as an authoritative preacher is also manifested by observing Grice' maxims with 42 frequency and 54.55 percentage of use as stated in Table 2 and 3 and Figure 3.

Table 2: Observance and Non-observance of Grice's Maxims in Pastor Alberta's Sermon

Conversational Maxims	Frequency	Percentage
Maxim Observance	42	54.55
Maxim Non-observance	35	45.45
Total Number	77	100

Table 3: Flouting of Grice's Maxims in Pastor Alberta's Sermon

Grace's Maxims	Frequency	Percentage
Quantity	19	54.28
Quality	1	2.86
Relation	12	34.29
Manner	3	8.57
Total Number	35	100

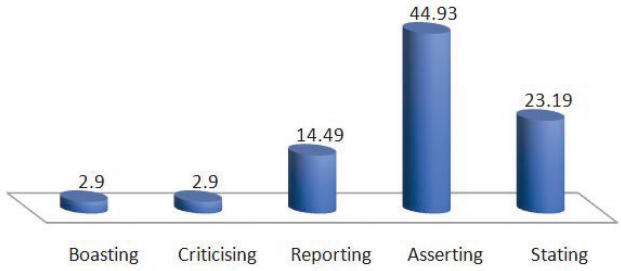

Fig. 3: Use of Representative Speech Acts in Pastor Alberta's Sermon

The analysis also shows that the social variable of solidarity is manifested in Pastor Alberta's language when he uses the PSs especially ORPP with 26 frequency and 63.41 percentage of use as stated in Table 4 and Figure 4.

Table 4: Politeness Strategies in Pastor Alberta's Sermon

Politeness Strategies		Frequency	Percentage	Total Number	Percentage
On-record Positive Politeness	Noticing the Hearer's Interests	3	11.54	26	63.41
	Exaggerating the Hearer's Interests	2	7.69		
	Intensifying the Hearer's Interests	2	7.69		
	Presupposing Common Ground	3	11.54		
	Including both the Speaker and the Hearer in the Activity	13	50		
	Giving Reasons	2	7.69		
	Giving Gifts to the Hearer	1	3.85		
On-record Negative Politeness	Hedging	5	62.5	8	19.51
	Stating FTA as a General Rule	3	37.5		
Off-record Politeness	Hints	3	42.85	7	17.08
	Presuppose	1	14.29		
	Understatement	2	28.57		
	Metaphor	1	14.29		
Total Number				41	100

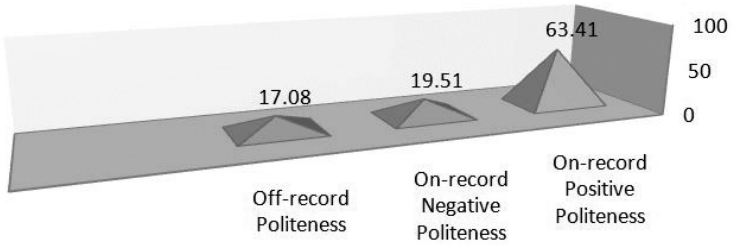

Fig. 4: Politeness Strategies in Pastor Alberta's Sermon

In relation to PAs, their use is stated in Table 5 and Figure 5 with a wide range of appealing to pathos with 18 occurrence and 81.82 percentage of use among the other PAs due to the fact that Pastor Alberta tends to appeal to the congregation's emotions to create a sense of solidarity. Therefore, the analysis of Pastor Alberta's sermon serves as a useful illustration of the effect of the social variables of power and solidarity on the pragmatic strategies used in the preaching process outlined at the beginning of this paper.

Table 5: Persuasive Appeals in Pastor Alberta's Sermon

Persuasive Appeal	Frequency	Percentage
Ethos	2	9.09
Logos	2	9.09
Pathos	18	81.82
Total Number	22	100

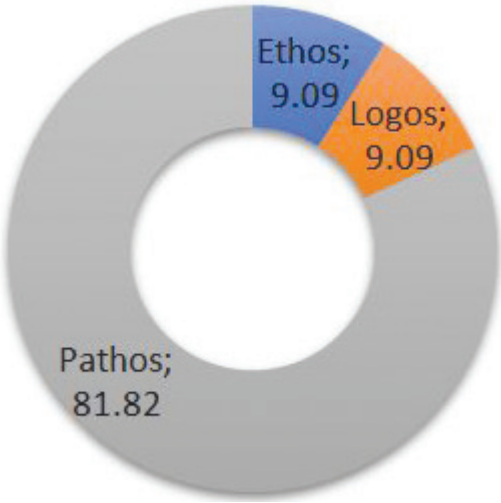

Fig. 5: Persuasive Appeals in Pastor Alberta's Sermon

CONCLUSION

The findings of the sociopragmatic and statistical analyses encourage the present study to come up with some conclusions. First of all, preaching is a social communicative process which operates with three stages: opening stage, main stage, and concluding stage. The first stage includes two sub-stages: the preambles and the biblical text, whereas the second consists of different two sub-stages: presenting the main topic and presenting sub-topics, and the third stage encompasses four sub-stages: the recapitulation, the clincher, awakening positive feelings, and the final prayer. Four tactics are employed in preaching which are distributed over the preaching stages and sub-stages which are preaching felicitously, effectively, appropriately and persuasively which are carried out by means of the pragmatic strategies of SAs, CMs, PSs, and PAs respectively. A variety of SAs are used to fulfill the preaching process. Such SAs include Rep SAs such as stating, asserting, reporting, criticising, and boasting and Dir SAs such as commanding, recommending, advising, and praying. It is observed that Rep SAs are used more than any other category of SAs and the most frequently used is Rep SA of asserting which mirrors the power and authority of Pastor Alberta over the congregation and depicts him as an authoritative religious figure and it indicates Pastor Alberta's strength of conviction in the truth of what he says. It is also noticed that Dir SA of recommending has the highest frequency which affirms Pastor Alberta's social power that is originated in his position as a preacher and manifested by his use of SAs.

Ethical Clearance: People identified as potential research participants because of their status as relatives or carers of patient's research participants by virtue of their professional role in the university and departments.

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The Effectiveness of Extract Klika *Streculiapopulifolia* Cream on the Collagen of Albino Mice against Ultraviolet B Radiation

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ABSTRACT

*Sterculiapopulifolia*extract contains flavonoid and polyphenol compounds which are the most potential components in reducing ROS (Radical Oxidative Superoxide) to prevent skin damaged caused by UV-B radiation. This study aims to assess the effectiveness of cream extract klika*Sterculiapopulifolia* to the thickness and density of collagen in albino mice skin after being exposed to UVB. This study was a laboratory experimental study using randomized post-test design. Albino mice were divided into 3 groups; group 1 was treated with klika*Sterculiapopulifolia* extract cream and exposed to UVB radiation, group 2 was treated with base cream/ placebo and exposed to UVB radiation, and group 3 was controlled group (not given anything and not exposed to UVB radiation). the treatment group was exposed to UV-B radiation at a dose of 500 mJ / cm2 for 4 weeks. After that skin biopsy was performed to examine collagen.klika*Sterculiapopulifolia* extract cream group showed collagen density higner than base cream group. No significant differences between klika*Sterculiapopulifolia* extract cream and contolled group. klika*Sterculiapopulifolia* extract cream can increase the thickness and density of collagen in mice skin exposed to UVB.

Keywords: *klikaSterculiapopulifolia extract cream, collagen, ultraviolet-B*

INTRODUCTION

Indonesia is a country with high sun exposure in which the society mostly work outdoor and need a skin protection. The spectrum of sun exposure, ultraviolet like UVB and UVA, has bad impact on skin. UVB and UVA work sinergically so that there must be a prevention and protection to reduce the impact of UVB and UVA radiation[1].

Various effects of acute and cronic effects resulting from exposure to UV that causes sunburn, pigmentation, premature aging and skin cancer are found in the community[2]. Collagen is one of the dominant component fibers in the strength, integrity and structure of skin. In the event of damage to the dermis due to exposure to UV, there was a change in the form of reduction of collagen fibers and results in a decrease in collagen density[3]. It is due to exposure to UVB due to the effects of free radicals, whice cause damage at the celluler level and ultimately result in cell death of collagen and fibroblasts that produce collagen[3,4].

Plants are potential source of natural antioxidants. Natural antioxidants or phytochemical antioxidants are the secondary metabolites of plants[5]. Carotenoids, flavonoids, cinnamic acids, benzoic acids, folic acid, ascorbic acid, tocopherols, tocotrienols etc., are some antioxidants produced by plant for their sustenance. Beta-carotene, ascorbic acid and alpha tocopherol are widely used antioxidants[6]. *Sterculiapopulifolia* is mostly found in Timor Island, East Nusa Tenggara Province (NTT). The people of East Nusa Tenggara Province use klika*Sterculiapopulifolia* as a traditional medicine based on hereditary knowledge and experience[7]. Klika*Sterculiapopulifolia* contains a number of antioxidants such as ascorbic acid, terpenoids, alkaloids, polyphenols such as flavonoids, flavone glycosides,

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rutin etc[8]. Easily cultivable klika*Sterculiapopulifolia* with its wide range of antioxidants can be a major source of natural or phytochemical antioxidants.

Based on these literature survey above, it is necessary to do a study to assess the effectiveness of extract klika*Streculiapopulifolia* cream on the collagen of albino mice against ultraviolet B radiation.

MATERIAL AND METHOD

Mice used in this research were male albino mice aged 6-9 weeks which were obtained from Animal Laboratory, Padjajaran University (West java, Indonesia). Animal were kept a temperature of 23 ± 1°C and 50 % ± 10% of relative humidity in a specific pathogen-free environment. The mice were divided into 3 groups with 5 mice in each group. The experimental animal was approved by the institutional ethics committee for animal care of Hasanuddin University and was conducted in accordance with the laboratory guidelines of animals caring and using as adopted and promulgated by the National Institutes of Health. The UV-B irradiation used was from TL20W/01RS UV Lamp (Philips, somerset, NJ, USA) with an emission spectrum between 275 and 380 nm (peak: 310-315 nm. The UV-B irradiation intensity on the mice skin surface was measured using a UV meter (WaldmannGmbH&Co, Vilingen-Schwenningen, Germany). The irradiation intensity at 30 cm from the light source was about 0.5mW/cm^2. Initially, the minimal erythema dose (MED) to induce erythema with sharp margins on the dorsal skin of the mice after 48 was defined as 1 MED, which was calculated to be approximately 500 mJ/cm2. The mice were exposed to UV light 3 timesa week (Monday, Wednesday and Friday) for 4 weeks. The radiation dose was increased weekly by 1 MED from 1 MED up to 3 MED and then maintained at 3 MED until the end of the experiment. Klika*Streculiapopulifolia* and placebo cream were topically applied to the dorsal area every Sunday for 4 weeks. On the day of UV irradiation, mice were treated after UV exposure. Mice were divided into 3 groups; group 1 was treated with Klika*Streculiapopulifolia* cream and exposed to UVB, group 2 was treated with placebo cream and exposed to UVB, and group 3 was not treated or controlled group.

Klika *Streculiapopulifolia* cream with concentration of 5% extract was made in the laboratory of pharmaceutical, Sekolahtinggiilmufarmasi Makassar. Each treatment was given extract klika*Streculiapopulifolia* cream as much as 3 drops (0,1 ml) is equivalent to a dose of 2 mg/g BW mice.

Histopatological preparations obtained from skin tissue of mice backs by excisional biopsy. Each specimen was fixed with buffered formalin, then placed on a flat surface and cut into to parts. Making a slide taken from pieces of tissue in the middle, which is cut perpendicular to the thickness of 4 μM than was staining using Masson's Trichrome staining for collagen assessment.

Collagen thickness was measured by taking the average thickness of the bottom edge of the basement membrane to the upper edge of the subcutaneous fat tissue are marked in green by Masson's Trichrome staining. Results 5 field of view with a magnification of 100x in print on A4 paper with a size of 100%, and its thickness is measured using a ruler in centimeters (cm) on each field of view. Measurements were performed by 3 assessors.

The density of collagen fibers was performed using a light microscope with a magnification of 400x. Each sample rated by 3 assessors. To assess the density of collagen fibers used criteria:

(-) or 0 : do not look the collagen fibers

(+) or 1 : collagen fibers look very thin or slightly

(++) or 2 : the collagen fibers spread very thin or slightly

(+++) or 3 : collagen fibers being spread

(++++) or 4 : collagen fibers spread solid.

The data obtained were analysed though the statistical product and service solutions (SPSS). The analysis is comparing the score density and thickness of collagen in all three groups. The statistical test p-value <0,05. If the above test is significant, advanced test (post-hoc test) to assess which groups are different. Post-hoc test method used is the Bonferroni method.

RESULT

Collagen Thickness: There are significant differences in the thickness of the collagen in the sample group (p<0,001) (table 1)

Table 1: Comparison of Collagen Thicness

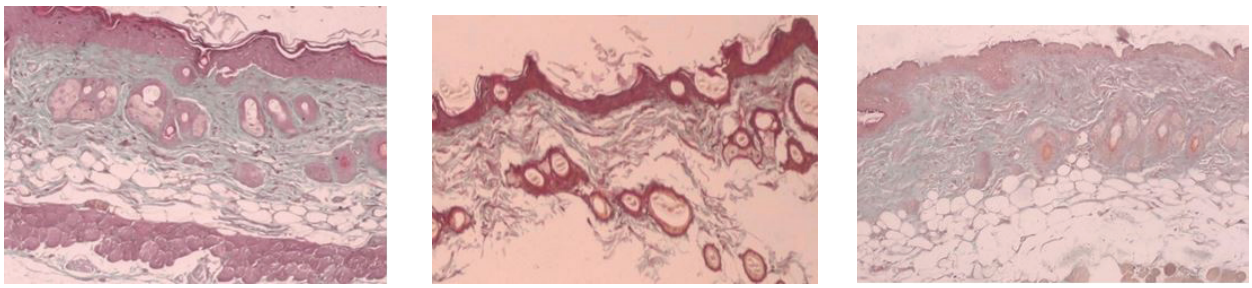
Group	Min	Max	Mean	SD	F	p
Extract klika *Streculiapopulifolia* cream	5,3	6,5	5,98	0,45	64,66	0,000
Base cream	2,8	3,7	3,22	0,38		
Control	4,5	5,3	4,86	0,30		

Kruskal-Wallis: In Table 2 shows the thickness of the collagen in extract klika *Streculiapopulifolia* cream was significantly higher than base cream. No significant differences between groups of collagen thickness of extract klika *Streculiapopulifolia* cream with the controlled group.

Table 2: Multiple Comparisons Collagen Thicness

(I) group	(J) group	Mean Difference (I-J)	p
Extract klika *Streculiapopulifolia* cream	Base cream	2,76	0,000
	control	1,12	0,001
Base cream	Extract klika *Sterculiapopulifolia* cream	-2,76	0,000
	Control	-1,64	0,000
Control	Extract klika*Sterculiapopulifolia* cream	-1,12	0,001
	Base cream	1,64	0,000

Post-hoc test (Bonferroni)



Group extract klika S. *populifolia* cream **Group base cream** **Group control**

Figure 1: Histopatology thickness of collagen; Masson's thichrome staining; magnification 100X

Collagen Density: The are significant difference in collagen density score by the sample group (p <0,001) (Table 3 and figure 2)

Table 3: Comparison of collagen density score

Group	Min	Max	Mean	SD	F	p
Extract klika*Sterculiapopulifolia* cream	3,0	4,0	3,6	0,54	8,0	0,06
Base cream	1,0	3,0	2,0	1,00		
Control	3,0	4,0	3,6	0,54		

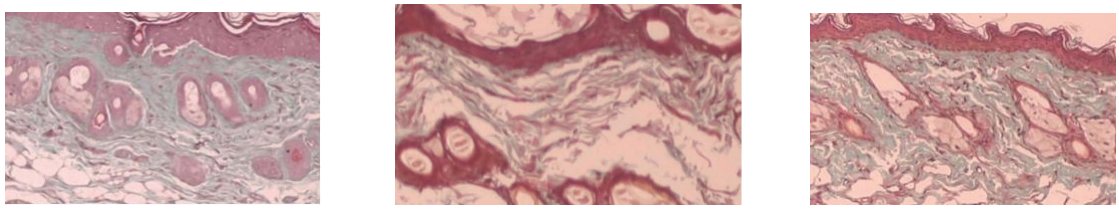
Kruskal-Wallis

In Table 3 shows collagen density score of extract klika*Streculiapopulifolia* cream was significantly higher than base cream. No significant differences between groups of collagen density score of extract klika*Streculiapopulifolia* cream with the controlled group.

Tabel 4: Multiple Comparisons

(I) group	(J) group	Mean Difference (I-J)	p
Extract klika*Streculiapopulifolia* cream	Base cream	1,60	0,005
	Control	1,00	1,00
Base cream	Extract klika*Sterculiapopulifolia* cream	-1,60	0,005
	Control	-1,60	0,005
Control	Extract klika*Sterculiapopulifolia* cream	0,00	1,00
	Base cream	1,60	0,005

Post-hoc test (Bonferroni)



Group extract klikaS.*populifolia* cream **Group base cream** **Group control**

Figure 2: Density Collagen; Masson's thichrome staining; magnification 400X

DISCUSSION

This study used healthy and normal albino mice(aged 6-9 weeks, weighing 20-30 grams). Albino mice were used because mice are mammalian vertebrate animals whose skin structure is similar to human skin besides albino mice do not have pigments including hair follicles. While rats aged 6-9 weeks were chosen because the structure of the skin has similarities with young adult humans who have not experienced intrinsic aging. examined green tea and its effects on ultraviolet exposure, using SKH-1 mice without hair in their research. SKH-1 mice without hair are ideal experimental animals in this study because they do not require shaving therefore they are more practical in ultraviolet light exposure[9].

The exposure of skin by ultraviolet both directly and indirectly would cause negative effects. As many as 50% of skin damage caused by UV is estimated due to the formation of free radicals, while the remaining 50% is caused by cellular damage and other mechanisms[10]. UVB doses that could cause damage to the collagen dermis (photoaging) in mice skin of several studies vary greatly. DjawadK used UVB exposure at a dose of 343 mJ/ cm^2 three times a week for 4 weeks[11]. Adriani A used UVB exposure at a dose of 450 mJ/ cm^2 three times a week for 4 weeks[12]. Referring to the study, the UVB dose used in this study was 500 mJ/ cm^2 three times a week for 4 weeks.

Collagen is the primary polypeptide/protein in the extracellular which is found in almost all organs of the human body. There are as many as 21 types of collagen, the number and type vary depending on a variety of human organs[13]. It has been widely demonstrated that the type of collagen that dominates the skin is collagen-1 and collagen-3 on mechanical defense function, but the type of collagen that also exists on the skin, such as collagen-5, collagen-6, collagen-7, collagen-12 found in the minimum amount thought to have support the strength of skin, but the exact role is unclear[13,14].

The thickness and density of collagen in this study was significant difference according to the sample group ($p<0,005$), where the results of statistical tests show the thickness and density of collagen in extract klika*Sterculiapopulifolia*cream group was significantly higher than base cream groups and did not differ with the normal group.

The main factors were allegedly responsible for the damage to the collagen in photoaging case is the presence of free radicals triggered by ultraviolet B which cause damage mainly in extracellularmatrix of collagen breakdown[14].

The extract klika*Sterculiapopulifolia* cream can increase the thickness and density of collagen after skin irradiation indicates that klika*Sterculiapopulifolia* extract could protect the skin from oxidative damage caused by UV exposure. Flavonoids and polyphenols in klika *Sterculiapopulifolia* extract could prevent damage caused by free radicals in several ways, one of which is destroying free radicals directly[15]. Flavonoids are oxidized by radicals and producing more stable and less reactive radicals. Flavonoids stabilize reactive oxygen by reacting with the reactive composition of these radicals[16]. The neutralization of free radicals by flavonoids causes no cytokine receptor activity and growth factor on the surface of epidermal keratinocytes and fibroblasts in dermis. By inactivation of these receptors, MAP kinase intracellular singular pathway causes the AP-1 transcription factor to be inactive. This results the cessation of MMP-1 transcription therefore the level of MMP-1 in the skin decreases, as indicated by a decrease of mRNA MMP-1 expression [17,18]

The polyphenol in klika*Sterculiapopulifolia* extract that was given topically could have an effect as photo-protection. The antioxidant mechanism of polyphenol is based on its ability to donate hydrogen atoms and the

ability to chelate metal ions. After donating a hydrogen atom, phenolic becomes stable and not susceptible to resonance, thus they do not easily participate in other radical reactions [16, 19]. By reducing the reactivity of free radicals, the administration of these polyphenols could prevent the synthesis and accumulation of MMP in the skin.

In group 2 (base cream) decreased the thickness and density of collagen after skin irradiation was caused by energy from UV radiation damaging cell membranes and proteins to produce reactive oxygen species (ROS), which inducing the expression of pro-inflammatory cytokines that binding to cell surface receptors including receptors of epidermal growth factor, interleukin (IL) -1, insulin keratinocyte grown factor and tumor necrosis factor (TNF). Activation of these receptors makes ROS to inhibit the protein tyrosine phosphatase enzyme, which has functions to maintain inactive epidermal growth factor receptors. The activity of kinase induces transcription of complex core of AP-1, a protein complex containing c-Jun protein and c-Fos[12]. AP-1 increases MMP gene transcription and decreases TGF-β pro-collagen receptorthen consequently decreases dermal matrix formation. In skin, the combination of collagenase (MMP-1), 92kDa gellatinase (MMP-2), 72kDa gellatinase (MMP9) and stromelisin 1 (MMP3) could completely degrade collagen and components of elastin tissue. Even though the expression of all these enzymes is very low in normal skin, the enzyme could increase after UV exposure. There are cell cultures in vivo and in vitro [13].

CONCLUSION

Based on the results of the study, it could be concluded that the topical administration of extractklika*Sterculiapopulifolia* cream in albino mice exposed to UVB could increase the thickness and density of collagen compared to groups of albino mice given placebo cream. Thus, extract klikaSterculiapopulifolia cream is effective to protect the skin from UVB.

Ethical Clearance: Taken from Hasanuddin University Ethics Committee, approval number: 551/ H4.8.4.5.31/ PP36-KOMETIK/2017.

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Conflict of Interest: The author declares no conflict interest regard this research

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Polymerase Chain Reaction (*PCR*) *Method* for Identification Gene *Escherichia coli* and Officer Depot Behavior in Drinking Water Refill

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ABSTRACT

Polymerase Chain Reaction (PCR) is one method for amplification (multiplication) of oligonucleotide primers directed enzymatically by specific DNA sequences. An accurate technique for molecular identification of bacteria is identification of the 16S-rRNA gene. Ribosomal RNA is most widely used as a molecular marker. The purpose of this study was to identify E.Coli bacterial 16S rRNA gene in refill drinking water. The research method used is analytic observational. As for the sample, there were 5 depots in Mariso sub-district and 5 depots in Panakkukang sub-district with a total sample of 3 samples measured on inlets, processes and outlets. The working principle of bacterial RNA is extracted and purified using RNX-plus kit. Deoxyribonuclease enzymes are used to remove DNA contamination from purified RNA. To remove the enzyme, 1 ml of tetra ethylene acetic acid (EDTA, 25 Mm) was added for 10 minutes at 65 ° C. Boom DNA extract method, DNA amplification by RT-PCR, PCR product detection, the results obtained in the form of RNA black band pattern (RNA band) where the results of electrophoresis were obtained by RNA bands (RNA bands) at 723 bp. The results showed that there was 1 consumer at the household level who was positive for E. coli bacteria. as a conclusion that the RNA genomic RT-PCR template can be used to detect Escherchia coli bacteria in refill drinking water more quickly, effectively and accurately when compared to culture methods which only require 4 hours of detection.

Keywords: *16S-RNA, RT-PCR, E.coli, 723 bp*

INTRODUCTION

Water quality is determined by various factors, one of which is the microbiological quality of the water. The presence of harmful microorganisms such as pathogenic bacteria in water can cause diseases for humans such as diarrhea. One of the causes of diarrhea is the contamination of coliform bacteria in food or drink. The main causes of diarrhea in Indonesia are Shigella, Salmonella, Campylobacter jejuni, Escherichia coli, and Entamoeba histolytica[1]. The presence of coliform bacteria can be indicated by the presence of Echerchia coli. In addition, E.coli is also a strong indicator of the contamination of other pathogenic bacteria[2].

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Based on the Unicef Joint Monitorong report, the performance of the water and sanitation sector in Indonesia is still considered low compared to other countries in Southeast Asia. Of Indonesia's population of around 218 million in 2015, an estimated 103 million people (47%) do not have access to sanitation and around 47 million (22%) do not have access to clean water. Only about 50% of all Indonesians have access to drinking water[3].

The method of detecting the presence of e.coli bacteria is commonly carried out conventionally. Qualitative testing is usually by inoculating water samples into specific growth media for coliform bacteria. Quantitative tests can be done by calculating the population of coliform bacteria using the most probable number (MPN) method[4]. In the MPN method the microbiological quality test was used by E.coli as an indicator4. E.coli group includes aerobic, facultative anaerobic bacteria, gram negative rods, and does not form spores. Colifecal ferments lactose with acid and gas

formation within 24 hours at 44 0C. The MPN method shows the amount of concentration that is statistically most likely

PCR (Polymerase Chain Reaction) is a technique of amplification of pieces of DNA in vitro in a specific area which is limited by two oligonucleotide primers[5]. The primary used as a limiting region is the single-stranded DNA which sequences complement with the DNA template. One of the genes commonly used to identify bacteria is the 16S rRNA gene. This gene is about 1500-2000 base pairs in length6. The specialty of this gene is: it is one of the genes that are relatively stable (the mutation is low), is a constant unit, and is found in a large number of copies[7].

16S rRNA gene analysis has become a standard procedure for determining phylogenetic relationships and analyzing an ecosystem. The 16S rRNA gene of each bacterial species has a stable part in the sequence and one bacterial cell has thousands of RNA copies. The 16S rRNA gene along with some of the smallest proteins join in. Analysis of the gene encoding the 16S rRNA gene is the chosen method for identifying and seeing bacterial phylogeny[8]. The advantage is that RNA is generally owned by all bacteria, changes little at a certain time, is a constant unit and is a sensitive target because there are large amounts of active cells[9].

Some DNA tracers that have been developed to detect the presence of pathogenic bacteria are the lacZ gene which is used to detect total coliform bacteria. The lamB gene is usually used to detect fecal coliform bacteria and the 5S gene is used as a detector for Legionella bacteria[10]. It has even been designed a primer that can be used to detect specifically E.coli bacteria, namely primary 16E1: GGG AGT AAA GTT AAT ACC GCT TTT and primary 16E2: TTC CCG AAG GCA CAT TCT[11].

The existence of potable drinking water is currently limited in number, so the presence of refill drinking water depots has become an alternative to meeting the drinking water quality of the community. Based on data obtained by the South Sulawesi Provincial Office in 23 Regencies, South Sulawesi Province recorded the number of drinking water depots in 2015 was 1,017. Drinking water depots that meet the requirements are 591 pieces, and those who do not meet the requirements are 426 pieces [12].

METHOD

An observational study design with cross sectional study mixed with experiment laboratory to identify the presence of Escherichia coli pathogenic bacteria as an indicator of the determination of the quality of refill drinking water with Reverse Transcriptase-PCR (RT-PCR) technique with a target of 16SRNA. The population in this study were 10 refill drinking water in the Mariso and Panakukkang sub-districts. Examination of the sample was carried out at the UNHAS medical faculty microbiology laboratory

Sample check flow diagram: Bacterial RNA was extracted and purified using RNX-plus kit. Deoxyribonuclease enzymes are used to remove DNA contamination from purified RNA. To remove the enzyme, 1 ml of tetra ethylene acetic acid (EDTA, 25 Mm) was added for 10 minutes at 65 ° C.

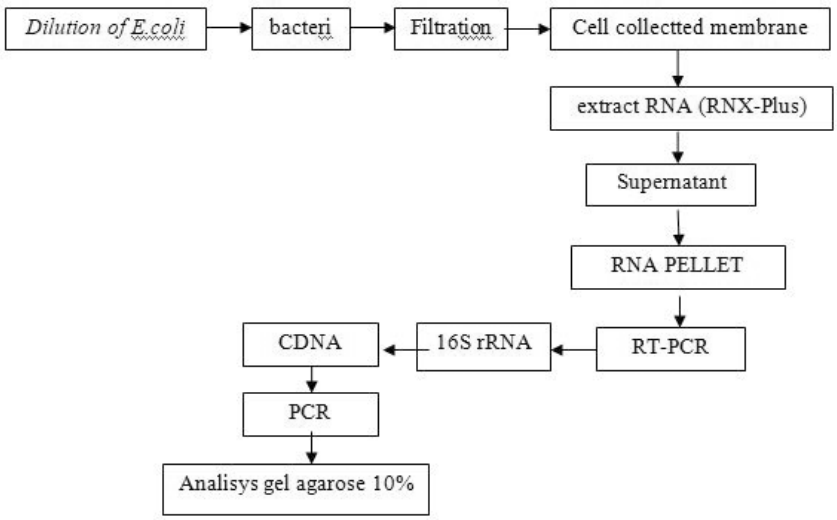

Figure 1: Flow chart RT-PCR for detection of E.Coli[5]

TOOLS AND MATERIALS

The tools used in this study were sample bottles, cool boxes, incubators, safety cabinets, vortex shakers, gyrotary shakers, Eppendorf tubes and shelves, centrifugation devices, dispossibel gloves, micropipets, thermocyclers (Hybaid, Ashford, UK), freezer -20 ºC, 4ºC refrigerator, electrophoresis machine, UV light device.

Materials for sampling are 70% alcohol, cotton and materials for DNA extraction, namely Diatom suspension, L6 (Lysis buffer) solution, L2 (Washing buffer) solution, 70% ethanol, acetone and TE (Tris-EDTA) solution elution buffer. The ingredients used for PCR were DNA extract, PCR mix (100 mM Tris-HCl, Ph 8.3, 1.5 mM MgCl, 50 mM KCl, 0.1% gelatin), deoxynucleotide triphosphate (dNTP), dATP, Materials for electrophoresis are 1.5% agarose gel containing 0.5 mg / Lethidium bromide, electrophoresis buffer Tris acetic acid-EDTA (242 g Tris Base, 57 mL acetic acid, and 100 mL of 0.5 mol / L EDTA, pH 8.0) 7.

DATA ANALYSIS

The results of PCR detection by electrophoresis were analyzed based on whether or not the pieces on the DNA band (DNA band) were formed and the data were presented descriptively using tables and images.

Table 1: Sequences and Position of Primary Nucleotides

Gen	Forward	Reverse	Size (bp)	Acsess nuMBERwe
16S rRNA	5'CGA GTC GCG GAC GGG TGA GT3' (From 81)	5'TCG ACA TCG TTT ACG GCG TGG A3' (From 786)	723	EF620925

RESULT

Based on Table 2 from the results of RT-PCR examination which results from positive EF-Tu RT-PCR examination as many as 4 (16.7%) and negative as many as 4 (16.7%) E. coli bacteria were not found. while the results of the EF-PCR RT-PCR examination were negative and positive 16S rRNA RT-PCR examination was not found E. coli bacteria, while 26 (100%) negative results were found.

Table 2: Relationship Between PCR EF-Tu Examination Results with Results of 16S rRNA examination

RT-PCR EF-Tu	RT-PCR (16S rRNA)						p
	Positive	%	Negative	%	n	%	
Positive	4	16,7	0	100	4	100	0.000
Negative	0	0	26	100	26	100	
Total	4	13,3	26	86,7	30	100	

Table 3: Relationship Between MPN Coliform and Examination Results: EF-Tu RT-PCR

Examination MPN Coliform	RT-PCR (EF-Tu dan 16S rRNA)						p
	Positive	%	Negative	%	N	%	
eligible	4	16,7	20	83,3	24	100	0.557
Not eligible	0	0	6	100	6	100	
Total	4	13,3	26	86,7	30	100	

Based on Table 3 the results of MPN Coliform examination that met the requirements and positive for EF-Tu RT-PCR examination were 4 (16.7%) and negative as many as 20 (83.3%) and the results of MPN Coli examination that did not meet and were positive were not E. coli bacteria were found on RT-PCR examination and found negative 6 (100%).

Based on data analysis using the Fisher Exact Test test, the value of knowledge (p = 0.557) means that it does not have a significant relationship (p value> 0.05) between the results of MPN coliform examination on RT-PCR examination.

Table 4: Depot Officer Behavior Against Drink Water Refill System

Behaviour	N	%
Knowledge		
Less	13	43,5
Enough	17	56,7
Total	30	100
Attitude		
Negative	15	50
Positive	15	50
Total	30	100
Behaviour		
Less	8	26,7
Good	22	73,3
Total	30	100

Based on table 4 shows that the knowledge variable is in the category of 43.5% and 56.7%. For the attitude attitude category between 50% positive and negative, while the officer action category was lacking (26.7%) and good (23.3%).

Table 5: The Relationship between the Behavior of Depot Officers against RT-PCR Identification with 16S Rrna Gene

Behaviuor		RT-PCR 16S RNA (Output)						p
		Positive	%	Negative	%	N	%	
Knowledge	Less	1	7,7	12	92,3	13	100	1,000
	Enough	2	11,8	15	88,2	17	100	
Actitude	Negatif	3	20	12	80	15	100	0,224
	Positif	0	0	15	100	15	100	
Behaviour	Less	3	37.5	5	62,5	8	100	0,014
	Good	0	0	22	100	22	100	

Based on table 5 shows that lack of knowledge and identification of positive RT-PCR results were 1 (7.7%) and inadequate categories were 2 (11.8%). The measurement of negative attitudes and examination of 16S rRNA were negative 3 (20%) and actions that were less positive were 3 (37.5%) and negative ones were 5 (62.5%). The results of the SPSS analysis of the behavior category of p (1,000) and attitudes p value (0,224) did not have a significant relationship with only the action variable of 0,014 which had a significant relationship with the results of 16S rRNA examination in E. coli bacteria.

DISCUSSION

The results of bivariate analysis showed that knowledge and attitude had no effect on microbial contamination. Attitude variables are confounding variables on disinfection quality variables. This information shows that the most microbial contamination found in the quality of disinfection does not meet the requirements and values of low attitudes, while the behavior variable is a confounding variable on the variables of sanitation and quality of disinfection.

Most microbial contamination is found in low behavioral values, sanitary conditions and disinfection quality that do not meet the requirements. Attitude is a reaction or response of someone who is still closed to a stimulus or object. Attitude has not been an act or activity, but it is a predisposition to action.

In this study, knowledge and acttitude have no effect on microbial contamination. This can be caused because the data of this study are continuous data and homogeneous population data. Subsequent research can use category data. For homogeneous data, it is necessary to do ecological studies comparing several groups. Whereas in action Most operators already know the purpose and benefits of sanitation hygiene, location and yard requirements, requirements for raw water transportation and storage, function of disinfection equipment, due to consuming polluted water, operator requirements, drinking water quality requirements.

The molecular method for testing water quality microbiologically is using the technique of polymerase chain reaction (PCR) with a higher level of accuracy. Polymerase Chain Reaction (PCR) is a reaction to double the number of molecules of Deoxyribonucleic Acid (DNA) on certain targets by synthesizing new DNA molecules that complement the target DNA molecules with the help of enzymes and oligonucleotides as primers in one thermocycle In this technique what must be done is to isolate bacterial cells from water samples, then amplify DNA from these bacteria[9].

RT-PCR is able to detect bacteria in various concentrations. The EF II primary application reduces false positive results compared to 16S rRNA primers. The FHLP hydrophobic filter (0.5 micron diameter) has a higher ability to absorb bacteria than the HAWB hydrophilic filter (0.45 micron diameter). So the use of a hydrophobic filter will increase the sensitivity of RT-PCR[5].

The presence of coliform bacteria in refill drinking water in drinking water depots in the Panakukkang sub-district shows the possibility of enteropatogenic and toxigenic microbes that are harmful to health. If the level of contamination is higher, then the risk of the presence of other pathogenic bacteria that normally live in human and animal feces is also higher. But depots contaminated with E. coli can be caused by various factors, including: The length of time that water is stored in a place shelter so that it affects the quality of the raw water source used. There is contamination during the insertion of water into the transport tank etc.

Methods that only detect live bacteria must be used to detect the presence of E. coli, techniques such as RT-PCR can be used to detect living bacteria[5]. In general, RNA-based techniques can prove the existence of living cells only when the molecular target has little stability after cell death. In fact, mRNA is constantly reproduced and enhanced in living cells. However, RNA unlike DNA has a very short half-life, so RNA content decreases rapidly after cell death. Therefore, the presence of RNA Molecules is a good marker to prove the existence of living cells. Vaitilingom et al used the RT-PCR method and found RNA molecules only in living cells[13]. However, some types of RNA molecules are more stable. For example, the results of a study conducted by Sheridan et al. Showed that the 16S rRNA gene remained stable for about 16 hours. Therefore, less stable RNA molecules should be sought.

The polymerase chain reaction (PCR) test results on water purification and disinfection systems are positively wrong due to the stability of DNA molecules. Thus, molecular methods such as PCR cannot reflect the impact of disinfectants on the water pollution index[14]. To solve this problem, other cell molecules (eg RNA) with relatively low stability such as EF-Tu with a stability of 4 hours can be used[15]. Reverse transcriptase polymerase chain reaction (RT-PCR) must be used to determine the presence of RNA in the medium. Performance detection can be improved using hydrophobic filters for relatively high water volumes with low concentration bacteria[5].

CONCLUSION

The results of this study indicate that the molecule RT-PCR 16S rRNA method is more efficient to detect the bacterium *Escherchia coli.* In drinking water and detection time 4 hours.

Ethical Clearance: Taken from Hasanuddin University Ethics Committee, approval number: 195 / H4.8.4.5.31 / PP36-KOMETIK/2017.

Source of Funding: Self-funding

Conflict of Interest: The author declares no conflict interest regard this research

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Assessment of Eu-152 Nuclide Contaminated from Radioactive lightning Rods in Soil Samples at Kasra and Atash in Baghdad

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ABSTRACT

In this study, the specific activity of Eu-152 nuclides is measured with the contamination in soil samples at Kasra and Atash, which were taken from Al-Tuwaitha site in Baghdad. Ten samples were collected from different areas in Baghdad for the purpose of the study. The technique of the spectral analysis was used for gamma-ray in order to make the measurements with the use of scintillation detector system NaI(Tl) gamma spectroscopy with 3"×3". The results show that, specific activity in soil samples under study were ranged from 21.45±0.33 Bq/kg to 96786.84±41.84 Bq/kg with an average 10039.63 Bq/kg. Soil samples are not safe to work in and are dangerous or hazardous to the citizens.

Keyword: *Gamma ray spectroscopy, contaminated in soil, Eu-152 nuclide, Kasra and Atash.*

INTRODUCTION

Since 1970s, the idea of radioactive lightning rods has become common[(1)].These devices are now not allowed to be manufactured or sold in many countries. Many programs have been developed in some countries to remove lightning rods that have already been installed, but the world is still using lightning attractors[(2)]. In each device, the moment of radioactivity is variable from (37-370)MBq[(3)]. A solid steel covered with a thin metallic coating such as gold are usually used in safety and storage of radioactive material. The covering was thin in order to make the air ionized by the penetration of the radiation of the alpha. The effectiveness of radioactive rods is no more effective than non-radiant lightning rods, as many studies have shown. This is because lightning rods spend their lives abroad.These rods are affected by cold, wind, heat and lightning. Thus, one or more sources will be damaged or disabled to detect the source material. This in turn leads to migration from the source to the surrounding areas[(4)]. In some catastrophic events, the sources on the rod can be spread or leaked, and the other materials will be contaminated in adjacent areas[(5)]. In the management of waste and shields, the characterization of radioactive is an essential obligation[(6)]. Radioactive waste production is often the result from nuclear production processes, Agriculture, research, medical, Industrial or through the fusion of radioactive sources that are not subject to radiation control. All remaining waste is considered as a serious source of radioactive contamination on the human body. Soil pollution results from the existence of industrial processes or other changes in the natural soil. Some of the causes of soil pollution are[(7)]:

- Percolation of contaminated water into the soil
- Division of underground storage tanks.
- Strain of industrial waste into the soil

The aim of this study is to measure the polluted Eu-152 nuclei from radioactive lightning rods in soil samples at Kasra and Atash in Baghdad. A specific activity of ^{152}Eu nuclide in soil samples at Kasra and Atash that it is taken from Al-Tuwaitha site in Baghdad that it is taken from using scintillation detector system NaI(Tl) with 3"×3".

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Area of study: The city of Baghdad is located in the center of Iraq within the plain flat sedimentary sector. The boundaries of Baghdad Municipality consist of fourteen administrative units, eight in Rusafa (east of the Tigris River) and six in Karkh (west of the Tigris River),and area of the municipality of Baghdad is 870 km^2. The advantage characteristics of the study area is an assessment of the radiation levels in the Eu-152 nuclides contaminated the soil of Kasra and Atash areas (see Fig. 1).

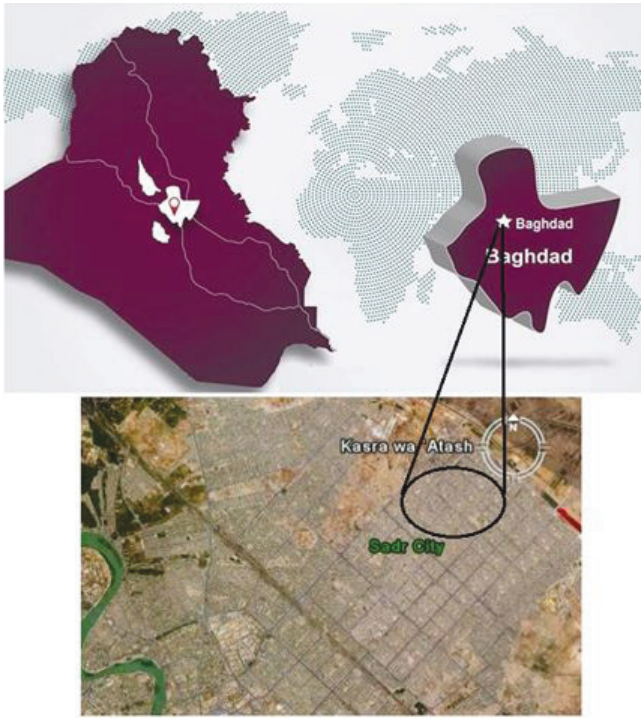

Figure 1: Area of study

MATERIALS AND METHOD

Collection and Preparation Samples: The ten soil samples were collected from different sites of Kasra and Atash during March 2018 in order to estimate the specific activity ^{152}Eu nuclide contaminated. The collected sample taken from Al-Tuwaitha site which it is collected random places with the depth of 15 cm.

The samples were crushed and dried in the advance of nuclear laboratory located in the Physics Department at faculty of Science, University of Kufa,. Some of these samples dried in an oven at (150) ˚C for 30 minute to ensure that any significant moisture was removed. After that a sieve with diameter holes 500 µm was used to obtain a homogeneous powder and then weighed by 1 kg each one. The samples were packed into (1) liter polyethylene plastic Marinelli beakers with constant volume to ensure geometric homogeneity around the detector. Plastic Marinelli beakers were sealed with a tape and stored for about one month before counting to allow secular equilibrium to be attained between ^{222}Rn and its parent ^{226}Ra in uranium chain.

After one month each sample was exposed to 5 hour, and all the steps required achieving the measurements of radioactivity for soil samples were carried out using low background gamma-ray detection system.

Gamma-Ray Spectrometer: Gamma- ray spectrometry is an analytical method that allows the identification and quantification of gamma emitting isotopes in a variety of matrices[8]. Inorganic scintillators such as NaI (Tl) is most important detection media for gamma-ray spectrometry on based the high penetrating power of gamma rays in the materials. The detection method for gamma rays depends on the interaction of detector material with the gamma-ray photons[9].

Gamma-ray spectrometer equipment consists of scintillation detector NaI(Tl) of (3"×3") crystal dimension (ORTEC company), supplied by (Alpha Spectra,Inc.-12I12/3), coupled with a multi-channel analyzer (MCA) (ORTEC –Digi Base) with range of 4096 channel joined with ADC (Analog to Digital Convertor) unit, through interface. The spectroscopic measurements and analysis are performed via the (MAESTRO-32) software into the PC.

Detector Characterization

Energy Calibration: The purpose of energy calibration is to obtain a relationship between the number of channels and the energy absorbed in the detector (gamma ray energy as a function of channel number). The energy calibration should cover the entire energy range of interest. A set of radioactive sources with activities shown in Table (1) were used to be calibration sources. The relationship between gamma energy and number of channel was obtained and it showed a straight line with excellent correlation (100%).

Table 1: The standard radiation sources used to energy calibration[10]

Isotope	Activity (kBq)	E_γ (keV)	I_γ (50)	Serial number	Production date
^{22}Na	74	511	1.81	RE402	March 2009
		1274	0.9995		
^{60}Co	74	1173.24	0.999	RB647	March 2009
		1332.5	0.9988		
^{137}Cs	185	661.66	0.8521	IRS480	September 2012

Detection Efficiency: The ratio of the number of particles or photons recorded by the detector to the number of particles emitted by the source is called detection efficiency.

The efficiency (ε) of the detector can be calculated from the following relation[11]:

$$\varepsilon = \frac{C}{AI_{\gamma} \cdot t} \times 100\% \quad \ldots(1)$$

Where C is the area under the specified energy peak after the subtraction of the background, t is the time per second for the spectrum collected, Iγ represents the transition probability of the emitted gamma ray (see table 1)).

The variation in the absolute photo-peak detector efficiency with gamma-ray energy was calibrated using (4) sources ;^{22}Na, ^{54}Mn, ^{137}Cs and ^{60}Co as illustrated in Figure (2).

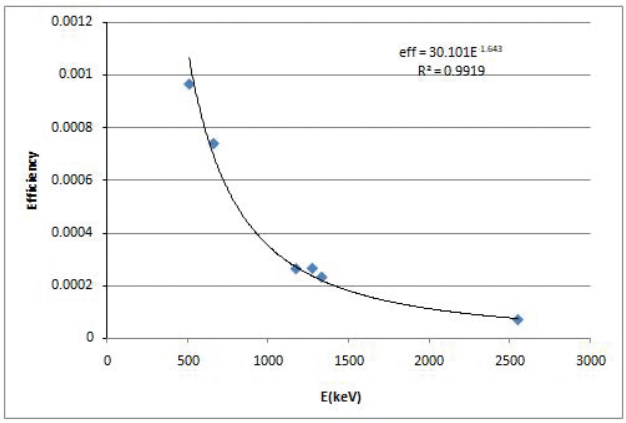

Figure 2: The Efficiency Calibration Curve of (3" × 3") NaI(Tl).

Sample measurements: Utilizing the (multi-channel analyzer), the spectrum of gamma of each samples were computed utilizing the computer and processed utilizing "MAESTRO-32software ". Then samples were put on the detector to about (5 hours). The specific activity for the samples were calculated with net area under corresponding peaks at the spectrum of energy was found by the count from background sources to the net area of a certain peak using data of "MAESTRO-32 " analysis package. The background spectrum calculated using empty (1L) polyethylene plastic Marinelli beakers on the detector and counting under the same time for the sample measurements. Due to the a few ability of resolution of NaI(Tl) detector, at low gamma energies which haven't a good separated photo-peaks, therefore, the measurement of the concentrations of the activity is possible at a good separated photo-peaks at the high energies as that estimated in our consequences from the gamma rays emitted by the progenies of ^{152}Eu was estimated directly by its gamma-line of 1408 keV.

The activity per mass and is given in units of curies (Ci) per gram in the individual fact sheets this is specific activity. The calculated specific activities in units of curies per kilo gram by using the equation[12,13].

$$A\left(\frac{Bq}{kg}\right) = \frac{N}{t \times \varepsilon \times I_{\gamma} \times m} \quad \ldots(2)$$

where N net area under photo peak, t is the counting time (sec), I_{γ} the gamma emission probability, m the sample weight (kg), ε the absolute efficiency of the detector at particular gamma energy

RESULTS AND DISCUSSION

The results of the specific activity of this region are shown in Figure (3) for ^{152}Eu in (10) soil samples of Kasra and Atash regions that it taken from Al-Tuwaitha site. The spectrum of samples were analyzed. Figure (4) show the gamma- ray spectra of samples. The accumulation time for each-spectrum with was 5 hour to obtain good statistics. The resolved photo peaks were appeared in the gamma-ray spectra. The specific activity of ^{152}Eu in this region varies from (21.45±0.33) Bq/kg for the sample (S10) to (96786.84±41.84) Bq/kg for the sample (S6) with average value 10039.63 Bq/kg. From the above results, we can see that all soil samples under study are contaminated by ^{152}Eu source. This is due to radioactive lightning rod (which has high activity for ^{152}Eu)found in the area under study on a pile of various metals for a long period of time. So, the soil sample works as a direct source of radionuclides which leads to the pollution of all agricultural products. Polluted soil utilized in greenhouses could add considerably to the vegetables contamination. Finally should be noted that, when the sources stayed intact, the leakage of the radioactive material, itself, was not a consideration and the materials in the vicinity will not become radioactive. The gamma-ray and more possible ionizing radiations will be emitted, depending on what are found in the radionuclides. The energies of these radiations lose by interacting between the radiation and air and probably other material in the vicinity area, but they did not produce any radioactive material. The radiations might be detected by holding an convenient detector near to the sources.

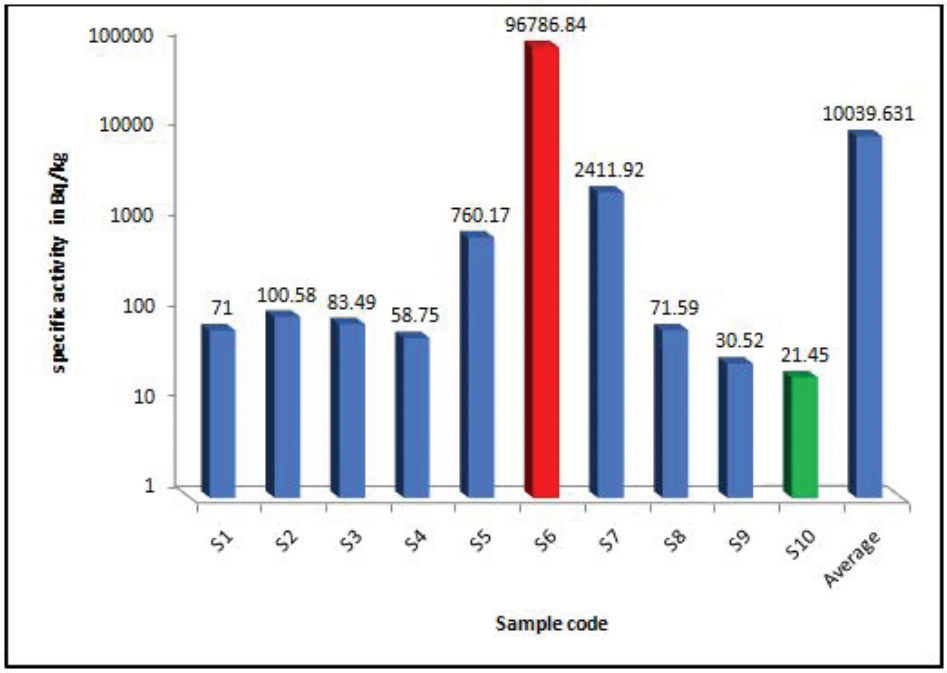

Figure 3: Results of specific activity of ^{152}Eu in soil samples under study

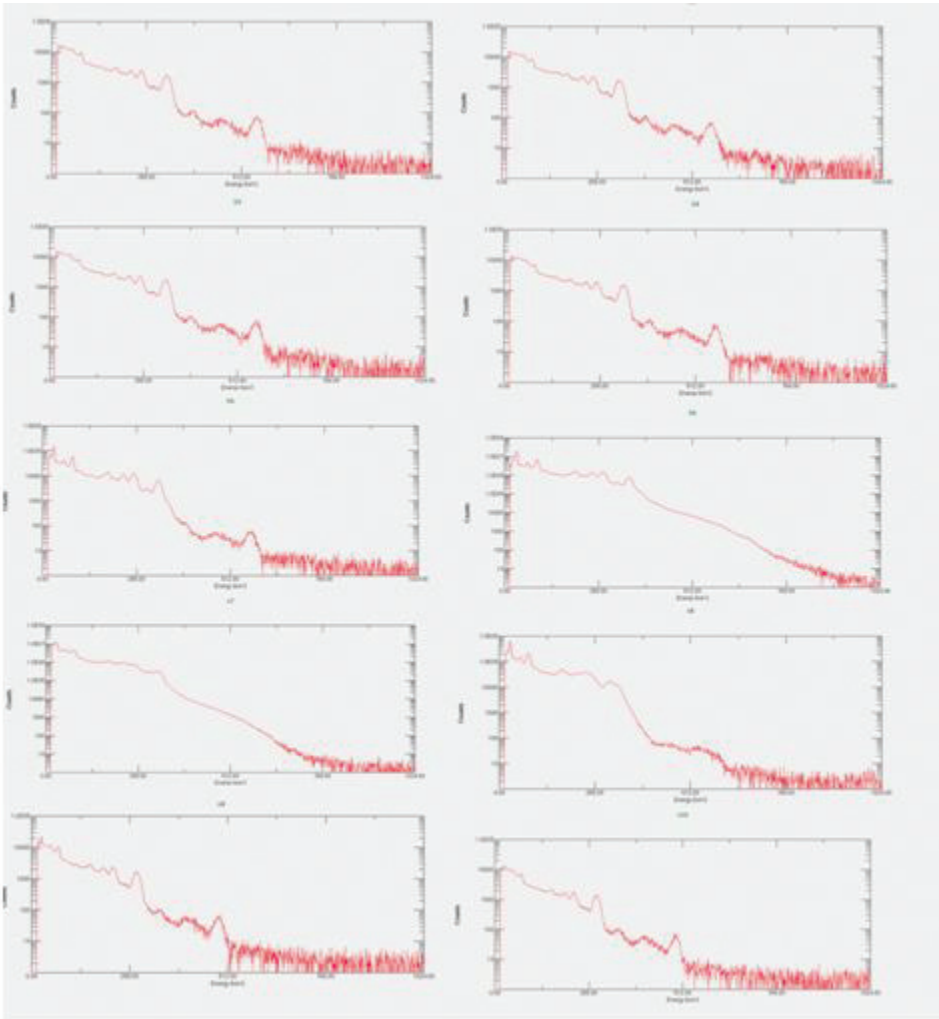

Figure 4: Gamma-ray spectra of samples

CONCLUSION

All soil samples under study are contaminated by ^{152}Eu source. Radiation hazards due to the activities concentration of ^{152}Eu was within the allowed limits except samples 6 and 7.

Conflict of Interest: There are no conflict interest.

Source of Funding: The authors declare that they have no competing interests.

Ethical Clearance: All authors are in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (5).

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Increased Expression of Interleukin 13 in Iraqi Patients Suffer from Ulcerative Colitis

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ABSTRACT

Background: Interleukin-13 is a cytokine that exerts strong proinflammatory activities. In this study, we aimed to evaluate changes in IL-13 expression in the inflamed mucosa and in the serum of patients with Ulcerative colitis.

Patients and Method: Tissue samples were collected endoscopically or surgically from patients with ulcerative colitis (n=46), and apparently normal colorectal tissues (n=32). IL-13 expression was evaluated by a standard immunohistochemical procedure and serum IL-13 levels were determined by ELISA technique.

Results: The IL-13 was sever expression in inflamed biopsies at score 4 (41.3%), moderate expression in non-inflamed biopsies at score 2 (63%), and low expression in apparently healthy control at score 2 (62.5%) in the interstitial space among colonocytes all along the crypt axis. Furthermore, UC patients had significantly elevated level of serum IL-13 than control group 58.69 ± 10.32 pg/ml, 24.14 ± 5.66 pg/ml respectively (p value <0.0001).

Conclusions: IL-13 expression in the mucosa and serum was increased in UC patients. It is likely that IL-13 expression in UC may be associated with inflammatory responses in the intestinal mucosa. Further studies were required to investigate the mRNA expression in UC.

Keywords: *Cytokine; Immunohistochemistry; Inflammation; Ulcerative Colitis.*

INTRODUCTION

Inflammatory bowel disease (IBD) is an idiopathic intestinal inflammation such as can arise when homeostasis process is interrupted. It is categorized into two different disorders: Ulcerative colitis (UC) and Crohn's disease (CD). Presently, the precise causes of UC is unclear. However, it is believed that immune system disorders and/or imbalanced interactions with microorganisms in genetically susceptible hosts leads to development of chronic intestinal inflammation [1].

In the inflammatory process, the identification of the cytokine profile may increase the understanding of the pathophysiology of UC [2-4]. IL-13 have not been described in relation to UC although their potential effects on intestinal inflammation. As indicated by studies on severe combined immunodeficient mice, then the factor that play important role in the development of UC is infiltration of T cells into lamina propria [5].

Interleukin-13 is a cytokine peptide composed from 33 amino acid whose gene resides on human chromosome 5q31. It is produced by CD4+ T lymphocytes that are the adaptive effector cells active in UC. However, in humans, innate immune cells such as basophils, eosinophils, natural killer (NK) cells, and mast cells have also been described to have a capacity to synthesize IL-13. Newly, several novel IL-13 secreting cell kinds with innate immune function and negative for T and B cell markers were recovered from murine gut associated lymphoid tissue, and small bowel [6]. IL-13 is an anti-inflammatory cytokine that inhibit lymphocytes chemotaxis, and it might be involved in retaining T lymphocytes in activation regions, which include the mucosa in UC patient's bowel [7].

It has been described that 76% of anti-CD2/CD28-activated lamina propria T lymphocytes from inflamed UC mucosa are positive for IL-13, and the main source of IL-13 in UC mucosa is thought to be represented by Natural Killer T cells (NKT). While it has been reported

that anti-CD2/CD28-activated lamina propria T cells produce more IL-13 in UC patients than in CD patients and that IL-13 transcripts are increased in inflamed UC mucosa, other researchers have reported reduced colonic levels of IL-13 in active UC compared with those in active CD and controls. Moreover, the mucosal proinflammatory role of IL-13 in the gut has been questioned [8].

In oxazolone colitis, IL-13 produced by an invariant NKT cell population in the lamina propria is a prominent feature of the gut inflammation and, indeed, the inflammation can be prevented by NKT cell depletion or IL-13 immune neutralization [9]. Consistent with its role as an effector cytokine in UC, IL-13 has been shown to enhance NKT cell cytotoxicity for epithelial cells and, in addition, can directly damage gut epithelial cells and/or increase epithelial barrier permeability [10]. These findings suggest that strategies that diminish the production of this cytokine or inhibit its signaling mechanism offer a novel approach to the treatment of UC. In this study, we aimed to evaluate changes in IL-13 expression in the inflamed mucosa and in the serum of patients with UC.

PATIENTS AND METHOD

Through the time from June/2014 to February/2017, (78) individuals from gastroenterology Centre in AL-Sader hospital of Al-Najaf province had been recruited for this case-control research. Individuals were classified into two categories:

1. **Patients Group:** Forty-six individuals of both genders; 26 males and 20 females had been clinically diagnosed as UC with an age range of 19-70 years (mean of 41±15.475 years).
2. **Control group:** Thirty-two individuals of both genders; 18 males and 14 females, were included in this group who underwent examination by endoscopy due to gastrointestinal symptoms but were investigated to have no inflammation in the bowel. Their age ranges from 18 to 75 with a mean age of 42.67±15.816. Biopsies were collected from both groups and the diagnostic confirmed was depending on clinical, endoscopy, histopathological examinations.

Exception criteria were: (a) formerly diagnosed IBD., (b) Pregnancy., (c) Age < 18 years., (d) Antibiotic use and previous history of medical treatment., (e) Previous history of colectomy., and (vi) Other synchronous infection, chronic diseases or cancer.

After the approval of protocol by the Ethical Review Board for human studies, faculty of nursing/university of kufa / Iraq (No. 9-12/03/2014) and before enrollment, all subjects gave their written informed consent.

Laboratory Analyses: (3ml) venous blood was drawn from each subject of the two groups and after clotting, centrifuge apparatus at 3000 rpm separated sera for 10 minutes and the separated sera were preserved at -80˚C before further testing. All sera tubes were allowed to thaw once and used to determine IL-13 level using quantitative enzyme linked immunosorbent assay kit (supplied Abcam, USA). The lower detection was 0.15 pg/ml.

Biopsies: In each patient, two different mucosal areas were chosen; one inflamed colonic segment and one apparently normal segment. No congestion or ulcers were involved. Biopsy mucosal areas were chosen by under endoscopy from the control group. Biopsies were regarded as adequate if they met all of the three following criteria: (a) Diameter 3 mm, (b) Penetration into the muscular is mucosa, and (c) < 20% crush artifact.

Biopsy specimen was fixed in 10% neutral buffer formalin for at least 72 hrs. The fixed specimens were then submitted to grade of concentration alcohol 70%, 80%, 90% and 100%, followed by immersed in twice in xylene and embedded in paraffin. Sections of 4µm-thickness were obtained for IL-13 detection. IHC was performed using ImmunoCruz™ mouse LSAB Staining System. The primary antibodies used were (Monoclonal mouse Anti-human IL-13 Protein, dilution of 1:50, 1ml Santa Cruz Biotechnology, Inc, USA).

Scoring of Immunoreactive staining was achieved by calculated the percentage of immunoreactive cells per total number of inflammatory and epithelial cells. The proportion of positively stained cells was evaluated as 1, 2, 3 or 4 score by estimation on screening wide areas within each tissue section: 1, <10% stained cells; 2, <30% stained cells; 3, <70% stained cells and 4, ≥70% stained cells, compared with the total cells [11].

Statistical Analyses: were performed using SPSS (ver.22). For comparing, the differences in the expression-studied parameters between UC patients and control, chi square test for qualitative data, independent *t* test for quantitative data and ROC for sensitivity were used. In each comparison. P<0.05 was considered to be statistically significant.

RESULTS

Table (1) shows expression of IL-13, in the normal colonic mucosa which taken from apparently healthy control, the majority of IL-13 expression was 20 cases with score 2 (62.5%) in the interstitial space among colonocytes all along the crypt axis (see Figure 1c).

In non-inflammatory mucosa of UC patients, immunohistochemistry for UC patients group revealed that minority of cases (29 out of 46) (63.0%) show a moderate IL-13 expression in inflammatory cells and epithelial cells in colon (score 2) (see Figure 1b), while in the inflammatory mucosa, IL-13 expression was frequently increased compared to expression levels of the normal epithelium and no found completely lost. From 46 colon biopsy samples, 27 (58.7%) showed strong expression levels in the surface of all epithelial cells (score 3) and only 19 cases (41.3%) were (score 4) (see figure 1a). These results were highly significant (p-value=0.00001).

Table 1: Immunohistochemistry scores for IL-13, among studied groups

Groups	IHC scores of IL-13				Statistics		
	1	2	3	4	IA&NIA	IA&NIA	Among all groups
	n (%)	n (%)	n (%)	n (%)			
UC Patients (IA)	0 (0)	0 (0)	27 (58.7)	19 (41.3)	df=3 X^2=92.0 p=0.00001	df=3 X^2= 0.002 p=0.961	df=3 X^2=78.0 p=0.00001
UC Patients (NIA)	17 (37)	29 (63)	0 (0)	0 (0)			
Control	12 (37.5)	20 (62.5)	0 (0)	0 (0)			

IA= Inflammatory area, NIA=Non Inflammatory area; IHC=Immunohistochemistry; df=degree of freedom; X^2=chi-square.

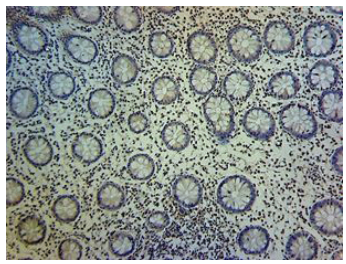
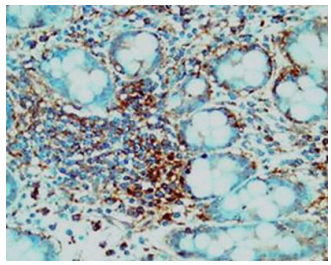
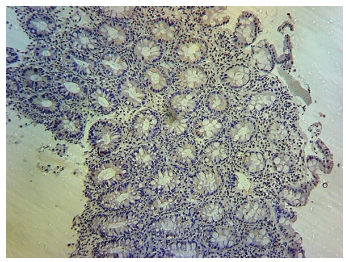
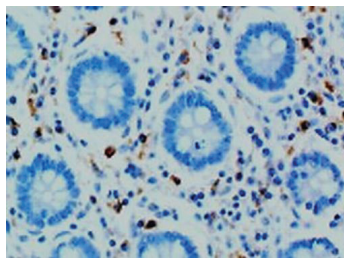
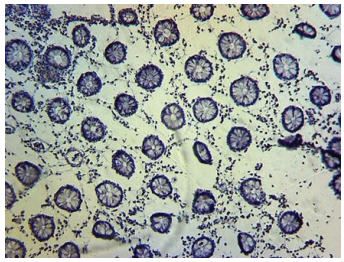
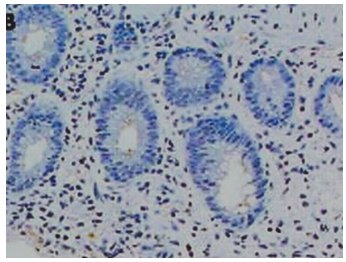
Biopsy	IL-13 (10X)	IL-13 (40X)
Patients inflammatory area (Score 4)		
Patients Non-inflammatory area (Score 3)		
Control (Score 2)		

Figure 1: Immunostain positivity of IL-13 in both epithelial cells and inflammatory cells in patients with UC.

Table (2) shows that UC patients had significantly higher level of serum IL-13 than control group 58.69 ± 10.32 pg/ml, 24.14 ± 5.66 pg/ml respectively (p value <0.0001).

Table 2: Means ± Standard deviation of serum IL-13 (pg\ml) level in Studied Groups

Groups	No.	Mean ± SD	t-test	P-value
UC Patients	46	58.69± 10.32	t = 18.954	P < 0.0001
Control	32	24.14± 5.66		

Furthermore, in way to differentiated between UC patients group and control group using the receiver operating characteristic (ROC) curve, table (3) and figure (2) show that serum IL-13 level could differentiate UC patients from control groups as well as it shows the cut-off values, sensitivity, specificity and the area under ROC curve.

In UC patients, the IL-13 cut-off value of 37 pg/ml had a sensitivity of 100% and specificity of 81.3%, with the AUROC of 0.914 (p-value=0.00001).

Table 3: Cut-off values, sensitivity, specificity and AUROC of IL-13 in the differentiation of UC patients from control

Proteins	Cut-off value	Sensitivity %	Specificity %	AUROC	p-value
IL-13 (pg\ml)	37pg/ml	100.0	81.3	0.914	0.000001

AUROC: Area Under receiver operating characteristic curve.

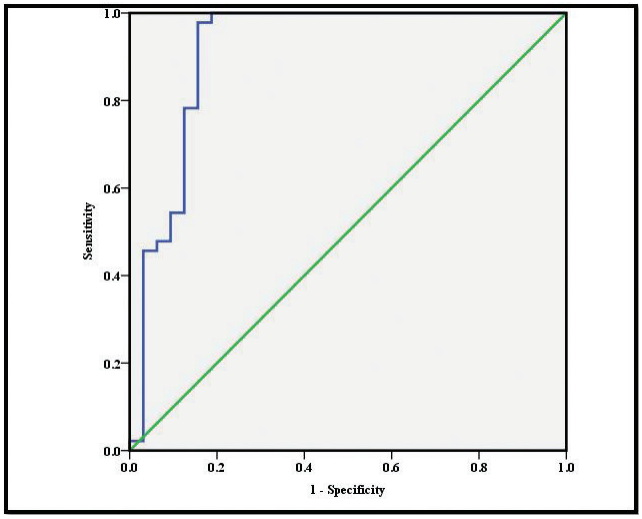


Figure 2: ROC curve of serum IL-13 level in UC patients

DISCUSSION

Ulcerative colitis (UC) is one of chronic inflammatory bowel diseases (IBDs) characterized by an activated mucosal immune system leading to damaged epithelial barrier function and tissue destruction. Many studies data propose that the normal flora in intestine is significant antigenic stimulus. In humans, because antibiotic treatment or diversion of the fecal stream can improve disease activity [12], while an inflammatory response to these antigens from the lumen is repressed in healthy humans, a destructive immune response is initiated. In UC has been intractable to classify using the Th1/Th2 profile, in patients with UC the production of IFN-γ or IL-12 is not elevated and thus the inflammation is obviously not a Th1 response, IL-4 is also decreased [13].

The reasons beyond rapid conception of the disease came primarily from the study of oxazolone colitis, a murine model of mucosal inflammation that like UC and is caused by IL-13– producing natural killer T cells (NKT). Based on these findings, a recent research reveal that UC as well related with increased IL-13 production by NKT cells and that the latter cells show reactivity to antigens presented by epithelial cells [14]. These immunologic changes may elucidate the truth that the inflammation in UC is a relatively superficial process marked by abnormalities of the epithelium.

Based to experimental animal research, a new research reveal that IL-13 plays a crucial role in an animal model of UC; oxazolone colitis. In this animal model, IL-13 is produced by CD1-reactive NKT cells [9]. Such IL-13–secreting NKT cells can also be found in the lamina propria and peripheral blood of patients with acute UC [14]. Therefore, we characterized the role of IL-13 as an effectors' cytokine that stimulate the intestinal pathology notice in UC. Because intestinal epithelial cells express CD1d [15] and are able to present glycolipid antigens directly to NKT cells, in inflamed mucosa epithelial cells must receive a constant IL-13 signal from NKT cells. Previous study showed that IL-13 has been found to be the key mediator for the development of allergic asthma [16]. Identical to our results in colonic

epithelial cells, this was due to a direct action of IL-13 on bronchial epithelial cells [17].

A previous study revealed that IL-13R were shown to be expressed in HT-29/B6 cells and in human colon epithelium of controls and patients with UC. Although IL-13 had already a spectacular influence when given alone, it was even enhanced when TNF-α was added. This could, for example, be clarified by the observation in endothelial cells that TNF-α enhances IL-13–induced STAT-6 activation. In contrast, the other important Th2 cytokine IL-4 had no significant effect on epithelial barrier in HT-29/B6 cell function, stressing the important role of IL-13 as a Th2-effector cytokine [1].

In addition to the action of IL-13 on apoptosis and tight junctions, also spreading and migration of epithelial cells after setting standardized lesions in the epithelium are inhibited by IL-13. In contrast to normal epithelial cells can rapidly close such gaps by compensation, this ability is highly minimized in cells under the effect of IL-13 and could elucidate the ulcer model lesions found in active UC. Our results demonstrated that patients with UC their T cell secreted large quantity of IL-13, which can stimulate epithelial apoptosis and expedite development of erosions and ulcer-type lesions by epithelial compensation interception.

During intestinal inflammation in UC, a considerable barrier dysfunction has indeed been documented. As a result of this, lumen diarrhea (leak flux diarrhea) happen due to increased barrier disturbance invasion of small antigens or noxious agents and loss of ions and water into the intestinal. The facilitated antigen uptake in response to IL-13 can induce more stimulation of lamina propria cells with the release of more IL-13, a perpetuation of inflammation could be induced to reveal direct proof for such an effector role for the Th2-cytokine IL-13. Therefore, patients with active UC can be treated with therapeutic antibodies as neutralization of IL-13 that could stop or decreased tissue destruction by activated immune cells [18].

CONCLUSION

The study results have revealed that mucosal IL-13 expression and serum IL-13 levels are increased in UC patients and might play essential role in the pathophysiology of IBD. Further research in considerable numbers of UC patients are important to detect the mechanisms involved in elevated mucosal IL-13 secretion and investigate the mRNA expression in UC.

Conflict of Interest: Nil.

Source of Funding: Self.

Ethical Clearance: After the approval of protocol by the Ethical Review Board, university of kufa/Iraq (No. 9-12/03/2014) and before enrollment, all subjects gave their written informed consent.

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The Protective Role of Hydatid Cyst against Colorectal Cancers

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ABSTRACT

Background: many research groups studied the relationship between cancers and parasitic infections as some parasite considereded to be the cause of malignancies, while others have antitumor activities against cancers. So the correlation between both is still a debate issue.

Aim: This study is designed to show if the patients with the hydatid cyst infection have protection against colorectal cancer, in other words, if hydatid cyst gives a percent of protection against colorectal cancer in future.

Method: A case/control study conducted from September 2017 to June 2018. Three group study have been involved who they attended different hospital in the al-Najaf city, the first one cystic hydatidosis patients (46 patients attended to different hospitals in Najaf city), the second group colorectal cancer patients(46 patients attended the Middle Euphrates Oncology center), the three group apparently healthy control (48 participants). Four types of tests were done, Chemiluminescence immunoassay (CLIA) for CEA measurement, CLIA for CA19.9 measurement, ELISA assay for human Echinococcus granulosus IgM (Eg IgM) and ELISA assay for human (Eg IgG), chi-square, p-value, and odds ratio were used for statistical analysis.

Results: Colorectal cancer show a high level of tumor marker CA19.9 (45.7%) and CEA (52.2%) compare to hydatid cyst and control was 0% for both, and the odd ratio, it was 1.7 for seropositive IgG and 2.09 for seropositive IgM.

Conclusion: This data suggest that hydatid cyst can occur in the patient with colorectal cancer.

Keywords: *colorectal cancer, hydatid cyst, the protective role*

INTRODUCTION

Different research studies reported the carcinogenic role of infectious agents in human(e.g., the bacterium *Helicobacter pylori*, and the hepatitis B, C viruses and the *human papilloma viruses*) [1], these infectious agents were responsible for about 2 million cases, mainly liver, gastric, cervix, and uteri cancers[2]. in parasitic infections, the matter is different although some parasites have the carcinogenic role like *Opisthorchis viverrini*, *Schistosoma haematobium* and *Clonorchis sinensis* [3, 4], but various research groups observed the antitumor activities of others such as toxocara canis[5], *Toxoplasma gondii* [6-12], *Trypanosoma cruzi*[13-19], malaria [20] these study have been investigated in experimental animals.

It has been shown that there are common antigens between hydatid cyst and cancer[21], and the immunization with human hydatic cyst fluid (HCF) induces antibodies against CT26 colon carcinoma cells and protects against tumor growth in mice[22].so we study the negative correlation between hydatid cyst and colorectal cancer.

PATIENTS AND METHOD

Study population: A case/control study was conducted on 140 participants during the period from September 2017 to June 2018. The study included into three groups: the first one (cystic hydatidosis group) involved 46 patients (male 18and females28, age range from10 to 65years, mean years38.5±17.3) with confirmed hydatid cyst infection by X-ray or CT-scan or underwent the operation. The second (colorectal cancer group) involved 46 patients (30male patients female 16patients, age range from 17to 80, mean years52±13.5) who were attended the Middle Elphurate Oncology center with histopathologically confirmed colon cancer (27) and rectum cancer (19). Other 48

apparently healthy individual (24 male and 24 female, age range from 14 to 70 years mean age 43.7±16.9), selected from the general population.

Inclusions criteria:

1. All hydatid cyst cases were examined and defined as clinically with hydatid cyst disease by surgeons and undergone investigations by imaging technique (ultrasound, MRI, X-Ray) according to the data sheet.
2. All patients with colorectal cancer were undergone with colonoscopy, pelvic and abdominal ultrasound and histopathological examination.
3. All colorectal patients are encored in middle Elphurate oncology center in the year 2017 and beginning 2018.
4. Male and female aged of control group between (10-70)years old in order to match the patients enrolled in this study.

Exclusions criteria:

1. All hydatid cyst cases without hepatitis, liver cirrhosis, smoking that elevates tumor marker.
2. Regarding colorectal cancer patients, we exclude Patients with recurrent CRC or with a history of another malignancy
3. Healthy Persons are without cancer or solid tumor, medical condition and chronic disease and we will detect human Echinococcus granulosus IgM and IgG.

Blood samples: Blood samples were collecting via vein puncture using 5ml disposable syringes, was put in gel tube and left to clot for 30 minutes at room temperature. And then centrifuged at 4000 RPM minute, stored by frizzing at -20°C until used.

Laboratory assays: The following commercial kits which utilized for estimation of serum level of anti-echinococcus IgG and IgM, CA19.9 and CEA in this study:

Table 1: list of kits used

Kits	Source
Human echinocccus granulsus IgM (Eg-IgM) ELISA kit	Biobase (chine)
Human echinocccus granulsus IgG (Eg-IgG) ELISA kit	Biobase (chine)
Elecsys CEA	Roche (Germany)
Elecsys CA19.9	Roche (Germany)

RESULTS

Table 2: P-value and percentage of Seropositive CA19.9 and Seropositive CEA in study group

Variables	HC(46)	Colorectal cancer(46)	Control(48)	p-value
Seropositive CA19.9	0(0%)	21(45.7%)	0(0%)	0.0001
Seropositive CEA	**0(0%)**	24(52.2%)	0(0%)	0.0001

Colorectal cancer show high level of tumor marker CA19.9 the percentage of seropositive CA19.9 is (45.7%) while hydatid cyst patient and control had 0% for both(P-value=0.0001), Also the percentage of seropositive CEA is (52.2%) compare to (0%) for both hydatid cyst patients and control(P-value=0.001).

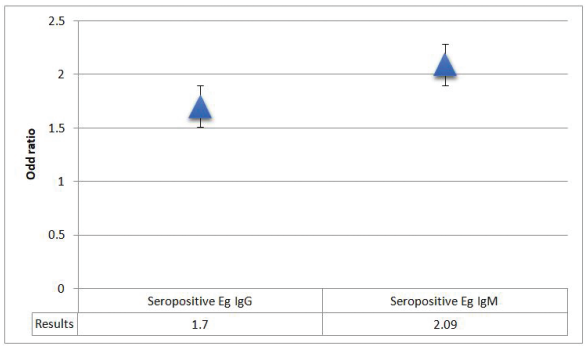

Figure 1: Odds ratio of seropositive human Echinococcus granulosus IgM (Eg IgM) and Seropositive human Echinococcus granulosus IgG (Eg IgG).

The cross-tabulation between colorectal cancer patients infection and healthy control revealed that cystic hydatidosis was more likely to occur in colorectal cancer patients than healthy control(OR= 2.09 for seropositive IgM) (non-protective) and (OR= 1.7 for seropositive IgG) (non-protective), all seropositive IgG and IgM were confirmed by Radiological techniques.

DISCUSSION

Colorectal cancer (CRC) globally is a major cause of illness and mortality [23], Colorectal cancer (CRC) is a multifactorial disease involving from genetic, lifestyle, and environmental factors [24]. in current study colorectal cancer and hydatid cyst can occur together, this study doesn't agree with the previous study done in turkey by Akgül et al.[25] who revealed a significant negative relationship between cancer and hydatid cyst.

The current study we have determined some tumor-associated markers, the carbohydrate antigen CA19.9 and carcinoembryonic antigen (CEA) which widely used for cancer detection in clinical practice [26, 27], many studies reported that simultaneous assessment of CEA and CA19-9 may increase the diagnostic sensitivity in CRC [28, 29].

CA19.9 is elevated in colorectal cancer patients compare controls and CH patients, this study is dissimilar with results acquired by Kamaes et al.[30] found that tumor marker CA19.9 elevated in HC and cancer patients compared controls, also disagrees with study done by Yuksel et al.[31] revealed that CA19-9 concentrations were significantly greater in CE patients in the presurgical compared with the control group.

CEA is low in HC patients and controls compared to colorectal cancer which agrees with a study done by Niścigorska et al.[32], which found that Alpha-fetoprotein AFP and carcinoembryonic antigen CEA were negative in all hydatidosis patients.

Our study revealed that after cross tabulation between colorectal cancer and healthy control found odd ratio, it was 1.7 for seropositive IgG and 2.09 for seropositive IgM so we considered there is weakly association between hydatid cyst and colorectal cancer.

In agreement with this conception a study done in Isfahan, Iran by Nodeh et al. [33], The results of this study showed that Mean tumor area of melanoma in mice received anti hydatid cyst antigens antisera, was not significantly different from those of control mice which received isotonic fluid, so the passive immunization with anti- hydatid cyst antigens of mice injected with melanoma cell tumor had no significant effect on melanoma tumor growth.

Our finding is in disagreement with the study done by Ali et al.[34], between 1985 and 2003 they followed and treated approximately 1200 patients with different hematologic neoplastic diseases, and only one of these individuals had concomitant liver hydatidosis and acute leukemia (1 infection out of 1200 hematologic malignancy patients)

The cause behind our finding as formerly infected patients with hydatid cyst presenting with colorectal cancer may have a skewed immune response from Th1 response to Th2 response or components of the parasite during an inactive non-treated *E. granulosus* infection may still exert effects on host pro- or anti-carcinogenic immune responses.

CONCLUSION

The observation of this data suggest that hydatid cyst can occur in the patient with colorectal cancer and the hydatid cyst don't have protection against colorectal cancer completely.

Conflict of Interest: Nil

Source of Funding: Self-funded

Ethical Clearance: Ethical clearance was approved by Ethical Committee of Karbala ,medical college.

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Pulp Response Capped by Brain Derived Neurotrophic Factor (BDNF)

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ABSTRACT

Background: Four neurotrophins (NTFs) are a family of structurally related proteins with specific effects on the developing nervous system and non-neuronal differentiating cells. The brain-derived neurotrophic factor (BDNF) has role in differentiation of pulp cells into mineralizing cells,and that was identified as survival factor , development and function of dental tissues.

Aim of the study: The study was designed to illustrate pulp response capped by brain-derived neurotrophic factor after mechanical trauma.

Materials and Method: Brain derived neurotrophic factor was used as pulp capped material for maxillary anterior teeth of (12)rat following the mechanical traumatized proceduce.Pulp reaction was studied histologically from the first cutting procedure ,followed by interval periods (48,72,168 hours) ,Six teeth for each period .

Results: Illustrated an enhancement of pulp healing represented by newly apposition of reparative dentine with presences of active angiogenesis followed by globular minerlization that coincides with proceeding interval time.

Conclusion: The study suggest that BDNF contributes in pulp healing and can be addressed to a more conservative treatment approach.

Keywords: *Brain derived neurotrophic factor;tooth structure;dental cell;dental pulp,pulp capping*

INTRODUCTION

Different neurotrophins include brain-derived neurotrophic factor (BDNF) , neurotrophin-3 (NT-3) and nerve growth factor (NGF) have differential roles in many tissues repair, and can be a potential target of intervention for promoting tissue healing.[1,2]

Brain-derived neurotrophic factor (BDNF) has an influence on the establishment of the dental innervation,and might have morphogenetic effects includes modulating the proliferation or differentiation of developing dental cells[3].In addition, they have also been shown to act as an osteogenic and angiogenic factor, and this neurotrophin can also enhance expression of the other factor ,like BMP-2, as well as the major angiogenic factor, VEGF, to promote bone formation, vascularization, and healing of the injury site.[4,5]

In this study, to clarify the actions of exogenous BDNF in dental tissue ,we choice traumatized dental pulp with application of BDNF as capped material.

MATERIALS AND METHOD

Twelfth healthy male(10–12-week-old) *Sprague-Dawley* rats (weight 250–300 g) were kept in the animal department of (National Center of Drug Control and Research /Iraq) at a constant humidity and temperature of 23°C according to the National Council's guide for the care of laboratory animals.

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Brain derived neurotrophic factor was used as pulp capped material for maxillary anterior teeth of the rat following the mechanical traumatized procedure.The experimental teeth were studied histologically (H&E stain) from the first cutting procedure ,followed by interval periods (48,72,168 hours) ,Six teeth for each period.

Lyophilised BDNF protein 10µg (ab9794)/Abcam,the protein was reconstitute in water to a concentration of 0.01mg/ml and used for experimental group.

METHOD

The tooth was washed with 0.2% chlorhexidine prior to cavity preparation. Then a classic class V cavity was prepared at the buccal aspect of the crown near the gingiva .pulp exposure was induced using dental explorer in the middle point of the cavity as closely as possible to a size 1mm[6]. Application of 1µml of BDNF was used as a direct pulp capping material.The cavity restored with amalgam filling.

The examination for 5µm section stained with haematoxylin and eosin stain (H&E) was done under light microscope for evaluation of pulp response following the proceeding periods.

RESULTS

Traumatic pulp (control group) after 24 hour ,shows cutting in enamel and dentine surfaces with displacement of odontoblast cell and some of them represented a dead cell.Figure(1)

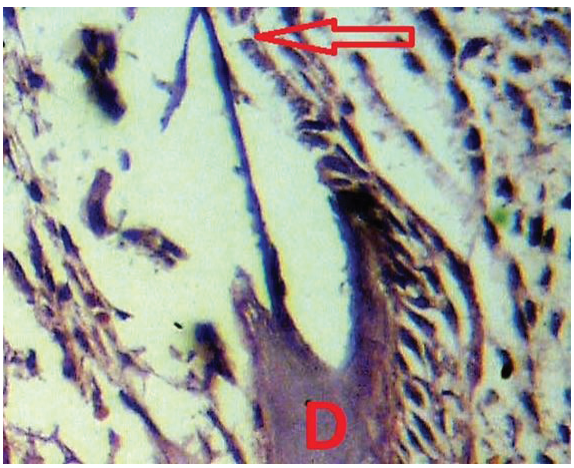
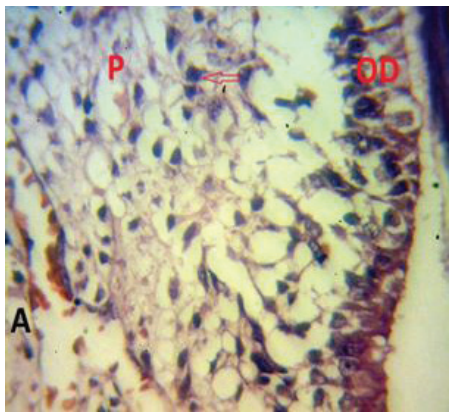
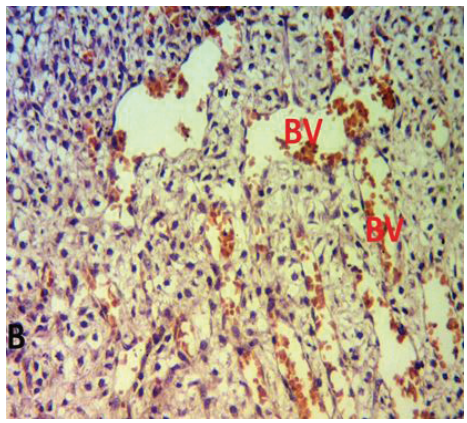


Figure 1: Traumatic pulp(control group) shows displacement of odontoblast cell,removing of enamel and dentine structure(arrow) at site of injury,intact dentine(D) away from the injuried site was identified.H&Ex 40

Traumatic pulp capped by BDNF after 48 hours, shows rearrangement of original odontoblast with addition of others by proliferating mesenchymal cells that differentiating to odontoblast .Pulp core illustrates active angiogeneis process that shows proliferation of endothelial cell with formation of new blood vessels.Figure(2)





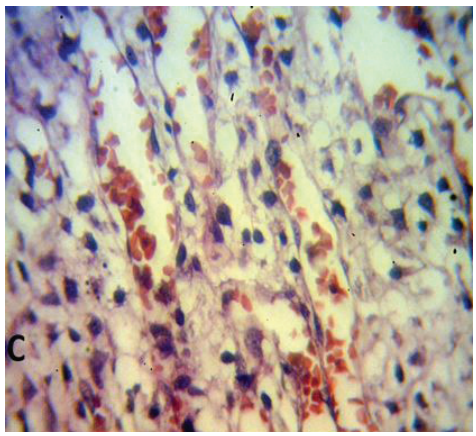


Figure 2: Traumatic pulp capped by BDNF after 48 h.
A. Rearrangement of odontoblast (OD) P=pulp,proliferating mesenchymal cells(arrow) H&E x20
B. Pulp core with active proliferation of blood vessels(BV)H&E x20
C. Magnified view for proliferated pulp cell and new blood vessels formation H&Ex40

Traumatic pulp capped by BDNF after 72 hours shows apposition of layer of new dentine (reparative dentine) demarked from the original dentine. Figure(3).

Figure 3: Traumatic pulp capped by BDNF after 72 h. shows apposition of reparative dentine(RD). Original dentine (D) can be recognized .H&E x20

Traumatic pulp capped by BDNF after168 hours (7 days) shows new dentine with minerlization in globules pattern. Figure(4)

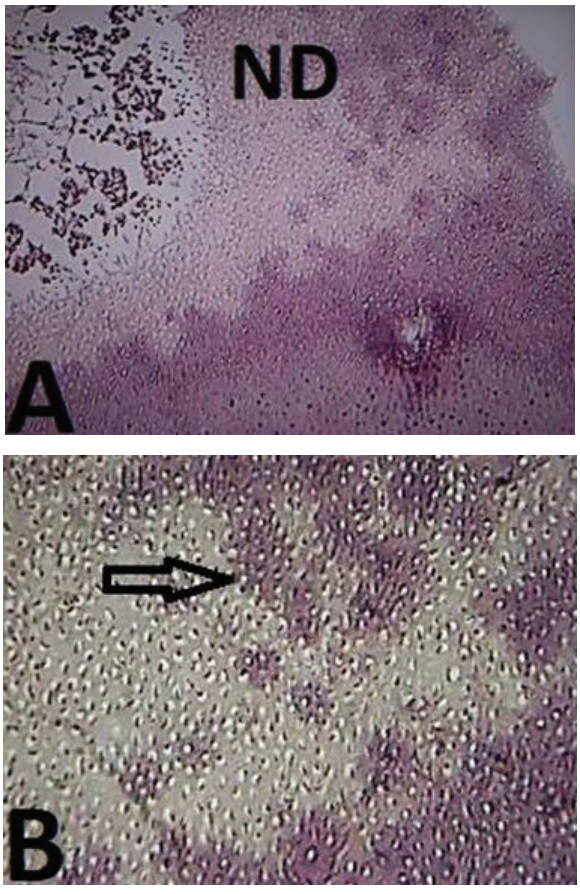


Figure 4: Traumatic pulp capped by BDNF after168 h (7 day). shows
A. new dentine formation (ND).H&E x20
B. globular dentine(arrow) .H&E x40

DISCUSSION

The neurotrophins regulate cell fate decisions, pruning and the expression of proteins, such as ion channels, transmitter biosynthetic enzymes and neuropeptide transmitters that play a role for normal neuronal function.[7] Continued presence of the neurotrophins is required to control synaptic function and plasticity, and sustain neuronal and non neuronal cell survival, morphology and differentiation.[8]

Brain-derived neurotrophic factor (BDNF), recognized to be expressed during tooth development ,and is involved in differentiation and proliferation in non-neuronal cells, such as endothelial cells and pulp cells specially mesenchymal cell.[9,10]

It was found also that BDNF increased the mRNA levels of dentin sialophsphoprotein, alkaline phosphatase, osteopontin, type I collagen and bone morphogenetic protein-2 and mineral deposition in cultures of pulp cells[11]

The present study is focused on using BDNF to help in regeneration of injuried pulp tissue and found that the regulation of functions of pulp cells and endothelial cells by BDNF culminates in the promotion of pulp tissue regeneration .[12] Furthermore, odontoblast cell differentiation in the early time and the faster response for developing reparative dentine,all these records of regenerative processes may stimulated by BDNF. The mechanism whereby BDNF regulates these functions should be elucidated.

CONCLUSION

Brain-derived neurotrophic factor (BDNF) shows active angiogenesis that affects pulp cell differentiation and deposition of reparative dentine.

Ethical Clearance: All work of this study had done according to the National Council's guide for the care of laboratory animals.

Source of Funding: Self

Conflict of Interest: Nil

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Quality of Food Bacteria in School Snacks and Canteens in East Jakarta Health Office Working Area in 2017

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ABSTRACT

Background: Snacks and canteens are food service providers for the community that can cause illness such as infection and poisoning. Foodborne diseases are caused by undesirable bacteria contamination in food. This research is to identify the quality of bacteria in school snacks and canteens in East Jakarta in 2017.

Materials and Method: The quality parameters of bacteria in food are *Escherichia coli, Salmonella sp.,* and *Staphylococcus aureus* with examination methods using tests set out in the National Standard of Indonesia No. 2897 of 2008. Data obtained from the examination results of food bacteria parameters were processed by using univariate tests with descriptive analysis method.

Results: Univariate results show that from 54 food samples from 30 canteens and 24 snacks, 10 (18.5%) food samples containing *Escherichia coli* bacteria and 2 (3.7%) food samples containing *Staphylococcus aureus.* Bacteria whereas *Salmonella sp.* not found in the 54 samples. Of the 10 food samples containing *Escherichia coli* bacteria, 6 (60%) samples came from the canteen and 4 (40%) samples came from snacks. *Staphylococcus aureus* bacteria came from snacks.

Conclusion: It can be concluded that *Escherichia coli* bacteria are the most common bacteria found in food samples and snacks are Food Processing Places with the most bacteria. From the conclusion, further research on factors that cause bacterial contamination in school snacks, canteens and other Food Processing Places is needed.

Keywords: *bacteria, canteens, school snacks*

INTRODUCTION

Foodborne diseases are infectious and have toxic properties, one of which is caused by consuming food contaminated with bacteria, including *Salmonella campylobacter*, *Escherichia coli*, *Listeria* or *Vibrio cholera*.[1] Food contamination is a public health problem worldwide, which results in foodborne diseases affecting humans every year.[2] Globally, in 2010, there were 420,000 deaths from foodborne diseases and 230,000 deaths from foodborne diseases caused by diarrheal diseases agents.[3] Food service sector is the most common place where foodborne diseases outbreak occurs.[4] Based on data from the Food Sanitation Hygiene Website, the Food Sanitation Sub-Directorate, types of Food Processing Places or better known as the food service sector including restaurants, catering services, drinking water depots, snacks, snack centers and school canteens. From these data, the number of Food Processing Places that are not qualified in terms of sanitary hygiene is 78.6% and the Special Capital Region of Jakarta province as the country's capital is the fifth in the province with the highest number of Food Processing Places but 58.5% of them are not qualified in terms of sanitary hygiene.[5]

Outbreaks source of food poisoning, among others, came from households (49.15%), snacks/fast food

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(20.34%), then followed by processed food (15.25%) and catering services (15.25%).[6] East Jakarta was selected as the research location because it was a city that has the most Food Processing Places in the Special Capital Region of Jakarta Province and the highest Food Processing Places that are not qualified in terms of sanitary hygiene, which was 61%.[7]

School snacks and canteens were selected because based on food poisoning cases in East Jakarta in 2016, many cases of food poisoning occurred in students. Based on data from the East Jakarta Health Office, it is known that in 2016 there were 6 cases of food poisoning consist of 2 cases caused by snacks, 2 cases caused by rice boxes, 1 case caused by cakes and 1 case caused by ready to drink beverages.[8] Therefore, this research was conducted to determine the quality of bacteria in the food served by school snack hawkers and canteens in the East Jakarta Health Office working area in 2017.

MATERIALS AND METHOD

This research was a descriptive analysis research design. Research data was the secondary data. Data was obtained from the results of bacterial examination on school snacks and canteens in East Jakarta in 2017 by the East Jakarta Health Office. Data from results of bacterial examination on food were then processed statistically by univariate test. Univariate test was used to clearly describe food and food hawkers contaminated with bacteria.

Snack and canteen samples in the East Jakarta area were selected using a purposive sampling technique. The food samples examined were 54 food samples with *Escherichia coli*, *Salmonella sp.*, and *Staphylococcus aureus* bacteria examination parameters. Food samples examination method used a method that has been established and regulated in the National Standard of Indonesia Number 2897 of 2008.

MPN *Escherichia coli* was carried out by estimation test, confirmation test and isolation-identification through biochemical tests of indole test, methyl red test, voges proskauer test and citrate test. The testing number of *Staphylococcus aureus* using the cup counting method spread on the surface of the media. The tests included preparation of media and reagents, identification tests with gram staining, coagulase testing and sequential petri dish calculations. Staphylococcus aureus testing is always accompanied by positive control. Identification of Salmonella sp. by growing *Salmonella sp.* on selective media with pre-enrichment and enrichment. Enrichment followed by biochemical and serological tests. Biochemical tests consist of urea test, indole test, voges proskauer test, methyl red tests, citrate test, lusine decarboxylase broth test, potassium cyanide test, confectionery test, malonate broth test, red lactose broth test, and sucrose broth red test, while for serological tests consist of polyvalent somatic test and polyvalent flagelar test. Salmonella sp. is always accompanied by using positive controls.[9]

FINDINGS

The number of samples in this examination is 54 food samples. Samples of food bacterial quality examination consist of 30 (55.6%) samples from canteens and 24 (44.4%) samples from snacks that are located in the East Jakarta Health Office working area (**Table 1**).

Table 1: Distribution of Quality Examination on School Snacks and Canteens in East Jakarta Health Office Working Area in 2017

Types of Food Processing Places	n	%
School Snack	24	44.4
Canteen	30	55.6
Total	54	100

The results of the food quality examination on Food Processing Places, namely canteens and snacks in the East Jakarta Health Office working area in 2017 consist of three parameters including *Escherichia coli*, *Salmonella sp.* and *Staphylococcus aureus.* The examination results show that there are 10 (18.5%) types of food samples that are not qualified or contained *Escherichia coli* bacteria. All samples are qualified for *Salmonella sp.* quality examination. Whereas in the examination parameters of *Staphylococcus aureus* bacteria are 2 (3.7%) samples that are not qualified or contained bacteria (**Table 2**). The results of this examination show that there are 12 food samples that are not qualified based on BPOM RI Number HK.00.06.1.52.4011 in 2009.[10]

Table 2: Results of Food Bacteria Examination on School Snacks and Canteens in East Jakarta Health Office Working Area in 2017

Bacteria Examination Parameters	Examination Results			
	Qualified		Not Qualified	
	n	%	n	%
Escherichia coli	44	81.5	10	18.5
Salmonella sp.	54	100	0	0
Staphylococcus aureus	52	96.3	2	3.7

Table 3: Distribution of Bacteria Examination Results on School Snacks and Canteens in East Jakarta Health Office Working Area in 2017

Bacteria Examination Parameters	Types of Food Processing Places			
	Canteens		School Snacks	
	n	%	n	%
Escherichia coli				
Qualified	24	54.5	20	45.5
Not Qualified	6	60	4	40
Salmonella sp.				
Qualified	30	55.6	24	44.4
Not Qualified	0	0	0	0
Staphylococcus aureus				
Qualified	30	57.7	22	42.3
Not Qualified	0	0	2	100

Table 3 shows that there are 6 food samples containing *Escherichia coli* bacteria from canteens. While in snacks, there are 4 samples containing *Escherichia coli* bacteria and 2 samples containing *Staphylococcus aureus*. Based on the results of bacterial examination, it is found that the number of food samples that does not meet the requirements is 12 food samples. The type of Food Processing Places contaminated with the most bacteria is 6 snacks of a total of 24 snacks. Meanwhile, Food Processing Places contaminated with bacteria in canteen category is 6 samples of a total of 30 canteen food samples.

Foodborne diseases can be caused by consumption of toxins or contamination of natural foods, such as pathogenic, toxic, bacterial and nonbacterial microorganisms, chemicals or other substances.[11] Foodborne diseases can be caused due to biological, chemical and foreign contamination that disrupt, harm and endanger human health.[10] Biological hazards that exist in food due to contamination by pathogenic microorganisms are the most dangerous contaminants among the three hazard categories namely physical, chemical and biological.[12]

The examination results show that *Escherichia coli* bacteria are the most common bacteria among the three parameters that include *Escherichia coli*, *Salmonella sp.*, and *Staphylococcus aureus*. Most *Escherichia coli* bacteria are found in food samples originating from canteens, 6 food samples, and 4 food samples are found in snacks. Food handler personal hygiene is one of the factors causing *Escherichia coli* contamination in food at Padang Restaurant in Manado City with a value of p = 0.002.[13] One of the research conducted on snacks, Elementary School of Timbang Deli Urban Village, Medan Amplas Sub-district, food handlers, cooking utensils, presentation methods and means of hawkers are factors that do not meet health requirements.[14] While the research conducted at the Faculty Canteen of X University obtained results that three factors that influence the *Escherichia coli* bacteria contamination in food include hygiene and sanitation factors in the processing process, cooking utensils and canteen environment.[15]

From several research above, it is known that *Escherichia coli* bacteria in food come from several external factors, namely the sanitation of the handler, environment and food equipment. *Salmonella sp.*, and *Staphylococcus aureus* are bacteria that cannot stand heat so that food with proper heating will not contain these bacteria.[16] Food samples based on the analysis results containing *Staphylococcus aureus* are most likely due to improper cooking process or contamination of raw food.

Bacteria in food can cause health problems and food poisoning.[17] Pathogen strains of *Escherichia coli* are the cause of severe diarrhea cases in all age groups through the resulting endotoxin.[18] One research show that there is a significant relationship between the presence of *Escherichia coli* bacteria in snacks with the incidence of acute diarrhea in elementary school children in Pancoran Mas Urban Village Depok with a value of p = 0.021.[19]

Based on data from the East Jakarta Health Office, it is found that in March 2016 there were food poisoning against three students after consuming snacks in the school canteen. Food poisoning also occurred in May 2016 to four elementary school students after consuming street food in front of the school.[8]

In 2017 Food Poisoning occurred to students of 184 Junior High School Pekayon in Cibubur Buperta Campsite with 225 victim. The results of food samples examination on uduk rice packages revealed that they contain *Escherichia coli*, *Staphylococcus aureus* and *Bacillus cereus* bacteria which were not qualified.[20]

One research on the quality of *Escherichia coli* bacteria in snacks at food stalls around Elementary Schools in Palembang City in 2010 found that the dominant factors of contamination were during the transportation of food (p = 0.020) and construction of food hawkers (p = 0.018).[7] While the research results on snacks at Elementary Schools in Cakung District in 2018, there is a relationship between Food Processing Places (p = 0.007) and food serving process (p = 0.02) with *Escherichia coli* bacteria contamination.[21] Based on the research results, it can be concluded that snacks are easily contaminated with bacteria because of various factors, including during the transportation of food, place to sell and process food and how to serve food. Decrease in food quality due to accidental microbial contamination comes from intrinsic factors, such as nutrient content, pH, redox potential and water activity associated with extrinsic factors, such as temperature, relative humidity and gas atmosphere.[22] Contamination can be controlled by proper cleaning and sanitation including using proper equipment and sterilized water in food processing.[23]

CONCLUSION

Escherichia coli bacteria are the most common bacteria among the three of food sample examination. School snacks obtained from the Food Processing Places around schools are food that have the most bacterial contamination. Subsequent research related to the factors that cause bacterial contamination in canteens and snacks is needed to determine the factors that should be evaluated by related parties to avoid illness.

Conflict of Interest: This research was conducted without competition or conflict of interest.

Source of Funding: This research project could not be carried out without support and source of funding by the grant from PITTA Program in University of Indonesia.

Ethical Clearance: This research‘s number of ethical approval from the Ethical Research Committee is 129/UN2.F10/PPM.00.02/2018 dated March 19th 2018.

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Borax Content in Foods Sold in a Campus and Its Trader Characteristics

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ABSTRACT

Borax is a substance that is commonly used as solder, a wood preservative, for cleaning, and as an antiseptic, but borax is often misused as a food preservative. The chemical borax has toxic effects that are carcinogenic when it accumulates in a body. A total of 77 food samples were tested for borax in the laboratory and the number of foods containing borax chemicals were obtained. It was found that 3.8% of the food samples tested positive for containing borax chemicals, which was from two samples of meatballs and one sample of curly noodles.

Keywords: *borax, food, canteen*

INTRODUCTION

Food additives are ingredients that are added to food or beverages to affect the nature or form of food, but they must meet the requirements[1].The food is stills contains harmful chemicals, such as formalin, borax, and textile dyes, which should be contained in the food because it can endanger health. These chemicals are used for the reason of reducing production costs and extending the food storage period[2].

In the short-term, the effects of borax can cause symptoms of malaise, nausea, vomiting of blood, diarrhea, tachycardia, anxiety, tremors, depression in the central nervous system, and can affect the pharynx and the eardrum membrane. Furthermore, the long-term effects of consuming borax-containing foods can lead to anorexia, weight loss, and irritation of the stomach and intestines, accompanied by indigestion, nausea, vomiting, mild diarrhea and gastroenteritis, injury to the kidneys, liver disorders, seizures, failure of the circulatory system and even cause death[3,4]. Repeated exposure can result in cumulative effects.

According to the World Health Organization (WHO)[5], experimental research on borax,in which it rats were given borax in food and drink in the short term, reveals that the rats developed testicular lesions. This research was conducted on experimental animals, so it can be said that borax is very dangerous for humans, judging by the effects produced in the experimental animals.

METHOD

This research uses descriptive research, utilizing a cross-sectional research design. This study contains a description of the knowledge of food traders and an examination of the borax chemicals in food sold by traders in the cafeteria of Depok Campus X, West Java,in 2017. There are 14 locations that have a cafeteria, which is where the research is located. However only ten sites were used in this study. The study sites are given using a code to meet the ethical criteria. This study is an umbrella study included in the study entitled "Borax and Formalin in Food in a Campus."

The population in this study are all traders who sell food in canteens in the Depok Campus X, for which there is a total of 260 traders. With respect to the number

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of food items used as food samples for the laboratory test for borax chemicals in food sold by respondents, there are 77 food samples from 77 respondents. The laboratory test to examine the food for borax is done using a Turble paper test. The researchers bought food samples that are suspected to contain borax chemicals from traders. Then each food sample was put into a plastic food-storage bag and placed inside a coolbox. The food samples were taken to the chemical laboratory of Faculty of Mathematics and Natural Sciences at the University of Indonesia. Where the distance between where the sample was taken and the laboratory distance is far enough, then the food sample was stored in a coolbox. However, if the distance between the sampling site and the laboratory is nearer and affordable, then the food sample was immediately sent for inspection.

The foods in the test are foods that are suspected to contain borax chemicals, such as meatballs, wet noodles, *cilok*, and sausage. An examination of the chemical substances in foods, conducted in the aforementioned chemical laboratory. The samples taken were directly submitted to the chemical laboratory. From the results of the testing in the laboratory, the data obtained was processed in descriptive form, giving a percentage for the chemical content of the food in Campus X and narrative about the knowledge of the traders.

The laboratory personnel performed the borax-content test procedure. While buying the food samples, the researchers also conducted interviews with the respondents or traders in the canteen, which were accompanied by the traders filling out questionnaires on their borax knowledge. In total 77 food samples from 77 respondents were used as the food samples for the laboratory test on borax chemicals in food sold by the respondents; the laboratory tests to examine the borax content was done using a Turble paper test.

RESULTS

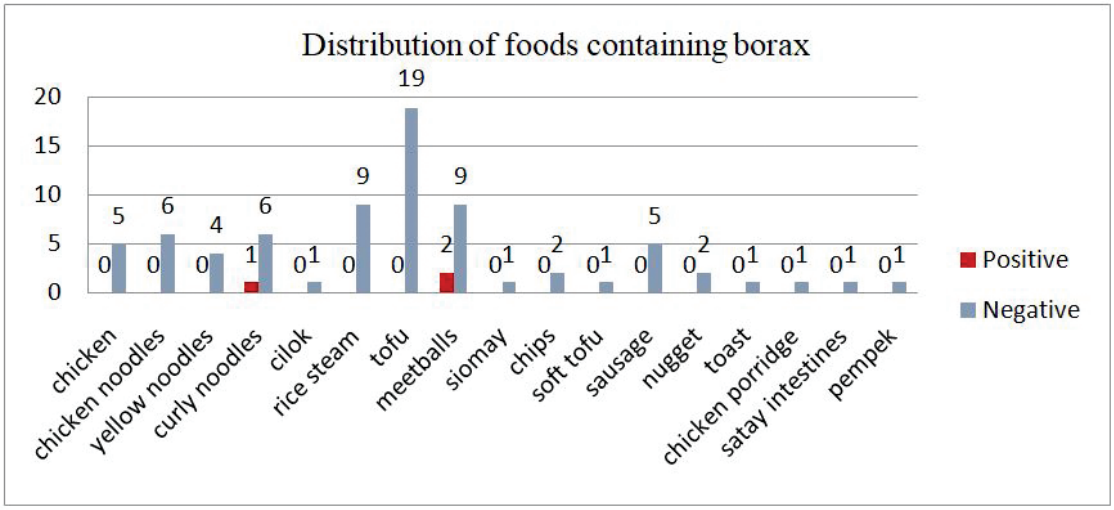

Figure 1: Distribution of foods containing borax chemicals

Based on figure 1,it can be seen that there are a number of foods containing borax chemicals. There are three food samples that tested positive for containing borax chemicals; i.e.,two samples of meatballs and one sample of curly noodles tested positive for borax chemicals.

Table 1: The relationship of trader characteristics to the content of borax chemicals in food

Characteristics	Borax (n = 77)				Total		p-value	OR	95% CI Upper–Lower
	Positive	%	Negative	%	N	%			
Age									
≤ 26 Years	0	0	16	100.0	16	100.0	1.000	1.052	0.993–1.113
> 26 Years	3	4.9	58	95.1	61	100.0			
Age	3	3.9	74	96.1	77	100.0			

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Gender									
Male	2	4.4	43	95.6	45	100.0	1.000	1.442	0.125–16.617
Female	1	3.1	31	96.9	32	100.0			
Total	3	3.9	74	96.1	77	100.0			
Education									
<High School	1	1.8	54	98.2	55	100.0	0.195	0.185	0.016–2.156
≥High School	2	9.1	20	90.9	22	100.0			
Total	3	3.9	74	96.1	77	100.0			
Knowledge									
Less ≤55%	3	4.7	61	95.3	64	100.0	1.000	0.953	0.903–1.006
Good >55%	0	0	13	100	13	100.0			
Total	3	3.9	74	96.1	77	100.0			

Table 1 shows the distribution of trader characteristics (age, gender, education and knowledge) with respect to the content of borax chemicals in food. The following section gives the distribution of food containing borax chemicals obtained from the food samples sold by the respondents at the time of the study with respect to these characteristics.

DISCUSSION

Based on the research results, the age variable has no significant relationship with the content of borax chemicals being present in the food sold by the trader. Age can determine how a person's thinking matures and how they can more easily receive information from others. A person who is older does not always have better knowledge than someone who is younger. A person with a high age (old) means it is possible for them to have a better knowledge of nutrition and food safety, due to having greater experience in gaining access to information about nutrition and food safety than younger people, but there is still the possibility that they are lacking information about the latest nutritional and food safety knowledge, which affects the way people act and their emotions.

From the results of this study it can be seen that the gender of the traders does not have a significant relationship to the presence of borax chemicals in the food sold by the respondents. Research with a larger number of males compared with the number of females was also conducted in Palembang[6]. This research is different from the research in Bangli Regency, where the all respondents are female[7]. In addition, other studies suggest that men and women differ when it comes to hygiene, and women are more likely to wash their hands in comparison to men[(6)]. In the results obtained for borax chemicals, for the respondents with less knowledge (≤ 55%), 4.4% sold foods with a positive result for containing borax chemicals and as much as 95.6% sold foods with that tested negative for borax. For those respondents with a good level of knowledge (> 55%), 0% sold foods that tested positive for containing borax chemicals and so 100% of respondents sold foods that tested negative for borax. With respect to the chemistry test for borax, there is no correlation between the level of knowledge and the food containing borax chemical substances because the results of the research show the level of knowledge on borax chemicals does not have a significant relationship to the risk factors for the chemical contents of food.

This research is also in line with research conducted in South Tangerang in 2016, which shows that for the respondents with less knowledge 53.3% sold food that tested positive for borax and 45.0% of respondents sold food that tested negative for borax, although this research uses a different number of case-control samples[8]. Having low knowledge of hazardous chemicals is one of the factors that causes food traders to use harmful food additives. Low levels of knowledge can encourage the selling of foods containing harmful chemicals that do not meet quality standards and harm health. Therefore, it is necessary to increase the knowledge of traders so that the circulation of foods containing hazardous chemicals can be reduced[9].

CONCLUSION

In this study, the respondents were divided by characteristics of age, gender, and education. The results of the study showed that most of the traders are over the age of 26 years, with the youngest aged 17 years and the oldest aged 65 years. With respect to gender in there are more male traders in the sample than female traders. Based on the level of education, it appears that most of the traders who have a low level of knowledge about borax chemicals have a low level of education; that is, they have not finished primary school, have not graduated elementary school, or are not junior high school graduates. In this research on the identification of borax in food samples sold on Campus X, only three food samples containing borax chemicals were found. With respect to the characteristics of age, gender, education, and knowledge, there is no significant correlation between any of those variables and the content of borax chemicals in the food sold in the canteen.

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The Condition of Sanitation Facilities with *Escherichia coli* Contamination on Food at University Cafeteria 2015

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ABSTRACT

Escherichia coli is a bacteria that can cause health problems in the human digestive system. The purpose of this study was to determine the correlation of sanitation facilities and contamination of *E. coli* on food in canteen of X University. Design of this study was cross-sectional by using secondary data from Susanna *et al* research "Sanitation and Hygiene on Food and Beverage being Served at Cafeteria of University 2015". Samples were taken from 16 locations with 80 sample. Independent variables were clean water facilitation, sewage disposal, toilet, trash can, hand washing facility, utensils washing facility, food washing facility, and insect and mouse barrier equipment. The dependent variable was food contamination by *E. coli*. The result of this study indicated that 58.8% (n=47) of foods was contaminated. Bivariate analysis showed p value which was more than 0.05. Therefore, the research hypothesis was rejected which meant that all sanitation facilities had no relationships to contamination of *E. coli*. This study suggests HSE (Health, Safety and Environment) agent in the X University to do routine examination for bacteriological quality on food and beverages and the next reseacher to investigate *E. coli* on foodstuff swab samples, cooking swab samples, water samples and rectal swab.

Keyword: *E. coli, sanitation facilities, food*

INTRODUCTION

Escherichia coli (*E. coli*) is a large and diverse group of bacteria commonly found in human intestines and warm-blooded organisms[1,2]. Most of them are harmful to human health (such as Shiga toxin-producing *E. coli*) and a small part is important for the health of the human digestive[1]. Based on WHO, every year there are 1 in 10 people (600 million) suffering from foodborne diseases and 420,000 deaths[3]. Through it, 550 million people are sick and 230,000 deaths are caused by diarrheal disease[3]. Diarrhea caused by *E. coli* results 63.000 deaths from 230,000[3].

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Foods which have a high risk of bacterial contamination are made from meat (high protein) such as grilled chicken, *kremes* fried chicken, and so on, as well as processed foods using water such as beef *tongseng*[4] and fast food such as *ketoprak* and *gado-gado* prepared by hand directly[5] while beverage is processed by using cold water (such as ice) which potentially becomes source of disease transmission[6].

E. coli contamination is caused by several risk factors. One of them is poor sanitation[7]. The sanitation includes clean water facilities, washing machines, physical condition of latrines, dustbins, toilet facilities, sewage conditions, and the presence of animals[7].

Canteen is one of the most commonly case found about *E. coli* contamination, such as in University. X Campus is a famous university in Indonesia which consists of 48,000 people and has several faculties and majors. If the food and beverages which are consumed contain *E. coli* bacteria, they will cause many victims of illness either food poisoning or other diseases. Therefore, it is necessary to observe and supervise periodically through this research[8].

METHOD

The study used a *cross-sectional* design by secondary data analysis of Susanna et al's 2015 study entitled «Sanitation and Hygiene Research on Food and Beverages on Sell in University X Cafetaria 2015». Research aimed to investigate the relationship of sanitation facilities with food contamination by *E. coli*. Samples are food which made from meat (high protein), fast foods served in a cold state, and cold drinks from water (such as ice). The number of samples are 80. Food was examined with Eosin Methylen Blue Agar (EMBA) medium and Colony Forming Unit (CFU) measurements. In addition, interviews were conducted with questionnaires of 80 food handlers. By reviewing the questionnaire, researcher selected available variables according to the purpose of research. Data analysis used SPSS software such as univariate analysis to describe all variables of research and bivariate analysis to know the relationship between independent and dependent variable and test the hypothesis by using *Chi Square*. Dependent variable is *E. coli* contamination in food. Meanwhile, the independent variables are sanitation facilities (clean water facilitation, sewage disposal, toilet, trash can, hand washing facility, utensils washing facility, food washing facility, and insect and mouse barrier equipment).

RESULTS

Table 1: The relationship of sanitation facilities to *E. coli* contamination on food

Sanitation Facilities Criteria	*E. coli Contamination*				Total (n=80)		p value	OR	95% CI
	Positive (n=47)		Negative (n=33)		n	%			
	n	%	n	%					
CLEAN WATER FACILITATION (Amount sufficient)									
No	4	8.5	1	3.0	5	6.3	0.399	0.336	0.036–3.151
Yes	32	97	43	91.5	75	93.8			
SEWAGE DISPOSAL (Wastewater flows smoothly)									
No	3	6.4	5	15.2	8	10.0	0.264	2.619	0.58 –11.829
Yes	44	93.6	28	84.8	72	90.0			
TOILET (Clean)									
No	8	17.0	5	15.2	13	16.3	0.202	1.196	0.351–4.074
Yes	39	83.0	28	84.8	67	83.8			
HAND-WASHING FACILITY (Clear water is sufficient)									
No	6	12.8	7	21.2	13	16.3	0.365	1.840	0.556–6.084
Yes	41	87.2	26	78.8	67	83.8			
TRASH CAN (Trash is transported after full)									
No	7	14.9	5	15.2	12	15.0	1.000	1.020	0.294–3.544
Yes	40	85.1	28	84.8	68	85.0			
UTENSIL WASHING FACILITY (Separated with food washing facility)									
No	37	78.7	23	69.7	60	75.0	0.512	0.622	0.224–1.723
Yes	10	21.3	10	30.3	20	25.0			
FOOD WASHING FACILITY (Separated with utensil washing facility)									
No	37	78.7	23	69.7	60	75.0	0.512	0.622	0.224–1.723
Yes	10	21.3	10	30.3	20	25.0			

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INSECT AND MOUSE BARRIER EQUIPMENT									
Each ventilation is fitted by insect wire									
No	45	95.7	32	97.0	77	96.3	1.000	1.422	0.124–16.364
Yes	2	4.3	1	3.0	3	3.8			
Each ventilation is fitted by rope bars									
No	46	97.9	33	100	79	98.8	1.000	-	-
Yes	1	2.1	0	0	1	1.3			
Water reservoir has a lid and free of mosquito larvae									
No	28	59.6	22	66.7	50	62.5	0.640	1.357	0.536–3.437
Yes	19	40.4	11	33.3	30	37.5			

According to the tables above, that all criterias have a p value greater than 0.05. Thus, the hypothesis is rejected which means there is no relationship of sanitation facilities with E. coli contamination on food.

DISCUSSION

Based on the results of the analysis, all sanitation facilities are not associated with *E. coli* contamination on food while the amount of contamination is large, 47 food samples (58.8%). Of the 47 food samples, the locations A, B, D, G and M provide a high amount of contamination. This is probably caused by a method that is carried out only until the observation stage. Other factors that may cause contamination have not been linked, such as personal hygiene food handlers[9], food processing[10], food storage and selection, sanitation equipment, etc[11]. Procedure of samples examination and food specimens is also insufficient because it is only examines food samples and has not examined foodstuff swab samples, cookstuff swab samples, water samples and rectal swabs[12].

Clean water facilities are only examined on physical quality and have not demonstrated biological, chemical and radioactive qualities[13,14]. This facility can contaminate through the process of washing food equipment, food processing and personal hygiene food handlers. Research also has not separated observations on waste water disposal facilities from contaminated kitchen, bathroom, WC, and rainwater channels[12]. Toilets and hand-washing facility are required in Personal Hygiene in which, at least, a toilet is available for 30 people and a hand wash is available for 10 people[12]. The trash cannot also be neglected because it can invite insects (such as cockroaches, flies, etc.) and mice reproduction and become vectors carrying bacterial agents in food[15]. Utensils washing facility should apply the basic principle of washing tableware consisting of three parts such as first basin is washing, second basin is cleaning and third is disinfection bath. Food-washing facility is not only about infrastructure but also how the handlers are washing uncooked and cooked food[12]. Insect and mouse barrier equipment can reduce the risk of vectors contaminating food.

Although all sanitation facilities have no relationship, this factor cannot be ignored. This facility can reduce the risk of food contamination through relationship to other factors such as personal hygiene food handlers, equipment washing process and lack of vector quantities in canteen environments.

CONCLUSION

The study found that food contamination by *E. coli* in the canteen was more than 50%. Sanitation facilities including clean water, sewage disposal, toilet, trash can, hand-washing facility, utensil washing facility, food washing facility, and insect and mouse barrier equipment have no significant association with *E. coli* contamination in foods.

Conflict of Interest: Authors declare that there is no competing of interest.

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Method and Frequency of Stethoscope Cleaning among Respiratory Therapists in Intensive Care Units at KAMC, Riyadh

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ABSTRACT

Nosocomial infection identified as a major problem that affects the health care quality and a leading cause of morbidity, mortality and health care cost [(1)].Moreover, nosocomial infection remains a significant risk for hospitalized patients. Medical devices including stethoscope approved as potential source of nosocomial infection.

Method: A cross sectional study performed to identify method and frequency of stethoscope cleaning among respiratory therapists in intensive care units in King Abdul-Aziz Medical City (KAMC) in Riyadh., KSA. The data was collected from 64 respiratory therapist both RT I and RT II. Self-administered questionnaire designed and collected data from ICU respiratory therapists. The questionnaire have 5 main sections, including personal characteristics, the awareness of importance of the subject, frequency of stethoscope cleaning, method of stethoscope cleaning, and barriers of stethoscope cleaning.

Result: Study variables entered into SPSS software. result showed that 79.7% of the samples did not received proper training on cleaning technique of stethoscope. Of the total population result shows that 89.1% of the samples agree that the cleaning of stethoscope is important. it is also shows that the major barrier of cleaning of stethoscope is forgetfulness, while concern of damaging the stethoscope has the lowest frequency, and lack of time or too busy has a percentage of 40.6%.

Discussion and Conclusion: In summary, this study found that the highest percentage of RTs at King Abdul-Aziz Medical City has not received previous information on stethoscope cleaning. it isimportant for policy-makers to initiate education programs. In addition, this study shows that the major barrier of stethoscope cleaning is forgetfulness; according to this, we suggest an existence of warning posters to remind RTs and other health care providers of stethoscope cleaning.

Keywords: *Stethoscope Cleaning, Frequency of Cleaning, Method Cleaning, Barriers of Cleaning, Respairatory Therapist.*

INTRODUCTION

Nosocomial infection identified as a major problem that affects the health care quality and a leading cause of morbidity, mortality and health care cost [(1)]. Moreover, nosocomial infection remains a significant risk for hospitalized patients. Medical devices including stethoscope approved as potential source of nosocomial infection [(1)].

The stethoscope invented in 1816 by the French physician, Rene Laennec, allowed for full examination of the thorax for the first time that became an almost

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universal tool in the medical field [2]. On the other hand, stethoscope recognized as a potential vector for bacterial infection over 30 years ago [3]. Moreover, publications have suggested that stethoscope could be a source of infection due to their continuous contact with many patients and because of their universal use by medical providers [2]. Likewise, the diaphragm and earpieces of health care provider's personal stethoscope, and bedside stethoscope are frequently colonized with bacteria [4]. The majority of lab results demonstrate a colonization of gram-positive bacteria [5]. In addition, results can be harmless as normal skin flora or deadly as methicillin-resistant staphylococcus aureus (MRSA) and vancomycin-resistant enterococci (VRE) [6-7].

Despite these findings, the policy of stethoscope cleaning method and frequency is not established yet [8]. Studies show that regular cleaning can greatly reduce the contamination of stethoscope with bacteria [4]. Therefore, due to the importance of stethoscope cleaning in reducing the infection and the lack of available information globally and in Saudi Arabia about the method and frequency of stethoscope cleaning by medical practitioners. The aim of this proposed study was to identify the method and frequency of stethoscope cleaning among respiratory therapists in intensive care units in King Abdul-Aziz Medical City (KAMC), Riyadh.

METHOD

A cross sectional study performed to identify method and frequency of stethoscope cleaning among respiratory therapists in intensive care units in King Abdul-Aziz Medical City (KAMC) in Riyadh., KSA. The data was collected from 64 respiratory therapist both RT I and RT II. Eligible to participate in this study were all respiratory therapists who are currently working in intensive care units at KAMC.

Self-administered questionnaire designed and collected data from ICU respiratory therapists. The questionnaire have 5 main sections, including personal characteristics, the awareness of importance of the subject, frequency of stethoscope cleaning, method of stethoscope cleaning, and barriers of stethoscope cleaning (see appendix 1).

Questionnaire is distributed by the researchers to all respiratory therapists in intensive care units on their free time, along with a letter of information about the study and its objectives. Staff consent and complete the anonymous questionnaire at their convince time by themselves and return them to the researchers.

Data Analysis: Study variables entered into SPSS software. A backup soft copy version as well as a hard copy print dated, saved and secured after each data entery update. The data were managed and anlysis using SPSS, P value > 0.005 was considerd statistically significant.

Ethical Considerations: King Abdullah International Medical Research Center (KAIMRC) approved the study proposal. The study maintained the confidentiality and anonymity of the respondents. Since the study used a self-administered questionnaire without asking for any identification, then filling of the questionnaire is taken as assent. The respondents informed about the purpose of the study, either verbally or as a written paragraph on the cover page of the questionnaire especially related to how the data used and for what purpose.

RESULT

Table 1: demographic characteristic of portions (n = 64)

		Frequency	Percentage %
Gender	Male	48	75
	Female	16	25
Job title	RT I	49	76.6
	RT II	15	23.4
Years of experience	<1 year	11	17.2
	1-5 year	35	54.7
	>5 year	18	28.1
Nationality	Saudi	40	62.5
	Filipino	23	35.9
	Other	1	1.6

Table 1, shows that there are 75 % of the samples are male and 25 % are female, 76.6 % are RT I and 23.4 % are RT II, approximately half of the samples have been working at the institution for 1-5 years, more than the third of the samples are Saudis.

Table 2: training on cleaning technique of stethoscope (n = 64)

	Frequency	Percentage
Received proper training	13	20.3
Not Received proper training	51	79.7

Table 2, shows that 79.7% of the samples did not received proper training on cleaning technique of stethoscope.

Table 3: The importance of cleaning stethoscope (n = 64)

	Frequency	Percentage
Agree	57	89.1
Disagree	7	10.9

Table 3, shows that 89.1% of the samples agree that the cleaning of stethoscope is important.

Table 4: frequency of cleaning stethoscope (n = 64)

	Frequency	Percentage
Between every patient	24	37.5
Several times a shift	13	20.3
Once daily	15	23.4
Several times a month	3	4.7
Other/Cannot remember	9	14.1

Table 4, shows that 24 RTs clean their stethoscope between every patient, 13 RTs do it several times a shift, 15 RTs do it once daily, 3 RTs do it several times a month, and 9 RTs can't remember how frequently they clean their stethoscopes.

Table 5: frequency of stethoscope cleaning (RTs point view). (n = 64)

	Frequency	Percentage
Between every patient	47	73.4
Several times a shift	7	10.9
Once daily	6	9.4
Several times a month	3	4.7
Other	1	1.6

Table 5, shows that most of the RTs (73.4%) believe that the frequency of cleaning stethoscope should be between every patient and only 4.7% of RTs believe that (several times a month) is the proper frequency.

Table 6: method of cleaning of stethoscope (n = 64)

	Frequency	Percentage
Alcohol swap	33	51.5
Alcohol hand gel	16	25.0
Alcohol spray	33	51.6
Anti-septic wipes	7	10.9
Soap and water	0	0
Dry cloth	0	0
Other	0	0

Table 6, shows that half of the RTs prefer using Alcohol swap or Alcohol spray, and 25% of RTs prefer to use alcohol hand gel, and the lowest percentage is for Anti-septic wipes.

Table 7: Barriers of stethoscope cleaning (n = 64)

	Frequency	Percentage
Lack of time or too busy	26	40.6
Forgetfulness	33	51.6
Lack of access to supplies	3	4.7
Laziness	18	28.1
Lack of knowledge regarding best cleaner	18	28.1
Sharing of stethoscopes	4	6.2
Concern for damaging one's stethoscope	2	3.1
No barriers identified	8	12.5
Unspecified	5	7.8
Stethoscope shape/design	0	0

Table 7, shows that the major barrier of cleaning of stethoscope is forgetfulness, while concern of damaging the stethoscope has the lowest frequency, and lack of time or too busy has a percentage of 40.6%.

DISCUSSION

This study found that most of RTs at King Abdul-Aziz Medical City in Riyadh, Saudi Arabia did not receive a proper cleaning techniques of stethoscope, while a previous study by O. Hyder in Pakistan reported that the highest percentage of physicians and medical student have received information on cleaning stethoscope, this finding does not match our results, which may refer to the differential of samples (RTs versus physicians and medical student)[8]. However, the majority of RTs agree that cleaning of stethoscope is important.

It was noted that 37.5% of RTs clean there stethoscope regularly between every patient, this frequency is higher than a study done by O. Hyder reported that none of respondents has ever clean their stethoscope between every patient, and also the frequency is higher than a previous study in Philippines done by Africa-Purino et al.[6][8]. Yet, the frequency of cleaning is low considering the risk of cross-infection posted by contamination of stethoscope[5][7].

Furthermore, this study found that the most popular method of cleaning is with alcohol swap that shown to be a good and effective disinfectant on the level of contamination of the diaphragm, this result match a previous study by Tang et al[(2)(6)(8)(9)].

Moreover, our study shows that the highest percentage of barriers of stethoscope cleaning among RTs is forgetfulness. While a previous study by Tang et al.reported that lack of time or too busy is the first main barrier of stethoscope cleaning among physians and nuerses. However, Tang et al. reported that forgetfulness is the second main barrier of stethoscope cleaning, which approximatly matches our result, with consideration of the differential of samples (RTs versus physians and nuerses) and the sample size differance[(9)].

CONCLUSION

In summary, this study found that the highest percentage of RTs at King Abdul-Aziz Medical City has not received previous information on stethoscope cleaning. This finding is important for policy-makers to initiate education programs informing RTs about the proper method and frequency of stethoscope cleaning. In addition, this study shows that the major barrier of stethoscope cleaning is forgetfulness; according to this, we suggest an existence of warning posters to remind RTs and other health care providers of stethoscope cleaning.

Conflict of Interest: Nil

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Hepatoprotectie Effect of Bromelain against Gentamicin-Induced Hepatic Damage in Rats

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ABSTRACT

This study was conducted to assess the protectie effect of bromelain (BROM) , on any hepatotoxicity induced by gentamicin (GNT) in rats. GNT is used for the treatment of Gram-negatie bacterial infections . Howeer, GNT in administration is limited because of hepatotoxicity. Twenty four rats were diided into four groups: control , (1 ml/kg Saline orally) and GNT (100 mg/kg) , intraperitoneally (i/p)) , and GNT (i/p) plus BROM (20 mg//kg) orally , and GNT (i/p)) plus BROM (40 mg//kg) orally for (10) consecutie days . All the rats were killed on the (11) day of the experiment , and then the blood , and liers samples were taken GNT induced hepatotoxicity was proed by a significant ($p < 0.01$) reduction in the body weight ,and a significant ($p < 0.01$) increased serum glutamic oxaloacetic transaminase (GOT) , serum glutamic-pyruic transaminase (GPT) , Total protein (TP) , Malonaldehyde enzyme (MAD) and histopathological changes.Protectie hepatic toxicity effect and oxidatie damage caused by GNT significantly ($p < 0.01$) increasing in body weight and significantl ($p < 0.01$) decreasing GOT , GPT , TP , MAD and improing tissue morphology in BROM (20 mg//kg) while ,BROM (40 mg//kg) has little effect . These results confirm that BROM (20 mg//kg) antioxidant effects can protect GNT-induced hepatotoxicity in rats.

Keywords: *Bromelain, Gentamicing, Anti-oxidantn, Ratsf*

INTRODUCTION

One of the most widely used class of drugs are antibiotics . These drugs preent many problems caused by infections. Antibiotics hae side effects and can damage arious body organs including lier, kidney , brain, blood, skin , eyes . [(1)]. Aminoglycosides antibiotics, especially GNT are widelyc used to treat seere infections of Gram-negatie bacteria [(2)]. The main side effects include lier damage that is one of the major factors of lier inefficiency in a significant number of people taking this medication Therefore taking these medications face limitations due to the fact that one of the major side effects of Gentamicin is creating hepaotoxicity [(3,4)].

Hepatotoxicity induced by GNT in experimental animals were reported [(5)]. GNT enhances the oxidatie stress and generation of free radicals and causes inhibition of the antioxidant defense system in the lier. It suppresses the non-enzymatic and enzymatic antioxidants , which leads to an oer production of Reactie Oxygen Species (ROS). This will cause damage to membrane lipids , proteins and nucleic acids which leads to lier toxicity , dysfunction and injury[(6)].

BROM is a crude extract deried from pineapple plant(Ananas comosus) and contains mixture of proteolytic enzymes and non-enzymatic substances . BROM's releance is eident from reports of its beneficial effects in resoling swelling, inflammation, bruising and pain associated with trauma and surgery . BROM is not only effectiew but also has fewer aderse effects as compared to non-steroidal anti-inflammatory drugs (NSAIDs) [(7,8)]. BROM may hae digestant actiity and has putatie anti-inflammatorye , immunomodulatory, anti-diarrheal, anticarcinogenic and wound healing actions and arthritis[(9)].

MATERIALS AND METHOD

This study was conducted at the period April 2018 in physiology department of eterinary medicine of AL-Qassim green uniersity.

Drugs: BROM 100% Naturalj was purchased fromj Superior Labs. Inc. San Diego USA. GNT , Gentaject 10% was purchased fromu KEPRO- HOLLAND. Ketaminej 10% inj. from KEPRO- HOLLAND. Xylazine, XYL- M2 , MD- Belgium.

Experimental Rats: The number of laboratory animals used in the experiment are twenty four healthy male rats at aged (130-140) days and weighted (150- 160) grams , obtained from the animal house of the College of eterinary Medicine, AL-Qadisiya Uniersity , were kept for one week as acclimatization period before the starting of the experiment , all rats were feed on concentrated food (pellets) and were gien plain water, the animals room temperature was (19-23)°C, and the humidity was (45 -55), that room was washing and sterilization once a week .

Experimental Design: After a quarantine period of [10] days, the animals were diided into the four groups, each group consist of (6) rats and GNT was injected (i/p) at the dose of 100 mg/kg/day for (10) consecutie days. The dose of GNT was selected according to preious studies that demonstrated significant hepatic toxicity. [5,10]. and they receied the treatment as follows:

Group I: Control (1 ml/kg Saline orally) for (10) days.

Group II: GNT (100 mg/kg i/p) for (10) days.

Group III: GNT (100 mg/kg i/p) + BROM (20 mg/kg orally by stomach tube) for (10) days.

Group I: GNT (100 mg/kg i/p) + BROM (40 mg/kg orally by stomach tube) for (10) days.

Body weight: All animals were weighed before and after treatment with using digital electronic balance.

Serum Preparation: At the end of experimental period, rats were fasted for (10) hrs , anaesthetized with ketamine (75 mg/kg) combined with xylazine (2.5 mg/kg). [11]. Blood samples were collected by heart puncture in non- heparinized tubes , centrifuged at (4000) rpm for (10) minutes [12]. After separation the serum from the clot , using a sampler, the samples were frozen and maintained in -20 until used to measurement in order to subsequent estimation of (GOT) , (GPT) , (STP) and (MDA) leel concentration .

Histopathological techniques: It has been conducted according to[13].

STATISTICAL ANALYSIS

The statistical results of the data were analyzed according to Complete Randomized Design (C.R.D.) [14]. The mean differences between the aerages of the studied traits were determined at the probability leel of (0.01) using the Duncan test [15]. Statistical data were analyzed using the (SAS,2010)[16].

RESULTS

Body weight: No deaths were obsered in the groups of rats that were gien GNT either alone or in summation with BROM.I/P injection of GNT produced significant (P<0.01) decrease in the body weight compared to controln. The animals were weighe before and after the experiments ,whereas, treatment with BROM (20 mg/kg) produced significant (P<0.01) improed on the body weight compared to GENT control rats (Table 1).

Effect of BROM on GNT induced alterations in hepatic function parameters: Effect of GNT induced reduction in lier function in rats. A significant ($p < 0.01$) increased in serum (GOT) , (GPT) , (TP) leels compared to the control group and significant ($p < 0.01$) increase in (MDA) leels compared to control was obsered after (10) days of treatment with GNT Whereas, treatment with BROM (20 mg/kg) preented GNT induced increase in serum (GOT) , (GPT) , (STP) leels ($p < 0.01$) and produced significant ($p < 0.01$) reduction on the (MDA) compared to GNT control rats . Howeer, BROM (40 mg/kg) it has less effect than , BROM (20 mg/kg) on body weight , serum (GOT) , (GPT) , (TP) leels and (MDA) leel significantly (P<0.01) compared to GNT control rats (Table 2).

Histopathological Examination: Light microscopic of lier examination using H&E (400X) stain in control rats showed the normal structure (Fig:1A). Histopathological effects of GNT on lier of treated rats are presented in rats treated with GNT for (10) days showed many seere histopathological alterations resulted in the damage of lier structure along with tissue necrosis with small remaining of normal tissues (Fig 1B). Moreoer , an extensi necrosis with large number infiltration cells (Fig 1C). Lier rats treatment with GNT and BROM (20 mg/kg) showed formation large immunological granuoloma (Fig 1D) Lier rats treatment with GNT and BROM (40 mg/kg) showed dilation of sinusoid that filled with inflammatory cells , with Kupffer cells seen (Fig 1E).

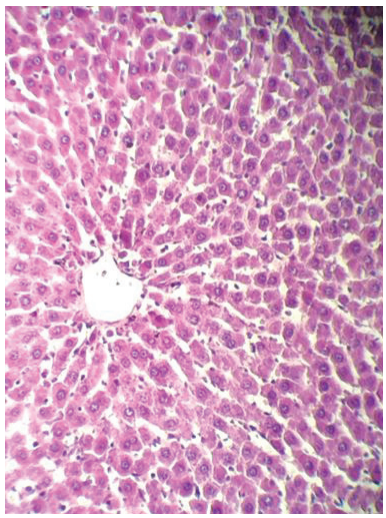

Figure 1a: Photomicrograph of the lier using H&E, lier of control rats H & Ex100

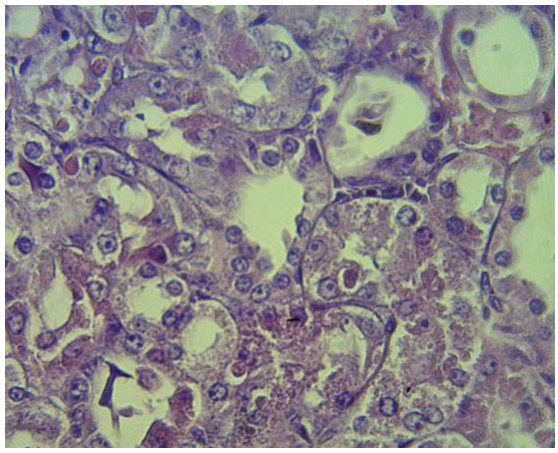

Figure 1b: lier of GNT-induced rats H&E x400

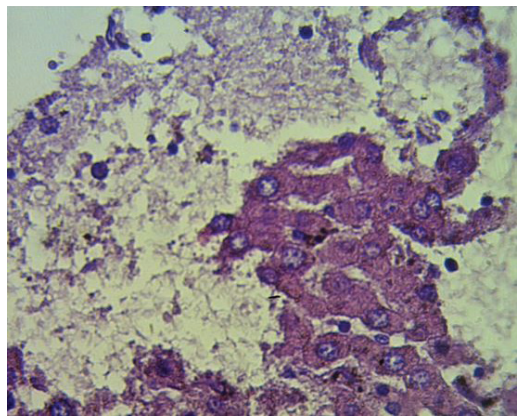

Figure 1c: GNT and BROMP (20 mg/kg) H&E x400

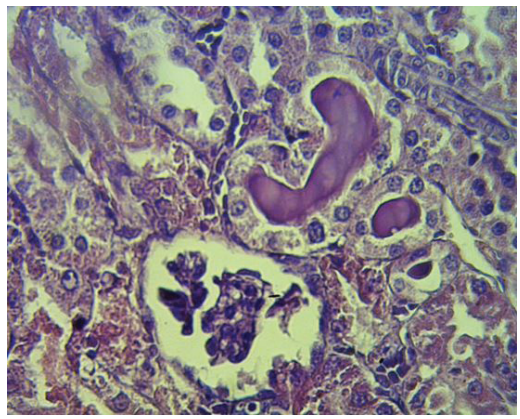

Figure 1d: GENT and BROMP (40 mg/kg)H&E x400

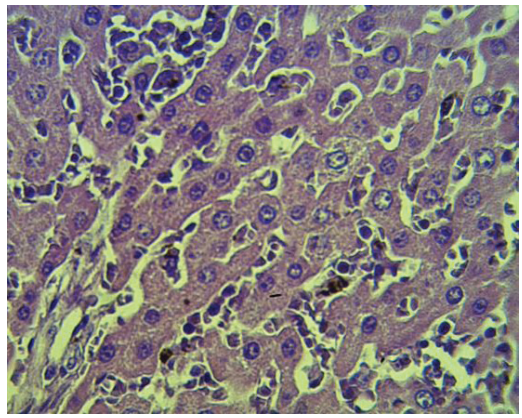

Figure 1e: hematoxylin and eosin. H&E x400

Table 1: Effect of Bromelain on Gentamicin-induced change of the weight/gram of rats

Traits	Control Mean ±SE	Gentamicin Mean ± SE	Gentamicin+ Bromelain20 Mean ±SE	Gentamicin+ Bromelain 40 Mean ± SE
Weight at 1 day (g/animal)	153.40 ±1.28 A	155.40 ± 1.50 A	154.40 ±1.57 A	154.00 ± 1.58 A
Weight at 11 day (g/animal)	160.60. ± 0.81 A	145.60 ± 1.16 C	158.40 ± 1.50 A	154.40 ± 1.07 B

Table 2: Effect of Bromelain on Gentamicin-induced change in lier function of rats

Traits	Control Mean ± SE	Gentamicin Mean ± SE	Gentamicin+ Bromelain 20 Mean ± SE	Gentamicin+ Bromelain 40 Mean ± SE
GPT (U/L)	38.276 ± 0.96 C	114.406 ± 0.68 A	40.048 ± 0.52 C	64.902 ± 0.60 B
GOT (U/L)	61.610 ± 0.54 C	186.422 ± 1.23 A	62.484 ± 0.64 C	114.868 ± 0.41 B
TP (mg/dl)	0.650. ± 0.01 C	1.354 ± 0.09 A	0.706 ± 0.03 C	1.120 ± 0.08 B
Malonaldehyde (nMole/L)	0.362 ± 0.07 C	3.920 ± 0.07 A	0.590 ± 0.01 C	2.304 ± 0.16 B

The aerage of traits which hae carried different letters horizontally indicates significance differences at leel of probability 0.01

DISCUSSION

Hepatotoxicty or lier damage is the irregular functioning of the lier ; with mitochondrial dysfunction reported as one of the major mechanism of drugs induce hepatotoxicity. By seerely altering mitochondrial function in the lier, drugs can induce hepatic necrosis , causing cystolytic hepatitis , and can progress into lier failure [17]. I/P injection of GNT(100 mg/kg) produced significant decrease in the body weight , when compared to control (P<0.01) ,[18,19].Whereas , BROM (20 mg/kg) produced significant effect on the body weight compared to GNT control rats . Howeer, BROM (40 mg/kg) not produce significant changes in the body weight compared to GNT control rats . According to [20] increased catabolism and anorexia are responsible for decreased food intake and causes body weight loss and as well as loss of the tubular cells, inoled in renal water reabsorption leads to dehydration and decreases body weight [21]. In the present study, the administration of GNT for (10) days produced a significant eleation of serum GOT, GPT and TP actiities. These results are in accordance with those obtained by other inestigators [22]. GOT and GPT are a better parameter for detecting lier injury and largely used as most common biochemical markers to ealuate lier injury [23]. Oxidatie stress is one of the key mechanisms responsible for lier damage and disease progression . Antioxidants, on the other hand , try to combat the oxidatie stress and minimize its deteriorated effects [24]. The experiment, hae clearly demonstrated the ability of GNT to induce oxidatie stress in rats lier and plasma, as eidenced by the significant rise in MDA (lipid peroxidation product). This finding howeer , is coordinated with earlier reports [25] [26]. The increased lipid peroxidation lead to inactiation of the enzymes by crosses linking with MDA; this will cause an increased accumulation of superoxide , H2O2 and hydroxyl radicals which could further stimulate lipid peroxidation. This mechanism has a clue from work [27] [28].In addition to that , GNT induced seere hepatic damages as shown in histopathological examination which add with clearly eleated leels of lier biochemical markers GOT, GPT and TP actiities. Similar findings were noticed by [22] who noticed the administration of GNT for (7) days resulted in damage of rats lier structure with histological features of necrosis and cells infiltrations . Other obserations were reported by [5] who found that administration of guinea pigs with (100 mg/kg) body weight GNT for (10) days induced lier histological alterations including showing necrosis of hepatocytes , and inflammatory cells infiltration. Treatment with BROM for (10) days reduced the GNT injured lier at a dose of (20 mg/kg) produces a significant ($p < 0.01$) decreased in serum (GOT) , (GPT) , (TP) leels and significant ($p < 0.01$) decreased in (MDA) leels. Histopathological changes induced by GNT were reduced the lier extensie necrosis with large number infiltration cells through the formation large immunological granuoloma in BROM (20 mg/kg) treated rats . Our results demonstrate the amelioratie effect BROM (20 mg/kg) on GNT for (10) days induced lier toxicity in the rats . This can be explained on the anti-inflammatory and analgesic actiity effect of BROM actiity is due to lowering plasmakinin (bradykinin) at inflammatory site and lowering prostaglandin E2 leels [29]. Also the presence of cysteine , an amino acid with known antioxidant properties . It is also an important precursor in the production of antioxidant glutathione, which protects cells from damages such as free radicals from GNT induced oxidatie stress [30]. As for BROM (40 mg/kg) , it had little effect . Based on the

adance findings , it can be deduce that, GNT had aderse effects on the lier. BROM (20 mg/kg) administration showed a marked hepatoprotectie actiity. The protectie effects of BROM (20 mg/kg) may be due to the its anti-inflammatory effects indiidually or antioxidant effects or synergistically.

CONCLUSION

The results of statistical analysis of hepatocellular hormones and the histolopathological examinations of the lier of the four groups indicated that both bromelain (40 mg\kg) and (20 mg\kg) had antioxidant effects but the BROM (20 mg\kg) more effectie as an antioxidant effects can protect GNT-induced hepatotoxicity in rats.

Conflict of Interest: None of the authors hae any conflicts of interest to declare.

Source of Funding: The research was performed independently, there is no funding, influence oer study design, analyses, manuscript preparation, or scientific publication.

Ethical Clearance: The project was approed by the local ethical committee (College of eterinary Medicine/ Al-Qasim Green Uniersity. C413/12).

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Acute Appendicitis Versus Ruptured Ovarian Cyst in Female Patients Presented as Acute Abdomen Pain

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ABSTRACT

Background: Acute appendicitis is one of the most common causes of the acute abdomen and one of the most frequent indications for an emergent abdominal surgical procedure worldwide, while Rupture of an ovarian cyst is a common occurrence in women of reproductive age.

Objective: differentiate between acute appendicitis and ruptured ovarian cyst by symptoms, signs and investigations before operations

Material and Method: A retrospective study comparing between ruptured ovarian cyst and acute appendicitis in Albaag hospital from the period of 1st January 2017 to 1st January 2018. The study included 236 patients, 196 with acute appendicitis and 40 patients had ruptured ovarian cyst.

Results: In the current study there was no significant difference in site of pain, duration of pain, rebound tenderness, abdominal distension. In the other hand poor appetite, fever, and abnormal WBC, were significantly higher in appendicitis compared to ovarian cyst. Irregular menstrual cycle, nausea and vomiting, abnormal GUE (general urine examination) and abnormal US findings, were significantly higher in ovarian cyst compared to appendicitis.

Conclusion: We found that poor appetite, fever, abnormal WBC, predict the diagnosis of acute appendicitis, while irregular menstrual cycle, nausea, abnormal GUE, and US findings suggestive of rapture ovarian cyst.

Keywords: *appendicitis, abdominal pain, ovarian cyst, duration of pain, site of pain*

INTRODUCTION

Appendicitis, an inflammation of the vestigial vermiform appendix, is one of the most common causes of the acute abdomen and one of the most frequent indications for an emergent abdominal surgical procedure worldwide [1]. Appendicitis occurs most frequently in the second and third decades of life. The incidence is approximately 233/100,000 population and is highest in the 10-to-19-year-old age group [2]. It is also higher among men (male to female ratio of 1.4:1), who have a lifetime incidence of 8.6 percent compared with 6.7 percent for women [2].

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The natural history of appendicitis is similar to that of other inflammatory processes involving hollow visceral organs. Initial inflammation of the appendiceal wall is followed by localized ischemia, perforation, and the development of a contained abscess or generalized peritonitis. Appendiceal obstruction has been proposed as the primary cause of appendicitis [3]. Appendiceal obstruction may be caused by fecaliths (hard fecal masses), calculi, lymphoid hyperplasia, infectious processes, and benign or malignant tumors. However, some patients with a fecalith have a histologically normal appendix, and the majority of patients with appendicitis do not have a fecalith [4].

Rupture of an ovarian cyst is a common occurrence in women of reproductive age. Physiologic cysts, such as a follicular cyst or corpus luteal cyst, or pathologic cysts may rupture (endometriomas, cystic components of benign or malignant neoplasms). In the normal

menstrual cycle, the physiologic rupture of small follicular cysts that occurs with every ovulatory cycle is not typically clinically significant. This cyclic event is generally asymptomatic or associated with mild mid-cycle pain (also referred to as mittelschmerz) [5].

Rupture of an ovarian cyst may be asymptomatic or associated with a sudden onset of unilateral lower abdominal pain. The classic presentation is sudden onset of severe focal lower quadrant pain, often following sexual intercourse. Due to the severity of the pain, patients usually present to emergency departments or other urgent care settings [6]. The right ovary is most commonly affected, possibly because the rectosigmoid colon protects the left ovary from the effects of abdominal trauma. In a series of 244 cases of ovarian cysts, 63 percent were right-sided [7].

The incidence of ruptured ovarian cysts is uncertain. Hospital admission rates with a diagnosis of a benign ovarian cyst provide some information for calculating an incidence. However, these rates are an overestimate, because they also include admission for other complications of ovarian cysts (eg, hemorrhage, torsion). Some data suggest that 4 percent of women will be admitted to the hospital for an ovarian cyst by age 65 years [5, 8]. In England and Wales, over a two-year period in the 1980s, the admission rate for an ovarian cyst was 67 women admitted per 100,000 women in the national populations; the rate was slightly higher in the United States at 131 per 100,000 women [9].

The aim of this study can help the surgeon to differentiate between acute appendicitis and ruptured ovarian cyst by symptoms, signs and investigations before operations or conservative treatments as if ruptured ovarian cyst is less than five centimeters in size can be treated conservatively.

MATERIAL AND METHOD

A total of 236 patients included in this study, it was carried out in Albaag Hospital, Mosul, Iraq; from the period of 1st January 2017 to 1st January 2018. The data obtained from case sheets of the patients including symptoms, signs and investigations

In this study comparison done between acute appendicitis and ruptured ovarian cyst in their symptoms, signs, and investigations for twenty items, fifteen of them was identical including starting of pain at right iliac fossa, right lower abdomen, epigastric area, duration of pain one day, two days, three days or more. Radiation of pain to all abdomen and back. Loss appetite, fever, menstrual irregularity, rebound tenderness, abdominal distension, dizziness and nausea. The other five items that are non-identical were radiation of pain to right iliac fossa, right lower abdomen, general urine examination, white blood cells count and ultrasound of abdomen.

STATISTICAL ANALYSIS

Analysis of our data done using the software program: SPSS 21 (Statistical Package for Social Sciences). Numeric data were represented by the mean ± standard error, while the categorical data represented by numbers and percentages. Independent t-test was used to study the difference between two. For the study of the association between categorical data, the Chi-Square test used. The significant level considered when the P value < 0.05 [10].

RESULTS

236 patients were subjected to this study. 196 of them were having cute appendicitis, 40 of them were having ruptured ovarian cyst, four of the forty women were having hemorrhagic ruptured ovarian cyst.

In the current study there was no significant difference in site of pain, duration of pain, rebound tenderness, abdominal distension. In the other hand poor appetite, fever, and abnormal WBC, were significantly higher in appendicitis compared to ovarian cyst. Irregular menstrual cycle, nausea and vomiting, abnormal GUE (general urine examination) and abnormal US findings, were significantly higher in ovarian cyst compared to appendicitis, as illustrated in table 1.

Table 1: comparison between patients with appendicitis and ovarian cyst

Items	Appendicitis	Ovarian cyst	p-value
Site pain			
RIF	119 (62.6%)	19 (47.5%)	0.113
RLA	25 (13.2%)	10 (25.0%)	
EPG	52 (27.4%)	11 (27.5%)	

Conted…

Duration			
One day	151 (79.5%)	25 (62.5%)	0.123
Two days	28 (14.7%)	8 (20.0%)	
≥ 3 days	17 (8.9%)	7 (17.5%)	
Radiation of pain			
RIF	59 (81.9%)	10 (45.5%)	NA
RLA	5 (6.9%)	9 (40.9%)	
EPG	0 (0.0%)	0 (0.0%)	
All abdomen	7 (9.7%)	2 (9.1%)	
Back	1 (1.4%)	1 (4.5%)	
Appetite			
Poor	181 (92.3%)	32 (80.0%)	0.016
Good	15 (7.7%)	8 (20.0%)	
Fever	174 (88.8%)	30 (75.0%)	0.020
Menstrual Irregularities			
Irregular	5 (2.8%)	4 (10.8%)	0.026
Regular	174 (97.2%)	33 (89.2%)	
Rebounded tenderness	168 (85.7%)	34 (85.0%)	0.907
Abdominal distention	18 (9.2%)	7 (17.5%)	0.119
Nausea and vomiting	23 (11.7%)	10 (25.0%)	0.028
Abnormal GUE	65 (33.2%)	26 (65.0%)	<0.001
Abnormal WBC	158 (80.6%)	10 (25.0%)	<0.001
Abnormal abdominal US	28 (14.3%)	27 (67.5%)	<0.001

RIF: right iliac fossa, RLA: right lower abdomen, EPG: epigastric pain., NA: not applicable

GUE: general urine examination

DISCUSSION

Acute appendicitis remain difficult diagnosis, the best approach to include some clinical score, even if ultrasound of abdomen or computerized axial tomography or both used, computerized axial tomography or ultrasound allows to obtain additional information in equivocal case. Observation and repeated clinical examination led to good clinical outcome, whereas the false negative evaluation carries the potential of higher perforation rates, however most complicated and perforated acute appendicitis are associated with longer delays before medical consultation, except for a few reports of negative findings no appendectomy below 10% [11]. Perforation can lead to sepsis and occurs in 17% to 32% of patients with acute appendicitis [12].

The status of appendix at the time of operation was obtained from the operative protocols and the pathology reports, it was classified as uncomplicated (inflamed, gangrenous without perforations), complicated (perforation, abscess, perforation) and normal unlike previous reports recent reviews have found no link between the frequency of perforation and misdiagnosis [13].

In the current study the majority of patients with appendicitis had one duration of pain (79.5%) while, 81.9% right iliac fossa pain, 92.3% had poor appetite, 88.8% presented with fever, 85.7% had rebound tenderness, 11.7% had nausea and vomiting, there were similarities with a retrospective analysis of 324 patients who had appendectomy for acute appendicitis, during the period January 2002 to December 2004, the similarities were abdominal pain (100%), and Generalized and localized abdominal tenderness were present in 62.0% and 19.4% of patients, while other symptoms were lower than reported by our study; only 29.3% presenting within 24 h of onset of symptoms, vomiting (57.4%) and anorexia (49.0%). respectively. Pyrexia was noted in 41.0%. Localized and generalized peritonitis were present in 26.4% and 14.0%, respectively [14].

In the current study all patients with rapture ovarian cyst had abdominal pain with half of the patients had right iliac fossa pain, with 62.5% had one day pain duration, 80.0% had poor appetite, 75.0% had fever, 89.2% had irregular menstrual cycles, 85.0% had rebound tenderness, 17.5% had abdominal tenderness, 25.0% had nausea, and 67.5% had abnormal US findings, in a study done in Qatar 81 women with ovarian or paraovarian cyst, The most common presenting complaint was lower abdominal pain in 51 (63%) women. An ovarian cyst was discovered as an incidental finding in 13 (16%) women where ultrasound was performed, Subfertility was a presenting complaint in 5 (6.2%), abnormal uterine bleeding in 3 (3.7%), dysmenorrhea in 4 (4.9%) and it was discovered as an incidental finding during a surgical procedure like caesarean section and laparotomy in 5 (6.2%) women [15].

CONCLUSION

We found that poor appetite, fever, abnormal WBC, predict the diagnosis of acute appendicitis, while irregular menstrual cycle, nausea, abnormal GUE, and US findings suggestive of rapture ovarian cyst.

Conflict of Interest: None

Ethical Clearance: Informed written consent was obtained from all the participants in the study, and the study and all its procedure were done in accordance with the Helsinki Declaration of 1975, as revised in 2000. Approved by the Albaag hospital, department of surgery.

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Effects of Health Promotion Behavior, Self-Esteem and Social Participation Activities on Life Satisfaction of Elderly Men

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ABSTRACT

Purpose: The purpose of this study was to investigate the relationship between health promotion behavior, self-esteem, social participation activities and life satisfaction in elderly men and to provide basic data for the development of a nursing intervention to improve the life satisfaction of elderly men.

Method: The study was a descriptive research study on 140 elderly men people aged 65 years or older living in the D metropolitan city, and data were collected using questionnaires. The data were analyzed using descriptive statistics, t-test, ANOVA, Pearson's correlation coefficient and stepwise multiple regression using the SPSS 22.0 program.

Results: The life satisfaction of elderly men was positively correlated with health promotion behavior (r=.493, p<.001), self-esteem (r=.621, p<.001), and social participation activities (r=.296, p<.001) at a statistically significant level. The factors affecting the life satisfaction of elderly men were self-esteem (β=.490, p<.001), health promotion behavior (β=.295, p<.001), and sufficient economic level (β=.251, p<.001), and these variables accounted for 54.5% of life satisfaction.

Conclusion: In order to increase the life satisfaction of elderly men, it is necessary to develop a customized nursing intervention program considering self-esteem, health promotion behavior and economic level, and in particular, the results suggest that research on the development of various programs that can increase self-esteem needs to continue.

Keywords: *Elderly men, Health promotion behavior, Self-esteem, Social participation activities, Life satisfaction*

INTRODUCTION

Along with aging, the elderly population is steadily increasing, and looking at the gender ratio of elderly people in Korea in 2015, elderly men per 100 elderly women aged 65 and over is predicted to increase from 71.7 to 87.0 in 2060.[1] Along with the trend of increasing elderly men, elderly men have significantly decreased activity area compared to elderly women after retirement, and in this period, health problems and economic problems, and the difficulty of adapting to the life of the old age[2], can reduce the quality of life.

In order to improve the quality of life of elderly men, the quality of life must be first evaluated, and as a representative subjective measure of life satisfaction of the elderly to measure the quality of life, there is recognizing that the person feels rewarded for life and is positive and happy about the life up until now.[3,4] Life satisfaction should be considered for adaptation to a changed life in old age and for successful aging.

On the other hand, health promotion behavior is the best way for the elderly to manage their own health and can maintain their health when they practice health promotion behavior through healthy lifestyle, and the health promotion and maintenance of the elderly is considered as a physical factor affecting life satisfaction of elderly men because it helps to achieve self-fulfillment and satisfaction.[5,6]

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Self-esteem influences human behavior and attitudes toward life. Looking at the results of a study [7] where the higher the self-esteem of the elderly is, the higher the life satisfaction, it can be considered as a positive psychological factor for elderly men who have to adapt to a life in old age.

Social participation activities provide a positive self-image by providing the role support needed to identify an individual's self-concept, and social participation activities of the elderly have a positive effect on life satisfaction.[8] These social participation activities are social factors influencing life satisfaction of elderly men, and it can be said that they need constant attention and encouragement.

On the other hand, in previous studies on life satisfaction of the elderly, there were demographic factors such as gender, age, education level, spouse status, subjective health status, economic level, and religion [9,10] and until now, the life satisfaction of the elderly has been mostly studied for both male and female elderly. There was a relatively large number of studies on elderly women in terms of gender-based studies. This means that more research should be done for elderly men to promote research and health policy to increase the average life satisfaction of the whole male and female elderly.[11] The purpose of this study was to examine the relationship between health promotion behavior, self-esteem, and social participation activities and life satisfaction of elderly men to provide basic data for the development of nursing intervention program to improve the life satisfaction of elderly men by analyzing the influence factors of life satisfaction.

METHOD

Subjects: The subjects of this study were 140 elderly men aged 65 or older who live in D metropolitan city and utilize elderly welfare centers. The number of subjects and the basis of calculation were calculated using G*Power 3.1.9 program with effect size 0.15, significance level 0.05, power 0.95, and number of predictors 5, where the minimum number of subjects required was 138 persons, and the questionnaires were distributed to 152 persons considering the dropout rate and the final 140 copies were analyzed.

Instruments

Health promotion behavior: A tool by Walker, Sechrist, and Pender adapted by Park applied to the elderly by Hong[12] was used. Higher scores represent higher practice of health promotion behavior and the reliability in this study was .92.

Self-esteem: A tool by Rosenberg adapted by Jeon[13] was used. Higher scores represent higher self-esteem and the reliability in this study was .74.

Social participation activities: A tool used by Choi[14] referencing Joo's research on elderly people's participation in social activities was used. Higher scores represent higher social participation activities level and the reliability in this study was .74.

Life satisfaction: A tool reconfigured by Park[9] referencing study of Krause based on LSI-A developed by Havighurst et al. was used. Higher scores represent higher life satisfaction and the reliability in this study was .84.

Data collection: For the data collection period, after IRB approval, elderly welfare centers in D metropolitan city were visited from February 28 to March 30, 2018. In the data collection, the questionnaire was distributed to the subjects who could read and understand the sentences, and the questionnaires were read to the subjects in the case of those who could not.

Ethical Clearance: This study was approved by K University IRB for personal information and ethical protection of the subjects and received the research approval (KNU_IRB_2018-01) on February 7, 2018, and the research ethics guidelines were followed during the study period. After receiving approval from the head of the institution in advance, the institution visit took place and the necessity and purpose of the study were explained to the subjects and the consents were received to participate in the study. In addition, it was agreed in writing that at any time, participation in the study can be withdrawn and that the anonymity will be kept and personal details of the subject will be kept confidential.

DATA ANALYSIS

The data collected in this study were analyzed by SPSS Win 22.0 program. The frequency, percentage, mean, and SE of the elderly men's general characteristics, health promotion behavior, self-esteem, social participation activities, and life satisfaction were obtained, and differences in life satisfaction according to general characteristics were analyzed by t-test, ANOVA,

and Scheffe' test. Pearson's correlation coefficient was used for the correlation between life satisfaction and variables, and stepwise multiple regression was used to analyze the factors affecting life satisfaction.

RESULTS

General Characteristics of Elderly Men: Age range from 70 to 79, was the most common with 80 (57.1%). In living arrangement, living with the family was the most frequent with 109 (77.9%) of the elderly. The most frequent response for perceived health status was 'Healthy' with 79 (56.4%), and 74 (52.9%) responded 'Adequate' to the economic level. The average monthly allowance was 200,000 to 300,000 KRW for 67 (47.9%) of the subjects, and 70 (50.0%) participated in regular exercise (Table 1).

Table 1: General Characteristics of Elderly Men (N = 140)

Variables	Categories	N (%)
Age	65~69	15(10.8)
	70~79	80(57.1)
	80 or over	45(32.1)
Education level	Elementary school graduate or below	15(10.7)
	Middle/high school graduate	68(48.6)
	College graduate or above	57(40.7)
Living arrangement	Alone	31(22.1)
	Family	109(77.9)
Perceived health status	Very unhealthy	6(4.3)
	Unhealthy	35(25.0)
	Healthy	79(56.4)
	Very healthy	20(14.3)
Economic level	Inadequate	66(47.1)
	Adequate	74(52.9)
Average monthly allowance	100,000 KRW or under	19(13.6)
	200,000 - 300,000 KRW	67(47.9)
	400,000 KRW or over	54(38.6)
Current diseases*	High blood pressure	54(31.8)
	Diabetes	22(12.9)
	Arthritis	26(15.3)
	Other diseases	40(23.5)
	None	28(16.5)
Exercise	Not at all	6(4.3)
	Sometimes	64(45.7)
	Regularly	70(50.0)

*Multiple responses

Degree of health promotion behavior, self-esteem, social participation activities, and life satisfaction in elderly men

The health promotion behavior of elderly men was 3.00 points, self-esteem was 3.45 points, social participation activities was 2.88 points, and life satisfaction was 3.31 points (Table 2).

Table 2: Degree of Health Promotion Behavior, Self-esteem, Social Participation Activities, and Life Satisfaction in Elderly Men (N = 140)

Variables	M(SD)	Possible range
Health promotion behavior	3.00(0.37)	1-4
Self-esteem	3.45(0.47)	1-5
Social participation activities	2.88(0.61)	1-5
Life satisfaction	3.31(0.73)	1-5

Differences in life satisfaction according to general characteristics of elderly men

Living arrangement (F=-2.09, p=.038), perceived health status (F=10.66, p<.001), economic level (F=-4.81, p<.001), average monthly allowance (F=4.18, p=.017), and exercise (F=3.98, p=.021) were statistically significant (Table 3).

Table 3: Differences in Life Satisfaction according to General Characteristics of Elderly Men (N = 140)

Variables	Categories	M(SD)	t or F(p) Scheffe test
Age	65~69	3.27(0.85)	1.02 (.363)
	70~79	3.25(0.78)	
	80 or over	3.44(0.60)	
Education level	Elementary school graduate or below	3.17(0.84)	2.20 (.114)
	Middle/ high school graduate	3.21(0.76)	
	College graduate or above	3.47(0.65)	

Conted…

Living arrangement	Alone	3.07(0.64)	-2.09 (.038) 10.66 (<.001) a,b,c<d
	Family	3.38(0.75)	
Perceived health status	Very unhealthy[a]	2.90(0.76)	
	Unhealthy[b]	2.94(0.61)	
	Healthy[c]	3.34(0.67)	
	Very healthy[d]	3.96(0.72)	
Economic level	Inadequate	3.02(0.68)	-4.81 (<.001)
	Adequate	3.57(0.69)	
Average monthly allowance	100,000 KRW or under[a]	2.88(0.66)	4.18 (.017) a<b,c
	200,000 - 300,000 KRW[b]	3.33(0.69)	
	400,000 KRW or over[c]	3.43(0.77)	

Conted…

Exercise	Not at all	3.13(1.10)	3.98 (.021)
	Sometimes	3.14(0.69)	3.98 (.021)
	Regularly	3.48(0.73)	3.98 (.021)

Relationship between independent variables and life satisfaction in elderly men

Life satisfaction of elderly men had positive correlation with health promotion behavior (r=.493, p<.001), self-esteem (r=.621, p<.001), and social participation activities (r=.296, p<.001). In other words, better health promotion behavior, higher self-esteem, and higher social participation activities correlated to higher life satisfaction (Table 4).

Table 4: Relationship between Independent Variables and Life Satisfaction in Elderly Men (N = 140)

Variables	Health promotion behavior r(p)	Self-esteem	Social participation activities r(p)	Life satisfaction r(p)
Health promotion behavior	1			
Self-esteem	.315(<.001)	1		
Social participation activities	.512(<.001)	.280(<.001)	1	
Life satisfaction	.493(<.001)	.621(<.001)	.296(<.001)	1

Factors affecting Life Satisfaction of Elderly Men

Living arrangements, perceived health status, economic level, average monthly allowance, and exercise were given variable treatment, and analysis was done including health promotion behavior, self-esteem and social participation activities. As a result of multi-collinearity test, the tolerance was 0.884-0.958, 0.1 or more, and the variance inflation (VIF) was 1.044-1.131, which was not more than 10 and there was no problem of multi-collinearity. Also, as a result of checking the autocorrelation of the error, the Durbin Watson value was 2.201, the independence was satisfied, the equal dispersion was satisfied, and the regularity was also confirmed.

The results of the regression analysis showed that the factor of affecting life satisfaction of elderly men were self-esteem (β=.490, p<.001), health promotion behavior (β=.295, p<.001), and adequate economic level (β=.251, p<.001), and these variables accounted for 54.5% of life satisfaction (Table 5).

Table 5: Factors affecting life satisfaction of elderly men (N = 140)

Variables	B	SE	β	t	p
Constant	-1.283	.411		-3.124	.002
Self-esteem	.763	.096	.490	7.991	<.001
Health promotion behavior	.590	.123	.295	4.791	<.001
Economic level (Adequate)	.368	.087	.251	4.251	<.001
R^2=.545 Adj. R^2=.535 F=54.289 p<.001					

Reference category: Economic level=inadequate.

DISCUSSION

In the study, the life satisfaction of elderly men showed differences in the general characteristics of living arrangement, perceived health status, economic level, average monthly allowance, and exercise. This was in agreement with the findings of study by Kim[15] where there was difference according to health status, cohabitation state, and monthly allowance, and study by Kwon and Cho[16] where there was difference according to health status, economic condition, and living arrangement. Therefore, these differences should be considered in program development or nursing intervention to increase life satisfaction of elderly men.

Life satisfaction of elderly men was 3.31 points out of 5. In a previous study using the same tool, the score of Park[9] was 3.02 points, similar to the results of this study, and in the study of elderly men and elderly women living in rural areas by Kim[15], the life satisfaction of elderly men was 3.07 points, consistent with the results of this study. Elderly men and elderly women are traditionally socialized differently [15] and Korea's elderly men have been defined as the heads of households responsible for the economy of the hosuehold.[17] In addition, they seems to live a relatively stable life, usually supported by a spouse through life.[18] Considering that elderly men have difficulty adapting to various life changes that may result in loss of social function and economic or health problems after retirement, it is necessary to apply a nursing intervention program that can enhance life satisfaction with continuous interest for healthy and happy old age life.

Elderly men had higher life satisfaction with better health promotion behavior, higher self-esteem, and higher social participation activities. Factors affecting life satisfaction of elderly men were self-esteem, health promotion behavior, and sufficient economic level and the most influential factor was self-esteem. Yoo[7] stated that self-esteem was an important factor in the overall life satisfaction of the elderly in the community, and Lim[19] showed that self-esteem was an important mediating factor in relation to elderly stress and life satisfaction. It is believed that elderly men can enhance life satisfaction through social activities and communication and exchange among people in their daily lives by participating in various health-related programs run by health care facilities and welfare facilities in their communities. In addition, through these activities, it is expected that they will be able to control their own health and life by recognizing their self-esteem and meaning of life. First of all, since health is the most important thing in old age, for life satisfaction it is important to recognize[20] that health can be achieved by steady management, and expert help is needed to make practice through recognition. Also, economic level of elderly men was considered as an important predictor of life satisfaction, matching the study, and for the national and local governments, in cooperation with local enterprises and social organizations, it is necessary to create activities for the elderly to create jobs and to provide activities to earn income.

CONCLUSION

In this study, factors affecting life satisfaction of elderly men were self-esteem, health promotion behavior, and adequate economic level, and the biggest influencing factor was self-esteem. In order to increase life satisfaction of elderly men, it is necessary to develop an individualized nursing intervention program considering self-esteem, health promotion behavior, and economic level, and in particular, it is suggested that it is necessary to continue research on the development of various programs to increase self-esteem.

Ethical Clearance: Not required

Source of Funding: Self

Conflict of Interest: Nil

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Change of Brief Psychiatric Rating Scale (BPRS) Value with Spiritual Qur'anic Emotional Freedom Technique (SQEFT) Therapy on Mental Disorder Patient

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ABSTRACT

Spirituality concept is as a part of nursing standard. A person's spiritual needs has to be considered as integral part from nursing care. SQEFT therapy is a combination intervention that combines between spiritual qur'anic therapy and EFT as a spiritual intervention that is simple and practical to be done.This research aimed at knowing the change of BPRS value after being given SQEFT therapy. Method, sample of this research was consisted of 10 patients with schizophrenia who had SQEFT therapy, and 10 patients as a control group. Both of the groups were measured by BPRS three times: pre (before therapy), post 1 (after therapy in 1-2 weeks), and post 2 (after therapy in 3 – 4 weeks). Research result, by utilizing paired sample T test in SQEFT therapy group, the BPRS value in pre and post 1 (P = 0.000), BPRS value in post 1 and post 2 (P= 0.000), and BPRS value in pre and post 2 (P = 0.000) were all significant. However, BPRS value lowered after SQEFT therapy. In control group, BPRS value was ocuurred a decrease in pre and post 1 (P value ≤ 0.004), and value of pre and post 2 (P= 0.001), meanwhile, the BPRS value in post 1 and post 2 (P =0.193) did not lower anymore. Conclusion, there was a significant change of BPRS value after being given SQEFT therapy and the decrease of it showed the improvement of clinical symptoms on patient with schizophrenia.

Keywords: *BPRS, SQEFT, nurse, schizophrenia*

INTRODUCTION

Prevalence of schizophrenia was varied and it was between 0.4% and 1.7%, the most number of psychotic disorder, schizoafective (0.3%), major depression with psychotic (0.4%), psychotic of induction of substance (0.4%), and psychotic due to medical condition (0.2%)[(1)]. Moreover, the prevalence of emotional mental disorder with depression symptoms and anxiety in the age of more than 15 years was about 14 millions of people or 6% from the total of Indonesian people. Meanwhile, the prevalence of serious mental disorder, patients were about 400,000 patients or 1.7 per 1,000 population[(2)]. Furthermore, cognitive damage became main characteristic of schizophrenia, including depression that caused the decrease of social function and inability in self-integrating into the family and work place, even there was a disorder in memory function to become main component of cognitive deficit[(3)].

One of several approaches of therapy for patient with schizophrenia is spiritual therapy. Spiritual therapy is a part of nursing intervention. Perspective of holistic nursing makes nurses to perceive every human as a biopsychosocial and spiritual beings[(4)]. Health workers should implement spiritual research for treating and nursing the patient[(5)]. Al-Qur'an therapy is a healing therapy and solution for physical, spiritual, and social disease for Moslems[(6)]. Reading and listening to Al-

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Qur'an naturally cause calming effect for the human self, increase relaxation and cure negative physical and mental disorders, stimulate the release of endorphins in the brain that affects positive side for mood and mind, focus the mind into positive experiences, divert negative mind into positive one, help to decrease stress, anxiety, and depression, even, reading and listening to Al-Qur'an become nonpharmacological treatment for completing the existing therapies[7].

The efficacy of surah al-rahman is as a treatment to reduce depression for female moslems[8]. Concerning with emotional reflection based on EEG and ECG signal while listening to Al- Qur'an rather than listening to music, the result is Al-Qur'an shows positive transformation from subject's negative emotion into calm condition and happiness that is indicated by positive valence of EEG and ECG signal. However, the result of analysis of music data shows negative transformation[9]. EFT is series of methods in body energy system for releasing from either emotional or physical disorders. Negative emotion in each individual is started from poor internal representation, then, it is followed by body energy system disorder. Chemical imbalance and energy disorder in the body can cause psychological disorder. Meanwhile, EFT intervention changes chemical condition of neurotransmitter, and tapping can help to deliver kinetic for the energy system and can release barrier that covers the flow of energy[10].

SQEFT (Spritual Qur'anic and Emotional Freedom Technique), is a combination spiritual intervention that combines between Qur'anic therapy and EFT. This combination intervention is expected to be intervention for mental health practitioner (doctor, nurse, psychologist), patient's family, and society. SQEFT therapy was first used in this study as spiritual intervention in schizophrenic patients, previously through trial instruments[11]. BPRS is a rating scale that is developed in order to look at the characterization of psychopathology and in order to measure the change in clinical psychopharmatology research. Besides, BPRS is a psychotic symptom that is very important in order to rate clinical condition from the patient with schizophrenia. The version of 18-items with each symptoms was rated in severity scale of 1-7[12].

MATERIALS AND METHOD

Study Subject and Period of Trial Test: Research of SQEFT therapy was conducted everyday for 30 days, from April to May 2018. The participants were patients who were diagnosed schizophrenia with Psychiatry of DSM-IV-TR by physician (doctor) through examining preliminary BPRS value which was about 60. Supporting criteria were such as good, calm, and cooperative communication and willing to be respondents for this research. Patient with schizophrenia was formed in a treatment group of SQEFT therapy (*n*=10), and the control group was Non SQEFT (n=10). There were three kinds of measurements for BPRS value in order to observe the change that was occurred in preliminary BPRS value (pre-test), (post-test-1), and (post-test-2).

Measurement Tools for BPRS Scale: In order to evaluate patient's condition with schizophrenia, it needs to be used BPRS scale[13]. BPRS is a scale that is often used and it is a Likert scale (categorized scale) with 18 items. Each items are divided into 7 categories (nothing, very light, light, medium, medium-hard, hard, very hard) with overall value range in 18-126. However, BPRS is not a diagnostic scale, but it is a scale for rating actual clinical description from the patient (criticalness of psychopathology) during the treatment (14). Furthermore, this scale is basically developed in order to rate schizophrenic condition.

FINDINGS

Table 1: Characteristics of respondents

Characteristics	Mean ± SD Treatment Group SQEFT (n = 10)	Mean ± SD Control Group Non SQEFT (n = 10)
Gender	1.60 ± 0.51	1.50 ± 0.52
Age (years)	2.00 ± 0.81	2.40 ± 1.72
Education	3.00 ± 0.94	2.90 ± 0.73
Work	1.80 ± 0.42	1.90 ± 0.31
Long sick	1.50 ± 0.70	1.70 ± 0.82
Relapse	2.30 ± 1.15	2.50 ± 1.08

Note: There were no differences between the two groups

Table 2: Measuring BPRS Value

	BPRS Value					
	Treatment Group (SQEFT)			Control Group (Non SQEFT)		
	Pre (Preliminary)	Post 1 (1-2 wk)	Post 2 (3-4 wk)	Pre (Preliminary)	Post 1 (1-2 wk)	Post 2 (3-4 wk)
Mean	51.70	37.60	22.70	59	55.5	56.4
SD	2.49	3.20	0.82	1.33	2.06	1.42

SD: standard deviation; wk : week; A decrease in the value of BPRS after SQEFT therapy

Table 3: Result of statistic test for BPRS value

Variable		Treatment Group (SQEFT)			Control Group (Non SQEFT)		
		Mean	SD	P Value	Mean	SD	P Value
Pair 1	Pre - Post1 BPRS	14.10	1.52	0.000	3.50	2.87	0.004
Pair 2	Post1 - Post2 BPRS	14.90	3.34	0.000	-0.90	2.02	0.193
Pair 3	Pre - Post2 BPRS	29.0	2.66	0.000	2.60	1.64	0.001

Note: Paired sample T test, P value = ≤ 0.005

Result of statistic test of paired sample T in treatment group of SQEFT, BPRS value for pre, post1 and post2 was P = 0.000 significantly, which meant that there was a significant decrease of BPRS value for every weeks after SQEFT intervention. In control group, BPRS value lowered in pre and post2 (P = 0.001), meanwhile, post1 and post2 (P= 0.193) did not lower anymore.

DISCUSSION

Schizophrenia is a mental disorder that has quite big impact for either the patient or the patient's environment[15] because of mind disorder, emotional disorder, and behavior disorder. Clinical presentation of schizophrenia is indicated by hallucinations and delusion, negative impact (such as anhedonia, avolition dan alogia), and cognitive disorder[16]. Moreover, education cannot overcome all of the symptoms which are concerned with spectrum disorder of schizophrenia. Meanwhile, anti-psychotic medicine is effective for medical treatment of psychotic symptoms, but it is less effective for the treatment of negative symptoms. Thus, it will be occurred cognitive deficit[17,18] that can cause disability. In other words, it is important for an additional intervention or complement that is appropriate for helping treatment and improvement of schizophrenia symptoms.

SQEFT emphasizes on the self-cleaning (spiritual) from all of the diseases and shirk. Then, praying and zikr, reading surah as-syifa, listening to holy verse of Al-Qur'an while being done EFT, and releasing negative emotional energy by stating affirmation sentences are for improving sincerity, chastity, and asking for healing only to Allah azza wajalla. Moreover, trial test of SQEFT instrument to the patient with schizophrenia who had inpatient treatment was occurred change for BPRS value[11]. Spiritual intervention for moslem patient had positive result for the health status and minimized the symptoms of the disease[19]. Nurses would be demanded more to give holistic treatment, combine physical, psychological, social, and spiritual dimension from the individual[20].

Furthermore, research result of SQEFT therapy was significant with the result of statistic test = 0.000 ≤ 0.05, and BPRS value lowered significantly, which meant that clinical symptoms of the patient with schizophrenia lowered[21]. Regarding mean value on analytical test above, most of them were occurred a decrease of BPRS value after SQEFT intervention rather than in control group. The more often and more regular to be conducted SQEFT intervention, the more improving the existing symptoms of the patient with schizophrenia.

Al- Qur'an therapy could overcome mental disorder[22], overcome negative disease of magic,[23], and overcome treatment for depression[8]. Al-Quran was significant in the treatment for psychological disorder. The patient who regularly attended AL-Qur'an therapy

session was success to be healed (81.8%),[24]. Reading and listening to zikr and AL-Qur'an for the students were occurred an increase of the percentage of beta and gamma wave[25]. The repetition in reading and listening to AL-Qur'an for medical patient and psychiatry patient was by lowering the symptoms of depression and anxiety[26]. Clinical test researched the effect of EFT for the symptoms of anxiety disorder, including phobia, tensional headache, depression, anxiety, and insomnia[27,28]. An observation reported that this technique was effective against emotional trauma, such as PTSD[29], addiction, and emotion[30,31]

The rating of BPRS was not a diagnostic rating scale, but it was a scale for rating actual clinical description from the patient (criticalness of psychopathology) during the treatment,[14] because rating involved observation and report of patient's symptoms. Thus, BPRS could be used to rate patient who was very critical and this scale was developed for rating schizophrenia condition. All of the patient who had SQEFT therapy showed a change by lowering BPRS value (positive symptoms, negative symptoms, mania, and anxiety), improving religious patient. The third week, patient could do SQEFT therapy independently in pair and this therapy was simple, cheap, and practical to be done.

LIMITATION

There was a difficulty in selecting mental sample because it was a vulnerable community, which because the sample must have good condition, cooperative condition, could communicate, and had willing to follow the program for 1 month. Moreover, it should be conducted sample that was bigger and the mental patients was not only diagnosed as schizophrenia, but the others.

CONCLUSION

SQEFT therapy lowered BPRS value and there was a clinical improvement in 4 symptoms in rating BPRS. SQEFT group showed a change in sincerity, patience, accepting disease, motivation, and spirit. Good relation with health workers and environment could control self during training program. SQEFT therapy was proved to help the cure of patient with schizophrenia as a complement therapy that was simple, cheap, practical, and without having any negative effects, and could be applied by patient, medical / health workers, family, and also society generally.

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An Empirical Analysis Research on the Characteristics of Elderly Welfare Organizations on Job Fit and Contextual Performance

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ABSTRACT

This An Empirical Analysis Research the factors affecting the job fit and contextually of the elderly welfare organizations. Job characteristics, compensation system, Organizational climate, job fit, and contextual performance variables of Long-term Care Facility for Elderly were used. 879 workers (Long-term Care Workers, Nurses, Nursing assistant, Physical therapist, Social Worker) of public organizations and private organizations were analyzed. Structural equations were used. Control variables, multi-group analysis, and latent mean analysis were performed. The following results were obtained. First, the elderly welfare organizations showed differences among groups in Job Characteristics, Compensation system, organizational climate, job fit, and organizational context. Second, it is found that there is a difference between public and private organizations in terms of affecting job characteristics, compensation system, organizational climate, job fit, and organizational context. Third, path coefficients affecting contextual performance were found to be job characteristics, organizational climate, and job fit in public organizations. In the private organization, the organizational climate and the job fit were found. Fourth, five paths were found to be statistically significant in the invariance constraints.

Keywords: *Elderly welfare organizations, Job Characteristics, Compensation System, Organizational Climate, Job Fit, Contextual Performance*

INTRODUCTION

In Korea, welfare issues for the elderly are becoming important. As a result, the government is shifting from providing government - led services to entrusting private welfare facilities to various welfare policies. As interest in the elderly welfare service has increased in our society, interest in the public organization's performance to increase the effectiveness of the policy is increasing. There is also a growing interest in the performance of private organizations to improve performance in competition and evaluation. The elderly welfare service is a representative human service in which the whole process of service is produced and handled by the workers (Long-term Care Workers, Nurses, Nursing assistant, Physical therapist, Social Worker). The role ambiguity of the elderly welfare organization workers and job performance requires contextual performance. In the elderly welfare organization, contextual performance[1] is emphasized, which is a behavior that encourages employees to voluntarily transcend organizational role expectations and helps organizations. As a result of the characteristics of the elderly welfare organization, the degree of suitability of the organizational members and the Job Characteristics as the organization providing the human services can directly affect the work performance of the organization members. Therefore, this study focused on the voluntary organizational behavior of the workers (Long-term Care Workers, Nurses, Nursing assistant, Physical therapist, Social Worker) in the elderly welfare organization and selected the contextual performance and job fit as research variables. Job characteristics, compensation system, and organizational climate variables were also selected as independent variables. Specific Job Characteristics cause important psychological conditions of the elderly welfare workers. This psychological state has a positive effect on individual motivation and job satisfaction. The problem of enhancing performance to achieve the goals of the elderly welfare organization is motivated by the endeavor of the workers. It is to create environment so that various tasks can be performed efficiently. In particular, the compensation system of the elderly welfare organization

will have a positive effect on the overall performance of the organization by forming the motivation of the workers.[2] A shared perception of how things happen in a shared perception of formal and informal organizational policies, practices and procedures is called the organizational climate. The organizational climate is an organization-wide concept that represents the organization's goals and the appropriate means of achieving them.[3] Workers in the elderly welfare organization are accompanied by ethical values. The organizational ethic climate has been studied in relation to the ethical consciousness of employees in the form of an organizational climate.[4] The purpose of this study is to analyze the relationship between organizational characteristics Job Characteristics, Compensation system, or organizational climate and organizational context of elderly welfare workers. An empirical analysis is made by adding the mediating path of job fit.

METHOD

Subjects of Investigation: The subjects of this study are the workers (Long-term Care Workers, Nurses, Nursing assistant, Physical therapist, Social Worker) of the elderly welfare organizations and the civilian organizations. 879 respondents were analyzed. Among the subjects, 297 (33.8%) were working in public organizations and 582 (66.2%) were working in civilian organizations.

Measuring Tools: The potential variables in this study are Job Characteristics, Compensation system Organizational climate, Job fit, and contextual performance. All questions consist of five points, a likert scale (not at all = 1 and very yes = 5). Job Characteristics was a numerically modified measure of Hackman & Oldham (1976).4 It consisted of nine questions. The measurement tools of the Compensation System Sang Hoon, P. (2017)[6] were used in a numeral manner. The questionnaires consisted of four questions. The organizational climate was based on the ethical climate questionnaire (ECQ) developed by Cullen &Victor (1993)[7] and completed the text (2010) Lee, Gye Seun (2010).[8] The questionnaire consists of a total of 19 questions. Job fit uses a measure of modification of tools developed by Cable & De Rue (2002)[9] and consists of six questions in total. Contextual performance was based on studies by Borman and Motwidlo (1993) and studies by Van Scotter and Motwidlo (1996)[10] to help with the findings used by Sang-hoon, L (2015).[11] The questionnaire consists of eight questions in total.

DATA ANALYSIS

This study was carried out a correlation analysis using the SPSS 23.0. Using AMOS 23.0 was applied to the average group analysis and potential analysis. The structural equation model through the RMSEA, TLI, and CFI assessed the fit of the model. If the value is less than 0.05 RMSEA good fit, 05-.08 is the right fit. If the value is 0.90 or more TLI and CFI good fit.[12] Use the structural equation model to perform empirical analysis using control variable validation, multi-group analysis, and latent mean analysis. Verification of control variables verifies whether variables of demographic characteristics influence measurement variables. Categorical data are treated as dummy variables. The results are as follows: 1= Female, 1 = university, 1 = marriage and 1 = public organization.

RESULT

Descriptive Statistics and Correlational Relationship: In the structural equation model, distorted results can be derived if the variables to be measured are not satisfied with the normal distribution condition. As a result of the analysis, the main variables were all satisfied with the normal distribution condition (reason Skewness <2, Kurtosis <4),[12,13] which is a requirement to apply the structural equation model.

Table 1: General characteristics of the subjects

Division	Mean	SD	Skewness		Kurtosis	
			Statistic	SD	Statistic	SD
Job Characteristics	3.342	.525	-.407	.082	1.061	.165
Compensation System,	3.205	,638	-.757	.082	.914	.165
Organizational Climate	3.561	.520	-1.051	.082	2.703	.165
Job Fit	3.311	.650	-.705	.082	1.162	.165
Contextual Performance	3.486	.574	-1.083	.082	2.538	.165

The correlational relationship between input variables used to test causality between variables was found to be good. In order to verify the multicollinearity, we conducted a correlational relationship analysis between the research model variables. All appeared to be good.

Table 2: Correlational Relationship

Variable	1	2	3	4	5
1	1				
2	.302***	1			
3	.285***	.251***	1		
4	.298***	.380***	.433***	1	
5	.367***	.296***	.497***	.478***	1

- 1. Job Characteristics, 2. Compensation System, 3. Organizational Climate, 4. Job Fit, 5. Contextual Performance

- * p<.05, ** p<.01, ***p<.001

Measurement Model Test: The analysis of the measurement model showed that the fit assessment of the measurement model was significant. Job satisfaction, compensation system, organizational climate, and job fit were found to be variables that affect the contextual performance.

Table 3: Research Models Fit

Fit	χ^2	DF	TLI	CFI	RMSEA
Models	390.026	160	.944	.953	.040

Comparison of measurement models and Latent mean analysis: For latent mean analysis, all the model's configural invariance, metric invariance, and intercept scalar invariance should be established.[12] In order to verify the configural invariance of the measurement model, the correlation between all potential variables was allowed and the fitness of the baseline model, which allowed free estimation of the parameters, was compared. All were satisfied. (Public organization χ^2=298.381(DF=160, N=220), p=.000, TLI=.932, CFI=.943, RMSEA=.054, private organization χ^2=302.608(DF=160, N=659), p=.000, TLI=.931, CFI=.942, RMSEA=.039) Since the formal identity of the model was verified, the measurement identity model was the nested model of the configural invariance. Therefore, the model was verified by the difference of the χ^2 value ($\Delta\chi^2$) using the degrees of freedom of the two models. As a result, the difference between χ^2 values was statistically significant ($\Delta\chi^2$ (15, N=879) = 36.087, p = .002). The intercept identity due to the difference in values was rejected. However, it is considered that the invariance constraints are not rejected if the fitness indexes TLI, RMSEA, etc. are not worse than the configural invariance.[14] There is little difference in fit between Model 2 and Model 1 (ΔTLI=-. 002, ΔRMSEA = .000). Metric invariance was established. Public and private organizations thus confirmed that the measurement tools worked in the same way.

Table 4: The fit index for invariance validation

Division	χ^2	DF	TLI	CFI	RMSEA
Model 1	601.147	320	.932	.942	.032
Model 2	637.234	335	.930	.938	.032
Model 3	791.384	354	.904	.910	.038
Model 4	842.035	359	.895	.901	.039

- Model1: Configural Invariance, Model2: Metric Invariance. Model3: Metric and Scalar invariance. Model4: Metric, Scale, Factor Variance Invariance

Since metric invariance was established, we next verified the intercept identity. The difference between χ^2 values between the model 2 and the intercept model (model 3) with the invariance constraints added to the intercept of each measurement variable was statistically significant ($\Delta\chi^2$ (19, N=879) =154.150. p=.000). The intercept identity due to the difference in values was rejected. However, as explained in the previous metric invariance verification process, the fit index, such as TLI and RMSEA, did not change significantly between the models 3 and 2 (ΔTLI = .026, ΔRMSEA = .006) It was confirmed that the intercept identity was established. This shows that measurement tools and intercepts in public and private organizations function in the same way, so that the observed mean difference between the two groups reflects the actual difference in potential variables. In latent mean analysis, the mean of the factors is not directly estimable. The potential average of the measurement organization was measured assuming the potential average of the public organization to be zero. The fit of the factor variance invariance model

(Model 4) is compared with the intercept scalar invariance model (Model 3) because the common standard deviation is applied when the variance of the latent variable is the same. The comparison showed little change ($\Delta\chi^2$ (5, N=879) =50.651. p< .001. ΔTLI=-.009, ΔRMSEA=.001). Factor variance invariance was secured. Thus, the effect size values were calculated using a common standard deviation. According to Cohen's criteria,[15] there was no difference between public and private organizations in Job Characteristics. In the Compensation system, the difference between public and private organizations was relatively large. In the organizational climate, job fit, and contextual performance, the difference between public and private organizations was more than moderate. All of them showed that private organization is higher than public organization.

Table 5: Latent mean difference analysis

Division	Public		Private		Effect Size (d)	Total Mean
	Latent Mean	Mean	Latent Mean	Mean		
Job Characteristics	0	3.372	-.084	3.327	.168	3.342
Compensation System	0	2.923	.478***	3.345	.771	3.205
Organizational Climate	0	3.450	.175***	3.618	.363	3.561
Job Fit	0	3.156	.221***	3.390	.388	3.311
Contextual Performance	0	3.400	.125**	3.529	.264	3.486

-* p<.05, ** p<.01, ***p<.001

Comparison of inter-group path coefficients: The test of structural model invariance across the groups is to analyze the difference in path coefficients between measurement models in the structural equation model. The analysis was done through the process of metric invariance constraints and cross-group equality constraints.[14] Metric invariance constraints verify that the results of each group response are identical in the study model. The fit of the path model with the same fixed standardized estimates of all factors for each latent variable was measured. The analysis showed satisfactory fit (χ^2=637.234(DF=335), p=.000, TLI=.930, CFI=.938, RMSEA=.032). As a result of the analysis, the path coefficients affecting the contextual performance were found to be job characteristics, organizational climate, and job fit in public organizations. In the private organization, the organizational climate and the job fit were found.

Table 6: Models of group-specific parameter estimates

Parameter		Public	Private
Job Fit	Job Characteristics	.358(.310)***	.050(.048)
	Compensation System	-.025(-.023)	.447(.487)***
	Organizational Climate	.680(.532)***	.252(.225)***
Contextual Performance	Job Characteristics	.366(.382)***	.088(.103)
	Compensation System	-.148(-.159)	.098(.131)
	Organizational Climate	.407(.383)***	.469(.513)***
	Job Fit	.200(.241)**	.242(.295)***

- Number: Regression Weights (standardized Regression Weights)

- * p<.05, ** p<.01, ***p<.001

In addition, there is a significant difference between public and private organizations. The model with invariance constraints applied to all path coefficients in the model is compared with the baseline model as shown in Table 7. As a result of the analysis, the fitness of path identity showed a satisfactory level of fit (χ^2=682.914(df=342), p=.000, TLI=.922, CFI=.930, RMSEA=.034). Five pathways were found to be statistically significant in terms of invariance constraints. Job Characteristics → Job fit ($\Delta\chi^2$ = 6.537, df = 1, p <.05), Compensation system → Job fit ($\Delta\chi^2$ = 6.502, df = 1 , p <.05), organizational climate → job fit ($\Delta\chi^2$ = 17.589, df =

1, p <.001), job characteristics → organizational context ($\Delta\chi^2$ = 5.982, df = 1, p <.05), Compensation system, → contextual performance ($\Delta\chi^2$ = 19.704, df = 1, p <.05). Among the statistically significant path coefficients, significant pathways were found that showed differences between public and private organizations. Standardized regression weights were found to be .532 (p <.001) for public organizations and .225 (p <.001) for private organizations. The organizational climate of the public organization has a greater influence on the job fit.

Table 7: Differences between groups (Variation)

Parameter		Difference comparison		
		ΔDF	**$\Delta\chi^2$**	**ΔTLI**
Job Fit	Job Characteristics	1	6.537*	.001
	Compensation System	1	6.502*	.001
	Organizational Climate	1	17.589***	.004
Contextual Performance	Job Characteristics	1	5.982*	.001
	Compensation System	1	19.704***	.004
	Organizational Climate	1	.394	.000
	Job Fit	1	.212	.000
All Constrained		7	45.680***	.007

- * p<.05, ** p<.01, ***p<.001

CONCLUSION

This study examined the relationship between the influences on the contextual performance of the elderly welfare public organization and the private organization social workers (Long-term Care Workers, Nurses, Nursing assistant, Physical therapist, Social Worker).

The following results were obtained. First, job satisfaction, compensation system, organizational climate, and job fit were found to be variables that affect the contextual performance. Second, welfare public organizations and private organizations showed differences among groups in job characteristics, compensation system, organizational climate, job fit, and organizational context. All of them showed that private organization is higher than public organization.

Third, there is a difference between public and private organizations in the way of affecting job characteristics, compensation system, organizational climate, job fit, and organizational context. Fourth, the analysis of the test of structural model invariance across the groups revealed three significant path coefficients. Fifth, path coefficients affecting contextual performance were found to be job characteristics, organizational climate, and job fit in public organizations. In the private organization, the organizational climate and the job fit were found. Sixth, five paths were found to be statistically significant in terms of invariance constraints.

Ethical Clearance: Gwangju University

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Conflict of Interest: Nil

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A Study on the Effect of Job Performance on Emotional Labor, Career Turnover Intention, Job Stress, Growth Need

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ABSTRACT

This study analyzed the effects of emotional labor, career turnover intention, and job stress on job performance health workers in the social welfare. Growth need was used as a parameter. A two-dimensional analysis of the characteristics of individuals and facility types was performed. The results of the analysis are as follows. First, there was a difference between personal characteristics, type of facility, emotional labor, career turnover intention, job stress, growth need, and job performance. Second, the results of the potential average analysis of the group health workers in the social welfare (gender, public organization, and private organization) were not statistically significant. In the type of facility, public organization has higher emotional labor and job stress than private organization. The effect size was medium. There was a difference between public and private organizations. Third, a significant gender path was found in the invariance constraint. A path of career turnover intention → growth need was found statistically significant. Fourth, in the invariance constraint, two statistically significant paths were found in the facility type. One, a path of emotional labor → job performance was found. Two, a path of growth need → organizational performance was found. Fifth, there was no statistically significant path in the path of independent variable (Emotional labor, Career turnover Intention, Job stress) → growth need → job performance.

Keywords: *Emotional Labor, Career Turnover Intention, Job Stress, Growth Need, Job Performance*

INTRODUCTION

In order to improve the quality of social welfare services and to achieve the goals of the organization in social welfare organizations, an environment should be created to enable the health workers in the social welfare to perform their duties successfully. Job performance is an important factor influencing organizational development and successful productivity improvement. Job performance is a good way to develop social work professions. The first criterion for evaluating the productivity of health workers in the social welfare is the result of activities of health workers in the social welfare, and the evaluation of activities of health workers in the social welfare is in line with that of job performance.[1] The feelings of humans themselves were not considered in achieving organizational goals or increasing job performance. However, emotional labor has become a factor affecting organizational performance, as emotional labor has been instrumental zed and the form of emotional labor has been injected into organizational activities.[2] Emotional labor may have a difference between the actual emotional state experienced by the health workers in the social welfare and the emotional expression required by the social welfare organization's emotional expression norms for effective job performance or organizational adaptation. As the health workers in the social welfare perform their jobs with professionalism, the higher their tendency to identify and identify with their specialties, the lower their career turnover intention. It is also reported that they do not want to move to another institution easily to maintain and develop their professionalism.[3] Health workers in the social welfare sometimes want to leave the practice as dysfunctional emotions or consciousness that a specific individual feels due to individual responses to various characteristics of the work environment or perception of conditions or events in social welfare practice. Currently, one can experience job stress, an individual's emotional state.[4] Motivating health workers in the social welfare to participate voluntarily in their jobs is very important for organizational management. It is growth needs to focus on the motivators that health workers in the social welfare voluntarily bring to the goals of the organization. Growth need has an important impact on individual career development and organizational goals,

and it positively motivates employees by assigning job responsibilities and meaning to their members.[5] The purpose of this study is to present the data for the effective management of social welfare projects by discovering group differences and significant paths according to organizational and individual characteristics of factors affecting job performance of health workers in the social welfare. We attempt to secure a more meaningful path through a two-dimensional analysis of the organizational and individual characteristics of the potential mean analysis of structural equations.

METHOD

Research Models: This study empirically analyzes the factors affecting the job performance of health workers in the social welfare. The basic hypothesis is that emotional labor, career turnover intention, and job stress affect the job performance of health workers in the social welfare. It is also influencing job performance as an intermediary path to growth need.

Subjects of Investigation: The subjects of this study are health workers in the social welfare. The sample of the study was a non - random sampling method and was conducted by self - report questionnaire. 1,157 respondents were analyzed except for those who were unfaithful. Among the subjects, 287 (24.8%) were males and 870 (75.2%) were females. In the type of facility, 438 persons (37.9%) were employed by public organizations and 719 (62.1%) were employed by civilian organizations

Measuring Tools: The potential variables in this study are Emotional Labor, Career Turnover Intention, Job Stress, Growth Need, Job Performance. All questions consist of five points, a Likert scale (not at all = 1 and very yes = 5). The instrument for measuring the degree of emotional labor was composed of 11 items based on the study of Morris & Feldman (1996).[6] Career turnover intention was based on data modified by Choi,[8] which was developed by Blau.[7] A total of four items were constructed. Job stress was measured by modifying the tool used by Kwak[10] based on the study of Chess.[9] It consists of 14 questions. The growth need was consisted of 5 items by using the Job Diagnostic Survey (JDS) developed by Hackman and Oldham.[11] Job performance is composed of 8 items by revising the scale of S. H. Lee (2013).[12]

DATA ANALYSIS

This study analyzed data using SPSS 23.0 for Windows and AMOS 23.0. Technical statistical analysis and research models were verified, and structural equation modeling conducted. The fitness of the model was evaluated through the RMSEA, TLI, and CFI established in the standard as of fitness index. The RMSEA value is a good fit if it is less than .05, and a good fit if it is 05-.08. The TLI and CFI values are better than .90.[13] An empirical analysis was conducted by applying a multi - group analysis and a latent mean analysis using a structural equation model.

RESULT

Descriptive Statistics: In the structural equation model, distorted results can be derived if the variables to be measured are not satisfied with the normal distribution condition. Table 1 shows the descriptive statistics of the measurement variables. The results showed that the main variables were all satisfied with the normal distribution condition (Skewness <2, kurtosis <4),[14] which is a requirement to apply the structural equation.

Table 1: Descriptive Statistics

Division	Emotional labor	Career Turnover Intention	Job Stress	Growth Need	Job Performance
Mean (SD)	3.392 (0.671)	3.427 (0.804)	3.476 (0.715)	3.614 (0.721)	3.585 (0.682)
Skewness	-0.419	-0.398	-0.516	-0.791	-0.734
Kurtosis	0.650	0.314	0.543	1.365	1.509

The correlational relationship between input variables used to test causality between variables was found to be good.

Table 2: Correlational Relationship

Variable	1	2	3	4	5
1	1				
2	.525***	1			
3	.521***	.557***	1		
4	.560***	.609***	.643***	1	
5	.525***	.483***	.508***	.709***	1

- 1. Emotional Labor 2. Career Turnover Intention 3. Job Stress 4. Growth Need 5. Job Performance

- * p<.05, ** p<.01, ***p<.001

Measurement Model Test: As a result of the analysis of the research model, the fit assessment of the research model was found to be the fit level. All the measurement variables used in the research model were found to be appropriate.

Table 3: Research Models Fit

Fit	χ^2	DF	TLI	CFI	RMSEA
Models	608.372	142	.951	.959	.053

Comparison of measurement models and Latent mean analysis: Latent mean analysis should be established in all stages of the research model (Configural invariance, metric invariance, scalar invariance).[13] The analysis method proposed by Kim, Joo-Hwan et al. (2009) was used.[13] **Table 4** shows that all the analysis results are established. This result implies that the observed mean difference reflects the actual difference between the groups to the latent variable. The conditions of latent mean analysis were met. Factor variance invariance was verified as a precondition for calculating the effect size in latent mean analysis. Factor variance invariance the fit index did not deteriorate more than the fit index of Model 3(Gender: ΔTLI=.001, ΔCFI=.000, ΔRMSEA=.000; Facilities: ΔTLI=.000, ΔCFI=-.002, ΔRMSEA=.000). Factor variance invariance was established (Model 4).

Table 4: The fit index for invariance validation

Division	Gender					Facilities				
	χ^2	DF	TLI	CFI	RMSEA	χ^2	DF	TLI	CFI	RMSEA
Model 1	818.083	284	.945	.954	.040	853.197	284	.941	.951	.042
Model 2	844.617	298	.946	.953	.040	890.091	298	.942	.949	.041
Model 3	871.573	317	.948	.952	.039	1032.419	317	.934	.939	.044
Model 4	880.289	322	.949	.952	.039	1051.562	322	.934	.937	.044

- Model1: Configural Invariance, Model2: Metric Invariance. Model3: Metric and Scalar invariance. Model4: Metric, Scale, Factor Variance Invariance

In the latent mean analysis, the mean of the factors can't be directly estimated. Therefore, we analyze the potential average of public organizations and men as '0'. Therefore, the potential average of private facilities and Female is assumed to be '0'. Potential mean difference analysis was done as in Table 5 and Table 6. The effect size values were calculated using a common standard deviation. According to Cohen's proposal, less than .2 is defined as a small effect size. Below .5 we defined the effect size as medium. 8 or greater defines the effect size as large.[15] There was no statistical significance in gender. In the type of facility, public organization has higher emotional labor and job stress than private facilities. The size of the effect was moderate, with a difference between public and private facilities.

Table 5: Latent mean difference analysis (1)

Division	Public		Private		Effect Size (d)	Total Mean
	Latent Mean	Mean	Latent Mean	Mean		
Emotional labor	.173***	3.493	0	3.330	0.211	3.392(.671)
Career Turnover Intention	.072	3.473	0	3.400	0.080	3.427(.804)
Job Stress	.191***	3.595	0	3.403	0.226	3.476(.715)
Growth Need	.071	3.661	0	3.585	0.084	3.614(.721)
Job Performance	-.044	3.557	0	3.602	-0.053	3.585(.682)

* p<.05, ** p<.01, ***p<.001

Table 6: Latent mean difference analysis (2)

Division	Female		Male		Effect Size (d)	Total Mean
	Latent Mean	Mean	Latent Mean	Mean		
Emotional labor	0	3.381	-.015	3.396	-0.018	3.392(.671)
Career Turnover Intention	0	3.439	.016	3.423	0.018	3.427(.804)
Job Stress	0	3.447	-.032	3.485	-0.038	3.476(.715)
Growth Need	0	3.632	.025	3.608	0.029	3.614(.721)
Job Performance	0	3.534	-.062	3.602	-0.075	3.585(.682)

* p<.05, ** p<.01, ***p<.001

Comparison of inter-group path coefficients: The test of structural model invariance across the groups is an analytical technique that verifies whether the path coefficient between measurement models in a structural equation model is the same as the path coefficient between different groups. Measuring model of major variables, the path model that examines the relationship between each variable in gender and facility was tested and the differences among groups were compared. For each latent variable, the load values of all factors were fixed, and the fitness of the path model was measured. The results of the analysis show that all of them are satisfactory. The path coefficients are presented in Table 7.

Table 7: Models of group-specific parameter estimates

Parameter		Gender		Facilities	
		Female	Male	Public	Private
Growth need	Emotional labor	-.042(-.035)	.427(.340)***	.338(.263)*	.043(.036)
	Career turnover intention	.211(.209)**	.283(.250)*	-.125(-.135)	.524(.481)***
	Job stress	.979(.719)***	.480(.388)**	.924(.712) ***	.568(.418)***
Job performance	Emotional labor	.303(.296)***	.186(.179)	.317(.311)**	.274(.267)***
	Career turnover intention	-.088(-.104)	-.008(-.008)	-.043(-.059)	-.234(-.252)*
	Job stress	-.149(-.131)	-.160(-.158)	.111(.107)	-.148(-.129)
	Growth need	.661(.787)***	.651(.792)***	.387(.487)***	.812(.958)***

* p<.05, ** p<.01, ***p<.001

In order to find out the significant difference between the path coefficients among the groups, seven models with the invariance constraints were compared with the baseline models. As shown in Table 8, the fitness of the model did not change even if all path coefficients were invariance constrained. (Gender: $\Delta\chi$ (7, N=1,157) =13.645, ΔTLI=.001, ΔCFI=-.001, ΔRMSEA=.000; Facilities: $\Delta\chi$ (7, N=1,157) =34.939, ΔTLI=-.002, ΔCFI=.-.002, ΔRMSEA=.001)

Table 8: Research Models Fit

Fit		χ^2	DF	TLI	CFI	RMSEA
Factor	Gender	844.617	298	.946	.953	.040
	Facilities	890.091	298	.942	.949	.041
path	Gender	858.262	305	.947	.952	.040
	Facilities	925.030	305	.940	.947	.042

A statistically significant path was found in the invariance constraint. In gender, path of career change intention → growth need was found. The standardization factor of the path was .209 (p <.01) for women and .250 (p <.05)

for men. The male group had a stronger influence than the female group. In the Facilities, two significant paths were found. First, a path of emotional labor → job performance was found. Public facilities .311 (p < .01), private facilities .267 (p < .001). Public facilities had a stronger impact than private facilities. Next, a path of growth need → job performance was found. Public facilities .487 (p < .001), and private facilities .958 (p < .001). Private facilities had a stronger impact than public facilities.

Table 9: Differences between groups (Variation)

Parameter		Gender			Facilities		
		ΔDF	Δχ²	ΔTLI	ΔDF	Δχ²	ΔTLI
Growth Need	Emotional labor	1	.915	.000	1	.109	.000
	Career Turnover Intention	1	11.824**	.001	1	2.345	.000
	Job Stress	1	.374	.000	1	3.335	.000
Job Performance	Emotional Labor	1	.217	.000	1	15.200***	.001
	Career Turnover Intention	1	.003	.000	1	1.650	.000
	Job Stress	1	4.107*	.000	1	2.681	.000
	Growth Need	1	.006	.000	1	11.227**	.001
All Constrained		7	13.645	-.001	7	34.939***	.001

* p<.05, ** p<.01, ***p<.001

CONCLUSION

The following results were obtained. First, research variables such as emotional labor, career turnover intention, job stress, growth need, and job performance were appropriate. Second, emotional labor, career turnover intention, job stress, growth need, and job performance differed. Third, there was a difference only in the facility type in the results of the potential average analysis of the groups (Gender, Facilities) of health workers in the social welfare. There was no statistical significance in gender. In the type of facility, public organization has higher emotional labor and job stress than private facilities. The size of the effect was moderate, with a difference between public and private facilities. Fourth, significant path of gender was found in invariance constrained. The standardization factor of the path was .209 (p <.01) for women and .250 (p <.05) for men. The male group had a stronger influence than the female group. Fifth, In the Facilities, two significant paths were found. One, a path of emotional labor → job performance was found. Public organization .311(p<.01), and private organization .267 (p <.001). Public facilities had a stronger impact than private facilities. Two, a path of growth need → job performance was found. Public facilities .487(p <.001), and private facilities .958(p <.001). Private facilities had a stronger impact than public facilities. Sixth, there was no statistically significant path in the path of independent variable (Emotional labor, Career turnover Intention, Job stress) → growth need → job performance.

Ethical Clearance: Gwangju University

Source of Funding: This Study was conducted by research funds from Gwangju University in 2018.

Conflict of Interest: The results of this study are only for some strata of health workers in the social welfare. Therefore, there is a limit to represent all the health workers in social welfare organizations

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Application of Digital Rubbing Massage in Pain Level, Comfort, and Duration of Labor Phase

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ABSTRACT

Background: Childbirth process is always marked with pain due to the existence of uterine contractions and the cervical dilation at stage one. The objective of this research was to investigate the intervention of independent nursing using digital rubbing massage (DRM) pain relief and its effect on pain level, comfort, and duration of active labor phase of primiparous women.

Method: This research used the true experimental pre-test - post-test design with a control group. The population in this study was all primipara pregnant women in inpartu condition in a health center of Pekalongan City, Indonesia. The subject of this research was 36 people who were selected by random sampling and divided into two groups. The division of subjects as intervention group and control group was determined randomly by using a lottery. The data were analyzed using a t-test.

Results: The results showed that there were significant differences in the degree of pain ($p<0.0001$), comfort ($p<0.0001$), and duration of labor ($p<0.0001$) in primiparous maternity women between the intervention group and the control group. The intervention of Digital Rubbing Massage (DRM) Pain Relief has an effect on decreasing the level of pain, increasing the comfort and shortens the duration of active labor phase in primiparous maternity.

Conclusion: The DRM Pain Relief instrument should be applied as an independent nursing intervention to relieve pain and increase comfort during childbirth process on a maternal unit or obstetric neonatal service in health care center.

Keywords: *Digital Rubbing Massage, Pain Relief, Maternal Pain, Primiparous*

INTRODUCTION

Giving birth is always characterized by pain originating from uterine contractions and cervical dilatation. The first stage of childbirth is the opening time of cervix between the opening of 0 cm until the complete opening of 10 cm. The depletion and opening of the cervix in primigravida last for approximately 12 hours. In this phase, the increment in both the length and frequency of uterine contractions will make the perceived pain grow and become stronger. Most women experience pain during delivery with moderate to severe pain intensity. Several studies have suggested that by using visual scale analog pain assessment, the mean intensity of pain during labor is 8.21 + 2.65 [(1)]. Primigravidas experience severe pain as much as 54%, moderate pain as much as 30% and light pain as much as 16% [(2)]. The intensity of maternal pain that experienced by women was the severe pain of 53.33% and moderate pain of 46.67% in Pekalongan City, Indonesia [(3)].

Birth pain should be addressed as it affects the functional mechanisms that lead to hyperventilation, thereby lower the CO2 levels and increase the blood ph. When the mother's CO2 level is low, the fetus' CO2 level is also low resulting in a slow deceleration of the fetal heart rate. Pain also causes uncoordinated uterine activity resulting in longer labor which ultimately threatens the lives of both mother and fetus [(4)]. The pain

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represents the discomfort, while the comfort describes the controlled pain.

The nurse or midwife says it is very inefficient to massage the patient with the fingers whenever a pain complaint occurs. On the other hand, the use of massage electronic devices has not been specifically used to overcome discomfort during labor and facilitate labor. The majority of massage equipment is only for the purpose of eliminating fatigue, and not yet to measure comfort for active phase and duration of labor. As such, this research aims at exploring the use of digital rubbing massage in eliminating the pain during labor.

METHODOLOGY

This research used true experimental design pre-test - post-test control group. This design is used to determine the effect of Digital Rubbing Massage (DRM) Pain Relief to the pain level, comfort, and duration of active labor phase of primiparous women. Digital Rubbing Massage Tool (DRM) Pain Relief was self-developed by the authors so that the overall research consisted of 2 stages, namely the development of the instrument and the validation of the usage of the instrument.

Development of the instrument began from literature studies, expert consultation, and then carried out the preparation of prototypes. The pain reliever was developed based on a principle similar to the developed Pain Digital Acupressure [5] Digital Rubbing Massage (DRM) Pain Relief is designed with a binary beat to provide rubbing sensation and combined using an Android or a notebook applications. Determination of wave type, frequency, amplitude, and duration of massage was done by trial and identification of 20 respondents. The subjects of the study were 36 primiparous mothers in the active phase.

This study had three dependent variables which were pain level, comfort, and duration of active labor phase and four independent variables which were education, occupation, mother's age, and pregnancy age. Simple descriptive pain intensity scale instruments were used to measure pain and childbirth comfort questionnaire was used to measure comfort during childbirth. A statistical test was used to analyze the difference of variable degree of pain and comfort by using t-test.

RESULTS

The results of this study indicated that the sine wave with the frequency of 50 Hertz was felt most comfortable by the respondents so that this wave was selected as the wave of DRM Pain Relief with Amplitude of 0.8 and duration of massage of 30 minutes. the average comfort score in both the intervention group and the control group experienced an increase. However, the increase in comfort score in the intervention group was more significant with the mean difference of 11.61 than the control group which was only an average difference of 0.95 between the scores before and after the treatment. The results showed that there was a difference of comfort before and after treatment ($p < 0,05$) in each group. Table 1 shows that there was a difference of average score between intervention group and control group on pre or post application of Digital Rubbing Massage (DRM) Pain Relief ($p < 0,05$).

Table 1: The Difference of Comfort Before and After the Application of DRM

Comfort	Intervention Group		Control Group		t*	p-value
	Mean	Standard Deviation	Mean	Standard Deviation		
Pre-application	25.78	2.463	28.11	1.844	-3.218	0.003
Post-application	37.39	1.914	29.06	1.474	14.634	0.000

The duration of active labor phase is measured from the fourth opening of the cervix to the born of the baby (in hours). Table 2 shows that the mean duration of the active labor phase between the intervention and control groups found a significant difference of $p < 0.0001$. The length of the active phase of labor in the intervention group was shorter by 2.39 hours compared with the control group.

Table 2: The duration of Active Labor Phase After the Application of DRM

Variable	Intervention Group		Control Group		t*	p-value
	Mean	Standard Deviation	Mean	Standard Deviation		
Duration of active labor phase (hours)	5.50	1.339	7.89	1.451	-5.133	0.000

t*: independent t-test

DISCUSSIONS

The Pain Relief (DRM) instrument is the development of the PDA (Pain Digital Acupressure) tool. The development of DRM is required because doing massage and rubbing manually at the same time are very inefficient and exhausting due to prolonged labor and uterine contractions that cause pain during the active labor phase within 6 to 8 hours in the normal delivery period [6,7].

Sine wave was chosen in this study because based on the result of identification of wave characteristics, the most comfortable perceived response was the sine wave (65%). These results were consistent with the previous study results of which suggests that square waves provide more pain sensation than sine waves [8]. The sine wave is the simplest type of wave, does not contain harmony tone and sounds soft or smooth, so it is very suitable for maternity and safe to for the baby. The principle in these waves is rapidly increasing in amplitude (rate rise) means the greater the ability of waves to generate neural networks [9].

The results of this study were relevant to the results of other studies in efforts to reduce the labor pain. The pain stimulus from cervical dilatation runs through the hypogastric plexus enters the spinal cord in thoracic 10, 11, 12, and lumbar 1. Based on this scientific reason, the location of the installation of two pairs of pads of the DRM device was in the area and proved capable significantly to relieve labor pain. DRM will stimulate the release of endorphin hormone which is an endogenous analgesic of the body.

Maternal mothers who had massage on their back had a lower pain intensity of 29.62 points than those that did not have; so there was a massage effect on the intensity of pain in the first stage of normal delivery ($p = 0.001$). Researchers also measured endorphin hormone levels using human beta-endorphin elisa kit. The results indicated that the mothers who had massage had higher levels of endorphins, which was 142.82 pcg/mL. There was an effect of massage on normal maternal endorphin levels ($p = 0.001$). This study was conducted in the maternal mothers at the first stage of latent phase in normal labor, not performed on the active phase of labor. The intensity of pain occurring in the first stage of latent phase is still rare and the intensity is still in the category of mild pain [10].

The intervention of back massage has also been studied with the result that there were effects of back massage on the adaptation of active labor phase pain, duration of second stage of labor, and primigravida labor bleeding ($p = 0.001$) [11]. Previous study stated that there was a relationship of husband's assistance with the decrease of pain in the first stage of active labor phase ($p = 0,015$). However, based on the scale of pain, with a good husband's assistance, there were still mothers who experienced severe pain [12]. This was because the mother could not concentrate when the husband gave attentions of both verbal and non verbal communication, so that the expected results of the husband's assistance was not optimal. Digital Rubbing Massage (DRM) is a solution in overcoming labor pain by establishing clients according to their needs. Nevertheless, measurements of endorphin levels have not been done in this study. Endorphin levels also play a role to give pleasure or happy that is part of comfort [13].

The hypothesis of this research stated that the independent nursing care of Digital Rubbing Massage (DRM) Pain Relief has an effect on the active labor phase enhancement in primiparous maternal mothers has been proven acceptable although the initial comfort score between the intervention group and the control group is already different. This condition is clinically very helpful for mothers in dealing with discomfort problems, the less mothers who experience discomfort or more mothers who experience comfort, the contraction of the uterus will be more adequate, reducing the number of prolonged labor, and prevent the emergence of complications in the mother and fetus [14].

The results of this study support the results of previous research which stated that massage as electrical stimulation could improve comfort, reduce one's condition from anxiety, emotional distress, nausea, and pain [15]. Interferential current electro-massage massage overcomes disability, pain, and improved quality of life in patients with low back pain [16].

The results of this study indicated the relationship between the degree of pain and comfort in the intervention group. When the pain score increased then the comfort score decreased and vice versa [17]. Comfort is in the same direction as relaxed conditions. Comfort and pain are two things that go incompatibly [18].

Results of the statistical analysis showed that the intervention group experienced active phase labor more quickly than the control group. The average duration of active labor phase in the intervention group was 5.5 hours, while the mean duration of active labor was 7.9 hours. This condition is clinically very useful for reducing the number of mothers who have an active time span of more than eight hours which may pose a risk to the mother and baby.

Digital Rubbing Massage (DRM) Pain Relief was developed to provide a rubbing massage sensation. Massage as well as rubbing movement has been proven to make the delivery process becomes faster and delivery becomes more smoothly although the duration and process are also affected by factors such as power (myometrial contractions and the ability of the mother to strain), passager (position, presentation, and size of the fetus), passageway, and psychology (fear, anxiety and stress conditions in the mother) [19]. The duration of labor may affect the health condition of the mother, even impact on maternal and fetal death. The problem of pain during labor is due to postpartum hemorrhage, infection, and obstetric fistula, whereas maternal death problems are associated with prolonged periods due to uterine rupture and infant mortality due to asphyxia [20].

CONCLUSION

The installation of the Digital Rubbing Massage (DRM) Pain Relief tool in the intervention group had proven that the tool was capable of reducing shorter labor duration in the primiparous maternal active phase which may reduce the likelihood of prolonged labor. The installation of the DRM instrument could also improve comfort during labor. This comfort will decrease catecholamines thereby increasing the effectiveness of uterine contractions.

Ethical Clearance: Ethical clearance was obtained from The Ministry of Health Polytechnic Semarang, Indonesia. We also wish to thank all the participants who contributed to this study.

Conflict of Interest: Nil.

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Using Propensity Score Bootstrapping on Determining the Model of the HIV/AIDS Patients' Assistance

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ABSTRACT

Background: The combination of Propensity Score Stratification (PSS) with a bootstrap method will get an estimate that has better accuracy because the covariates will be more balanced. Propensity score Bootstrapping is used to estimate the response to mentoring HIV/AIDS patients in RSUD dr. H. Moch. Ansari Saleh Banjarmasin South Kalimantan.

Method: The research method used is non-reactive based on secondary data. The study sample was HIV/AIDS patients who had undergone treatment for more than one year at RSUD dr. H. Moch.Ansari Saleh Banjarmasin, South Kalimantan. The response variable is *y*)*y*) CD4 (Cluster of Differentiation) level, while predictor variables (X_j) knowledge, attitude, self-concept, family support, and treatment in the form of antiretroviral therapy.

Results: From the test, the significance of parameters *bootstrap* shows that at the significance level $\alpha = 5\%$ indicating all covariates are significant, namely the covariate of knowledge, attitude, self-concept, family support. Estimation of the PSS bootstrap sample is best in the two strata group with a standard error of 0.0127 and a treatment effect of 0.4175.

Conclusion: The ATE (Average Treatment Effect) value in the univariate response using a proportion test with z test statistics showed that antiretroviral therapy and assistance affected Cluster of Differentiation (CD4) levels.

Keywords: *Propensity Score Stratification, Bootstrap, Antiretroviral Therapy*

INTRODUCTION

Based on reports from the hospital of Dr. H. Moch Ansari Saleh Banjarmasin in 2014, of 422 people who were HIV positive, only 138 people underwent regular therapy, and 14 people dropped out. The number of HIV/AIDS patients who do not undergo treatment regularly, probably because of no companion making HIV/AIDS patients are reluctant to conduct therapy in an orderly manner. As is well known if HIV/AIDS patients do not take antiretroviral therapy regularly, the HIV cannot be controlled so that it reduces the immune system which will affect CD4 levels, opportunistic infections and the quality of life of HIV/AIDS patients will decrease [(1)].

The highest risk of HIV-AIDS transmission in Indonesia comes from sexual relations (62.5%) followed by injecting drugs (16.1%), perinatal (2.7%) and homosexuals (2.4%) Until now; no drugs have been found which can kill the HIV. However, with the discovery of drugs that inhibit the replication of HIV known as Highly Active Antiretroviral Therapy (HAART), the death rate of HIV-AIDS patients can lower [(5)].

The study intends to examine the estimation of propensity score boots on CD4 levels of HIV/AIDS patients who received antiretroviral therapy along with mentoring as a treatment group and who only received antiretroviral treatment as a control group. This causal

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research is observational rather than experimental. The estimation method of the propensity score used is the Maximum Likelyhood Estimation (MLE) bootstrapping method. The technique used in the propensity score is a combination stratification method with the method bootstrap to estimate the Average Treatment Effect (ATE) and confounding used only one.

METHOD

This research is a secondary data-based documentation study. To complete the information contained in the research objectives required primary data collection through observational research with a survey approach. Secondary data were obtained from records medical at RSUD dr. H. Moch Ansari Saleh Banjarmasin, covering the characteristics of respondents, antiretroviral therapy, mentoring, CD4 levels. Primary data was also taken through a questionnaire on the respondents include knowledge, attitudes, self-concept, and family support.

The location of this research in Regional General Hospital Dr. H. Moch. Ansari Saleh Banjarmasin Kalimantan Selatan. The research period was 2015 to 2016.

The population of this study was all the status of HIV/AIDS patients in RSUD dr. H. Moch Ansari Saleh Banjarmasin, South Kalimantan, from 2008 to 2016, while the sample is every HIV/AIDS patient, who has undergone treatment for more than six months in dr. H. Moch Ansari Saleh, Banjarmasin, South Kalimantan. After CD4 levels of HIV/AIDS patients were examined for the first time and then examined every six months again.

The variables used in this study consisted of response variables (y)CD4 levels. Predictor variables (x_i) included knowledge, attitudes, self-concept and family support. The treatment variable (Z) as respondents were given antiretroviral therapy and regular and continuous peer assistance. While another variable is the respondents, who were only given antiretroviral therapy without support.

RESULTS

Propensity Score used in this analysis is derived from the following results.

1. **Determination of variables confounding using Chi-square:** This testing is to find out the relationship between antiretroviral therapy and the overall predictor variables obtained *value* = 0.000 smaller than α = 0.05, meaning there is a relationship between antiretroviral therapy and predictor variables, as well as the relationship between antiretroviral therapy and response variable.

2. **Logistic regression model on covariate (x) against confounding (z)**

Table 1: Logistic regression test results concurrently with antiretroviral therapy

Antiretroviral Therapy	Chi-square	Significant
Step	86.882	0.000
Block	86.882	0.000
Model	86.882	0.000

Table 1 shows the significance level used is α = 5 percent and the test statistics used are G test statistics that follow the distribution Chi-Square. P-value = 0.000 <α = 0.05, then the decision taken is that there is at least one predictor variable significant not equal to zero.

Table 2: Logistic regression test results and partial odds ratio antiretroviral therapy

Antiretroviral Therapy	B	Significance	Exp(β)
Knowledge of Good	-2.706	0.000	0.067
Positive Attitudes	-1.754	0.000	0173
Good Self Concept	-1.112	0.031	0329
Family Support	-1.232	0.013	0.292
Constant	3.998	0.000	54,511

Table 2 shows that the four variables namely good knowledge, positive attitude, supportive family support have a significant influence on antiretroviral therapy. This result is demonstrated through a p-*value* less than α (0.05).

Furthermore, the suitability of the model is tested to determine whether there is a difference between the results of the observation and the probability of the prediction. The results of this table are cross-classification of response variables with dichotomous scale. The research shows that the percentage of all observations classified

correctly is 84.0% so that the magnitude of the misclassification is 16.0%. The misclassification value is not too significant, so it can be concluded that the logistic regression model is good enough to classify observations with only antiretroviral therapy (*sensitivity)* percentage of 81.9 percent and the percentage of antiretroviral therapy and assistance (*specificity*) of 85.9 percent.

3. **Estimated value of propensity score:** The propensity score value in this case, is estimated using a model logistic regression. Therefore the logistic regression model is the same as the *propensity score,* so to know the propensity value, the model parameters must be known in advance. The parameters of the logistic regression model are estimated by the Maximum Likelihood Maximum method. The following is a logistic regression model for antiretroviral therapy :

$$g(x) = 3.998 - 2.706X_{1(1)} - 1.754X_{2(1)} + 1.112X_{3(1)} + 1.232X_{4(1)}$$

Based on the estimation of the parameters above, the obtained *propensity score* will be used at the next stage. The model *propensity score* used is as follows.

$$e(x_i) = \frac{\exp(g(x))}{1+\exp(g(x))} \quad \ldots(1)$$

from equation (1) above, the value of propensity is obtained for 150 research subjects ranging from 0 to 1 because it is a limited opportunity.

4. **Estimation of Average Treatment Effect (ATE) or effect of antiretroviral therapy on CD4 levels from HIV/AIDS patients:** Providing antiretroviral therapy has a significant effect on CD4 levels in HIV/AIDS patients as p-value is $0.000 < \alpha = 5\%$. The effect of antiretroviral therapy and assistance on increasing CD4 levels in HIV/AIDS patients is 0.678 in the original data.

   The bootstrap data giving antiretroviral therapy has a significant effect on CD4 levels of HIV/AIDS patients. It can be seen from the p-value = $0.000 < \alpha = 5\%$. The effect of antiretroviral therapy and accompaniment on increasing CD4 levels in HIV/AIDS patients is 0.690.

Table 3: ATE estimation results for antiretroviral therapy against CD4

Levels of CD4	Sub-Classes	Value of ATE	ATE	Z	p-value
Original	1	0.118421	-0.678876	-11.38	0.000
	2	0.797297			
Bootstrap	1	0.135802	-0.690284	-11.62	0,000
	2	0.826087			

DISCUSSION

Combined antiretroviral (ARV) treatment is the best therapy for human infected patients of Human Immunodeficiency Virus (HIV) to date [(2)]. The primary purpose ARV administration is to reduce the amount of virus (viral load) so that it will improve the HIV patient's immune status and reduce deaths from opportunistic infections[(3)]. In 2015, according to the World Health Organization (WHO) antiretroviral has been used in 46% of patients HIV in various countries. The use of ARVs has been managed to reduce mortality related to HIV/AIDS from 1.5 million in 2010 to 1.1 million in the year of 2015. Antiretroviral besides being an antivirus is also useful to prevent transmission of HIV to sexual partners, and HIV transmission from mother to child. Up to finally expected to reduce the number of cases of people new HIV infections in various countries [(4)].

This study was conducted to determine the effect of antiretroviral therapy on HIV/AIDS patients. The research data contained several covariates involved namely knowledge (X_1), attitude (X_2), self-concept (X_3), family support (X_4), and antiretroviral therapy (Z) as well as three response variables (*outcomes*) namely CD4 levels (Y_1). Based on the result, it is known that four covariates X (X_1, X_2, X_3, X_4) are associated with antiretroviral therapy and are risk factors of CD4 of HIV/AIDS patients.

Logistic regression modeling with more than one predictor variable (simultaneously) needs to be done to examine the multicollinearity relationship between predictor variables. If the connection is very close, it is possible to have predictor variables become insignificant again in testing simultaneously because other predictor variables sufficiently represent it. Concurrent test results showed the significant result.

The principle of propensity score stratification is to divide the subject into several sub-classes based on the propensity score obtained in the previous step. At this stage, the subject is divided into 2 to 5 strata to find strata that prove that the covariates are balanced on all levels and provide an estimate of the standard error value of the smallest Average Treatment Effect (ATE). The distribution of strata was initially carried out on the original data to find the best levels.

Prior estimates with the bootstrap method, first performed at the full data parameter estimation, this is because the criteria for rejection of H_0 using the value *p-value* involving the of the test statistic at complete data. Besides, the significance test of parameters bootstrap shows that at a significance level $\alpha = 5\%$ all covariates are significant, namely the covariate of knowledge, attitude, self-concept and family support.

After their requirements are met, then the next step is to estimate the effect of treatment (ATE) or the impact of antiretroviral therapy on CD4 levels of HIV/AIDS patients. The test was carried out using the Z test, and the results showed that the effect of antiretroviral treatment and accompaniment on increasing CD4 levels in HIV/AIDS patients was 0.678 in the original data.

The *Bootstrap data* giving antiretroviral therapy has a significant effect on CD4 levels of HIV/AIDS patients. The magnitude of the effect is 0.690; thus after bootstrap, it turns out the results are smoother because the fact is stronger.

Based on effect treatment estimates, the provision of antiretroviral therapy and assistance affects increasing CD4 levels. A companion can inspire patients with HIV/AIDS because even though it is incurable but can be extended for life with drugs certain [7]. Antiretroviral therapy is beneficial in reducing the amount of HIV in the body so that CD4 (lymphocytes *cluster of differentiation 4*)can be prevented. After the administration of antiretroviral therapy drugs for six months can usually be achieved the number of undetectable viruses and the number of CD4 lymphocytes increases [8].As a result of the risk of opportunistic infections decreases and the quality of life of patients increases [9].

HIV/AIDS patients who are given antiretroviral therapy and mentoring will have an increase in CD4 levels. Through the need to increase knowledge, a positive attitude is formed which makes the concept of self-good. No less important for the family to support their family support HIV/AIDS patients with HIV feel cared for and being considered in the family.

The lower CD4 count identifies a decreased immune system so that pathogens that cause infection can enter the body together. Giving ARVs can increase CD4 levels, which also means rising immunity to prevent opportunistic infections[6].

CONCLUSION

From the research, it can be obtained estimator propensity score stratification bootstrap. Estimated PSS bootstrap samples are best in the two levels group. The effect of antiretroviral therapy and accompaniment to CD4 levels significantly impact on the HIV patient.

Ethical Clearance: Ethical clearance was obtained from the the Health Research Ethics Committee at the Faculty of Public Health Airlangga University with registration number 161-KEPK dated 14 April 2016. We also wish to thank all the participants who contributed to this study.

Conflict of Interest: Nil.

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ARCS Module (*Attention, Relevance, Confidence, Satisfaction*) to Increase Classroom Motivation for Pregnant Women at Public Health Center

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ABSTRACT

Background: Maternal Mortality in Indonesia reached 359 each 100,000 live births, this figure is the number highest in the Asian region. One of the causes of maternal mortality is labor complications. The indirect cause of labor complications is self-efficacy of pregnant women How to deal with childbirth. In connection with this, during pregnancy classes are held for pregnant women, but do not pay attention to self-efficacy so that in this study an ARCS module was created (Attention, Relevance, Confidence, Satisfaction).

Methodology: The ARCS module is designed to improve the learning motivation of pregnant women so that mothers have strong self-efficacy in the face of childbirth. This study aims to analyze the effectiveness of ARCS modules in improving the learning motivation of pregnant women class participants. The research applied quasi- design experiments. The population was pregnant women at the Banjar Regency Public Health Center, South Kalimantan Province, Indonesia. The sample was taken by simple random sampling technique, totaling 30 people consisting of 15 people in the intervention group and 15 people in the non-intervention group.

Test Results: The results of the Wilcoxon test showed p-value of 0.009; $\alpha \leq 0.05$ and the test results of Mann-Whitney obtained p-value 0.020; $\alpha \leq 0.05$ indicating the difference attitude after given the module.

Conclusion: Classroom learning of pregnant women using ARCS modules has proven to be effective in increasing learning motivation. Public health service facilities are recommended to use the ARCS module in pregnant women class learning programs.

Keywords: *ARCS Module, Pregnant Mother, Maternity Classes*

INTRODUCTION

Childbirth is an extraordinary process for a mother. Labor complication is one of the causes of the high maternal mortality rate in Indonesia. A total of 2806 cases of obstetric complications with the amount of coverage handled were 112.83% including complicated delivery which ended with a cesarean section with various indications including fetal distress, induction failure, and exhausted mothers. Among the cases who experienced obstetric complications were those who did not actively participate in a class learning for pregnant women.

The ARCS learning model is a set of motivational principles applied in the learning process which consists of components "attention," "relevance," "confidence," and "satisfaction." The model aims at that teacher, or the facilitator is to develop a learning plan that can motivate students optimally. In other words, the model aims to stimulate, improve, and maintain students' motivation in classroom learning even in any educational program[(1)].

The learning module is a way of organizing subject matter that takes into account the function of education in the form of program packages that are arranged in the

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form of a particular unit and designed in such a way as to facilitate the implementation of learning and guidance [2]. The learning module is designed systematically guided by a particular curriculum and prepared in the form of the smallest and possible learning unit to be studied to encourage the learning process in students.

This study aims to increase the learning motivation of pregnant women class participants to strengthen maternal self-efficacy in the face of childbirth to avoid complications due to lack of confidence to end labor by their strength.

METHOD

This research using quasi-experiment. Samples of 30 pregnant women were divided into 15 people for the intervention group and 15 people for the control group who were selected using simple random sampling technique from the class of pregnant women. The study was conducted at the Banjarmasin Regency Public Health Center, South Kalimantan Province, Indonesia. Data collection tool uses Instructional Materials Motivation Survey (IMMS) [3]. The research was carried out by giving lesson material to class participants of pregnant women in the intervention group using the ARCS module as well as to the control group, given lessons using modules from the Ministry of Health of the Republic of Indonesia which is commonly run as a program at the entire Community Health Center in Indonesia. After finishing learning, the respondent was given an Instructional Materials Motivation Survey (IMMS) questionnaire. The results of data collection in the control group using the Ministry of Health module and the intervention group using the ARCS module, before and after the intervention were analyzed using the statistical Wilcoxon-test. To find out the changes in maternal learning motivation in the classroom learning of pregnant women between the intervention and control groups were analyzed using the test of Man Whitney.

RESULTS

The results of research on the use of the ARCS module (attention, relevance, confidence, satisfaction) in the classroom learning of pregnant women to improve self-efficacy in the face of childbirth at the Public Health Center of Banjarmasin Regency, South Kalimantan, Indonesia are shown as follows:

Table 1: Level of classroom respondent motivation learning pregnant women on ARCS and non-ARCS module

Category of Motivation	Non- ARCS Modules				ARCS Modules				Mann-Whitney test
	Before		After		Before		After		
		f%		f%		f%		f%	
Very Weak	0	0	0	0	0	0	0	0	0.020
Weak	0	0	0	0	1	7	0	0	
Adequate	5	33	2	13	4	27	1	7	
Strong	10	67	13	87	8	53	10	67	
Very Strong	0	0	0	0	2	13	4	27	
Wilcoxon Test	0.889				0.009				

Table 1 shows that the level of learning motivation in both of non-intervention and the majority intervention group showed a change in motivation categories. "Weak" motivation in the intervention group before was 7% and after is 0%. The category "strong" was 53% before the intervention, increasing to 67% after intervention. The category "very strong" before intervention as much as 13% and after the intervention increased to 27%. The results of the Wilcoxon test show that the increase in learning motivation before and after in the ARCS module group has a degree of significance (*p-value* 0.009; α 5 0.05) and in the non ARCS module group (*p-value* 0.889; α> 0.05). The Mann-Whitney test results show that there are differences in the level of learning motivation between the ARCS module intervention class and the ARCS non-module class with a significance level (*p-value* 0.020; α 5 0.05).

Table 2: Difference level class motivation before and after pregnancy at ARCS module and non- ARCS module

Groups	Motivation			P*
	Before	After	Change	
	Mean	Mean	Mean	
ARCS Module	131	147	16	0,009
Non ARCS Module	128	133	5	0.889
P **	0454	0.005	0.036	

Description: *p** Wilcoxon Test *p* ** Mann-Whitney Test

Table 3: Changes in the level of learning motivation for pregnant women in ARCS module and non ARCS-modules

Group	Motivation				Total		P
	Increases		Fixed/decreased				
	n	%	N	%	n	%	
ARCS Modules	12	80	3	20	15	100	0.020
Non ARCS Module	6	40	9	60	15	100	

Table 2 shows the difference in mean motivation values before being given intervention in the ARCS module group was 131 and after interference is 147 with changes in mean value 16. Wilcoxon test results produced $p = 0.09$ $\alpha \leq 0.05$. Further, in the non-module ARCS group there is a difference in the mean motivation value before the intervention of 128 and after intervention is 133 with a change in mean value = 5. Wilcoxon test generated $p = 0.889$ $\alpha > 0.05$. Table 3 shows the intervention group experienced a change in learning motivation level as much as 80% "increased" and only 20% were fixed/decreased. While in the non-intervention group there was a change in the level of learning motivation as much as 40% increased and as much as 60% remained/decreased with a significance level of $p = 0.020$ α 5 0.05.

DISCUSSION

Learning classes for pregnant women conducted by midwives at the community health center using modules or guidelines from the Ministry of Health shows that respondents' learning motivation is in the fairly up to high category. This illustrates that the motivation to learn between before and after being given intervention has increased. Although the learning approach used in the lecture and question and answer method with conventional learning media, still tends to increase. This means that whatever learning modules are used in the class of pregnant women, the most important is that they get teaching materials that are appropriate to their needs and useful in maintaining health to prepare themselves for the delivery process. The finding strengthened the previous results which shows that there is an increase in scores of knowledge and skills between before and after the intervention. The average of education increased by 12.3 points and skills increased by 74.5 points after the intervention of the class of pregnant women using the pregnant mother class conventional module program [(4)]. Thus, the implementation of classroom learning for pregnant women using the ARCS module with learning components (attention, relevance, confidence, and satisfaction) using the model concept from aims to stimulate, improve, and maintain the motivation of the participants in class learning as proved in a previous study[(5)].

Indicators of learning achievement from the aspect of attention were active participants responding to facilitator questions, listening to the material presented, and enthusiastically asking questions. The sign of learning achievement of the relevant aspect is that participants can verbally express the benefits of learning material with the current pregnancy experience. Indicators of achievement of positive aspects of learning are that participants can answer facilitator questions. The sign of the achievement of the satisfaction aspect is that the participants concentrate seriously on education, actively asking questions and enthusiastic to follow future learning.

The results showed that before the respondents followed the learning using the ARCS module, there were varying levels of learning motivation ranging from weak, sufficient, reliable and existing categories to very strong. Respondents in the vulnerable group and sufficient before the intervention tended to answer the questionnaire in a negative direction. The respondents with strong and extreme learning motivation categories before the invasion were caused by high enough enthusiasm to attend classes for pregnant women.

After the respondent followed the learning with the ARCS module, there was an increase in learning motivation in the relatively smaller category compared to the strong and very strong class based on a questionnaire consisting of 36 question points. The survey for the "attention" sub-variable contains questions that explore participants 'interest from the start of learning and questions that stimulate participants' curiosity. From questionnaire questions that can examine the motivation for learning respondents who believe researchers that the results of this study can improve the learning motivation of pregnant women class participants.

The evaluation results illustrate that the ARCS module used in this study can improve the learning motivation of class participants of pregnant women with results that can be seen in Tables 2 and 3 showing that in the intervention group has a mean value before intervention 131, after intervention the mean value is 147 which means there is a change the mean value is 16. Based on the test results Wilcoxon p-value = 0.009 which means that learning with the ARCS module is very significant in increasing the motivation to learn pregnant women. This means there is a change in the level of learning motivation of participants in the intervention group before intervention and after being given intervention. In table 2, it can be seen that there is a change that is an increase in learning motivation in the class of pregnant women after the intervention of ARCS module learning as much as 80% in the intervention group mothers. This is following the concept that explains that the learning process that is conditioned by the facilitator's environment can support the change in the behavior of the learners towards a better direction.

The results of this study were supported by the research on the classroom learning of pregnant women which showed an increase in self-control, especially in controlling pain and obtaining satisfaction in giving birth [6]. The result also in line with the results before which states that women attending antenatal education classes have greater self-efficacy in facing labor and lower labor pain [7,8,9].

The existence of differences in values that increase in the intervention class before and after the intervention using the ARCS module is likely because the form of a learning experience is different from the learning in the class commonly applied in public health centers in Indonesia. Determining that is implemented with the ARCS module is focused on directing learning motivation systematically using the steps in the ARCS component (attention, relevance, confidence, and satisfaction).

In the non-intervention group the mean value before intervention 128, after intervention 133 and the mean value of change 5, using the test *Wilcoxon* p-value = 0.889 (> α 0.05). This means that there is no significant difference in learning motivation before and after intervention in the non-intervention group. In table 3, it can be seen that there is a change, namely an increase in learning motivation in the class of pregnant women after the intervention of learning using standard modules that are usually used in public health centers as much as 40%. Based on the test *Mann-Whitney*, significant results were obtained (p = 0.020 (<α 0.05) which means that there were differences in learning motivation between the intervention group and the non-intervention group. The interventions showed that pregnant mother classroom learning using the ARCS module could be used to improve learning motivation is better than the standard module used usually in the class of pregnant women in public health centers in Indonesia.

CONCLUSION

Class participants of pregnant women who were given learning using the ARCS module mostly experienced increased learning motivation from stable to extreme categories. Class participants of pregnant women in the learning intervention class used the ARCS module before and after the intervention with the level of change in learning motivation increased by 80% and the significance level of 0.009 α 5 0.05. So it can be concluded that the classroom learning of pregnant women using the ARCS module increases learning motivation better than the standard module which is usually used in the class of pregnant women in public health centers in Indonesia.

Ethical Clearance: Ethical clearance was obtained from the Health Research Ethics Committee at the Ministry of Health Polytechnic Banjarmasin, Indonesia. We also wish to thank all the participants who contributed to this study.

Conflict of Interest: Nil.

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Interprofessional Education Module in Achieving Ethics/ Values, Roles, Responsibilities, Professional Communication Competencies, and Team Collaboration among the College of Health Students

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ABSTRACT

Background: In learning, a module is crucial to provide the same knowledge and understanding between lecturers and students in the application of theory and practice in the implementation. This research aims at analyzing the effectiveness of interprofessional education module in the achievement of ethical/value competencies, roles, responsibilities, professional communication, and team collaboration between College of Health Karya Husada students located in Kediri, Indonesia.

Method: The approach of this research is action research. Samples are taken by purposive sampling. The sample size was 16 participants from nursing (8 students), midwifery (4 students), nutrition (4 students). With observation and interviews, the data were analyzed by the Constant Comparative Method.

Results: In cycle 1 consisting of module development, the trial of the module, evaluation of the trial of the module, the mastery achieve 99.37%. Further in cycle 2 after attending the lectures in a specific topic, the assessment the students understand the module correctly. **Conclusion**: From the results of this study it can be concluded that the module *Interprofessional Education* (IPE)can improve the value/ethics competency, roles, responsibilities, interprofessional communication and teamwork in collaboration among nursing, midwifery and nutrition students.

Keywords: *Module Development, Trial, Evaluation, Interprofessional Education*

INTRODUCTION

The learning approach is a path taken by the teacher and students in achieving the objectives of learning outcome. Modules are needed for the lecturers and students to learn before the lecture begins. The module will provide the same knowledge and understanding between lecturers and students in the application of theory and practice [(1)]. The Module of Interprofessional Education is one of the main modules used by health care professionals [(2)]. In the developed country, the adoption of interprofessional education (IPE) in health sciences has increased dramatically over the past decade [(3)]; however, this is not the case in developing country like Indonesia [(4)]. With a view of the emerging primary health care system in Indonesia, it is essential to consider how best to prepare healthcare graduates for employment in what will be an increasingly multidisciplinary work environment.

This research aims at developing, testing and evaluating the module of *Interprofessional Education* (IPE) in achieving ethics/values competencies, roles, responsibilities, professional communication, and team cooperation on malnutrition handling collaboration among students of nursing, midwifery and nutrition program in College of Health Karya Husada located in Kediri, Indonesia.

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METHODOLOGY

This research applied action approaches extending the models of Kemmis and Mc Taggart [(5)] selected

purposively where the sample size is determined by considering the adequacy of information until the data is saturated and the sample does not provide new information. Participants were 16 students: study program of nursing = 8 students, midwifery = 4 students, and nutrition = 4 students. Data were collected by observation and interview, then processed by analysis of constant comparative method. The constant comparative method (CCM) together with theoretical sampling constitute the core of qualitative analysis in the grounded theory approach and other types of qualitative research[6].

RESULT

Initially, in planning, the making of modules, in collaboration with health community center has determined the malnutrition cases which are *Marasmus, Lower Red Line and obesity*. The module was reviewed by peers producing the value of 8.95 out of 10. The module of Interprofessional Education was tested through lectures and question and answer 2 times then upon understood is continued with role-playing. Evaluation of the trial of the Module Interprofessional Education; with the questionnaire after the question and answer lecture produced the result of 99.37%, the tutorial lecture, 88.6% indicating the level of satisfactory supported with the competency of participant reached 100% when role-playing. Finally reflecting was interviewing with 6 participants confirming the module is suitable for use. In Cycle 2 to reinforce the mastery, the steps include :1) Module development where the module has been used by students while attending the 3-course, 2) Trial of the Interprofessional Education Module where the module was tested in giving lectures followed with question and answer sessions, 3) Evaluation of module where interview was conducted with the result that 100% of questionnaire items have been understood on what the Interprofessional Education module is. Further, observing is again performed indicating that 100% of students understand modules. Finally, in reflecting, where interviewing is conducted with participants indicate the sustainability of the module of Interprofessional Education.

DISCUSSION

Peers have assessed the module of Interprofessional Education in the field of nursing, midwifery and nutrition with an average value of 8.95 from the value maximum of 10. Application of the module to the value/ethics competency of the learning process module for students must be invested when students are still sitting in college, where the value/ethics is the foundation of students as capital when carrying out clinical practice and as a provision when working later. If students have started early cultivated strong values/ethics,- strong students will be more confident and thoughtful when doing something that is not follo wing operational procedures. The development of value competency is developed from the process used in the Interprofessional Education module [7]. However, when this module is used in practice, there must be a lot of modifications to adjust the situation and condition of the patient. Students can carry out their respective roles by profession, can solve problems collaboratively, clarify respective positions, and provide information to each business. The module is a place to learn inter professionally that becomes a driver for students to be interested in using module of Interprofessional Education as a practicing arena.

The application of the module Interprofessional Education on inter professional communication competencies can be used as a medium to practice communication between different professions. Students can practice their ability to communicate inter professionally according to real situations when practicing and working one day. With the simulation and role play during the trial of the module Interprofessional Education, students are expected to be indeed able to use it as a medium to practice communication, which will later be exercised in the field of practice and work. Communication runs also depend on perception, environment and knowledge factors [8]. In the application of Interprofessional Education (IPE), each profession must have the same perception, enabling the environment for communication, extensive knowledge and insight so that communication can work. With the existence of inter professional communication competencies, there is no significant difference between nursing and medical students as well as between professions feel comfortable learning with other businesses [9]. This way, the reinforcement is needed in Interprofessional Education includes team leader and laboratory personnel.

Inter professional cooperation is an ability that must always be studied and trained through *Interprofessional Education* (IPE). Good inter professional cooperation ability can be seen from the ability of students to become *team leaders* and capable overcome obstacles in inter professional cooperation. On the application

of the module *Interprofessional Education* (IPE) on teamwork competencies, students are trained to work together in team solving patient problems so that it will become a habit for students besides the *antecedent* (Interpersonal, social, environmental, organizational and institutional), *process* (behavior, attitude, interpersonal and intellectual), *outcomes* (ideas, new programs, institutional changes).

A person must have awareness in socializing to form groups so that they can work effectively and efficiently. Interpersonal basis in human self is an essential component in creating good collaboration. The work environment and closeness when working between team members will increase team ties. With institutional support, policies with the application of *inter* professional education in the curriculum and organization will encourage the creation of collaboration between health professionals. Besides that the awareness to cooperate and need each other must be instilled in each team member so that there is no arrogance or professional egoism.

The module studied is to train students to collaborate in multidisciplinary teams, so that students can practice when they are in the field practice later.

CONCLUSION

The development of the module Interprofessional Education can increase achievement of value/ethics competencies, roles, responsibilities, Interprofessional communication and teamwork on collaboration among students of nursing, midwifery, and nutrition in College of Health Karya Husada Kediri, Indonesia. The trial of the module improves the achievement of competencies ethical/value, roles and responsibilities, inter professional communication and team collaboration among the respective students of the schools. Similarly, evaluating the trial of the module with a questionnaire question indicated the satisfactory achievement.

Conflict of Interest: We have no conflicts of interest to the material of this manuscript.

Ethical Clearance: The trial was approved by the Ethics Committee of Health College Karya Husada Kediri, Indonesia.

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Anxiety Level of Dental Care among Adolescents in Kepulauan Selayar District

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ABSTRACT

Introduction: Dental health has not seen any tangible results that needs an attention and require cooperation from various parties. One of the contributing factors is the lack of data on the level of community dental and oral health care needs that owned by the local government so that efforts to actualize healthy communities including dental and oral health are less than optimal. The objective of the study is to identify the level of anxiety of dental services among adolescents in Kecamatan Benteng, Kepulauan Selayar Distict.

Subjects and Method: The present study is a purposive-sampling study, adolescents between the age of 17 to 21 years old in state senior high school. This study obtained 511 students from three different schools and processed with SPSS Version 16.

Discussion: A total of 511 students showed four level of anxiety- Not Anxious, Less Anxious, Anxious and Very Anxious. Most student experienced a not anxious level (56,8%), while only 2,3% students showed a very anxious level. In addition, the respondent was divided into two groups, based on visiting dentist in the last two years. Respondents who have had last visit to the dentist more than 2 years witnessed more anxiety than they who are visiting dentist in the last two years.

Conclusions: The cause of anxiety to dental treatment is influenced by many factors, which relate closely to the pain history on dental treatment both in the adult and children.

Keywords: *Anxiety, Dentist Care, Adolescents, Kepulauan Selayar District.*

INTRODUCTION

Kepulauan Selayar is a district in South Sulawesi Province , Indonesia, which Benteng city is the capital city.This district has an area of 903.35 km² and a population of ± 100,000 inhabitants. This area is the only regency in South Sulawesi that its entire territory separated from the mainland of South Sulawesi and more than that region Kepulauan Selayar District consists of a group of islands so that is the archipelago region. This place consists of 123 islands, both large islands and small islands extending from North to Southwhich has a stable number of schools each year. Those are elementary school 139 units (16,207 students), junior high school 52 units (5,232 students), senior high school 8 units (2,343 students) , and vocational school 7 units (1,481 students).

In addition, it has variety of health facilities. One general hospital, 13 public health center and 61 units supporting community health center. On the other hand,oral and dental health problems are found in Kepulauan Selayar which need to get attention and require cooperation from various parties. Moreover,

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efforts to overcome have not seen any tangible results when measured with public dental health indicators. One of the contributing factors is the lack of data on the level of community dental and oral health care needs that owned by the local government so that efforts to actualize healthy communities including dental and oral health are less than optimal. If this continues, obviously dental and oral health especially in the community will continue to decline. And ultimately affect their quality of life[1,2].

Anxiety is a vague feeling of discomfort, with a shadow that something undesirable will happen (Kargan & Haveman, 1976). Surveys generally showed that most of the general population avoid regular visits to dentists because they are afraid to do so. In recent studies, anxiety about dental care is associated with the length of time since the last visit to dental care and the greatest frequency of cancellation visits. Anxiety about dental care restricts partial, or prevents all oral health care services. An anxious person shows more damage or missing teeth and less restored teeth [4.5]. The level of anxiety is closely related to the method of oral and dental treatment that will be given to the patient. Patients with high levels of anxiety will find it more difficult to receive dental and oral care as well[3, 13].

SUBJECTS AND METHOD

The present study was a purposive-sampling study among adolescents between the age of 17 to 21 years old in state senior high school. This study obtained 511 students from three different schools. Those schools were Benteng Senior High school, Muhammadiyah Senior High school and Benteng Vocational High school. Examination of survey was based on questionnaires/ survey forms . Researchers attend all senior state high school and vocational schools in each location then explained the purpose of visits, followed by the distribution of a questionnaire /survey form and filling the questionnaire/survey form. Eventually, the data collected was processed with SPSS Version 16.

DISCUSSION

Results showed that the characteristics of respondents consists of age, sex, class grade, parental education level , last visit to dentist and anxiety of dental services. Majority respondents was in 16-17 years old (75.5%) and the least age was in 20-21 years old (0.8%). In addition, most of respondents were women (58.1%), while another was only 41.9%. The respondents was generally second grade (57,9%) and most of them had parents with bachelor education level (51,1%). In the last two years, it had 52,4% who had visited the dentist. Furthermore, most of the respondents do not feel anxious about dental services (56.8%). The data results is showen in Table 1 below :

Table 1: Characteristics of respondents

Respondents Characteristics	n	%
Age Group (year)		
16 - 17	386	75 , 5
18 - 19	121	23 , 7
20 - 21	4	0, 8
Gender		
Man	214	41 , 9
Women	297	58 , 1
Grade		
1	12	2 , 3
2	296	57 , 9
3	203	39 , 7
Parents' Education		
High school	250	48 , 9
Bachelor	261	51 , 1
Last Visit To Dentist > 2th		
Yes	268	52 , 4
No	243	47 , 6
Anxiety Level of dental services		
Not Anxious	290	56 , 8
Less Anxious	149	29 , 2
Anxious	60	11 , 7
Very Anxious	12	2 , 3

Source: Primary Data

Table 1 showed that most of adolescences was not anxious of dental services. Even thought it showed a not anxious level, there were other anxiety levels which almost a half of the results. This sums that anxiety of dental services was still an issue in Kepualaun Selayar District. Moreover, the correlation of anxiety level and last dentist visiting is shown in table 2.

Table 2: Correlation of anxiety level to dental services and last dentist visit

Anxiety	Last visit to the dentist > 2 years				Amount	
	Yes		No			
	n	%	n	%	n	%
Not Anxious	145	54,1	145	59,7	290	56 , 8
Less Anxious	82	30,6	67	27,6	149	29 ,2
Anxious	33	12,3	27	11, 1	60	11 , 7
Very Anxious	8	3,0	4	1 , 6	12	2 , 3
Amount	268	100	243	100	511	100

Source: Primary Data

Table 2 shows that in the last two years visiting the dentist had almost the same number in all level of anxiety. Respondents who've had last visit to the dentist more than two years mostly felt not anxious (54,1%). This number has slightly lower than them who were not visiting the dentist, which were 59,4%. In contrast, other anxiety levels on respondents who visited the dentist experienced a little more percentage compare to them who had not visited.

Different types of anxiety components are interconnected with one another, but it is important to repeat here that there is no one-on-one relation between the components. Some people are actually very anxious about dental treatment but regularly and fairly cooperatively examined while others may actually avoid visiting dentists.[6,14]

Approach through education alone is not enough, because it only gives partial impact on behavior change. Although humans need information and skills, they have no motivation to implement the newly-given information[15]. The idea that research alone is not enough, supported by research conducted by Todd et al (1982). Although 91% of the sample size is large enough to agree that regular visits to dentists are important to maintain dental health, 43% say they go to the dentist only when experiencing symptoms. The imbalance between knowledge and the actual behaviour may related to the motivation factor, especially the consequences seen from its actions.[6]

A review of the literature estimates that 9% of the world population suffer from a sense of fear/anxiety to dental treatment, with a reduction in prevalence as age increase. The cause of anxiety to dental treatment is influenced by manyfactors, which relate closely to the pain history on dental treatment both in the adult and children. The prevalence of fear to dental care is considered high (24.3 %), but lowers than fear of snakes, heights or injured physically.

Surprisingly, among all the phobias, the most common is dental phobia (3.7 %). These findings should be on alert by both researchers and dental care practitioners as a very real problem with the aim to finding ways to improve the conditions. [12] Fear to dental care usually begins in childhood with a negative experience, commonly expressed as a painful experience and/or being treated by a rough dentist.

Although it tends to decrease with age increasing, anxiety of dental care can last until adolescence and continue into adulthood. This is important. Therefore, the dentist should be able to identify these patients, with the aim to plan dental interventions that can reduce an individual's anxiety level. [12]

CONCLUSIONS

The cause of anxiety to dental treatment is influenced by many factors, which relate closely to the pain history on dental treatment both in the adult and children.

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Baby Massage With Common Cold Massage Oil on Temperature Change, Pulse Rate, Frequency of Breath, Sleep Quality and Number of Streptococcus Bacteria in Toddlers with Acute Respiratory Infection

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ABSTRACT

Background: Acute Respiratory Infection (ARI) is a common cause of illness and death in toddlers. One of the reasons of ARI is bacteria, the most dominating is bacteria *streptococcus.* The majority of toddlers suffering from ARI experience cough, runny nose, out of breath, fuss and often wake up at night. The study aimed to determine the effect of massage of babies with common cold massage oil on changes in temperature, pulse frequency, respiratory frequency, sleep quality and the number of bacteria streptococcal in infants with ARI.

Method: This type of research quasi-experimental uses approach pretest-post-test with control group design. The samples were toddlers who were treated at the Kedungmundu Health Center with a total of 32 respondents (16 respondents in the treatment group and 16 respondents in the control group). The sampling technique is simple random sampling.

Results: The entire test results showed that p-value <α (0.05), so it can be concluded that there is the significant effect of infant massage with common cold massage oil to changes in temperature, pulse, respiratory rate, quality of sleep and the number of bacteria streptococcus in children with ARI.

Conclusion: The community health center should consider the results of this study to developed additional services for children under five suffering from Acute Respiratory Infection

Keywords: *Acute Respiratory Infection, Toddlers, Massage, Bacteria*

INTRODUCTION

Infection Acute Respiratory Tract (ARI) is still one of the leading causes of infant and child mortality. The World Health Organization (WHO) estimates that ARI causes 3.2 million deaths worldwide every year [(1)]. The prevalence of ARI in Indonesia has increased from 2010 at 25.0% to 25.5% in 2013 [(2)]. Data revealed by the Semarang City Health Office in 2016 found that the number of pneumonia cases in toddlers found and obtained handling based on reports of health centers and hospitals as many as 4,173 cases. Kedungmundu Public Health Center, Tembalang Subdistrict is a health center which is ranked first of 37 health centers in Semarang City with a total of 509 cases [(3)].

Based on the results of qualitative research conducted in the Anggrek Room of Sukoharjo Hospital in children with ARI, data was obtained that the mother said the child was short of breath, coughing, heat, and heartfelt warmth. Furthermore, the mean pulse frequency is 98 times/minute, the respiratory rate is 38 times/minute, and the temperature is 38.8°C [(4)]. This is in line with another research conducted in children with pneumonia showed an average pulse rate is 194.75 times/minute, breathing rate is 60.4 times/minute, and body temperature is 37.8ºC [(5)]. Other studies revealed that bacteria Streptococcus is one of the leading causes of ARI disease with a percentage of 17.78% [(6)].

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One of the non-pharmacological therapies to restore temperature stability, pulse frequency respiratory frequency, sleep quality of toddlers, and the number of bacteria streptococcal with ARI is infant massage. A massage is a form of touch therapy that functions as one of the essential treatment techniques [7]. Research results revealed that infant massage could reduce the hormone cortisol and can increase the quantity of baby sleep [8]. The hormone cortisol is a stress hormone, with a decrease in the cortisol hormone the baby will become calmer and less fussy [9].

Other studies suggest that a group of newborns who are massaged using oil have better sleep quality than the other two groups, namely those who are rubbed not using oil and who are not massaged at all [10]. One oil that can be used for massage is common cold massage oil. Common cold massage oils contain cajuput, turpentine, turmeric, and kaffir lime. In general, the content of common cold massage oil is useful for killing bacteria and germs, lowering body temperature, thinning phlegm, and relieving stress [11].

Based on this background, further research is needed to identify the effect of baby massage with common cold massage oil on toddlers with Acute Respiratory Infection (ARI).

METHODOLOGY

The research design was quasi-experimental using approach pretest-post-test with control group design. The population of this study was all children under five suffering from ARI treated at the Kedungmundu Health Center in February 2018 - April 2018. The sample in this study were 32 respondents (16 respondents as the treatment group and 16 respondents as the control group) taken from the population by using simple random sampling technique.

BSIQ (Brief Infant Sleep Questionnaire) [12] was used to measure sleep quality, a digital thermometer to regulate body temperature, a stopwatch to measure pulse and respiratory frequency frequencies and throat swab culture examination methods (by health analysts) to calculate the number of streptococcus bacteria.

Data analysis used univariate analysis in the form of frequency distribution and bivariate analysis using a different test of independent samples t-test for data with normal distribution, namely temperature and number of streptococcus bacteria. Whereas for data not normally distributed, the Mann-Whitney test was used to measure the variables of pulse frequency, breath frequency, and sleep quality.

RESULTS

Respondents characteristics in this study include nutritional status, immunization status, birth weight, history of breastfeeding and educational background of parents (mothers).

Table 1: Characteristic of respondent

Characteristic	Control		Intervention		Total	
	N	(%)	n	(%)		
Nutritional status						
Good	16	(100)	16	(100)	32	(100%)
Poor	0	(0.0)	0	(0.0)	0	(0.0%)
Immunization status						
Completed	13	(81.3)	15	(93.8)	28	(87.5)
Not completed	3	(18.8)	1	(6.3)	4	(12.5)
Birth weight						
Normal	15	(93.8)	16	(100)	31	(96.9%)
Not Normal	1	(6.3)	0	(0.0)	1	(3.1%)
Breastfeeding						
Exclusive	4	(25)	1	(6.3)	5	(15.6%)
Not exclusive	12	(75)	15	(93.8	27	(84.4%)
Mothers' educational background						
Elementary	6	(37.5)	9	(56.3)	15	(46.9%)
Secondary	10	(62.5)	7	(43.8)	17	(53.1%)
Senior High	0	(0.0)	0	(0.0)	0	(0.0%)

Characteristics of respondents showed that all respondents, both in the control and intervention groups had good nutritional status, while the immunization status of 28 (87.5%) respondents had complete essential immunization status. Almost all respondents had normal birth weight as many as 31 (96.9%), and history of breastfeeding indicated more than 50% ((84.4%) of children did not get breast milk exclusively. Further, the parents' mostly in secondary education (53.1%).

Table 2: The different test of dependent variables in the intervention and the control group

Variables	Mean ± SD	p-value
Temperature	0.513 ± 0.2927	0.002$^{\mu}$
Pulse frequency	2.91 ± 1.146	0.000*
Breath frequency	3.47 ± 2.079	0.006*
Sleeping quality	4.34 ± 2.266	0.000*
Number of streptococcus bacteria	60.81 ± 55.882	0.004$^{\mu}$
*Mann-Whitney U Test $\propto$ Independent-Samples T Test		

Table 2 showed changes in temperature, pulse rate, respiratory frequency and sleep quality in ARI under five in the intervention and control groups. The results of the statistical test Mann-Whitney test is p-value of 0.000 for pulse frequency variables and sleep quality and 0.006 for breathing frequency. Besides, for changes in temperature and the number of bacteria streptococcus using the Independent-Samples t-test obtained p-value 0.002 and 0.004. Thus it is concluded that all variables have a p-value <0.05, which means that there is an effect of massaging infants with common cold massage oil on changes in temperature, pulse frequency, respiratory quality of sleep quality and the number of bacteria streptococcal in ARI toddlers.

DISCUSSIONS

Massage of babies with common cold massage oil can be an alternative in reducing ARI symptom pain in infants. Baby massage can reduce the hormone cortisol and increase endurance so that it can suppress the inflammatory process. Common massage oil whose content is useful as an anti-bacterial, anti-inflammatory, anti-microbial, and analgesic making the inflammation process faster, so the ARI toddler's body temperature stabilizes more quickly.

Massage babies with common cold massage oil can also improve the quality of sleep and stabilize the pulse frequency in ARI toddlers. This is related to brain waves during a massage can reduce alpha waves, increase the stream of beta and theta, so the baby becomes more relaxed and the quality of sleep increases. The effect of sleep quality makes ARI, and the massage effect that can reduce the hormone cortisol (stress hormone) makes the toddler's pulse frequency more stable.

Other studies revealed that at the end of the study, the intervention group, namely group treated with baby massage had a higher number of natural killer cells than the control group [13]. Natural killer cells are one component in increasing endurance. The role of the cellular immune system is crucial to protect the body against bacteria that grow in the intracellular way [14]. This has been demonstrated by a significant difference in the number of streptococci bacteria among toddlers suffering from ARI in the intervention and the control group.

Another benefit of massaging babies with common cold massage oil is that it can stimulate the parasympathetic nervous system that can free tight respiratory mucosa so that the respiratory rate or respiratory frequency in ARI toddlers becomes more stable. This has been proven where there is a significant difference between ARI toddler respiratory frequency in the intervention group and the control group.

CONCLUSION

Mothers can follow or add various insights about baby massage and ordinary cold massage oil to provide therapy at home as the research proved the positive effect of massaging infants with regular cold massage oil on changes in temperature, pulse frequency, respiratory frequency, sleep quality and the number of streptococcal bacteria in to children suffering from Acute Respiratory Infection (ARI).

Further research is expected to develop the effect of massaging babies with common cold massage oil on the immune system in ARI toddlers.

Ethical Clearance: Ethical clearance was obtained from the research ethics committee of Minister of Health Polytechnic, Semarang, Indonesia with the number of 015/KEPK/Poltekkes-Smg/EC/2018.

Conflict of Interest: Nil

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Risk Factors Affecting Attention Deficit Hyperactivity Disorder among Early Childhood in the Agricultural Area in Indonesia

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ABSTRACT

Background: ADHD (Attention Deficit Hyperactivity Disorder) is a behavioral disorder the most common among children. This disorder is often found in early childhood and school age. The purpose of this study was to determine the incidence and risk factors for ADHD in early childhood in agricultural areas.

Method: This study used a cross-sectional design. The subjects of this study were 1,113, kindergarten students aged 5-7 years in the agricultural area of Brebes Regency, Central Java, Indonesia. The independent variables in this study were age, sex, history of preterm birth, education level and parental work, and the dependent variable is the incidence of ADHD. The multivariate logistic regression test is used to determine variables which are risk factors.

Results: The study showed that from 1.113 total subjects. there were 480 (43.1%) subjects in ADHD diagnosis. History of preterm birth (OR = 1.577; 95% CI = 1.128-2.205), low father's education level (OR = 1.422; 95% CI = 1.106-1.827), low mother's education level (OR = 1.312; 95% CI = 1.008-1.708), parental involvement in agriculture (OR = 1.580; 95% CI = 1.231-2.028) and gender (OR = 3.126; 95% CI = 2.442-4.001) proved to be an independent risk factor for ADHD.

Conclusion: The incidence of ADHD in early childhood in agricultural areas reached 43.1%. History of preterm birth, the low father education level, the parental involvement in agriculture and the male gender are independent risk factors for early childhood ADHD incidence in agricultural areas.

Keywords: *ADHD, Risk Factors, Early Childhood, Agriculture Area*

INTRODUCTION

One of the developmental disorders of children is a disorder of concentration, where the number is increasing over time. ADHD is characterized by a continuous and persistent pattern of attention deficit and hyperactivity-impulsivity. ADHD is the most common and disturbing psychiatric condition in childhood, estimated to affect 5-10% of school-age children [(1)].

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ADHD is a disorder characterized by an inability to maintain attention, regulate activity levels, and control impulsive behavior. The essence of this disorder is a lack of focus, motor hyperactivity, and chronic impulsivity often persist from childhood to adolescence [(2)]. Another literature says ADHD is a biological disorder in continuous brain function that causes cognitive dysfunction (executive function) that is not following the child's age development [(3)]. These disorders can be found in everyday life, both in preschoolers, adolescents, and even adults can experience this disorder [(4)].

ADHD disorders can cause psychosocial problems that are worse, for example learning difficulties will adversely affect achievement academic, drug abuse, alcohol, and other addictive substances, behavioral

disorders such as delinquency, violence, and criminal acts, difficulty adjusting, both at home, at school and in the community, and can cause problems in the family if they do not get intervention since early [5].

The prevalence of ADHD varies depending on the screening instrument and the diagnostic criteria used, as well as the characteristics of the population studied. In general, worldwide prevalence rates are estimated at around 5.29% [6].

The exact cause of ADHD is still unknown. Several theories state that the incidence of ADHD is related to several factors such as genetics, prenatal and perinatal, environmental toxins, family adversity and early caregiving, gene-environment interplay [7]. It is now being discovered that the potential role of toxic chemicals in the environment is a risk factor in brain development disorders in fetuses and children and is a risk factor for ADHD [8]. One of the potentially toxic chemicals in the environment is the use of pesticides in agricultural areas. As happened in Indonesia, which is one of the countries with a large agricultural sector, it also uses pesticide chemicals of farming processes. The results of Suhartono's research, the exposure to pesticides is a risk factor for thyroid dysfunction in women of childbearing age in agricultural areas where women and children are involved in agricultural activities [9].

The prevalence of ADHD in children in agricultural areas in Indonesia is not known with certainty, due to the absence of research and exact figures have not been reported, so this study is needed to make the handling of the incidence of ADHD in early childhood can be done earlier so that the case does not last until adult.

METHODOLOGY

This research is a case study in the agricultural area of Brebes Regency, Central Java. The design of this study uses a cross-sectional with the subject of kindergarten students in the farming area. The subjects of this study were 1,113 kindergarten students living in agricultural areas. The research subjects were taken from 31 kindergarten schools in agrarian areas consisting of boys and girls aged 5-7 years.

The assessment uses appropriate local standard instruments, namely SPPAHI (Scale of Indonesian Hyperactive Behavior Assessment). Dr. Dwidjo Saputro, Sp developed this scale. KJ (K) adjusted to the psychopathology of ADHD children and parents' perception of ADHD symptoms in Indonesia. This rating scale is simple, but sensitive to the symptoms of attention-deficit / hyperactivity in children in the community either in the clinic or outside the clinic is valid and reliable. The items of these instruments were prepared based on objective signs that showed the psychopathology of attention deficit hyperactivity problems most frequently expressed by teachers and parents. Further, it is coupled with items from the Conners Parent Rating Scale, Conners Teacher Rating Scale, Child Behavior Checklist (CCL), Edelbrock Children's Attention Problem (CAP), the ADD Comprehensive Teacher Rating Scale (ACTeRS) that is most often found in children in Indonesia and in accordance with Indonesian norms and culture [10] .

Observation and interviews assess schools by kindergarten teachers who have been trained by pediatric psychiatry doctors. The results of the evaluation carried out by the teacher were randomly selected to be tested by the child psychiatric interrater doctor, and the results were by those assessed by the teachers. Observations and interviews were carried out for approximately 30 minutes by filling in 35 points from the SPPAHI instrument assessment. The multivariate logistic regression test is used to determine variables which are risk factors.

RESULTS

The characteristics of respondents were based on LBW (Low Birth Weight), birth history, birth history with action, parental involvement in agricultural activities, father's education level, mother's education level, child age, child gender, and detection early on ADHD. The gender of the respondents between men and women was not much different, namely 47.3% for male and 52.7% for female. The prevalence of ADHD was 43.1% and children whose ages 5-6 years was 75.3%.

Table 1: Characteristic of respondents

Characteristics	N	(%)
Low Birth Weight Babies		
Yes	70	6.3
No	1043	93.7
Premature Birth		
Yes	161	14.5
No	952	85.5

Conted…

Birth history with action		
Yes	161	14.5
No	952	85.5
Parental involvement in agriculture		
Yes	382	34.3
No	731	65.7
Father's education level		
Basic education	717	64.4
Higher education	396	35.6
Mother's education level		
Basic education	788	70.8
Higher education	325	29.2
Children's age		
60-72 months / 5-6 years	838	75.3>
73 months /> 7 years	275	24,7

Conted…

Gender		
male	527	47.3
female	586	52.7
Early detection on ADHD	480	43.1

Table 2 presents the bivariate analysis results for each variable, and obtained several risk factors that significantly increased the incidence of ADHD in early childhood, namely a history of preterm birth (OR = 1.577; 95% CI = 1.128-2.205), father's low level of education (OR = 1.422; 95% CI = 1.106- 1.827), the mother's low education level (OR = 1.312; 95% CI = 1.008-1.708), parental involvement in agriculture (OR = 1.580; 95% CI = 1.231-2 . 028) and male gender (OR = 3.126; 95% CI = 2.442-4.001). Non-significant risk factors include LBW, birth by action, and age of the children.

Table 2: Respondents' Risk Factors

No.	Variables	Early Detection of ADHD	No ADHD	p-value	OR	95% CI
1.	**Low Infant Body Weight**					
	<37 weeks	35	35	0.230	1.344	0.828-2.181
	≥37 weeks	445	598			
2.	**History of preterm birth**					
	<2500 gr	85	76	0.007	1.577	1.128-2.205
	≥2500 gr	395	557			
3.	**History of birth with actions**					
	(Cesar. Vacuum. Forcep)	60	101	0.105	0.752	0.533-1.062
	Normal	420	532			
4.	**Involvement in agriculture**					
	Involved	193	189	0.001	1.58	1.231 to 2.028
	Not engaged	287	444			
5.	**Father's educational level**					
	Elementary to Secondary	331	366	0.006	1.422	1.106 to 1.827
	Junior High to colleges	149	247			
6.	**Mother's educational level**					
	Elementary to Secondary	355	433	0.044	1.312	1.008 to 1.708
	Junior High to colleges)	125	200			
7.	**Children's Age**					
	5-6 years	372	466	0.137	1.234	0.935 to 1.630
	≥7 years	108	167			
8.	**Children 's gender**					
	Male	303	224	0.001	3.126	2.442 to 4.001
	Female	177	409			

Results of the logistic regression indicated eight significant variables namely low birth weight, history of preterm birth, birth history with action, parental involvement in agriculture, father's education level, mother's education level, child age, gender. The results of the multivariate test showed that three variables could increase the risk of early detection of ADHD, namely a history of preterm birth, the low level of education of the father, parental involvement in agriculture and male gender. The distribution of the characteristics of respondents based on table 3 is 76%. This means that there are 76% risk factors for early detection of ADHD, supported by a history of preterm birth, the latest level of education of the father and the sex of the child so that other supporting factors are 24%.

DISCUSSIONS

The results showed that the history of preterm birth, the low level of education of the father parental involvement in agriculture and male gender could increase the risk of ADHD in early childhood in agricultural areas. The results of this study are in line with previous studies which suggested that preterm birth was one of the factors causing ADHD [11,12]. Another study found that 16 out of 72 children born prematurely will display ADHD symptoms at the age of 7-8 years. Results from a meta-analysis study found that preterm birth was associated with an increased risk of the incidence of ADHD in children. Children who are born prematurely are at risk of decreasing cognitive test scores and their immaturity at birth is directly proportional to the average cognitive value at school age. Children born prematurely also show an increased incidence of ADHD and other behaviors [13].

Fathers with a low level of education increase the risk of the incidence of ADHD in early childhood. The low level of parental education will affect knowledge where individuals know what to do and how to do it, which is one aspect of behavior that shows a person's ability to understand and use the skills of everything he has learned. Knowledge is a domain that is very important for the formation of one's actions, including increasing creativity in parenting and behavior patterns in children. [14]. Parents are not easy to understand children with behaviors such as children with ADHD, especially followed by low education, poor socio-economic conditions, not understanding how to care for children, there are psychological problems in the family so that parents are powerless in caring for children [15].

The results of this study found that the prevalence of early detection of ADHD was 43.1%. This is a relatively high number, in which case the range of figures put forward by experts regarding the prevalence of ADHD ranges from 2–7% in school-aged children, and has been reported to reach a 17.1% prevalence in community surveys [16]. The prevalence results are quite high ever obtained in the study conducted in primary schools in Jakarta the capital of Republic Indonesia, namely 26.2% [17]. With the high rate in the capital city, it is not surprising that in rural areas people still keep on fighting to solve the problem.

CONCLUSION

The research on early childhood in agricultural areas concludes that the prevalence of early detection of ADHD is 43.1% with a comparison between boy and girl is 2: 1. The risk factors that most play a role in the occurrence of ADHD in early age children are the history of premature birth, low level of father's education, parental involvement in agriculture and the gender. It is suggested to parents to be more careful in storing pesticides, storing agricultural products and it is advisable to immediately wash their hands and change clothes after exposure to pesticides whereas for children it is recommended to stay away from the shallot farming area.

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Maternl and Neonatal Outcomes of Elective and Emergency Cesarean Sections

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ABSTRACT

Cesarean section is safe surgical procedure, but increased cesarean section incidence leads to higher maternal and neonatal complications intraoperatively and postoperatively. This study aimed to assess the maternal and fetal outcomes of different types of cesarean sections in Kirkuk city. Hence, a prospective study was conducted in Obstetrics and Gynecology department of Azadi Teaching Hospital in Kirkuk city during 1st of October, 2013 to 31st of May, 2014, included 600 term pregnant women indicated for elective and emergency cesarean sections. It had been found that second stage Cesarean sections were significantly associated with womens' obesity and irregular antenatal care ($p<0.001$). Extension of lower uterine incision, bladder injury and broad ligament hematoma were the reported intropeative complication while, postoperative maternal complications were postpartum hemorrhage and secondary suturing of skin wound. Neonatal complications after first and second stage cesarean section were transient tachypnea, sepsis, admission to neonatal intensive care unit, hypoxic ischemic encephalopathy, birth asphyxia and low apgar score. In conclusion, the second stage cesarean section is obviously accompanied by many maternal and neonatal complications in comparison to elective and first stage cesarean sections.

Keywords: *Cesarean section, Elective, Stages, Maternal outcome, Neonatal outcome.*

INTRODUCTION

Cesarean section (CS) is the most common obstetrical surgery that is increased in incidence globally in last twenty years [1,2]. Higher rates of CS had not improved the maternal and fetal outcomes, but inversely, it is accompanied by high morbidity rates and financial burden [3-6]. In Iraq, the cesarean section rate had increased in last years to reach rate of 24.3-25.4% [7-9].

The CS is classified into elective and emergency CS; the emergency type is sub-classified into first stage CS and second stage CS. These CS types differ in indications and outcomes of surgery [10,11]. The emergency CSs are defined depending on extent of cervical dilation during labour [12]. The second stage CSs represented about 25% of primary cesarean sections and it is regarded as the most complicated type [13]. Second stage caesarean section is related to higher maternal and fetal co-morbidities and mortalities[14]. Failure in fetal head engagement during second stage of labour is carrying high risk for pregnant women commonly if associated with lower uterine segment tear, uterine incision extension and extension of the urinary bladder incision. Additionally, any delay in decision in performing emergency CS during second stage of labour may lead to fetal distress, brain damage, disability or death [15-17]. High shift to CSs in private institutes [18] in addition to scarce literatures exploring this national public health issue; all were the rationale of present study. Therefore, the present study tried to assess the maternal and fetal outcomes of different types of cesarean sections in Kirkuk city in Iraq

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PATIENTS AND METHOD

A prospective follow up study conducted at Obstetrics and Gynecology department of Azadi Teaching Hospital in Kirkuk city-Iraq during the period from 1st of October,

2013 to 31st of May, 2014. Included term pregnancy with indication for elective and emergency cesarean section. Women with diabetes mellitus, hypertensive disorders of pregnancy, anti-phospholipid syndrome, preterm labour, intrauterine growth retardation, congenital fetal malformation and antepartum hemorrhage were excluded. The study included 200 term pregnant women indicated for elective CS group, 200 term pregnant women indicated for emergency CS at first stage of labour and 200 term pregnant women indicated for emergency CS at second stage of labour , and represented the three studied group. The data were collected through fulfilling of prepared questionnaire designed by the researcher. The questionnaire included following information of women like age, parity history, maternal weight, regularity of antenatal care, postoperative maternal complications (postpartum hemorrhage, extension of lower uterine incision during CS, postpartum fever, wound infection, secondary suturing of skin wound, bladder injury during CS, paralytic ilius after CS, broad ligament hematoma during CS and blood transfusion) and neonatal complications after CS (birth weight, NICU admission, duration of NICU admission, neonatal sepsis, hypoxic ischemic encephalopathy, transient tachypnea of neonates, birth asphyxia, apgar score and status). The decision of elective or emergency cesarean section for selected term pregnant women was done by the researcher. Elective CSs were almost depending on pregnant women request and/or relative indications. Emergency CSs were indicated at first or second stages of labour after failure of progress or threatened lives of both mothers and fetuses. Preoperatively, the term pregnant women were assessed by the researcher. The maternal assessment postoperatively was done by the researcher through follow up of women for duration of one month with different visits or by phone calling. The neonates were examined by Pediatrician in the NICU of Azadi Teaching Hospital. The neonatal birth weight was done at labour room directly after the delivery using the UNICEF weighing scale. The apgar scores were measured by the Pediatrician at 5 minutes. Statistical analysis was performed using the statistical package for social sciences (SPSS) software version 25. Appropriate statistical tests were applied accordingly, P value less than 0.05 was considered statistically significant.

FINDINGS

The study included 200 pregnant women delivered by elective CS, 200 pregnant women delivered by first stage CS and 200 pregnant women delivered by second stage CS. There was a significant association between nulliparity history of pregnant women and second stage CS ($p<0.001$). Pregnant women with increased weight more than 90 Kg were significantly associated with risk of first stage CS ($p<0.001$). A significant association was observed between irregular antenatal care and second stage CS ($p<0.001$). (Table 1). No significant differences among the three studied groups, regarding, postpartum fever, wound infection, paralytic ilius after CS, and blood transfusion after CS, (P.value>0.05). Second stage CS was significantly associated with postpartum hemorrhage, extension of lower uterine incision during CS , secondary suturing of skin wound, bladder injury and broad ligament hematoma during CS, ($P<0.05$), (Table 2). The neonataal birth weight was insignificantly different across the three studied groups, ($P>0.05$). First and second stage CS was significantly associated with more frequent NICU admission of neonates ($P<0.001$). Second stage CS was significantly associated with longer duration of neonatal admission to NICU, neonatal hypoxic ischemic encephalopathy, birth asphyxia and lower Apgar score, ($P<0.05$). Neonatal sepsis was significantly more frequent in those delivered with first stage CS ($p=0.003$). Elective CS was significantly associated with transient tachypnea of newborn ($p<0.001$), (Table 3).

Table 1: Maternal general characteristics distribution according to cesarean section types (n = 200, for each group)

Variable		Elective (n = 200)		First stage (n = 200)		Second stage (n = 200)		P. value
		No.	%	No.	%	No.	%	
Age (year)	<20	45	22.5	51	25.5	50	25.0	0.07
	20-30	93	46.5	67	33.5	87	43.5	
	31-45	62	31.0	82	41.0	63	31.5	

Conted…

Parity	Nulliparous	68	34.0	55	27.5	110	55.0	**<0.001***
	One	13	6.5	0	0.0	0	0.0	
	2- 4	76	38.0	77	38.5	62	31.0	
	≥5	43	21.5	68	34.0	28	14.0	
Maternal weight (kg)	<70	31	15.5	45	22.5	37	18.5	**<0.001***
	70-90	111	55.5	38	19.0	51	25.5	
	>90	58	29.0	117	58.5	112	56.0	
Antenatal care	Regular	131	65.5	93	46.5	67	33.5	**<0.001***
	Irregular	69	34.5	107	53.5	133	66.5	
*significant at P<0.05								

Table 2: Intra and postoperative Maternal outcomes distribution according to cesarean section types

Variable	Elective (n = 200)		First stage (n = 200)		Second stage (n = 200)		P value
	No.	%	No.	%	No.	%	
Postpartum hemorrhage	6	3.0	10	5.0	20	10.0	**0.009***
Extension of lower uterine incision during CS	4	2.0	11	5.5	19	9.5	**0.005***
Postpartum fever	15	7.5	16	8.0	7	3.5	0.10
Wound infection	10	5.0	15	7.5	12	6.0	0.10
Secondary suturing of skin wound	0	0.0	4	2.0	14	7.0	**0.001***
Bladder injury during CS	18	9.0	6	3.0	18	9.0	**0.02***
Paralytic ilius after CS	3	1.5	1	0.5	5	2.5	0.10
Broad ligament hematoma during CS	6	3.0	11	5.5	16	8.0	0.50
Blood transfusion	14	7.0	17	8.5	14	7.0	0.70
*significant at P<0.05							

Table 3: Neonatal postoperative outcomes distribution according to cesarean section types

Variable		Elective (n = 200)		First stage (n=200)		Second stage (n = 200)		P. value
		No.	%	No.	%	No.	%	
Birth weight (kg)	< 2.5	2	1.0	6	3.0	1	0.5	0.10
	2.5 - 4.5	192	96.0	192	96.0	192	96.0	
	> 4.5	6	3.0	2	1.0	7	3.5	
NICU admission	Yes	17	8.5	44	22.0	48	24.0	**<0.001***
	No	183	91.5	156	78.0	152	76.0	
NICU admission duration (day)	One	5	29.4	15	34.1	3	6.3	**0.009***
	2 - 7	12	70.6	29	65.9	43	89.6	
	> 7	0	0.0	0	0.0	2	4.2	
Neonatal sepsis	Yes	3	1.5	19	9.5	15	7.5	**0.003***
	No	197	98.5	181	90.5	185	92.5	
Hypoxic ischemic encephalopathy	Yes	0	0.0	2	1.0	10	5.0	**0.001***
	No	200	100.0	198	99.0	190	95.0	

Conted…

Transient tachypnea of newborn	Yes	13	6.5	3	1.5	0	0.0	**<0.001***
	No	187	93.5	197	98.5	200	100.0	
Birth asphyxia	Yes	0	0.0	23	11.5	26	13.0	**<0.001***
	No	200	100.0	42	21.0	174	87.0	
Apgar score at 5 minutes	<7	18	9.0	30	15.0	36	18.0	**0.030***
	≥7	182	91.0	170	85.0	164	82.0	
Status of neonate	Alive	180	90.0	175	87.5	166	83.0	0.10
	Dead	20	10.0	25	12.5	34	17.0	
*significant at P<0.05								

DISCUSSION

The cesarean section is operated to minimize the maternal and fetal morbidity and mortality [19] [21]. The present study showed that nulliparity and irregular antenatal care history were significant risk factors for second stage CS. Nakano et al [22] found that induction of labour failed in high proportion of nulliparous pregnant women and shifted to emergency CS. Other earlier study, showed antenatal care was significantly affecting the rates of CSs [23]. Increased weight of pregnant women in the present study was significant risk factor for first stage CS (p<0.001). This finding is consistent with results of Neumann et al [24] and An et al [25] studies. The current study revealed that pregnant women delivered by second stage CS were significantly complicated intraoperatively which agreed that reported in previous Iraqi study by Al-Ghazali et al [26]. Postoperatively, pregnant women delivered with second stage CS were significantly complicated with postpartum hemorrhage (p=0.009) and secondary suturing of skin wound (p=0.001). This finding coincides with results of Moodley et al [16] study in South Africa and Gayathry et al [27] in India.

Regarding neonatal outcomes, present study showed that neonates of pregnant women delivered by second stage CS more likely to be admitted to NICU, and longer NICU admission duration, hypoxic ischemic encephalopathy, birth asphyxia and lower apgar score. Previous studies from Moroco, Pakistan, and India supported these findings [2,21, 28] . Neonatal sepsis in current study was significantly associated with first stage CS which agreed the finding of Shah and Padbury study in USA[29]. Inconsistently, Tuuli et al [30] reported that infectious morbidity was more common complication for second stage CS as compared to first stage CS. This difference might be due to discrepancy in maternal risk factors between different studies. Transient tachypnea of neonates was the significant neonatal complication for pregnant women delivered with elective CS. Previous American study showed a great impact of elective CSs on neonatal respiratory outcome [31]. Multiple studies documented that decreased gestational age with an elective CS play a major role in development of transient tachypnea of neonates [32-34].

CONCLUSION

The second stage cesarean section is obviously accompanied by many maternal and neonatal complications in comparison to elective and first stage cesarean sections. The maternal risk factors related to second stage cesarean section were nulliparity and irregular antenatal care.

Ethical Clearance: All ethical issues were approved according to the 2013 WMA declaration of Helsiki. An informed oral consent was taken from each woman before enrolling in the study and an ethical agreement was taken from administration of the hospital in addition to management and consultation for selected women and neonates by the researcher

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Comorbidities of Phototherapy Used in Neonatal Jaundice in Diyala Governorate, Iraq

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ABSTRACT

Phototherapy is the first most common therapeutic measure in treatment of jaundice in newborns and many cases been the only treatment required. This cross-sectional study tried to assess the comorbidities of phototherapy used in neonatal jaundice. The study conducted at Al-Batool maternity and child teaching hospital in Diyala province in Iraq, during the period August 2017 to January 2018, included 100 neonates with jaundice who were treated with phototherapy. Almost, 64% of the neonates aged less than three days, After phototherapy, there was a significant decline in each of hemoglobin, serum iron, TSB, serum calcium, serum Phosphate, serum RDW, serum MCV, WBC count and platelets count ($p<0.001$), and there was a significant increase in serum alkaline phosphatase ($p<0.001$) and urine calcium level ($p=0.002$). In conclusion, phototherapy had significant influence on the levels of minerals and electrolytes of the neonates, hence the change in mineralization and electrolyte status need to be managed carefully.

Keywords: *Neonatal jaundice, Phototherapy, Comorbidities, Minerals, Electrolytes.*

INTRODUCTION

Neonatal jaundice, the yellowish discoloration of the sclera and skin caused by hyperbilirubinemia, is one of the most common conditions confronting neonatologists daily [1]. It's a serious condition that may result in fatal complications if not treated properly and in a timely manner, this condition is caused by an excess of bilirubin in the blood, a yellow substance created from the degradation of red blood cells, which give bilivirdin and ferrous bilivridin then metabolize to bilivirubin, bilirubin is broken down by the liver in a healthy adult by binding to albumin and being excreted as bile, neonates in the first few days after birth produce 6 to 8 mg/kg/24h, more than twice as much as adults, due to an increased red blood cell turnover rate, bilirubin production usually declines 10 to 14 days after birth, for this reason, the risk of jaundice and complications resulting from the hyperbilirubinemia is highest in the few days directly following birth[2].

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Jaundice is the most common condition requiring medical attention in newborn babies, and about 50% of term and 80% of preterm babies develop jaundice in the first week of life [3]. Jaundice is also a common cause of re-admission to hospital after early discharge of newborn babies, jaundice usually appears 2 to 4 days after birth and disappears 1 to 2 weeks later, usually without the need for treatment [4].

Hyperbilirubinemia is one of the most common causes of morbidity in newborns worldwide, and the most frequent cause of hospitalization or readmission for special care in the 1st week of life [(5-7)]. Recent global estimates suggest that every year, roughly 1.1 million babies would develop severe hyperbilirubinemia and the vast majority reside in sub-Saharan Africa and South Asia [(8)]. Available evidence also shows that severe hyperbilirubinemia, with or without bilirubin encephalopathy, is associated with substantial mortality and long-term morbidities in low- and middle-income countries (LMICs) [9-12]. Over 60% of all newborns develop neonatal jaundice (NNJ), a physiologic condition characterized by yellowish discoloration of the skin and conjunctiva as a consequence of increased levels of serum bilirubin during the first week of life[13-

[14]. NNJ is usually benign, but in some cases it can progress to severe hyperbilirubinemia, acute bilirubin encephalopathy (ABE) and kernicterus/chronic bilirubin encephalopathy (CBE) [15-17]. ABE and CBE are largely preventable if severe hyperbilirubinemia is identified early and treated promptly with effective phototherapy or, for hazardous cases, exchange transfusion. Guidelines for managing jaundice have been proposed by the American Association of Pediatrics (AAP), the UK National Institute for Health and Care Excellence (NICE) and others [18-20].

With improvements in prevention and treatment, the number of cases of severe hyperbilirubinemia in high-income countries (HICs) has decreased markedly since the 1990s, as assessed by population-based studies and registries, the incidence of severe hyperbilirubinemia in HICs is currently estimated to be about 31.6/100,000 live births (95% CI 11.8-51.3), while the incidences of ABE and CBE have been estimated as being in the range of 1.0-3.7 and 0.4-2.7/100,000 live births, respectively [21-22]. The present study tried to assess the comorbidities of phototherapy used in treatment of neonatal jaundice among group of Iraqi neonates in Diyala province of Iraq.

PATIENTS AND METHOD

This was a prospective cross sectional study conducted at Al-Batool maternity and child teaching hospital in the period from the 1st of August 2017 to the 1st of January 2018, included 100 newborn patients with neonatal jaundice who were admitted for treatment with phototherapy. Data were collected using a specially designed questionnaire form by direct interview with the mothers or relatives of the participant neonates. Data were collected regarding the newborn's age, gender, gestational age at labor (full term or preterm), consanguinity, number of sibling, death in the family and cause of death, financial and social problems. Mother's blood group, father's blood group, neonate's blood group, mode of delivery, place of delivery, complication of delivery, admission to NICU needed or not, central line or assisted ventilation, duration and source of admission, if the newborn presented with sepsis or not and type of sepsis, father and mothers' age and the presence of congenital anomalies. The data collection form also included, obstetrical and gynecological history of the mothers, pregnancy history, medical history of the mother, family history of neonatal jaundice, neonatal admission, DM, rickets and causes of rickets.

Then we measure the neonatal weight and current weight, birth length, current length, birth OFC, current OFC and full clinical examination was performed looking for hepatomegaly, splenomegaly, skin rash, bronze baby, diarrhea, dehydration, eye trauma and eye injury. Laboratory investigations were performed for each participant neonate, at time of inclusion of a neonate, before initiation of phototherapy, a sample of venous blood was taken through aseptic venipuncture. Another sample of venous blood under sterile conditions was taken 36 hours after phototherapy. Skull x-ray was performed before and 36 hours after phototherapy looking for possible changes in the bone mineralization.

The statistical analysis was performed using the statistical package for social sciences, version 24, appropriate statistical tests and procedures were applied accordingly. (p value) set at ≤ 0.05 to be significant.

RESULT

The mean age of neonates was 2.6±2.3 days; 64% of them were less than 3 days age, 33% of them were in age 3-7 days and 3% of them were more than 7 days age. Male gender neonates with jaundice were more than females with male to female ratio of 1.3 to 1. (Table 1). Most (82%) of neonates with jaundice were preterm while 18% of them were term. The consanguinity was present among 53% of neonates. Mean siblings number was 1.7±1.5; 67% of neonates had one sibling and 33% of them had 2 and more siblings (Table 2).

Mean birth weight of neonates with jaundice was 3.3±0.82 Kg, while currently was 3.2±0.79 Kg, with significant reduction after phototherapy ($p<0.001$). No significant differences in length and occipto-frontal circumference of neonates with jaundice after phototherapy (Table 3).

After phototherapy, there was a significant decline in each of neonatal Hb, serum iron, TSB, serum calcium, serum Phosphate, serum RDW, serum MCV, WBC count and platelets count ($p<0.001$). After phototherapy, there was a significant increase in Serum Alkaline Phosphatase ($p<0.001$) and urine calcium level ($p=0.002$). All these findings were shown in (Table 4).

Types of phototherapy used to treat neonates with jaundice were single (4%), double (42%), triple (28%) and intensive (26%). Exchange transfusion was done for 17% of neonates and repeated in 8% of them. ABO differences in blood groups were detected for 51% of neonates with jaundice and RH differences were detected for 28% of them. G6PD enzyme deficiency was detected in only one neonate while no other causes of hemolysis was detected, (Table 5).

Table 1: Demographic characteristics of the studied group (N = 100)

Variable	Category	No.	%
Neonatal age* (days)	<3	64	64.0
	3-7	33	33.0
	>7	3	3.0
Neonatal gender	Male	57	57.0
	Female	43	43.0
*Mean (SD) = 2.6 (2.3), SD: standard deviation			

Table 2: Gestational characteristics of the studied group (N = 100)

Variable	Category	No.	%
Gestational age	Preterm	82	82
	Term	18	18
Consanguinity	Yes	53	53
	No	47	47
Siblings number	<2	67	67
	≥2	33	33

Table 3: Anthropometric measurements of the studied group at birth and after phototherapy (N = 100)

Variable	At birth*	After phototherapy*	P. value
Weight (Kg)	3.3 ± 0.82	3.2 ± 0.79	**<0.001**
Length (cm)	48.4 ± 4.0	48.4 ± 4.1	0.40
OFC (cm)	34.6 ± 2.06	34.4 ± 1.96	0.20
*Values are mean ± standard deviation			

Table 4: Neonatal investigations at admission and at discharge (N = 100)

Variable	At admission*	At discharge*	P. value
Hb (mg/dl)	15.7 ± 3.1	13.3 ± 3	<0.001
Serum Iron (µg/dl)	22.3 ± 4.0	20.5 ± 3.9	<0.001
TSB (mg/dl)	16.9 ± 4.6	7.9 ± 1.8	<0.001
Serum Calcium (mg/dl)	2.4 ± 0.6	2.0 ± 0.4	<0.001
SerumPhosphate (mg/dl)	2.7 ± 0.6	2.3 ± 0.5	<0.001
Serum Alkaline Phosphatase (U/L)	184.6 ± 43.6	218.9 ± 53.2	<0.001
Urine calcium (mg/24h)	3.3 ± 0.7	3.6 ± 1.1	0.002
Serum RDW (%)	14.6 ± 2	13.9± 2.1	<0.001
Serum MCV (fl)	92.8 ± 13.5	89.0 ± 15.0	0.005
WBC count ($x10^3$)	13.8 ± 4.8	11.3 ± 8.5	0.003
Platelets count ($x10^9$)	332.7 ± 149.7	285.3 ± 127.4	<0.001
*Values are mean ± standard deviation			

Table 5: Types of phototherapy and clinical variables of the studied group (N = 100)

		No.	%
Types of phototherapy	Single	4	4.0
	Double	42	42.0
	Triple	28	28.0
	Intensive	26	26.0
Exchange transfusion		17	17.0
Repeated exchange transfusion		8	8.0
ABO difference in blood group of baby and mother		51	51.0
RH difference		28	28.0
G6PD enzyme deficiency		1	1.0

DISCUSSION

Regarding to the gestational age, it was found that about 4/5th (82%) of the neonate were full term and (18%) were preterm. Which is same that revealed by Al-Swaf FB et al, in a study done previously in Iraq when 81.5% of the neonates were full term and the rest was preterm [23]. The current study shows that the incidence of UTI among neonates with jaundice was 6.0%. Which is more than that revealed by Sgro M. et al, [24] Study when it was represent (2.1%) of the patient with neonates jaundice cases [24]. This may be due to small sample size of the current study. There was a significant decrease of the neonate weight in the current study after hyperbilirubinemia,. Which is agreed with that found by Osborn et al, [25] study and Maisels et al [(26)] study when they mentioned that jaundiced infants did lose more weight than control infants. In the current study the level of serum bilirubin was 16.9±4.6 mg/dl at admission and decreased at discharged (7.9± 1.8). With a statistically significant association which is in agreement with that mentioned by Leite et al 2004, [27] . When reported incidence of serum bilirubin > 10 mg/dl with a statistically significantly lower number of neonates with serum bilirubin > 10 mg/dl in the phototherapy group compared to the control group. Also the maximal serum bilirubin concentration exceeded 12.9 mg/dL [27]. The present study show that there is a significant decrease in serum calcium level between before and after phototherapy, which is in accordance with that found by Arıkan Fİ, [28]. Phototherapy raises calcium absorption by the bones and leads to the reduction of melatonin levels, hypocalcemia has been declared as a reaction to phototherapy in term and premature infants [28]. In Yadav R et al, study, neonate will developed hypocalcemia in 66% of the term and 80% of the preterm neonates after treatment with phototherapy [29].

The prevalence of hypocalcemia in Jain's study [30] was 30% in full term neonates and in Ehsanipoor's 15% [31]. In Alizadeh-Taheri P et al, study 83 (56%) of newborns had decline in serum calcium level.

CONCLUSIONS

More than half of the baby will suffer from one or more co-morbidities after treated with phototherapy. The majorities were suffering from skin rash, dehydration, diarrhea and eye injury.

Ethical Clearance: All official agreement were obtained prior to initiation of the study. A written signed informed consent was obtained from all mothers or relatives of the neonates and they were informed about the nature and the outcome of the study. Data were collected in accordance with the World Medical Association declaration of Helsinki 2013– Ethical principles for medical research involving human subjects.

Conflict of Interest: None.

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Effect of Thyroid Disorder on Liver Function and Some Immunological Parameters

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ABSTRACT

Since thyroid disorder is associated with many diseases and weaken the immune response, this research aims to study the effect of hypo- and hyper- thyrodisim on liver function and some immunological parameters such as C-reactive protein and transferrin. This study included forty patients were previously diagnosed with hyperthyroidism and hypothyroidism, as well as healthy as control, male and female, in age group of 20-60 years. 5 ml of venous blood was collected from all subjects. Serums were used to determine the Hormones levels (TSH, T3, and T4) using a Cobas e411 system and Liver function and immunological parameters using Cobas Integra 400 plus. Total, direct, and indrect serum bilirubin were higher in the thyroid disorder (hyper- or hypo-thyrodisim) compared to control. GOT and GPT levels were significant higher in hyperthyroidism compared to hypothyroidism and control while no differences between hypothyroidism and control were detected. Transferrin and CRP levels were also significant higher in hyperthyroidism compared to hypothyroidism and control while no differences between hypothyroidism and control.TSH had positive correlation with total and direct serum bilirubin and transferrin and negative with GPT. T4 and T3 had positive correlation with GPT, GOT and CRP and negative with transferrin. As conclusion, thyroid disorders (hypo- or hyperthyroidism) effect negatively on liver function and immune parameters, and hyperthyroidism can be has more affects than hypothyroidism on these parameters.

Keywords: *hypothyroidism, hyperthyroidism, transferring, CAP, and liver function.*

INTRODUCTION

Thyroid gland is heavily involved in energy balance, metabolism of fats and carbohydrates, regulating body weight and composition[1, 2] Thyroid disorder is associated with many diseases[3] because of that the physiological role of the thyroid gland has been taken seriously by many researchers[4].

The level of thyroid hormones is also important for normal function of liver and metabolism of bilirubin. It is understood that the disorders of these two organs will interact or affect each other. In fact, there are many clinical and laboratory links between the diseases of thyroid and liver. Namely: 1) Secondary liver damage due to the systemic effect of excess thyroid hormone or the effects of direct toxic and subclinical physiological of thyroid hormone on hepatic function; 2) autoimmune mechanisms may cause hyperthyroidism or hypothyroidism in some patients with chronic hepatic disease; 3) changes in metabolism of thyroid hormone or secondary tests of hepatic disease; And 4) thyroid or hepatic disorders associated to treatment of hepatic or thyroid disease. Clinically, it is common for patients with hypothyroidism to have abnormal hepatocellular biochemical tests return to normal with an improved thyroid condition[5]

In the rat model, it was found that hypothyroidism and hypothyroidism weakens the immune response, leading to elevated sensitivity of tumor. After thyroidectomy, in experimental animals there have been obvious disorders in the immune system, including low body weight loss, reduced lymphocyte count, suppression of immune response and metabolic activity of macrophages[6, 7].

Acute phase reactors (APRs); such as C-reactive protein(CRP), ferritin, pro-calcitonin(PCT), fibrinogen and erythrocyte sedimentation rate (ESR); are known to be involved in the combination of pro-inflammatory

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molecules in different inflammatory diseases and increase during many conditions of immunologically mediated[8]. So these factors used as markers to diagnosis of some diseases[9]. Some APRs levels rise with thyroid disorder related or unrelated with autoimmune processes[10-12]

This research aims to study the effect of hypo- and hyperthyroidism on liver function and some immunological parameters such as CRP and transferrin.

MATERIAL AND METHOD

This study included forty patients were previously diagnosed with hyperthyroidism and hypothyroidism (20 volunteers in each group), who visited the Endocrines and diabetes center in Nassiryiha city/Iraq, as well as 20 healthy as control (male and female) in age group of 20-60 years.

After taking consent, 5 ml of venous blood was collected from antecubital vein by disposable syringe with all proper aseptic precautions in a dry sterile test tube. The blood samples were left to clot for 1-2 hour at room temperature and then centrifuged at 3000 rpm for 10 minutes, serums were stored at – 20C° until used. Hormones levels (TSH, T3, and T4) were determined using a Cobas e411 system (Roche/Germany). Liver function and immunological parameters were determined using Cobas Integra 400 plus (Roche/Germany).

Results are expressed as mean ± standard error (M±SE). Data were analyzed by one-way analysis of variance (ANOVA) followed by Fisher's test for multiple comparisons, using Stat view version 5.0. Differences were considered significant when $p<0.05$. Regression analysis was performed by analysis of covariance (ANCOVA) also using Stat view version 5.0.

RESULTS

TSH, T3, and T4 levels in patients and control groups were descript in the table-1.

Table 1: descriptive hormones levels in control and patients with hyper-and hypothyroidism

Pateints groups	TSH	T4	T3
Hyperthyrodism	0.03 ± 0.01*	171.4 ± 8.1*θ	4.4 ± 0.4*θ
Hypothyrodism	58.9 ± 9.4ζ	58.7 ± 7.5	1.5 ± 0.1ζ
Control	1.6 ± 0.3	96.6 ± 5.2	2.0 ± 0.2
P. Value	*0.0001	*0.0001	*0.0001
	ζ 0.0001	θ 0.0001	θ 0.0001
			ζ 0.0038

*significant differences hyper vs. hypothyroidism, θsignificant differences hyper vs. control, and ζsignificant differences hypo vs. control

While Total and direct serum bilirubin were significant higher in the thyroid disorder (hyper- or hypothyroidism), indirect serum bilirubin was significant higher in hyperthyroidism and tendency higher in hypothyroidism compared to control (Figure-1).

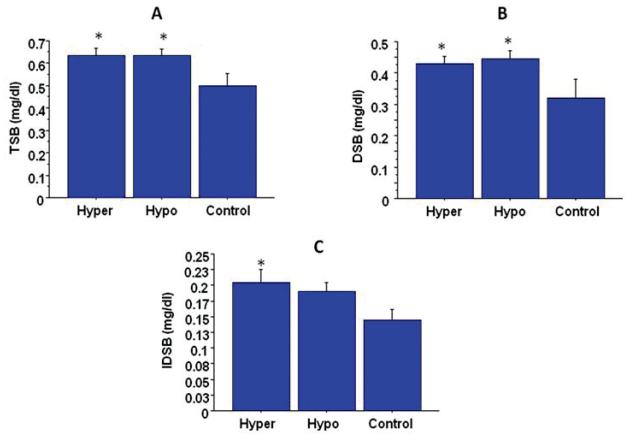

Figure 1: Total (A), direct (B) and indirect (C) serum bilirubin in control and thyroidism patients (hyper- and hypothyroidism). *significant differences vs. control

GOT and GPT levels were significant higher in hyperthyroidism compared to hypothyroidism and control while no differences between hypothyroidism and control were detected. (Figure-2)

Transferrin and CRP levels were significant higher in hyperthyroidism compared to hypothyroidism and control while no differences between hypothyroidism and control. (Figure-3)

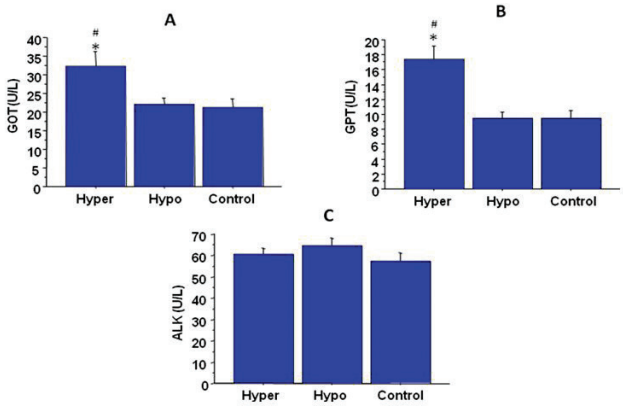

Figure 2: GOT (A), GPT (B) and ALK (C) levels in control and thyroid disorder patients (hyper- and hypothyroidism). *significant differences vs. control, and # significant differences vs. hypothyroidism

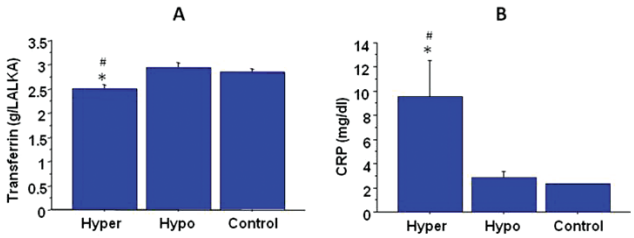

Figure 3: Transferrin (A) and CRP (B) levels in control and thyroidism patients (hyper- and hypothyroidism. *significant differences vs. control, and # significant differences vs. hypothyroidism

The correlation among thyroid hormones and all biochemical and immunological parameters were showed in the table-2. Significant positive correlation among TSH, total, and direct serum bilirubin but not indirect serum bilirubin while no correlation among T4 and T3 with total, direct and indirect serum bilirubin were detected. Significant positive correlation among T4 and T3 with GOT and GPT were also detected while there were significant negative correlation between TSH and GPT but not GOT. There weren't correlation among TSH, T4 and T3 with ALKP. Transfirrin had significant positive correlation with TSH and significant negative correlation with T4 and T3. Finally, CRP had significant positive correlation with T4 and T3 but not TSH (Table-2)

Table 2: Thyroid hormones correlation with Biochemical and immunological parameters

	TSH	T4	T3
TSB (mg/dl)	R^2=0.083 ↗ P=0.048	R^2=6.568 P=0.986	R^2=3.993 P=0.893
DSB (mg/dl)	R^2=0.083 ↗ P=0.047	R^2=0.001 P=0.799	R^2=0.003 P=o.696
IDSB (mg/dl)	R^2=0.004 P=0.670	R^2=0.003 P=0.712	R^2=0.003 P=0.709
GOT (U/L)	R^2=0.028 P=0.269	R^2=0.083 ↗ P=0.0015	R^2=0.173 ↗ P=0.003
GPT (U/L)	R^2=0.155 ↘ P=0.0057	R^2=0.38 ↗ P=0.0001	R^2=0.156 ↗ P=0.0055
ALK (U/L)	R^2=0.007 P=0.563	R^2=0.005 P=0.632	R^2=0.003 P=0.712
Transfirrin (g/LALKA)	R^2=0.112 ↗ P=0.02	R^2=0.14 ↘ P=0.0096	R^2=0.153 ↘ P=0.006
CRP (mg/dl)	R^2=0.003 P=0.69	R^2=0.085 ↗ P=0.047	R^2=0.102 ↗ P=0.029

↗ Significant positive correlation, ↘ significant negative correlation

DISCUSSION

Previous researches have reported that thyroid hormones have important role in regulating of lipid metabolism in liver by thyroid receptors[13, 14]. Some of thyroid hormone derivatives have also important effects on the lipid metabolism in the liver such as 3,5-Diiodl-thyronine (T2) which has a fat-lowering effect and decrease excess fat in cultivated liver cells[15, 16] by reduce fat accumulation and stimulate fat oxidation pathways[17, 18]. In rodents, studies have shown a regression of hepatic lipid degeneration after treatment with thyroid hormones receptor-targeted liver[19, 20]. Moreover, oxidative stress in liver tissue among patients with thyroid disorder can cause cellular injury by reducing beta oxidation of fatty acids and increasing fat peroxidation[21]. These evidences can explain the higher total, direct, and indirect serum bilirubin in the thyroid disorder (hyper- and hypothyroidism) in our results but the GOT and GPT levels were higher only in hyperthyroidism but not in hypothyroidism which passed with the correlations results, GOT and GPT levels have positive correlation with T4 and T3 levels. In our results there was also no change in the ALKP levels within hyper or hypothyroidism which not passed with many studies[22-24]. These differences in the results found

in many studies not only in ours. Many researchers have reported differences in thyroid function in thyroid patients with acute or chronic liver disease, and even contradictory[5]. Much of the confusion in published literature can be attributed to patients who are studied at different stages of their illnesses[5, 25, 26] so we recommend repeating this work in different stages of illnesses and studying the differences among these parameters in these different stages.

It is well established that CRP, one of inflammatory parameters, has been increased in patients with hypothyroidism[27-29]. Czarnywojtek showed that the concentration of CRP in the serum was increased in thyroidism. CRP increase in hypothyroidism may be due to IL-6 interaction on TNF-alpha and IL-1. However, the mechanism which caused increases CRP in both hyper- and hypothyroidism is still a question. In addition, hypothyroidism leads to a decrease in metabolic rate and a disruption in biochemical processes which may lead to an imbalance in the CRP clearance rate. Contrariwise, rapid metabolic activities caused by hyperthyroidism, which can lead to hyperactive nervous system, stimulate the immune system and increase the flow of peripheral blood significantly. These conditions may increase CRP concentration in the patients with hyperthyroidism[30]. In our results, the CRP levels increase in hyperthyroidism but not in hypothyroidism.

The innate immune pathways stimulate many antimicrobial mechanisms, including the depletion of iron available to pathogens on the systemic and cellular levels. Metabolism and proteins regulate the condition of iron that affects innate immunity[31]. Heme–containing thyroperoxidase catalyzes the two initial steps of thyroid hormone synthesis[32-34], that means severe iron deficiency may decrease thyroperoxidase activity and interfere the thyroid hormones synthesis[35]. The low iron stores appear to reflect the increased concentration of transferrin, a plasma glycoprotein synthesized in the liver[36]. In addition, transferrin is a severely negative protein phase (a protein that decreases its concentration in response to acute phase reaction as in the case of inflammation), leading to reduce its concentration in hyperthyroidism. In hyperthyroidism, an oxidative stress, the neutrophil-derived superoxide causes damage in transferrin which leads to fragmentation of protein and increased in ferrous release[37, 38] leading to decrease transferrin levels as showed in present study.

As conclusion, thyroid disorders effect negatively on liver function and immune parameters, and hyperthyroidism can be has more affects than hypothyroidism on these parameters, but we recommended repeating this work in different stages of illnesses and studying the differences among these parameters in these different stages.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Taken from Biology Department/ Science College/Mustasiriyah University which have a deal with Health Ministry

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The Presence of Pathogenic *Leptospira sp*. in Water Bodies in Klaten District

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ABSTRACT

Leptospirosis is a health problem in Indonesia. In the year 2016 cases of leptospirosis in Klaten reported death rate 15.38%. The presence of *Leptospira* bacteria in the body of water plays an important role in the transmission of leptospirosis. This study aims to determine the presence of *Leptospira* bacteria in water bodies in Klaten Regency. This research is descriptive research with survey method using cross sectional design. The sample was 100 water samples from wells, rivers and paddy fields in endemic and non endemic areas of Leptospirosis. Polymerase Chain Reaction examination there were 6 positive water samples of rpoB leptospira gene on well water (6.7%), irrigation channel (6.7%) and paddy field (5%). *Leptospira* is found at temperatures ranging from 24-31ºC, pH 6.8-7.5 and dissolved oxygen 4-12ppm.

Keywords: *Leptospira sp., water bodies, irrigation channels, bacteria*

INTRODUCTION

Leptospirosis is one of the most widespread bacterial zoonoses in the world.[1] Leptospirosis, caused by pathogenic spirochetes belonging to the genus Leptospira, is a zoonosis that has important impacts on human and animal health worldwide.[2] Transmission to mammals occurs via direct contact with leptospira-infected urine or tissues or indirectly through contact with contaminated soil or water. Although infection may take place through unbroken skin after prolonged immersion, *Leptospira* sp. usually gain entry to the host via abrasions or cuts in the skin or through exposed mucosae (eyes, nose, *etc.*).[3] Soil,[4,5] mud,[6] and surface waters contaminated with urine from chronically-infected reservoir hosts remain important sources of human leptospirosis transmission worldwide.[7–9]

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Based on data from the Central Java Provincial Health Office, cases of leptospirosis in Central Java have increased cases from 2012 to 2014. In 2015 cases in Central Java declined from the previous year, but the Case Fatality Rate (CFR) stagnated.[10] Klaten District is one of the endemic areas of leptospirosis. Leptospirosis in Klaten District occurs every year for the last five years. In 2016 reported 39 patients with 6 deaths (CFR = 15.38%). The case spread sporadically, not clustered in one place. Leptospirosis in Klaten regency was dominated by patients with occupation as farmer and laborer (79.49%) and had wound history (87.18%).[11]

The high prevalence rate of Leptospirosis in tropical and subtropical climates can be attributed to adverse environmental conditions that allow the environment to be a suitable place to live and develop of *Leptospira* bacteria.[6,12] Outbreaks of leptospirosis have been associated with common water events such as rural and urban flooding, swimming, and other water sports as well as occupational exposure involved predominantly with farming and drinking contaminated water.[13,14] The presence of *Leptospira* sp. bacteria in the body of water plays an important role in the transmission of

leptospirosis. The purpose of this study was to determine the presence of *Leptospira* sp. bacteria in water bodies. Tested using PCR (Polymerase Chain Reaction) method to determine the presence of *Leptopsira* sp. bacteria in water bodies with high sensitivity reaches 90-100%.

METHOD

The design of this study is cross sectional conducted by survey method. Sample in this research is water well, irrigation channels and paddy field in case area and free of leptospirosis in Klaten District. The water sample is determined based on the proportion estimation formula from Lemeshow to obtain 100 water samples taken by puposive. Water samples taken from wells are commonly used by respodents, irrigation channels used by respondents to cleanse themselves and paddy fields where respondents work. Each water sample was taken with a volume of 150ml placed in a dark glass bottle. Water samples are stored at 4ºC and processed within 24 hours.[15]

Water samples taken measured temperature, pH and dissolved oxygen. Temperature measurements are carried out with a water thermometer that is by dipping the thermometer into water and allowing for 2-5 minutes until the thermometer shows a stable value. Then record the thermometer scale reading without lifting the thermometer in water.[16] The pH measurement is done by dipping the electrode into a water sample until the pH meter indicates a fixed reading. Then record the reading of the scale or number on the view of pH meter.[17] Dissolved Oxygen measurements using Dissolved Oxygen meter in accordance with WalkLAB Digital Dissolved Oxygen meter.[18]

Each water sample was filtered with one nitrocellulose membrane (Milipore) whose pore size was 0.22µm. Next the membrane is cut into small pieces and inserted into a microsentrifuge tube. The next stage is the DNA isolation of the niroselulose membrane used to filter the water sample. The DNA isolation was performed using the Genomic DNA Mini Kit isolation kit (Geneaid). The isolation stages are performed according to the procedures listed in the kit manual.

The Polymerase Chain Reaction (PCR) process performed on DNA samples was obtained using primers: rpoB-F-CCTCATGGGTTCACAATATCA and RpoB-R-CGCATCCTCRAAGTTGTAWCCTT using Go Taq Green Master Mix (Promega).[19] PCR Stages were as follows: predenaturation 94°C for 2 minute, followed by 40 amplification cycles consisting of denaturation at 94°C for 30s, annealing at 55°C for 1 min, extension at 72°C for 1 min followed by a final extension for 20 min at 72°C . Analysis of PCR results was performed with electrophoresis using agarose 1.5% at 100 volts for 15 min. Specific DNA visualizations were performed using UV transilluminators. Positive samples when electrophoresis results showed that the DNA bands were in the 600 bp position.

RESULTS AND DISCUSSIONS

One hundred water samples consist of well water, irrigation channels and paddy fields coming from sub-districts where leptospirosis cases occur every year, sub-districts almost every year occurs leptospirosis cases and sub-district without leptospirosis in Klaten District. Six positive water samples of rpoB gene were obtained from two wells, two rivers and two rice fields. This indicates that the water bodies are contaminated by the *Leptospira* sp. from infected animals. Prevalence of *Leptospira* sp. in water samples are tabulated in Table 1.

Table 1: Results of water sampling and Leptospira sp detection based on Leptospira rpoB gene detection. (n=100)

Distribution area	Water sources	Total sample	Positive sample	Percentage of positive sample (%)
Sub-district with cases occurs every years	wells	11	0	0.0
	irrigation channels	11	2	18.18
	paddy fields	15	1	6.67
Sub-district with cases occurs almost every years	wells	11	2	18.18
	irrigation channels	11	0	0.0
	paddy fields	15	1	6.67
Sub-district without cases	wells	8	0	0.0
	irrigation channels	8	0	0.0
	paddy fields	10	0	0.0

Our study revealed that *Leptospira* bacteria is found in sub-district with cases occurs every years and sub-district with cases occurs almost every years. In sub-districts with cases ocuurs every year, *Leptospira* bacteria found in irrigation channels (18.18%) and paddy fields (6.67%). While in sub-districts with cases occurs almost every year, *Leptospira* sp. are

found in wells (18.18%) and paddy fields (6.67%). The bacteria were found in irrigation channels, one of the positive irrigation channels found rats holes, water in the irrigation channels was relatively stagnant. The presence of rats around the river can contaminate the water in the irrigation channels. Leptopsires survive weeks or months in moist and warm soil, stagnant water at neutral or slightly pH.[20,21] And based on observation on two positive wells of *Leptopsira*, the floor around the well is made from soil, not segmented with cement. Wells are easily contaminated through floors which is not made with water resistant material.[22] Leptospira bacteria contamination in the paddy fields is caused, a paddy field is a place for the availability of food for rats. And the soil in the paddy fields is wet. It is suitable for *Leptospira* sp. to survive for long period of time. Besides that, there were water puddles in the rice field allows for *Leptospira* sp. spread the contaminated urine in the soil. Previous study revealed that *Leptospira* serovar Harjo has higher survival rate in moist soil at pH 6.9-7.4.[23]

Table.2: Results of water sampling and *Leptospira sp*. detection based on *Leptospira* rpoB gene detection (n = 100)

Distribution area		Sampling code	º C	pH	DO
Sub-district with cases occurs every years	Cawas irrigation channels 1	CB2	30	6,9	12
	Cawas irrigation channels 2	CB3	24	6,8	6,9
	Trucuk paddy fields	TC4	28	7,4	9,2
Sub-district with cases occurs almost every years	Kebonarum paddy fields	KBC3	31	6,8	8,7
	Klaten Selatan 1 well	KSA1	28	7,5	4
	Klaten Selatan 2 well	KSA2	28	7,2	5,7

Temperature was important factor for the survival of Letopsires in the nature.[21] Leptospires are obligate aerobes with an optimum growth temperature of 28 to 30°C.[24] In this study *Leptospira* sp. was found at a temperature of 24-31ºC, pH 6.8-7.4 and DO 4-12ppm. These results show the ability of *Leptospira* sp. to survive in a variety of environmental conditions. Our results are consistent with the theory that the ability to survive *Leptospira* sp. in the environment is affected by variations in soil and water conditions in contaminated areas.[25] Well water and paddy fields in the leptospirosis case areas have more optimal temperatures compared to leptopsirosis-free areas. Temperature is influenced by external factors such as weather, wind and currents. In addition, water temperature variations are caused by natural processes such as biochemistry, through organisms that produce heat (endothermic and exothermic reactions) and microbiological processes (geothermal sources).[26] Optimal temperature makes *Leptospira* sp. survive last longer. The previous study found that The leptospires can survive for 10 months in adverse condition (4^0C) and up to 20 months when stored at 30^0C.[27] Length of life of Leptospira bacteria in water can be affected by water pH. Optimum growth of Leptospira bacteria occurred in the range of pH 7.2-7.6. [28] The result of examination found the existence of Leptospira bacteria at relatively acidic pH that is pH 6.8-6.9. This research is in line with research conducted by Benacer in Malaysia, that Leptospira bacteria found in water with acidic pH that is 5.77-6.63.[18] State of environmental conditions that are not suitable for breeding bacteria Leptospira can cause bacteria are inhibited growth even become die.[4] Based on research found Leptospira bacteria in DO 4-12ppm. The oxygen concentration is influenced by many factors including water temperature, photosynthesis rate, turbidity and water depth, degree of water turbulence or wave action, and the amount of oxygen used by respiration and decay of organic matter. The oxygen concentration is the limiting factor of growth.

CONCLUSIONS

Leptospira sp. can live at temperatures and pH beyond the optimal limit for its growth. From 100 water samples examined, six samples found positive rpoB gene from well water samples (6.7%), irrigation channels (6.7%) and paddy fields (5%).

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Conflict of Interest: The author reports no conflicts of interest in this work.

Ethical Clearance: Ethical clearance was obtained from Ethic Commission of Health Research, Faculty of Public Health UNDIP (123/EC/FKM/2017). All subjects signed informed consent to join the study.

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Dialectic Unity between Threat and Division Sociological Study

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ABSTRACT

In the intensive works of the discipline on History, Toynbee pointed out civilizations were mounted or developed after fallow down so a result regarding challenges. In this sense, that gave the surroundings big function within creating civilizations, according to according to his theory, civilization existence impact has been primarily based of challenge yet explanation assumption, as is between someway equal including Ibin Khaldoon hypothesis that gives an explanation for the existence impact concerning the states namely a lot so ternary generation's lifestyles time, who final in regard to 120 years. In his assumptions, salvo civilization would like in accordance with continue to exist plenty longer than normal then wish in accordance with lift over its muscular energy, ought to take advantage of the spiritual motivation then spiritual values. When we look at ignoble thinkers' factory of this field, we may want to point out Frances Fukuyama between his (the quilt of History) who center of attention regarding the globalization, yet Samuel Huntington, any claimed so conflicts and wars in the past had been done location among nations yet states, however at last a day, smoke place of Ideologies, economies and cultures. According in conformity with his Perspective, countries would usage all capability according to put off mean international locations and as is what we bear seen recently, now USA ancient this policy according to a fearful volume in opposition to mean international locations especially Arabian and Islamic nations.

Keywords: *Dialectic Unity, Sociology, Iraqi History, Political Autocracy*

INTRODUCTION

Since Adam was landed till the final prophets and messengers there was an ascending and perfect line which is the unification line, which is the method of god to humanity and include the unification of gladness in life and happiness in the second life [(1)]. under these principles an encompass united civilization build by the prophet's father'' Ibrahim " peace be up on him" to reach its bright ranges, this truth that was hided and faced by " many social and political challenges" represented by historical, bloody and tragedy stages that our Iraqi society live since the invasion of British forces in 1914 which controlled the country future and forward an opportunity to the series of bossy reign and despotism that dominated more than eighty years by one party on the sate which is " bath party" and the only one president that prohibiting just thinking of the existence of opposite parties simulate Iraqi voice or even defending its duties then deprivation of citizen from his/her simplest rights which resulted in rebellion [(2)], disobedience, weaken the relation between the citizen and the state and motivate many native Iraqis to migrate and not participate in building Iraqi state as this was a declaration of many expatriate Iraqis [(3)]. today we are in new era with democratic system supposed to encourage human ability and their skills then get people out of ignorance that was imposed by autocracy regime to the atmosphere of responsibility and facing the challenges of social and political conversion of Iraq that are reflected in achieving political and security stability [(4)]. Our current study is launching with its scientific limits to study many features, the researcher chose unification approaches for Iraqi society and what threaten him through the current period [(5)].

RESEARCH OBJECTIVES

1. Dialectic of Iraqi society
2. Studying social and political alternatives affecting the unity of Iraqi society
3. Processing the relation between unity limits and separation factors
4. Observing political conflict among the parties and reducing competition gap of shares and locations.

5. Making political and social reformations to reduce struggle gap and competition especially of what relates with distributing shares and locations.

To have interest in social and political situation in Iraq we must consider the challenges that Iraq witnessed for more than three decades especially after political regime coup attempt and its consequences of deep conversions that are reflected in social & political environment for all the society [6]. Consequently, the importance of the study is in our ability to find convinced answers of how to fill the efforts and endure the loads of political transition with political variables that included establishments in Iraq and what resulted in strikes affected all social levels in Iraq[7].

METHODOLOGY

Method is defined as arranging research steps in a form enable researcher to reach scientific results with different means. History is one of the main source to human knowledge, which is a visible line that contains all social events the humanity had passed through then written in documental and chronicle form. We observed the contemporary historical methodology had witnessed a remarkable development after Second World War (1939-1945) where historians moved to cover miscellaneous humanitarian activities in though, economy, sociology & politics [8]. Social sciences had especially progressed and synchronized with economy development and modernization in European society after the Second World War [9].

1. **Historical Approach:** It is as a record to past, rethinking in it and writing its historical events in comprehension to register people life and their civilized development depending on documents and historical original references. To use historical method we need evidence to write down events then scientifically analyze the reference to read all variables that are affecting in future on study subject[10].
2. *Induction Approach:* This approach is interesting in study and read historical events for past and present then specifying the track of historical events and their directions towards the future to predict possible facts [11].

Iraqi History: The origin of civilization and its development in Iraq since seven thousand years ago was related to great rivers Tigris and Euphrates [12]. On their banks there was the origin of first civilization and agricultural villages that still the most important elements of economic life of Iraqi people. Agriculture helped to exist the oldest civilizations in the world, the two rivers also have the greatest role in internal transportations between villages and cities and trading with the neighbored countries [13].

As for the name of Iraq, the researchers were different in its origin and meaning its meaning is beach or sea shore. It is named Iraq because it's Tigris and Euphrates shore, maybe the Sumerian name "ARROCK" that called on WARKAA city is related to the name Iraq this city is the borders of 12th villages B.C. There is also another name "ARIKA" to indicate the education in the middle of Iraq and maybe this name was the origin of the name Iraq [14].

Greeks called in the 4th century B.C on the part between Tigris & Euphrates till Baghdad borders the name of "Mesopotamia" this name is derived from Torah to indicate the land among two rivers, Euphrates and Al-Khabour. The multiplicity of mentioning Iraq at the ends of Sassanid occupation between 5th and 6th century was increased also Europeans used Mesopotamia name to indicate old Iraq.

As a result for these factors Iraq become a target for greedy and raiders of colonialists. If we tracked the historical method to the forms of reign in Iraq we could noticed the tragedy form to the nature of political reign in Iraq since the series of ottoman occupation after they defeated Iran in the era of first Safavis. As for our historical look to Iraq through these years after 4 centuries from the first Turkish conquest – it will explain to us what Iraq suffer and gain- so we can obviously find the non-development in this country since the era of SULIAMAN AL- QANONI in thought and in using financial resources, the country get out from 19th century with less savage and less ignorance and not less corrupt of 16th century. It's clear how is the government id disappointed to fulfill its duty towards the people in the time that Europe& India were developing and progressing. During ottoman reign, now it's the time to fight against British colony so the Shia reference motivated tribes to make 20th revolution which become a specific character for Iraqis after ottoman occupation [15].

Iraqi cities witnessed "according to AL-WARDY news" the cooperation and coordination between one

city people, then Baghdad converted to media place to the revolution and succeeded in revealing national character that included different religious &ethnical groups from all areas of the country that agreed on one principle which is fighting British occupation. If we study in deep the history of Iraq to clarify accurately the true justifications of 20th revolution we could find that they are many as the declaration of British occupation on Iraq that the researcher "ABDULLAH FAHAD AL-NAFESSE "said "there are many reasons most important ones are political pressure, British depletion for Iraqi fortunes and authority abuse towards the appearance of new concepts that relates with autonomy and national comprehension". these reasons made Iraqis to declare armed revolution that was a magnificent revolution included all Iraqis also included the signatures of them headed by religion men in Najaf and agreed to demand royal regime in Iraq so "king faysal" was candidate as Iraq king during a conference held in Cairo in march 1921 then the basis of Iraqi state was built. After 6th of January 1921 Iraqi army was formed to be as a good start to fight colonialists, here we stopped a little to recognize the importance of royal era in Iraq [16].

The revolution of 14th July 1958 in Iraq with its huge consequences limited Americans interests and finished western rule in Iraq. During this stage American rule was invisible and its dimensions drawn by CIA then executed by a group of American shadow men f Iraqis to abortion the revolution in a coup of 8th April 1963 and a beginning of new stage of public relations with United States. These relations grow to take commercial nature in the beginning where the volume of commercial trade between the two countries increased then developed to declare Iraqi-Iranian war to improve Iraq relation with US then Iraq bought 5 boing planes and put on the list of the countries supporting terrorism.

Law and Justice: Law as its proper feeling is the reason of amity with nature and published through all humanitarian groups , it speaks to people permanently to do their duties by ordering them and preventing them from doing mistakes then forbidden them from committing bad actions 1 cause law rules insure for everyone to keep on coherent of main rights that found for them , this moves us to the fact that law is the necessary power to build diversified community cause law spirit contains heritage and nations cultures so the most difficult issue that law faces is how to put a law that coincide with all these cultures then organize them in one frame , definitely this need to experience and deep political philosophy to deal with these different natures where human try hard to put law rules organize his/her rights inside community then direct him toward his spiritual supreme [17].

Threatening the Unity of Iraqi Society

Political Autocracy: Policy represented by authority still affecting the tracks and thinking directions based on the method of what happened with isolated thinking in MA, AMOON, MOTWAKEL and Abbasids era where in MA, MOON era this thinking increased in power but it's attenuated in MOTWAKEL era, there are many examples in different cultures and old societies. Autocracy is confiscated and prevented freedom, so without freedom thinking will retard. when AL-KAWAKEBY reached to Cairo secretly from Aleppo in 1899 sheikh Al-Ridha quoted from him human dare to write and talk in freedom country what he/she doesn't dare to do in autocracy country, freedom country nourish mind with thinking and opinions. While in conflict the state sometimes be in political conflict about values, references era, and potential power where opponents targeted by limiting their component's then harm them, actually seeking through conflict to defeat the other is normal result cause each party have different objectives stands against the others party so some parties use violence to achieve their political, social and economic intentions. The conflicts may happen when mixing between religion and policy, we can notice that fanatical are most intending people to this direction also they carry "religion hammer to reach to their religious intentions. locally , we can apply that partially on conflict masters , in Iraq authority conflict happened cause of no justice authority in most periods, justice authority manages society things where in Iraq the result of strong conflict is frustration of Iraqi people[18].

Positions Conflict: Clinton mentioned in investment conference in Washington 21st of October 2009 with the presence of Iraqi prime minster that relation with Iraq is based on stable and sovereign Iraq depends on itself under strategic frame agreement. She also declared in conference: "we have political objectives" as supporting national government, solving conflicts 1, working on enhancing Iraq relation with neighbors, concentrating to solve Iraqi problem and rehabilitation of Iraqi people. this agreement based on mutual respect between these two states as a basis to new democracy in political side as

for economical side it includes to ease the flow of foreign investments then aid Iraq in financial merge in financial organizations to reconstruction its infrastructures then developing scientific abilities. All these aids are made by strategies to achieve the equilibrium with opposed parties and this based on conversional nature of previous political regime and prosecution policy that made opposed parties one of the important components in new political process.

CONCLUSION

In Iraq religious ID still continue and important factor in coherent of different social components despite multi doctrines while national and religious multiplicity in Bosnia and Herzegovina lead to incoherent relations and fighting as in Yugoslavia, Kosovo. Religious frame is wider than national frame and intervention between them doesn't deny the fact of amity between them. Doctrine ID maybe from the most controversial cases because of belongs and doctrine directions that leads to incoherent in national and religious ID and in tribal ID. This phenomenon is found in different communities and states that their individuals from different religions Islamic, Christian, Jewish. With different nationalities as in Iraq, china and India where India is a complex module of diversification including many languages as" Tamil, Bengali, Hinduism. Iraq is a suitable module to approximate picture when talking about doctrine ID cause of multi religion and nationalities.

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Job Demands, Low Back Pain, and Job Crafting Behaviors: A Proposed Framework

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ABSTRACT

The purpose of this paper is to propose a framework for understanding Job Crafting Behaviors (JCBs) as a proactive behavioral treatment in the relationship between Job Demands (JDs) and Low Back Pain (LBP). Though the relationship between JDs and LBP is well-established in the ergonomics literature, studies on the role of proactive behaviors are neglected. More so, while a few studies have examined behavioral treatment and its role in to JDs–LBP relationship, none has examined JCBs in relation to JDs–LBP relationship. Hence, this paper discusses JCBs as a moderator of the JDs (psychological and physical JDs)–LBP relationships. A conceptual model supported by Job Demands–Resources (JD-R) theory is thus proposed for future empirical studies and for expanding the JCBs and ergonomics literature.

Keywords: *Job Crafting Behaviors (JCBs), Low Back Pain (LBP), Psychological JDs, and Physical JDs.*

INTRODUCTION

Studies in healthcare facilities showed high rates of occupational injury[1,2,3], including Work-Related Musculoskeletal Disorders (WRMSDs)[4]. As a part of theses WRMSDs, LBP is the common and the costly WRMSDs among healthcare professionals[5]. Thus, major concern around the world among nursing are WRMSDs[6,7,8,9,10] including LBP. For instance, the prevalence rate of LBP in healthcare facilities ranged between 33% - 86% in developing and developed countries[11,13,14,15,16,17,18,18].

Case definition of LBP varied in term of temporality (i.e. 'current' or 'past' low back pain) and topography (i.e. the anatomical location of the painful area)[19]. For example, Karahan et al. (2009)[14] defined LBP as "discomfort in the spinal area (between the lower costal margins and gluteal folds) with or without radiation into the leg to below the knee for at least 1 day during the preceding 12 months". likewise, lee et al. (2008)[20] defined LBP as symptoms that happened at least once a month or continued at least 1 week in the past year and produced at least moderate pain. However, according to health & safety survey (2011)[21], 4,614 responses nurses are still being developed LBP on the job, influencing their decision regarding continuation of their practice [21].

Nurses are not the only healthcare providers having experience with LBP[22], but they classified to have the highest rate of experience among other healthcare personnel[14,22,23,24].

There are many factors that related to an individual's risk of developing LBP[14]. Such as personal factors[19], workplace activities[25], psychological and psychosocial factors which not only increase the risk of developing LBP, but also have an adverse effect on the prognosis of LBP[26], and physical JDs[18,25,27,28]. However, this study focused mainly in JDs (i.e. physical and psychological JDs) as risk factors of LBP within nursing.

Physical and Psychological JDs: Physical JDs represent that physical requirements at work such as moving heavy loads, rapid physical activity and awkward postures[28]. However, studies indicate that there are mixed findings about the relationships between physical JDs and LBP among nursing. While several studies found statistically strong significant correlations between LBP and physical JDs[18,25,27,28,29]. For example,

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according to Habibi *et al*. (2012)[29] ergonomics risk factors had significant relation with LBP. Other studies reported an insignificant relation between physical JDs and LBP[30,31,32]. For example, Rahmah *et al*. (2008)[31] study shown insignificant relationship between manual handling and LBP.

As well, psychological JDs work as LBP risk factors, which includes work characteristic such as perceived work overload, responsibility, work commitment, mental load, and confrontation with suffering & death[33]. Feng et al. (2007)[12] concluded that psychological JDs seem to be among the most important risk factors of LBP in nursing. Similarly, Yip (2004)[34] highlighted that psychological stress at work has been reported as a common factor in LBP among nurses.

However, there are mixed findings about the relationships between psychological JDs and LBP among nursing. Whereas some studies revealed a significant association between psychological JDs and LBP among nurses[12,25,33,35]. On the contrary, some studies like Choobineh *et al*. (2006)[27] found no association between psychological demands and reported symptoms of LBP. Thus, these inconsistent findings show the importance to investigate the effect of physical and psychological JDs on the LBP.

Furthermore, demand/control model hypothesis[36,37] predicts that high psychological JDs lead to job strain (i.e. LBP). Based on the literature findings, the association among the physical and psychological JDs and LBP in this study would be significant and positive, and the researcher hypothesizes that:

Hypothesis 1: There is a significant and positive relationship between physical JDs and low back pain among nurses in Jordanian hospitals.

Hypothesis 2: There is a significant and positive relationship between psychological JDs and low back pain among nurses in Jordanian hospitals.

Job Crafting Behaviors: Van Hoof et al. (2018)[38] and Dawson et al. (2007)[39] conducted a systematic literature review to assess the effectiveness of that interventions aimed to prevent or reduce LBP in nurses. Both researchers found that there was no strong evidence in terms of the efficacy of any stress management interventions, manual handling training, and exercise interventions that aims to prevent LBP in nurses. Therefore, the usefulness of a new approach highlighted in this study in order to reduce/prevent back injuries and LBP among nurses, namely proactive behavioral treatment (i.e. JCBs) of LBP.

Job crafting defined as cognitive and physical changes made by individuals in their relational or task boundaries[40]. In other words, job crafting referred to the process of employees reshaping, redesign or re-modify their jobs[41]. Additionally, job crafting is defined as changes made by the employee regarding their JDs[42]. Therefore, job crafting can be viewed as specific kind of proactive behavior in which changes are initiated by the employees in the level of JDs[43].

Furthermore, in terms of employee health, it has been observed that employees job strain level can be affected by the prolonged exposure to high JDs which can have negative impact on their wellbeing (i.e. health)[44]. Thus, because JCBs involves changing and reshaping the job tasks in order to keep the job healthy[41]. Besides, because job crafting involve changes made by the employee regarding their JDs[42] this study guided to exploring the potential impact that JCBs has on the LBP of nurses in hospitals. By this way, employees can stay healthy through optimizing their working environment (JDs) leading to low level LBP.

Hypothesis 3: The positive relationship between physical JDs and low back pain will be weaker when Job crafting behaviors is high.

Hypothesis 4: The positive relationship between psychological JDs and low back pain will be weaker when Job crafting behaviors is high.

Theoretical Support: With the help of JD-R theory, it is possible to understand, explain and make predictions regarding the health of nurses (i.e. LBP). The main proposition of the JD-R theory is that JDs interact in predicting occupational wellbeing[45]. In addition to that, JDs are triggered the health impairment process[45]. So, the most important predictor of such outcomes as repetitive strain injury (RSI), psychosomatic health complaints and exhaustion are generally the JDs[46,67]. As the JDs consume energetic resources and cost efforts, therefore JDs are affected by these unique effects[48]. Thus, grounded by JD-R theory, the independent variables of nurse's physical and psychological JDs can be seen as health impairment processes that work as important predictors of related outcomes as health complaints (i.e. LBP).

Furthermore, Tims, Bakker and Derks (2013)[49] attempted to integrate JCBs in JD-R theory and hypothesized that the future JDs will be predicted by JCBs. Thus, grounded by JD-R theory, the moderator variable (i.e. JCBs) of nurse's can be seen as predictor for future JDs and also have indirectly positive impact on about nurse's health (i.e. LBP). Therefore, present research looks for JCBs as demands adjusted by nurses, which explain the way of changing the work environment (i.e. JDs) of the nurses such as they can make the work less exhausting. Thus, the proposed framework of this study has proposed physical JDs and psychological JDs as independent variable, job crafting behaviors as a moderating variable and low back pain as dependent variable.

CONCLUSION AND FUTURE DIRECTION

The significance of employee behaviors is highlighted in available theoretical and empirical studies in occupational safety literature. However, there are limited studies that explain this relationship with LBP exposure, this basis the proposition of this study that theoretical and empirical studies neglect the role of the proactive behavioral treatment of LBP in form of JCBs. To the limited knowledge of researcher, there is no proposition in the past literature in the JCBs, LBP, and ergonomics safety literature, and more so that the proposed framework is underpinned and supported by JD-R theory. Thus, this study open the scope for empirical investigation in order to validate the argument and applicability of these in the context of work and /or demographic/social characteristics that suits the interests of the researcher.

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"Educational-Staff Knowledge and Attitude towards Antibiotic Use in Technical Institute of Karbala"

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ABSTRACT

Background: Antibiotics are compounds that produce by microorganisms (bacteria, fungi) that inhibitory action on the growth of other microorganisms. Irrational antibiotic use has led society to antibiotic resistance a serious health problem worldwide. 23000 deaths per year from antibiotic resistant bacteria and seventeen common disease-causing bacteria have antibiotic resistant versions nevertheless only few studies had conducted in Iraq on this subject.

Objective: The aim of this study was to assess knowledge and attitude toward antibiotics use for educational-staff in the Technical Institute of Karbala.

Objects and Method: Across sectional survey study using with an interviewer administered questionnaire. Data collected from a random sample of **200** educational - staff in the Technical Institute of Karbala, regarding their knowledge and attitude about the effectiveness of resistance toward and self-medications of antibiotics. Statistical analysis done by using Chi-Square (χ^2) test.

Result: In total of all participants, those completed the questionnaire, more than half of the respondents (59%) had adequate knowledge and (67%) had good attitude level of antibiotics. There was no significant difference between genders, marital status and occupation of participant's with knowledge level while there was relation with age groups, certificate and specialty of study sample. For attitude level, there was no significant difference between genders, age groups, marital status, certificate and specialty of study sample with attitude level; on the other hand, there was a significant difference with occupation.

Conclusion: In spite of good knowledge level as in general, but there was lacks aware in self-medication with antibiotics that's consider a serious problem requires considerable attention to reduce the risk of antibiotic resistance.

Recommendation: It is very necessary to understanding how to use the antibiotic because personal decisions based on these understandings that lead to decrease the resistance of bacteria to antibiotic.

Keywords: *Antibiotic Use, Self-medication, Drug Resistance*

INTRODUCTION

In 2011, the World Health Day theme was "Combat drug resistance: no action today means no cure tomorrow" and for this occasion the World Health Organization introduced a six-point policy package to fight against the spread of antimicrobial resistance [(1)]. Irrational antibiotic use reflects not only patients' failure to comply with physician's instructions on how to use antibiotics adequately, but is also associated with inappropriate antibiotic prescribing. Rational antibiotic therapy should base on the correct indication, the right drug and dosage, the drug of the first choice, the appropriate period of use, and the lowest treatment costs [(2)]. According to the WHO, lack of education about the prudent use of antibiotics was one of the factors that affected the use of antibiotics [(3)]. A substantial evidence has shown that the general community plays a role in the increase and spread of antibiotic resistance and the increase of antibiotics resistance will endanger their therapeutic effectiveness, increase treatment failures and, as a result lead to longer and more severe illness

episodes with higher costs and mortality rates [4]. WHO identified three key issues for public involvement, improving access to medical facilities, decreasing unnecessary use of antimicrobials, taking a full course of treatment, and not giving out medication to other people or keeping left over medication for future needs, and also urged member countries to initiate educational interventions for patients and the general population aimed at rationalizing the use of antibiotics to combat resistance [1].

OBJECTS AND METHOD

Across sectional survey, study using with an interviewer-administered questionnaire. Data collected from a random sample of educational - staff in the Technical Institute of Karbala, after obtaining verbal informed consent to participate in the study, recruited at different settings in theirs works, regarding their knowledge, attitude and physician relationship about the effectiveness of resistance toward and self-medications with antibiotics against infectious diseases. The interview were based on a well-structured questionnaire, which had been pre-tested on a small pilot scale and subsequently modified from reviewing available questionnaires in the literature [5,6] to ensure that the data would provide reliable information. Comparability with those surveys and the validity of the instrument were important factors in determining which behavior regarding antibiotics use, questionnaire form consisting of three parts: some demographics characteristic, knowledge, and attitude towards antibiotic use. Rating and scaling score calculated according to the number of correctly answered questions, the knowledge score categorized as inadequate or adequate, while attitude score categorized as poor and good. Each correct answer assigned (**1**) point while wrong or uncertain responses assigned (**0**) points. Then, the sum of the responses for each patient was calculated. The maximum knowledge score was 13 points and 8 points for the attitude score. Thus, the knowledge scores categorized into inadequate (0-6/13) or adequate (7-13/13) and attitude score divided into poor (0-4/9) or good (5-9/9) as dichotomous variables [7]. Collected data were presented in frequency, percentage and analyzed by using **"SPSS-18"** by using Chi-Sq. ($\chi 2$) test after being coded. The comprised of significant (P-value) in any test were S=Significant difference ($P<0.05$) and NS= Non Significant difference ($P>0.05$) throughout the study.

RESULTS AND DISCUSSION

The results would help in testing the adequacy of knowledge-attitude and provide further insight in designing future educational campaigns to promote appropriate antibiotic use and help in reducing antibiotic resistance. **200** participate were surveyed; the demographic details of the samples were summarize in table 1, present study revealed that the overall number of participants were, Instructor 128 (64%) and managers 72(36%) according to their occupation with 120(60%) male and female 80(40%) with male-female's ratio (0.99: 1) that agree with "Malak" in Lebanon [8] and "Kim" in Korea [9]. Out of which 140 (70%) were between 30 and 50 years old and over three -quarter of the respondents 174(87%) were married. Over all the study shows that 18 (90%) live in urban area. About half of patients had a postgraduate degree 102(51%) while 98 (49%) had undergraduate degree that agree with "Malak" in Lebanon [8], diversity of participants according those specialties to (25.5%, 39.5% and 35%) for medical, technology and managers respectively.

Table 1: Characteristics of the study population

Variable	Total participants N = 200 (100%)
Occupation	
Instructor	128 (64%)
Managerial	72 (36%)
Age group	
20-30	14 (7%)
30-40	70 (35%)
40-50	70 (35%)
50-60	46 (23%)
Marital status	
Single	26 (13%)
Married	174 (87%)
Certificate	
Undergraduate	98 (49%)
Postgraduate	102 (51%)
Gender	
Male	120 (60%)
Female	80 (40%)
Residence	
Urban	180 (90%)
Rural	20 (10%)
Specialty	
Medical	51 (25.5%)
Technology	79(39.5%)
Managerial	70 (35%)

Table (2) shows that 63% believed that antibiotics can kill bacteria. 25% responded that antibiotics can kill viruses and 77% are effective against cough and cold, while 15% of participants believed that antibiotics are effective in reducing fever and pain, almost half of participants 51% knew that antibiotics can kill normal flora that lives normally in the skin and gut which is similar percentage to that reported in Korea [9] but higher than that in UK [10]. 80 % of participants realized that bacteria are becoming resistant to antibiotics and that the unnecessarily use of antibiotics has increased the risk of bacterial resistance. 71% believed that if antibiotics are taken for long period, the bacteria become more resistant to antibiotics and 29 % believed that taken less doses do not decrease the bacterial resistance. Approximately, 57% of participants believed that antibiotics cause side effects including hepatic and renal problems; on the other hand, 69% of participants believed that antibiotics does not cause side effects. 8% stopped taking antibiotic if they get side effects including skin allergic reaction, other studies conducted in UK[10] Sweden[11], Korea [9], Italy [12] and United State [13] showed that many people thought that antibiotics are effective for common cold and cough symptoms and may be used for viral infections. As overall assessment for the study sample knowledge, the study shows 59% had adequate knowledge as shown in figure (1), but the average of knowledge score was not adequate especially for educational staff in comparing with public people this finding similar to other study in Jordan [3]. Almost 90% checked the expiry date of medication before taking it, 71% stopped taking the medication if the symptoms disappear. 28% preferred to take antibiotic from the pharmacy without physician prescription and about 55% preferred to take antibiotic in cases of cough and sore throat that could be due to possible reason for inadequacy of knowledge in this area is the use of term "germ" rather than "bacteria" or "viruses" by the physicians during medical counseling. 45% shared the antibiotics with someone else if he had similar signs and symptoms, 61% agreed to know the kind and component of antibiotics before use it, while 55% of study sample prefer to keep antibiotics at home in case there may be a need for them later in emergency case. Approximately 76% of participants responded that pharmacists tell them how to administer antibiotic. 60% expected that physicians routinely prescribe antibiotics in case of cold symptoms and that 90% of physicians spent time to inform patient about the usage of antibiotics. 76% trusted physicians if they decided not to prescribe antibiotic, while 53% agreed to request antibiotic prescriptions from my physician and 45% consulted another physician if the first physician disagreed to prescribe antibiotic. As overall assessment, 67% of study sample had positive attitude toward using the antibiotic figure (2).

Table 2: Knowledge Attitude and Patient Physician Relationship among participants

Total participants N = 200 (100%)						
Antibiotic Action	**Correct**		**Incorrect**		**Uncertain**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Antibiotics work on most coughs and colds.	154	77	36	18	10	5
Antibiotics can kill bacteria.	126	63	28	14	46	23
Antibiotics can kill viruses.	50	25	98	49	52	26
Antibiotics are effective in reducing pain (Analgesic).	30	15	152	76	18	9
Antibiotics can kill the bacteria that normally live on the skin and in the gut.	102	51	48	24	50	25
Antibiotic Resistance:	**No.**	**%**	**No.**	**%**	**No.**	**%**
Bacteria are becoming resistant to antibiotics.	124	62	40	20	36	18
The unnecessarily use of antibiotics can increase the resistance of bacteria to them.	160	80	22	11	18	9
If antibiotics are taken less than the prescribed dose, bacteria become less resistant to antibiotics.	58	29	98	49	44	22
If antibiotics are taken for a long time, bacteria become more resistant to antibiotics.	142	71	34	17	24	12
Antibiotic Side effects:	**No.**	**%**	**No.**	**%**	**No.**	**%**
Antibiotic does not cause side effects.	138	69	30	15	32	16

Conted…

Antibiotic may cause hepatic and renal problems.	114	57	34	17	52	26
If you get side effects during a course of antibiotics treatment, you should stop taking them as soon as possible.	134	67	32	16	34	17
If you get some kind of skin reaction when using an antibiotic, you should not use the same antibiotic again.	16	8	124	62	60	30
participants Attitude:	Agree		Disagree		Uncertain	
Total participants N=200 (100%)	No.	%	No.	%	No.	%
Do you normally look at the expiry date of antibiotic before taking it	180	90	18	9	2	1
I stop taking the antibiotic if the symptoms do not improve after taking it.	142	71	38	19	20	10
I prefer to be able to buy antibiotics from the pharmacy without a prescription.	56	28	130	65	14	7
I prefer to keep antibiotics at home in case there may be a need for them later	110	55	64	32	26	13
I prefer to use an antibiotic if I have a cough for more than a week	90	45	76	38	34	17
When I have a sore throat I prefer to use an antibiotic	110	55	36	18	54	27
I share antibiotic with someone else in my family/friends with similar symptoms to mine	90	45	86	43	24	12
Before the use of antibiotics requires knowledge of its kind and its components	122	61	14	7	64	32
Physician Relationship:	**Agree**		**Disagree**		**Uncertain**	
Total participants N=200 (100%)	No.	%	No.	%	No.	%
Pharmacists often tell you how antibiotics should be used.	152	76	36	18	12	6
Doctors often take time to inform the patient during the consultation how antibiotics should be used.	180	90	12	6	8	4
Physicians routinely prescribed antibiotics to treat common cold symptoms	120	60	46	23	34	17
I request antibiotic prescriptions from my physician	106	53	62	31	32	16
I trust the doctor decision if she or he decides not to prescribe antibiotic	152	76	32	16	16	8
I consult another physician to prescribe antibiotics if their physician disagreed to do so	90	45	100	50	10	5

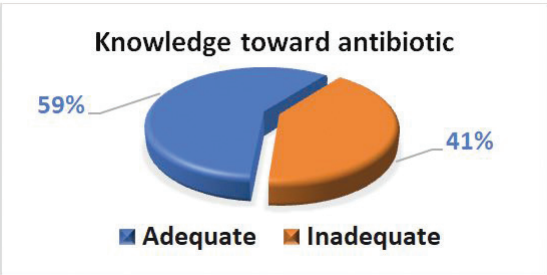

Figure 1: Knowledge toward antibiotic.

Figure 2: Level of Attitude toward antibiotic.

Table (3) shows the relationship between knowledge and attitude level toward antibiotic with demographic characteristic of study sample, the study showed no significant difference (p-value >0.05) between genders and marital status with knowledge and attitude level regarding antibiotic use, while there was high association in age groups with knowledge level, but no significant difference with attitude level that's agreed with "Malak" [8] and "Kim" [9]. In addition, the study shows a significant association between the (certificate and specialty) of study sample with knowledge level but no significant differences with attitude level, while there was significant difference with occupation of study sample that could be due to the teaching profession that had a positive impact on the cognitive level of the employee**,** these findings support the idea that the better knowledge on antibiotics usage and the potential

for antibiotic resistance can change attitudes and behaviors regarding the appropriate use of antibiotic these finding agreed with " You, J.H " in Hong Kong[6].

Table 3: The relationship between Knowledge and Attitude level toward antibiotic with demographic characteristic of study sample

	Level of Knowledge			Level of Attitude		
	Adequate	**Inadequate**	**P-value**	**Good attitude**	**Poor attitude**	**P-value**
Gender						
Male	74 (61%)	46 (39%)	0.3	**90 (75%)**	**30 (25%)**	**0.4**
Female	**44 (55%)**	**36(45%)**		64 (80%)	16 (20%)	
Age group						
20-30	**6 (43%)**	**8 (57%)**	**0.01**	**10 (71%)**	**4 (29%)**	**0.7**
30-40	**46(66%)**	**24(34%)**		52(74%)	18(26%)	
40-50	**33(47%)**	**37(53%)**		54(77%)	16(23%)	
50-60	**33(72%)**	**13(28%)**		38(83%)	8(17%)	
Marital status						
Yes	102(59%)	72(41%)	0.7	**132(76%)**	**42(24%)**	**0.3**
No	**16(62%)**	**10(38%)**		22(85%)	4(15%)	
Certificate						
Undergraduate	**50(51%)**	**48(49%)**	**0.02**	72(73%)	**26(27%)**	**0.2**
Postgraduate	**68(67%)**	**34(33%)**		82(80%)	20(20%)	
Occupation						
Teaching	80(63%)	48(37%)	0.1	104(81%)	**24(19%)**	**0.05**
Managerial	**38(53%)**	**34(47%)**		50(69%)	22(31%)	
Specialty						
Medical	**37(73%)**	**14(27%)**	**0.05**	**44(86%)**	**7(14%)**	**0.1**
Technology	**45(60%)**	**34(43%)**		60(76%)	19(24%)	
Managerial	**36(51%)**	**34(49%)**		50(71%)	20(29%)	

Data presented as number and using Chi2 respectively, p-value < 0.05 was considered significant.

CONCLUSION

In spite of good knowledge and attitude level toward antibiotic use as in general, but there was 49% from participation believed that antibiotics could kill viruses and 76% effective in reducing pain (Analgesic) and self-medication with antibiotics consider a serious problem that is requires considerable attention and patient counselling should be implemented by physicians and pharmacists about antibiotic use should provide to reduce the risk of antibiotic resistance.

Ethical Clearance: Taken from Technical Institute of Karbala committee.

Source of Funding: Self.

Conflict of Interest: No

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Intervention of Sexual Abuse Prevention for Mother of Children with Mental Retardation in Payakumbuh Indonesia 2016

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ABSTRACT

Background: Mother is the closest person for her children, especially for children with mental retardation. Thus, the mother has a very important role in providing knowledge and education to prevent the occurrence of sexual abuse against children.

Objectives: The purpose of this study is to improve mother's knowledge and attitudes in an effort to reduce the risk of sexual abuse on children with mental retardation.

Method: The study method was a quasi-experimental with One-Group Pre-Test-Post-Test approach and a total sample of 45 mothers with mentally retarded children. This study was conducted over eight months, from May 2016 to January 2017. Data analysis used Paired Sample T-test.

Result: The study's result showed that there were increased knowledge and attitudes of the mother after given health education about primary prevention of child sexual abuse (p=0,000) in Payakumbuh City of West Sumatera, Indonesia, the Year 2016.

Conclusion: It is expected that there some cooperation of related parties to regularly conduct health education on mothers who have a child with mental retardation, at least once in every semester.

Keywords: *mother, children, mental retardation, sexual abuse, primary prevention*

INTRODUCTION

Mental Retardation is a condition that caused by chromosomal development abnormalities. According to data of children who experience mental retardation is always increasing globally. America, 3% of the population has mental retardation, in the Netherlands 2.6%, in England 1-8% and in Asia 3%. According to WHO (2007), in Indonesia people with mental retardation consist of six million people [2]. Or about 1-3% of total population in Indonesia [3]. The role of parents, especially mothers in children with mental retardation is very important, mainly in providing education about sexuality in children, especially in children with mental retardation [4].This is proved by many studies, one of them is the results of the study. As parents, especially mothers should be able to know the signs of children who have experienced sexual abuse. Therefore, mother as the closest person to her child should to have know about the prevention of sexual abuse against children[5, 6].

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MATERIALS AND METHOD

The study design was Quasi-Experiment with One Group Pretest-Postest approach. The total population is 45 people, and all of them were sampled in this study (total sampling) so that the number of samples was 45 mothers who have children with mental retardation at Child Care Foundation SLB-PAB Payakumbuh. The study was conducted from May 2016 - January 2017

Study Setting: Health education about prevention of sexual abuse for children with mental retardation which given to the mother of children with mental retardation at Child Care Foundation Payakumbuh.

DATA COLLECTION

A. Preparation

- Secondary data obtained from the education and cultural offices, social offices and the office of women's empowerment and child protection Payakumbuh.

- Primary data were obtained directly from respondents at the time of research through filling the questionnaire.

B. Implementation: Stages of implementation were as follows:

- Opening: researchers did an introduction to all respondents and explained the goals and benefits of the intervention that will be carried on.
- Respondents signed an approval paper for becoming respondents (informed *consent)*.
- Pre test: Researchers distributed questionnaires to discover the knowledge of the respondents before being given intervention
- Intervention: Interventions were carried by providing knowledge about prevention of childhood sexual abuse, especially in children with mental retardation to reduce the risk of becoming victims of sexual abuse.

The intervention was carried by using instructional media such as power point presentation, discussion, short video films and control sheets of the implementation of sexual abuse prevention education in children by mothers at home.

This control sheet should always be filled by the mother for 15 days as proof that mother had provided education to the children with mental retardation.

- Post-test: Post-test was carried 15 days after interventions were implemented.
- Questionnaires that used during pre-test and post-test were the same. So, the difference of respondents' knowledge before and after received interventions can be discovered.

RESULT

Table 1: Average Respondents' Knowledge Before and After Interventions

Knowledge	N	Mean	Min	Max	Standard Deviation
Before Interventions	45	4,62	0	10	3,010
After Interventions	45	8,40	6	10	1,095

Based on table 1, it can be seen that average knowledge of mothers about prevention of sexual abuse against children was increased after receiving health education, from 4,62 become 8,40 point with standard deviation change from 3,010 to 1.095.

Table 2: Average Respondents' Attitudes Before and After Interventions

Attitudes	N	Mean	min	max	Std
Before Interventions	45	25,13	15	39	7,421
After Interventions	45	37,82	29	40	2,208

Table 2, It can be seen that average score of mothers' attitudes after receiving health education increased from 25.13 to 37.82 with standard deviation also changed from 7,421 to 2,208. Based on table 3, It can be seen that the difference of average knowledge before and after health education intervention was 3.78. The result of statistic test was p = 0,000 ($p \leq 0,05$), it means that there was an increased knowledge about prevention of child sexual abuse on a mother who has children with mental retardation at Child Care Foundation Payakumbuh.

Table 3: Difference of Repondents' Average Knowledge and Attitudes Before and After Interventions

Respondents Knowledge	Mean	Differences		
		Mean	Std	P Value
Before Interventions	4,62	3,78	2,60	0,000
After Interventions	8,40			
Respondents Attitudes	Mean	Differences		
		Mean	Std	P value
Before Interventions	25,13	12,69	7,66	0,000
After Interventions	37,82			

From table 3, also can be known that there was the difference between average mothers' attitudes before and after health education interventions, which was 12,69. Statistical test's result was p = 0,000 (p ≤ 0,05) which means that there was the difference between the average attitude of mothers with mentally retarded children before and after receiving health education intervention about Prevention of sexual abuse.

DISCUSSION

A. Mothers' Knowledge About Prevention of Sexual Abuse Against Children: Knowledge is the result of knowing and this happens after a person does the sensing of a particular object. Sensing occurs through the five human senses of sight, smell, hearing, touch, and taste. The study's result showed that the average score of knowledge after receiving intervention was higher than the average score before receiving intervention [(1)]. The purpose of doing health education is to improve knowledge about health especially about prevention of sexual abuse against children with mental retardation. It can be developed through cognitive, effective, and individual psychomotor abilities. It was proved from this study's result that by doing health education interventions can improve the knowledge of mothers with mentally retarded child about prevention of sexual abuse against children [(2, 3)].

With the increased average knowledge of mothers' with mentally retarded child about prevention of child sexual abuse, it was expected to change mother's behavior to provide knowledge of sexual abuse prevention to her children [(4, 5)]. A person's behaviors especially health behaviors are affected by the presence of thoughts from feelings, which one of it, is knowledge. With increased knowledge, mothers with the mentally retarded child were expected to increase knowledge of her child as well, so her child can avoid sexual abuse. Psychoeducation provided by parents had been proven effective in improving sexuality knowledge on their children [(6, 7)].

B. Mothers' Attitudes About Prevention of Sexual Abuse Against Children: The mothers' attitude to realize that health education about prevention of sexual abuse is important to improve childhood health and can lead to a positive attitude of mother to health education. But the attitude formed within the mother does not change simply because the formation of highly complex attitudes that have a close relationship with factors from within and outside the individual [(8, 9)]. Based on the study's result, it was found that the average score of mothers' attitude was increased from before the intervention was carried. Attitude is the judgment (can be opinion) of a person against stimulus or object, once someone knows the stimulus and object, then the next process is to judge or how to behave toward the stimulus or object [(8)].

Mothers' increased attitudes about sexual abuse prevention were also influenced by health education process. Health education is an effort or activity to create society behavior which is conducive to health. It means, people realize or know how to maintain health and realize or prevent things that harm health [(10, 11)].

Increased attitudes in this study occurred because the mothers had gained knowledge through the provision of health education on prevention of sexual abuse in children with mental retardation (12-14). Attitude is closely related to one's knowledge. A person's attitude toward an object shows the person's knowledge of the related object. Mothers who have good knowledge will tend to have a positive attitude. In contrast, mothers with less knowledge tend to have negative knowledge. Attitudes can also be influenced by mother's work characteristics. Low job status may affect one's level of knowledge [(15)].

C. Influence of Health Education on Mother's Knowledge Before and After Intervention: Based on the study results, found that the average level of knowledge before the mothers were given health education was 4.6 and the average knowledge after health education was 8.40. Thus, the average difference between before and after health education was 3.78. The result of statistical test obtained was p = 0,000 (p ≤ 0,05) hence Ha accepted which mean that there was a difference of average mothers' knowledge before and after health education intervention about prevention of sexual abuse in the child with mental retardation at Child Care Foundation Payakumbuh. This was

due to at the time health education was given, it using lecture methods, discussions, leaflets and videos to improve mother's knowledge.

The results of this study were in line with previous research conducted by Astra (2013) that the score of mothers' knowledge before receiving effective psychoeducation was 7.33, after receiving psychoeducation, knowledge score increased to 8.73. This was because when giving psychoeducation, it used to lecture and discussion methods which can improve mother's knowledge about sexual abuse prevention [9]. According to WHO, the definition of health education is part of all health efforts that focus on the attempt to improve health behavior. The goal is to change the behavior of people or society from unhealthy behavior to healthy behavior, but basically, to change one's behavior is not easy [16]. The success or failure of health education is determined by several factors, which are the condition and the interaction between counseling components. Components that affect health education are counselor that includes preparation, given material, appearance, language use, intonation and how the health information delivered.

The delivery of health information is aimed at the target. The target is the party that received information from the counselor where the target can understand, grasp, and applies the prevention way of sexual abuse on children with mental retardation in daily life. The given information should be adjusted to needs and individuals, families, groups and communities. The analysis of recent studies has shown that there was an increase in knowledge before and after health education, which proved that it was effective in improving mothers' knowledge about prevention of sexual abuse in children with mental retardation.

D. Influence of Health Education on Mother's Attitude Before and After Intervention: Based on study result, it showed that average difference between before and after the intervention of health education was 12.69. The result of the statistical test was $p = 0{,}000$ ($p \leq 0{,}05$), thus Ha was accepted which means that there was a difference of average mothers' attitude before and after intervention about prevention of sexual abuse in children with mental retardation.

Attitudes are viewpoint with a tendency to act in accordance with the objective. So, attitude is always directed towards a thing, there is no attitude without an object. The increasing of mothers' attitude in this research was influenced by viewpoint that had been directed towards one thing that had been informed through health education which had been given by researcher with various media of learning: Powerpoint presentation, video, discussion, and assignment, greatly helped to improve mothers' attitude about Prevention of sexual abuse in children with mental retardation [17].

Health education as a stimulus causes a person to make judgments and opinions on what is known or liked and is expected to implement health practice. Someone who adopts new behavior will go through a process of awareness, when the object is known and the object is interesting then it will comes at the interest stage. After this stage is passed, someone will consider whether the stimulus is good or not for him/her, which means his/her attitude become better [18]. The Good attitude makes a person want to try new behaviors, once tried and felt beneficial, the subject or the respondent has a new behavior in accordance with the knowledge he/she gained, awareness and attitude to the stimulus. Behavior that goes through this process is long lasting because this behavior is already owned or adopted [18].

Children with mental retardation are particularly vulnerable to sexual abuse cases. This is because of condition of having an IQ below average. This will impact on the children's future such as children can experience venereal disease, even unwanted pregnancies. Therefore, the role of mother is very important in educating, nurturing, raising and protect. Mothers hold an important role in protecting their children from the threat of sexual abuse. Mothers should be sensitive in seeing unusual things on children [17].

CONCLUSION

There was increased knowledge and attitude of mothers after receiving health education about primary prevention of child sexual abuse ($p = 0{,}000$) in Payakumbuh City West Sumatera Indonesia Year 2016.

Conflict of Interest: No conflict of interest arose in this study.

Source of Finding: This study was conducted using a source of funds derived from the researcher himself

Ethical Clearance: This research has graduated from the Research Ethics Committee of Medical Faculty of Andalas University Padang Indonesia.

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Prenatal Tobacco Exposure and Neonate Birth Weight

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ABSTRACT

Background: Smoking is a global problem and serious threat to the health of pregnant women and fetus. Nicotine contained in cigarette smoke stimulates vasoconstriction of blood vessels, reduces the flow of nutrients and oxygen to the fetus, hence it inhibits the fetal growth. The aim of study was to assess the effects of exposure to cigarette smoke in pregnant women toward birth weight.

Method: Prospective study was carried out on the third-trimester pregnant women who were non-smokers, pregnant with a single fetus, did not suffer from chronic diseases and followed until delivery. Assessment of smoking exposure referred to nicotine levels of umbilical cord blood ≥1ng/ml. Mean difference test analysis was used to determine the difference in birth weight between groups. Linear regression analysis was to find out the effects of passive smoking on birth weight by paying attention to confounding variables.

Result: The results of study found that birth weight of infants from passive smoker mothers were lower than those mothers who were not passive smokers. Passive smoking significantly reduces the infant's weight by 195.9 grams after controlled by weight before pregnancy.

Conclusions: Exposed to tobacco smoke during pregnancy can reduce birth weight.

Keywords: *Secondhand Smoke, Nicotine, Birth weight*

INTRODUCTION

Prenatal active and secondhand tobacco smoke exposure is a prevalent environmental exposure that is associated with adverse infant and childhood health outcomes.[1] Exposure to cigarette smoke among pregnant women increases the risk of placental disorders, premature birth, respiratory infections, asthma, sudden death syndrome, and hyperkinetic disorder.[2,3] Previous study shows that exposure to cigarette smoke during pregnancy reduces the average birth weight by 33 grams.[4]

Birth weight is often considered as an indicator of health status of a given society. Elevated population's mean birth weight has been linked to good maternity care and healthy living conditions. Birth weight has been shown to be a primary determinant of the chances for survival of a newborn baby. Low birth weight, a proxy measure of intrauterine malnutrition, is a risk factor of fetal and neonatal mortality and morbidity, and chronic diseases which occur later in life such as increased risk of type 2 diabetes, hypertension, and cardiovascular diseases.[5,6] Low birth weight (LBW) has also been associated with deficits in growth and neurocognitive development.[7] In Indonesia, just like in many developing countries, low birth weight is a significant contributor to the overall infant mortality rate and a major factor in the high neonatal mortality rate.[8]

Fetal exposure to cigarette smoke is usually assessed by questionnaires administered to mothers during or after pregnancy. However, difficulties in regocnizing smoking behavior or recalling smoking exposure, or changes in smoking habits during gestation could bias these assessments.[9] In a country such as Indonesia with a high prevalence of housholds exposure (85%) and a high passive intake through social events, questionnaires could be even less valid. In addition, pregnant women, conscious of the risk of tobacco smoke products for the fetus, may be reluctant to admit active smoking or passive exposure.

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A more objective method of ascertaining prenatal exposure is the measurement of exposure-specific biomarkers in biological matrices of mother and/or child. Candidate biomarkers with high specificity for active or passive tobacco smoking are nicotine itself and its metabolites.[10] Nicotine is a chemical compound, an alkaloid, found in tobacco smoke. It can be absorbed through the Mouth. Once nicotine has entered the bloodstream, it is distributed throughout the body to various tissues such as the brain, lung and liver. By crossing the placental barrier, nicotine can be transferred from the maternal circulation to the foetus. Nicotine is present in the placenta at a 15% higher concentration than in maternal blood. There is increasing evidence for specific effects of prenatal nicotine exposure that leads to adverse health effects in new-borns, especially in birth weight.[11] The objective of this study was to provide an overview on prenatal tobacco smoke exposure by measuring umbilical cord blood and its relationship with birth weight.

MATERIALS AND METHOD

The cohort on which this study is based consists of 128 pregnant women, the third trimester pregnancy, single pregnancy, no chronic illness, non-active smokers, and willing to take part in the study. We used plasma nicotine, to objectively measure prenatal exposure to tobacco smoke. Umbillical cord blood was collected at delivery and birth weight was measured immediately after birth. Nicotine concentrations was measured using Gas Chromatography-Mass Spectrometry (GC-MS) and was reported as ng/ml. Other related data were collected by interviewing the selected pregnant women face to face by a single researcher. The variables of interest included information on exposure status. Bivariate associations between plasma nicotine and birth weight outcomes guided our construction of multivariable regression models using linear regression analyses. Covariates included maternal and newborn characteristics that may affect birth weight: maternal age, income, parity, intake of carbohydrate, protein, and fat. Covariates/confounders were retained in the final model if they significantly affected birth weight or removal changed the nicotine estimate by greater than 10%. Ethical approval for this study was obtained from the Research and Ethics Committee, Faculty of Public Health, University of Indonesia. Written informed consent was signed by all the respondents in this study. All information was kept confidential and would not identify individual respondents.

RESULT

Mean of nicotine level in placental blood in this study was 1.3 ng/ml, standard deviation of 2.5 ng/ml, median 0.1 ng/ml, lowest value was 0.01 ng/ml and highest was 11.5 ng/ml. Pichini and colleagues found higher median among newborns of mothers who actively smoked compared to newborns of mothers who did not smoke and were exposed to smoking. The median cord blood cotinine level with maternal smoking exposure was 2.4 ng/ml, and 73.8 ng/mL with maternal active smoking during pregnancy.[12] For further data analysis, nicotine level ≥ 1 ng/ml was classified as exposed to secondhand smoke and nicotine levels <1 ng/ml as non exposed to secondhand smoke. The mean nicotine levels in this study sample were 4.3 (±3.2) ng/ml for exposed group and 0.15 (± 0.21) ng/ml for non exposed group. The difference between nicotine levels in secondhand smokers and non secondhand smokers was also demonstrated by Baheiraei et al. They found lower mean nicotine levels in exposed group (3.71± 1.22 ng/ml) than were reported in our study. [13]

Table 1 showed that exposed women were found to be younger, less educated and to have lower household incomes, possibly reflecting a poorer socioeconomic status. Other study found that women exposed to second-hand smoke were less educated, of higher parity and fewer were employed. Many studies have highlighted the association between poor socioeconomic conditions (measured through low education level, occupation and household income) and low birth weight.[14] The maternal characteristics of height and weight, and gestational age has no significant difference between exposed and non exposed group.

Table 1: The Distribution of Basic Characteristic of Pregnant Women and Neonates

	Non Exposed (<1ng/ml) (n = 93) (Mean ± SD)	Exposed (≥1ng/ml) (n = 35) (Mean ± SD)
Continuous variables		
Maternal age (years)	28.2 ± 5.8	26.6 ± 6.4
Gestational age (weeks)	39.3 ± 1.6	39.0 ± 1.2
Maternal height (cm)	153.63 ± 4.6	154.9 ± 5.3

Conted…

BMI before pregnancy (kg/m2)	22.4 ± 3.6	22.9 ± 3.9
Weight before pregnancy (kg)	52.0 ± 9.4	54.8 ± 12.6
Weight gain during pregnancy (kg)	12.9 ± 3.1	12.9 ± 5.2
Categorical variables	**n (%)**	**n (%)**
Maternal education		
Incomplete high school	25 (26.9)	17 (48.6)
Complete high school	45 (48.4)	6 (17.1)
Post-high school	23 (24.7)	12 (34.3)
Parity		
0	36 (38.7)	17 (48.6)
1+	57 (61.3)	18 (51.4)
Income		
< Rp. 1.730.000,-	39 (41.9)	18 (51.4)
≥ Rp. 1.730.000,-	54 (58.1)	17 (48.6)
Neonate sex		
Male	38 (40.9)	16 (45.7)
Female	55 (59.1)	19 (54.3)

Mean birth weight was 3045.5 grams in our study population, with the babies in non exposed group a mean birth weight that was 178 grams heavier than the mean birth weight of the babies in exposed group. Low birth weight (<2500 grams) was approximately 7.8% in this study. There was significant difference of infant birth weight between groups of mothers from smoking status (p=0.014). Low birth weight in the exposed group can be due to the bad influence of the content of cigarette smoke, one of which is nicotine.

Nicotine is very soluble in water, so that cigarette smoke entering the mother's respiratory tract will easily dissolve in the blood. Furthermore, maternal blood containing nicotine circulates throughout the body, including placental blood vessels. Nicotine in maternal blood disrupts fetal growth in two pathways. Directly, nicotine disrupts absorption of calcium, vitamin C and other vitamins and minerals needed for fetal growth. Nicotine binds acetylcholine (ACH) which is a placental signal molecule that plays an important role in controlling nutrient absorption, blood flow and fluid volume in the placental vessels, and vascularization during placental development. In other ways, nicotine causes vasoconstriction in blood vessels, resulting in reduced blood flow to the fetus through the umbilical cord to reduce the distribution of food substances needed by the fetus.

Several covariates associated with lower birth weight were also associated with the exposure during the third trimester. These included maternal age, parity, family income, and maternal intake. Younger mother was associated with delivering a smaller baby, compared to older mother. The finding for parity was consistent with the finding for maternal age: multigravida were more likely to have a smaller baby, compared to primigravida. For family income and maternal intake (carbohydrate, protein, fat) there was non significant difference birth weight between group (Table 2).

Table 2: The Results of Birth Weight by Smoking Exposure and Covariate Variable

	Birth Weight	
	(Mean ± SE)	**p value**
Smoking Exposure		
Exposed (n=35)	(2916.5 ± 327.3)	0.014
Non Exposed (n=93)	(3094.1 ± 371.9)	
Maternal age		
<20 years (n=9)	(2965.6 ± 123.8)	0.477
>35 years (n=14)	(3055.0 ± 227.4)	0.999
20-35 years (n=105)	(3051.1 ± 72.8)	
Parity		
0 (n= 75)	(3092.6 ± 365.2)	0.085
1+ (n=53)	(2978.8 ± 364.1)	

Conted…

Family Income		
< Rp. 1.730.000,- (n=57)	(3011.7 ± 313.8)	0.353
≥ Rp. 1.730.000,- (n=71)	(3072.7 ± 405.9)	
Carbohydrate		
Inadequate (n=77)	(3036.9 ± 356.2)	0.746
Adequate (n=51)	(3058.5 ± 387.6)	
Protein		
Inadequate (n=72)	3038.1 ± 373.6	0.797
Adequate (n=56)	3055.1 ± 362.9	
Fat		
Inadequate (n=109)	3037.7 ± 362.4	0.570
Adequate (n=19)	3090.0 ± 404.4	

These potential confounders, along with the other variables associated with lower birth weight, were included in the linear regression model when analyzing the relation between smoking exposure and infant birth weight. In addition to a measure of smoking exposure, the full model included maternal age, parity, family income level, maternal intake and maternal weight before pregnancy. Smoking exposure significantly reduces the infant's weight by 195.9 grams after controlled by maternal weight before pregnancy (Table 3). Maternal weight before pregnancy is known to have a positive correlation with infant birth weight because it describes the environmental aspects of the fetus and the availability of resources from the mother. Maternal weight before pregnancy BMI has a direct physiological effect on fetal growth through nutrient supply and hormonal profiles.[12]

This finding is in line with previous studies which reported birth weight loss due to passive smoking ranged from 15-200 grams.[16,17,18] The variation in birth weight reduction due to smoking exposure with a quite wide range can be caused by differences in active or passive smoking, design, number of samples and variables controlled in each study. However, all studies consistently prove the negative effects of passive smoking on a decrease in birth weight and low birth weight.

Most of the studies on birth weight have investigated risk factors of either low or high birth weight rather than analyzing birth weight as a continuous variable. In Indonesia, there appeared to be no study to the best of the authors' knowledge analyzing smoking exposure by using nicotine in umbilical cord to assess birth weight as a continuous variable. Therefore, it is important to bear in mind that comparison of findings of this study to others may not be straightforward. Nevertheless, the findings of one study that analyzed birth weight as a continuous variable and also investigated a large number of determinants were largely consistent with the findings of this study. They found that birth weight of infants with mothers who exposed to smoking during pregnancy were lighter than those with mothers who non exposed.

Table 3: Regression Model for Birth Weight

	B	95% CI	p
Smoking Exposure	-195.9	-336.314- -55.438	0.007
Maternal weight before pregnancy	6.6	0.551-12.668	0.033

CONCLUSION AND SUGGESTION

Our findings provide evidence that prenatal smoking exposure reduces mean infant birth weight. Hence, pregnant women need to avoid secondhand smoke exposure throughout pregnancy.In addition, although a cut-off point for significant secondhand smoke exposure was described, secondhand smoke is not safe, and negative effects may still occur at a lower level.

Conflict of Interest: The authors declare that they have no competing interests

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Ethical Clearance: This research was approved by ethics committee of Public Health Faculty, Universitas Indonesia No.532 UN2.F10/PPM.00.02/2017

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Influence of Firm's Intangible Assets Intensity on Stock Prices Volatility: Evidence from Emerging Market of Pakistan

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ABSTRACT

This particular study is about to calculate the impact of intensity in intangible assets of different firms' listed in Pakistan stock exchange on volatility of their stock prices. The study relies on panel data of 44 sampled firms and these firms were randomly selected from six different industry groupings namely Food & Beverage, Chemicals & Pharmaceutical, Information & Telecommunication, Manufacturing, Motor vehicles and Paper Board industries. These all are listed companies in Pakistan stock exchange and collected data up to five years from 2011 to 2015. Panel Least Squares regression analysis show overall sector result is intensity of firm's intangible assets has negative effect on volatility of stock price probably because of the way that the volatility of the firm share price are driven by improbability and expectation of future development. Industrial group results shows that there is positive relation between variables in case of food & beverage and manufacturing group and other groups result shows as negative relation between these variables.

Keywords: *Intangible Assets; Stock Price; Volatility; Regression; and Granger Causality*

INTRODUCTION

Intangible assets have been generally perceived as the main impetus of an economy's profitability development and have turned out to be increasingly urgent for a firm's survival and thriving. [1] Researcher says that the source of economic value and prosperity is not any more the generation of material good however the creation and control of intangible assets. Scholar categorizes intangibles into four types, including advertising, goodwill, research and development (R&D) and different intangibles. The consequence of these intangible assets on market adjusted holding period returns (HPR) is need of hours to study. There are perceptions that the share market system conduct of the purported knowledge companies much of the time strays from that of basic industries. Scholars have found evidence supporting a positive relationship between firm's intangibles assets and its share market value [2]. Stock market is the primary indicators to the financial performance and a basic part of creating countries economy. Clearly, it is critical for investor and speculators to assess the stock price and select the best trading opportunity early. Stock cost are by and large acknowledged to be managed by some fundamental macroeconomic factors, for example, interest rate, Money supply, Inflation, money supply, inflation, exchange rate[3]. Changes in stock costs are associated with macroeconomic performance in advance nations. Cognizant that above statement could be just valid if investors have symmetric data related to the organization monetary position however ordinarily manager passes relevant data to the shareholder by holding any negative information until the point when any control or monetary requirement drive them to uncover that data [4].

The expanding significance of intangible assets for financial specialists, examiner and investors has expanded speculation group's needs to see how organizations make and deal with their intangible assets, and to know how organizations share costs are influenced by different intangible assets[5].

Research Problem: The problem is focused by the researcher in this investigation to know about the impact

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of intensity of firm's intangible assets on the volatility of stock prices. Stock markets assumes an indispensable part in economic development of a country. Stock market volatility is a standout amongst the most critical parts of financial market developments, since it gives an important contribution to portfolio management, option pricing and market direction. Stock market in Pakistan is highly volatile as it is extremely delicate and receptive to unexpected shocks and news. It requires no time to affect the market activates. On the other hand Intangible assets investment is essential in the general performance of a firm. Evaluating the relationship between intangible assets intensity and stock return is of crucial for an economy of under developed countries as well. So that's why need arises to examined this effect of intensity of firm's intangible assets on volatility of stock price of Pakistani firms.

RESEARCH OBJECTIVE

To find out the impact of the intensity of firm's intangible assets on volatility of stock prices of industrial groups (Food & Beverage, Chemicals & Pharmaceutical, Information & Telecommunication, Manufacturing, Motor vehicles and Paper Board industries) working in Pakistan stock exchange.

LITERATURE REVIEW

The literature review is review of already published material in relevant field. And it may also identify gaps or controversies in the literature and topics needing further research. Accordingly our study review literature are as follows.

Relationship between Firm's Intangible Assets Intensity on Stock Prices Volatility: [6,7,8] Researchers conducted research on share price volatility and dividend policy in Pakistan, and Malaysian market; study included stock prices of different companies from Pakistan stock exchange and Malaysian stock exchange as dependent variables and dividend policy as independent variable. The Studies were inspected the association between dividend policies on stock price volatility. Researchers are used time series data of Pakistan and Malaysian market from period 2001 to 2014, to measure descriptive statistics, correlation and regression models. Stats of regression model show that all results were not significant. So it was cleared form pervious literature that dividend policy had no significant impact on stock price volatility in Pakistan. Dividend yield and dividend payout were found to be negatively related to share price volatility, [9,10,11,12] established the relation between stock market volatility and corporate investment. Studies used US stock exchange monthly data from the period of 1926-90, 2013 and applied panel regression models for analysis. The results find that market volatility has independent effects on investment over and above that of stock returns. Volatility and its changes are negatively related to invest. Key result of this paper to the degree unpredictability debilitates settled capital game plan and therefore future pay development, the results propose the appealing nature of decreasing securities exchanges instability development.

[13,14,15]Scholars Studied the effect of inflation on prices of stock market. Researchers include inflation as explanatory variable and stock prices as a response variable. This study examine whether this hold for Pakistan, over the period 1971-2006. This study result show positive link between inflation and stock prices but some studies show negative relationship the discoveries bolster the speculation. Pakistani economy is ceaselessly confronting the exemplary dramatization of protected flimsiness and offer costs likewise demonstrate the dynamic conduct in the time of political insecurity. As political unsteadiness will consequently impacts on inflation rates, interest costs and outside save rates so stock returns additionally affected by that effect.

Similar studies were conducted by various researchers [16,17] with similar topics, the studies discussed the impact of macroeconomic variables interest rate, exchange rate and their volatilities on stock prices: evidence from Pakistan use this papers as sample. [18,19] they are taking stock prices as dependent variable and macroeconomic variables, interest rate and exchange rate taking as explanatory variable. The study considers annual data from 1998 to 2009 and used multiple regression analysis with Fixed Effects Model, Causality analysis, Co-integration test. [20,21,22] the results of analysis showed positive and significant link exists between volatilities of exchange rate and interest rate and gross domestic product and exchange rate with stock prices while consumer price index negatively affects stock prices. Co-integration results suggests the existence of significant negative long run relationship between exchange rate and short term interest rate with stock prices [23].

RESEARCH HYPOTHESIS

This fascinating examination hypothesizes as;

H_0: Intensity of intangible assets does not have positive and significant impact on volatility of share prices.

H_1: Intensity of intangible assets does have positive and significant impact on volatility of share prices.

RESEARCH DESIGN AND METHODOLOGY

In this research study, research design is quantitative nature that is particularized following head. The primary theme is to detecting the econometric techniques and methodology.

Methodology: The Present study considers, annual secondary data obtained from officials website of central bank of Pakistan and business recorder for the period of 2011-2015. Panel data was obtained from listed companies financial statements because main source of that data is financial statements of relevant firms. The sample included 44 companies from six different industry groups including food and beverage, Manufacturing, information and telecommunication, Chemical Products & Pharmaceuticals, Motor Vehicles, and Paper and Paperboard Products. Panel OLS regression analysis is used when you want to expect a continuous dependent variable from a number of explanatory variables.

RESULTS AND INTERPRETATIONS

Regression analysis: Regression analysis generates an equation to describe the statistical relationship between explanatory variables and a predicted variable.[23] Scholar in their research regression analysis was used to model the relationship between explanatory variables and a response variable.

Table 1: Panel Least Squares regression analysis for all Firms

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.778326	0.705105	2.522074	0.0124
Intensity of intangible assets	-2.284771	5.377884	-0.424846	0.0414
R-squared	0.102835	Prob. (F-statistic)	0.041372	
Adjusted R-squared	-0.013791	Durbin-Watson	2.045899	

For this study:

VSP = volatility of stock prices IIA = Intensity of Intangible assets

β = Parameters of variables

So for available data the expected model is,

Estimated Equation

VSP = β0-βIIA + e

Substituted Coefficients

VSP = 1.77832645336 - 2.28477083447*IIA

The above table shows the overall industry sector panel regression results in which R square and adjusted R square's value being 0.102835 and -0.013791respectively shows that 10.23% of variation in volatility of stock prices is explained by intensity of intangible assets of firm. The study result of DW is 2.045899 it mean that there is no evidence of autocorrelation between the variables. The value of prob. F. Statistics is 0.041372 which is less than 0.05 it mean that the model of this study good fit.

The value of C(1) shown in above equation as 1.7783 depict that if assume all the independent variables is equal to zero or remain the constant even then the value of stock prices volatility is 1.7783. If 1% increase in intensity of intangible assets of firm it has negative effect on volatility of stock prices as volatility decreases by 2.285%. Remaining Analysis and interpretations of results of each included sector are listed in appendix.

Table 2: Panel Least Squares Regression Analysis: Sector Wise

	Chemicals & Pharmaceutical Sector	Food & Beverage Sector	Manufacturing Sector	Information & communication sector	Motor vehicles Sector	Paper and Paperboard sector
C	1.771271 (0.1076)*	0.789230 (0.1179)	0.735938 (0.4716)	0.822623 (0.2160)	0.430065 (0.0263)	0.540550 (0.1150)

Conted…

Intensity of intangible assets	-6.325049 (0.0458)	6.870346 (0.0351)	200.4545 (0.0419)	-0.851342 (0.0561)	-15.71514 (0.0224)	-134.5535 (0.0592)
R-squared	0.102835	0.111633	0.119839	0.017452	0.104750	0.126048
Adjusted R-squared	-0.112595	-0.13534	-0.022776	-0.029309	-0.032111	-0.031243

*The values in parentheses shows the probability values of T-statistics.

The above table explain that there are relationship between dependent variable and independent variable. R square value of paper and paperboard sector is highest as compare to all other sectors being 0.1260 which shows that about 13% of variation in volatility of stock prices is explained by intensity of intangible assets of firm in this sector and the second highest value of R2 shown in manufacturing sector which is being 0.1198. The value of C shown in above table represent constant value. In case of chemicals and pharmaceutical sector value of C is 1.7712 which means that if we assume all the independent variables is equal to zero even then the value of volatility of stock prices of this sector is 1.7712. The value of intangible assets' intensity shown in above listed table shows the coefficient value of intensity which is -6.325049 in chemical sector. It means that if we assume 1% increase in intensity of intangible assets it results to decrease volatility of stock prices as 6%. Value of probability of T-statistics is less than 0.05 in almost all cases which means that intensity of intangible assets has significant impact on volatility of stock prices of each said sectors. Same interpretations for all other results.

4.2 Granger Causality Tests

Granger causality is a way to deal with inquire about causality between two factors in a period course of action. The technique is a probabilistic record of causality [24].

Table 3: Granger Causality Tests

Hypothesis	F-Statistic	Probability	Decisions
Volatility does not Granger Cause Intensity	0.00000	0.0000	Rejected
Intensity does not Granger Cause Volatility	-0.00566	0.0000	Rejected

Granger causality test is used to determine short run causal relationship between variables. If the probability value of null hypothesis is less than 0.05 it's indicate to reject the null hypothesis of causal relation between variables. In our study there are two null hypotheses and both are rejected at the significance level of 0.05. It means volatility of stock prices and intensity of intangible assets both has causal relationship with each other.

CONCLUSION

The main aim to investigate the impact of firms' intangible assets on the volatility of stock prices in Pakistan stock exchange, during the period of 2011 to 2015 using panel data. Panel regression analysis and granger causality test were used to test selected hypotheses. The panel least squares regression analysis show overall sector result as the intensity of firm's intangible assets has negative effect on volatility of stock prices. On the other hand the sector wise results show that food and beverage and manufacturing shows positive association between intensity of intangible assets and volatility of stock prices. Pharmaceutical, motor vehicle, and paper and paperboard shows negative relationship between selected variables. According to Granger Causality test there are two null hypotheses and both are rejected at the significance level of 0.05. It means volatility of stock prices and intensity of intangible assets both has causal relationship with each other. At the end researcher may concluded this study as all the null hypotheses rejected in favor of alternative because there are strong evidence exist about the relationship between intensity of intangible assets of the firm and stock prices of that firms.

Future examinations may conducted researches on relationship of each types of intangible asset's intensity with volatility of stock prices.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: I declare that the work submitted for publication is original, previously unpublished and not under consideration for publication elsewhere.

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Perception of Job Characteristics and Internal Motivation in Medical Records Staff

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ABSTRACT

Introduction: Human resource is one of the most effective factors in failure or success of a social system. Most of the employees do not have a sufficient understanding of their job characteristics; as a result, their motivation decreases. The present study aimed to compare the relationship between the perception of job characteristics and internal motivation in medical records staff of the hospitals in Isfahan and Shiraz.

Methodology: This was a descriptive-analytical study conducted in 2015. The participants were selected by census (315). We used the questionnaire of job characteristics of Hackman and Oldham. Descriptive statistics, Pearson correlation and multivariable regression (ANOVA) were used to analyze the data.

Results: There was a significant correlation between the grades of job characteristics and its components with internal motivation. Moreover, it was revealed that there was a significant relationship between job characteristics and internal motivation; also, the job feedback had the most effect on the internal motivation.

Conclusion: The results of the study showed that all the job characteristics had a positive effect on internal motivation, and job feedback had the most impact on internal motivation.

Keywords: *Perception, Job characteristics, Internal motivation, Staff, Medical Record.*

INTRODUCTION

The most important factor affecting the failure or success of a social system is human sources which can guarantee the survival and success of a system. The main challenging crises, with which our managers are confronted, are low motivation and decrease in the accountability of the employees. On the other hand, unmotivated employees waste the best programs, the most effective structures, and the most beneficial sources[1]. One of the important items in humans' relationship is paying attention to the opportunity of motivation creation in human sources[2]. The employees' motivation creates the foundation of efficiency in the organization[3]. Lack of attention to motivational factors can cause lack of job satisfaction, reduce the quality of services, and decrease the costumer's satisfaction from the services[2]. Thus, the executive managers of hospitals must ensure that the working environment is commensurate with the employees' job satisfaction[4].

Job characteristics specify how we can design or redesign the jobs in a way the employees consider themselves and their jobs important and feel safe [2,3,4,5]. A job with high motivational power can create a condition in which the employees can gain necessary readiness for internal motivation. If it is believed that human resources help the organization in accessing and keeping the optimal workforce, during job designing specialists and managers of human sources must have a complete understanding of job characteristics and individual characteristics of employees[6]. In designing jobs, the characteristics and conditions of the jobs are recommended to be consistent and coordinated with the psychological characteristics and conditions of the employees[7].

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Employees of medical records department in a treatment center are in charge of keeping data and monitoring their quality; they play an important role in the process of curing, diagnosing, and calculating the costs[8]. The services of this department have a special importance, and are considered as a factor in showing work efficiency and quality and quantity of curing. Inappropriate performance of medical records department personnel moves them away from their main purpose[9],[10]. Research shows that the employees' satisfaction of the Medical Records is not desirable and the performance of the Medical Records departments of the hospitals is at the medium levels. One of the reasons of these problems is lack of enough motivation of the employees of Medical Records in hospitals[11, 12, 13]. Therefore, the managers of this department should be completely aware of the behavior, motivation and needs of their staff in the organizations[6].

METHODOLOGY

This is a descriptive-analytical study. 315 subjects from the medical records department in teaching hospitals affiliated to Shiraz and Isfahan Universities of Medical Sciences in 2015 were chosen through census 135 from Isfahan and 180 from Shiraz). Employed and on contract staff with six-month experience in delivering services in Medical Records department were the criteria for the selection of the participants. Two questionnaires were used in this study:

a. The job characteristics questionnaire designed by Hackman and Oldeham in 1980 with two main parts; the first part includes demographic questions and the second part includes 23 questions for specifying the potential power of jobs. The following formula was used for specifying the motivational power score which is an index for determining the total power of the job in creating motivation.

   Motivational power index= {(skill diversity+ identity+ importance)/3× independence ×feedback

b. Internal motivational questionnaire with 28 questions for determining the internal motivation based on Likert scales.

The content validity of the questionnaires was confirmed by some of the experts. The correlation of the job characteristics questionnaire was 0.84 and for the internal motivational questionnaire it was 0.94. We used SPSS, 18. For data analysis, the correlational method, T-test, student, multiple regression, Pearson, and ANOVA were used.

RESULTS

The participants of this study were 230 women (73/01%) and 85 men (30/16%). 34.6% of them were less than 30 years old and 3.8% were aged over 51 years. The working experience of 43.17% of them was less than 10 years. 120 participants (38.09%) had BA degree and 15 of them (4.76%) had higher degrees of education. 175 persons (55.55%) had a Medical Records degree and 136 subjects (33.33%) had studied in other fields.

Table 1: The mean and SD of the job characteristics of the medical records department

Dimension of job characteristics perception	Average		SD		Total number	
	Shiraz	Isfahan	Shiraz	Isfahan	Average	SD
Diversity	385·3	508·3	0.587	0.547	3.482	57·0
Identity	3.683	3.483	0.587	0.556	3.58	57·0
Importance	992·3	808·3	672·0	623·0	9·3	645·0
Independence	303·3	503·3	664·0	603·0	4·3	63·0
Feedback	279·3	256·3	549·0	520·0	27·3	53·0
Total	53·3	511·3	612·0	569·0	52·3	589·0

Based on the results shown in Table 1, the highest mean was related to the importance dimension with a mean of 3.9 and the lowest one belonged to the feedback dimension with a mean of 3.27.

Table 2: The mean and SD of internal motivation of the medical records department

Internal motivation items	Average		SD		Total number	
	Isfahan	Shiraz	Isfahan	Shiraz	Average	SD
Success	3·325	3·401	0·713	0·72	3·363	0·72
Acknowledgment	3·327	3·325	0·691	0·695	3·326	0·69
Provoking job	3·550	3·640	0·654	0·664	3·6	0·66
Growth and development	3·251	3·255	0·772	0·735	3·253	0·75
Increasing responsibility	3·431	3·420	0·765	0·753	3·425	0·76
Total number	377/3	3·41	0·719	0·713	3·39	0·716

Based on the results in Table 2, the highest mean was related to the "motivational job" items with a mean of 3.6 and the lowest to the "growth and development "item with a mean of 3.25.

Table 3: The motivational power score of the jobs in medical records

Option	The section of Medical Record department	Average		Total number
		Shiraz	Isfahan	
MPS	The head of section	485·64	446446·57	9696·60
	Receptionist	948·41	564·39	7·40
	File keeping	734·45	436·43	58·44
	Statistics	612·56	372·55	99·55
	Encoding	374·49	853·45	61·47
	Total	83/51	31/48	97/49

As shown in Table 3, the highest mean of the motivational power was related to the" head of medical records department" and the lowest to the "receptionist unit".

DISCUSSION

The mean score of "job importance" in job characteristics perception was higher than the other dimensions and "feedback" dimension had the lowest score. Ansari revealed that all the motivational items had a significant relationship with job satisfaction and among the three health items only job identity did not have a meaningful relationship with job dissatisfaction and the two others had an inverse and significant relationship with job dissatisfaction[16].

Gabr and Mohamed's research showed that the scores of skill diversity, identity, importance and job feedback of the nurses' general surgery units were over the medium level, but as to personal independence they had a lower score[26]. Also, Kudo-Yasushi's research revealed that the motivation of nurse practitioners greatly depended on their free time spent for doing their responsibilities[27]. In the same line, Chen's study showed that job characteristics were very effective on the personnel's satisfaction and certainly job characteristics and job satisfaction were related to each other [30].

The results of the present study were consistent with those of Gabr (2012) and Saghaiiyan nejad's (2005) study; both showed a higher score than medium level[26-33]. It may be said that job designing of the staff of Medical Records departments is in a way that most of the skills and talents are used.

The present study results as to the dimensions are not consistent with those of Tang's (2000) research. It might be due to the level of different dimensions; in this study, the mean score of job characteristics perception was moderate while in Tang's study, except for job identity, all dimensions were at the acceptable level[32]. It seems that the reason for this difference is the difference between the subjects of the study or the location of the research.

Due to the acquisition of the same data and the importance of internal motivation and considering job characteristics toward creating jobs satisfaction, the results were consistent with the researches done by several researchers[22,24,20,17, 18,4,29,28,19,16,31,30,27].

In the present study, the mean of motivational factors ranged from the most important to the least important, including motivational job, increasing responsibility, success, acknowledgment, and growth and development. Furthermore, Hazaveie's research (2005) indicated that the feedback, growth and development were powerful motivational factors[1]. On the contrary, in Mehrabie's research (2005), the mean motivational factors were respectively success, acknowledgment, job nature, salary and preference, growth and development, relationship, supervision, and job security[23]. Mahmoudi (2007) stated that job nature, acknowledgment and recognition, job development, success and responsibility were the effective factors in creating motivation, respectively[21].

In the research of Masoud Asl (2008), the most effective factors in motivation were "responsibility" and "success" and in Baratie's research (2006) the priority of importance was given to the growth and development and job security[20, 22] and both of them are inconsistent with the results of the present study.

In the present study, "motivational job" and "increasing responsibility" were the most important factors of job internal motivation. The staff prefers and is satisfied with diverse jobs more than ordinary and normal ones; in addition, they work better when they enjoy from the job's nature and are interested in it.

From the participants' viewpoint, among the internal factors of creating job motivation, job responsibility is ranked the second. It seems that a good sense of internal motivation has been conceived.

In spite of all the above studies, Khalesie's research (2005) revealed that available jobs do not have diversity, identity, independence and feedback; they just considered duty as the main concern[25].

CONCLUSION

The findings of this study showed that the score of all dimensions of jobs characteristics were good and the perception "job importance" and "job feedback" had the highest and the lowest scores respectively among different dimensions of job characteristics; also, due to the fact that the job characteristics have an important role in changing the staff's internal motivation, different occupations of medical records department must be designed in a way that they increase the staff's internal motivation and interest in order to achieve the job and health system goals.

Suggestion: It is suggested that the managers and authorities should redesign different jobs of medical records department in a way to increase the staff's internal motivation and interest for achieving the health system goals and also the goals of the job. It is suggested that opportunity should be given to the staff of different sections of medical records department in order to increase their not only internal motivation but also efforts and activities, thereby creating a dynamic medical records department.

Conflict of Interests: None

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Influencing Factors and Microbial Agents Which Contribute to Acne among Students from Pathological Analysis Department/ Kufa Technical Institute\Al- Najaf Government

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ABSTRACT

Context: Acne is not a life-threatening disease, but it can cause permanent dermal scar, it may be a source of depletion of the financial resources of the individual as well as the psychological distress that can affect a person's future life.

Aims: determine the influencing factors, grading acne severity and identify the potential microbial cause.

Method and Material: the analytic descriptive study was performed using an interview-administered questionnaire and clinical examination for each participant. Global acne grading system was used for determining the acne severity. The sample was collected only from students who have a cane, the specimen have been processed to identify the species of microorganism.

Statistical analysis: The data were analyses by a statistical program SPSS (version 21).

Results: the prevalence of acne was (71.9%), it was more common among male compared to female (43% vs29%), there is a significant association ($p>0.05$) between acne and skin hygiene, family history, stress and menstrual cycle, while there is no association ($p<0.05$) between acne and hormonal imbalance, polycystic ovarian, sun protecting creams, cosmetic and moisture cream. sever and moderate form of acne was more common in female (2.3 %, 5% vs 0%, 3.6%), however the mild form more common in male (39.4% vs 22.2%). *Staphylococcus epidermidis* was the most bacterial isolate from specimens (28.3%).

Conclusions: acne results from overlapping more than one factor at the same time. The extent of the impact of these factors may differ from one person to another depending on regional variations in terms of the environment and lifestyle.

Keywords: *acne, gender, severity, diet, menstrual cycle.*

INTRODUCTION

First of all, let us introduce acne is a cutaneous condition encountered in the puberty period. It affects almost 85% of individuals 12-24 years of age [1], it is a very common skin problem but it is not contagious. It is characterized by the formation of nodules, pustules, papules, comedowns, blackheads and whiteheads on the skin [2]. It may be appearing in more than one place in the body such as the face, chest and back. It occurs primarily because of the increase in the production of sebum, which is produced by the sebaceous glands. This substance plays an important role in moisturizing and protecting the skin from invasion by the most bacterial species [3]. Several studies have shown that the appearance and severity of acne may be affected by several factors such as genetics, hormones, polycystic ovaries, menstrual cycle, emotional stress, diet, use sunscreen and the colonization of the skin by a species

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of bacteria which have the ability to metabolize the sebum [4, 5] . The presence of one or more of these factors is affecting the appearance of acne in some young people compared to their peers, as well as it controls the degree of acne which ranges from mild infection that disappears automatically after a certain period to severe infection that may leave scars on the skin, if it is not treated properly . Adolescence is a period in which a person experiences many biological and psychological changes. Acne may make this period more difficult and lead to a variety of psychological impacts such as embarrassment, depression, anxiety, violence and lack of self-confidence, as mentioned in previous research [7].

MATERIAL AND METHOD

Study design: This is an analytical descriptive study designed to identify potential influencing factor that related to acne, grading acne severity and the microbial species that associated with acne formation.

Place of the study: This study was conducted in the district of Kufa- Najaf province in Iraq, on a sample of students from the first and the second stage of the Department of Pathological Analysis \ Kufa Medical Technical Institute.

Sample size and study period: The study was conducted from 5 to 29 of January. The total number of students was 350, Only 107 females and 115 males agreed to participate.

Data collection: The research team conducted an interview with all participants to complete the questionnaire form after getting a verbal consent of the department headmasters. The questionnaire contained several parts. The first part included information about the participants, such as age, sex, personal hygiene. Use sunscreen, use cosmetics or skin care creams, Family history, stress, as well as a number of additional questions for a female. The second part concerned with the clinical examination. The third part concerned with the laboratory examination of the sample.

Clinical classification of the acne: The clinical examination was performed by a doctor and a nurse with experience in the field of dermatology. According to criteria of global acne grading system (GAGS) [8].

Sample processing: The samples were collected only from the participants who suffer from acne. The specimens were transferred directly to the laboratory and cultured on blood agar, sabouraud dextrose agar with olive oil overlay, two replicates per sample for each type of media was performed then incubated at 37 ° C for 2 to 7 days with aerobic and anaerobic conditions, to verify any Bacterial or fungal growth. All the microbes were isolated subjected to further identification method[9].

Statistical analysis: The data were analysed using a statistical program SPSS (version 21), the result optioned by Calculating the Chi secure, frequency, present, P values less than 0.05 was considered significant.

RESULT

Among the 350 students, only 221 participated (106 females and 115 males) with a response rate of (63.1%). The percentage of acne among students was (71.9%), the results showed that gender, skin hygiene, family history and stress condition, statistically significant with acne as follows. The percentage of acne among male 95(43%) was higher compared with female 64(29%). Students who wash their skin 3-5 time 58(26.2%) and more than 5 times 9 (4.1%) in a day less Suffering from acne than those who clean their skin once a day 92(41.6%). The percent of participants who have acne and family history was high , regardless of whether they are inherited from the father 60 (27.1%), mother 50(22.6%) or both of them 26(11.8%), stress was thought to make acne appear and become worse in 134(60.6%) of students, while there was no significant value between presence of acne and the use of sunscreen, make-up and moisturizing creams (x2=0.532, p=0.466; x2=3.803, p=0.051; x2=3.995,p=0.046), all these variables and values summarized in detail in Table (1).

Table 1: The socio-demographic factors that influence with acne formation

Characteristic	Category	Have acne				Total		x	p
		Yes		No					
		n.	%	n.	%	n	%		
Gender	Male	95	43	20	9	115	52	13.506	.000
	Female	64	29	42	19	106	48		
	Total	159	71.9	62	28.1	221	100		

Conted…

Skin hygiene	1-2	92	41.6	9	4.1	101	45.7	52.168	.000
	3-5	58	26.2	29	13.3	87	39.4		
	>5	9	4.1	24	10.9	33	14.9		
Sun protecting creams	Yes	41	18.6	19	8.6	60	27.1	0.532	0.466
	No	118	53.9	43	19.5	161	72.9		
Cosmetic	Yes	52	23.5	107	48.4	81	36.7	3.803	.051
	No	29	13.1	33	14.9	140	63.3		
Moisture cream	Yes	27	12.2	132	59.7	45	20.4	3.995	.046
	No	18	8.1	44	19.9	176	79.6		
Family history	Father	60	27.1	10	4.5	70	31.7	58.543	.000
	Mother	50	22.6	9	4.1	59	26.7		
	Both of them	26	11.8	2	0.9	28	12.7		
	None of them	23	10.4	41	18.6	64	29		
Stress	Yes	134	60.6	25	11.3	167	75.6	23.293	.000
	No	33	14.9	29	13.1	54	24.4		

The highest percentage of females agreed that the appearance of acne increases and becomes worse before the start of the menstrual cycle 77(72.6%) the results were statistically significant, While neither hormonal disorder nor polycystic ovaries had any significant value with acne according to our results that mentioned in Table (2).

Table 2: Factors related to female and its association with acne formation

Variable		**Menstrual cycle**				**Hormonal imbalance**				**Polycystic ovarian**			
	Yes		**No**		**Yes**		**No**		**Yes**		**no**		
	No	**%**	**No**	**%**	**no**	**%**	**no**	**%**	**no**	**%**	**no**	**%**	
Have acne	Yes	55	51.9	9	8.5	8	7.5	56	52.8	7	6.6	57	53.8
	No	22	20.8	20	18.9	40	37.7	2	1.9	2	1.9	40	37.7
Total	Total	77	72.6	29	27.4	96	90.6	9	8.5	9	8.5	97	91.5
X		14.368				1.7				1.245			
P value		.000				0.182				0.265			

The intensity of acne was determined by the global acne grading system (GAGS) and the results were as follows, 136 (61.5%) of participants had mild, 19 (8.6%) of them had moderate and only 5(2.3%) had severe cases, the sever and moderate form were more common among female(2.3%,5%) than male, As mentioned briefly in Table (3).

Table 3: Grading acne according to (GAGS), and its distributions with gender

Gender		**Global score**					**X^2**	**P**
		No Lesion	**Mild**	**Moderate**	**Sever**	**Total**		
Male	No.	20	87	8	0	115	22.992	.000
	%	9	39.4	3.6	0.0	52		
Female	No.	41	49	11	5	106		
	%	18.6	22.2	5	2.3	48		
Total	No.	61	136	19	5	221		
	%	27.6	61.5	8.6	2.3	100		

Out of 159 samples, only 103 gave positive results, included 44 samples containing mix species of microorganisms and 59 samples containing one species. The type and number of isolates were determined as follows, Propionibacterium acne 15(10.1%), *Staphylococcus epidermidis* 42(28.3%), *Staphylococcus aureus* 40(27%), *Klebsiella SPP.* 14(9.4%), *Streptococcus SPP*. 24(16.2%), *Mallasizia SPP*. 13(8.7%) As mentioned briefly in Table (4).

Table 4: The species of microbe that may be associated with acne formation

Species	Mix isolates											Total no of mix isolate	Total no of a single isolate	Single isolate		Total no of each isolate
														No.	%	
Propionibacterium acnes	+	+	+											3	2.9	15(10.1%)
Staphylococcus epidermidis	+		+	+	+	+	+							16	15.5	42(28.3%)
S.aureus		+	+	+				+	+					15	14.5	40(27%)
Klebsiella					+						+			7	6.7	14(9.4%)
streptococcus						+			+	+	+			10	9.7	24(16.2%)
Mallasizia							+	+		+				8	7.7	13(8.7%)
No.	4	6	2	11	3	5	2	2	4	1	4					
%	3.8	5.8	1.9	10.6	2.9	4.8	1.9	1.9	3.8	0.9	3.8			Total		148
Total												44	59	103		

DISCUSSION

Acne is one of the health problems that prevalent among young people, and there are several studies that have dealt with this subject in different parts of the world. But this problem has never been highlighted in the city of Al- Najaf. Therefore, this study was conducted to determine the prevalence of acne in a sample of students and the response rate was less than a study in Syria (99.2%) [10], the prevalence of acne was lower in Saudi Arabia (56.2%), Turkish (40.1%) and Syria (43.7%) than in our study[10, 11, 12], while the result in Singapore was higher (88%) [13]. There is a disparity in the results of studies from different regions of the world on the relationship between gender and acne. A study in Malaysia and turkey reported that acne is more common in males than females [14, 15], and this is consistent with our results, while other studies in Saudi Arabia and Iran showed that acne is more common in females than males[12, 16]. These differences may be due to variation in the proportion of male and female participants. According to U.S. Food and drug administration, the poor hygiene has no interfere with acne [10], which is contrary to our results where there is a significant relationship between acne and a good self-hygiene which consistent with results of a Syrian study [10]. The percentage of acne was higher in a student with a positive family history of acne, according to the study carried out in Cameroon [17] and that corresponds to our results, but the proportion was lower in a study in Japan (56.8%) [18]. There are many researchers who have dealt with the relationship between stress and acne[19, 15]. They reported that stress is one of the risk factors contributing to acne especially among students and this corresponds to our results. It may be due to the relationship between stress and cortisol, where their production increases with increased stress and leads to sebum secretion in larger amounts than the normal secretion rate. The menstrual cycle is regulated by different types of hormones, including progesterone, which its level increase during this period leading to increased production of sebum and close, swell the pores [20]. All these events cause the appearance and exacerbation of acne in females in the pre-menstrual period, Therefore, there are many studies mentioned the existence of a significant relationship between the menstrual cycle and acne (p=0.298, p=0.3)[21,22], however, this is close to the results of our research(p=.000). regarding the acne severity our results were contrary to previous studies in Malaysia and Iran where the severe and moderate cases common among males more than females (P= 0.001, P=0.003)[16,23].The Conflicts of results because the lack of uniform global system for determining severity.

In our study, the most prevalent bacterial isolate was *Staphylococcus epidermidis* followed by *S. aureus* while in an Indian study reported that *S.aureus* was the most common isolate[24], furthermore another study showed that *Staphylococcus epidermidis* and *Propionibacterium acnes* were the frequent bacterial cause of acne[25]. The acne may result from overlapping more than one type of microbes act together at the same time.

CONCLUSION

Acne is more common in males than females, but the sever form was among female. There is a relationship between acne and gender, family history, stress, menstruation, and personal hygiene. It is possible that acne is caused by an overlap of more than one type of microorganisms at the same time; these microorganisms may be bacterial or fungal.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: This study was approved by Ethics committee (91-183-4) of Anbar University.

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Analysis of Factors on Reward System in the Hospital

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ABSTRACT

Introduction: Hospitals, as an institution providing health services, are required to provide quality services. Excellent service must be owned by health workers, including nurses. One strategy used to improve health services in a hospital is a reward system and this is effected by the organisational factors of nurses in the hospital.

Objective: This study aimed to identify factors in the reward system in a hospital.

Method: This study used a cross-sectional design. The sampling method used simple random sampling with as many as 237 nurses. The independent variables were demographic factors (education, length of working, rotation, workplace and position of work). The dependent variables were intrinsic and extrinsic rewards. The data were collected using an instrument test and observation sheet that were tested for validity and reliability. The analysis used multivariate-test (MANOVA) level $\alpha \leq 0.05$.

Results: The results showed that there was an effect of education on intrinsic reward ($p = 0.001$), duration of work on intrinsic reward ($p = 0.006$), position of work on intrinsic reward ($p = 0.004$), education on extrinsic reward ($p = 0.028$), duration of work on extrinsic reward ($p = 0.001$) and position of work on extrinsic reward ($p = 0.000$).

Conclusion: Education, duration and position of work can improve the reward system of nurses. Therefore, these factors can be the motivation of nurses to deliver excellent service.

Keyword: *reward system, demographic factors, nurse.*

INTRODUCTION

Hospitals, as one of the institutions that provide health services to the community, are also required to provide quality services.[1] Improving the quality of hospital services is inseparable from the role of the various disciplines of health workers in hospitals, including nurses, because most hospital services involve some form of nursing services.[2] A reward system is one of the important factors that affect individuals working in an organisation.[3] According to Hasibuan, a reward is a reward for services provided by the agency for labour, rewards are not just about rights and obligations, but the most important thing is the driving force and enthusiasm to work.[4]

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Gillies stated that nurses are the group providing health services, with the largest number reaching 40-60%. In addition, nurses work in hospitals 24 hours per day, 7 days per week on a continuous basis, and they are the spearhead of a hospital in providing health services to the community. Therefore, the performance of nurses is one of the important parts in achieving the goals for providing and improving the most effective health services[56].

Nurse performance results in 2013 showed that the good performance of nurses ranging from assessment to implementation was > 40%, while, for nurses' performance in evaluating, it was > 60%, with the average education of diploma and work duration of 1-5 years.[7] This shows that the performance of the nurses still needs to be improved. The reasons for the not good performance of nurses are the level of education, the low levels of training level and the lack of motivation given.[8] Research conducted at Manado Indonesia Hospital showed that work experience and education level had an impact on nurses' performance in providing nursing

care. Data at the Manado Hospital show the highest nurse education level was diploma, with less than five years of work experience.[9]

The reward is the level of performance that can be realised through a certain business. The individual will be motivated by the hope of things to come; therefore, some people do their job well. Rewards are given to nurses because they have devoted their time, energy, skills and knowledge.[10] Performance is generated from a combination of effort and level of ability, skill and individual experience. Individual performance result is evaluated, formally or informally, by management, and two types of rewards can be given, intrinsic rewards and extrinsic rewards. Then, the reward is evaluated by the individual; if the reward is satisfying and balanced, the individual reaches a level of satisfaction.[11] The purpose of this study was to identify the factors in the reward system in the hospital.

METHOD

This study was a descriptive research study that used a cross-sectional design.[12] The sample in this research consisted of 237 nurses at RSUD Dr. Iskak Tulungagung. The independent variables were demographic factors (education, length of work, job rotation, workplace, position). The dependent variables were intrinsic rewards (task completion, achievement, autonomy, personal growth) and extrinsic reward (salary, wages, benefits, interpersonal rewards, promotion, job satisfaction). The instruments used in the collecting data were instrument test and observation sheet which were tested for validity and reliability. The data analysis used in this research was a multivariate (MANOVA) level $\alpha \leq 0.05$.

RESULTS

Table 1: Respondent Demographic Factors (n=237)

Respondent Factors	Criteria	f	%
Education	Diploma	115	49
	Bachelor's degree	122	51
	Master and Doctoral degree	0	0
Work experience (length of working)	< 5 years	83	35
	5 – 10 years	66	27.9
	> 10 years	88	37.1
Work experience (work rotation)	< 5 years	190	80.2
	5 – 10 years	38	16
	> 10 years	9	3.8
Type of work (place of work)	Low risk (out-patient care)	20	8
	Moderate risk (hospitalisation)	172	73
	High risk (emergency room, operating room, and others)	45	19
Position of work	Associate nurse	120	50.6
	PJ shift	35	14.8
	Team leader	74	31.2
	Nursing unit manager	8	3.4

In Table 1, it can be seen that most of the respondents have a bachelor's degree, which is 122 (51%) respondents. The longest work experience (length of work) is for more than 10 years, which is 88 (37.1%) respondents. Work experience (work rotation) was almost entirely less than five times the work, namely 190 (80.2%) respondents. In regard to the type and nature of work (workplace), most of the respondents worked in the in-patient clinic or hospitalisation, namely 172 (73%) respondents. Half of the respondents held positions as associate nurses, which is equal to 120 (50.6%) respondents.

Table 2: Reward System

Reward System		Category						Total	%
		Good		Enough		Less			
		N	%	N	%	n	%		
Intrinsic reward	Task completion	131	55	63	27	43	18	237	100
	Achievement	55	23	116	49	66	28	237	100
	Autonomy	129	54	63	27	45	19	237	100
	Personal growth	74	31	125	53	38	16	237	100
	Average	97	41	92	39	48	20	237	100
Extrinsic reward	Salary	81	34	91	38	65	27	237	100
	Wage	73	31	67	28	97	41	237	100
	Allowances	62	26	82	35	93	39	237	100
	Interpersonal reward	76	32	65	27	96	41	237	100
	Job promotion	89	38	86	36	62	26	237	100
	Total	76	32	78	33	83	35	237	100

Based on the results of data collection, nurses gave an assessment of the intrinsic reward, of which 131 (55%) respondents stated that the task completion indicator was in the good category. Nearly half of the respondents, 116 (49%), stated that the achievement indicators were in the sufficient category. Most of the respondents, 129 (54%), stated that the autonomy indicators in the hospital were in the good category. Most of the respondents, 125 (53%), stated personal growth indicators during working as nurses in the hospital as in the sufficient category. According to the results of the assessment, almost half of the respondents, 97 (41%), stated that intrinsic rewards given by RSUD Dr. Iskak were in the good category.

Based on Table 2, extrinsic reward elements, almost half of the respondents, namely 91 (38%), stated that the salary provided by the hospital was in the good category. Nearly half of the respondents, 97 (41%), said that the wages given by the hospital were in the poor category. Nearly half of the respondents, 93 (39%), stated that the allowance benefits were in the less category. And almost half of the respondents, 96 (41%), stated that interpersonal rewards given by hospitals were in the less category. Nearly half of the respondents, 89 (38%), said that the promotion so far was in the good category. Based on the results of the assessment, almost half of the respondents, 83 (35%), stated that extrinsic rewards given by hospitals were in the less category.

Analysis of Factors in Reward System in the Hospital

Table 3: Analysis of Factors in Reward System in the Hospital

No.	Variable	*F*	MANOVA	Description
1.	Education on intrinsic reward	11.059	0.001	Significant
2.	Length of working on intrinsic reward	5.259	0.006	Significant
3.	Work rotation on intrinsic reward	2.903	0.057	Not sig.
4.	Workplace on intrinsic reward	0.199	0.819	Not Sig.
5.	Job position on intrinsic reward	4.474	0.004	Significant
6.	Education on extrinsic reward	4.917	0.028	Significant
7.	Length of working on extrinsic reward	6.741	0.001	Significant
8.	Work rotation on extrinsic reward	0.140	0.869	Not Sig.
9.	Workplace on extrinsic reward	1.658	0.193	Not Sig.
10	Job position on extrinsic reward	22.317	0.000	Significant

The results of the multivariate ANOVA education analysis on intrinsic reward obtained a value of 0.001 ($\alpha \leq 0.05$). These results indicate that there is a significant effect between education variables with the intrinsic

reward variables. It can be interpreted that the higher the education, the more intrinsic reward increases nurse motivation at the hospital. The results of the second analysis, namely the duration of work against intrinsic reward, obtained a value of $\alpha \leq 0.05$ (0.006). The implication of the statement is that the longer you work in a place, the higher the intrinsic reward. The results of the analysis of work rotation and workplace against intrinsic reward are 0.057 and 0.819, respectively, which means that there is no effect between the length of work and intrinsic reward. Subsequent demographic data are the work position against intrinsic reward, were obtained at 0.004, meaning that there is a relationship between a work position and intrinsic factors. The results of the analysis of the work position against intrinsic reward indicate a value of $\alpha \leq 0.05$ (0.004); this means there is a relationship between the work position and the intrinsic reward.

There were similar results in the analysis of the effect of education, work experience and position on extrinsic reward. Education, length, and position of work on extrinsic reward have a value of $\alpha \leq 0.05$, which is 0.028, 0.00 and 0.000, respectively. It can be concluded that the higher the education and work position and the longer the work experience of the nurse in the hospital, the higher the extrinsic reward for the nurse. Whereas, for the results of rotation and workplace analysis of extrinsic rewards, there were no significant results. The α value shows >0.05 (0.869 and 0.193, respectively), which means rotation and workplace have no effect on the extrinsic reward.

DISCUSSION

Demographic Factors Effect on Intrinsic and Extrinsic Reward: Demographic factors that have been analysed and shown to have significant effect include the level of education,[13] length of work, job rotation, workplace and position.[14] Education, length of work and work position are factors that affect intrinsic and extrinsic reward. The higher the education, the longer the work experience[15] and the position that has the most important role in nursing care, then the completion of the task will be faster, achievement of progress will grow, autonomy and personal growth will improve, and salary, benefits, interpersonal rewards and promotion will also be better.[16] The highest education level of respondents in this study is bachelor's degree, with the longest working time being more than five years and with the highest position being that of executive nurse, thus so means the intrinsic and extrinsic reward given will be high.

This is in line with previous research on the quality of the work of nurses who are effected by educational factors; the higher the education of a nurse,[17] the better the quality of the nursing.[8] According to researchers, intrinsic reward includes task completion, achievement, autonomy and personal growth. This is in accordance with research which states that consideration in giving rewards to employees is strongly affected by position,[15] work experience (length of work), type and nature of work.[19] Other studies that supporting this show that of the basic considerations in drafting rewards to employees in terms of the old covers and artwork o rity[6].

Thus, nurses who have more experience and a higher level of education will be assumed to be faster in completing tasks than nurses with education who have just started working. Nurses with a higher education will also be more careful in deciding an act of nursing. But that does not mean that those with just a diploma but with lengthy work experience cannot complete the task quickly, because one of the factors that affects the completion of the task satisfactorily is a lengthy working experience.[13] Thus, apart from education, factors must also be seen from the duration of the work experience of nurses. Executive nurses are always required to be able to provide the best nursing care and always have direct contact with patients, so that will require nurses to always work fast and be able to complete tasks. The experience of being a nurse can also make nurses' personal development better than other positions. Not that a higher position cannot complete the task and get less wages and fewer benefits, but what needs to be seen and considered is the responsibility of the officer in managing the patient. Clearly, a nurse has many duties and responsibilities toward the patients who are managed.

CONCLUSION

Many factors must be considered in the provision of a reward systems, both intrinsic and extrinsic reward. Education, length of working and the position at work can increase the reward system and become a priority to determine the reward system so that the giving of rewards is appropriate and fair for all nurses.

Ethical Clearance: This study has passed the institutional review board from the Faculty of Nursing, Universitas Airlangga, Surabaya, number 938-KEPK.

Source of Funding: This study is a self-funded research project.

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Model Development of Nursing Service Loyalty

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ABSTRACT

Introduction: Customer loyalty to a hospital service is one of the main indicators as to whether the services provided are qualified and can satisfy customers or not.

Objective: This study aimed to develop a loyalty model of nursing services based on the SERVQUAL Model and the American Customer Satisfaction Index (ACSI).

Method: This study used a cross-sectional design and cluster random sampling. The study involved 180 samples. The independent variables were customer expectation, quality of services, perceived value and overall customer satisfaction. The dependent variable was loyalty. Data were collected using a questionnaire. The analysis used partial least square (PLS) and t-test with a significance level $\alpha > 1.96$.

Results: Research results showed customer expectation to perceived quality (t = 5.483), customer expectation to perceived value (t = 2.767), customer expectation does not affect satisfaction (t = 1.322), perceived quality can increase perceived value (t = 3.896), perceived quality can increase satisfaction (t = 2.128), perceived value increase satisfaction (t = 3.538), and satisfaction can increase loyalty t = 4.327).

Conclusion: Customer loyalty can be established by precedence by build-up of customer expectations of the service to be delivered. Through the development of this model, nurses can provide the best service that can shape customer expectations by build-up of word of mouth, personal needs, external communication and maintaining past experience with the good quality of services. Therefore, hospital as a healthcare provider was expected to meet customer expectations by providing quality services.

Keyword: *service, loyalty, satisfaction, quality.*

INTRODUCTION

Development of medical services to function in the social economy sector requires marketers of medical services providers to work harder so that they can attract new customers and create customers with high loyalty.[1] Patients that feel satisfied with one service will not search for another alternative; if they do move on, it means that the previous services weren't successfully fulfilling their satisfaction. Medical service is very personal and private among the different characteristics of the clients and medics should have special skills to serve their best interests.[2]

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Patients that come with various health problems, physically or psychologically, need answers and explanations regarding their lack of knowledge concerning their current condition. Customers have a tendency to experience dissatisfaction with a service that they receive related to the medics; this [3] is supported by the statement[4] that a service failed to satisfy due to the lack of special treatment that was able to touch the hearts of the clients in a way as to make them become loyal. A combination of customer expectation with services will result in the client's satisfaction, which will lead them to increase the level of loyalty.[4] Research regarding customer loyalty is attractive and important to be conducted; therefore, the medical service provider should be able to understand what is required. Therefore, the purpose of this study is to develop a loyalty model of nursing services based on SERVQUAL model and the American Customer Satisfaction Index (ACSI).

METHOD

The research design used is a descriptive correlation with cross-sectional approach. This research measured customer expectation, perceived quality, perceived value, overall customer satisfaction and customer loyalty toward the medical service of out-patient care at Amelia Hospital. The population of this research is a targeted population, thus, all of the clients that experienced the out-patient care medical services of Amelia Hospital Kediri were collected using cluster sampling technique. The location that is treated as the cluster is the out-patient care of Amelia Hospital, or the internists, neurologists, and pulmonologists of Amelia Hospital. Research of Loyalty Model Nursing Services uses a model development with 18 parameters; therefore 6 x 18 = 108 respondents are used with the previously determined inclusion criteria that they had experienced Amelia Hospital services at least twice, were adults age 20 or older and literate.

RESULTS

The result of the variable of customer expectation distribution can be seen in Table 1 where it shows that the majority of the respondents, about 76% (*82 persons) stated the external aspect of using the service in Amelia Hospital.

Table 1: Data Distribution of Customer Expectation in Out-Patients Unit in the Hospital

No.	Customer expectation	Category			
		Positive		Negative	
		∑	%	∑	%
1.	Word of mouth	55	51%	53	49%
2.	Personal needs	60	56%	48	44%
3.	Past experience	53	49%	55	51%
4.	External communication	26	24%	82	76%

Table 2: Data Distribution of Perceived Quality in Out-Patients Unit in the Hospital

No.	Quality of Services	Criteria			
		Good		Bad	
		∑	%	∑	%
1.	Reliability	49	45%	59	55%
2.	Assurance	38	35%	70	65%
3.	Tangible	54	50%	54	50%
4.	Empathy	49	45%	59	55%
5.	Responsiveness	60	56%	48	44%

The second variable is the perceived quality (Table 2), which indicates the data in assurance aspects. These aspects are considered as dissatisfaction from 70 respondents. This is followed with empathy and reliability aspects, the aspect in the considerably satisfying category with the highest score is responsiveness.

Table 3: Data Distribution of Perceived Value in Out-Patients Unit in the Hospital

No.	Perceived value	Criteria			
		Accordingly		Not Accordingly	
		∑	%	∑	%
1.	Quality given price	61	56%	47	44%
2.	Price given quality	55	51%	53	49%

Table 3 showed that the majority of the respondents stated that the quality of services aspects that were achieved were already in accordance with the price that they have to pay after experiencing the medical services, followed with the price given quality.

Table 4: Data Distribution of Overall Customer Satisfaction in Out-Patients Unit in the Hospital

No.	Overall Customer Satisfaction	Criteria			
		Satisfied		Not Satisfied	
		∑	%	∑	%
1.	Overall satisfaction	56	52%	52	48%
2.	Fulfilment of expectation	62	57%	46	43%
3.	Compare with ideal	47	44%	61	56%

Table 4 showed that the satisfactory result toward medical service can be seen as considerably satisfying in terms of fulfilling customer satisfaction; however, in comparing with the standard fulfilment, a majority stated that they were not satisfied with the services.

Table 5: Data Distribution of Customer Loyalty in Out-Patients Unit in the Hospital

No.	Customer Loyalty	Criteria			
		Loyal		Not Loyal	
		∑	%	∑	%
1.	Repeat buying	69	64%	39	36%
2.	Retention	44	41%	64	59%
3.	Referral	56	52%	52	48%
4.	Willingness to corporate	42	39%	66	61%

Repeat buying aspects, in Table 5, gained the highest score in the category of loyalty, followed by referral aspects. On the other hand, majority respondents stated that they would not actively participate to fix the service quality in the hospital; in other words, were not considered as loyal.

Inner Model Evaluation

Table 6: The Hypothesis Test Result of Development Model Medical Care's Loyalty

No.	Variable	Path Coefficient	Std. Dev.	T Statistik	Ket.
1.	Customer expectation perceived quality	-0.316	0.057	5.483	Sig.
2.	Customer expectation perceived value	-0.152	0.055	2.767	Sig.
3.	Customer expectation overall customer satisfaction	-0.074	0.056	1.322	No Sig.
4.	Perceived quality perceived value	0.287	0.073	3.896	Sig.
5.	Perceived quality overall customer satisfaction	0.142	0.066	2.128	Sig.
6.	Perceived value overall customer satisfaction	0.227	0.064	3.538	Sig.
7.	Overall customer satisfaction customer loyalty	0.257	0.059	4.327	Sig.

Inner model evaluation is used to test the researcher's hypothesis. Hypothesis research can be accepted where the value of t- calculation > t-table. Value of t table in the error value $\alpha > 5\%$, which is 1.96. Value of coefficient line and the value of t are calculated in the inner model can be seen in Table 6. The result of t-calculation shows that, from seven hypotheses, six of them are considered insignificant and these are the hypotheses concerning the implication of customer expectation toward overall customer satisfaction.

DISCUSSION

This study concluded that the sub-variable of past experience creates a positive implication toward customer expectation[5]. Past experience will be considered as good when the customer feels safe and comfortable.[6] Previous study said a service can be seen as full of quality when it can satisfy customer need and is delivered in a well-mannered way, on time and create a solution and avoid the expansion of the disease.[7] The external communication is a form of corporate strategy that is attractive and innovative to attract customers regarding the hospital's quality of services.[8] Hospital as the medical care service provider is expected to be able to create a good customer expectation by increasing word of mouth, fulfilling customer need, creating a good past experience and optimising the external communication to attract the customers.

Customers expectation significantly influences the perceived value. Customer perceived value is the end result between the benefits and sacrifice that are expected by the customer[9]. Perceived value is the whole customer expectation toward the benefits of products and services, based on the perception that they felt and what they gained as an investment.[10] The perceived value is the value comparison between the sacrifice that the customer has made, which are their expenses, with the benefits or utilities according to their expectation.

The results between the customer expectation variable with the overall customer satisfaction variable are not significantly impactful toward the customer expectation variable directly. The variable of customer expectation includes the external factors of word of mouth, personal needs, past experience and external communication.

Customer satisfaction can be created by quality, service and value[11]. The customer that only hears the word of mouth about a service has the feeling of needing the best aspects of services and if they only see the promotion without experiencing directly the products or services, in this case medical services, they will be unable to conclude whether the service can meet their expectation or not[12]. Customer satisfaction is the satisfaction or disappointment occurred after comparing the performance received with the expectation[13]. After conducting a purchase and experience the service directly, then they will know the holistic aspects of services as supporting factors.[8]

Based on Drucker, a management expert,[14] people have different beliefs toward the quality of a service

based on their own characteristics. Drucker stated it to be a myth that high-quality service is supposed to be expensive and luxurious. For the cost-sensitive customer, a cheap price is a source of satisfaction because they will obtain greater value for money.[15] The irony is where there is a perception in society whereby the cheap price equals low-quality products, and vice versa.[16] If obtaining quality is well-implemented, this will decrease the cost, not the other way around. We can conclude that hospitals are expected to provide luxurious services without a high rate of cost along with efficient resources, both human and also of the facility.

The research concludes in a PLS test showing that the perceived quality variable has a significant relationship with overall customer satisfaction. It can be seen that when the quality of services is higher, customer satisfaction will be higher as well.

Previous research[17] showed that the quality of service is significantly related to customer satisfaction. The provider has to thoroughly observe their customer segment as a targeted market. This ranges from the majority of job characteristics and communication patterns to the tendency of complementary or substitution products.[18] The quality of service is the main important factor that has to be noticed, because this is the point that will be remembered by the customer after they have used the product and service.[19] The high level of competition will require the service provider to always give the best service to the customer.[20]

The increase of patient demand regarding good quality of service creates a need to increase the service function to fulfil the patients level of satisfaction.[21] The concept of service quality is a complex understanding of qualities, as to whether it is satisfactory or not.[22] The quality concept can be seen as excellent when the service that is served is far beyond the expectation.

The perceived value variable has a significant impact on the variable of overall customer satisfaction and the higher the value of that service, the higher the customer satisfaction as a whole. The value itself is defined as the lowest price, the value is the need to satisfy, and value is the quality that is gained according to the cost expended.

The key to increasing the service is to connect the customer expenditure with the value they received in return.[22] The results of the study are in accordance with study that the nurse performance is important for customer satisfaction and to make the customer feel satisfied then the nurse should give their best.[23] The value in the aspect of customer satisfaction is very important; therefore the hospital has to thoroughly analyse the need of the customer toward the medical services that are reachable physically and materially.

The overall customer satisfaction actively impacts the customer loyalty variable with a positive coefficient line; this means that the higher the customer satisfaction level, the higher the loyalty of that particular customer to the provider. The respondents would repeat go to the hospital when they were satisfied with the service they received.[17] The satisfied customer will return to do further buying and give a positive recommendation by word of mouth.[24] The customer's satisfaction can create loyalty to the corporate. To retain customer loyalty is the cheapest and most economical of activities conducted by the corporate. The loyal customer will experience the service again and again in the long-term period; as such, we can conclude that if we lose this customer, we also could lose future income as well.[12]

Six reasons why an institution needs to obtain customer loyalty have been stated,[12] it has to be the number one hospital consideration. First, the loyal customer will bring big benefits to the institutions through the continuous buying activities. Second, the cost to gain a new customer is far greater than saving and keeping the existing customers. Third, the customer that trusts a service given by an institution will keep on believing in their other services. Fourth, the operational expenses of the institution will be efficient if they have more loyal customers. Fifth, the institution can reduce the psychological and social expenses due to the positive experience provided to the customers. Lastly, the loyal customer will always try to defend the institution and also will try to persuade and make an effort to suggest other people go to the institution.

CONCLUSION

Loyalty can be built through customer expectations by creating recommendations, providing the services they need, maintaining a good experience and conducting promotion. The perceived value that is in accordance with the quality of service will increase the customer satisfaction toward the hospital's services as a whole.

Ethical Clearance: This study has passed the institutional review board from the Faculty of Nursing, Universitas Airlangga, Surabaya, number 361- KEPK.

Source of Funding: This study is a self-funded research project.

Conflict of Interest: None.

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Occupational Health Issues Faced by Women in Spinners

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ABSTRACT

Women are the marginal group of the society from the ancient period especially in India. Spinning units are the most prominent wok place for the marginalized women of Indian society. They are earning very less amount of salary when compared to the other sector due to lack of economic opportunities and the material price. Dindigul district is the one of the major hub of the spinning activities of southern part of Tamil Nadu. Weaving and spinning are the activities involving more physical works compare to the other kind of works. This high involvement of physical activities influences on the health condition of the women in psychologically and many other ways. This study aimed to understand the psychological issues faced by the women spinning workers in the study area. For the study purpose, 81 respondents working in the spinning units of Gandhigram trust. This study found that workers gave added strain to the workers and the pain was severely felt and at the shoulders and hands. It concludes that man-machine combination needs to be optimized along with improvements made in the charkha as with this only one can be sure of increased productivity. Further, more studies are needed in this area to improve the health and occupational status of the women workers.

Keywords: *Health, Women, Occupation, Spinning, Problems*

INTRODUCTION

Spinning was an art confined to the women of India because the women had more leisure. Training of women under KVIC is carried out with the help of departmental training centre as sell as non-departmental training centre operated through voluntary institutions working for the development of the country and women. Early spinning was carried out by twisting the fibers by hand; it must have been an extremely slow process until the invention of the spindle around 1000 B.C .This equipment used for early spinning is called 'Takli'. The production of yarn in 'Takli' will be around one hank per 8 hours, [(3)]. The study was conducted in the economically growing Dindigul District of Tamil Nadu[(5)]. Three different units under the Gandhigram Khadi Trust were selected from the four units under its control. Spinning was an art confined to the women of India because the women had more leisure. Training of women under KVIC is carried out with the help of departmental training centre as sell as non-departmental training centre operated through voluntary institutions working for the development of the country and women. The kissan spinning could not also be taken up as an employment due to its low productivity. So, the search continued for a more productive charkha and the result is the Ambar charkha. The 'Ambar charkha', is an improved type of spinning wheel with multiple spindles linked to the wheel [(1)]. Its invention has made a land mark in khadi industry and has ensured greater improvement in the productivity of the spinners by improving both the quality of the year and the speed of year production [(2)]. The technological improvement in Ambar spinning has considerably increased the quality and quantity of yarn production. It has also reduced the drudgery of hand spinning with the introduction of the principles of ring frame spinning in Ambar charkhas subsequent improved versions like six spindle, 12 spindle and 48 spindle charkhas have come out[(4)].With this the twist and uniformity of yarn have been considerably improved over-coming difficulties of weaving yarn. Hence, this study on occupational health on women spinners is more important for the present phenomena.

Statement of the problem: Women are the most viable segment of the society and facing lot of problems in their day to day life especially in the work place to compete with their occupation [(10)]. The latest development in khadi spinning is the invention of 48 spindle charkha

which can be operated by the electric power. With improvement in the charkha, the productivity of spinners could have increased [9]. The equipment is reported to have eliminated the drudgery of hand spinning. But prolonged working for eight hours a day in a squatting posture can pose postural stress and discomforts [6]. Relevant studies in this field of women health issues were found scanty [8]. Hence an attempt is made in this study to analyze this issue also as to have a general opinion of the workers on their work and work strain. Occupational health providers have a particular role in working with individuals who are experiencing problems associated with work related stress and helping them either remain at work or return to work successfully[7]. Hence this study will be more important to contribute in this area of women health.

THE OBJECTIVES OF THE STUDY

1. To study the background of women working in spinning units;
2. To understand their work and working conditions;
3. To assess the relative advantages of different spinning wheels and spinning arrangement;
4. To have a picture of the occupational problems of women working on different types of spinning wheels; and
5. To suggest suitable measures for improving the status of these workers

METHODOLOGY OF THE STUDY

The study titled 'Occupational Health Problems of Women in Spinning Units' is an attempt to portray the background, work status and problems of the women spinners in the spinning units. A survey design was followed. The study was conducted in Dindigul District of Tamil Nadu. Three different units under the Gandhigram Khadi Trust were selected from the four units under its control. This occupational health study is an descriptive cum analytical in nature. The selected units were located in Gandhigram, Dharmathupatti and Panjampatti. Two hundred and eighty charkhas had been distributed through the three units but only 128 were in operation. From this group 81 persons were selected at random. The women in these centers were found working in six, eight and twelve spindled charkhas. Out of the 81 spinners, thirty two were home based workers and the remaining forty nine were working at the centre. An interview schedule was used for collecting the data.

Status of the Khadi Spinning Units: Gandhigram spinning units owned 72 six spindled charkhas. Both cotton and muslin yarns are spun from carded silvers and muslin is the yarn spun from combed fibres. The muslin yarn is fine texture and is silkish and uniform. All the 72 charkhas had been in operation at the time of the survey and indicated a100 percent working status.

Under Gandhigram Khadi Trust there were four units. Of these three units were selected for the study. Of these one was located at Gandhigram and the remaining two in the periphery villages –N.Panjampatti and Dharmathupatti .

Background of the Khadi Spinners: All spinners in the study area were women. Eleven percent of the workers were working in the Gandhigram spinning unit. The proportion of women working in the other two units located in Panjampatti and Dharmathupatti constituted 49 percent and 40 percent respectively. Sixty percent of the women worked in the spinning unit. Others, though were attached to specific spinning units, did the spinning at their residences. They were referred to as home based workers. The supply of raw materials, sales of yearns and wage payments were the responsibilities of the khadi unit. One fourth of the workers used six spindled charkhas. The proportion of workers using eight spindled and twelve spindled charkhas constituted 39.5 percent and 35.8 percent respectively. Two thirds of the spinners were Hindus, Christians constituted 32.2 percent. Ninety three percent of the workers belonged to background community. The female headed families ranged from one to eight with a mean of 4.2 Sixty percent of the families were of nuclear type and 40 percent belonged to joint families. More than half (58percent) of the families were with double earners and 36 percent from them were with three or more earners. The occupation of the lead of the household reveals that 48 percent of them were daily wage labour followed by service (11 percent), earning (9.9 percent), village artisanship (9.9 percent) and business self – employment.

Socio-Economic status of the spinners: The monthly income of large family is from Rs.500 to 6000 with a mean of Rs.2839 per month. Sixteen percent of the families were below the poverty line. The Socio-economic status of a majority of the families (67 percent) was on the relatively higher side.

Income & Productivity of the Spinners: The spinners worked on the different type of charkhas. The three charkhas used in the area of their operation. The production & earning potential of the workers varied considerably in the type of charkhas used & the type of yarn spun. All the three varieties of charkhas were used for spinning cotton, but for spinning cotton, but for spinning muslin only six spindled charkhas was used and for poly khadi, only twelve spindled charkhas was used 39.5 percent of the charkhas in the study area were 8 spindled, 35.8 percent were 12 spindled percent 24.7 percent f of them were 6 spindled

Wage Rate: The monthly earnings of the spinners ranged from Rs.200 to Rs.2000 with a mean of Rs.434 per month. Seventy three percent of the women earned Rs.300-600/month.

Table 1: Comparison of the Worker's Income by Selected Variables

Variables	No. of spinners	Mean income (in Rs./month)	Statistical measure	Significance Level
Work site				
Home	32	489.10	t =1.49	NS
Centre	49	415.70		
Type of Charkhas				
Six	20	485.50	t = - 0.04	NS
Eight	32	444.70		
twelve	29	418.60		

NS-Not significant

The mean income of the home centered workers was Rs.489.10/month and that of centre based workers was Rs.415.70.The highest mean income of Rs.485.80 per month was reported for six spindled charkha as against Rs.418.60 for twelve spindled charkha. A sum of Rs.50 is paid from the welfare fund to all weavers as pongal gift.

Occupation Prior to Spinning Work

Table 2: Occupation Prior to Spinning Work

Occupation	Spinners	
	Numbers	Percent
Vegetable vending	1	1.2
Coolie (Agriculture, Mansory, etc.,)	16	19.8

Conted…

Tailoring	3	3.7
Spinning in mill	11	13.6
Gem cutting	2	2.5
Unemployed	48	59.2
Total	81	100.0

Table-7, a majority (59.2 percent) of the women were unemployed prior to spinning .14 percent of them were doing spinning even prior to joining the centre.

Reasons for the Shift of Women to Spinning Work

Table 3: Reasons for the Shift to Spinning Work

Reasons	Spinners	
	Numbers (N = 81)*	Percent
Availability of job with regular income	51	63.0
Migration	18	22.2
Convenient work timings	16	20.0
Access to the work place	13	16.0
Personal interest	10	12.3
Financial difficulties	8	10.0
To support family	6	7.4

*Multiple responses

The major reason for shift of families to spinning was their potential for having a regular income (63 percent). The other reasons were migration (22.2 percent), compatibility of the working hours (20 percent), closure of the industry (16 percent), personal interest (12.3 percent), financial difficulties (10 percent) and support their family (74 percent).

Training: Around 16 percent of the spinners had undergone training in spinning. They received training in the respective units and others at T.Kallupatti and Trichi.The duration ranged from one to 3 months and the stipend received by them ranged between RS.250-400 per month.

Proficiency in Spinning: Around 60 percent of the spinners expressed full confidence in their spinning skill. Rejection of the yarns for want of expected quality was reported in 36.4 percent cases. The reasons reported the rejection of the yarns were either the reduction in the of the yarn and oil stains in the hanks (50 percent).

Table 4: Advantages of Spinning over Other Conventional Jobs

Variables	Spinners (N = 81)*	
	Numbers	Percent
Can do it at home	34	50.0
Regular income	25	31.0
Not much strain	21	26.0
No need to work under direct sun	19	23.4
Reduction in travel	17	21.0

*Multiple responses

Regularity of income (31 percent), reduced stress and strain (26 percent), absence of work under direct sunlight (23.4 percent) and reduction in travel were the advantages of spinning over other conventional jobs.

The reasons reported by the spinners for opting to work at the centre were the possibility of spinning more hanks, convenience to work continuously without any disturbances, lack of strain and expenditure on repair of the charkha, companionship at work site training and supervisory care and insistence on work at the centre in the case of 12 spindled charkas. The main advantages reported with home spinning were possibility of dovetailing the job with household work (56.3 percent) and convenience (28.1 percent) of doing the work during leisure time.

Worker's Rating of Spinning Work: On selected 5 parameters namely the nature of the work, operation, fatigue, satisfaction, and income yield the spinning task was rated on a point scale. On each parameter the mean score ranged from 1.3 to 1.8.The total mean score of the spinning task was 6.5.

Table 5: Spinners' Rating of the Charkhas on Selected Parameters

Parameters	Scale	No. of responses	Total scores	Mean scores
Work	Hard	55	55	1.3
	Light	26	52	
Operation	Difficult	54	54	1.3
	Easy	27	54	
Fatigue	Fatiguing	45	45	1.4
	Less fatiguing	36	72	
Satisfaction	Low	16	16	1.8
	High	65	130	
Income yield	Irregular	13	13	1.8
	Regular	68	136	

X = 6.5

Occupational Strain: The work strain was calculated on the basis of duration of continuous work possible, feeling of on set of pain, indication of highest pain and the mode of efforts to relieve the pain.

Table 6: Strain of Spinning

Response	Spinners (N = 81)	
	Numbers	Percent
Duration of continuous work possible(in hours) without strain:		
Two	40	49.4
Three	23	28.0
Four	18	22.2

Conted…

Onset of pain on continuous work after:		
One hour	68	83.9
2 hours	2	2.5
At night	11	13.6
Location of severe pain:		
Shoulder + upper arm + neck	17	21.0
Shoulder + leg + mid back	15	18.4
Buttocks+ thigh + foot	14	17.3
Buttocks + lower back + legs	10	12.3
Shoulder + Buttocks	9	11.2
Shoulder + palms	9	11.2
Upper arms + palms	7	8.6

Conted…

Relief measures taken:		
Rest	63	78.0
Taking pain killers	13	16.0
Application of pain relieving balms/oil	5	6.2

Forty nine percent of the workers reported that at a stretch they could work only up to 2 hours. Twenty one percent of the workers reported experiences severe pain in the shoulder, upper-arm and neck. Twenty nine percent of the women irrespective of the category they belonged to reported recurrence of head ache and chest pain. The other problems were stomach pain, body pain, and back pain, cold, fever, leg pain, hand pain, giddiness, sinus problems and eye complaints.

Felt Needs of the Spinners: Inadequacy of proper medical care and low income compelled the workers to resort to self prescribed medical/health care for their problems. The economic needs of the spinners were financial help at the time emergency (24.7 percent), medical reimbursement facility (20.9 percent) and daily payment

CONCLUSION

Spinning is chosen by families as a supplementary occupation. In the centers chosen the charkhas were not in full use. There is no ensuring full utilization of the centre for spinning productivity in the field. Work availability in spinning depended on the basis and demand for khadi produce. The welfare for workers was not strong. The workers gave added strain to the workers and the pain was severely felt and at the shoulders and hands. The eight spindled charka was best choice of the spinners. Spinning, though an economically viable occupation, needs improvement. Work studies are needed in this area for eliminating stressors of this work. The man-machine combination needs to be optimized along with improvements made in the charkha as with this only one can be sure of increased productivity.

Ethical Clearance: Data used in this study pertained from the priliminary field survey at Dindigul, Tamil Nadu.

Source of Funding: Self

Conflict of Interest: Nil

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Association of HLA-DRB1 Alleles with Allergic Asthma and Total Serum IgE Levels in Iraqi Adults Patients

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ABSTRACT

Background: Asthma is multifactorial disorder, many researches have reported relationship between allergic asthma and HLA alleles, the aims of the current study were to clarify the relationship between allergic asthma and HLA-DRB1 alleles and to determine the possible association of HLA-DRB1 alleles with serum total IgE.

Patients and Method: A case-control study included 42 adult patients with allergic asthma and 42 normal control. All patients were diagnosed to have allergic asthma on the basis of clinical history and examination and all were positive to at least to one of the common tested allergens by skin prick test, HLA-DRB1 genotypes in patients and controls were done by using Histospot system and serum total IgE were measured by Chemiluminescence immunoassay.

Results: The frequencies of HLA-DRB1*07, DRB1*03, and DRB1*04, were higher among allergic asthmatic adult patients in comparison to control and these alleles were significantly associated with high serum IgE levels while HLA-DRB1*11 and DRB1*13 alleles were associated with low serum level of total IgE.

Conclusion: HLA-DRB1*07, DRB1*03, and DRB1*04 alleles might be the possible genetic factors for susceptibility of allergic asthma and serum IgE production in Iraqi adult patients with allergic asthma.

Keywords: *Asthma; HLA-DRB1; MHC; IgE*

INTRODUCTION

Allergic asthma is a chronic inflammatory disease of the airways that affect persons at any age. It induces recurrent attacks of wheezing, tightness of the chest, cough and breath shortness [1]. Globally, an estimate of about 334x10^6 people are suffered from allergic asthma, therefore, control and prevention of asthma have great significance [1, 2].

Recent report shows asthma prevalence was 18% in Iraqi children [3]. Genome-wide screening researcher has recognized several chromosomal areas containing susceptibility genes for asthma such as long arm of chromosomes; 2, 5, and 12, and short arm of chromosomes; 3, and 6 [1]. Human leukocyte antigens (HLA) are part of the major histocompatibility complex (MHC), where localized on chromosome 6p21, with more than 100 genes. The MHC is organized into three classes; MHC class-I, class-II, and class-III. In general, molecules of MHC class-I present foreign antigenic determinants to CD8+ T cytotoxic cells and molecules of MHC Class-II present foreign antigenic determinants to CD4+ T helper lymphocytes [4]. HLA shows an essential role in immunological disorders, infections-against host defense, transplantation, and all known risk elements for asthma [5]. Nonetheless, the influence role of the HLA loci on development of asthma remains unclear [6].

Among HLA class II, some studies demonstrated a strong associations between HLA-DRB1 asthma. Examples of these associations, the HLA-DRB1*01, DRB1*07, DRB1*13, DRB1*11, DRB1*12, and DRB1*03 were described as susceptibility indicators for development of allergic asthma in Murcia-Spain [7], Koreans [8], Taiwanese [9], Venezuelans [10], Iranians [11], and Indian [12] respectively. However, in other studies, no direct relationship has been detected [13, 14]. Nonetheless other studies have shown a genetic linkage of the 6 p21.3-23 region in susceptibility of asthma, which maps near to the HLA genes [15].

Several chromosomal linkage such as short arm of chromosome 5 and 11 have been identified to influence on the serum level of IgE, therefore, level of total IgE is primarily affected by genetic factors while other factors such as environmental factors are less important factors that has an effect on IgE level [11].

The aims of the present study were to clarify the relationship between allergic asthma and HLA-DRB1 alleles and to determine the possible association of HLA-DRB1 alleles with serum level of total IgE. To our best knowledge, this is the first study that has been achieved in Iraq.

MATERIAL AND METHOD

Subjects: Forty two unrelated patients with allergic asthma (22 males, 20 females), referred to Asthma Centre in Al-Sadder hospital in AL-Najaf Province were enrolled in the current case-control study. All patients carefully examined by respiratory specialist based on the American Thoracic Society report for asthma [16] and they were off treatment for at least one week before testing. Exclusion criteria were involved the smokers, diabetic, pregnant, unstable asthma, neoplasms, other lung diseases, and parasitic infections.

Forty two normal blood donors (20 males and 22 females) with no history of allergic conditions and were unsystematically chosen as normal control. Written informed consents got from all participants.

Skin prick test (SPT) performed to the patients and control groups by using common allergens in Iraq, such as pollens, molds, and mites. Staller Genes SA–France supplied the extracts for percutaneous skin tests.

Immunological and Molecular Tests: 5ml of venous blood were collected from each patients and control. Blood was divided into 2 aliquots; 3ml transferred immediately into plain tube, allow to clot at room temperature then centrifuged at 1500 rpm for 5 minutes then serum kept at deep freeze (-20 C˚) to be used for measuring of serum total IgE level by Chemiluminescence immunoassay kit (Biomedical Engineering Co-UK). 2ml was added to EDTA tube for DNA extraction by commercial kits (Genomic DNA Extraction Mini Kit /Geneaid-Korea). Hybridization and detection HLA-DRB1 alleles performed on DNA sample by using the appropriate locus specific HISTO SPOT DRB1 kit (BAG Health Care-Germany).

Statistical Analysis: The frequency distribution of HLA was calculating by direct counting. For each allele, the frequency was compared between patients and control group using fisher exact test for qualitative data and independent *t* test for quantitative data. The Odds ratio of HLA alleles along with the 95% confidence interval was calculated. SPSS version 20 (SPSS Inc., Illinois, US) was used and *p*-value <0.05 were considered significant.

RESULTS

A total of 42 Iraqi patients with allergic asthma (22 men and 20 women) and 42 healthy controls (20 men and 22 women) were included in the present study, see table (1).

Table 1: Demographic information of participants

Variables	Patients (n = 42)	Control (n = 42)	*p*-value
Gender (M/F)	22/20	20/22	0.663[a]
Age (years)	32.02 ± 10.266	34.26 ± 12.087	0.363[b]
Serum Total IgE (IU/mL)	593.30 ± 57.44	147.23 ± 51.71	0.001[b]

[a]: using chi-square, [b]:using independent *t* test, SD: standard deviation.

The frequency distribution of HLA*DRB1 loci was studied in the Iraqi patients with allergic asthma and normal control. The expected and observed phenotypes of studied alleles for normal control were in a good consistent with equilibrium of Hardy-Weinberg as demonstrated in table (2).

Table 2: Expected and Observed frequency, HLA-DRB1 allele's percent in Control group

HLA-DRB1 alleles	Control (n = 42) Observed values		Control (n = 42) Expected values		Hardy-Weinberg	
	No.	%	No.	%	X^2 (df)	p-value
*01	4	9.5%	2	4.7%		
*02	4	9.5%	2	4.7%		

Conted…

*03	3	7.1%	7.5	17.8%	6.000 (13)	0.946
*04	1	2.4%	4.5	10.7%		
*05	3	7.1%	1.5	3.5%		
*07	1	2.4%	7	16.6%		
*08	4	9.5%	2	4.7%		
*09	3	7.1%	1.5	3.5%		
*10	3	7.1%	2	4.7%		
*11	2	4.8%	4	4.7%		
*12	3	7.1%	1.5	3.5%		
*13	2	4.8%	2.5	5.9%		
*15	5	11.9%	2.5	5.9%		
*16	4	9.5%	2	4.7%		

X^2: chi-square, df: degree of freedom

Table (3) shows that there was a statistically significant increased frequencies of HLA-DRB1*03 (*p*-value=0.02), HLA- DRB1*04 (*p*-value=0.029), and HLA-DRB1*07 (*p*-value=0.0007) in patients compared with normal control. Moreover, HLA-DRB1*011 were the most common HLA-DRB1 genotypes identified in allergic asthmatic patients, whereas HLA-DRB1*01, DRB1*02, DRB1*8, DRB1*15, and DRB1*16 were the commonest HLA-DRB1 genotypes identified in the control group but these results were statistically non-significant.

Table 3: Distribution of HLA-DRB1 alleles in patients versus normal control

HLA-DRB1 allele	Patients (n = 42)		Control (n = 42)		OR (95% CI)	p-value
	No.	%	No.	%		
*01	0	0%	4	9.5%	na	na
*02	0	0%	4	9.5%	na	na
***03**	**12**	28.6%	3	7.1%	5.2 (1.346-20.093)	0.02
*04	8	19%	**1**	**2.4%**	**9.647 (1.149-81.015)**	**0.029**
*05	0	0%	3	7.1%	na	na
***07**	**13**	31%	**1**	**2.4%**	**18.379 (2.276-148.418)**	**0.0007**
*08	0	0%	4	9.5%	na	na
*09	0	0%	3	7.1%	na	na
*10	1	2.4%	3	7.1%	0.317 (0.032-3.179)	0.616
*11	6	14.3%	**2**	**4.8%**	**3.333 (0.632-17.574)**	**0.265**
*12	0	0%	3	7.1%	na	na
*13	3	7.1%	2	4.8%	1.538 (0.244-9.714)	1.000
*15	0	0%	5	11.9%	na	na
*16	0	0%	4	9.5%	na	na

OR: Odd ratio, CI: Confidence interval, na: not applicable.

Table (4) shows that the HLA-DRB1*03, DRB1*04 and DRB1*07 alleles were more frequent in Patients with high serum Total IgE (66.7%, 100%, and 92.3% respectively), while DRB1*11 and DRB1*13 were more frequently distributed in patients with low serum Total IgE (66.7%, and 100% respectively). These results were statistically significant (*p*-value=0.0005).

Table 4: The relationship between the most frequent HLA-DRB1 alleles and serum Total IgE in patients

HLA alleles	Serum Total IgE <190 (IU/mL) (n = 15)		Serum Total IgE ≥190 (IU/mL) (n = 30)		Total	X^2 (df)	p-value
	No.	%	No.	%			
*03	4	33.3%	8	66.7%	12	22.096 (5)	0.0005
*04	0	0%	8	100%	8		
*07	1	7.7%	12	92.3%	13		
*10	1	100%	0	0%	1		
*11	4	66.7%	2	33.3%	8		
*13	3	100%	0	0%	3		
Total	15		30				

X^2: chi-square, df: degree of freedom

DISCUSSION

There are several Genome-wide screening researchers have identified several chromosomal areas, where many genes of susceptibility for asthma has been detected such as 2q, 5q, 12q, 3p, and 6p [1]. After description of various molecular and serological techniques for HLA typing, studies was started to investigate the association between asthma and HLA alleles. The results of the present study revealed that, HLA-DRB1*07 allele was observed in 13(31%) of Iraqi adult patients with allergic asthma and 1(2.4%) of healthy control, followed by HLA-DRB1*03 (28.6% vs 7.1%), and HLA-DRB1*04 (19% vs 2.4%). Therefore, these alleles might have an effect on development allergic asthma in Iraqi population. Conversely, HLA-DRB1*02, DRB1*01, DRB1*05, DRB1*08, DRB1*09, DRB1*12, DRB1*15, and DRB1*16 were conspicuously absent in Iraqi adult patients with allergic asthma in comparison to control which it might regarded as protective alleles in our population.

The current results were in consistent with the results of a meta-analysis study that revealed that there is a positive association between HLA-DRB1*03 and asthma, while DRB1*15 was negatively associated with asthma, however, the analysis revealed no relationship was detected in other alleles DRB1 [17]. Nearly, the same finding reported in study HLA-DRB1 alleles in Asian Indian children by Mishra et al. as they find positive association between DRB1*04, DQB1*03, DQB1*02;02 and negative with DRB1*15 [18]. In addition, a study in Korea demonstrated that HLA-DRB1*04 and DRB1*07 has an effect on development of allergic asthma in adults[8] and Kauppinen et al. showed that HLA-DRB1*03 and DRB1*04 were related with asthma in Finland [19].

In contrary, Movahedi et al. [11] found that HLA-DRB1*12 significantly elevated in Iranian patients with asthma, a results somewhat consistence with Croatian population that determined the most common HLA alleles in asthmatic patients were HLA-DRB1*11, HLA-DRB1*01 and HLA-DRB1*13 [20]. Another study in Pakistan concluded that HLA-DRB1*12 may be have a relation with asthma [21]. However, Dzurilla et al., has found non significant relationship between HLA-DRB1 and asthma [22]. Such variation might give a genetic impact on asthma, make the comparisons between studies difficult [17].

In the second section of this study, we studied the association of the prevalent HLA alleles with level of total IgE. We demonstrated that HLA-DRB1*07, DRB1*04 and DRB1*03 were associated with high production level of total IgE while HLA-DRB1*11 and DRB1*13 alleles were associated with low level. These results were in agreement in some aspects and disagreement with others. In the British population, a report showed a statistically significant relationship between DRB1*07 and total IgE levels [23]. In Croatia, the frequency of HLA-DRB1*03 was increased in asthmatic patients with high serum IgE levels [20]. In Basra, 94.1% of asthmatic patients with HLA-DRB1*0101/2/4 had high levels of IgE [24]. In the other hand, a study showed patients with HLA DRB1*07 and DRB1*03 alleles had low level of IgE while those with DRB1*0101 and 14 had high total IgE [11] and in Pakstanian children DRB1*14 associated with high level of IgE [18].

Highest levels of total IgE that related to specific HLA-DR may explain the role of HLA alleles in asthma with up regulation of IgE production [25].

CONCLUSION

HLA-DRB1*03, DRB1*04, and DRB1*07 alleles might be have a role in susceptibility of allergic asthma in Iraqi adult patients. Furthermore, these alleles are associated with low level of total IgE, while HLA-DRB1*11 and DRB1*13 are associated with high serum level of total IgE. Further researches are required to investigate class I HLA and other blamed genes like TNF-α gene.

Declaration of Interest: All authors have no conflict of interest.

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Ethical Clearance: After the approval of protocol by the Ethical Review Board for human studies, faculty of nursing/university of kufa / Iraq (No. 10-04/01/2015) and before enrollment, all subjects gave their written informed consent.

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The Role of Serum and Follicular IL-1Beta in Predicting the ICSI Outcome in Infertile Women

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ABSTRACT

Background: Cytokines have an important and controversial role during ovarian folliculogenesis for the development of fertilizable and mature oocytes. Many cytokines are essential for reproductive processes and their role in the female reproductive system function widely investigated during controlled ovarian stimulation as part of IVF attempts.

Objective: to evaluate the effect of serum and follicular fluid IL-1beta on ICSI outcome.

Material and Method: the study included 45 infertile, COH with short protocol done to them. E2, FSH, LH on the second day of cycle and E2 at the day of HCG injection measured. Serum and follicular IL-1beta measured at the day of oocyte retrieval.

Results: serum IL-1beta negatively correlated with the fertilisation rate, cleavage rate, and no. of embryo transferred (P-value < 0.05). There is no significant correlation between follicular IL-1beta and ICSI outcome.

Conclusion: serum IL-1beta can serve as a negative predictor for ICSI outcome.

Keywords: *IL-1beta, IVF, ICSI, controlled ovarian stimulation , COH*

INTRODUCTION

The infertility is the pathology in the system of reproduction cause unsuccessful clinical childbearing following a year or more of regular unprotected intercourse [1, 2]. Primary subfertility is the failure to become pregnant after one year of steady, regular coitus without using contraception. Secondary subfertility: failure to get pregnant after one year of continuously regular intercourse without contraceptive use with history of previous delivery or abortion [3].

In the ovary, the regulation of physiological mechanism is complicated, in which the gonadotropin, steroid hormones, growth factors, and cytokines have a role. There are the immune cells in the ovary, which trigger the immune-endocrine interaction that modulates the function of the ovary by the production of regulatory factors particularly the cytokines [4].

The interleukin-1 system involves the following: IL-1α and IL-1β, which are agonists, IL-1RA, which is an antagonist and two receptors: interleukin-1 receptor type I and interleukin-1 receptor type II [5]. The interleukin-1 family associated with implantation. In human type, I interleukin-1 receptor are found uterine endometrium from the 23rd day of the monthly cycle [6-8]. After ovulation IL-1 increase the luteal function of the granulosa cells by paracrine manner, which leads to the stopping of the dissolving of proteins and collagenous fibre in the ovary [9-11].

Assisted reproductive techniques are that group of skills, which involve systemized program to achieve pregnancy by using infertility medications, IUI, IVF, ICSI and surrogacy. ICSI (Intra-cytoplasmic sperm

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injection) means the injection of single alive sperm directly to the ooplasm of the already prepared mature oocyte [12, 13]. The main indications of ICSI are a severe male factor, tubal blockage, endometriosis, poor ovarian reserve, and finally unexplained infertility [14]. In this study, we aim to evaluate the effect of IL-1beta role on ICSI outcome

MATERIAL AND METHOD

We did a prospective cohort study in the fertility centre of Al-Sader medical city, in Al-Najaf governorate. Our study achieved from October 2017 to June 2018. 90 samples of follicular fluid and serum were taken from the 45 participating couples who were a candidate for ICSI/ET in the fertility centre due to different causes; (anovulation cause n=14, tubal factor n=4, male factor infertility n=22, unexplained infertility n=5). We clarified the procedure for the patients and took an informed written consent from them. Patient's information in the form of age, BMI, cause and type of infertility, parity, and abortion if present. The medical, surgical, and gynaecological history of the women all taken considerably.

The inclusion criteria involved: regular cycle, BMI 19-35 kg/m^2, women' age (18-40) years, cycles that ended with ova pick up and embryos transfer, no uterine pathology, and seminal fluid analysis revealed motile sperm with a concentration of >5 million/ml. The exclusion criteria involved: FSH >10 IU/l, antral follicle count (AFC) < 5, poor responders and severe male factor.

ICSI was done to the suitable retrieved oocytes. After ICSI the oocytes would be examined for fertilisation success after 16-18 hr that is confirmed by the presence of 2PN. On the second-day post-injection, the best resulting embryos would be transferred, maximally three embryos.

Of the selected patients, we took the only cycle that reached the ICSI stage. The oocytes number and quality together with the ICSI outcome in the form of the number of 2PN, fertilisation rate, cleavage rate, the total number of embryos with their grading and staging, the number of transferred embryos, pregnancy rate all were recorded and statically sorted.

Sample collection and analysis:

Follicular fluid (FF): Follicular fluid collected from mature ovarian follicles at the time of oocytes pick up, by the ultrasound-guided needle. The sample centrifuged and the supernatant was stored at -20 ºC.

Serum sample: Blood sample was drowned at the day of oocytes pick up. Left standing for at least 15 mint then centrifuged and stored at -20 ºC.

Commercial available ELISA kits (Elabscience Biotechnology Inc.) used to determine the levels of IL-1β in the follicular fluid and serum quantitatively.

STATISTICAL ANALYSIS

Analysis of our data done using the software program: SPSS 21 (Statistical Package for Social Sciences) and Microsoft Office Excel 2016. Numeric data were represented by the mean ± standard error, while the categorical data represented by numbers and percentages. Independent t-test was used to study the difference between two. For the study of the association between categorical data, the Chi-Square test used. The correlation between variables studied by Spearman correlation test. The significant level considered when the P value < 0.05.

RESULTS

The major Demographic data of the studied patients:

Table 1: The demographic and clinical data of the studied patients (45 couples)

Variables		Values
Age (years), mean ± SE		29.98 ± 0.85
BMI (kg/m^2), mean ± SE		28.53 ± 0.48
Duration of subfertility (years), mean ± SE		7.51 ± 0.60
Type of subfertility	Primary, n (%)	34 (75.6%)
	Secondary, n (%)	11 (24.4%)

Table 1 Conted…

Etiology of subfertility	Male factor, n (%)	22 (48.9 %)
	Unexplained, n (%)	5 (11.1%)
	Anovulatory, n (%)	14 (31.1%)
	Tubal, n (%)	4 (8.9%)
Hormonal assay	Basal E2 (pg/ml), mean ± SE	34.22 ± 2.89
	E2 at the day of hCG, mean ± SE	2045.60 ± 157.20
	Basal FSH (mlu/ml), mean ± SE	5.80 ± 0.44
	Basal LH (mlu/ml), mean ± SE	4.00 ± 0.35
Follicular fluid IL-1B (pg/ml), mean ± SE		2.25 ± 0.42
Serum IL-1B (pg/ml), mean ± SE		6.82 ± 2.23

Regarding serum IL-1β there were significant negative correlations between the IL-1 levels and fertilisation rate, cleavage rate, and some embryones transferred, while there were no significant correlations with other parameters, as illustrated in table 2.

Table 2: Correlation between serum IL-1β and ICSI outcome

ICSI outcome	Correlation coefficient	P-value
Basal E2 pg/ml	-0.176	0.24
Basal LH mlu/ml	0.057	0.71
Basal FSH mlu/ml	0.330	**0.02**
E2 at the day of hCG injection	-0.094	0.53
No. of follicles	-0.129	0.39
No. of retrieved oocytes	-0.056	0.71
No. of M II	-0.055	0.72
No. of 2PN	-0.094	0.54
Fertilization rate	-0.497	**0.001**
No. of embryos	-0.098	0.52
Cleavage rate	-0.725	**<0.001**
Grade I embryos	-0.115	0.45
Grade II embryo	0.027	0.85
No. of transferred embryos	-0.462	**0.001**

Regarding follicular fluid IL-1β, there was no any significant correlation between it and any parameters of embryological outcomes.

Table 3: Correlation between follicular fluid IL-1β and ICSI outcome

Variables	Correlation coefficient	P-value
Basal E2 pg/ml	0.06	0.69
Basal LH mlu/ml	-0.005	0.97

Table 3 Conted…

Basal FSH mlu/ml	-0.061	0.69
E2 at the day of hCG injection	-0.074	0.62
No. of follicles	-0.20	0.17
No. of retrieved oocytes	-0.224	0.10
No. of M II	-0.228	0.13
No. of 2PN	-0.214	0.150
Fertilization rate	0.160	0.29
No. of embryos	-0.211	0.16
Cleavage rate	0.099	0.51
Grade I embryos	-0.061	0.69
Grade II embryo	-0.178	0.24
No. of transferred embryos	-0.147	0.33

Table 4 below compared between pregnant and non-pregnant women about the concentration of IL-1β in the serum and follicular fluid at the day of oocytes retrieval. Data expressed in mean ± SE using independent sample t-test. Despite the higher concentration of serum IL-1beta in non-pregnant as compared with pregnant women but this difference was not statically significant (P value >0.05).

Table 4: comparison of serum and follicular fluid IL-1β and pregnancy

IL-1β	Pregnant (n = 17)	Non-pregnant (n = 28)	P value
Serum IL-1β	3.53 ± 1.28	8.79 ± 3.51	0.26
Follicular fluid IL-1β	2.24 ± 0.58	2.32 ± 0.59	0.92

DISCUSSION

We found a negative correlation between the serum IL-1 beta and fertilisation rate, cleavage rate, and no. of transferred embryos on one hand and positive correlation with serum level o,f basal FSH on the other hand. FSH is a negative predictor of pregnancy as high basal FSH level indicated poor oocytes quality and diminished ovarian reserve [15]. Several types of research reported that women with a high level of FSH regardless the age will have a poor response to the controlled ovarian stimulation cycles and poor ICSI outcome and lower pregnancy rate [16-19]. This can consequently affect the pregnancy rate. This effect is understood when we know that the non-pregnant patients in our study have a higher serum level of IL-1beta and serum FSH. Serum IL-1beta was lower in pregnant than non-pregnant, but no significant difference found, both Sequeira et al. [20] and Nikolettos et al. [21] agree with this finding, while Karagouni et al. [22], Rehman et al. [23] disagreed with us and mentioned that the serum level of IL-1beta was significantly higher in pregnant than non-pregnant group of patients. Further investigations are required to explain this negative impact of IL-1beta on ICSI outcome.

Simon et al. [6] thought that steroid hormones regulate the IL-1b secretion. In our study, there is a negative time but not a significant correlation between peak serum E2 and serum IL-1 beta. Simon et al. [6] Bonetti et al. [24] agree with our finding. Nikolettos et al. [21] reported a significant negative association between the serum IL-1beta and the peak E2 level, no. of retrieved oocytes, and some 2PN.

On comparing the follicular fluid IL-1beta in pregnant and non-pregnant women, follicular concentration is higher in non-pregnant than pregnant patients. Still, no significant difference found, and the follicular fluid IL-1beta does not associate with any of the hormones or the ICSI outcome. This may be due to we took a pooled sample of follicular fluid instead of studying the follicular fluid of each follicle individually. Nikolettos et al. [21] and Asimakopoulos et al. [25] mention the same results. Mendoza et al. [26] found that treatment cycle that leads to pregnancy have significantly lower follicular fluid IL-1beta than those failed to get pregnancy, and the follicular IL-1beta correlate positively with the cleavage rate. Mendoza et al. [26] found a positive correlation of follicular IL-1 beta with fertilisation rate and cleavage rate, but no association with embryo quality. Zollner et al. [27] reported a good fertilisation results associated with higher level of follicular fluid IL-1beta, but no correlation found between embryo quality or pregnancy outcome. Barak et al. [28] and Bili et al. [29] mentioned that no correlation found between follicular IL-1beta and oocytes fertilisation rate or the embryo quality same as our finding said. Bedaiwy M et al. [30] found that the concentration of follicular fluid IL-1beta between pregnant and non-pregnant is not significantly different. Karagouni et al. [22] who studied follicular fluid of individual follicles, found that follicular fluid IL-1 beta is significantly higher in cycles end with implantation than cycles fail to implant.

CONCLUSION

Serum IL-1beta can serve as a negative predictor for ICSI outcome.

Conflict of Interest: None

Ethical Clearance: Informed written consent was obtained from all the participants in the study, and the study and all its procedure were done in accordance with the Helsinki Declaration of 1975, as revised in 2000. Approved by the University of Kufa, department of urology and infertility

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Factors Related to the Satisfaction of BPJS Participants on Outpatient Services in the Regional General Hospital Dr. H. Moch Ansari Saleh Banjarmasin

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ABSTRACT

The hospital is a part of the Social Security Administering Agency (BPJS), this program can help to create the highest level of health for the community. The quality of a health service is found from patient satisfaction measurement. The purpose of this study was to determine the factors related to the satisfaction of BPJS participants on outpatient services. This study used an observational analytic method with a cross sectional design conducted at The Regional General Hospital Dr. H. Moch Ansari Saleh Banjarmasin. The population of this study is all patients who are registered as BPJS participants and utilize the outpatient services of The Regional General Hospital Dr. H. Moch Ansari Saleh. Sampling is based on purposive sampling that has been determined based on inclusion and exclusion criteria with a sample of 100 respondents. Data were analyzed based on chi-square and logistic regression test. Chi-Square test showed no relationship ($p > 0.05$) between age, education, occupation, membership status with patient satisfaction, while there was a relationship ($p < 0.05$) between service procedures, human resource services, drug services, facility services with satisfaction of BPJS participants. Logistic regression test shows that the biggest variable related to patient satisfaction is service procedure (registration) ($p < 0.05$).

Keywords: *Patient Satisfaction, health services. BPJS Participants, Outpatient Installation*

INTRODUCTION

One of the government's efforts in realizing the highest health degree and health development goals towards a healthy Indonesia then the government sets a National Health Insurance (JKN). Since January 1, 2014, the Ministry of Health Republic of Indonesia has launched BPJS Kesehatan whose participants started from Askes participants, Jamkesmas, Jamsostek, and member health insurance on TNI/Polri. The government targets in 2019 is Universal Coverage that membership of the Health Care Guarantee which means that all residents in Indonesia by 2019 must have a health insurance.[1]

Hospital is a health service institution that organizes services health individual plenary who provides inpatient, outpatient, and emergency services. The hospital is also a part from program implementers of National Health Insurance (JKN).[2] Customer satisfaction is the level of state that someone feels which is the result of comparing appearance or outcome perceived product in relation to one's expectations. Patients will feel satisfied when the quality of service health obtained is equal to or exceeds what becomes expectations and vice versa, dissatisfaction will arise or feeling disappointed the patient will occur if the health service performance obtained is not in accordance with his expectations.

The Regional General Hospital Dr. H. Moch Ansari Saleh is one reference for advanced health facilities chosen by BPJS Participants in South Kalimantan,

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especially the city of Banjarmasin and has outpatient services which continue to increase every year. Based on the independent survey satisfaction data obtained from the hospital in 2016 - 2017 there were still patients who stated that they were not satisfied with the overall health services provided, but there were also those who expressed their satisfaction with the service. The purpose of this study ts to determine factors related to satisfaction of BPJS participants in outpatient service of Hospital Dr. H. Moch Ansari Saleh Banjarmasin.

MATERIALS AND METHOD

This type of research is an observational analytic study with cross sectional approach. Purposive sampling method with a sample size of 100 respondents. Data collection used a questionnaire with bivariate, univariate and multivariate analysis. The population in this study were all patients registered as BPJS participants and using outpatient services at the Regional General Hospital Dr. H. Moch Ansari Saleh.

FINDINGS

Research began in March 2018 in the Outpatient Service of the Regional General Hospital Dr. H. Moch Ansari Saleh in the area of Banjarmasin City.

Univariate Analysis: The characteristic of respondents consisting of age, education, occupation, and membership status showed patients in the category of young adults (17-45 years) more than 80%, the majority of respondents were highly educated (high school-higher education) 95%, the majority of respondents is working at 85% and the majority of the membership status of respondents is Non-PBI (non-contribution recipients) of 89%. In terms of the assessment of patients who judge well on the overall service, namely on the service procedure (registration/ administration) of 85% while the lowest poor assessment is on drug/pharmacy services by 27%.

Bivariate Analysis: Bivariate analysis aims to see the relationship of independent variables, namely the characteristic of respondents consisting of age, education, employment, membership status, service procedures, HR services, pharmacy services, facility services with dependent variables, namely BPJS participant satisfaction, show results there is no relationship indicated ($p>0.05$) between age, education, occupation, membership status towards patient satisfaction, while there is a relationship indicated ($p <0.05$) between service procedures, HR services, pharmacy services, and facility services to the satisfaction of BPJS participants in the Outpatient Service of Hospital Dr. H. Moch Ansari Saleh Banjarmasin.

Multivariate Analysis: The statistic results from this study of all independent variables only, there are four variables that can be included in the multivariate model known only significant values p-value <0.25 were eligible for inclusion. The service procedure variable shows the most significant number among the variables included in the multivariate model with p-value 0.003, this number is less than 0.25, the service procedure variable can be included in the multivariate model. This is also reinforced by the beta coefficient (β) of 2.691. HR service variables (health workers) show a significant number of p-value 0.005, this number is less than 0.25, the variable HR services (health workers) can be included in the multivariate model. This is also reinforced by the beta coefficient (β) of 2.506. The pharmacy service variable shows a significant number of p-value 0.017, this number is less than 0.25, so the pharmacy service variable can be included in the multivariate model. This is also reinforced by the beta coefficient (β) of 2.128. Facility service variable shows a significant number of p-value 0.038, this number is less than 0.25, the facility service variable can be included in the multivariate model. This is also confirmed bybeta (β) efficiency coefficient of 1.809.

Table 1: Crosstab Bivariate Analysis of All Independent Variables

Independent Variable	p- *value*	OR	95% CI	Conclusion
Age	0.303	2.091	0.633-6.911	No relationship
Level of Education	1.000	1.333	0.139-12.773	No relationship
Work	0.253	2.212	0.605-8.093	No relationship
Membership Status	0.376	2.192	0.514-9.360	No relationship
Service Procedure	0.000	26.333	6.779-102.287	There is a relationship
HR Services	0.000	15.833	4.550-55.101	There is a relationship
Pharmacy Services	0.001	6.569	2.093-20.611	There is a relationship
Amenities	0.000	11.000	3.304-36.625	There is a relationship

Table 2: Logistic Regression Test Results of Service Procedures, HR Services, Pharmacy Services, and Facilities Against BPJS Participant Satisfaction Variables

Variable	β	p- value	OR	95% CI
Service Procedures	2.691	0.003	14.753	2.478-87.828
HR Services	2.506	0.005	12.258	2.111-71.186
Pharmacy Services	2.128	0.017	8.395	1.458-48.332
Amenities	1.809	0.038	6.104	1.101-33.848
Constanta	-14.084			

DISCUSSION

Service Procedure: The results showed that patient satisfaction related to service procedures was 93%. Based on the Chi-Square test it is known that there is a relationship between service procedures and patient satisfaction with p=0.000 (<0.05). A good assessment of service procedures (registration) in outpatient installations will lead to satisfaction, trust, and expectations in patients, then determine the attitudes and subsequent behavior of hospital services. Satisfaction of BPJS participant that accumulates continuously will lead to a positive attitude. Service quality that is considered good and reliable makes service recipients trust and has greater expectations for these service providers.[3]

HR services (health workers): The results of the study show that satisfaction is related to HR services at 93%. Based on the Chi-Square test it is known that there is a relationship between HR services and patient satisfaction with p=0.000 (<0.05). The knowledge, beliefs and politeness of service providers to generate trust and confidence in the form of knowledge and abilities of officers in work, as well as guarantee of the safety of services and trust in services will have an impact on the level of patient satisfaction.

Pharmacy Services: The results showed that patient satisfaction was related to pharmacy services by 92 %. Based on the Chi-Square test it is known that there is a relationship between HR services and patient satisfaction with p=0.001 (<0.05). A good assessment of drug services (pharmacies) in hospital outpatient installations will lead to satisfaction, trust, and hope in patients for example the availability of affordable drugs for patients so as not to burden patients in drug fulfillment and ultimately determine attitudes and behavior towards hospital services. Satisfaction of BPJS participant that accumulates continuously will lead to a positive attitude.

Facility Services: The results of the study show that the satisfaction of the customer is related to the service facilities of 93 %. Based on the Chi-Square test it is known that there is a relationship between service procedures and patient satisfaction with p=0.000 (<0.05). Based on Republic of Indonesia Law No. 44 article 11 Year (2009) regarding facilities and infrastructure (facilities) hospitals must meet hospital service standards, safety and health, must be maintained and function properly.[2]

Age: The results showed that patient satisfaction was not related to age, because the two categories tend to have presentations that are not much different, namely greater satisfaction. Based on the Chi-Square test , it was found that there was no relationship between age and patient satisfaction (p = 0.303> 0.05). Every human being wants to feel owned and possessed, love and affection and self-esteem, so that between young and old people want good interpersonal relationships.[4]

Education: The results of the study show that patient satisfaction is not related to education because both categories tend to have presentations that are not much different, that is more satisfied. Based on the Chi-Square test it is known that there is no relationship between education with the patient's satisfaction with (p = 1,000 > 0.05).

There is no relationship between the level of education with patient satisfaction because that feeling of satisfaction in each individual is not the same, but the expression of satisfaction in a group of individuals can occur almost the same because of the influence of the environment and society of certain groups.[5] Like the thing that was revealed that the same as the quality of service dimensions of patient satisfaction is very varied.[6]

Work: The results showed that patient satisfaction was not related to work , because both categories had presentations that were not much different, namely larger satisfied. Based on the Chi-Square test it is known that there is norelationship between jobs with the patient's satisfaction with (p = 0.253 > 0.05).

A customer would expect that he should also be served well if other customers are well served by service providers. This is where service providers need responsiveness to treat and pamper customers in real terms, customers need to be served and valued without differentiating socioeconomic status or employment.[3]

Membership Status: The results showed that patient satisfaction was not related to membership status, because the two categories of people tend to have presentations that are not much different, namely greater satisfaction. Based on the Chi-Square test it is known that there is no relationship between membership status and patient satisfaction with ($p = 0.376 > 0.05$).

CONCLUSION

1. There is no relationship between age, education, occupation, and membership status to the satisfaction of BPJS participants in the outpatient service of Hospital Dr. H. Moch Ansari Saleh.
2. There is a relationship between service procedures, HR services (health workers), pharmacy services, facility services to the satisfaction of BPJS participants in the outpatient service of Hospital Dr. H. Moch Ansari Saleh

Ethical Clearance: Before conducting the data retrieval, the researchers conducted a decent test of ethics conducted at the Faculty of Medicine, Lambung Mangkurat University to determine that this study has met the feasibility. Information on an ethical test that the study is eligible to continue. The feasibility of the research was conducted in an effort to protect the human rights and security of research subjects.

Source of Funding: This study was done by self-funding from the authors.

Conflict of Interest: The authors declare that they have no conflict interests.

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Increasing of Nutrition Status of Pregnant Women after Supplementation of Moringa Leaf Extract (*Moringa Oliefera*) in the Coastal Area of Makassar, Indonesia

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ABSTRACT

Pregnant women are very susceptible to malnutrition, they risk for giving birth to low birth weight babies. Moringa leaves contain fairly complete nutrients such as protein, vitamins and minerals thatare quite high. This study used a Randomized Double Blind design, Pretest-PostestControlled using a sample of non-anemia pregnant women which divided into two groups, namely the intervention group given Moringa leaf extract and the control group given iron folic supplements. Nutritional status of pregnant women is assessed using a measure of Upper Arm Circumference (MUAC) weight gain during pregnancy. The average size of MUAC of pregnant women in the intervention group was 25.72±3.30 cm increasing to 26.42 + 3.24 cm (p = 0.006). The average MUAC in the control group was 25.13±3.03 cm increased to 26.08±3.27 cm (p = 0.000). There was no difference in the increase in MUAC size between the two study groups. The weight of pregnant women in the intervention group increased by 5.07 kg (8.91%) while the control group increased by 6.09 kg (10.85%) during the three months of intervention. Supplementation of Moringa leaf extract can improve maternal nutritional status, especially in the size of the upper arm circumference. Increased nutritional status in pregnant women who consume Moringa leaf extract is no different from pregnant women who take iron folic supplements.

Keywords: *Moringa leaves, nutritional status, pregnant women*

INTRODUCTION

Nutritional status of pregnant women affects maternal nutritional status and fetal growth. Malnutrition in pregnant women causes a decrease in blood flow from the placenta to the fetus thereby inhibiting fetal growth [(1)] Maternal nutritional status before pregnancy or during pregnancy greatly determines *outcomes* pregnancy. Pregnant women who have normal nutritional status and who gain weight during pregnancy are in accordance with the standard, the average birth weight of the baby is higher than those of mothers who are underweight [(2)] In contrast, women with BMI <18.5 kg / m^2 (underweight) tend to give birth to babies with a birth weight lower than women with normal BMI (> 18.5 kg / m^2). Nutritional deficiency experienced by the mother, especially during the first trimester, causes obstruction of placental formation so that the size of the placenta is not maximal. Nutritional supply to the fetus from KEK mothers cannot meet the need for fetal formation and growth resulting in IUGR or fetal growth retardation [(3)] Pregnant women who experience malnutrition have a risk of experiencing complications at the time of delivery by 2.63 times compared to mothers with normal nutritional status [(4)]

Therefore, to improve the nutritional status of pregnant women, several activities have been carried out through nutritional programs such as supplementation of blood booster tablets and supplementary feeding. However, these interventions haven't fully been able to overcome nutritional problems, especially in pregnant

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women. This is due to a lack of target compliance with the intervention provided and the lack of sustainability of the program. The approach to prevention of nutritional problems in pregnant women should increase the utilization of potential local resources, so that they are easily accessible to the community and sustainable. The potential of local foodstuffs that are rich in nutrients and widely available but not maximally utilized are (*Moringa Oleifera) leaves*.

Moringa leaves contain a number of essential nutrients, especially proteins that are high enough with a protein composition of 40% and have the highest protein ratio [5] Moringa leaves contain 10 types of essential amino acids (arginine, histidine, isoleucine, leucine, lysine, methionine, phenillanine, trionin, tryptophan and valine which are indispensable to support growth [6] Moringa plants are known for magic trees, their leaves contain quite high protein, reaching three times the protein of eggs and two times the protein of milk.The interventions flour Moringa leaves in the diet of children under five who was suffer from malnutrition in Senegal Africa can improve the nutritional status of individuals significantly [7] Likewise, the results of research in children under five in Burkina Faso using that intervention of Moringa leaves can increase the nutrition status on the subject of the target toddler. The provision of Moringa leaf flour in the diet of toddlers can increase the weight of children who are malnourished [8]

Moringa plants are easy to grow and cultivated in areas with tropical climates such as the province of South Sulawesi Indonesia. Moringa leaves have been used more as animal feed and for vegetables in a small proportion of the population, so it needs to be developed as an alternative to improving the nutritional status of the community.

This study aims to assess the effect of giving Moringa leaf extract to the nutritional status of pregnant women living around the coastal area of Makassar city.

RESEARCH METHOD

1. **Research Design:** This research was carried out through an experimental intervention in the form of Moringa extract in pregnant women using the *Randomized Double Blind Controlled design.* Pregnant women who meet the inclusion criteria are divided into two groups at random (*simple random sampling*). The*first*group received intervention from Moringa leaf extract (2 capsules x 800 mg) and the *second* group received iron folic supplements (60 mg Fe and 0.25 mg folic). Interventions in both groups were carried out every day (2 capsules every day) for 3 (three) months. The Capsules that have Moringa leaf extract and iron folic use the same color and size. The study sample was second trimester pregnant women. Sample selection is done using the following inclusion criteria, 5-6 months of gestational age, Hb level ≥ 10.5 g / dL (not anemia), and not smoking. Samples totaled 70 people, each of 35 people per group.
2. **Data collection:** Data collected includes general data, nutrient intake and nutritional status of pregnant women. Nutritional status of pregnant women is determined based on weight gain and Upper Arm Circumference (MUAC). Mother's body weight was measured 4 times before intervention, first month, second month and third month intervention. MUAC is measured at the beginning and end of the intervention. The Body weight measurement using "Seca" such a brand scales. The measurement of MUAC using a MUAC tape. Maternal nutrient intake during pregnancy is collected by 24-hour recall method.
3. **Data Analysis:** Data that has been collected is included in the SPSS for Windows program for statistical analysis. Data analysis was carried out in univariate and bivariate ways. Data analysis was carried out by comparing the mean BBL between treatment groups using two free samples t test.

RESULTS

Nutrient intake data in table 1 shows that energy and protein intake in both the intervention group and the control group had fulfilled the Nutrition Adequacy Rate (RDA) which recommended for pregnant women (> 80%).

Table 1: Intake of nutrients (before) intervention

Nutrient	Intake of nutrients (x ± SD)		Sig [b]	% RDA	
	Intervention	Control		Intervention	Control
Energy (kcal)	2096 ± 543	2077 ± 371	0.864	83.5	82.7
Protein (gram)	68 ± 19	71 ± 20	0.434	88.3	92.2
Vitamin A (ug)	1075 ± 690	1315 ± 1570	0.409	125.6	153.6
Vitamin D (ug)	10 ± 6.7	11 ± 8.2	0.450	66.7	73.3
Vitamin E (uq)	6.4 ± 2.7	6.0 ± 2.8	0.576	42.7	40
Vitamin B1 (mg)	0.64 ± 0.21	0.65 ± 0.15	0.860	45.7	46.4
Vitamin B2 (mg)	0.92 ± 0.21	0.88 ± 0.40	0.674	54.1	51.8
Vitamin B6 (mg)	1.23 ± 0.49	1.25 ± 0.42	0.854	76.9	78.1
Folic Acid (ug)	154.6 ± 71.0	173.1 ± 82.2	0.318	25.8	28.9
Vitamin B12 (ug)	3.23 ± 1.58	4.41 ± 7.23	0.393	124.2	169.6
Vitamin C (mg)	46.84±34.25	42.14±31.56	0.551	57.5	49.6
Calcium (mg)	385.1± 1	383.7 ± 275.5	0.983	30.1	30.0
Phosphor (mg)	948.7 ± 287	1032 ± 279	0.219	130.1	141.6
Iron (mg)	7.1 ± 2.9	8.7 ± 3.95	0.57	20.3	24.9
Zinc (mg)	6.75 ± 2.26	8.69 ± 3.96	0.185	64.5	83.1

[b] T Test Independent

Likewise, the intake of several micronutrients has met the RDA in both research groups such as vitamin A, vitamin B12 and phosphor. However, intake of vitamin C, vitamin E, iron and zinc in both groups was still very low. The level of intake of these four nutrients is still below the minimum adequacy of less than 70% of RDA.

Table 2: Changes in MUAC size of pregnant women between before and after supplementation

Group	Before (cm)	After (cm)	Sig [c]	Changes in	Sig [d]
Intervention	25.72 ± 3.30	26.42 ± 3.24	0,006	0,70 ± 1.41	0,418
Control	25.13 ± 3.03	26.08 ± 3.27	0,000	0,89 ± 1.19	

cPaired t-Test dMann-U Whitney

Table 2 shows that there was a significant change in the Upper Arm Circumference (MUAC) of pregnant women in both groups ($p < 0.05$), both in the intervention group and in the control group. Changes in LLA size were 0.19 cm higher in the control group, but the increase in LLA size in the two groups was not significantly different ($p > 0.05$).

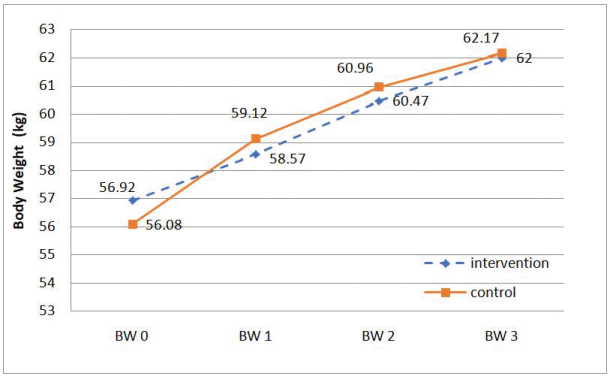

Figure 1: Weight gain of pregnant women during supplementation

Figure 1 shows that from the beginning of the study until the end of the study (3rd month) there was a consistent increase in body weight each month in both groups. However, the increase in body weight in the control group was greater, especially after one month of supplementation. The weight of pregnant women in the intervention group increased by 5.07 kg (8.91%) while the control group increased by 6.09 kg (10.85%) during the three months of intervention.

DISCUSSION

The weight gain of pregnant woman(second and third trimester) during the intervention only reached 5.08 kg in the intervention group and 6.09 kg in the control group. According to the *Institute of Medicine* (IOM) weight gain of pregnant women is based on the state of nutritional status (BMI) before pregnancy. The weight

gain for thin pregnant women should be higher than fat pregnant women.*TheInstitute of Medicine (IOM)* 1990 of American, advocated weight gain during pregnancy around 11.36-15.9 kg. Weight gain in pregnant women with normal BMI in Trimester II and III is around 0.4 kg per week [(9)(10)] This means that the average increase in body weight of pregnant women in the two study groups still relatively normal. When viewed per week, the average increase in body weight of pregnant women in the second and third trimesters in this study reached 0.42 kg in the intervention group and 0.51 kg in the control group.

The size of MUAC in both of study groups hada good change. The addition of MUAC size to pregnant women who consumed Moringa leaf extract as much as 0.78 cm and pregnant women who received iron folic supplementation were 0.89 cm. The results of statistical analysis showed that there was a significant correlation between the size of MUAC in pregnant women during the intervention both in the group that consumed Moringa leaf extract and pregnant women who consumed iron folic supplements. These results indicate that the administration of Moringa leaf extract can improve the nutritional status of pregnant women, especially in the last three months of pregnancy.

Maternal nutritional status at conception and during pregnancy can affect the growth of the fetus being conceived. In addition, nutrition for pregnant women determines the weight of babies born. The results of the study in West Java showed that pregnant women with chronic energy deficiency (KEK) with a MUAC limit of 23 cm had a 7.9 times risk of giving birth to babies with low birth weight [(11)] The study *cross sectional* research in Daya Hospital of Makassar showed a strong correlation (r) = 0.611 between maternal nutritional status by size Upper Arm Circumference (MUAC) with birth weight infants [(12)] The weight gain during low pregnancy risks giving birth to low birth weight babies (RR = 2.04). The risk of giving birth to *macrosomia* babies (weight ≥4000 grams) is higher by increasing BMI before pregnancy and weight gain during pregnancy [(13)]

The results of statistical analysis showed that there were no differences in body weight gain between the two groups of pregnant women during the intervention (p = 0.160). Likewise, the MUAC indicator showed that there was no difference in the increase in MUAC during the intervention in the two study groups. That is, the intervention in the form of giving Moringa leaf extract has the same effect as iron folic supplementation in improving the nutritional status of pregnant women. Moringa leaves have a high composition of micro and macro nutrients. Previous publications have reported that moringa leaves have enough iron to prevent anemia and have the ability equivalent to iron folic supplements can prevent anemia [(14)]

Moringa leaves contain nutrients that are important for fetal growth and nutritional status of pregnant women. Moringa leaves contain Vitamin A, vitamin C and vitamin E as very strong antioxidants [(15)] Antioxidants in pregnant women are needed to prevent narrowing of the placental vessels that occur due to increased oxidative reactions during pregnancy, especially in the last trimester [(16)] This means that the intervention of Moringa leaf extract can facilitate the transportation of oxygen and nutrients from mother to fetus so as to increase fetal growth which is reflected in the nutritional status of the mother.

Moringa leaves contain a number of complete essential amino acids. Amino acids can increases metabolic transformation efficiency to improve muscle growth and quality [(17)] The derivatives of protein in the form of amino acids is a nutrient that has a very important role in tissue formation and fetal growth, it will affect changes in body weight and nutritional status during pregnancy. Protein and calcium supplementation and other micronutrients through the intervention of Moringa leaf extract capsules are important for the needs of nutrients during pregnancy, so that it can support fetal growth and maternal nutritional status during pregnancy. The results of this study are in line with the findings of a study of interventions carried out on humans both of children under five and pregnant women showed that giving flour or Moringa leaf extract can improve the nutritional status of the target. Likewise, research conducted on pregnant women informal workers showed that the administration of Moringa leaf extract can increase pregnant women MUAC [(18)]

CONCLUSION

Supplementation of Moringa leaf extract can improve maternal nutritional status, especially in the size of the upper arm circumference. Increased nutritional status in pregnant women who consume Moringa leaf extract is no different from Amil's mother who took iron folic supplements.

Conflict of Interest: In this study there is no conflict of interest, because the sample used has no kinship to the researcher

Source of Funding: The source of funding comes from the personal finance of the researcher which allocated for the researcher's final assignment

Ethical Clearance: Research ethics was obtained after the researcher made a presentation in front of the ethics Commission for Health Research Medical Faculty of Hasanuddin University

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Assessment of the Effect of Diyala River upon the Quality of Tigris River in Baghdad Province by National Sanitation Water-Quality Index (NFS-WQI)

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ABSTRACT

Background: This study was conducted to assess the effects of Diyala River on physical-chemical characteristics and total account of coliform bacteria of Tigris River in Baghdad city by (NFS-WQI).

Aim: To assess the effect of the Diyala River upon the water quality of Tigris River of Baghdad.

Materials and Method: Water samples were taken bimonthly at four stations,first on as control station and second one at the point in which Diyala River joint with Tigris River and nine parameters (*viz.* water, temperature, turbidity, dissolved oxygen, BOD,pH, TS, NO_3,total PO_4 and total coliform bacteria) were analyzed. According to NSF-WQI,

Results: Tigris river had fluctuated between medium at station 1 and bad water quality at stations 2, 3 and the refluxes to medium characteristics at station4 after 5.5 Km from a jointed point between Diyala and Tigris river as well as increasing in turbidity,NO_3,PO_4 concentration,BOD and decreasing of DO.

Conclusion: The model gave a good idea to assessing the water quality of Tigris River at Baghdad region under the effect of dryness and large quantities of pollutants on it.

Keywords: *NSF-WQI, Tigris River, Diyala River, Water quality.*

INTRODUCTION

Globally, river pollution is a problem which impacts on chemical quality destroy the community and delicate food chain that has several dimensions in a produce imbalance in aquatic ecosystem[1,2]. Water quality in many large rivers has deteriorated significantly worldwide due to anthropogenic activities in last 2-3 decades[3] by carry on disposal municipal waste water, industrial waste water, solid waste, runoff water from agricultural field and road[4].

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Baghdad is a largest city (capital of Iraq) with population estimated by 7.5 millions has two rivers Tigris and Diyala river which unfortunately suffered from different change in physiochemical properties depending on discharge of contaminated water from Al-Rustumia Sewage Plant (RSP) that thrown directly into river without pretreatment[5] on other hand approximately 30% of Baghdad population is not connect to sewage collecting and treatment system, about 300,000 lit of raw sewage escape into Tigris river daily.

Evaluation of water quality has become the critical object in the last period, especially Water Quality Index (WQI) as arithmetic tool that give a general idea and data necessary to determined general health. There are numerous WQIs which had been sophisticated and established by researches worldwide[6] and the national sanitation foundations, water quality index (NFS-WQI) is one of them, which is a scale with 100 parameters that appear the consequences from nine variables *viz.*

biological oxygen demands, dissolved oxygen, NO_3, PO_4, temperature, turbidity, total solid substances, pH and fecal coliform bacteria[7,8]. The index ranges from 0 to 100, where 100 represent an excellent water quality condition[9,10].

Although there are several studies on the effect of Diyala river on water quality of the Tigris river with in Baghdad city but the present study aim to examine the chronic impacts of Diyala river at the present time with decreasing of rain rate as well as increasing of dry climate period in Iraq and many islands appear inside the river with time which led to geometry change of Tigris river, its ability to carry flood water and physical chemical characteristics of water quality.

MATERIALS AND METHOD

Description of the study area: Diyala river is one of main important water resources in Iraq and large tributaries that feed Tirgis river in Baghdad city.The diyala river lies within highly cultivated regions and have many drainage channels, these affected on their hydrochemistry[7] as well as impacts on the quality ofwater in Tigris river which meets the latter south of Baghdad city[8]. The present study designed to assess the impacts of Diyala river on physical, chemical and biological characteristics of the Tigris river in Baghdad province by choosing four stations. The selected stations are given below

1. Station No.1: Located on Tigris river before meeting with Diyala river in Zafurania city.
2. Station No.2: Located on Diyala river after the sewage treatment plant (Rustumiya) before 3 km from its joining with Tigris river (near old Diyala bridge).
3. Station No. 3: Situated on Tigris river after the meeting point about 500 meters (represents the mixing zone between two rivers).
4. Station No.4: Located about 5 km down the Tigris River.

Water samples were collected bimonthly from January to December of 2017, at each station. The samples were kept and are tested according to the American public health Association (APHA)[9] (Table 1).

Table 1: Testing methods for water samples

Parameters	Site	Methods	Units
DO	In situ	Portable multi meter340i.WTW\Germany	mg\l
pH	In situ	pH- meter \WTW(Germany)	
Temperature	In situ	Thermometer\ Zeal (England)	°C
Turbidity	Laboratory	Turbidity meter\ Jenwaw company (model-6035)	mg\l
BOD	Laboratory	SM 5210, azide modification at 20 c (5D)	mg\l
Total solids	Laboratory	SM 2540, dried at 103-105 c	mg\l
Nitrate	Laboratory	UV-spectrophotometer SHIMADZU.Mod.UV-1650PC (Japan).	mg\l
Total PO_4	Laboratory	SM4500-p, spectrophotometric, molybdate- ascorbic acid method	mg\l
FC	Laboratory	SM 9215, membrane filtration	CFU\100ml

DO: dissolved oxygen; BOD: Biological oxygen demand: CFU: Colony forming unit: FC: Fecal coliform bacteria.

Assessment of physical and chemical properties: Physical and chemical prosperities including nine parameters *viz.* water, temperature, turbidity, dissolved oxygen, BOD, pH, TS, NO_3, total PO_4 and total coliform bacteria were determined to calculate the national sanitation foundations water quality index (NFS-WQI)[7]. The formula for water quality index calculation is given below

$$\text{NSF} - \text{WQI} = \sum_{\text{I}=0}^{n} \text{W}i \times \text{L}i$$

Where, the NFS-WQI is the score of water quality index; Wi is the weight score and Li is the sub index value. The weight score and NFS-WQI five categories were depicted in Table 2 and 3, respectively.

Table 2: Weight score (Wi) of nine NSF-WQI parameters

Parameters	Unit weight (Wi)
Dissolved oxygen (mg\l)	0.17

Table No.2 Conted…

Fecal coliform bacteria(colonies\100ml)	0.16
pH	0.11
Biological oxygen demand (mg\l)	0.11
Temperature(°C)	0.1
Nitrate nitrogen (NO_3)(mg\l)	0.1
Phosphate (PO_4)(mg\l)	0.1
Turbility(NTU)	0.08
Totle soluble solids(mg\l)	0.07

Table 3: Water quality classification based on weighted NFS-WQImethod

Range	Quality of water
0-25	Very bad
26-50	Bad
51-70	Medium

Table No. 3 Conted…

71-90	Good
91-100	Excellent

NFS-WQI: The National Sanitation Foundations Water Quality Index

RESULTS

The physical–chemical characteristics at study stations during January to December 2017 is depicted in the Table 4. The nonsignificant ($p< 0.05$) change was observed in water temperature between stations during the study period. One of the factors for this variation could be regional temperature. On the other hand, turbidity, total dissolved solid (TDS), NO_3 and total coliform bacteria at station 2 were 35.93 ± 8.81 NTU, 0.916 ± 0.07mg\l; 7.88 ± 0.34mg\l and 16.17 ± 1.19mg\l, respectively. These values are found to be significantly high ($p<0.05$) as compared to stations 1, 3 and 4.

Table 4: Statistical analysis of physical–chemical characteristics at study stations during (January–December) 2017 (Means ± SE)

Parameters	S1	S2	S3	S4	LSD value
Temperature (°C)	21.70 ± 2.60^{a}	22.11 ± 2.24^{a}	21.62 ± 2.47^{A}	21.75 ± 2.42^{a}	7.19^{NS}
pH	7.81 ± 0.18^{a}	7.53 ± 0.18^{a}	7.91 ± 0.13^{a}	7.90 ± 0.12^{a}	0.474^{NS}
Total dissolved solid (mg\l)	0.356 ± 0.04^{c}	0.916 ± 0.07^{a}	0.526 ± 0.05^{B}	0.491 ± 0.03^{bc}	0.143*
Dissoved oxygen	7.53 ± 1.29^{a}	1.58 ± 0.08^{b}	5.23 ± 0.97^{A}	6.67 ± 0.78^{a}	2.66 *
Turbidity(NTU)	12.67 ± 2.56^{b}	35.93 ± 8.81^{a}	20.01 ± 2.13^{a}	18.80 ± 2.18^{b}	14.26 *
PO_4(mg\l)	0.961 ± 0.04^{a}	0.906 ± 0.05^{a}	1.06 ± 0.07^{a}	0.988 ± 0.06^{a}	0.167^{NS}
NO_3(mg\l)	7.60 ± 0.54^{a}	7.88 ± 0.34^{a}	6.91 ± 0.61^{a}	7.04 ± 0.17^{a}	1.329^{NS}
BOD(mg\l)	2.87 ± 0.34^{b}	42.03 ± 11.52^{a}	13.74 ± 6.11^{b}	3.47 ± 0.51^{b}	16.56 *
FC(colonies\100ml)	12.00 ± 1.41^{a}	16.17 ± 1.19^{b}	14.33 ± 0.49^{ab}	13.50 ± 0.96^{ab}	3.159 *

*P<0.05 significant differences between stations. A station that carrying similar letter have no any significant difference between them.

The obtained water quality values were compared with the standard NSF-WQI parameters which are given in the Table 3. The quality of the water is depicted in the Table 5. According to NSF-WQI water quality of Tigris river had fluctuated between medium (stations 1 and 4) to bad water quality (stations 2 and 3).

Table 5: NFS-WQI values of stations at present study

Stations	NSF-WQI value	Class
S1	52	Medium

Table No. 5 Conted…

S2	43	Bad
S3	46	Bad
S4	51	Medium

DISCUSSION

In the present study, the water quality was evaluated from Tigris river before and after meeting with the Diyala River. The variation in the water temperature depends on the external region / study area temperature. There will slight variation in the water temperature, if the study regions are not climatically or geographically distinged[11]. At station 2, lot of organic matter and

nutrients were discharged from Al- Rustamiya sewage treatment plant. Hence, there might be the bad water quality. Station 3 showed increased in the turbidity, TDS, FC value with sinumtinous decreased in dissolved oxygen values. Verious reports are available regarding increased turbidity and total dissolved solids leads to decreases in the dissolved oxygen values[12-19].

This change the physical and chemical characteristics of Tigris river at station 2 and 3 drastically. This refluxes to medium characteristics at station 4 after 5.5 Km from a jointed point between Diyala and Tigris river. Our results are accordance with previous studies from Iraq[20]. The pH of water is also affected due to low variation of free CO_2[21]. This study reported poor to marginal for aquatic life in Tigris river as a result of drainage of treated organic pollutants from domestic sewers, industrial and agriculture wastes to water sources. Due to the deterioration of water quality and pollution of the Tigris River, there is a scarcity of water in the near ares of river.

CONCLUSION

Water quality indicators, especially (NFS-WQI) for private consumption is a simple method of initial recognition of river water quality and allow estimating the changes in water quality over time and space. Assess the successes and weakness of domestic policies and international treaties aimed at protecting water resources.

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Determination of the Radiation of Alpha Particles in the Air of Primary School Buildings in the City of Karbala

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ABSTRACT

Background: This study was conducted to determine the alpha particles radiation in the air and their limits according to the international commission on radiological protection.

Materials and Method: Twenty-eight dosimeters were distributed in 14 randomly selected elementary boy's schools in Karbala city.

Results: Radon concentrations are 23.307±13.68, 26.372±16.24Bq/m^3 in closed and 37.771±23.08, 36.788±21.42Bq/m^3 for open dosimeter. The mean of the annual effective dose was 0.042 and 0.022 mSv/y for closed; 0.077 and 0.033 mSv/y for open measures and number of people who may be exposed to radon cause to lung cancer was found 0.760, 0.391 and 1.383, 0.590 in the enclosed and open doses of LR-115 type II and CN-85, respectively.

Conclusion: The results were within the normal limits of radiation, according to The International Commission on Radiological Protection.

Keywords: *Radon Concentration, SSNTD, LR-115 type II, CN-85.*

INTRODUCTION

A true measure of a society's quality can be seen in the development of programmes designed to protect the health of its children. Due to the fact that children spend most of their time in schools, a number of radon surveys have been performed in schools[1-5]. Radon is an inert gas, colourless and tasteless with half-life of 3.8 days[2]. Radon concentration levels are strongly influenced by geology, geophysical conditions, as well as atmospheric effects. Searching for realized the exposure to natural radiation ^{222}Rn and its offspring as well the problem of the world. Radiation damage caused by the lungs, because of inhalation of radon and its radioactive offspring, it may cause significantly increased risk of lung cancer on the population[6-8]. Thus, one of the most effective and appropriate ways to minimize potential risks for students in schools will be testing radon concentrations in many potential locations.

There are several studies to measure the radiation activity released from radon and its counterparts in the air of buildings in the city of Karbala and other Iraqi cities. There are no studies currently studying the radiation activity of alpha particles in the city of Karbala and the importance of this subject we conducted this study on some of the primary schools. Primary schools host children between the ages of 6 and 12, where children stay in these schools for 6 hours each day and five days a week for the purpose of acquiring knowledge and learning. The increased concentration of radon from 200-300 Bqm^{-3} was associated with an increase of about 16% chance of lung cancer risk for adult children. The objective of this study is to measure the concentrations of alpha particles emitted from radon and its analogs in the air of primary school buildings by using two types of nuclear impact detectors LR-115type II and CN-85, in addition to calculating the equilibrium coefficient between radon and its progeny for closed and open dosimeter, which may be exposed to students.

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MATERIALS AND METHOD

Study area: Karbala is the center of the province of Karbala, located in the center of Iraq, passing through its territory with latitude (32`, 34º-32`.37º N), longitude (58`, 43º-60`, 44º E). The area of Karbala is 2793 km^2 [9].

Methodology: Measurements were made in winter, the long-term negative cumulative propagation method, that contains two types of solid state nuclear track detectors LR-115 type II ($C_6H_9O_9N_2$) and CN-85 ($C_6H_8O_9N_2$) with a thickness of 12µm was used. The cumulative negative dosimeters are a 6.8cm diameter plastic cup with a height of 4.6cm, one open to allow radon isotopes, while the other is closed with a 3cm hole covered with 0.5cm thick sponge in the top cover of the roller to ensure that only the radon entered, to detectors as shown in Figure 1. The electrochemical scavenging of all the reagents is then started to show the nuclear effects of the alpha particles on the detector surface using Sodium hydroxide solution at 2.5M at 60°C for 90min. After removing the detectors from the solution and washing them with well distilled water by placing them in a magnetic stirrer for 20minutes and then dried on soft paper, the number of alpha particle pathways is calculated on the detector surface using a light microscope with a 100x magnification.

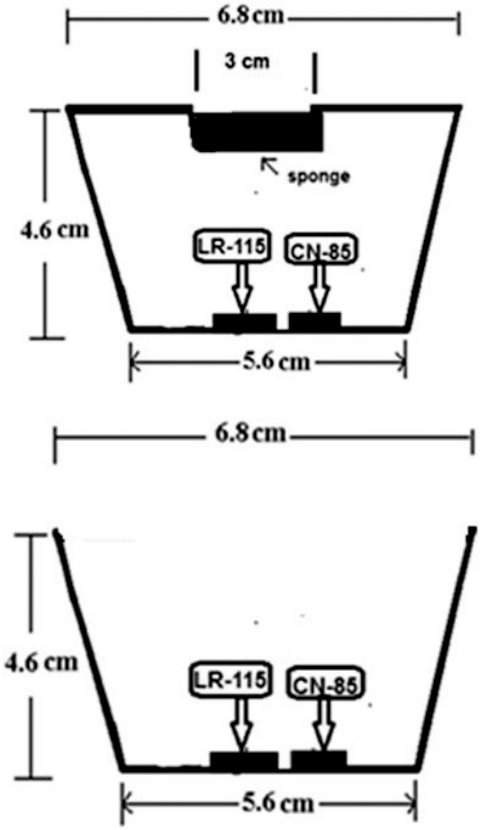

Fig. 1: Integrated passive radon closed and open dosimeters

CALCULATIONS

The radon concentration is calculated using the following relation[10,11]:

$$C = \frac{Coto\rho}{\rho o t} = \frac{\rho}{kt} \quad \ldots(1)$$

Where, C_o is activity density of the calibration chamber, t_o is calibration exposure time, ρ is measured number of tracks per cm^2 on the detectors that were inside ourdosimeters, ρ_o is the measured number of tracks per cm^2 on the detectors, t is the exposure time on the distributed dosimeters and k is a calibration factor. Plastic track detectors that is calculating using ^{226}Ra, equal to the value of K, 0.285 and 0.256Track.cm^{-2}/Bq.m^{-3} day respectively.

The equilibrium factor (F), using the following relationship[11,12]:

$$F = a \exp\left(-b\frac{C_c}{C_o}\right) \quad \ldots(2)$$

Where, a and b are constants magnitude 15 and 7.5 respectively.concentration radon passive closed dosimeter.concentration radon passive open dosimeter. The annual effective dose was obtained using the relation[12,13]:

$$AED\ (m\ Sv/y) = C \times F \times H \times T \times D \quad \ldots(3)$$

Where, H is the occupancy factor in schools (0.13) and T is the time 7860 h/y, D is the dose conversion factor (9×10^{-6}mSv/Bq.h.m^{-3}). Potential Alpha Energy Concentration (PAEC) was obtained using the relation[14,15]:

$$PAEC\ (WL) = F \times C/3700 \quad \ldots(4)$$

Exposure to radon progeny (EP) is related by following expression[16]:

$$EP\ (WLM\ Y^{-1}) = T \times H \times F \times C/170 \times 3700 \quad \ldots(5)$$

The lung cancer cases per year per million person (CPPP), was obtained using the relation[14-18]:

$$(CPPP) = AED \times (18 \times 10^{-6} mSv^{-1}.y) \quad \ldots(6)$$

RESULTS

Table 1 shows the names and locations of the schools in the neighborhoods of Karbala and the special code in each school for the purpose of distinguishing between them.

Table 1: The schools and locations and code numbers in Karbala city

School name	Locations	Codes	School name	Locations	Codes
Banu Hashim	Saif Saad	S1	Ard Al- Hussein	Al- Hussein	S8
Kortoba	Benaa Al-jahiz	S2	badr alkubraa	Al- gadeer	S9
Al-Mahabh	Benaa Al-jahiz	S3	Al- Alaws	Moulmein	S10
Al-Mohannad	Al- naser	S4	Ibn Hayyan	Moulmein	S11
Al – Tasami	Al atibba	S5	Abu Talib	Al- hur	S12
Ekraa	Salam	S6	Al -Tawjih	Al- hur	S13
Al – Tawfiq	Tahady	S7	Khayr Al bariya	Al- Hussein	S14

The concentrations of radon in closed dosimeters ranged from 17.680±13.87 to 36.044±16.03Bq/m^3, whereas in open dosimeters, the concentrations of radon ranged from 19.18±19.25 to 50.70±27.37 Bq/m^3 for CN-85 detectors. As for the LR-115 detectors, the concentrations of radon in closed dosimeters ranged from 14.737±11.65 to 30.579±17.52Bq/m^3, whereas in open dosimeters, the radon concentrations ranged from 20.140±20.55 to 56±27.11Bq/m^3.

Table 2: Track density (ρ), radon concentration (C_R) for open (O) and closed (C) dosimeter (D) and equilibrium factor (F) for the selected primary boys school

Codes	D	LR-115			CN-85		
		ρ (Track/cm^2)	C_R(Bq/m^3)	F	P(Track/cm^2)	C_R(Bq/m^3)	F
S1	O	1226.667	45.193 ± 24.71	0.122	1196.666	49.201 ± 27.76	0.092
	C	786.667	28.982 ± 12.78		813.333	33.440 ± 20.55	
S2	O	1276.000	47.035 ± 23.99	0.038	1010	41.526 ± 20.25	0.071
	C	683.333	25.175 ± 11.07		720	29.603 ± 14.54	
S3	O	1460.000	53.789 ± 28.60	0.037	1056.666	43.445 ± 22.46	0.071
	C	746.000	27.509 ± 13.90		753.333	30.973 ± 18.46	
S4	O	666.667	24.561 ± 20.22	0.167	640.000	26.314 ± 16.64	0.097
	C	400.000	14.737 ± 11.65		430.000	17.680 ± 13.87	
S5	O	646.667	23.825 ± 15.97	0.055	670.000	27.548 ± 21.45	0.072
	C	483.333	17.807 ± 13.90		476.667	19.599 ± 10.84	
S6	O	650.000	23.947 ± 22.48	0.033	540.000	22.203 ± 16.84	0.013
	C	530.000	19.526 ± 12.88		506.667	20.832 ± 12.20	
S7	O	636.667	23.456 ± 18.07	0.020	880.000	36.182 ± 17.76	0.098
	C	560.000	20.632 ± 12.97		590.000	24.258 ± 15.64	
S8	O	546.667	20.140 ± 20.55	0.015	620.000	25.492 ± 18.89	0.023
	C	503.333	18.544 ± 18.70		536.667	22.065 ± 17.71	
S9	O	1120.000	41.263 ± 2.62	0.081	966.666	39.745 ± 22.83	0.139
	C	780.000	28.737 ± 16.39		603.333	24.806 ± 17.69	
S10	O	1303.333	48.018 ± 28.50	0.407	973.333	40.019 ± 21.70	0.041
	C	626.667	23..088 ± 11.4		766.667	31.522 ± 17.94	
S11	O	1426.667	52.561 ± 28.61	0.244	1233.333	50.709 ± 27.37	0.160
	C	783.333	28.860 ± 14.33		746.667	30.700 ± 18.28	
S12	O	1263.333	46.544 ± 19.47	0.240	1060	43.582 ± 16.99	0.030
	C	696.667	25.667 ± 12.82		876.666	36.044 ± 16.03	
S13	O	1520.000	56 ± 27.11	0.250	1213.333	49.887 ± 30.15	0.168
	C	830.000	30.579 ± 17.52		726.666	29.877 ± 21.81	
S14	O	610.000	22.474 ± 22.23	0.062	466.667	19.187 ± 19.25	0.014
	C	446.667	16.456 ± 11.23		433.333	17.817 ± 11.90	
AV	O	1025.238	37.771 ± 23.08	0.164	894.762	36.788 ± 21.42	0.078
	C	632.619	23.307 ± 13.68		641.429	26.372 ± 16.24	

Table 3: AED, PAEC, EP and CPPP by using LR-115 and CN-85

Code	D	LR-115				CN-85			
		AED mSv/y	PAEC mWL	EP $WLMY^{-1}$	CPPP $/10^6$	AED mSv/y	PAEC mWL	EP $mWLMY^{-1}$	$CPPP/10^6$
S1	O	0.004	0.093	0.624	0.064	0.046	1.219	8.167	0.832
	C	0.057	1.493	10.002	1.019	0.031	0.829	5.551	0.566
S2	O	0.036	0.958	6.414	0.654	0.030	0.802	5.373	0.548
	C	0.131	3.443	23.062	2.350	0.022	0.572	3.831	0.390
S3	O	0.070	1.843	12.344	1.258	0.032	0.839	5.619	0.573
	C	0.179	4.708	31.535	3.213	0.023	0.598	4.006	0.408
S4	O	0.042	1.106	7.410	0.755	0.026	0.691	4.631	0.472
	C	0.025	0.664	4.446	0.453	0.018	0.464	3.111	0.317
S5	O	0.013	0.355	2.379	0.242	0.020	0.538	3.603	0.367
	C	0.010	0.265	1.778	0.181	0.015	0.383	2.563	0.261
S6	O	0.008	0.214	1.436	0.146	0.003	0.079	0.530	0.054
	C	0.007	0.175	1.171	0.119	0.003	0.074	0.4971	0.051
S7	O	0.005	0.130	0.869	0.089	0.036	0.961	6.435	0.656
	C	0.004	0.114	0.765	0.078	0.024	0.644	4.315	0.440
S8	O	0.003	0.082	0.548	0.056	0.006	0.157	1.049	0.107
	C	0.003	0.075	0.505	0.051	0.005	0.136	0.908	0.093
S9	O	0.034	0.902	6.040	0.615	0.057	1.494	10.005	1.020
	C	0.024	0.628	4.206	0.429	0.035	0.932	6.245	0.636
S10	O	0.200	5.286	35.413	3.609	0.017	0.441	2.955	0.301
	C	0.096	2.542	17.027	1.735	0.013	0.347	2.328	0.237
S11	O	0.132	3.468	23.235	2.368	0.083	2.193	14.691	1.497
	C	0.072	1.904	12.757	1.300	0.050	1.328	8.894	0.906
S12	O	0.114	3.017	20.210	2.059	0.014	0.358	2.395	0.244
	C	0.063	1.664	11.145	1.136	0.011	0.296	1.981	0.202
S13	O	0.143	3.780	25.320	2.580	0.086	2.265	15.175	1.546
	C	0.078	2.064	13.826	1.409	0.051	1.357	9.088	0.926
S14	O	0.014	0.375	2.515	0.256	0.003	0.074	0.492	0.050
	C	0.010	0.275	1.841	0.188	0.003	0.068	0.457	0.047
AV	O	0.077	2.026	13.570	1.383	0.033	0.865	5.794	0.59
	C	0.042	1.113	7.454	0.760	0.022	0.573	3.841	0.391

Table 4: Comparison of results between LR-115 and CN-85 detectors in open (O) and closed (C) dosimeters

		LR-115			CN-85		
	D	**Min**	**Max**	**AV**	**Min**	**Max**	**AV**
C_R Bq/m^3	O	20.14 ± 20.5	56 ± 27.1	37.77 ± 23.1	19.19 ± 19.2	50.71 ± 27.3	36.79 ± 21.4
	C	14.74 ± 11.6	30.58 ± 17.5	23.31 ± 13.68	17.68 ± 13.8	36.04 ± 16.0	26.37 ± 16.2
AED mSv/y	O	0.003	0.200	0.077	0.003	0.086	0.033
	C	0.003	0.096	0.042	0.003	0.051	0.022
PAEC mWL	O	0.082	5.286	2.026	0.074	2.265	0.865
	C	0.075	2.548	1.113	0.068	1.357	0.573

Conted…

EP mWLM/y	O	0.548	35.413	13.570	0.492	15.175	5.794
	C	0.0505	17.027	7.454	0.457	9.088	3.841
CPPP/10^6	O	0.056	3.609	1.383	0.050	1.546	0.59
	C	0.051	1.735	0.760	0.047	0.926	0.391
F		0.015	0.407	0.164	0.013	0.168	0.078

AED: Annual Effective Dose; PAEC: Potential Alpha Energy Concentration; EP: Exposure to Radon and its progeny; CPPP: Lung Cancer Cases Per Year Per Million Person

AED was varied from 0.003 to 0.096 mSv/y and varied from 0.003 to 0.051 mSv/y the mean of AED was 0.042, 0.022 mSv/y for closed dosimeters and varied from 0.003 to 0.200 mSv/y and varied from 0.003 to 0.086mSv/y with an average value 0.077, 0.033 mSv/y for open dosimeters, the mean of PAEC are 1.113 and 0.573mWL in closed dosimeters, while in open dosimeters 2.026 and 0.573mWL, an average of exposure to radon progeny was 7.454, 3.841 in closed dosimeters whereas in open dosimeters the mean value was 13.570,5.794, the number of people that may be subjected to radon which is considered the second cause of lung cancer after smoking was found 0.760, 0.391 and 1.383, 0.590 in closed and open dosimeters for LR -115 and CN-85 respectively. Through shows the results in Table 4, a comparison can be made between the two detectors showing a convergence of results for both detectors. Correlation between radon concentration in open and closed dosimeters were given in Figure 2 and 3, respectively.

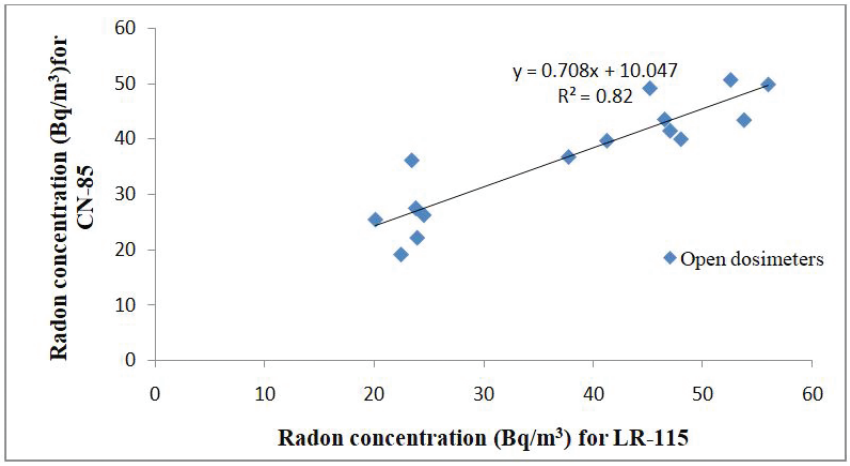

Fig. 2: Correlation between Radon in open dosimeters

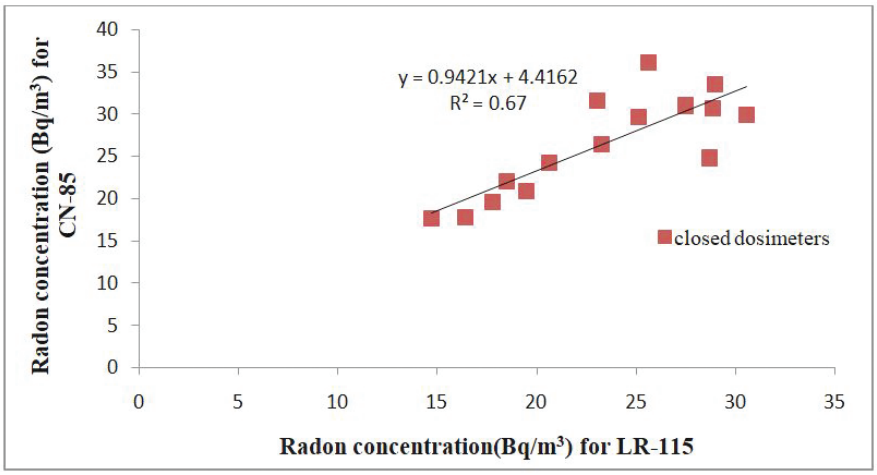

Fig. 3: Correlation between Radon in closed dosimeters

DISCUSSION

Table 5 shows comparison of the results of the current study with other studies in other countries shows that the results obtained are comparable with other researchers.

Table 5: Comparison between concentrations of radon in the air of some countries

Country	Place of study	C_R(Bq/m^3)	Ref.
Italian-Parma	Kindergartens and school	30 ± 19	19
Turkey-Batman	School	49	20
Pakistan	Houses sitting rooms	28 ± 11	21
Turkey-Istanbul	School	125	22
Serbia	School	28.8 ± 4.3	23
Pakistan-Punjab	School	52 ± 9	24
Palestine-Hebron	School	34.1	25
Tunisia-Tunis	School	26.9 ± 24.5	26
Pakistan-Muzaffarabad	Houses drawing room	85	29
Palestine-Tulkarem	School	40.4 ± 2.5	28
Greece-Patras	Dwelling	38	29
Turkey, Izmir	University	161	30
Pakistan, Kardu	Dwelling	111.34	31
Iraq, Karbala	School	23.307 ± 13.68; 37.77 ± 23.08	Present study

CONCLUSION

The present study showed that the radon concentration levels and the annual effective dose in this study were lower than the permissible limits as recommended by ICRP[32]. Therefore, it may be concluded that, there is no radiation hazard due to radon concentrations in primary school students in Karbala city.

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Ethical Clearance: Not required as it is a regarding environmental hazards. The patients are not involved in the study.

Conflict of Interest: Nil

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The Influence of Organizational Pride on the Performance of Lecturers in Health at the Nahdlatul Ulama University in Surabaya

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ABSTRACT

Pride is needed in individual motivation and performance, because a person will respond to profitable identities, which are relevant to developing members' psychological sense in the organization, as identification or commitment (Tyler & Blader, 2003). Unusa is a college concentrating on health education programs. Data from Unusa regarding the dharma of conducting research and community service in 2014, found that out of 117 lecturers who had carried out the research, the number had only reached 42,7%, community service was 44,4%. Demonstrating the performance of Unusa lecturers is not optimal. Research objectives, to prove the influence of Organizational Pride on the Performance of Unusa Lecturers. Observational research design, type of explanatory research, using a cross sectional approach. Respondents were 105 lecturers. Independent variables are Organizational Pride. Dependent variables are Lecturer Performance (task performance, contextual performance, adaptive performance, counterproductive work behavior). Data analysis used linear regression test, $\alpha = 0.05$. The results of the study prove that Organizational Pride influences Lecturer Performance ($p = 0.002$; $b = 0.301$). This study shows that Pride of the Organization can play a role in encouraging the increase of Lecturer Performance. The higher the Pride of the Organization ultimately increases the Lecturers' Performance. Efforts to strengthen the pride of the lecturers, individually and in institutions are carries out through training and SGD (Small Group Discussion) with routine. Finally, it will improve and strengthen the sense of love, belonging and loyal to optimize the performance of the tridharma.

Keywords: *Organizational Pride, Lecturers' Performance*

INTRODUCTION

Pride is part of the organization. According to Tyler and Blader, Pride is a belief in an individual who refers to the way he evaluates his organization without making explicit comparisons with other organizations[1].

Pride belongs to everyone who feels proud to be a member or part of an organization. Individuals feel proud to use all the attributes of the organization every day. The pride attitude of individuals who feel the organization supports the individual and gives positive value to him. Individuals feel that the organization has important and beneficial meaning for individuals as members of the organization. Conversely, No pride in the individual who feels that his organization gives a negative value to him as a member of the organization.

Performance is the level of success in carrying out tasks and the ability to achieve predetermined goals[2]. Associated with the role of individuals in the organization, performance is a series of individual behaviors or activities that are in line with the expectations or desires of the organization in which he works[3].

According to Steers and Porter(1987) that performance is influenced by individual motives in interacting with their environment. Performance can be express as an expression of the potential behavior or way of someone in carrying out a task, is a manifestation of the duties and responsibilities of the work given.

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Individual performance is work performance measured by actual achievement compared to the expected performance of employees. Expected work performance is standard achievement as a reference. Proving employee performance in accordance with the standard or other employees[4].

Individual performance is the foundation of organizational performance, so it is necessary to understand individual behavior that also greatly influences organizational behavior in realizing effective management. Organizational behavior is strongly influence by individual characteristics, individual motivation and appreciation. Besides that, there are several behavioral processes that can influence and give color to the life of the organization. According to John M. Ivancevich, et al (2007) processes that contribute to effective organizational performance include communication, decision making and leadership. The sustainability of an organization depends on the ability of management to receive, send and follow up on information. The communication process connects individuals and integrates internal activities from the organization. Information also integrates organizational activities with external requests. In addition, communication and feedback are management approaches in decision making in organizations.

In this study, using the results of research from Linda Koopmans, et all entitled *Conceptual Frameworks of Individual Work Performance A Systematic Review* to measure or identify individual performance indicators. It done because the dimensions of this study include Task Performance, Contextual Performance, Adaptive Performance, and Counterproductive Work Behavior.

1. **Task Performance:** Task performance as an important dimension of individual work performance. Task Performance as an ability (competence) which to perform central work tasks. Task performance is a specific work of the technical ability of task skills or role performance such as work quantity, work quality, and knowledge work. Includes completing work assignments, work quality, work quantity, work skills, job knowledge, keeping up to date knowledge, working accurately and neatly, planning and organizing, administration, decision making, problem solving, oral and written communication, monitoring and controlling resource.
2. **Contextual Performance:** Contextual performance as individual behavior that supports organization, social interaction and psychological environmental functions. Behavioral-oriented beyond the specified official work goals. Contextual Performance, including Extra tasks, Effort Initiative, Enthusiasm, Attention to duty, Resourcefulness, Industriousness, Persistence, Motivation, Dedication, Proactivity, Creativity, Cooperating with and helping others, Politeness, Effective communication, Interpersonal relations, Organizational commitment.
3. **Adaptive Performance:** Adaptive performance is an individual's adjustment to changes in the work system or job role. These conditions and situations include creative problem solving, dealing with uncertain or unpredictable work situations, learning new tasks, technology and procedures, and adapting to others, culture, or the physical environment.

   Adaptive Performance, including generating new, innovative ideas, adjusting goals and plans to situations, learning new tasks and technologies, understanding and others, understanding other groups or cultures, showing resilience, remaining calm, analyzing quickly, acting appropriately.
4. **Counterproductive Work Behavior:** Counter-productive work behavior as a behavior is detrimental to organizational welfare, becoming a phenomenon that can be found in the work environment and occurs in almost all organizations with different intensities.

   Counterproductive Work Behavior can be described in the following activities, Off task behavior, Too many or longer breaks, Presentism, Absenteeism, Complaining, Tardiness, incorrectly, Accidents, Insult or gossiping about coworkers, Fighting or arguing with coworkers, Disregard of safety, Misusing privileges, Aggression, Theft, Substance use.

OBJECTIVE

Analyzing the influence of Organizational Pride on Unusa lecturer performance (Task performance, Contextual performance, Adaptive performance, Counterproductive work behavior).

METHOD

The method used in this study is observational analytic, using an explanatory type. The study explores the causal effects of Organizational Pride and lecturer performance. Based on the time of data collection, using cross sectional. Respondents were 105 lecturers at Unusa's study program. The variables studied include independent variables, namely Organizational Pride. The dependent variable is the performance of the lecturer. The instrument used was a questionnaire. Data analysis used linear regression test. Retrieval of data using a questionnaire.

RESULT

The results of the study describe the description of measurement and statistical analysis of the variables of Organizational Pride and Performance.

Pride Description of Unusa lecturer organizations: The pride of the Unusa Organization uses 3 indicators, namely the pride of being a lecturer at Unusa because of the value of NU, the feeling of being proud as an Unusa lecturer internally, and the feeling of being happy to meet other people as Unusa lecturers. Each indicator is a sub variable. Results of review of Pride variables Different attitudes were seen in table 1

Table 1: Description of Composite Measurement Variable Pride of Unusa lecturer organization in 2016

No.	Pride of the Organization	Criteria			Total	Mean	SD
		Low	Enough	High			
1.	Sense of Proud to be a lecturer at Unusa because of the NU Value	0	49 (46,7%)	56 (53,3%)	105 (100%)	2,53	0,50
2.	Sense of Proud to be a lecturer at Unusa Internally	1 (1,0%)	57 (54,3%)	47 (44,8%)	105 (100%)	2,44	0,52
3.	A feeling of pleasure when people see as Unusa lecturers	0	53 (50,5%)	52 (49,5%)	105 (100%)	2,50	0,50
	Pride of the Organization	0	48 (45,7%)	57 (54,3%)	105 (100%)	2,54	0,50

Source: Primary research data, 2016

In table 1, it can be seen that Unusa lecturers have sufficient organizational pride (average 2.54). Proud of being a lecturer at Unusa because the NU value has the highest average of others. This shows that the lecturer is proud of the value of NU that is applied, not proud of being part of the organization (Unusa). Even then, it indicated by the average category

Unusa Lecturer Performance: Lecturer performance as a lecturer's behavior carries out tridharma according to the standards of implementing Unusa lecturer workload, which is detailed in *Task performance, Contextual performance, Adaptive performance, Counterproductive work behavior.* Explanation of each lecturer performance indicator in the table 2

Table 2: Composite Descriptions of Unusa lecturers' performance in 2016

No.	Lecturer's Performance	Criteria			Total	Mean	SD
		Low	Enough	High			
1.	Task Performance	4 (3,8%)	14 (13,3%)	87 (82,9%)	105 (100%)	2,79	0,49
2.	Contextual Performance	4 (3,8%)	10 (9,5%)	91 (86,7%)	105 (100%)	2,83	0,47
3.	Adaptive Performance	4 (3,8%)	14 (13,3%)	87 (82,9%)	105 (100%)	2,79	0,49
4.	Counterproductive Work Behavior	0	13 (12,4%)	92 (87,6%)	105 (100%)	2,88	0,33
	Kinerja Dosen	0	16 (15,2%)	89 (84,8%)	105 (100%)	2,85	0,36

Source: Primary research data, 2016

Table 2 provides a real picture of the performance of Unusa lecturers in implementing tridharma in sufficient categories (2.85). This means that Unusa lecturers have done enough tridharma obligations on task performance, contextual performance, adaptive performance and not doing Counterproductive Work Behavior, which is a unified indicator of lecturer performance in this study. Thus, Unusa lecturers work quite well in carrying out learning, research and community service activities. Lecturers are expected to be able to control themselves and not emotionally, or not show Counterproductive Work Behavior when they are in a situation of workload pressure or unfavorable conditions and disrupt the implementation of tridharma.

Linear Regression test results prove that there is a significant effect of Organizational Pride on Lecturer Performance with p = 0.002. The value of b = 0.301 indicates that Organizational Pride can play a role in encouraging an increase in Lecturer Performance with a contribution of 30.1%. This means that, there are other factors beside Organizational Pride that can improve Lecturer Performance with a contribution of 69.9%.

DISCUSSION

The contribution of Organizational Pride to Lecturer Performance is 30.1%, which is a positive impact of the sense of leadership towards Unusa. A sense of pride in Unusa can occur internally and be recognized by Unusa's performance and competitiveness as a university in the middle of other universities. If Unusa's work and competitiveness is still uncovered, it will be difficult to have pride.

Another factor that can improve Lecturer Performance with a contribution of 69.9%, including the ability of lecturers to master their competence. In accordance with Amanta Law number 14 of 2005 concerning Teachers and Lecturers, that lecturer competence includes pedagogic competence, professional competence, personality competence, and social competence. This competence is a requirement to be an educator or lecturer and can be deepened by attending lecturer competency training.

The concept put forward by Tyler and Blader, Cooperation in Groups: Procedural Justice, Social Identity, and Behavior Engagement, Pride is as a belief in a person or individual that refers to the way an individual or someone evaluates his organization without making explicit comparisons with other organizations. A proud attitude of being part of an organization provides positive value, so that it can spur the spirit of carving out one's achievements. The proud attitude of the lecturer who feels Unusa lives and gives positive value to him, so that anything that comes into with Unusa, the lecturer will appear proud. However, if anyone tries to harass Unusa in various ways, he will try his best to defend. In fact, when someone harasses and attacks Unusa, it will be desperate to defend Unusa.

If the achievements and competitiveness of Unusa are still not felt by the lecturer, then the lecturer will be difficult to have pride.

Pride of the part of the organization, according to Tyler and Blader, is as a belief in the individual who refers to the way individuals evaluate their organization without making explicit comparisons with other organizations[5].

Pride is with everyone who feels lucky and likes to be a member or part of the organization. Individuals feel proud to use all the attributes of the organization every day. The proud attitude of individuals who feel the organization supports the individual and gives positive value to him. Individuals feel that the organization has important and beneficial meaning for individuals as members of the organization. Pride will not exist in individuals who feel that the organization gives a negative value to itself as a member of the organization.

According to M. Shamsul Haque, in his book Pride and Performance in The Public Service Three Asian Cases. SAGE Journals, International review of administrative sciences, It was stated that one's pride in the organization has implications from the motivation and commitment needed by the organization which is an intrinsic factor.

By having pride in the organization, the lecturer feels Unusa has an important and beneficial meaning. Pride is an attitude observed in the lecturer in carrying out Tridharma activities in Unusa. Thus, pride can be seen as a powerful motivator. Lecturers, who are proud of working, for what have done and for whom the lecturer works. Furthermore, pride increases teamwork, as partners treat each other with respect[6].

Lecturers who are proud of Unusa, have positive attitudes towards fellow lecturers and other Unusa members, strengthen the sense of togetherness and willingness to act more than what is supposed to be done. This condition is effective to foster a sense of ownership in the organization, as a lecturer as capital to nourish the life of the organization and develop it.

The sense of belonging to this organization can thicken the life of the lecturer, especially to do everything; that is good a lecturer not always driven by everything that benefits him.

CONCLUSIONS

The conclusion of the study is that the higher the Pride of the Organization will ultimately increase the Lecturers' Performance. Lecturers feel Unusa has important and beneficial meaning. Pride is an attitude observed in the lecturer in carrying out Tridharma activities in Unusa.

Thus, pride can be seen as a powerful motivator. Employees, for example, are proud of working, what they do and who they work for. Furthermore, pride increases teamwork, as partners treat each other with respect.

Ethical Clearance: Taken from ethic committee Nahdlatul Ulama University of Surabaya

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The Effectiveness of Using Direct Composite Veneer Template System in Restoring Anterior Teeth

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ABSTRACT

Background: Veneer is one method of dental restoration. Veneers are used to repair tooth deformities, discolorization, diastema, and fractures. One method of veneers is direct composite veneers. However, it is difficult to form a perfect labial surface using this technique.

Method: The purpose of this study was to identify the effectiveness of direct composite veneers template. The type of the experiment was quasi-experimental with the post-test only design. The area of interest was the dental practice in Palembang City, with total sample equals to the population of dentists who do the direct composite veneer.

Results: The average surgery duration of direct composite veneers using plastic, mica stem, and plastic stem were 46.25, 32.25, and 28.00 minutes respectively. The easiness level of conducting direct composite veneer with a plastic template was 3.35 (normal), 4.20 for mica stem template (easy), and 4.30 (easy) for plastic stem template. The satisfaction level of dentists using the plastic template was 3.50 (ordinary), the mica stem template was 4.30 (satisfied), and the plastic stem template was 4.65 (satisfied).

Conclusion: The ANOVA analysis results showed a significant difference between the duration, easiness level, satisfaction level when working on different templates of direct composite veneer. It was concluded that the usage of plastic stem template resulted in fastest, easiest, and the most satisfying outcome.

Keywords: *Direct composite veneer, template, veneer*

INTRODUCTION

The veneer is a transparent thin layer which is applied to the labial and proximal surfaces of the teeth using acids and bonding agents. Veneers are used to correct tooth deformities, discolorization, diastema, abrasion, failure of restorations, and fractures [(1)].

There are 3 veneer methods, namely direct veneer, indirect veneer, and direct-indirect veneer. Indirect veneers have the advantage of high resistance to friction, fracture, and discoloration, while the disadvantages of this technique are a long duration of treatment that requires several visits to dentist and expensive price. On the other hand, the direct veneer is one method of restoring anterior teeth using a composite resin which has some advantages including one-time only treatment, easiness of preparation and cheaper price. However, the difficulty of direct veneer is the making of the teeth anatomy to be as perfect as possible so that it is similar to the natural teeth. Because of this issue, many dentists are not confident in using this procedure [(2)].

A tool called template has been developed to reduce the difficulty and shorten the working time of direct veneers. Templates are used to form beautiful and consistent results with the desired teeth anatomy design [(3)]. Based on clinical studies of 298 composite veneers in children and young adults, the average veneer strength was 35.6 months [(4)]. Previous research concluded that composite veneers can last without changing for 2 to 13 years [(5)]. As a consequence, this research was conducted to identify the effectiveness of direct composite veneers template in terms of duration, easiness level, and satisfaction level in Palembang City, Indonesia.

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METHODOLOGY

The type of the experiment was quasi-experimental with the post-test only design. The area of interest was the dental practice in Palembang City, with total sample equals to the population of dentists who do the direct composite veneer. The study was conducted for 8 months starting from May to December 2017. The results were analyzed using a computer program, namely the normality test using the Shopiro-Wilk test, difference tests, ANOVA, and post-hoc tests. The difference tests were used to determine whether there were significant differences in the data obtained. Data with normal distribution and homogeneous variance were then analyzed using the ANOVA test. Furthermore, a post-hoc test was conducted with the Least Significant Difference (LSD) method to find out which groups had significant differences.

RESULTS

The results of the effectiveness of direct composite veneers template in terms of duration, easiness level, and satisfaction level in Palembang City, Indonesia are given in Table 1-4. Table 1 shows that the surgery duration of direct composite veneers using plastic, mica stem, and plastic stem templates were 46.25 ± 12.126, 32.25 ± 9.931, and 28.00 ± 9.652 minutes respectively. Table 2 shows that the easiness level of conducting direct composite veneer was 3.35 for the plastic template, 4.20 for mica stem template, and 4.30 for plastic stem template. These easiness levels were graded as normal, easy, and easy accordingly. The satisfaction level of dentists was 3.50, 4.30, and 4.65 sequentially for plastic, mica stem, and plastic stem templates, which were included in ordinary, satisfied, and satisfied levels.

Table 1: Duration of Direct Composite Veneer Surgery

Methods	N	Duration (minutes)	Sig.
Plastic template	20	46.25 ± 12.126	0.000
Mica stem template	20	32.25 ± 9.931	0.000
Plastic stem template	20	28.00 ± 9.652	0.000

Table 2: Easiness Level of Direct Composite Veneer Surgery

Methods	N	Easiness Level	Sig.
Plastic template	20	3.35 (Normal) ± 0.489	0.000
Mica stem template	20	4.20 (Easy) ± 0.523	0.00
Plastic stem template	20	4.30 (Easy) ± 0.57	0.000

Table 3: Dentists' Satisfaction Level on The Results of Direct Composite Veneer Surgery

Methods	N	Satisfaction Level	Sig.
Plastic template	20	3.50 (Ordinary) ± 0.51	0.000
Mica stem template	20	4.30 (Satisfied) ± 0.470	0.000
Plastic stem template	20	4.65 (Satisfied) ± 0.489	0.000

Table 4: Post-hoc Test Results

Dependent Variables				Mean Difference	Sig.
Duration	Tukey HSD	Plastic template	Mica stem template	14.000	0.000
			Plastic stem template	28.250	0.000
		Mica stem template	Plastic template	-14.000	0.000
			Plastic stem template	4.250	0.421
		Plastic stem template	Plastic template	-18.250	0.000
			Plastic stem template	-4.250	0.421
	LSD	Plastic template	Mica stem template	14.000	0.000
			Plastic stem template	18.250	0.000
		Mica stem template	Plastic template	-14.000	0.000
			Plastic stem template	4.250	0.211
		Plastic stem template	Plastic template	-18.250	0.000
			Plastic stem template	-4.250	0.211

Conted…

Easiness Level	Tukey HSD	Plastic template	Mica stem template	-0.850	0.000
			Plastic stem template	-0.950	0.000
		Mica stem template	Plastic template	0.850	0.000
			Plastic stem template	-0.100	0.822
		Plastic stem template	Plastic template	0.950	0.000
			Plastic stem template	0.100	0.822
	LSD	Plastic template	Mica stem template	-0.850	0.000
			Plastic stem template	-0.950	0.000
		Mica stem template	Plastic template	0.850	0.000
			Plastic stem template	-0.100	0.552
		Plastic stem template	Plastic template	0.950	0.000
			Plastic stem template	0.100	0.552
Satisfaction Level	Tukey HSD	Plastic template	Mica stem template	-0.800	0.000
			Plastic stem template	-1.150	0.000
		Mica stem template	Plastic template	0.800	0.000
			Plastic stem template	-0.350	0.071
		Plastic stem template	Plastic template	1.150	0.000
			Plastic stem template	0.350	0.071
	LSD	Plastic template	Mica stem template	-0.800	0.000
			Plastic stem template	-1.150	0.000
		Mica stem template	Plastic template	0.800	0.000
			Plastic stem template	-0.350	0.028
		Plastic stem template	Plastic template	1.150	0.000
			Plastic stem template	0.350	0.028

DISCUSSIONS

In the usage of plastic template indirect veneer composite, it was found that the duration for direct veneer composite surgery reached up to 46.25 minutes because the usage of plastic template was similar to the semi-indirect method in which the veneer must be formed outside the mouth first and after had been done, it is attached to the teeth. Judging from the easiness level, direct composite veneer using plastic template had an average value of 3.35 which means “normal”. In this case, the dentists considered that doing direct composite veneer treatment using plastic templates was not too difficult but was not too easy as well. The satisfaction level of doing direct composite veneer using plastic template was 3.50, which means “ordinary”. The dentists who performed direct composite veneer using the plastic template felt satisfied and not satisfied.

From the results of ANOVA analysis, it was found that the time used for direct composite veneer using the mica stem template was 32.25 minutes, requiring a slightly faster time than using a plastic template because the veneer was made directly inside the mouth. Based on the easiness level, the direct composite veneer using the mica stem resulted in the average value of 4.20, which means “easy”. In this case, dentists performing direct composite veneer using the mica stem felt that the usage of mica stem template was easier than the plastic template. This is in accordance with the previous research who said that templates could save time, do not need to spend time and energy for carving and polishing, easy to use, increase clinical productivity significantly, and require minimal preparation [3]. The drawback of the mica stem template is that the price is very expensive.

It was also found that the time spent in direct composite veneers using plastic stem template was an average of 28.00 minutes, which was the fastest compared to using plastic and mica stem templates. On the easiness level, this method had an average value of

4.30 which means "easy". On the level of satisfaction, the average value was 4.25 which means "satisfied". In this case, dentists who did direct composite veneer using plastic stem felt more satisfied with the final outcome because it was more practical and the cost of making this plastic stem is very cheap. The result is supported by previous research which says that satisfaction depends on the quality of the product [4].

The ANOVA analysis results showed a significant difference between the duration, easiness level, satisfaction level when working on different templates of direct composite veneer. However, further investigation using post-hoc test showed that the usage of mica stem and plastic stem had no significant difference. It was concluded that the usage of plastic stem template resulted in fastest, easiest, and the most satisfying outcome.

CONCLUSION

Based on the results of this research, it can be concluded that the fastest time required to do direct composite veneer could be achieved by using the plastic stem template. The easiest and most satisfying template to be used in direct composite veneer was the plastic stem template. However, further investigation using post-hoc test showed that the usage of mica stem and plastic stem had no significant difference.

Ethical Clearance: Ethical clearance was obtained from the research ethics committee of Minister of Health Polytechnic Makassar, Indonesia.

Conflict of Interest: Nil.

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A Study on Breast Cancer Awareness in Female Students of Begum Rokeya University, Rangpur: A Cross-Sectional Study

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ABSTRACT

Background: Breast cancer in women is the leading health problem in many overpopulated countries like Bangladesh. As breast cancer is increasing at a faster rate in Bangladesh, public awareness is essential for early detection and proper treatment of breast cancer.

Objectives: The purpose of this study was to find out the level of awareness and knowledge of risk factors for breast cancer in female students of Begum Rokeya University, Rangpur.

Method: The study population was selected using a multistage cluster sampling procedure. Binary logistic regression was performed to identify the significant risk factors for breast cancer and Chi-square test was used to determine the association between breast cancer awareness and demographic characteristics of the respondents.

Results: Results show that only a total of 39.7% respondent's had breast cancer awareness. Respondent's age, residential area, marital status, parent's education and healthcare facilities were predictors for breast cancer and had a significant effect on breast cancer awareness.

Conclusion: Students had a low level of breast cancer awareness; so, there is a need to increase awareness and educate young females through University-based educational or awareness campaign on breast cancer.

Keywords: *Breast cancer, Awareness, Healthcare facilities, Breast self-exam, Risk factors.*

INTRODUCTION

Breast cancer is one of the most common diseases in women both in developed and developing world. Around the world, breast cancer was the second most common type of cancer after lung cancer (10.4% of all cancer incidences) and the fifth most common cause of cancer death (World Cancer Report, 2003). It had been reported that over 1.5 million women each year are diagnosed with breast cancer and 502000 dies from this disease[1]. Although breast cancer usually develops after the age of 45, the age of onset is decreasing and more young women than ever are affected[2,3]. There are several studies about the knowledge of breast cancer and practice of breast self-examination in female students of university and secondary-school[4-7]. Young women's cancers are generally more aggressive and result in lower survival rates, making early detection even more important[8]. Due to lack of breast cancer awareness in Bangladeshi population and inadequate access to health care facilities, the majority of the patients are diagnosed at the advanced stage of the disease. Early diagnosis of breast cancer not only influences the better prognosis and long-term survival, but it is also associated with the stage of cancer and mode of treatment. Usually, in breast cancer, delayed symptomatic presentation is more likely in women with non-lump symptoms and low awareness of the significance of symptoms[9]. There are many reasons behind this, but studies of many countries show that lack of awareness, ignorance and misbelieve are the leading causes of this faster silent killer[10,11].

The main purpose of this study was to investigate the level of awareness and knowledge of risk factors

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for breast cancer in female students of Begum Rokeya University, Rangpur (BRUR). Another aim was to identify various socio-demographic characteristics of the respondents and major factors associated with breast cancer awareness.

METHOD

Population and sampling: This cross-sectional study was conducted between September 2017 and December 2017 in BRUR. The study population was obtained from the lists of the department using multistage cluster sampling. A total of 360 female students from this University were selected as the target population. Firstly, 12 departments from 21 departments were randomly selected. Secondly, each department was divided into five groups according to the study years; three study groups were then selected (based on higher study years) from each department. Thirdly, 10 female students were randomly selected from each study group. A total of 30 female students were selected from each of the 12 departments and finally, the total numbers of 360 female students were selected to meet the goal.

Questionnaire and data collection: The questionnaire consisted of a total of 20 questions in three sections. The first section included the demographic characteristics of the respondents. The second section involved items that are related to participants' awareness of breast cancer. Most of the questions about the knowledge of risk factors for breast cancer are followed with reference to the guidelines of the American Cancer Society (2017). Each question regarding breast cancer awareness was awarded 1 mark (total 10 marks) for the correct answer, while each incorrect or unknown answer was given 0 marks. The total marks of questions were evaluated as follows: scores of 75% to 100% were considered "excellent", while scores of 50% to 74%, 25% to 49% and 0% to 24% were considered "good", "poor" and "very poor", respectively. In analyzing the relationship between awareness of the breast cancer and demographics, "aware" was defined as "excellent" and "good", while "not aware" was defined as "poor" and "very poor". Third section considered questions related to the personal specific characteristics of the respondents on breast cancer.

DATA ANALYSIS

Data were analyzed using IBM SPSS Statistics 23. Descriptive data were presented as frequency and percentages. Multivariate analysis was performed with binary logistic regression to determine the significant independent variables for predicting breast cancer awareness. The odds ratio (OR) and 95% confidence interval (CI) for predictor variables were also estimated using logistic regression. Chi-square analysis was conducted to determine the association between breast cancer awareness and the factors associated with breast cancer awareness.

RESULTS

Demographic characteristics of respondents: A total of 360 female students participated in the investigation. Ages of the participants ranged from 21 and 26 years and the mean age was 23 years (). In terms of family income, the majority (77.5%) of students came from middle-class family and only 25.6% respondent's parents were higher educated. Most of the respondents were unmarried (87.8%) and they came from the rural residential area (67.2%) (Table 1).

Table 1: Demographic characteristics of the sample (n = 360)

Characteristics	n	%
Age		
21-22	103	28.6
23-24	179	49.7
25-26	78	21.7
Marital status		
Married	44	12.2
Unmarried	316	87.8
Parents' education		
Higher	92	25.6
Secondary	124	34.4
Primary	144	40
Family status (in terms of economic condition)		
Upper	23	6.4
Middle	279	77.5
Lower	58	16.1
Residential area		
Urban	118	32.8
Rural	242	67.2

Knowledge of breast cancer: The responses to the questions related to the knowledge of breast cancer are shown in Table 2. Although all the respondents heard the name of breast cancer, only 27.2% respondents knew

that breast cancer can be infected both male and female. More than 54% of respondents were familiar with the risk factors of breast cancer. Only 34.7% of the respondents knew about the breast self-examination and other types of breast cancer test. The maximum number of students (67.2%) thought that feeling like a lump in the breast is a symptom of breast cancer. Only 35.6% of respondents knew that oral contraceptives use, fertility treatment and hormone replacement therapy may increase the risk of breast cancer. Very few students (13.3%) knew that family history of breast cancer may put someone at higher risk of breast cancer. Most of the respondents did not have any knowledge about breast cancer support group and national breast cancer screening program, only a few respondents (5.8%) had knowledge about this. Also, only 36.1% of respondents had knowledge of breast cancer treatment such as surgery, chemotherapy, radiation therapy, hormone replacement therapy etc.

Table 2: Students' knowledge of breast cancer

(n = 360)

Questions	n	%
Have you heard the name of breast cancer?		
Yes	360	100.0
Do you know breast cancer can be infected both male and female?		
Yes	98	27.2
No and Unknown*	262	72.8
Do you know that smoking, alcohol consumption, lack of physical activity, overweight etc. are the risk factors for breast cancer?		
Yes	197	54.7
No and Unknown	163	45.3
Do you know feeling like a lump in the breast is a symptom of breast cancer?		
Yes	242	67.2
No and Unknown	118	32.8
Do you know bleeding from the nipple of breast is a symptom of breast cancer?		
Yes	170	47.2
No and Unknown	190	52.8
Do you know that oral contraceptives, fertility treatment and hormone replacement therapy may increase the risk of breast cancer?		
Yes	128	35.6
No and Unknown	232	64.4
Does a family history of breast cancer put someone at a higher risk?		
Yes	48	13.3
No and Unknown	312	86.7
Do you know about the breast cancer support group and national breast cancer screening program?		
Yes	21	5.8
No and Unknown	339	94.2
Have you heard the name of breast self-examination and other types of breast cancer test?		
Yes	125	34.7
No and Unknown	235	65.3
Do you know about the treatment of breast cancer such as surgery, chemotherapy, radiation therapy, hormone replacement therapy etc.?		
Yes	130	36.1
No and Unknown	230	63.9

*"Unknown" responses are added with "No" responses because of table presentation purpose

Specific characteristics of respondents are shown in Table 3. A small number of (5.3%; n = 19) respondents reported that they feel some symptoms of breast cancer and the percentage of the students who performed the test or checked-up their breast to determine whether they had breast cancer or not was 4.7% (n = 17). Very few students (1.4%; n = 5) had a family history of breast cancer, and none of the students directly reported that they had breast cancer. Most of the respondents (81.1%) informed that health care facilities in their residential area were not good enough. The main source of information about breast cancer awareness was electronic or printing media (42.2%).

Table 3: Specific characteristics of the sample (n = 360)

Students' specific knowledge of breast cancer		n	(%)
Do you feel any symptom of breast cancer?			
	Yes	19	5.3
	No	341	94.7
Have you check whether you have ever had your breast cancer?			
	Yes	17	4.7
	No	343	95.3
Family history of breast cancer			
	Yes	5	1.4
	No	355	98.6
Do you think health-care facilities in your area are enough?			
	Yes	68	18.9
	No	292	81.1
Sources of your information about breast cancer*			
	Media	152	42.2
	Internet, book or journal	93	25.8
	Health professionals	48	13.3
	Others	39	10.8

*More than one choice was indicated for that question

A total of only 11.4% (n = 41) respondents had excellent awareness and 28.3% (n = 102) of respondents had good awareness abovut breast cancer. On the other hand, about 45.6% (n = 164) of respondents had poor awareness and 14.7% (n = 52) of respondents had very poor awareness of breast cancer. The details of these results are presented in Table 4.

Table 4: Awareness of breast cancer in female students of BRUR (n = 360)

Awareness	Excellent[a]		Good[b]		Poor[c]		Very poor[d]	
	n	%	n	%	n	%	n	%
Breast cancer awareness	41	11.4	102	28.3	164	45.6	53	14.7

[a] Excellent = cumulative point > 75; [b] Good = cumulative point 50 to 74; [c] Poor = cumulative point 25 to 49; [d] Very poor = cumulative point < 25.

Table 5 shows that a total of 39.7% respondents were aware of breast cancer (aware was calculated by adding excellent and good awareness) and 60.3% respondents were not-aware of breast cancer (not-aware was calculated by adding poor and very poor awareness). Binary logistic regression analysis indicated that age group, parent's education, residential area, marital status were predictors of breast cancer awareness. Student's age more than 25 years were more likely to score high level of breast cancer awareness than those of age 21 to 22 years old (OR=2.18). Student's residential area, marital status, and parent's education had significant effect on breast cancer awareness (p-value = 0.041, 0.038 and 0.032). Unmarried students and local residents were less likely to breast cancer awareness (OR=0.80 and 0.71).

Table 5: Influence of characteristics on "aware" grade for breast cancer in female students of BRUR (n = 360)

Characteristics	Aware[a], n(%) (n=143; 39.7%)	Not-aware[b], n(%) (n=217; 60.3%)	Odds ratio (95% CI)	p value	(p-value)
Age group					
21-22	44 (42.72)	59 (57.28)	1.00		7.137 (0.036)
23-24	62 (34.64)	117 (65.36)	1.16 (0.68-2.10)	0.051	
25-26	37 (47.44)	41 (52.56)	2.18 (1.89-3.09)	0.035	

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Parents' education					
Higher	59 (64.13)	33 (35.87)	1.00		6.312 (0.032)
Secondary	41 (33.06)	83 (66.94)	1.04 (0.83-1.87)	0.063	
Primary	43 (29.86)	101 (70.14)	0.65 (0.03-0.93)	0.038	
Residential area					
Urban	52 (44.07)	66 (55.93)	1.00		3.979 (0.041)
Rural	91 (37.60)	151 (62.40)	0.71 (0.42-1.04)	0.031	
Marital status					
Married	35 (79.55)	9 (20.45)	1.00		4.029 (0.038)
Unmarried	108 (34.18)	208 (65.82)	0.80 (0.46-1.15)	0.037	
Health care facilities					
Yes	21 (30.88)	47 (69.12)	1.00		4.051 (0.043)
No	122 (41.78)	170 (58.22)	0.91 (0.73-1.36)	0.041	

[a] aware = excellent + good; [b] not-aware = poor + very poor.

Available healthcare facilities had also significant impact on breast cancer awareness (p-value = 0.043); the respondents who were not finding any healthcare facilities were 9% less chance (OR=0.91) to gain breast cancer awareness.

DISCUSSION

In this study, the result shows that only a total of 39.7% (including excellent and good) respondents had awareness of breast cancer. There were different sources of information about breast cancer awareness; about 42.2% of the respondents got information about breast cancer from electronic media which is similar to the observation of McMenamin, Moya, et al.[12], where the main source of knowledge about breast cancer was television (72%) among 85% western population. About 81.1% (n = 292) respondents reported that the available healthcare facilities provided by the local government and other non-government organizations were not enough for breast cancer awareness. The alarming result was that more than 5% (n = 19) of respondents feel one or more symptoms of breast cancer. Among them, 1.4% (n = 5) respondents had a family history of breast cancer and 4.7% (n = 17) respondents had checked whether they had breast cancer or not.

Most of the respondents were not known about the sign and symptom of breast cancer. Only 47.7% of respondents knew that bleeding from the nipple of the breast is an indicator of breast cancer. About 67.2% of respondents knew that lump in the breast is a symptom of breast cancer. According to our study, only a few of the respondents (13.3%) knew that family history or genetics reason is one of the risk factors for breast cancer. Only 35.6% of respondents indicated that oral contraceptives, fertility treatment, and hormone replacement therapy may increase the risk of developing breast cancer. The study on ''breast cancer and some epidemiological factors'' conducted by Jabeen et al., (2013)[13] found some risk factors for breast cancer which are mostly similar to this study. The study unveils that more than 44% of respondents had no knowledge about the treatment of breast cancer. Most of the respondents (more than 90%) did not know about the breast cancer support group and the national breast cancer screening program. In our study, 65.3% of respondents did not know about the breast self-exam or any other screening test of breast cancer.

CONCLUSIONS

Awareness has a crucial impact on the overall treatment outcome of breast cancer. This study revealed that students' had a low level of awareness score (39.7%) on sign and symptoms, early detection, diagnosis and treatment of breast cancer. As the female students are at future risk of breast cancer, therefore it is important to create awareness and educate the University students to remove the misconceptions associated with ignorance through University-based educational or awareness campaign. The results of this study would be an important source of baseline information about the awareness of breast cancer for other educational institutions.

Conflict of Interest: Nil

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Ethical Clearance: Taken from University ethics committee.

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Failure of Speed oligo Mycobacteria to diagnose *Mycobacterium tuberculosis* Complex Directly from Sputum Samples

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ABSTRACT

Introduction: Rapid and accurate diagnosis of tuberculosis facilitate treatment outcome and reduce the frequency of drug resistance. This study aimed to determine the role of speed – Oligo Mycobacteria in the rapid diagnosis and characterization of Mycobacteria to the species level.

Method: A total number of 46 confirmed positive tuberculosis sputum samples by smear microscopy, conventional PCR with IS6110 and Genotype mycobacterium CM were tested by Speed-Oligo Mycobacteria.

Results: All tested samples showed No results with speed – Oligo Mycobacteria, while a positive with Genotype Mycobacterium CM and conventional PCR.

Conclusion: Our finding oppose the use of speed-oligo mycobacteria for direct diagnosis of TB from clinical samples, recommending the use of conventional PCR method, Genotype, GeneXpert or any other molecular techniques used for direct diagnosis of TB from clinical specimens.

Keywords: *Speed oligo Mycobacteria; Mycobacterium tuberculosis; Tuberculosis; Sputum sample; Genotype Mycobacterium CM*

INTRODUCTION

Tuberculosis (TB) rank 10th of the leading cause of deaths worldwide, according to the WHO global tuberculosis report, 6.7 million notified new cases and relapsed during the year 2017. About 1.3 million deaths among HIV negative have been reported and further 300000 deaths in combination with HIV [1]. One of the most important criteria for reduction of deaths due to TB and improve public health was early diagnosis and implementation of proper treatment regiments for its exact duration [2-4]. Most low income countries relay on smear microscopy as the only laboratory diagnostic method for TB detection, but this method encounter high false positive and identified as none specific methods for TB detection [5-7]. Several molecular techniques showed remarkable specificity with high sensitivity of TB detection. Implementation of one of these techniques together with smear microscopy facilitate the early detection of the disease and starting up proper treatment [8,9].

Speed oligo Mycobacteria is a new method of detection and characterization of mycobacteria to the

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species level. Several authors evaluate speed oligo for differentiation of Mycobacterium species from culture isolates. They characterized both Mycobacterium tuberculosis complex as well as None tuberculous mycobacteria [10,11]. This study aimed to determine the efficacy of speed oligo mycobacteria to detect M. tuberculosis from direct sputum sample.

MATERIALS AND METHOD

A total number of 46 confirmed positive tuberculosis sputum samples by smear microscopy, conventional PCR with IS6110 and Genotype mycobacterium CM were enrolled in this study. DNA was extracted from each sample using HIPURA Mycobacteria purification kit (Himedia, India).

Inclusion criteria: All suspected Tuberculosis new cases who attended King Fahad Specialist Hospital and Prince Salman Armed Forces Hospital and had been confirmed as having tuberculosis clinically, radiologically and laboratory using smear microscopy and molecular techniques were enrolled in this study.

Exclusion criteria: Smear negative and patients who were not confirmed to have tuberculosis was excluded from the study. Previously infected patients who started the treatment were also excluded.

Conventional PCR to amplify IS6110: Extracted DNA was used to perform conventional PCR to amplify the 567 bp fragment of insertion sequence 6110 (IS6110) with the forward primer TB1-5'GAGATCGAGCTGGAGGATCC-3' and reverse primer TB2-5'-AGCTGCAGCCCAAAGGTGTT-3'. PCR protocol was adjusted according to Walker DA et al [12].

Genotype Mycobacterium CM: Genotype Mycobacterium CM was done for all clinical samples using the manufacturer protocol. In brief, 5µl of DNA was mixed with 10µl reagent (AM-A) and 35 µl of reagent (AM-B), PCR amplification and hybridization protocols were done according to the manufacturer.

Speed oligo Mycobacteria: 10µl from the extracted DNA was mixed with 15 µl of reconstituted master mix and 40 PCR cycle was run according to kits protocol (SPEED-OLIGO® MYCOBACTERIA, Vircell). The PCR product was hybridized as stated by the manufacturer. The kit allows detection of 19 different species of Mycobacteria.

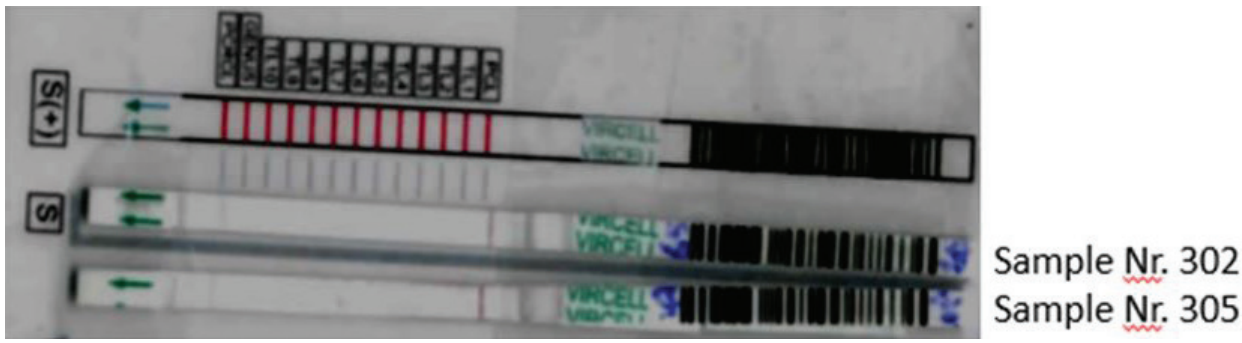

Figure 1: Speed oligo Mycobacteria, shows positive line in PCR control, hybridization control

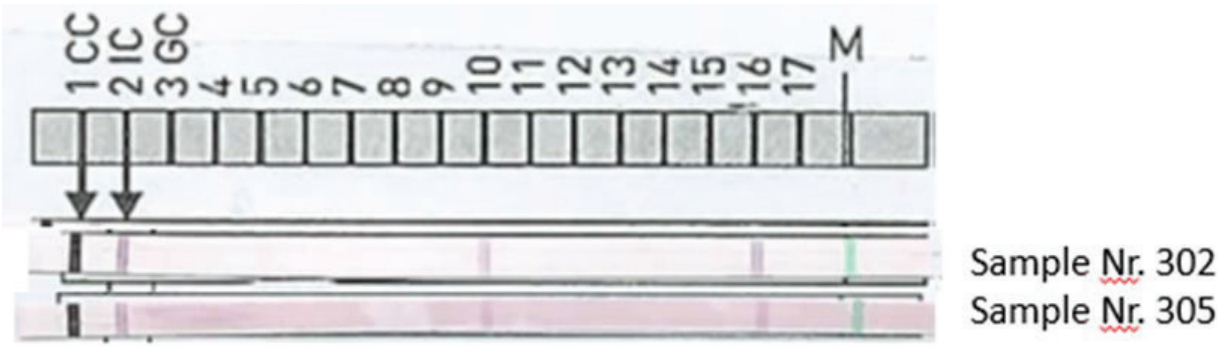

Figure 2: Genotype Mycobacterium CM results showing positive line in position 10 and 16 characterizing the species as *M. tuberculosis* complex

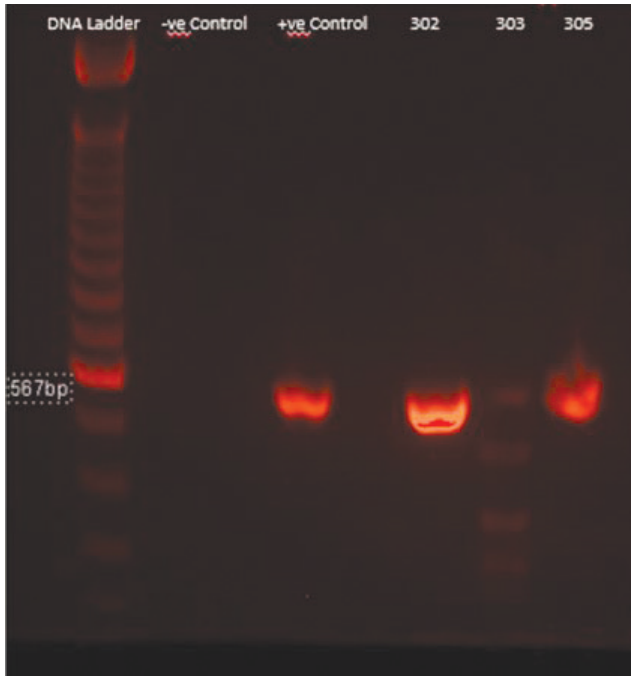

Figure 3: Conventional PCR method amplifying the 567 bp fragment of IS6110. Lane 1: 100 bp DNA ladder, Lane 2 negative control, Lane 3 Mycobacterium tuberculosis +ve control, Lane 4: sample Nr. 302 and Lane 5: sample Nr. 305. Sample # 303 showed multiple none specific bands which are not related to IS6110 gene fragments

RESULTS AND DISCUSSION

All 46 sputa showed positive line for both PCR control and hybridization control while failed to produce line with either Mycobacterium control area or species lines (Figure 1). Presence of the two control lines indicate that the PCR amplification and hybridization were performed correctly and accurately, while absence of mycobacterium control and species lines may indicate an inhibitory substance in the sputum samples or inability of the test to identify Mycobacterial DNA directly from the sample. The Speed Oligo mycobacteria test kit was designed to identify Mycobacterium species isolated by culturing and not tested against direct sputa. According to the manufacturer leaflet sheet, the efficacy of the test has not been demonstrated on clinical specimen and negative results do not exclude the presence of Mycobacterium species as their DNA may be below the detection levels. Our results confirmed the inability of the test to diagnose Mycobacterium tuberculosis directly from sputum samples. Most of published work evaluate the speed oligo Mycobacteria using culture isolates rather than clinical samples [10,11,13], none have tested the methods directly from clinical samples, although its use helps characterization of the species and facilitate rapid treatment, hence increase treatment out comes.

Same samples gave good identification line using Genotype Mycobacterium CM and identified as *M. tuberculosis* complex (Figure 2) and positive band using amplification of the 567bp IS6110 by conventional PCR method (Figure 3).

CONCLUSION

Our finding oppose the use of speed-oligo mycobacteria for direct diagnosis of TB from clinical samples, recommending the use of conventional PCR method, Genotype, GeneXpert or any other molecular techniques used for direct diagnosis of TB from clinical specimens.

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Ethical Clearance: This study has been approved by the local committee for research ethics, University of Tabuk under the approval number (026), which has been covered by the umbrella of National Local Bioethics committee, Saudia Arabia with the license number HAP-07-TU-001. All participants have been aware with the objectives of the study and signed agreement was collected from them.

Conflict of Interest: All authors declare that they have no conflict of interest with regards to this manuscript.

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Body Fat Composition as a Determinan of Cognition Functions in Elementary School Students

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ABSTRACT

The prevalence of over nutrition problems which include overweight and obesity shows an increasing tendency also =experienced by school-age children. This condition causes excess energy which is then stored in the form of fat tissue. Cognitive is one of the important aspects of the development of generations that are directly related to the learning process, and greatly determine their success in school. Excessive adipose tissue in the body will affect the development of cognitive function through the mechanism of secretion of cytokines and growth hormones. The purpose of this study was to examine the composition of body fat as a determinant of the development of cognitive functions in school-aged children in Mojokerto. The study design used is correlation analysis with cross sectional approach. The population were all 4-5 grade students at Mlirip II Elementary School in Mojokerto. The sampling technique used total sampling of the entire population. Data analysis used Rank Spearman test. The result that the significance value (2-tailed) is 0.008 that less than 0.05, so there is a significant composition of body fat is one determinant of cognitive abilities. Macronutrients associated with cognitive function are fat levels. Fat levels can affect cognitive function through the mechanism of secretion of cytokines and growth hormones.

Keywords: *Body fat composition, Cognitive function*

INTRODUCTION

The growth and development of a child are two different events but take place the same [(1)]. Growth and development are interrelated so that it is difficult to separate. In developing countries like Indonesia, nutritional problems are one of the big problems faced from year to year. The prevalence of over nutrition problems that include overweight and obesity shows an increasing tendency not only in the adult age group, but also in children [(2)]. The group of children to early adolescents (9-14 years) is an age group that is at risk of experiencing problems with malnutrition and over nutrition [(3)]. Obesity occurs because of an imbalance between energy intake and output so that excess energy occurs which is then stored in the form of fat tissue [(4)]. Excessive fat tissue can contribute to several diseases such as excess blood cholesterol levels, hypertension and diabetes mellitus, which currently has not a small amount suffered by early adolescents and school-age children [(5)].

Cognitive is one of the important aspects of the development of generations that are directly related to the learning process, and greatly determine their success in school [(6)]. Nutritional factors play an important role in achieving a quality generation that is healthy, intelligent and has a strong and productive attitude[(7)]. In simple terms, it can be understood that cognitive ability is the ability possessed by children to think more complex, as well as reasoning and problem solving abilities[(8)]. In subsequent developments, the term cognitive became popular as one of the realms of human psychology including mental behavior related to understanding, information processing, problem solving and belief. in school-age children, the development of cognitive functions is very important to be considered for the success of the nation later . The purpose of this study was to determine whether the composition of body fat as one of the determinants of cognitive function of school-age children.

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RESEARCH METHOD

The research design used correlation analysis with cross sectional approach. The populations were all students in grades 4-5 in Mlirip II Elementary School Mojokerto. The sampling technique used total sampling. The research was carried out at the Mlirip II Elementary School in Mojokerto. All respondents were given an explanation of the purpose of the study and asked for approval to become research respondents. All respondents measured their body fat composition using the Body Fat Hydration Monitor tool. Then all respondents were examined for cognitive function using a scale A CFIT Type 2 instrument. Decreased IQ Test (cognitive function) was carried out by Psychologists from Lovalogy Consulting engaged in the psychology test.

RESULT

Table 1: Cross tabulation "Body fat composition as a determinant of cognitive function of children in SDN Mlirip II Mojokerto"

Kategori	Cognitive Function												TOTAL	
	Intelectual deficience		Borderline		Below average		Average		Above average		Superior			
Body fat	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Too lean	2	2,1	1	1,05	8	8,4	7	7,3	2	7,7	0	0	20	21,0
Lean	1	1,0	1	1,05	0	0	7	7,3	1	7,7	0	0	10	10,5
Normal	0	0	0	0	2	2,1	35	36,8	10	38,7	2	2,1	49	51,5
Fat	0	0	1	1,05	2	2,1	4	4,2	2	4,4	0	0	49	9,4
Obesity	0	0	0	0	2	2,1	3	3,15	1	3,2	1	1,05	37	7,3
TOTAL	3		3	3,15		14,7	56	58,9	16	62,04	3	3,15	95	100

Source: Primer Data, 2018

Processing statistical data used the Spearman rank statistical test. There are 3 test results, the first is the significance value (2-tailed) of 0.008 where it is less than 0.05, that the composition of body fat is a significant determinant of cognitive abilities. The second is that the correlation coefficient is 0.270, it can be stated that the correlation between two variables is sufficient. For the third result, where the correlation coefficient number on the result is positive (0.270), it means that the relationship between the two variables is unidirectional (kind of unidirectional relationship). The more normal composition of body fat is as good as cognitive abilities.

DISCUSSION

Fat in the body functions as an energy source, a hormone raw material, helps transport fat-soluble vitamins[10]. Metabolic fat is a fat that undergoes metabolic changes, produces special substances that have biological and nutritional significance, cholesterol also undergoes changes in the adrenal glands (kidneys) to various types of steroid hormones[11]. The function of fat as a hormone is also very influential on physiological processes in the body, for example, the production of reproductive hormones[12]. According to Piaget, cognitive development is a genetic process that is a process based on the biological mechanism of the development of the nervous system[13]. With the increasing age of a person, the more complex the arrangement of nerve cells and the more their abilities increase[14]. When individuals develop toward maturity, they will experience biological adaptation to their environment which will cause qualitative changes in their cognitive structure[15]. Cognitive development is not something that can be defined quantitatively[16]. Thinking power or mental strength of children of different ages will be qualitatively different macronutrients associated with cognitive function are fat levels[17]. Fat levels can affect cognitive function through the mechanism of secretion of cytokines and growth hormones[18].

SUMMARY

The significance value (2-tailed) is 0.008 where it is less than 0.05, so there is a significant composition of body fat which is one of the determinants of cognitive

ability. The second is that the correlation coefficient is 0.270, it can be stated that the correlation between two variables is sufficient. The number of correlation coefficients on these results is positive (0.270), which means that the relationship between the two variables is unidirectional (type of unidirectional relationship). The more normal composition of body fat is as good as cognitive abilities. Thus it can be concluded that the composition of body fat is a determinant of children's cognitive function.

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Factors Associated with the Knowledge and Attitude Towards Breastfeeding in Thai Grandmothers of Pregnant Adolescents

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ABSTRACT

Objective: To assess knowledge and attitude towards breastfeeding, to determine the level of knowledge and attitude towards breastfeeding and to examine the factors associated with breastfeeding knowledge and attitude among Thai grandmothers of pregnant adolescents.

Method: A cross-sectional study was conducted in Banmi Hospital, Lopburi and Inburi Hospital in Sing Buri Province, Thailand. All of the interviewed grandmothers had a pregnant daughter or granddaughter using the antenatal care clinic from 20 May 2015 to 30 July 2015.

Findings: The results showed 54.8% of grandmothers had good breastfeeding knowledge, 51.2% of the grandmothers had a negative attitude towards breastfeeding. In addition, the experience of exclusive breastfeeding and its intent were associated with breastfeeding knowledge ($p = 0.036$ and 0.049, respectively), and the relationship between the grandmother and pregnant adolescent was associated with the attitude towards breastfeeding ($p = 0.027$).

Conclusion: The knowledge and attitudes towards breastfeeding in Thai grandmothers are suboptimal, and it is important to provide them with health education on breastfeeding.

Keywords: *breastfeeding knowledge, attitude towards breastfeeding, grandmothers,*

INTRODUCTION

Children are our future and our most precious resource. After birth, the health of the baby depends upon the family's selected nurturing practice. Breastfeeding is recognized as the gold standard for infant feeding and the best way to enhance the health of mothers and infants. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend that all infants worldwide should breastfeed exclusively for the first six months of life, followed by partial breastfeeding combined with an appropriate diet until the age of two years or beyond [(1)]. Global Nutrition Targets 2025 increased the rate of exclusive breastfeeding (EBF) in the first six months to at least 50% [(2)]. In 2012, UNICEF report found that only around 12.3% of Thai mothers breastfed their babies exclusively for the first six months [(3)]. Grandmothers represent influential persons in breastfeeding promotion [(4)]. In Thai society, family members pay respect to their elderly relatives and they obey their advice, including recommendations about breastfeeding [(5)]. Their knowledge, attitudes and experiences influence mothers' decisions to initiate and continue breastfeeding [(4, 6)]. This study aimed to assess knowledge and attitude towards breastfeeding, to determine the level of knowledge and attitude towards breastfeeding and to examine the factors associated with breastfeeding knowledge and attitude among Thai grandmothers of pregnant adolescents.

METHOD

A cross-sectional study was conducted in Banmi Hospital, Lopburi and Inburi Hospital in Sing Buri Province, Thailand. This study was part of a larger study in which the sample size was calculated from the formula based on proportionate outcomes of events in two population groups [(7)]. Purposive sampling selected a total of 84 grandmothers of pregnant adolescent. All of the interviewed grandmothers had a pregnant daughter or granddaughter and used the antenatal care clinic.

Three experts in public health, including an expert in breastfeeding, an expert in maternity and infants and an expert in research methodology, validated the Item-Objective Congruence Index (IOC) of knowledge

and attitude towards breastfeeding. The KR-20 of breastfeeding knowledge was 0.72, and the Cronbach's Coefficient Alpha of attitude towards breastfeeding was 0.73. The interviewers performed fact-to-face interviews with the participants and used a structured questionnaire.

RESULTS

General Characteristics: There were 84 grandmothers who participated in this study. Grandmother's aged ranged from 35 to 60 years with mean of 49.89 (±6.92) years. The majority (77.4%) had a primary school education.

Breastfeeding Knowledge

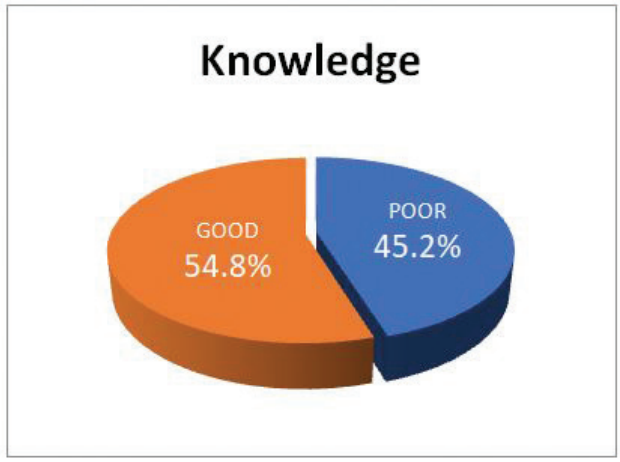

Figure 1: Level of breastfeeding knowledge in grandmothers

Table 1: Breastfeeding knowledge of grandmothers (n = 84)

No.	Issues	n (%) of correct response
1.	Breast milk contains immunity to help reduce the chances of the infant becoming sick.	78 (92.9)
2.	Breastfeeding helps the uterus return to its original size more quickly.	62 (73.8)
3.	Breastfeeding reduces the risk of cancers such as breast cancer and ovarian cancer.	64 (76.2)
4.	The initiation of breastfeeding should occur soon after delivery or within the first 30 minutes to one hour after birth.	65 (77.4)
5.	Yellow breast milk (colostrum) should be discarded because it is spoiled.	56 (66.7)
6.	The most important technique for breastfeeding is frequent suckling every two to three hours.	74 (88.1)
7.	Good latching on is the baby taking the nipple only into his/her mouth to suckle.	29 (34.5)
8.	The baby can receive sufficient nutrition from breast milk if the mother breastfeeds 10-15 minutes on each side.	51(60.7)
9.	Let the infant suckle fully from one breast before switching.	38 (45.2)
10.	Exclusive breastfeeding is appropriate for infants until six months old.	42 (50)
11.	After breastfeeding, babies should be fed water to wash their mouth.	28 (33.3)
12.	Infants will suffer malnutrition with exclusive breastfeeding.	32 (38.1)
13.	The best way to tell if babies receive enough milk is that they sleep two to three hours and have six or more wet diapers in one day.	53 (63.1)
14.	Breast milk is easier to digest than formula milk.	76 (90.5)
15.	Before infant suckling, the mother should clean her nipples with soap.	52 (61.9)
16.	If cracked nipples are not bleeding, the mother can breastfeed her infant.	60 (71.4)
17.	Applying expressed breast milk to the cracked nipples accelerates healing.	33 (39.3)
18.	Mothers who suffer from stress release less milk.	39 (46.4)
19.	If mothers are not at home, they can express breast milk and store it in the refrigerator.	75 (89.3)
20.	Breast milk that has been refrigerated can be heated in the microwave before giving it to the infant.	40 (47.6)

Attitude towards Breastfeeding

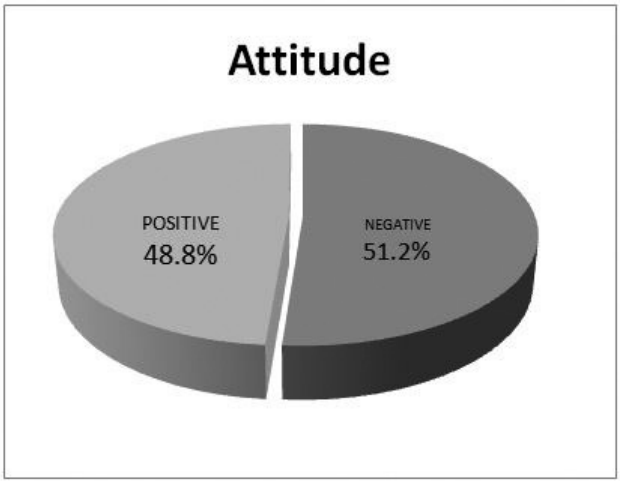

Figure 2: Level of attitude towards breastfeeding in grandmothers

Factors Associated with Breastfeeding Knowledge: The average score of breastfeeding knowledge (SD) was 12.46 (3.65), and 54.8% (n = 46) of the participants had good breastfeeding knowledge, while 45.2% (n = 38) had poor breastfeeding knowledge. The experience of exclusive breastfeeding and the intention to breastfeed the grandchild had statistically significant differences with breastfeeding knowledge at p-values < 0.005 (p = 0.036 and 0.049, respectively).

Factors Associated with Attitude towards Breastfeeding: The average score of attitude towards breastfeeding (SD) was 51.79 (6.11), with 48.8% (n = 41) of the grandmothers having a positive attitude towards breastfeeding, while 51.2% (n = 43) had a negative attitude towards breastfeeding. The relationship between grandmothers and pregnant adolescent had a statistically significant difference with attitude towards breastfeeding at p < 0.005 (p = 0.027).

DISCUSSION

Breastfeeding Knowledge: The results showed that more than half of the grandmothers had good breastfeeding knowledge. Similar studies showing that women who already had children had good breastfeeding knowledge supported these findings [8-12]. However, another study has shown women had poor breastfeeding knowledge, presenting findings that are inconsistent with the present study [13]. When breastfeeding knowledge was categorized by item, the present study showed that the majority of grandmothers (92.9%) knew breast milk contains immunity to help reduce the infant's chances of becoming ill. These results are consistent with Mohammed et al., who found the vast majority of mothers (94.8%) knew breast milk contains immunity to help reduce the infant's risk of illness [9]. The present study found that the grandmothers answered questions correctly less than half the time, and 65.5% of them did not know how to correctly latch on. The study from Santo et al. demonstrated that poor latch-on technique was associated with cessation of exclusive breastfeeding [14]. Inappropriate suckling technique makes it more difficult to extract milk from the breast, which in turn means that the breast is not completely emptied (breasts are never completely emptied because they are constantly producing milk), initiating a vicious cycle of poor milk demand and poor milk supply. Furthermore, mothers' breastfeeding nipples may become cracked and painful when the latch is incorrect, and this can result in the child being weaned early. More than half of the participants (54.8%) did not know about foremilk and hindmilk, did not mind the duration of feeding and said that the infant suckling on only one side created unequal breasts. The duration of each feeding is very likely the most important concern. The high lactose level found in foremilk is important for energy and brain development, and it also quenches the baby's thirst. The hindmilk is richer in fat and calories, which is important for growth and helps the baby feel full [15]. It is extremely important that the mother allows the baby to drink from one breast until it seems empty. The most common reason mothers give for weaning is a perceived insufficient milk supply. Thai mothers think that babies want to breastfeed all the time, are seldom satisfied, cry and demonstrate slow weight gain due to not getting enough milk. Foremilk and hindmilk imbalance are due to colic symptoms, green frothy explosive stools, diaper rash due to acidic stools, the baby wanting to breastfeed all the time, the baby not becoming satisfied and the baby experiencing slow weight gain. Regarding the exclusive breastfeeding issue, Thai grandmothers did not know exactly the meaning of 'exclusive breastfeeding' and hesitated to exclusively breastfeed because they thought exclusive breastfeeding meant feeding infants with only breast milk and water. Furthermore, 66.7% of the respondents thought that water should be given during exclusive breastfeeding, and 61.9% of them thought that exclusive breastfeeding during the first six months led to malnutrition [5]. In Thai culture, including many countries around the world, it is believed that infants

need water. Some of the most common reasons are that water is necessary for life, quenches thirst, prevents and treats colds and constipation, soothes fretfulness and decreases jaundice and hiccups. More than half of the respondents (53.6%) did not know stress or anxiety may also inhibit the physiological milk-injection reflex, causing inadequate milk flow. It can be possible that the older generation in rural areas never received proper education regarding breastfeeding; thus, 52.4% of the grandmothers did not know the method to thaw and heat stored breast milk. In the past, expressing or storing breast milk was not popular and, in their view, a difficult and inconvenient practice. The older Thai generation in rural areas typically fed their babies with breast milk, water, mashed rice or mashed bananas. Some houses did not have a refrigerator; therefore, it is not surprising that these grandmothers did not know the way to thaw and heat stored breast milk. It is important to motivate grandmothers and give them information regarding the present breastfeeding practice and exclusive breastfeeding knowledge.

Attitude towards Breastfeeding: The results found that grandmothers had a negative attitude towards breastfeeding. This is inconsistent with a previous study that found grandmothers had a positive attitude towards breastfeeding [16]. Few researches have shown that grandmothers had a negative attitude regarding breastfeeding, but the research from Johansson and Westmar revealed that mothers in a rural area of Thailand were more positive towards formula feeding than to breastfeeding [17]. These Thai women may have preferred formula feeding because of the economic development in Thailand, which has seen an increase in the rates of formula feeding due to the improved marketing of breast milk substitutes [17]. When attitude towards breastfeeding was categorized by item, the study showed that almost all of the grandmothers (98.8%) believed that breast milk promoted mother-child bonding, saved money and was more convenient than formula feeding [9]. However, there were some negative attitudes towards breastfeeding. The majority of Thai grandmothers (90.4%) agreed that performing lactation in public places is an embarrassment, as the breast is a sexual symbol and traditional Thai women are very reserved. In such a traditional society, it is still considered shameful for a woman to expose her breasts. Women would be embarrassed to breastfeed their babies in the presence of anyone other than their husband[18]. Most of the grandmothers (82.2%) agreed that breastfeeding babies makes the husband feel left out. In Thai society's older generation, it is the woman's duty to take care of the baby, and the man is involved very little. More than half of the grandmothers (58.4%) agreed that breastfeeding wastes more time than formula feeding, and 57.1% of them agreed that private time will be limited when they choose breastfeeding. Formerly, Thai women who breastfed did not work and stayed home to take care of their child. This is difficult work, and they must stay with their babies all the time; thus, it makes them feel like they have no private time. If mothers select formula feeding, other individuals can help them feed and take care of their child when they go to work or have something else to do. As previously mentioned, storing and thawing breast milk was more difficult for the older generation. The misconception that small breasts produced insufficient milk was found in 70.2% of Thai grandmothers. Breast size mostly depends on how much fatty tissue the breast contains, and fatty tissue does not have anything to do with how breasts make milk. Breast size does not affect milk production, which is a 'use it' process; the more often and effectively the baby suckles, the more milk will be produced.

Factors Associated with Knowledge and Attitude towards Breastfeeding: The present study found the experience for exclusive breastfeeding and the intention to breastfeed their grandchild was associated with the grandmothers' breastfeeding knowledge. This was inconsistent with a previous study, which found that knowledge regarding breastfeeding was associated with the mothers' education [13]. Furthermore, Banu and Khanom showed that knowledge on breastfeeding was highly significant for those with a higher education [19]. Limited studies have been done to explore whether experience of exclusive breastfeeding and its intent are associated with breastfeeding knowledge. However, Brodribb et al. showed that personal breastfeeding experience does not guarantee better breastfeeding knowledge, although increasing the length of the experience is related to higher knowledge scores [20]. The result displayed that there was a relationship between the grandmothers having been pregnant as an adolescent and their attitude towards breastfeeding. A similar study found that partner or friend/ family support is important in improving the attitude towards breastfeeding [21]. However, the aforementioned finding was inconsistent with the previous study, which found that attitude towards breastfeeding was associated with breastfeeding intent [22].

CONCLUSION

Thai grandmothers' breastfeeding knowledge and attitude towards breastfeeding are suboptimal. These results indicate a compelling need for a specific strategy to provide breastfeeding education to grandmothers who help their daughters care for babies in order to further promote breastfeeding.

Conflict of Interest: None

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Cross-Sector Collaboration Indicators Development of HIV-AIDS Prevention Program in Indonesia

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ABSTRACT

Background: Cross-sector collaboration is a very effective strategy in carrying out HIV-AIDS prevention programs. The purpose of this study was to develop indicators for measuring cross-sector collaboration of the HIV-AIDS Prevention Program.

Method: This study used a qualitative method with a rapid assessment procedure design, and information was extracted through in-depth interview to develop assessment indicators and ways of measuring cross-sector collaboration of the HIV-AIDS Prevention Program. Information sources were taken from key informants and regular informants. After that expert conducted discussion which aimed to refine and sharpen the question model which had been developed from the informants.

Result: It was found that from the five dimensions of cross-sector collaboration of HIV-AIDS prevention programs, there were 18 new indicators formed from the dimension of governance, administrative, organizational independence, mutuality and norms.

Conclusions: It is expected that from those indicators, the government's strategy for the HIV-AIDS prevention program can be measured.

Keywords: *Collaboration, Cross-Sector, Prevention Program of HIV-AIDS*

INTRODUCTION

In the last five years, the rate of HIV epidemic in Indonesia was the fastest in ASEAN[(1)]. Referring to the report on the development of HIV-AIDS in Indonesia until 2017 tended to increase. The number of HIV cases reported from 2005 to 2017 has increased every year. The highest number of HIV cases reported in 2016 was 41,250 cases, while AIDS reached the highest number of cases in 2013 as many as 11,741 cases[(2)].

To deal with the HIV epidemic, HIV-AIDS prevention and response efforts are more intensive, comprehensive, integrated and coordinated, to produce high-coverage, effective and sustainable programs. This policy direction was elaborated into a strategy involving active role of multi-stakeholder collaboration[(3)].

In Indonesia itself to improve the effectiveness of collaboration between sectors, the government established the AIDS Commission (ACT) through Ministerial Regulation No. 20 of 2007 concerning guidelines for the establishment of AIDS Prevention Commission (NAC) and community empowerment in the context of HIV-AIDS prevention in the region. The Ministerial Regulation No. 75 in 2006 concerning the National AIDS Commission in order to improve the effectiveness of the coordination of AIDS prevention.

In 2016 the President then issued Presidential Regulation No. 124 of 2016 concerning the National AIDS Commission, which outlined the changes and adjustments to membership and work procedures of the National AIDS Commission. There were several main

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issues discussed in Presidential Regulation 124/2016, including the NAC membership system, the placement of the NAC secretariat under the Ministry of Health, and the announcement of the enactment of the NAC's tenure.

With the issuance of the Presidential Regulation, it caused turmoil among HIV activists both in national and regional levels. This is mainly due to the community and NGOs and the National and Regional NAC secretariat were not included in the process of drafting the Presidential Regulation. Not only a matter of legal products but also the point of placing the NAC secretariat under the Ministry of Health has also been a concern. As it is assumed that the problem of HIV-AIDS must be noticed from many aspects, ranging from preventive, curative, to the things that are not less important: stigma and discrimination, coordination, cross-sectoral collaboration, business, society, NGOs, communities, and also media. The duties and functions of NAC as a forum for combating HIV-AIDS will certainly be very ineffective if it is only submitted to one ministry institution inasmuch as that will make NAC very overwhelmed and less strategic, especially in coordinating its collaboration, and building partnerships.

Through those problems, it is important to conduct studies related to cross-sector collaboration of the HIV-AIDS prevention program. To be able to measure cross-sector collaboration of the HIV-AIDS prevention program, it is necessary to develop a measuring tool that can assess the success of collaboration. For this reason, it is necessary to develop indicators for cross-sector collaboration to measure collaboration and obtain the expected collaboration model with changes in the structure of cross-sector coordination. This research aims to develop the indicators for measuring cross-sector collaboration of the HIV-AIDS Prevention Program in Indonesia.

MATERIAL AND METHOD

This study applied qualitative methods, with the design of rapid assessment procedures. In this stage, the search for indicators and how to measure the dimensions of the collaboration process were carried out according to stakeholders who have direct involvement and impact. Then from the preparation of these indicators, discussions with experts were conducted so that a quantitative instrument of the HIV-AIDS Prevention Program collaboration measurement was designed.

The information was explored through in-depth interview to develop assessment indicators and ways to measure cross-sector collaboration of the HIV-AIDS Prevention Program. Information sources were taken from key informants and regular informants. The key informant was the Assistant Deputy for Institutional Affairs for the Regional Secretariat of the National AIDS Commission. Regular informants were institutions directly affected by the HIV-AIDS Prevention Program, namely the Ministry of Health, the Ministry of Social Affairs and the Ministry of Education. After the indicator was formed, the expert discussion was conducted to refine and sharpen the indicators that have been developed from the informants. Hence the measurement can meet the standards that should be. The experts involved have expertise in their respective fields, namely (1). Content experts, from professionals who are experts in the field of HIV-AIDS development, consisted of one person from UNAIDS (2). Subject experts are academics who are experts in the field of health policy. (3) Target experts who can provide input regarding the relevance of the research objectives are right on target.

The technique of selecting informants or respondents was by purposive method with the consideration that the informants or respondents chosen were those who were most aware of the HIV-AIDS prevention program. The criteria for informants were those who were aware of the HIV-AIDS Program or the HIV-AIDS Program holders and the Program/ Position holders between the periods of 2012-2017 with a minimum of 1 year term.

FINDINGS

The five dimensions of collaboration developed by Thomson and Perry are the dimensions developed in this study. Collaborative dimensions are the dimensions of Governance, Administration, Autonomy (Institutional Independence), Mutuality, and Norms (Trust). The indicators in each of these dimensions were obtained through theory which is then operationalized for the HIV-AIDS prevention program through in-depth interview.

Dimensions of Governance: Dimension of Governance describes the involvement of various institutions in managing the program. Based on the results of interviews with informants, there were several indicators formed from this dimension. Following are the excerpts from interviews with informants:

"*As a coordinator in the coordination of stakeholders, coordination is carried out in the form of meetings between stakeholders"*

(YPC, Deputy for Planning and Institution of the National AIDS Commission, NAC, 2018)

"*Membership is urgent to know by all institutions involved, if they themselves do not know that they are part of NAC, it is difficult to be involved and play an active role in activities*."

(Head of Sub-directorate for HIV-AIDS and Sexually Transmitted Diseases, Ministry of Health, 2018)

From the statement of the informants above, it can be concluded that in the governance of HIV-AIDS prevention programs, there are several important points that must be considered, namely regarding to institutional rules that become a reference in cross-sector collaboration, involvement of members in coordination meetings and knowledge related to the membership of each agency in collaboration HIV-AIDS prevention program.

Research conducted by Bryson, Barbara & Stone, 2006 produced three dimension; membership, structural configuration, and institutional structure. Thomson and Perry, 2006 stated that governance is a *jointly decision making* in arranging the rules that can affect the behavior and relationships among institutions. From several indicators proposed by several collaboration experts, there are several similarities with the indicators developed in this study, including related rules and membership. While the new indicators formed are information and socialization needed in the governance of the HIV-AIDS prevention program[4-6].

Table 1: New Indicators Formed in the Collaborative Dimension of the Cross-Sector HIV-AIDS Prevention Program

Dimension of Governance	
1.	Membership
2.	Policy as the basis for relations among institutions
3.	Information and socialization related to rules
Dimension of Administration	
1.	Communication
2.	Roles and responsibilities
3.	Settlement of conflicts among institutions
4.	Institutional information system

Conted…

Dimension of Organization Independence/Autonomy	
1.	Policy of rules related to HIV-AIDS prevention programs
2.	HIV-AIDS prevention program
	Budget
Dimension of Mutuality	
1.	Exchange of Resources (skill, expertise, money, information)
2.	Influence of other institutions activities
3.	Communication channel
4.	Honored and respected feelings by the other institutions
Dimension of Norms	
1.	Trusting the other institutions
2.	Program Sustainability

Administration Dimension: The administrative dimension describes the means used in supporting the implementation of the institutional process in collaborating. Based on the results of interviews with the informants, there are several indicators formed from this dimension. The excerpts from interviews with informants are shown as follows:

"*There is an internal secretariat coordination meeting, NAC and stakeholders. At the meeting, the activities, solutions, conflicts were discussed*."

(YPC, Deputy for Planning and Institution of the National AIDS Commission, NAC, 2018)

"*Agencies need to know their roles and functions in NAC membership, as in the center, they don't necessarily understand their role and function as NAC members*".

(EBH, Head of Sub-directorate for HIV-AIDS and Sexually Transmitted Diseases, Ministry of Health, 2018)

The statements of the informants reflect that each institution needs a communication channel to improve coordination. Some important points that must be considered in the administrative dimension based on the statements of the informants above are communication used in coordination, clarity of roles and responsibilities, conflict resolution, and institutional information systems.

Organizations collaborate because they intend to achieve certain goals. To achieve this goal, administrative structures must exist that can move governance into action. The administrative structure focuses on implementation and management to do what needs to be done to achieve goals[7-10].

Referring to the collaborative theory of Barbara Gray, Thomson & Perry and Ansell & Gash, there are several indicators that describe this dimension as; Clarity of roles and responsibilities, communication channels to improve coordination, mechanisms to monitor each activity in relation to roles and responsibilities[4,6,10].

Institutional Independence Dimension: The third dimension of the collaboration process reflects the independence of the institution which means how each institution has a strong legal law in the form of policy, in collaboration[5]. Based on the results of interviews with the informants, there are several indicators formed from this dimension. Following are the excerpts from the interview:

"*... in term of cross-sectoral budgets in handling HIV, it is important because there are several ministries that do not have a budget ...*"

(EBH, Head of Sub-directorate for HIV-AIDS and Sexually Transmitted Diseases, Ministry of Health, 2018)

"*There is a program, yet Social Affair Department conducts its own assessment and then a policy or program is made*"

(IS, Head of the Sub district Directorate of Social Rehabilitation for Youth and people with HIV-AIDS, Ministry of Social Affairs, 2018)

Referring to the statements of the informants, it can be implied that the independence of the organization in its budget, policies and programs is important in collaboration. Therefore, it can concluded from the interview is that the independence is associated with policies where support comes from regional leaders, budgeting from the regional government and donors.

In collaboration of the organizations involved have multiple roles. They maintain their own organizational identity and authority which is separated from the collaborative identity and authority of the collaboration itself. [11-12]

Dimension of Mutuality: The fourth dimension of the collaboration process displays interdependence and mutual benefit among collaborating institutions. Based on the results of interviews with the informants, there are several indicators formed from this dimension. The excerpts from interviews with informants are outlined as follows:

"*Communication is important. If in the Ministry of Education and Culture is involved in a task force such as stopping pornography there are groups available, related to the crime of trafficking in persons there are groups themselves all from across ministries and non-ministries, but none in HIV-AIDS*"

(NS, Head of sub-directorate for children and youth education, ministry of education and culture)

"*Communication is important especially communication outside formal meetings, i.e. communication through WA groups or there are joint activities that can unite all institutions. Communication should not be too formal so that each member is free to express opinions".*

(IS, Head of the Sub district Directorate of Social Rehabilitation for Youth and people with HIV-AIDS, Ministry of Social Affairs, 2018)

Furthermore it can be concluded from the interview that there is an exchange of information among members involved in collaboration. Communication media such as WA can increase interdependence among them. It was also found that a number of indicators on the dimensions of mutuality were also formed, such as resource exchange, influence of other institutions' activities, communication channels, and respected feelings.

Mutuality is rooted in interdependence. Collaborating organizations must feel interdependent one another and mutually beneficial even though they have different interests[9,10]. In his study at the National Sevice, Thomson (1999) found that commitment to the same target population proved to be one of the most important factors in collaborating[13].

Dimension of Norms: The fifth dimension of the collaboration process reflects the trust built by collaborating institutions. The excerpts from interviews are described as follows:

"*It is required the coordination among institutions, so that problems can be handled more effectively and efficiently*"

(EBH, Head of Sub-directorate for HIV-AIDS and Sexually Transmitted Diseases, Ministry of Health, 2018)

"*Coordination is very important, but how can the institution be effective as the Working Group made is related to institution and community (academics, HIV activists)*"

(IS, Head of the Sub district Directorate of Social Rehabilitation for Youth and people with HIV-AIDS, Ministry of Social Affairs, 2018)

Hence it can be concluded that trust in every institution that collaborates is important. From the above interviews, several indicators were formed on the dimensions of norms such as trust in other institutions, believing that collaboration can solve problems and trust in the leaders of institutions that act as coordinators.

Expert Discussion Results: The expert discussion began with the explanation by the researcher regarding the measurement instrument of the Cross-Sector Collaboration Process of the HIV-AIDS Prevention Program which was produced in the qualitative stage. Then the researcher asked for input from the experts related to the instrument especially the content of the instrument being developed.

In general, experts assessed what was contained in the instrument in terms of content and operational concepts related to institutional cross-sectoral coordination. The HIV-AIDS prevention program is appropriate, but there are some improvements and additional indicators that need to be corrected, such as clarifying the operational definition of each dimension and operational definition associated with HIV-AIDS prevention program. The governance variables need to be clarified by the references used in relation to the Regional Action Plan Strategy (SRAD). In the dimension of mutuality, it is necessary to add related performance on basic tasks to each Regional Work Unit (RWU).

CONCLUSION AND SUGGESTION

Development of the HIV-AIDS collaboration indicator needs to be carried out as an evaluation of the performance of the HIV-AIDS prevention strategy in Indonesia. It was revealed from the interviews with the informants and expert discussions that there are five dimensions that need to be measured in the collaboration of HIV-AIDS prevention programs, namely governance, administration, organizational independence, mutuality and norms. These five dimensions consist of 3 to 4 indicators, each of which can be converted into questions to measure the effectiveness of cross-sector collaboration in the HIV-AIDS prevention program. It is expected that through these indicators, the measurement of the government's strategy in the HIV-AIDS prevention program can be discovered/ measured accurately.

Conflict of Interest: There is no conflict of interest in this research

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The Relationship between Ventilation with Excess Cancer Risk (ECR) of Benzene at the Shoe Home Industry in Romokalisari Surabaya

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ABSTRACT

The objectives of this study were to identify the relationship of Ventilation with Excess Cancer Risk (ECR) of benzene at the shoe home industry in Romokalisari, Surabaya. This researchwas observational, cross-sectional study 10 workers as the total population.

The data was analysed using cross tabulation to calculate the frequency of Ventilation and Excess Cancer Risk (ECR), that obtained from the value of benzene Carcinogen Intake (Ink), benzene concentration in work environment (C), worker's weight (Wb), inhalation rate (R), length of work/day (tE), working frequency/year (fE), duration of work (Dt), and average time period (t_{avg}). Analysis relationship between Ventilation with Excess Cancer Risk (ECR) of benzene carcinogen was using Coefficient-Contingency Test and Prevalence Risk (PR).

From observation it was found that most of the workplace were not ventilated (9 places/90%). Concentrations of benzene 0.04 mg/m^3-2.91 mg/m^3, inhalation rate (R) 0.5 m^3/hr-0.7 m^3/hr, length of work per day (tE) 8 hours/day-15 hours/day, working frequency (fE) 312-365 days/year, duration of work (Dt) 14 - 43 years, weight of worker's (Wb) in 8 people (80%) ≤ 70 Kg, CSF benzene 0.055 mg/m^3, and excess cancer risk (ECR) > 10^{-4} indicated that there was a possibility of carcinogenic health risks. P-value was 0.035, meaning there was a relationship between the existence of ventilation with the Excess Cancer Risk (ECR) of benzene carcinogen in workers. Prevalence Risk (PR) was 9.0, meaning that the absence of ventilation has a 9 times greater risk of carcinogen health effects. Recommendations were by providing better ventilation in the workplace, consuming CYP2E1 enzyme contained in cow liver and salmon to lower benzene concentration in the body, it is necessary for risk management to include medical tests, added air vents, replaced with safer materials, and communicated to use personal protective equipment.[12,16]

Keywords: *Benzene, Ventilation, Excess Cancer Risk (ECR),Shoes Home Industry*

INTRODUCTION

The use of chemicals in the informal industry sector was significantly increasing. One of the informal sectors that use chemicals was home industry such as shoes or sandals industry that uses glue materials in their production process. In general, glue or adhesive contains a variety of mixtures including benzene and toluene which act as a solvent. Benzene is well known as a good organic solvent for various industrial processes such as rubber industry, shoes, paint solvents, components in motor fuel, component in detergents, pesticides and pharmaceutical manufacturing.[8]

Based on Regulation Ministry of Manpower and Transmigration No Per.13/MEN/X/2011 about Threshold Limit of Physical Factor and Chemical Factors at Work, maximum benzene exposure is at 1.59 mg/m^3,[11] continuous exposure to benzene and exceeding predetermined threshold values can cause adverse health effects, especially exposure through inhalation. The impacts that can arise from acute exposure to benzene

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were disruption of the nervous system, lack of oxygen supply to the brain, dizziness, rapid heartbeat, headache, tremors, confusion,and fainting.[17,18] Benzene toxicity to the central nervous system arises after exposure to benzene through inhalation/respiration with high concentrations (3,000 ppm for 5 minutes) or 30 to 60 minutes via digestion.[3]

This was in accordance with the results of a study, that conducted by Betty [4] on the health risk of benzene exposure to the worker at the leather shoes industry in Pulo gadung, Jakarta. The calculation of the carcinogen effects for exposure to lifetime and real-time concentrations of benzene at risk of adverse health effects because of the value of excess cancer risk (ECR) $>10^{-4}$ so that it required a risk management to protect workers in the five workshops. The exposure of safe benzene concentration for a carcinogenis 0.023 mg/m^3, while the benzene concentration at the shoe production place is 0.206 mg/m^3, it is necessary for risk management to include medical tests, adding air vents, using safer materials, using food rich in glycine and using the personal protective equipment.[16]

The home industry Romokalisari Surabaya were producing shoes. There is a process of gluing shoes with the use of glue materials in which there was benzene chemical content. The benefit of using ventilation in the shoes home industry Romokalisari, Surabaya was that it can decrease the level of exposure of benzene in the workplace, therefore the study aims to correlation the existence of ventilation with excess cancer risk (ECR) of benzene carcinogen in home industry Romokalisari Surabaya.

MATERIALS AND METHOD

This research was conducted on 8th of October 2017 on the gluing section of shoehome industry Romokalisari Surabaya. This research was use the cross-sectional approach. The independent variable in this study was the ventilation on the nominal measurement scale. The dependent variable is the Excess Cancer Risk (ECR) of benzene carcinogen in ppm unit. Total population counted 10 samples.

Variables in this study were the presence of ventilation and Excess Cancer Risk (ECR) of benzene carcinogen. Determination of Excess Cancer Risk (ECR) of benzene carcinogen was calculated from Intake benzene carcinogen (I_{nk})*CFS. The value of Intake benzene carcinogenic was the result of calculation that was directly proportional to the value of benzene concentration in the working environment (C), inhalation rate of worker (R), length of work/day (tE), working frequency per year (fE), duration of work (Dt) and was inversely proportional to the worker's characteristic value (consisting of worker's weight (Wb) and average time period (t_{avg}).

Primary data collected include the presence of ventilation data and worker characteristics (worker's weight (Wb), length of work/day (tE), working frequency every year (fE), duration of work (Dt)). Secondary data collection included benzene concentration value data in work environment (C), worker inhalation rate (R) and average time period (t_{avg}) used for carcinogen intake benzene (I_{nk}) and CFS value used to calculate Excess Cancer Risk (ECR).

Data analysis was using cross tabulation to know the frequency of the presence of ventilation and frequency of value to determine Excess Cancer Risk (ECR) of benzene carcinogen that is the result of calculation from Intake benzene carcinogen (I_{nk})*CFS. To determine the value of carcinogen intake benzene (I_{nk}), it was necessary to know the frequency of benzene concentration values in the work environment (C), inhalation rate of worker (R), length of work/day (tE), frequency of work each year (fE) , working duration (Dt), worker's characteristic value (consisting of worker's weight (Wb) and average time period (t_{avg}).The relationship analysis of the correlation of ventilation with Excess Cancer Risk (ECR) of benzene carcinogen was using Coefficient-Contingency Test and to know the amount of risk was using Prevalence Risk (PR).

FINDINGS

A. The Presence of Ventilation: Based on table. 1 below, most of the place where the workers did their gluing work in the shoes home industry of Romokalisari, Surabaya had no ventilation as many 9 places (90%).

Table 1: Distribution of Presence of Ventilation at Worker's Place in The Shoes Home Industry of Romokalisari, Surabaya

The Presence of Ventilation	N	%
Yes	1	10,0
No	9	90,0
Total	10	100,0

Based on Regulation Ministry of Health Republic Indonesia No. 48 in 2016 about Occupational Safety and Health Standards in Office, it was said that one of the requirements of building safety and security was the availability of ventilation for circulation and air exchange needs, especially when there wasa component that used asolvent such as benzene. In addition, based on decision Ministry of Health Republic Indonesia No. 1405/ MENKES/SK/XII/2002 in 2002 about the Health Working Environment Requirements in the Office and Industry, it was said that every office space and industry had of ventilation holes. Standard air exchange was 0.283 m^3/min/person with a ventilation of rate are 15 to 0.25 m/s. For non-air conditioned working, rooms should have a ventilation hole at least 15% of the floor area by applying a cross ventilation system.[10]

LEED[9], ASHRAE[2], and ICC[7], suggested that additional ventilation at the end of construction would reduced VOC concentrations (including benzene) to acceptable levels. In indoor environmental studies, BRE reported that seasonal variation in indoor air concentrations was due to higher concentrations of exterior air infiltrated to buildings, and a greater effect of indoor sources during the winter than in the summer months. This was because of the available ventilation a low/ bad level. VOC concentrations including benzene were reduced when the level of ventilation andmaterial emission standards were met.

B. Excess Cancer Risk (ECR) of Benzene Carcinogen: The following numbers on the table below were the data of benzene concentration, inhalation rate, worker characteristics, carcinogenic benzene intake and Excess Cancer Risk (ECR) in the shoe home industry of Romokalisari, Surabaya.

Table 2: Data of Benzene Concentration, Inhalation Rate, Workers Characteristic, Intake Benzene Carcinogen and Excess Cancer Risk (ECR) of Benzene Carcinogen in The Shoes Home Industry of Romokalisari, Surabaya.

No. Workers	C mg/m^3	R m^3/jam	tE Jam/hari	fE days/year	Dt year	Wb Kg	t_{avg} day	I_{nk} mg/Kg/day	ECR mg/Kg/day
1.	1.12	0.5	13	312	43	42	25550	0.09791	0.005385303
2.	1.12	0.6	9	312	43	52	25550	0.05955	0.003275346
3.	0.06	0.6	14	312	36	50	25550	0.00426	0.000234135
4.	0.06	0.6	8	312	40	48	25550	0.00277	0.000152429
5.	1.27	0.7	10	350	27	70	25550	0.04367	0.002401576
6.	1.27	0.6	8	365	20	50	25550	0.03346	0.001840544
7.	1.27	0.7	8	312	14	80	25550	0.01477	0.000812257
8.	1.27	0.6	15	365	23	53	25550	0.06959	0.003827613
9.	2.91	0.7	10	312	25	85	25550	0.07249	0.003986947
10.	0.04	0.7	15	365	20	70	25550	0.00159	0.000087647
Average								0.04001	0.002200379

Table 2 above, the value of intake benzene carcinogenic (I_{nk}) can be calculated using the following formula: Based on the calculation of Intake benzene carcinogen (I_{nk}) value above, it was known that the maximum intake value received by workers in the shoes home industry Romokalisari Surabaya was 0.09791 mg/Kg/day).

Excess Cancer Risk (ECR) of benzene carcinogen determines benzene exposure having carcinogenic risks in the worker's body or not. The value Excess Cancer Risk (ECR) is calculated using the following formula:

It was known that the carcinogenic benzene ECR values established by US-EPA[19] was ($\leq 10^{-4}$) mg/Kg/day. Based on the calculation in Table 2 above, the average value of excess cancer risk (ECR) on workers in the shoes home industry of Romokalisari Surabaya was 8 x 10^{-5} mg/Kg/ day and the highest ECR was 53 x 10^{-4} mg/Kg/ day. This showed that ECR >10^{-4}, meaning that

there was a possible indication of the risk of carcinogenic health effect and the need for control measures.[3]

This was in accordance with the results of study that was conducted by Rendi[13] on the health risk assessment for exposure to benzene in SPBU Pancoranmas, Depok. Fuel pump operators have a risk carcinogenic effect of each individual can be concluded that at 3 years exposure there is 1 employee who is at risk of cancer effect, and at lifetime exposure all employees are at risk of cancer. All of the population but the administrative staff was at risk of a carcinogenic effect on all the duration of exposure. It was advised that all workers should work no more than 3 years, working for a maximum of 6 hours/day or the use of appropriate PPE to protect them from the risk of cancer.

C. The Presence of Ventilation with Excess Cancer Risk (ECR)of Benzene Carcinogen: Analysis of the relationship between of ventilation with Excess Cancer Risk (ECR) of benzene, the Excess Cancer Risk (ECR) has 2 value, that were ECR $\leq 10^{-4}$ and ECR $> 10^{-4}$, in the Prevalence Risk (PR) calculation. The following table was the relationship between of ventilation with Excess Cancer Risk (ECR) of Benzene Carcinogen.

Table 3: Relationship between of Ventilation with Excess Cancer Risk (ECR) of Benzene Carcinogen The Shoes Home Industry of Romokalisari, Surabaya

The Presence of Ventilation	Excess Cancer Risk (ECR)				Total		p	Prevalence Risk (95%CI)
	ECR > 10^{-4}		ECR < 10^{-4}					
	N	%	N	%	N	%		
Yes	0	0.0	1	10.0	1	10.0	0.035	9.000 (1.418-57.117)
No	8	80.0	1	10.0	9	90.0		
Total	8	80.0	2	20.0	10	100.0		

The results in table 3 above, it was found that the p-value of the relationship between the Presence of Ventilation with Excess Cancer Risk (ECR) of benzene carcinogen was 0.035 and when compared with α that was 0.005 then p-value 0.035 was smaller than α so it could be seen that there was a relationship between the presence of ventilation with Excess Cancer Risk (ECR) of benzene carcinogen in the shoe home industry of Romokalisari, Surabaya.

Prevalence Risk (PR) showed 9, meaning that the absence of ventilation was 9 times greater risk for carcinogen health effects (ECR > 10^{-4}) to workers in the shoe home industry of Romokalisari, Surabaya and there was a significant relationship between the presence of ventilation and the value Excess Cancer Risk (ECR) to worker in the shoe home industry of Romokalisari, Surabaya which could be seen from PR value does not pass 1 (1,418-57,1117).

The results of this study showed that the ventilation system controls the exposure of benzene in the shoe industry Romokalisari Surabaya, because the ventilation system works to draw more air into the work room by using fan to encourage air to rise and can be dilutied by mixing with fresh air entering ventilation, and equipped with exhauster to suck air contaminants out the room. In addition, workers are encouraged to use personal protective equipment, especially masks, placing some plants that work to accelerate the decomposition of benzene vapor, and always maintain good hygiene, and promote healthy life style.[15]

CONCLUSION

The result of the study found out that most of the places (90.0%) for workers to work did not have ventilation. The most of worker in the shoe home industry of Romokalisari, Surabaya had Excess Cancer Risk (80.0%) more than 1. There was a significant relationship between the presence of ventilation with Excess Cancer Risk (ECR) of benzene carcinogen in the shoe home industry of Romokalisari, Surabaya (p-value = 0.035, Prevalence Risk = 9.0).The recommendation was by making ventilation in a good workplace and by consuming CYP2E1 enzyme contained in beef liver and salmon that serves to lower benzene levels in the body, and the use of appropriate PPE to protect them from the risk of cancer.[12,16]

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The Prevalence of Oral Manifestation in Transgenders with HIV/AIDS in Surabaya, East Java, Indonesia

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ABSTRACT

Background: Transgenders do anogenital and orogenital (fellatio) sexual intercourse which high risk of HIV/AIDS transmission. HIV/AIDS decrease immune system ($CD4^+$ T cells) that can easily lead to opportunistic oral infections. There are oral lesions that close related to HIV/AIDS infection such as Oral Candidiasis, Angular Cheilitis, Oral Hairy Leukoplakia, and Linear Gingival Erythema.

Aim: to describe the prevalence of HIV/AIDS Oral Lesions in HIV/AIDS transgender patient at Surabaya, East Java, Indonesia.

Material and Methods: an analytical observational research with cross-sectional and total sampling method. The samples consisted of 56 patients transgender patient at PERWAKOS in July 2014 accordance with the criteria and agreed to participate by filling the informed consent. Diagnosed of HIV/AIDS based on Rapid Test and HIV 1 and 2 Enzyme Linked Immunosorbent Assay (ELISA). The oral cavity of subjects examined by oral medicine specialist. Diagnosed for Oral Candidiasis based on mycology test direct microscopy using Potassium Hydroxide 10%. Fungal culture was done on Sabouraud Dextrose Agar (SDA). Candida species detection by sugar fermentation test. Results: There were 45 of 108 transgenders were diagnosed seropositive HIV/AIDS revealed 26 cases of Oral Candidiasis (49,06%), 18 cases of Angular Cheilitis (33,96%), 7 cases Oral Hairy Leukoplakia (13,2%), and 2 cases of Linear Gingival Erythema (3,77%).

Conclusion: Oral Candidiasis was the most common oral lesion found in HIV/AIDS transgender.

Keywords: *HIV/AIDS, Oral Manifestation, Transgender, Opportunistic Infection.*

INTRODUCTION

First Human Immunodeficiency Virus (HIV) and Aquired Immunodeficiency Syndrome (AIDS) case was discovered in the United States in 1981 with the presence of *Pneumocystis jirovecii* in pneumonia and Kaposi's Sarcoma in 26 healthy homosexuals in New York and Los Angeles.[1] HIV was originally known as Limphadenopathy-Associated Virus (LAV) and Human T-cell Lymphotrophic Virus Type III (HTLV-III).[2] . HIV is a retrovirus that can transmit through three ways: vertically from an infected mother to child; as a transsexual; and horizontally or contact with body fluids.[3]

In Indonesia, first HIV/AIDS case was discovered in Bali in 1987. Since 1999, the transmission of HIV/AIDS through sexual intercourse phenomenon shifts to the transmission through contact with body fluids, especially intravenous drug use or Intravenous Drug Users (IDUs). In 2000, the pandemic of HIV through sex workers in Indonesia increase annually.[3] September 2014 until 2016, there are 150.296 HIV cases dan 55.799 AIDS cases in Indonesia (Ditjen PP and PL Kemenkes RI, 2014). HIV/AIDS included in the Emerging Infectious Disease.[4,5]

One of highest risk group infected HIV/AIDS was transgender group, due to the high risky sexual life that

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can lead spreading of HIV/AIDS such as anogenital or orogenital (fellatio) and changing sexual partners frequently.[5] Surabaya transgender community gathered by a Persatuan Waria Kota Surabaya (Perwakos) or Union of Shemale Surabaya. Most of Perwakos centers are spread throughout the entire Surabaya city.[6] HIV/AIDS decreased immune system of human's body. People who at the last stage of HIV/AIDS infection, $CD4^+$ T cell decreasebelow 200cells/mm^3.[2] The decreased in the immune system caused by HIV/AIDS destruct the $CD4^+$ T cells and caused a decrease $CD4^+$ T cells significantly. The opportunistic infection associated with HIV/AIDS increased.[7]

It has been estimated that 90% of people with HIV disease will present at least one oral manifestation, sometime during the HIV infection. Dentist has an important role in the primary health care to positively affect the well being of patients. The oral health is an important but frequently undervalued as source of diagnostic and prognostic information in patients with HIV diseases. Oral manifestations is an important biomarkers in HIV infection. OHL is one of seven oral manifestations were strongly associated with HIV/AIDS (pathognomonic lesion), such as Oral candidiasis (OC), Angular Cheilitis (AC), Oral Hairy Leukoplakia (OHL), Linear Gingival Erythema (LGE), Necrotizing Ulcerative Gingivitis (NUG), Necrotizing Ulcerative Periodontitis (NUP). Sarkoma Kaposi dan Non Hodgkin Lymphoma (NHL).[8]

The most common opportunistic infections in the oral cavity was OC. An early manifestation in the oral cavity that can indicate the progression of HIV infection in approximately 30-80% of patients.[9] One of priorty program from World Health Organization (WHO) Oral Health Program in 2003 was effective prevention of oral manifestations of HIV/AIDS through several activities, such as by identifying the most indicative of oral lesions in HIV / AIDS. Diagnosis of infection through early identification is one way to lower the risk of transmission of infection.[10] The aim of this study to know the prevalence of HIV/AIDS Oral lesions in HIV / AIDS transgender patient at Surabaya.

MATERIALS AND METHOD

This study has been received approval ethical clearance letter of human subjects from Ethics Research Committee Faculty of Dental Medicine, Universitas Airlangga Surabaya, East Java, Indonesia 40/KKEPK. FKG/VI/2014. This is an analytical observational research with cross-sectional and total sampling method. The samples consisted of 108 patients transgender patient. There were 45 HIV/AIDS seropositive patients at PERWAKOS in July 2014 accordance with the criteria and agreed to participate by filling the informed consent. Diagnosed of HIV/AIDS based onRapid Test (VIKIA® by BioMérieux SA, Marcy-I'Etoile, France) and Enzyme Linked Immunosorbent Assay (ELISA) (Human Immunodeficiency Viruses Type 1,2 Antibody (HIV1,2) ELISA Test Kit® by Diagnostic Automation/ Cortez Diagnostics Inc, California, USA).

The oral cavity of subjects examined by oral medicine specialist. Diagnosed for Oral Candidiasis based on mycology test direct microscopy using Potassium Hydroxide (KOH) 10% (Remel BactiDrop®, by Thermoscientific™, California, USA). Fungal culture was done on Sabouraud Dextrose Agar (SDA by Acugen Manufacturers inc Neogen™, Lesher Place, Lansing). Candida species detection by sugar assimilation and fermentation test (The Candifast™ kit (International Microbio™, France). Prevalence of oral lesion was determined using Chi Square test. Statistical analysis was done using Statistical Package for the Social Sciences (SPSS) 17.0 software for windows 8.1 by SPSS Inc, Chicago, United State.

RESULTS

According this study there were 45 seropositive HIV/AIDS patients (41,67%) from 108 transgender at Perwakos. Most of them in 20-30 years old group (75,56%) age distribution of seropositive HIV/AIDS transgender can be seen in table 1.

Table 1: Age Distribution of HIV/AIDS seropositive transgender in 2014

Ages	Total	Percentage (%)
20-30 years old	34	75,56
>30 years old	11	24,44
Total	45	100

In this study, most common of oral lesion was OC with 26 cases (49,06%). Prevalence of Oral Lesion in HIV/AIDS seropositive transgender shown in table 2.

Table 2: Prevalence of Oral Lesion in HIV/AIDS seropositive transgender in 2014

No.	Oral Lesions	Number of Cases	Percentage (%)
1.	Oral Candidiasis	26	49,06 %
2.	Angular Cheilitis	18	33,96 %
3.	Oral Hairy Leukoplakia	7	13, 2%
4.	Linear Gingival Erythema	2	3,77%
	Total	14	100%

DISCUSSION

The number of people living with HIV/AIDS in the age range 20 to 30 years old as a result of a risky lifestyle such as prostitusion and drug abused. HIV/AIDS infected people in productive age because high sexual libido in young age. In the previous study, libido at productive age range increased only by a little stimulation or even without stimulation. Libido combustible triggers sexual perversion.[11] The high HIV/AIDS cases in the 20-29 age range supported by the majority of the study subjects had a job as commercial sex workers and the existence of a community which resulted in changing sexual intercourse partners.[12]

HIV/AIDS symptoms appeared from 7 to 10 years after infection, it can be implied that at the young age seroconversion was infected which is between 13-20 years old. This age group associated with the developmental stage both body and physic maturation, that can easily affected by environmental conditions and negative lifestyle such as free sex, IDU drug abused.[11,13]

HIV infection affects innate immunity and adaptive immunity. HIV attacks and disrupt homeostasis efforts that so the host susceptible to opportunistic infections. HIV/AIDS infections lead to a variety of clinical manifestations in the various organs such as in the oral cavity. Oral manifestations may indicate systemic conditions of person and reflect an initial clinical signs that can predict the progression of HIV into AIDS.[14]

The most common oral lesion in this study was OC. OC cases in this study fewer than previous study in UPIPI RSUD Dr. Soetomo 2011 with 31 cases (66%), dan study in Nigeria 2012 with 31 cases (47,77%).[15,16] The differences occurred depend on individual immune system status at the time of inspection. OC often arised in people with HIV/AIDS due to immunodeficiency condition that made fungal colonies in the oral cavity lead to opportunistic infection.[16]

The second most prevalent in this study was Angular Cheilitis. Number of AC cases in this study more than study India 2012 with 16 cases (12,8%) and Iran 2014 with 17 cases (17%).[17,18] In previous study said that AC occurred due to HIV/AIDS infection made Staphylococcus Aureus, Streptococci and Candida Spp. Become opportunistic infection. Less nutrition and vitamin such as B complex and C play role as predisposition factor that can lead to AC.[20]

The less prevalent of oral lesion in this study was OHL. Number of OHL cases in this study fewer than study in Iran 2014 with 17 cases (17%) and study in India 2012 with 16 cases (12,8%) OHL occurred only in HIV/AIDS patient with late stage of infection. Epstain Barr Virus is the etiology of OHL ends it dormant stage and pathogen stage because of immunodeficiency condition.[21]

Another less prevalent of oral lesion in this study was LGE. Number of LGE cases in this study fewer than previous study in UPIPI RSUD Dr. Soetomo Surabaya 2014 with 7 cases (5,83%). *Candida Spp*. in subgingival plaque trigger inflammation respond at free margin gingiva that involved attach gingiva.[22]

CONCLUSION

Oral Candidiasis was the most common oral lesion found in seropositive HIV/AIDS transgenders patient at PERWAKOS Surabaya, East Java, Indonesia.

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Evaluation of the Health Policy Implementation of Indonesian Social Insurance Administration Organization in Primary Health Care Facilities

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ABSTRACT

Background: This study discusses the evaluation of BPJS policy implementation regarding aspects of perception, resources, and implementation of the National Health Insurance program for the quality of primary health care facilities services. BPJS stands *for Badan Penyelenggara Jaminan Sosial* (Social Insurance Administration Organization) administering the Indonesian national health insurance (*Jaminan Kesehatan Nasional*) or JKN for short.

Method: This study uses a descriptive study using a qualitative approach. Subjects in this study are those involved in policy implementation of BPJS in JKN program conducting in primary health care facilities (*Fasilitas Kesehatan Tingkat Pertama*) or FKTP for short.

Results: The study showed stakeholders feel the benefits of BPJS policy. However, there is also the perception that BPJS policy may hurt some parties. Analysis of resources towards the implementation of BPJS policies at primary health care facilities indicates the unbalanced proportion of the health workers with the number of JKN participants. JKN program implementation and analysis of policy implementation of BPJS at primary health care facilities reveal some obstacles in the execution.

Conclusion: BPJS policy implementation at primary health care facilities have been perceived beneficial by society and health care providers, but the shortcomings are still there.

Keywords: *Evaluation, Implementation, BPJS, JKN, FKTP*

INTRODUCTION

Health financing is a way to fulfill one's medical needs. Everyone has the responsibility for financing personal health services they need to live healthy and productive. However, in reality, most people are not able to spend money to meet all the medical needs when experiencing pain severe enough due to the nature of health services which are sometimes hard to identify which cost to cover. To overcome these problems, then there are two methods applied, i.e., entirely financed by the government and partially funding[(1)].

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To realize the commitment that everyone has equal rights in obtaining access rights to resources in the field of health and health services that are safe, quality and affordable, the government of Indonesia runs a National Health Insurance called BPJS or *Badan Penyelenggara Jaminan Sosial* (Social Insurance Administration Organization). However, this effort is still fragmented so that health care costs and quality of service become uncontrollable.

In most cases, the problems of BPJS implementation are with primary health care facilities or *Fasilitas Kesehatan Tingkat Pertama* (FKTP) especially first-class clinic among that will not admit participants of JKN not listed in the application of *P-Care*. Besides, a clinic that has no pharmacist should cooperate with a pharmacy in networks making it difficult for patients because they have to take the drug on the outside.

Further many clinical systems are not willing to pay the JKN fare, so there is still the cost of services imposed on patients.

The various obstacles in the implementation of JKN require an evaluation study on BPJS policy implementation through analysis of perception, resources, and program implementation of services JKN in primary health care facilities. Therefore, this study discusses the evaluation of BPJS policy implementation regardin g perception, resources, and implementation of the National Health Insurance program for the quality of primary health care facilities services.

METHODOLOGY

This study uses a descriptive study using a qualitative approach. The study was conducted by taking steps of data collection, classification, processing or analyzing data, making inferences, and reports.

Subjects in this study are those involved in policy implementation BPJS in the program JKN in terms of primary health care, the community of users/participants of BPJS, facilities manager of primary healthcare services in collaboration with health BPJS, doctors and other health workers as a force providing health care, health policymakers at the district/city, JKN manager of the district/city.

The research location is a primary health care facility that includes family physicians, health centers, and primary clinics cooperating with BPJS located in Central Java and East Java. The three main areas of analysis are the perception of stakeholders, availability of resources, and implementation of JKN against BPJS policy.

RESULTS AND DISCUSSIONS

1. **Perception Analysis Related of Stakeholder to the Implementation of BPJS Health Policy:** Stakeholders' perception analysis was conducted through questionnaires to related five parties, namely: JKN or national health insurance participant, doctors and health officer, leader of primary health care facilities, health BPJS or Social Insurance Administration Organization leadership, and leader of the health department.

120 participants of JKN were asked to state their level of satisfaction towards primary health care facilities. Through JKN people feel very relieved to get quality health care. The percentage of very satisfied by 25% are found on tangible dimensions, 75% expressed satisfaction at aspects of responsiveness, and 15% expressed dissatisfaction with the dimensions of responsiveness, reliability, and empathy. The percentage of patient dissatisfaction is the greatest on the aspects of responsiveness, reliability, and empathy.

Problems faced by respondents waiting in line long enough to get service when children are sick. The respondents hope to be able to get services more efficiently and notification to them when their membership payment is due to as late fees will make the patient cannot perform health checks using BPJS before settling the amount.

Interviews with doctors who serve patients in health facilities indicate the capitation rate policy in FKTP or primary health care facilities is still relatively small. Moreover, the uneven distribution of participants by the number of JKN membership resulted in FKTP feel overwhelmed in caring for patients.

Perceptions of FKTP leadership in policy evaluation BPJS can be concluded that there has been no equalization amount of participation JKN program between FKTP with each other. This has an impact on the quality of health care provided to patients, especially in FKTP, the over-representation of JKN health service to patients is not optimal. Besides, the capitation rates in FKTP is relatively too small for the activities of healthcare to patients, so FKTP has to work hard to be able to provide services to patients as effectively and efficiently as possible to continue to promote the quality of healthcare to patients.

In Health BPJS leadership, the organization will address any problems that arise with issuing new policies as a solution to these problems. Monitoring and evaluation activities are regularly conducted. Payment of claims relating to the amount of BPJS to health care can be exactly where the entire administrative provisions must be submitted or reported at the end of the month. The ability of healthcare facilities needs to show the dimensions

of the primary services can give confidence to the community. Problems of membership were felt by the whole society on the level of understanding of BPJS participation. The level of knowledge of the health insurance system with BPJS was found in a variety of factors, especially the level of awareness, education, income and level of socialization that cannot be accepted throughout society.

Health Department has a function as a watchdog against JKN program implementation. Any problems that arise will be assessed and will be formulated policies to overcome it. Inhibiting factor in participation is the level of payment capability in poor communities themselves. Networking for the poor and displaced were done in coordination with the social department office to be made under the observation and evaluation reports from the various programs.

Capitation payment is a way to control health care costs by putting the health facility in a position to bear the risk, in whole or in part, by receiving bulk payments [(2)]. In the implementation of capitation is a physician who will obey oath, then it will not sacrifice medical services to participants. Incentives received the desired surplus will be carried out by the individual preventive effort to allow participants who registered will remain healthy. However, a doctor who does not obey will reduce costs by paying attention to the health of the participants. Depending on the amount of capitation (precise equivalent dosing in therapy), capitation payment can encourage a positive reaction and adverse reaction. A positive response would occur if the capitation worthy and fair with utilization conducted openly. Adverse reactions quickly occur if the capitation is too low.

2. **Resource Analysis to BPJS Policy Implementation:** The results of interviews with respondents obtained information that related resources towards the implementation of BPJS policy in primary health care, among others, are the lack of supporting facilities for services to participants such as the lack of parking spaces, narrow waiting room , less extensive examination room, lack of available boards and directional information to facilitate the patient, as well as the limited number of available health workers.

   Interviews with doctors obtained information that the resource constraints in the implementation of JKN are the lack of human resources in FKTP, infrastructure is still limited, and the capitation rates are still inadequate.

   Interviews in FKTP obtained information that resources are still lacking is capitation rates are still relatively small for the public service activities impacting on service conditions. Results of interviews in BPJS received news that the problem is the limited resources of health personnel in serving patients. The number of doctors is limited while the number of patients helped a lot. Also unequal distribution of the number of participants and the number of health JKN employees making the accumulation of participants of JKN in some FKTP, while in some FKTP the participants are less.

3. **Implementation of JKN Program against BPJS Health Policy:** With the enactment of JKN program managed by BPJS[(3)], JKN participants feel the benefits of having this program as at any time of health problems they can quickly obtain health care without the need for health care costs. JKN implementation encourages doctors to improve the quality of service by providing health services effectively and efficiently. JKN impact on the optimization of the variety of health services is to create efficient and adequate health care. In the implementation of this program, BPJS role is to make every effort to provide a quality health care to participants of JKN and to establish a good cooperation with the healthcare provider. A sound concept in the draft of Social Security Law has been set [(4)], but only in the implementation, several things distort the design. Some proposals below are the solution to achieve the reputation of Indonesia in the application of JKN:

1. Setting the higher wage limits.
2. Transferring the setting of rates or payments to a health facility.
3. Setting the rates on capitation payments to be more realistic to encourage primary care to serve better.
4. In line with the nature of the disease, the milder cases are handled in a lower level of health care.
5. There should not be any limitation of jurisdiction in referral services.

6. Improving the operational research and development research/medical technology on JKN.
7. Until recently, the majority of policymakers still have not received a guarantee of medical services abroad/in neighboring countries. JKN benefits are supposed to be applicable elsewhere as long as overseas doctors are willing to accept payment determined.
8. One of the potential problems and bureaucracy in the solvency problem is the separation of liquid assets of BPJS and DJS or *Dana Jaminan Sosial* (Social Security Fund). The concept of separation of the two assets is provided for in the Act of BPJS [(5)]. However, the separation is conceptually inconsistent with the principle of a non-profit organization where holdings from contributions and investment results are used for the higher interests of the participants.
9. Disclosure of information/data for clinical research, development management, JKN impact evaluation, and development of human health resources must be the principle of openness of BPJS.
10. The public needs to encourage the government to increase the use of cigarette tax funds (and other health hazardous materials) for strengthening the program of healing people and subsidizing poor people and the self-employed.
11. The public needs to encourage the transfer of some allocation of subsidies and fuel tax for strengthening JKN.
12. It is urgent to strengthen the National Social Security Council of Indonesia to monitor and control and supervision of the Indonesia Social Security System, especially JKN.
13. Strengthening the public health program by the Ministry of Health and the District Health Office should be a reliable companion of JKN.

CONCLUSION

1. The results of the analysis of the perception of the parties relating to the implementation of BPJS policies at primary health care facilities are stakeholders feel the benefits of health BPJS policy. However, there is also the perception that BPJS policy can lead dissatisfaction to some parties.
2. Results of analysis of policy implementation of BPJS resources at primary health care facilities is that there is no maximal equitable distribution of the health workers with the number of JKN participants.
3. Analysis on JKN program implementation in BPJS policy implementation at primary health care facilities indicates some obstacles in the implementation of JKN.

Conflict of Interest: The authors have no conflict of interests related to the conduct and reporting of this research.

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The Relationship between Environmental Sanitation to the Incidence of Hepatitis A in Rural Areas of Central Java, Indonesia

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ABSTRACT

Background: Hepatitis A is a liver disease caused by hepatitis A. The virus spreads out through food or water contaminated by the faeces of infected people. This condition can cause symptoms including nausea, vomiting, lethargy, loss of appetite, fever and other symptoms Hepatitis A is due to poor environmental sanitation (source of clean water, hand washing facilities, and latrines). This study aims to determine the relationship between ecological sanitation with hepatitis A incidence.

Method: The study applied Case Control. The location of study was in Health Community Center or in Indonesia known as *Pusat Kesehatan Masyarakat* (Puskesmas) of Wanareja in Cilacap district, Central Java, Indonesia. The relationship among variables was analyzed with Chi-Square test.

Results: The results of this study showed that source of clean water, food and beverage management, toilet condition, and defecation sites are positively related with the incidence of Hepatitis A.

Conclusion: Environmental sanitation is closely related with the incidence of hepatitis A. As such, Health Community Center or *Pusat Kesehatan Masyarakat* (Puskesmas) in the respective area must assist the society in providing information to improve environmental sanitation in the community.

Keywords: *Hepatitis A, environmental sanitation, Health Community Center*

INTRODUCTION

Hepatitis A is a liver disease caused by the virus spreading out through food or water contaminated by the faeces of infected people(1). This condition may generate symptoms such as nausea, vomiting, lethargy, loss of appetite, yellow skin and eye sclera fever and others(2). As such, knowledge of the environment is essential to tackle environmental problems and prevention of the infectious disease due to environmental sanitation and poor conduct giving rise to various diseases such as diarrhea, typhoid and especially hepatitis A which is more common in school children infecting them from home, school and other places.

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Hepatitis is still a health problem in developing countries like Indonesia. Based on data derived from the hospital, hepatitis A is still the most prominent part of the cases. The incidence rate of hepatitis per 10,000 populations often fluctuates over several years ago. Outbreaks of hepatitis A in Indonesia is always repeated every year.

High rates of hepatitis A are caused by various factors, including poor hygiene and sanitation, dense population, contamination of food and beverages by viral hepatitis and on the rare condition, hepatitis A infection can be transmitted through sexual contact (anal-oral) and blood transfusions.

In Cilacap District, the cases of Hepatitis A is still high where the peak happened in 2013 with some 119 sub-district of Wanareja, and the District Dayeuhluhur were found (3). Based on the above background it is a possible outbreak of hepatitis A will come to strike again

in the years to begin making necessary to research several factors affecting the transmission of this contagious diseases.

METHODOLOGY

This study was observational analysis with a case control study design that examines the relationship between cases (illness) by a factor of exposure/specific risk. The study begins by identifying the group with the disease (cases) and without a case group (control), and then retrospectively (tracing back) on thorough risk factors that might explain whether cases and controls affecting each other or not. The population in this study were all patients of Hepatitis A in *Puskesmas* I Wanareja with the number of sample cases of 49 people being diagnosed suffering from Hepatitis A and control group of 49 people who are not suffering from Hepatitis A. Data collected were tabulated and analyzed descriptively with a frequency distribution table with an explanation as well as bivariate analysis was conducted to see the relationship between the dependent variable of the incidence of Hepatitis A (Y) and independent variables of source of clean water (X_1), food & beverage management (X_2), latrines condition (X_3) and defecation sites (X_4) by employing Chi square test.

RESULTS

The primary results are presented in the following tables.

Table 1: Cross Tabulation of Water Resources with The Incidence of Hepatitis A

Water Resources	Case		Control	
	n	%	n	%
Not in compliance with the health requirements	24	49.0%	9	18.4%
Compliance	25	51.0%	40	81.6%
Total	49	100%	49	100%
Chi-Square = 8.955	P-value = 0.001		Odd Ratio = 4.267	

All 98 respondents (100%) of cases and controls used a source of clean water daily from wells. Quality of fresh water sources used by the respondent of cases and control groups indicate some are compliant with the criteria of water resources which are colorless, tasteless and odorless. Source of clean water not to meet the requirements mainly is found in case group (49.0%) compared to the control group (18.4%) while the source of clean water that meets the element is located in the control group (81. 6%) higher than the one in case group (51.0%). Further, the quantity of clean water sources used to meet the needs of the people daily = ± 80 -100 l/ person/day.

Table 2: Cross Tabulation of Food and Beverage Management with The Incidence of Hepatitis A

Food and Beverage Management	Case		Control	
	n	%	n	%
Buying outside	24	49.0%	4	8.2%
Individual Cooking	25	51.0%	45	91.8%
Total	49	100%	49	100%
Chi-Square = 18.050	P-value = 0.000		Odd Ratio = 10.800	

In managing food and beverage to consume, a more substantial proportion of cases group (49.0%) prefers to buy the food from outside compared to the one in the control group (8.2%). Consequently, the control group (91.8%) prefer to cook at home in providing food to consume compare to the case group that shows only 51% of respondents making their food and beverage at home.

Table 3: Cross Tabulation of Latrines with The Incidence of Hepatitis A

Latrine Condition	Case		Control	
	n	%	n	%
Not in compliance with the health requirements	47	95.9%	27	55.1%
Compliance	2	4.1%	22	44.9%
Total	49	100%	49	100%
Chi-Square = 19.920	P-value = 0.000		Odd Ratio = 19.148	

The latrines that do not meet the requirements are found in a more significant proportion of cases group (95.9%) compared to the control group which is only 55.1% making the percentage of latrines that meet the requirements in the control group (44.9%) is higher than the one found in case group (4.1%).

Table 4: Tabulation Cross of Defecation Sites in The Incidence of Hepatitis A

place defecation ()				
Defecation Sites	**Cases**		**Controls**	
	n	**%**	**n**	**%**
Rivers, ponds	47	95.9%	27	55.1%
Latrine + Septic Tank	2	4.1%	22	44.9%
Total	49	100%	49	100%
Chi Square = 16.720	P-value = 0.001		Odd Ratio = 17.138	

The sites do not meet the requirements (rivers, ponds) in more significant proportion are found in the cases group (95.9%) compared to 55.1% of the control group, while defecating place that meets the requirements in the control group is 44.9% greater than the case group which is only 4.1%. These figures are similar to the data for the condition of the restrooms.

DISCUSSION

The water resources with the incidence of hepatitis A show the value of Chi-Square = 8.955 and p-value = 0.001 which is less than α + 0.05. This value indicates there is a significant correlation between clean water source and the incidence of hepatitis A. Furthermore, the odd ratio shows the amount of 4.267 which means respondents whose clean water source does not meet the requirements are at risk of infected by hepatitis 4.267 times higher than the respondents whose clean water source has met the requirements of health standard. This is consistent with [4] that hepatitis A pattern of transmission is through contaminated food or drink. Solutions that can be done is to perform simultaneous chlorination on the source of clean water to break the chain of transmission of hepatitis A and to improve well construction which is still mostly used in the rural areas.

The relationship of food and beverage management with the incidence of hepatitis A shows the value of Chi-Square = 18.050 with value p-value 0.000 indicating there is a significant relationship between how to manage food and beverage with the incidence of hepatitis A. The odd ratio shows the value of 10,800 meaning that respondents who frequently purchase food and drink at risk can get hepatitis A by 10,800 times higher than the respondents who cook for themselves at home. How to manage the food and drinks affects the health mainly by self-cooking to guarantee the hygiene of foods and beverages. But the majority of the respondents still buy food and drink outside, do not pay attention to where the food is sold especially about hygiene and health of the sellers. This is consistent with [2] that transmission of hepatitis A is through food and beverages that contain the virus originating from patients with hepatitis A. This may happen due to the hepatitis A virus is mixed with food or drink served or it could be the mixing of the patient into the water that often used to process food. The solution must be made is that food and beverage should be cooked personally. People who are ill should not prepare to reduce the source of infection as well as to pay attention to every material in food processing.

The relationship between latrines with the incidence of hepatitis A shows the value of Chi-Square = 19.920 with value p-value 0.000 proving there is a significant correlation between the prevalence of hepatitis A with the latrine condition. Besides, odd ratio shows the value of 19,148 indicating that respondents whose latrines do not meet the requirements are at risk of infected by hepatitis A 19,148 times higher than the respondents whose restrooms are in compliant with the health standards.

Latrines owned by most of the respondents did not meet the requirements such as they have restrooms and fecal sewer canalized directly into a pond as means of feeding fish, or the sludge is discharged directly into rivers. This way, soil contaminated surfaces and the contamination of soil can get into the well because the pool is not protected by the wall and is not water resistant.

This is consistent with [5] from several factors causing the incidence of hepatitis A, one is poor environmental sanitation. Solutions are to make a septic tank that meets requirements such as latrines gooseneck + septic tank. When soil surface is not contaminated, no contamination of groundwater that may enter the spring.

The places to defecate relationship with the incidence of hepatitis A results show the value Chi-Square = 16.720 with value p-value 0.001 indicating there is a significant relationship between area of defecation with the prevalence of hepatitis A. In addition, the odds ratio shows the value of 17.138 meaning that respondents' sites to defecate do not meet the requirements are at risk of contracting hepatitis A 17,138 times greater than the respondents who place defecation meet the health standards.. In this area, people still consider the making of latrines and septic tanks that meet the requirements of health are unimportant that many people have a toilet but does not have a septic tank. This indicates that people are less aware of the danger of fresh faeces not appropriately handled. This improper handling will cause transmission of the disease because faeces are a source of bacterial infections and pathogens virus in the stool including hepatitis A virus. Latrines owned by the respondent contaminate surface soil contaminating groundwater which enters the springs. Hepatitis A virus from faeces of Hepatitis A sufferers, as well as faeces that contain lots of hepatitis A virus, can contaminate food and beverage as well as cooking utensils or cutlery[6].

CONCLUSION

The results of environmental sanitation relationship with the incidence of hepatitis A in children under five in Community Health Center or *Puskesmas* I Wanareja in Central Java, Indonesia are summed up as follows:

1. There is a connection between a source of clean water to the incidence of hepatitis A (p = 0.001; OR =4.267).
2. There is a relationship between how to manage food and beverage with the incidence of hepatitis A (p = 0.00; OR =10.800).
3. There is a relationship between the condition of restrooms with the incidence of hepatitis A (p = 0.000; OR =19.418).
4. There is a relationship between the place of excrement with the incidence of hepatitis A (p = 0.001; OR =17.138).

Conflict of Interest: The authors have no conflict of interests related to the conduct and reporting of this research.

Source of Funding: Source of the fund for this project was by Politeknik Kesehatan Kementrian Kesehatan Semarang, Indonesia.

Ethical Clearance: Before conducting the study, written permission was obtained from Politeknik Kesehatan Kementrian Kesehatan Semarang, Indonesia.

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The Correlation between Green Open Space with Carcinogen Toxicity Score of Benzene in Shoes Home Industry Surabaya

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ABSTRACT

Benzene is a carcinogenic substance that can be found as chemical compounds in shoes-making industries that use glue as a raw material. The objectives of this research were to identify the presence of Green Open Space (GOS), GOS requirement, benzene concentration in work environment, carcinogen toxicity score of benzene, and to analyze the correlation of GOS with carcinogen toxicity score of benzene. This research was an observational research, cross-sectional analysis with the sample of 10 people determined by purposive sampling technique. The data analysis was using cross tabulation and statistic prevalence risk (PR) method to find out the correlation of the presence of GOS with carcinogen toxicity score of benzene.

The results showed that most respondents (70%) did not have green open space. Analysis of Green Open Space requirement calculation for 10 respondents in 10 work locations got the value of private GOS requirement of 104.8 m^2. There was a 10% sampling point with a benzene concentration (2.91 mg/m^3) that exceeds the threshold value (1.6 mg/m^3). The carcinogen toxicity score of benzene differed in each workplace where the highest was in the 9th location with the value of 0.160. There was a correlation between the presence of Green Open Space and carcinogen toxicity score of benzene (PR>1) in which workplaces without a GOS at risk of 1.555 times had a higher carcinogenic toxicity score compared to sites with Green Open Space. Suggestion as an alternative of GOS presence at the workplace was by planting ornamental plants in hanging pots such as Spider plant, Boston fern, Peace lily, Dutch betel, and Golden pothos that was effective in reducing benzene contaminants. In addition, it was suggested to consume foods with CYP2E1 enzymes contained in beef liver and salmon to decrease benzene levels in the body.

Keywords: *Benzene, Carcinogen Toxicity Score, Green Open Space, GOS Requirement*

INTRODUCTION

Benzene is a carcinogenic substance and one of the most widely used chemical compounds in the industry as a solvent, raw material or intermediate material in the manufacture of chemical compounds. Benzene exposure sources may come from vapors of benzene-containing products such as glue that used in shoes-manufacturing[1].

A research conducted in China showed that 65% of shoes-making facilities had benzene concentrations that were still above OEL (40 mg/m^3)[2]. Benzene is a carcinogenic compound to humans through inhalational exposure associated with an increased incidence of myeloblastic leukemia and lymphoid leukemia among workers[3]. Leukemia incidence was found in Turkish shoemakers at 13/100.000 which was larger than the general population level of 6/100.000[4].

While in Indonesia, the growing of shoes industry can not be separated from the use of glue in the production process where organic solvents have been found in the glue form of benzene (1-2%) to glue the shoe soles. The research on informal shoemaker in Ciomas showed that the average of benzene vapor level (1.40 ppm) exceeding TLV (0.5 ppm) with the effect of irritated respiratory disturbance that derived from the use of glue[5]. Other research conducted at Tambak Oso Wilangun Surabaya showed that there was a correlation

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between working hours and urine tt-MA levels due to benzene exposure, the average of benzene exposure was 0.5111 derived from the used of glue[6].

Based on some research mentioned above, it is understandable that exposure to benzene can cause various health risks. In the activities, the shoemaker in shoes home industry Surabaya is very vulnerable to benzene exposure from the organic solvent in glue which a major source of exposure that can affect environmental quality and health problems. To determine the extent of the carcinogenic effects caused by benzene exposure, it is necessary to identify hazards at an early stage including the determination of carcinogen toxicity scores of benzene[7]. Pollution caused by benzene exposure could be minimized by implementing the Green Open Space (GOS) at work environment. Cultivation of certain tree species was considered appropriate to grow and effective for reducing air pollution[8]. Based on Indonesian Law Number 26 Year 2007 on Spatial Planning, there must be at least 10% of private GOS provided from the total area[9].

This research aims to identify the presence of Green Open Space, GOS requirement, benzene concentration in the worksite, carcinogen toxicity score of benzene and to analyze the correlation between GOS with carcinogen toxicity score of benzene.

MATERIAL AND METHOD

This research was an observational research, cross-sectional analytical which was done in shoes home industry Romokalisari Surabaya with the sample of 10 people determined by purposive sampling technique. The variables in this study include the presence of Green Open Space, the requirement of GOS, benzene concentration, and carcinogen toxicity score of benzene. The data was analyzed by cross-tabulation and prevalence risk (PR) statistic method to find out the correlation of the presence of Green Open Space with carcinogen toxicity score of benzene. Data collection included primary data and secondary data. Primary data were obtained through questionnaires and interviews on the presence of Green Open Space. In addition, observation and measurement of benzene concentrations in the work environment were observed. While the secondary data obtained from the results of previous research. The method of measuring benzene concentration in the working environment was using NIOSH 1501 method with Gas Chromatography (GC) technique[6,10].

FINDINGS

Green Open Space: Green Open Space (GOS) is a type of open space that filled with plants which are ecologically useful in decreasing pollution levels. Based on observations at the workplace, most respondents (70%) did not have GOS.

The results of research on the requirement of GOS showed that 90% of respondents did not know the need for plants at workplaces. Based on the social aspect, 70% of respondents agreed that the plant serves a purpose to control the risk of pollution at workplaces. Based on the economic aspect, 60% of respondents stated that the cost incurred for plants in the workplace was affordable.

Based on human oxygen demand and oxygen demand at the workplace (as a benzene contaminating unit), the GOS requirement analysis can be calculated using the following formula[11] :

1. **Human Oxygen Demand**

   $X = P \cdot 4420.8 \text{ liter/day/person} \cdot 1.2 \text{ kg/m3}$

Descriptions:

X: the amount of oxygen demand (ton/day)

P: population

4420.8: average of oxygen suction capacity in humans per day

1.2: average of constant air, 1 m air yields 1.2 kg/m^3

The oxygen requirement for 10 respondents in this study was 53049,6 ton/day.

2. The need for oxygen in the workplace as a benzene contaminating unit can be calculated using the following formula:

   $Z = 0.014 \cdot$ number of benzene pollutant units

   The need for oxygen of respondents in the workplace as a benzene contaminating unit was 0,14 ton/day.

3. Green Open Space requirement can be calculated using the following formula:

$$L = \frac{(X + Z)}{(54)(0.9375)}$$

Descriptions:

L : the required green open space area (m^2)

X : human oxygen demand (ton/day)

Z : workplace oxygen requirements (ton/day)

54 : a constant that suggests that every 1 m^2 of plants per day can produce 54 grams of dry matter

0.9375 : a constant value indicating that 1 gram of dry matter can produce 0.9375 oxygen.

Green Open Space requirement based on oxygen requirement of 10 respondents and oxygen demand of 10 working sites of benzene contaminating units was 1048 m^2.

The ownership status of Green Open Space was divided into public green open spaces and private green open spaces. Private GOS is a green open space that privately planted on private land[11]. The requirement for GOS based on Indonesian Law Number 26 in 2007 about Spatial Planning, private GOS is provided at least 10% of the total area. After analyzed the calculation of GOS requirement for 10 respondents in 10 work locations, the value of private GOS requirement was 104.8 m^2 that covered 10% of the sample area. Meanwhile, in the reality, most respondents did not have Green Open Space that caused the distance between the workplaces with one another was too close, so there was no land that could be planted to be utilized as Green Open Space.

Benzene Concentration: The environmental measurement was performed to determine the concentration of benzene exposure in the work environment. In this case, the measurement was done at 10 sampling sites. The results of the benzene concentration measurement can be seen in Table 1 below:

Table 1: Distribution of Benzene Concentration at Shoes Home Industry Surabaya

Benzene Concentration (TLV = 1.6 mg/m^3)	N	%
≤ 1.6 mg/m^3	9	90
> 1.6 mg/m^3	1	10
Total	10	100

The results of the study showed that the concentration of benzene in the work environment showed different results for each location of measurement. This was due to the variation and number of products produced in the workplace. The more shoe was produced, the more of benzene concentration was in the workplace. This was influenced by the increased use of glue as an adhesive. In this case, there was approximately 10% of sites had been measured benzene concentration above the threshold (0.5 ppm or equivalent to 1.6 mg/m^3) specified in Indonesian Regulation of the Minister of Manpower and Transmigration No. PER.13/MEN/X/2011 about the Threshold Value of Physical Factors and Chemical Factors in the Workplace[12]. Although most concentrations were still below the TLV, there would be damage of chronic effects to the blood clotting system that could caused bone marrow damage in a long time [13].

Carcinogen Toxicity Score of Benzene: The carcinogen toxicity score of benzene obtained by calculating the maximum concentration value (C_{max}) was 2.91 mg/m^3 and the value of Cancer Slope Factor (CSF) which in this study CSF taken from US-EPA value was 0.055 mg/kg.day[14]. The toxicity score formula for carcinogens can be calculated using the following formula[7] :

Toxicity Score (TS) = Cmax · CSF

The value of carcinogen toxicity score of benzene at work location of shoemaker Romokalisari Surabaya was 0.160.

While the carcinogen toxicity score of benzene in each work location can be seen in Table 2 below :

Table 2: Carcinogen Toxicity Score of Benzene in Shoes Home Industry Surabaya

Location	C_{max} (mg/m^3)	CSF (mg/kg.day)	TS
1st Location	1.12	0.055	0.062
2nd Location	1.12	0.055	0.062
3rd Location	0.06	0.055	0.003
4th Location	0.06	0.055	0.003
5th Location	1.27	0.055	0.070
6th Location	1.27	0.055	0.070
7th Location	1.27	0.055	0.070
8th Location	1.27	0.055	0.070
9th Location	2.91	0.055	0.160
10th Location	0.04	0.055	0.002

Table 2 showed that the different carcinogen toxicity scores of benzene at each workplace were affected by the maximum benzene concentrations in every site. The highest carcinogen toxicity score of benzene at the 9th location was 0.160.

The determination of a toxicity score is one part of the hazard identification stage in the workplace. Determination of toxicity scores include determination of scores for carcinogenic and non-carcinogenic toxin levels.

The results showed that the carcinogen toxicity score of benzene was different for each location, which was influenced by the value of benzene concentrations in the work environment. The higher the benzene concentration in work environment, the higher the toxicity score. Toxicity scores indicate the toxic level of a toxin to bring health effects to the body, both non-carcinogenic and carcinogenic effects. Based on toxin exposure score, there would be some influence on the worker's health. This was in line with other studies that there was no safe lower threshold for exposure to benzene chemicals to obtain leukemia risk at all exposure levels[15].

Correlation Between The Presence of Green Open Space with Carcinogen Toxicity Score of Benzene: The basic assessment in benefiting from GOS was based on pollutant levels that related to carcinogen toxicity score of benzene in the workplace. The relationship between carcinogen toxicity scores of benzene with GOS described in cross-tabulation below:

Tabel 3: Correlation Between The Presence of Green Open Space With Carcinogen Toxicity Score of Benzene

Green Open Space (GOS)	Carcinogen Toxicity Score (TS)		Total	Prevalence Risk (95% CI)
	≤ 0.066	> 0.066		
Yes	2 (20%)	1 (10%)	3 (30%)	1.555
No	3 (30%)	4 (40%)	7 (70%)	
Total	5 (50%)	5 (50%)	10 (100%)	

Based on Table 3, respondents who did not have Green Open Space (40%) had high carcinogen toxicity scores (>0.066). From the calculation by using statistic *Prevalence Risk* (PR) method, the PR value was 1.555 (PR> 1). It could be seen that there was a correlation between the presence of GOS with carcinogen toxicity score of benzene. The locations with no GOS were at risk 1,555 times had high carcinogen toxicity score (>0.066) compared to locations with GOS. This showed that respondents who had a GOS, toxicity score of carcinogen exposed tend to be low. This showed that Green Open Space had proven to be effective as a toxin control system in benzene that exposed to shoemaker. This result was in accordance with the theory of the ecological function and direct benefits of GOS ecology that was reducing the level of pollution[11]. It was also supported by other research about how changes in the pattern of green space areas had a great influence on air pollution and microclimate patterns[16].

CONCLUSION

Most of the respondents (70%) did not have green space. The value of private GOS requirement was 104.8 m^2. Measurement of benzene concentration exceeded the threshold value (>1.6 mg/m^3). there was a correlation between the presence of GOS with carcinogen toxicity score of benzene. The locations with no GOS were at risk 1.555 times had high carcinogen toxicity score (>0.066) compared to locations with GOS.

Suggestion as an alternative of GOS presence at the workplace was by planting ornamental plants in hanging pots such as Spider plant, Boston fern, Peace lily, Dutch betel, and Golden pothos that was effective in reducing benzene contaminants. In addition, it was suggested to consume foods with CYP2E1 enzymes contained in beef liver and salmon to decrease benzene levels in the body[17].

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Ethical Clearance: The study was approved by the institutional Ethical Board of the Public Health, Airlangga University.

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Frequency of Cardiac Troponin T (TNNT2) Polymorphism, a Dilated Cardiomyopathy Gene in Tabuk Population

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ABSTRACT

Aim: *Cardiac troponin T* (TNNT2) mutations have been associated with Dilated cardiomyopathy (DCM) and overall frequency of TNNT2 mutations in familial DCM is approximately 3–6% . Therefore, we investigated the incidence of *TNNT2* gene variation in Tabuk population.

Methodology: Study was conducted on 103 subjects including 36 smokers 67 nonsmokers. Genotyping of the TNNT2-rs3729547T>C was performed by using Allele specific PCR method (AS-PCR). The frequency of TNNT*2*-rs3729547T>C gene polymorphism was determined and its correlation with smokers and nonsmokers was performed. Pooled odds ratios (ORs) and 95% confidence intervals (CIs) were applied to evaluate the correlation of this *TNNT2*-rs3729547T>C polymorphisms with smokers and nonsmokers.

Results: A significant difference was observed in the genotype distribution TNNT2 (rs3729547 T>C) among the Smokers and nonsmokers (p=0.0003). The frequencies of all three genotypes TT,CT,CC reported in the smoker samples were 64%, 13% and 0% and in the nonsmoker samples were 76%, 24% and 0% respectively. Genotypes of TNNT2 -rs3729547 CT (OR = 1.80, 95 % CI, 0.74-4.35; RR 1.24(0.86-1.79, p=0.22) TNNT2 (TT+ CT) (OR = 1.19, 95 % CI, 0.62-2.25; RR 1.05(0.86-1.30, p=0.58) , TNNT2 (TT) (OR = 0.90, 95 % CI, 0.50-1.61; RR 0.96(0.80-1.16, p=0.72) were not significantly correlated with smokers and nonsmokers.

Conclusion: A significant correlation was found between Cardiac Troponin T (TNNT2) (rs3729547 T>C) gene polymorphism among smokers and nonsmokers of Tabuk population of Saudi Arabia.

Keywords: *Cardiac Troponin T (TNNT2), AS-PCR-allele specific PCR,OR-Odds ratio*

INTRODUCTION

Idiopathic or primary dilated cardiomyopathy (DCM) is one of the leading causes of heart failure with high morbidity and mortality[1]. The incidence of dilated cardiomyopathy is 36 cases per 100,000 individuals, and 30–50% of all cases are diagnosed as a familial form of dilated cardiomyopathy[2]. Recent studies have reported that more than 40 genes, including 2 X-linked genes, are associated with dilated cardiomyopathy[3]. Important of these genes encode for sarcomeric contractile proteins such as troponin T (TNNT2), troponin I (TNNI3), and cardiac α-actin (ACTC)[4]. Cardiac muscle troponin T (cTnT), is a protein which in humans is encoded by the *TNNT2* gene[5]. Cardiac TnT is the tropomyosin-binding subunit of the troponin complex, which is located on the thin filament of striated muscles and regulates muscle contraction in response to alterations in intracellular calcium ion concentration. The TNNT2 gene is located at 1q32 in the human chromosomal genome, encoding the cardiac muscle isoform of troponin T (cTnT). Human cTnT is an ~36-kDa protein consisting of 297 amino acids

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including the first methionine with an isoelectric point (pI) of 4.88. It is the tropomyosin- binding and thin filament anchoring subunit of the troponin complex in cardiac muscle cells[6]. TNNT2 gene is expressed in vertebrate cardiac muscles and embryonic skeletal muscles [7]. It has been reported that the mutations in this gene have been associated with familial hypertrophic cardiomyopathy as well as with restrictive and dilated cardiomyopathy[8]. Advancement to dilated cardiomyopathy may be more rapid in patients with TNNT2 mutations than in those with myosin heavy chain mutations [9].TNNT2 rs3729547, is a SNP that was recently shown to be mildly associated with dilated cardiomyopathy (DCM) in the Han Chinese population and hypertrophic cardiomyopathy in the Indian population[10]. This SNP is located within the coding sequence of the TNNT2. A number of earlier studies have shown that mutations in TNNT2 can lead to dilated cardiomyopathy[1].

The risk allele for TNNT2rs3729547 is T which is a synonymous (isoleucine) variant .A number of earlier studies have shown that mutations in TNNT2 can lead to dilated cardiomyopathy which is characterized by a thinning of the ventricular wall, or conversely, hypertrophic cardiomyopathy (HCM), characterized by a thickening of the ventricular wall. Both conditions lead to an overall weakening of the heart muscle and can lead to heart failure or sudden cardiac death **[12].** The molecular mechanisms whereby mutations in the same gene (TNNT2) can lead to two diseases (DCM and HCM) with such contrasting phenotypes are still not well-understood. This study was aimed to establish Allele-specific PCR (ASPCR) based genotyping system for the detection of TNNT2 rs3729547 gene polymorphism in smokers, nonsmokers and healthy controls**.** .This concept in determining SNP is relatively cheaper than other available methods. Primer design and well-optimized PCR methodology are the crucial aspects in creating a working AS-PCR-based genotyping system. Once the optimized protocol will be achieved, the execution of AS-PCR is relatively simple, analogous to the conventional PCR[13]. The assay can be tested on many samples and accurately detect the homozygous wild-type, homozygous variant-type and heterozygous of each SNP[14]. This study was therefore carried out to develop, validate and utilize an AS-PCR method to determine the frequency of TNNT2rs3729547 gene polymorphism in smokers, nonsmokers of Tabuk.

MATERIAL AND METHOD

This study was done on 100 healthy controls with no history of any types of cancer. Patients with any previous history of cancer were excluded from this study. Equal number of female volunteers (age matched) served as controls. All samples were collected and stored at -70°C and thawed immediately before assay. The purpose of the sampling was explained to all controls and written informed consent was obtained prior to enrolment. The study was approved by the Institutional Ethics Committee. After assessing the health findings, a 4ml sample of peripheral blood was collected by venipuncture in EDTA tubes from each healthy control.

DNA extraction: DNA extraction was done by using DNeasy Blood Kit (cat 69506) from Qiagen (Germany) as per the manufactures instructions. The extracted DNA was dissolved in nuclease-free water and stored at 4°C until use. Quality and integrity of DNA were checked by NanoDrop™ (Thermo Scientific, USA).

TNNT2 (rs3729547 T>C) genotyping: The TNNT2 (rs3729547 **T>C**) genotyping was detected by using amplification-refractory mutation system PCR .The ARMS primers were designed by using Primer3 software as depicted in Table 1.TNNT2 (rs3729547 T>C) genotypes were analyzed using two tube PCR assay which was performed in a reaction volume of 25uL containing 0.25 uL of 25pmol of each primers (designing by using primer3 software) as depicted in table 1 and 10uL from GoTaq® Green Master Mix (M7122) (Promega,USA). Final volume of 25 uL was adjusted by adding nuclease free ddH_2O.

Finally, 2ul of 50ng DNA was added from each patient.

Table 1: Primer sequence of TNNT2 (rs3729547 T>C) genotyping

Primer	Sequence		
Fo	5-GGCCATCAGAGAATGTTAGGTGGGCAGA-3	64 °C	229bp
Ro	5-TGTCTAGCCCACCCATCTCTCCTCTGGA-3		
FI (G allele):	5-TTTCTTCCTGTTCTCAAAGTGAGCCGCG-3		154bp
RI (A allele):	5-ACCTGAATGAGTTGCAGGCGCTGCTT-3		129bp

Thermocycling conditions TNNT2 (rs3729547 T>C) optimization: The amplification conditions used were at 95°C for 10 minutes followed by 40 cycles of 95°C for 30sec, 64°C for 30 sec, 72°C for 30 sec followed by the final extension at 72°C for 10 minutes. The amplification products were separated by electrophoresis through 2% agarose gel stained with ethidium bromide. The optimization was done by using two tube reaction, one tube for the amplification of T allele and other for C allele. The T allele was amplified by using primer F0 (outer forward primer and inner reverse primer RI generating a band of 129bp whereas the C allele was amplified by using outer reverse primer Ro and inner forward primer FI generating a band of 156bp as depicted in Figure 1.

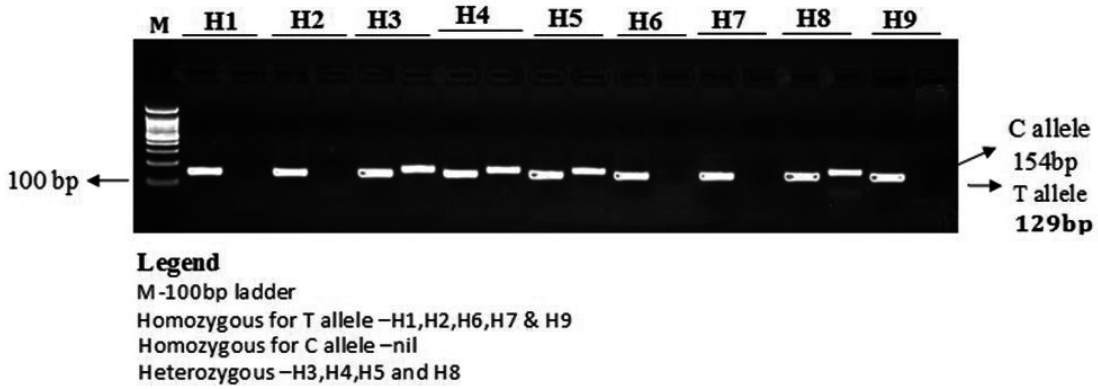

Figure 1: Cardiac troponin T (TNNT2) gene polymorphism (rs 3729547 T > C) by mutation specific PCR

The best temperature was determined to be 64°C in the temperature range of 55°C to 64°C tested with a gradient PCR thermocycler. The number of cycles was increased from 30 to 42 cycles, significantly enhancing the yields of all three PCR products. Together, these changes resulted in a more robust amplification of the mutant allele and a less competing reaction from the control, as shown by the relative intensities of the corresponding bands on agarose gel electrophoresis.

Statistical analysis: Deviations from Hardy-Weinberg disequilibrium (HWD) was calculated by Chi-square (χ^2) goodness-of-fit test. Differences in the TNNT2 (rs3729547 T>C) gene allele and genotype frequencies between groups were evaluated using Chi-square test. The associations between TNNT2 (rs3729547 T>C) genotypes and risk of breast cancer were estimated by computing the odds ratios (ORs), risk ratios (RRs) and risk differences (RDs) with 95 % confidence intervals (CIs).

RESULTS

Study population: This population-based control study was done on 36 smokers 67 nonsmokers' .Among 103 subjects 54 were males and 49 were females .This research study was approved by the Research ethics committee, PSAFH and written informed consent was obtained from all the subjects before enrollment. A significant difference was observed in the genotype distribution TNNT2 (rs3729547 T>C among the Smokers and nonsmokers (p=0.0003). This study reported significantly higher percentage of TT (64%) and CT (36%) genotypes in nonsmokers compared to smokers TT (76%) and CT (24%) genotypes. Similarly the frequencies of all three genotypes TT,CT,CC reported in the healthy controls (males) were 72%, 28% and 0% and in the healthy controls (females) samples were 71%,29% and 0% respectively.

Genotype distribution of TNNT2-(rs3729547T>C gene variation in smokers and non smoker: Using the chi-squared test, we compared the genotype and allele frequencies in the *TNNT2* gene between the smokers and nonsmoker subjects. Our results showed that the genotype frequencies of the tagging SNPs rs3729547 ($\chi^2 = 15.9$, $P = 0.0003$) is highly significant as summarized in Table 2. The frequency of C allele (fC) was found to be higher among smokers (0.18) than the nonsmokers (0.12)whereas, the higher frequency of T allele (fT) was observed in nonsmokers (0.88) than the smokers.

Table 2: Genotype distribution of TNNT2 (rs3729547 T>C) gene variation in smokers and non smoker

	N =	TT	CT	CC	T allele	C allele	X2	Df	P value
Smokers	36	23(64%)	13(36%)	0	0.82	0.18	15.93	2	0.0003
Non-smokers	**67**	51(76%)	16(24%)	0	0.88	0.12			

Genotype distribution of TNNT2 rs3729547T>C gene variation among males and females: Using the chi-squared test, we compared the genotype and allele frequencies in the *TNNT2* gene between the males and female subjects. Our results showed that the genotype frequencies of the tagging SNPs rs3729547 (χ^2 = 0.2, *P* = 0.99) was not significant as summarized in Table 3.

Table 3: Genotype distribution of TNNT2 (rs3729547 T>C) gene variation in smokers and non smoker

	N = 103	TT	CT	CC	T allele	C allele	X2	Df	P value
Males	**54**	39(72%)	15(28%)	0	0.86	0.14	2	1	0.99
Females	**49**	35(71%)	14(29%)	0	0.85	0.15			

Association of TNNT2 (rs3729547 T>C) gene variation in smokers and nonsmokers: A multivariate analysis based on logistic regression like odds ratio, risk ratio and risk difference with 95% confidence intervals were calculated for each group to estimate the association between the TNNT2 (rs3729547 T>C variant and risk of smokers in Tabuk population as **depicted in table 4.**

A significant difference was observed in the genotype distribution TNNT2 (rs3729547 T>C among the Smokers and nonsmokers (p=0.0003). Genotypes of TNNT2 -rs3729547 CT (OR=1.80, 95 % CI, 0.74-4.35; RR 1.24(0.86-1.79, p=0.22)TNNT2 (TT+ CT) (OR=1.19, 95 % CI, 0.62-2.25; RR 1.05(0.86-1.30, p=0.58) , TNNT2 (TT) (OR=0.90, 95 % CI, 0.50-1.61; RR 0.96(0.80-1.16, p=0.72) were not significantly correlated with smokers and nonsmokers.

Table 4: Association of TNNT2 (rs3729547 T>C) gene variation with smokers and non smokers

Genotypes	Non smoker		Smokers		OR (95% CI)	Risk Ratio(RR)	P-Val
	N = 67	%	N = 36	%			
Codominant							
TNNT2-TT	51	76%	23	64%	1(ref.)	1(ref.)	
TNNT2-CT	16	24%	13	36%	1.80(0.74-4.35)	1.24(0.86-1.79)	0.22
TNNT2-CC	0	0%	0	0%	2.19(0.42-1.13)	1.37(0.19-9.80)	0.69
Dominant							
TNNT2-TT	51		23		1(ref.)	1(ref.)	
TNNT2 (TT+ CT)	67		36		1.19(0.62-2.25)	1.05(0.86-1.30)	0.58
Recessive							
TNNT2 (CC+ CT)	118		59		1(ref.)	1(ref.)	
TNNT2 (TT)	51		23		0.90(0.503-1.61)	0.96(0.80-1.16)	0.72
Allele							
TNNT2-T	169		82		1(ref.)	1(ref.)	
TNNT2-C	118		59		1.03(0.68-1.55)	1.01(0.88-1.15)	0.88

DISCUSSION

The *TNNT2* gene provides instructions for making a protein called cardiac troponin T, which is found solely in the heart (cardiac) muscle. Cardiac troponin T is one of three proteins that make up the troponin protein complex in cardiac muscle cells. The troponin complex is part of a structure called the sarcomere, which is the basic unit of muscle contraction. Sarcomeres are made up of thick and thin filaments. The overlapping thick and thin filaments attach (bind) to each other and release, which allows the filaments to move relative to one another so that muscles can contract. The troponin complex, along with calcium, helps regulate contraction of cardiac muscle.

The results of our study shows that the higher frequencies of CT genotype (36%) was reported in

smokers than the nonsmokers (24%) whereas higher frequencies of TT genotype (76%) was reported in nonsmokers than the smokers (64%) CC genotype was absent in both smokers as well as in and nonsmokers. The observed frequencies of the SNP rs3729547C/T was compared with the HapMap populations (www.HapMap.org) (15) as **depicted in table-5.**

Table 5: The Allele Frequencies of TNNT2 -rs3729547 C/T SNP in the present study and various HapMap Population Samples

Alleles	ASW	CEU	CHB	CHD	GIH	JPT	LWK	MEX	MKK	TSI	YRI	CON	HCM	SA
Major allele	62	72	54	56	87	59	58	80	67	71	61	80	84	**36**
Minor allele	38	28	46	44	13	41	42	20	33	29	39	20	16	**67**

ASW, African Ancestry in SW USA; CEU, CEPH Collection; CHB, Han Chinese in Beijing, China; CHD, Chinese in Metropolitan Denver, CO; GIH, Gujarati Indians in Houston, TX; JPT, Japanese in Tokyo, Japan; LWK, Luhya in Webuye, Kenya; MEX, Mexican Ancestry in LA, CA; MKK, Maasai in Kinyawa, Kenya; TSI, Toscani in Italia; YRI, Yoruba in Ibadan, Nigeria; CON, controls; HCM, hypertrophic cardiomyopathy; DCM, dilated cardiomyopathy,Saudi Arabia.

Several prospective studies of relatives of patients with dilated cardiomyopathy proved that about 25-30% of all cases are of familial etiology. A multivariate analysis based on logistic regression were calculated for each group to estimate the association of TNNT2 (rs3729547 T>C SNP in smokers and nonsmoker in Tabuk population of Saudi Arabia and a significant association was observed between the two groups (0.0003).

CONCLUSION

The allele specific PCR optimized can be potentially useful for the detection of TNNT2 (rs3729547 T>C) gene variation in smokers and nonsmokers. The test is therefore a simple, fast, and inexpensive procedure that does not entail any special equipment other than a thermocycler.

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Ethical Clearance: The study was approved by the Research Committee from Prince Salman Armed forces hospitals, Tabuk. Number R & REC 2018.

Conflict of Interest: The authors declare that no conflict of interest exists.

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SLC2A2 Gene (Glucose Transporter 2) Variation is Associated with an Increased Risk of Developing T2d in an Ethnic Population of Saudi Arabia

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ABSTRACT

Background: It has been reported that in GLUT2 polymorphism (rs8192675) CC homozygotes exhibit a greater absolute HbA1c reduction than T-allele homozygotes upon metformin treatment.

Methodology: A case control study was performed on 100 T2D patients and 100 healthy controls (HC) collected from Tabuk region. The SLC2A2 gene polymorphism (rs8192675) was investigated by using mutation specific allele specific PCR.

Results: A significant difference was observed in genotype distribution between T2D patients and HC ($p<0.03$). The frequencies of all 3 genotypes CC, CT, TT reported in T2D patients were 03%, 75% and 22% and in HC were 6%, 58% and 36% respectively. Moreover, our result indicates that a higher percentage of heterozygosity (75%) in cases than in HC (58%). Increased risk of developing T2D in Saudi patients was found to be associated with SCL2A2 - CT variant OR 2.11(1.12-3.97) RR 1.42(1.07-1.88) P=0.020, for SCL2A2-CT+ CC variant OR 1.99(1.6-7.2) RR 1.37(1.05-1.80) P=0.030 . Therefore, it is indicated that more than 2.11 and 1.99 fold increased risk to T2D was associated with CT+CC and CT genotype of SCL2A2 gene variants.

Conclusion: These findings suggest that SLC2A2 (rs8192675) gene variation is associated with an increased susceptibility to T2D in an ethnic population of Saudi Arabia. However, these findings still need to be confirmed in larger sample size Studies.

Keywords: *Glucose transporter gene, SLC2A2, Type 2 Diabetes mellitus (T2D)*

INTRODUCTION

GLUTs 1–5 are family of transmembrane proteins encoded by the SLC2A2 genes and function as facilitated glucose and/or fructose transporters in different cells and tissues[1,2]. GLUT1 transports glucose to the cells of the central nervous system[3], while GLUT3 catalyzes the transport of glucose to dendrites and axons[3]. GLUT4 is regulated by insulin and transports glucose to muscles and fat[4]. GLUT5 transports fructose and expressed mainly in intestine[5]. GLUT2 or SLC2A2 is expressed in hepatocytes, intestine, kidney and beta cells of the Pancreas[6]. GLUT2 has a very low affinity for glucose (Km for ~17 mM). With its high km for glucose, GLUT2 in Pancreatic beta cells senses hyperglycemia and stimulates these cells to secrete insulin[7].

GLUT2 transports also glucose to the hepatocytes where it is converted to glycogen[8]. The GLUT2 protein is composed of 524 amino acid residues and encoded by SCL2A2 gene that is located on chromosome 3q26-1-q26.2[9]. T2DM is caused by impaired function of beta cells of Pancreas, insulin resistance, or increased glucose

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production by hepatic cells[10]. Glucokinase phosphorylates glucose to glucose-6-phosphate and plays a vital role in the regulation of insulin secretion. Interruption of insulin secretion pathway is major cause of T2D[11].

It has been reported that single nucleotide polymorphisms (SNPs) in GLUT2 gene predict the conversion to T2D in obese Finnish individuals with impaired glucose tolerance (IGT)[11]. This study showed that rs5393 (obese subjects with IGT, AA genotype) is associated with threefold risk for conversion to T2D (OR 3.04, 95%: CI 1.34–6.88, P = 0.008). Moreover, it has been reported that SCL2A2 SNP (rs8192675) is associated with increased risk of development of cardiovascular disease[12]. The rs8192675 is an SNP in the SLC2A2 intron that coding GLUT2[13]. In Kingdom of Saudi Arabia (KSA), the prevalence of DM in adult was estimated to be 23.7% in 2004 [14]. Moreover, it has been estimated that in Jeddah, KSA, more than half of the individuals ≥ 50 years are T2D patient, whereas, 10 to 15% from the remainders are in pre-diabetic stage[15]. In addition to the complications of DM, there is the economic burden of the disease which estimated to be more than 0.87 billion USD[16, 17]. This estimation did not include absenteeism, unproductivity from DM complications, treatments, health care and other costs[17]. It is widely accepted that T2D is a multifactorial develop from interaction of risk alleles, behavioral and environmental factors[18]. Interestingly, medication (metformin) or intervention (modification of diets, loss of weight, exercise) were sufficiently decreased risk of T2D at any level of genetic susceptibility[18]. Metformin is the most widely used oral antidiabetic drug for the treatment of T2D. Recently, polymorphism in SLC2A2 gene (rs8192675C>T) has been described in association with the efficacy of metformin treatment [19]. Obese subjects that are homozygotes of C-allele at rs8192675 showed 0.33% more absolute hemoglobin A1 c decrease than the homozygotes of T-allele in metformin treatment[19]. Stratified clinical trials in different ethnic populations are required to evaluate the potential for this polymorphism in clinical care. The present study was performed to examine the potential effect of SLC2A2 gene polymorphism (rs8192675C>T) as a risk to T2D, and to reveal frequency of this polymorphism in an ethnic population of Tabuk region in Saudi Arabia.

PATIENTS AND METHOD

Study Population: It included two groups consisted of 100 healthy controls and 100 T2D patients visiting King Fahad Specialist Hospitals Tabuk for routine checkup dung the period from January until June 2017.

DNA extraction: Genomic DNA was isolated using DNA extraction kit from Qiagen (cat51106, Qiagen, Germany). The quality and integrity of isolate genomic DNA was checked by NanoDrop™ (Thermo Scientific, USA). The isolated DNA was stored at -20°C until further use.

Genotyping for SCL2A2 gene: The genotyping was done by using ARMS-PCR in which reaction volume of 25µL containing template DNA (50ng), 0.2 µM of each primers which were designed by the primer 3 software listed in table1 and 12.5uL from GoTaq® Green Master Mix (cat no M7122, Promega, USA). Final volume of 25 µL was adjusted by adding nuclease free ddH_2O.

Table 1: ARMS-PCR primers for SLC2A2 gene (rs8192675C>T)

SLC2A2FO	5-CTAATTTCAGGCCTGGTTCCTATG-3	278bp	Control band
SLC2A2RO	5-AATTGGCTTTTCTCTCTGTGCTGGT-3		
SLC2A2FI T	5-CACCCATCTACTTCATCCTCTACA-3	134pb	TT genotype
SLC2A2RI C	5-CGATGCAATAGTAGTAGTGGTACC-3	191bp	CC genotype

The thermocycling conditions include initial denaturation at 95ºC for 10 minutes, followed by 40 cycles of 94ºC for 30 seconds, 61ºC for 35 seconds, and 72ºC for 35 seconds with final extension of 72ºC for 10 minutes.

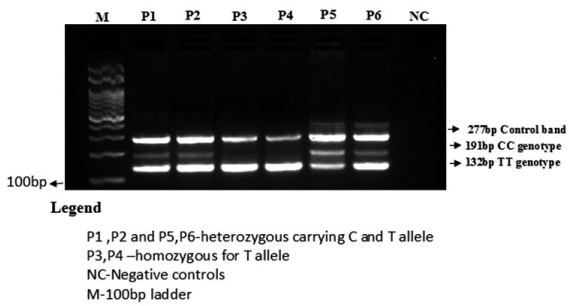

Fig. 1: Amplification of SCL22 (rs8192675 C>T) gene polymorphism using ARMS-PCR in T2D patients

The amplification products were separated by electrophoresis through 2% agarose gel stained with ethidium bromide. The two forward and two reverse primers are used in different combinations to generate three potential PCR products as shown in table 1. Primers FO and RO flank the target exon, resulting in a band of 278bp to control for DNA quality and quantity. Primers F1 (I) and R(O) (TT genotype) amplify a wild-type allele, generating a band of 134bp, and primers F1(O) and R2(I) generate a band of 191bp (CC genotype) from the mutant allele as shown in Fig 1.

Statistical analysis: T2D patients and controls were compared by statistical analysis performed using the SPSS 16.0 software package. Chi-square analysis and Fisher exact test were carried out to compare SLC2A2 (rs8192675 C>T) frequency between T2D patients and controls. Hardy-Weinberg equilibrium was tested by a $\chi 2$ test to compare the observed genotype frequencies within the case-control groups. The associations between SLC2A2 (rs8192675C>T) variant genotypes and risk of T2D were estimated by computing the odds ratios (ORs) and their 95% confidence intervals (CIs) from both univariate and multivariate logistic regression analysis. P value of ≤ 0.05 was considered statistically significant.

RESULTS

Genotype distribution of SCL2A2 (rs8192675 C>T) in cases and controls: In T2D patients, the TT, TC and CC genotype frequencies were 22%, 75% and 03% respectively, compared to 36%, 58% and 06% in HC respectively . The distribution of SCL2A2 (rs8192675 T>C) genotypes observed between patients and controls is significantly different (P=0.032). This study observed higher percentage of TT genotype (36%) of SCL2A2 (rs8192675) gene in controls than cases (22%). Moreover, our result indicated a higher percentage of heterozygosity (75%) in cases than healthy controls (58%) as summarized (Table 2).

Table 2: Genotype and Allele frequencies of SCL2A2 (rs8192675 C>T) gene between cases and controls

Subjects	N	TT Genotype	T/C Genotype	CC Genotype	C allele	T allele	$\chi 2$	df	P-value
Controls	100	36(36%)	58(58%)	06(%)	0.35	0.65	6.55	2	0.031
Cases	100	22(22%)	75(75%)	03(%)	0.41	0.59			

The frequency of T allele (fT) was found to be higher among HC (0.65) than the T2D patients (0.59). The frequency of C allele (fC) was found to be higher among T2D patients (0.41) than the HC (0.35) (Table 2).

Risk of T2D cases with SCL2A2 (rs8192675 C>T) genotypes: A multivariate analysis based on logistic regression like odds ratio (OD) and risk ratio (RR) with 95% confidence intervals (CI) were calculated for each group to estimate the association between SCL2A2 (rs8192675 C>T) genotypes and risk of T2D as depicted in table 3.

Table 3: Risk of T2D is Associated with the SCL2A2 (rs8192675 C>T) variant

	Healthy controls (N = 100)	T2D patients (N = 100)	OR (95% CI)	Relative ratio (RR)	P-value
Codominant					
SCL2A2-TT	36	22	1(ref.)	1(ref.)	
SCL2A2-CT	58	75	2.11(1.12-3.97)	1.42(1.07-1.88)	0.0200
SCL2A2-CC	06	03	0.81 (0.18-3.60)	0.93 (0.56-1.54)	0.780
Dominant					
SCL2A2-TT	36	22	1(ref.)	1(ref.)	
SCL2A2 (CT+ CC)	64	78	1.99(1.6-.72)	1.37(1.05-1.80)	0.030
Recessive					
SCL2A2 (TT+CT)	94	97	1(ref.)	1(ref.)	
SCL2A2-CC	06	03	0.48 (0.117-1.99)	0.73(0.45-1.19)	0.310
Allele					
T	130	119	1(ref.)	1(ref.)	
C	12	06	0.54 (0.19-1.50)	0.78(0.55-1.10)	0.16

In allelic comparison, the C allele was compared with the T allele, and we found a highly significant association suggesting a possible dominant effect of this polymorphism on T2D risk. The increased risk of developing T2D in Saudi patients was found to be associated with SCL2A2 - CT variant OR 2.11(1.12-3.97) RR 1.42(1.07-1.88) P=0.020, for SCL2A2-CT+ CC variant OR 1.99(1.6-7.2) RR 1.37(1.05-1.80) P=0.030. Therefore, it is indicated that more than 2.11 and 1.99 fold increased risk to T2D was associated with CT+CC and CT genotype of SCL2A2 gene variants. Whereas the decreased risk was found to be associated for SCL2A2-CC genotype OR 0.81(0.18-3.60) RR 0.93(0.56-1.54) P=0.78 (Tables 3). During the comparison of CC homozygous genotype with the TT homozygous genotype, we did not find a significant association. Therefore, it was observed that more than 2.11 and 1.99 fold increase risk of developing T2D was associated with SCL2A2 CT and SCL2A2 (CT+ CC) genotypes in Tabuk population.

DISCUSSION

Malfunction of GLUT2 or Glucokinase results in elevated blood glucose levels which is one of the characteristics of T2D[20-21]. T2D is a complex metabolic disease caused by defective insulin action (insulin resistance) and secretion[21].T2D is developed by contribution of genetics, behavioral and environmental factors[18]. For examples, the G (−30) A polymorphism in a specific glucokinase promoter of pancreatic beta cells was reported to cause beta cells malfunction, impaired glucose tolerance (insulin resistance) and T2D[11, 22].

Polymorphism of IRS-1 lead to reduced insulin signaling was reported to be with a higher frequency in T2D[23]. In the present study we have examined the distribution of the rs8192675 C>T in 100 T2D patients in Tabuk population and compared them with 100 HC from the same population. Our results showed that in T2D patients, the TT, TC and CC genotype distribution were 22%, 75% and 03% respectively, whereas, it was 36%, 58% and 06% in HC respectively. This result indicated that (75%) of the individuals with a heterozygous genotypes TC are more susceptible to develop T2D (75 vs. 58%, P-value = 0.03, Table 3). Our result also showed that 58% of the individuals (TC genotype) are healthy (Table3), and they can maintain rather sound insulin secretion. This result suggests that GLUT2 is not the only glucose transporter in the pancreatic beta cells. This observation is quite consistent with a previous study[23]. Furthermore, the genotype distribution of the rs8192675 in the Tabuk population has specific clinical impact. It has been reported that 49% African Americans are C-allele homozygotes, whereas only 9% in European Americans are C-allele homozygotes[19].

Our study showed that CC homozygous are 6 and 3 in HC and T2D cases respectively . It has been demonstrated that CC homozygotes can be treated with lower doses of metformin and have less side effects, but T allele carriers needed more doses of metformin (not sulfonylurea) than recommended to achieve a normal blood glucose levels[19]. T2D represents a serious problem in KSA and Metformin is the first-line therapy.

The increased risk of developing T2D in Saudi patients was found to be associated with SCL2A2 - CT variant OR 2.11(1.12-3.97) RR 1.42(1.07-1.88) P=0.020, for SCL2A2-CT+ CC variant OR 1.99(1.6-7.2) RR 1.37(1.05-1.80) P=0.030 . Therefore, it is indicated that more than 2.11 and 1.99 fold increased risk to T2D was associated with CT+CC and CT genotype of SCL2A2 gene variants. Moreover, our result showed that frequency of T allele (fT) is higher among HC than in T2D patients (0.65 vs 0.59, P-value=0.03). Whereas, fC is higher in T2D patients than in the HC (0.41 vs 0.35, P value =0.03) (table 3).The increased risk of developing T2D in Saudi patients was found to be associated with SCL2A2 - CT variant OR 2.11(1.12-3.97) RR 1.42(1.07-1.88) P=0.020, for SCL2A2-CT+ CC variant OR 1.99(1.6-7.2) RR 1.37(1.05-1.80) P=0.030 suggesting a possible dominant effect of this polymorphism on T2D risk. Our results come in lines with a study conducted in Finnish population revealed that four SNPs of SLC2A2 (promoter SNPs rs5393 and rs5394 and exon SNPs rs5400 and rs5404) are associated with increased risk of T2D[11]. In addition, it was demonstrated that the rs8192675 genotypes TC and CC are associated with low serum levels of high-density lipoprotein cholesterol and thus metabolic risk of T2D and cardiovascular disease[12]. The result of this study is in good agreement with our result that showed the frequency of T allele (fT) is higher among the HC than in T2D patients, whereas, fC is higher in T2D patients than in the HC.

CONCLUSION

The present study revealed that the SLC2A2 (rs8192675C/T) gene variation is associated with an increased susceptibility to T2D in an ethnic population of Saudi Arabia. However, these findings still need to be confirmed in larger sample size study.

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Ethical Clearance: The study was approved by the Research Committee from King Salman Armed forces hospitals, Tabuk.Number R & REC 2016-115

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A Content Analysis of Original Research Articles on Public Health Published in an International Journal: The Case Study of Thailand

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ABSTRACT

This study aimed at exploring the most common content of Masters and Doctoral level research articles published by an internationally recognized public health sciences journal of a Thai academic institute. The objective was to assess the current status of public health research. A content analysis of 265 abstracts from 2009 to 2015 was classified into content, objective, research field, methodology, study population, statistics used and study area. The study revealed that 66% of submissions were Master's level contributors and 34% from Doctoral level. The top study content at Master's level was 'health behaviors', while 'environmental health' was popular at. The study objective at both levels was to identify cause and reasoning. Study populations were mostly conducted amongst adults. The majority of studies at Master's level used quantitative research methods while Doctoral level students used inferential statistics. The majority of articles were published in the ASEAN Citation Index database whilst a few were published in Scopus and the Web of Science databases. Topics relating to "alternative medicines' and 'environmental health' were mostly published in Scopus. Further strategies regarding encouraging students to publish in Scopus and Web of Science and emphasis on encouraging in-depth health behavior and community health research conducted in aging should be addressed since these can provide preventive services and develop a viable public health field for the future.

Keywords: *Content analysis; original research articles; public health*

INTRODUCTION

Writing for publication is a requirement of graduation in the global Higher Education context and is regarded as "a most formidable task for many graduate students"[1]. Once a student's papers are published in an internationally recognized journal, key performance indicators of the institution are increased resulting in improved dissemination of knowledge[2]. Educational research aims at undertaking the development and improvement of educational practice and education in every country where research is carried out [3, 4].

In Thailand, a number of academic institutions have successfully launched programs on Public Health at graduate level. However, it is not easy for students on these programs to have their research papers successfully published in recognized scholarly journals. There are a number of reasons why manuscripts are not accepted for publication including: insufficient problem statements, poor study design, inappropriate methods used, over-interpretation of results, text difficult to follow, inaccurate or inconsistent data, incomplete data, outdated review of relevant literature, insufficient data presented, defective tables or figures, over interpreting results, and poor writing [5]. Therefore, it is important to explore the content of original research articles in the area of public health. With an increase in the number of papers published by students in journals, the following important questions should be explored.

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- What are the most popular topics dominating the field of public health?
- What is the study objective?
- What research methods are most used?
- What study design are most used?
- What type of statistics are most used?
- What study population is most frequently selected?
- Which region is most used for study purposes?

Some of these questions were linked to scientific databases or sources of publication i.e. the ASEAN Citation Index (ACI), Scopus, Web of Science, and Open Access Journal (OAJ) and reflect current research interests. The objectives are to explore current topic trends with reference to the above questions that may lead to improved quality and standards across all levels of published research thereby attracting the interest of more prestigious journals. Studies by Akkus, et al. indicated that 'content analysis' research methods best address our questions[6] as it is a useful method of determining and describing the interests of individuals, teams and institutions[7]. It is defined as a quantitative analysis which answers the questions "who, whom, what, why, how, etc."[6]. Many studies mentioned that content analysis of published articles indicates a growth in research topics and determines the interests, methods, and beliefs within the discipline[8, 9]. It enables researchers to sift through large volumes of data with relative ease[7], but is rarely used in the field of public health[10]. Except as a popular analytic method in studies related to end-of-life care[11].

Therefore, content analysis was used in this study. Results were displayed between Master's and PhD level original research articles regarding study content, objective, population, design, method and statistics used. The discussion will help widen our knowledge of public health among researchers in the future.

METHOD

Sample: 265 original research articles submitted to the international journal from 2009 to 2015 were selected. All articles were papers from Master's and PhD level students from the College of Public Health Sciences, Chulalongkorn University, Thailand.

Procedure: The analysis process was conducted in multiple steps. The scientific databases used for extraction of data in this study included Web of Science, Scopus, PubMed, ASEAN Citation Index (ACI), and Open Access Journal (OAJ) using "College of Public Health Sciences, Chulalongkorn University" and publication year in the search engine for publications between 2009 to 2015.

All research articles were imported into EndNote software in order to perform the duplication check. If duplications were found in more than one database, the higher ranking journal index was selected. Web of Science is the highest ranking impact database followed by Scopus.

The necessary fields in EndNote were authors, title, journal name, publication year, abstract, and full text of articles (if needed for tracking). The author was classified by level of study listed in the academic year of 2008 to 2014. The journal name was classified by 4 groups; ACI, Scopus, Web of Science, and OAJ. The journal name was re-checked in the scientific databases for inclusion in each group.

All variables used in this study were approved by two experts in the field and included, study content, study objective, study design, statistics used, study population and study area.

The content analysis was extracted and classified into the areas of Health Behaviors, Community Health, Alternative Medicines, Health Policy and Management, Environmental Health, Occupational Health, Urban and Global Health, and Bimolecular Technology. The study population, classified by WHO[12] included infants, children, adolescents, adults, and the elderly. The study area was divided into 4 categories [13] : (1) Mainland South East Asia, (2) Maritime South East Asia, (3) South Asia, and (4) Africa.

After developing variables, articles were independently checked and evaluated by two researchers. If there was disagreement in the evaluation process, the original articles would be checked again until consistency of the evaluation was deemed acceptable. Then, all data was analyzed in a single data set using SPSS with results presented in percentage and frequencies.

FINDINGS

Table 1 reveals that of the total 265 original research articles classified by level, 175 (66.0%) were Master's level and 90 articles (34.0%) were submissions from Doctoral level students. Study content findings revealed that *health behavior* was a popular subject at Master's level (80.5%) while *community health* related content came second (68.2%). At Doctoral level, *environmental health* (45.3%) and *community health* (45.3%) related topics were the most popular.

The most favored study objective for both levels was to *identify the causation* (81.5%, 18.5%).

For the study design, *quantitative design* was mostly conducted for both levels of students at 67.5% and 32.4% proportions. In term of the statistics used, 77.2% of Master's articles used descriptive statistics while 42.0% of Doctoral articles had inferential statistics.

The interest of original articles at both levels mainly concerned adults at a proportion of 74.0% and 26.0%. The main study area was South East Asia with South Asia coming in second.

Table 1: Distribution of content, objective, study design, statistics used, study population, study area conducted by Master and Doctoral Program Students

Characteristics	Total	Master level	Doctoral level
	n	n(%)	n (%)
Content	265	175(66.0)	90(34.0)
Health behaviors	87	70(80.5)	17(19.5)
Community health	66	45(68.2)	21(31.8)
Alternative medicines	22	4(18.2)	18(81.8)
Health policy and management	21	14(66.7)	7(33.3)
Environmental health	53	29(54.7)	24(45.3)
Occupation health	7	5(71.4)	2(28.6)
Urban and global health	5	5(100.0)	0(0.0)
Bimolecular technology	4	3(75.0)	1(25.0)
Objective	255	175(68.6)	80(31.4)
Identify the causation	162	132(81.5)	30(18.5)
Problem identification	43	24(55.8)	19(44.2)
Implementation	5	2(40.0)	3(60.0)
Others	45	17(37.8)	28(62.2)
Study design	265	175(66.0)	90(34.0)
Qualitative	6	4(67.0)	2(33.3)
Quantitative	237	160(67.5)	77(32.4)
Mixed-method	22	11(50.0)	11(50.0)
Statistics used	265	175(66.0)	90(34.0)
Descriptive	136	105(77.2)	31(23.0)
Inferential	115	67(58.2)	48(42.0)
NA	14	3(21.4)	11(78.6)
Study population	265	175(66.0)	90(34.0)
Adults	177	131(74.0)	46(26.0)
Non-human	30	9(30.0)	21(70.0)
Elderly	27	15(55.6)	12(44.4)
Children	14	9(64.3)	5(35.7)
Adolescent	13	8(61.5)	5(38.5)
Infant	4	3(75.0)	1(25.0)

Study area	265	175(66.0)	90(34.0)
Mainland South East Asia	231	149 (64.5)	82 (35.5)
South Asia	25	21 (84.0)	4 (16.0)
Maritime South East Asia	7	4 (57.1)	3 (42.9)
Africa	2	1 (50.0)	1 (50.0)

Table 2 the contents were published in 4 main scientific databases. At PhD level, the study found that *alternative medicines* (50.0%) and *environmental health* (29.2%) were mostly published in Scopus and Web of Science. Most publications in Scopus related to *problem identification* (36.7%). Regarding study design, *quantitative methods* (50.0%) and *mixed-method studies* (36.8%) were most published in Scopus. The findings also showed that using *inferential statistics* (37.5%) was also most published in Scopus. Studies relating to infants had a high proportion of Scopus publications (38.1%).

Table 2: Distribution of content, objective, study design, statistics used classified by scientific database sources

	Master level					**Doctoral level**				
	Total	**ACI**	**Scopus**	**Web of Science**	**OAJ**	**Total**	**ACI**	**Scopus**	**Web of Science**	**OAJ**
		n(%)	**n(%)**	**n(%)**	**n(%)**		**n(%)**	**n(%)**	**n(%)**	**n(%)**
Content (n = 265)										
Health behaviors	70	69(98.6)	0	0	1(1.4)	17	3(17.6)	4(23.5)	2(11.8)	8(47.1)
Community health	45	45(100.0)	0	0	0	21	7(33.3)	5(23.8)	3(14.3)	6(28.6)
Alternative medicines	4	4(100.0)	0	0	0	18	4(22.2)	9(50.0)	4(22.2)	1(5.6)
Health policy and management	14	14(100.0)	0	0	0	7	4(57.1)	2(28.6)	0(0.0)	1(14.3)
Environmental health	29	29(100.0)	0	0	0	24	10(41.7)	7(29.2)	4(16.7)	3(12.5)
Occupation health	5	5(100.0)	0	0	0	2	2(100.0)	0	0	0
Urban and global health	4	4(100.0)	0	0	0	1	1(100.0)	0	0	0
Bimolecular technology	4	1(25.0)	2(50.0)	1(25.0)	0	0	0	0	0	0
Objective (n = 255)										
Identify the causation	24	24(100.0)	0	0	0	19	8(42.1)	5(26.3)	3(15.8)	3(15.8)
Problem identification	132	131(99.2)	0	0	1(0.8)	30	8(26.7)	11(36.7)	4(13.3)	7(23.3)
Implementation	2	2(100.0)	0	0	0	3	2(66.7)	0	0	1(33.3)
Others	17	15(88.2)	2(11.8)	0	0	28	10(35.7)	8(28.6)	6(21.4)	4(14.3)
Study design (n = 265)										
Qualitative	1	1(100.0)	0	0	0	2	0	0	1(50.0)	1(50.0)
Quantitative	0	0	0	0	0	8	4(50.0)	4(50.0)	0	0
Observation	170	168(98.8)	1(0.6)	0	1(0.6)	51	21(41.2)	14(27.5)	6(11.8)	10(19.6)
Experiment	1	1(100.0)	0	0	0	0	0	0	0	0
Mixed-method	0	0	0	0	0	19	2(10.5)	7(36.8)	7(36.8)	3(15.7)

Conted…

Observation	2	0	2(100.0)	0	0	10	4(40.0)	1(10.0)	0	5(50.0)
Experiment	1	1(100.0)	0	0	0	0	0	0	0	0
Statistics used (n = 265)										
Descriptive	105	104(99.0)	1(1.0)	0	0	31	19(61.3)	5(16.1)	2(6.5)	5(16.1)
Inferential	67	66(98.5)	0	0	1(1.5)	48	7(14.6)	18(37.5)	9(18.8)	14(29.2)
NA	3	2(66.7)	2(1.1)	0	1(0.6)	11	4(36.4)	4(36.4)	3(27.3)	0
Study population (n = 265)										
Adults	3	3(100.0)	0	0	0	1	1(100.0)	0	0	0
Non-human	9	9(100.0)	0	0	0	5	1(20.0)	3(60.0)	0	1(20.0)
Elderly	8	8(100.0)	0	0	0	5	0	2(40.0)	1(20.0)	2(40.0)
Children	131	130(99.2)	0	0	1(0.8)	46	15(32.6)	10(21.7)	8(17.4)	13(28.3)
Adolescent	15	15(100.0)	0	0	0	12	4(33.3)	4(33.3)	2(16.7)	2(16.7)
Infant	9	7(77.8)	2(22.2)	0	0	21	9(42.9)	8(38.1)	3(14.3)	1(4.8)

DISCUSSION

The purpose of this study was to explore the current topic trend in original research articles on public health within the College of Public Health Sciences, Chulalongkorn University, Thailand

Out of 265 articles, 175 (66.0%) articles were from Master's level, and 90 (34.0%) articles from Doctoral level of study. Masters level students publish faster than Doctoral level students because their study duration is shorter. However, Doctoral level papers are more sophisticated and include concepts from a variety of disciplines including health innovation and development, requiring more technological expertise [14]. An increasingly common phenomenon is that more papers are published at Master's level than at Doctoral level.

At Master's level, health behaviors and community health topics were the most studied topics. Researchers should make this data easily accessible to practitioners and individuals [15]. It is interesting that there are few papers focusing on urban and global health published in either database suggesting that few students are interested in this subject. This could also be because 1) the College has insufficient resources on urban and global health; 2) the subject is difficult; and 3) the content of the study is sophisticated making it hard for students to take an interest. A solution for the College policy makers is to recruit experienced lecturers and offer more interesting courses that include case studies and site visits to promote an interest in the study content.

Results show that the most popular study population was adults (aged range 19-59 years old). The reason could be that this group is easier to approach than other groups. Nevertheless, this is in contrast to "Future trends affecting public health", where the aging population (aged 65 years and above) was the most popular age group in public health research, practice and education [16] due to the increasing need for developing solutions for this age bracket, particularly in Thailand[17] . The results of this study are similar to those conducted in the US [15] and Turkey [3].

This study revealed that students used observational research methods over experimental methods. An important advantage of observation is that it can help to overcome the discrepancy between what people say and what they actually do [18]. However, one study suggested that experimental methods provide a clearer picture of health communication issues [15] suggesting that more experimental research methods should be employed by College students.

Descriptive statistics were most popularly used amongst Master's level students (77.2%) while Doctoral students used inferential statistics (42.0%). Published articles in Scopus and Web of Science using descriptive statistics was low.

Thailand is a favorable place of study for Thai and non-Thai students. The reasons for this is limitation of study duration, budget, and the conditions of scholarship, especially when the course offers 1 year for a Master's degree.

CONCLUSION

There are few articles published in the Journal indexed in Scopus and Web of Science. Most of the content is in the field of health behavior and community health. Most research studies employed quantitative study by using descriptive statistics for Master's level and inferential statistics at Doctoral level. Thailand is a favorable study area for both Thai and international students.

Recommendations: In order to develop an advanced public health field in the future, students should be encouraged to publish in Scopus and Web of Science but also, institutions should emphasize community health and anti-aging studies using sophisticated methodologies. Additionally, most statistics presented in the papers were broad findings and further study should be devoted to this point.

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Ethical Consideration: This study does not involve direct contact with human subjects and was approved by the host institute, (The College of Public Health Sciences, Chulalongkorn University) before obtaining the data.

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Study of Mental Health and Attitude towards Psychological Help Seeking among Management and Science University Students

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ABSTRACT

This research is on 'study of the mental health and attitude towards psychological help-seeking among MSU students'. Students of MSU need psychological help will be analyzed. Next is which gender seeks for more help and which gender is having good health is found out. Another point is why mental health is not taught as a subject which the students need most because of everyday stress life. A cross-sectional study was conducted with a random sample of 200 students among MSU students. 100 male and 100 female are divided equally. The questionnaire has four parts which included personal details, knowledge on mental health, the attitude of mental health and last part is psychological help-seeking. The data were analysed using Microsoft Excel version 2010 via the table of percentage and frequency. The overall study stated that students having poor knowledge of mental health which is 44% (N=88) and very few has good knowledge on that which is 21%. Besides that, the attitude of mental health is analysed and it is shown that students having poor attitude level which is 47% (N = 94 out of 200). At last part which is psychological help-seeking among MSU students is 67% of them seeking for help whereas majority is female said yes for help. As a conclusion, knowledge and attitude on mental health are very poor among MSU students. Therefore, students seek psychological help.

Keywords: *Mental health, Psychological help-seeking, Student awareness.*

INTRODUCTION

Mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community. The positive dimension of mental health is stressed in WHO's definition of health as contained in its constitution: "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.[1]" this fact file highlights the important aspects of mental health and disorders. Mental health problems are highly prevalent among college students1. In the 2008 national college health assessment sponsored by the American college health association, more than one in three undergraduates reported "feeling so depressed it was difficult to function" at least once in the previous year, and nearly one in 10 reported "seriously considering attempting suicide" in the previous year[2]. According to a study of 26,000 students from 70 colleges and universities in 2006, 6% of undergraduates and 4% of graduate students reported having seriously considered suicide in the previous 12 months.[3] In other survey data from random samples at 26 colleges and universities in 2007 and 2009 (the healthy minds study), found that 17% of students had positive screens for depression according to the patient health questionnaire–9, including 9% for major depression, and 10% of students had a positive patient health questionnaire screen for an

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anxiety disorder (panic or generalized anxiety disorder).[4] Isaac Ray, one of the thirteen founders of the American Psychiatric Association, further defined mental hygiene as "the art of preserving the mind against all incidents and influences calculated to deteriorate its qualities, impair its energies, or derange its movements [5] . "Dorothea Dix (1802–1887) was an important figure in the development of "mental hygiene" movement. Dix was a school teacher who endeavoured throughout her life in helping people with mental disorders, and to bring to light the deplorable conditions into which they were put. This was known as the "mental hygiene movement". Before this movement, it was not uncommon that people affected by mental illness in the 19th century would be considered neglected, often left alone in deplorable conditions, barely even having sufficient clothing [6]. Year 1 students gave high ratings to the workload and lack of feedback stressors. Year 3 students gave high ratings to 'Worries about future endurance/competence' and 'Pedagogical shortcomings', In Year 6, both the latter factors were rated highly, but Year 6 students also gave higher ratings than the 2 other groups to 'Non-supportive climate'. In all 3 cohorts, students complained of lack of feedback.[7] Mental health is an individual and personal matter was clearly mention by Jahoda, Marie from New York, NY, US: Basic Books Current concepts of positive mental health (1958).[8] Fear of emotions is hypothesized to be a primary reason for individuals' negative attitudes toward seeking psychological treatment.[9] Besides that teaching, a subject on mental health will give more knowledge and it can be great platform them to change their attitude and this will later will reduce the discipline issues. Due to lack of knowledge, it reflects on their behaviour which is a negative impact on themselves and to MSU itself.

METHOD

Study Design: The study design that has been conducted was a cross-sectional study. This study is based on cross-sectional analysis of survey studies that have been carried out within the given time frame which is from May 2017 until July 2017 according to the objectives to be achieved .the target population was 200 students among the total number of total MSU students.

Place of Study: The study was conducted in Management and Science University Seksyen 13 Shah Alam Selangor.

Study Population: The study population was students from faculty of health and life science, international medical school, faculty of business management and professional studies, faculty of information science and engineering, school of pharmacy, school of education and social science, school of hospitality and creative arts, school of graduate studies, graduate school of management, centre for foundation studies, and Continuing and Extended Education Centre Management and Science University Shah Alam ,Selangor.

DATA COLLECTION

A questionnaire was designed carefully before being used to avoid any difficulty for the students to understand it. Respondents were assured that the information gathered would be treated confidentially. The respondents were needed to complete the questionnaire given. A convenient sampling method was used to select 220 students as a sample population for this study. Before distributing the questionnaires, the respondents were briefed and explained in regards to the study directed. The questionnaires were fully in English. An appropriate time period was given to the respondents to complete the survey.

RESULTS

The data was analysed by using Microsoft Excel version 2010. The data was plotted in frequency and percentage form. The data showed that students having poor knowledge which has lead to poor attitude and to poor health where they are seeking psychological help.

DISCUSSION

The purpose of this research is to study the mental health and attitude towards psychological help-seeking among management and science university students. In this study, the sample size of 200 respondents from all the faculties equally. In previous studies at USM, the sample for the study comprised of 192 undergraduate medical and dental students, medical students (N=45), dental students (N=147). In another previous study, which was done at Massachusetts, the subjects were 500 physicians and 500 dentists.

Regarding personal details, the results are recorded based on the frequency and percentage. Personal details consist of gender, age and educational background. Figure 1 shows the descriptive statistic of gender. The percentages of both male and female respondents are

50.0%. Thus concludes that the study is equivalent in term of participation of both genders. Figure 2 shows the statistic of the age of respondents. Age is grouped into 18-20, 21-23, 24-26 and 27-30 years old. Figure 2 explains male is a high percentage which is 22.5% and 19% is female from 18-20 years old from all over 4 aged group and least is from 27-30years old. fig 3 shows the descriptive statistic of educational background. Respondents from diploma, degree, master and PhD programme. Figure 3 explains both male and female are a high percentage from the degree which is 26% male and 24% female respondents and lest percentage from PhD programme which is male 1.5% and female is 4%.

Regarding part B which is knowledge of mental health, the results are recorded based on the frequency and percentage. Knowledge of mental health was measured according to 3 categories which are poor knowledge, good knowledge and moderate knowledge. Figure 4 shows the percentage level of knowledge regarding the mental health of participants. Majority of the participants were having a poor level of knowledge which is 44% (N=88), followed by a moderate level of knowledge, 35% (N=70) and a very few were having a good knowledge level, which is 21% (N=42).

In the approach to part C which is the attitude on the mental health of respondents. The results were recorded based on the frequency and percentage. In this part, it was divided into 3 parts which a good attitude, poor attitude and moderate attitude. This part of questionnaire consists of 9 questions with yes or no answer options. Figure 5 shows the percentage level of attitude on the mental health of participants. Majority of the participants were having a poor level attitude which is 47% (N=94), followed by moderate attitude level, 33.5% (N=67) and a very few were having a good attitude, which is 19.5% (N=39).

Finally, part D known as psychological help-seeking. In this part, it was measured as whether the respondents need psychological help or not. This part based on 3 questions with yes or no answers options. Respondents have to circle at the yes or no column. Figure 6 shows the percentage level of psychological help-seeking on the mental health of participants. This part shows that female participants are seeking for psychological help which is categorized as poor health 67% (N= 67) and less seeking help which categorized as good health is 33% (N=33).

CONCLUSION

In conclusion, the mental health and attitude towards psychological help-seeking among management and science university students Shah Alam Selangor were measured. Overall when measured the knowledge of mental health respondents have poor knowledge of mental health which is 44%. When we measured the attitude towards mental health respondents have a very poor attitude which is 47%.

Last but not least respondents are seeking for psychological help which stated as poor health 67%.The objectives were reached whereas the null hypotheses were rejected. Overall the knowledge and attitude of the respondents about mental health among university students is poor. The knowledge and attitude level between male and female were measured. The result revealed that the difference was not significant, where both the gender almost have the same level of knowledge and attitude on mental health. In this issue the students showed a poor level of knowledge and attitude which is a very serious issue regarding mental health, educators and government need to place greater emphasis on mental health education, increase more counsellor and observe more on discipline issues of students ways test on students. This study revealed an urgent need for a more structured teaching program, with more focus on the early signs and symptoms of mental health and focusing on the awareness campaign, on those who have lower knowledge. For future research, I would like to recommend, further analysis for the association of socio-demographic, socio-economic, discipline and moral issues

TABLES AND CHARTS

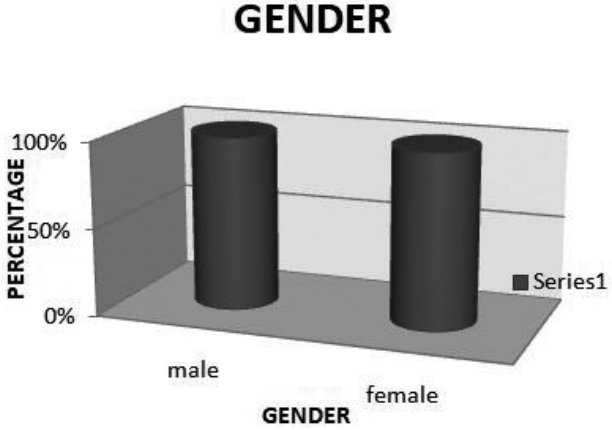
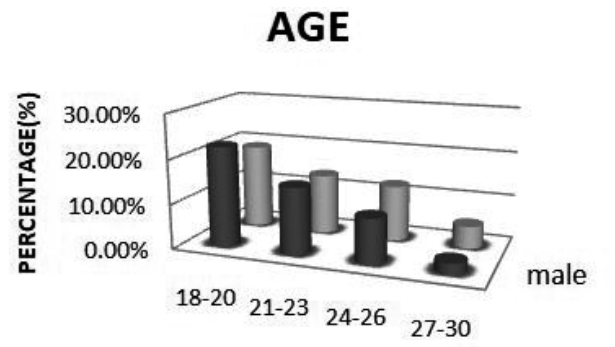


Figure 1

Of 200 respondents that participated in this study, 50.0% specified as male (N = 100) and 50.0% were female (N = 100). Thus, concludes that the study is equivalent in term of participation of both genders.



	18-20	21-23	24-26	27-30
male	22.50%	15%	10%	2.50%
female	19%	13.50%	12.50%	5%

Figure 2

Overall, participants involved in this study were in the age range between 18 to 20, 21 to 23, 24 to 26 and 27 to 30 years old. The figure above shows that female and male equally distributed age group. Age group 18-20 years old is a high percentage of male respondents which is 22.5% meanwhile in female respondent same high which is 19%. Least respondent in male and female is in the age group of 27-30 years old which is 2.5% for male and 5% for females. Another age group which is 21-23 years old in male is 15% and in female is 12.5% meanwhile in the age group of 24-26 years old 10% for male 12.5% for female.

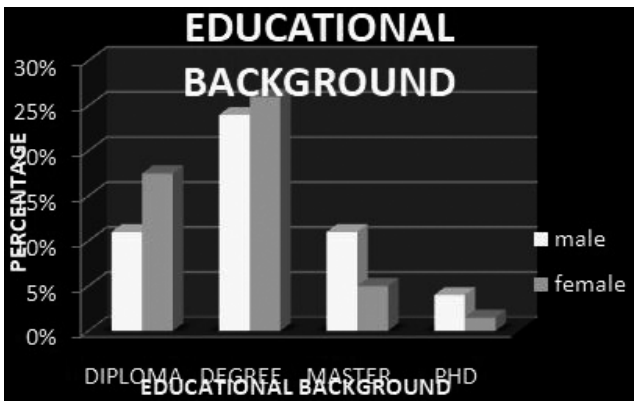


Figure 3

Overall, participants involved in this study were in the different educational background which is from diploma, degree, master and PhD. In Diploma, female students a high percentage which is 17.5% and the male is 11% meanwhile in degree the same female is high which is 26% and the male is 24%. In masters, programme is opposite which is male is high 11% and female is less 7%. Last part of PhD programme female respondents is a high percentage which is 4% and the male is 1.5%.

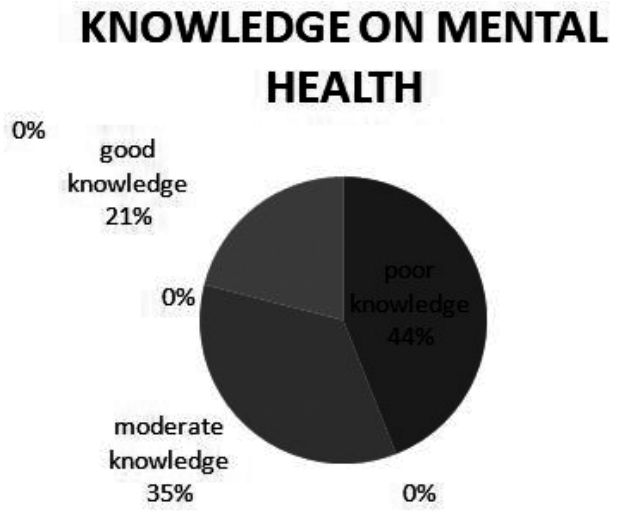


Figure 4

Figure 4 shows the percentage of level of knowledge regarding the mental health of participants. Majority of the participants were having a poor level of knowledge which is 44% (N=88), followed by a moderate level of knowledge, 35% (N=70) and a very few were having a good knowledge level, which is 21% (N=42).

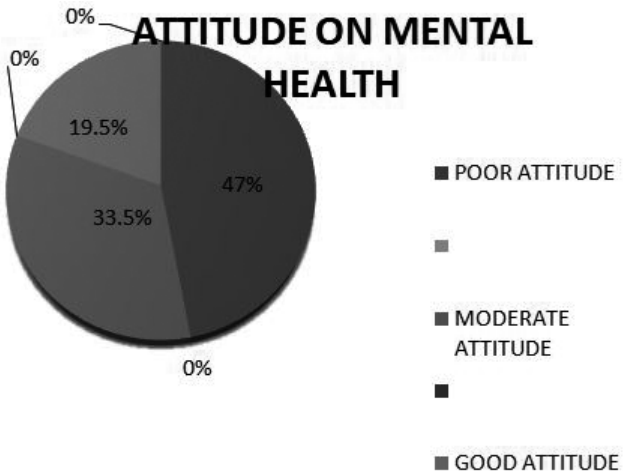


Figure 5

Figure 5 shows the percentage level of attitude on the mental health of participants. Majority of the participants were having a poor level attitude which is 47% (N=94), followed by moderate attitude level, 33.5% (N=67) and a very few were having a good attitude, which is 19.5% (N=39).

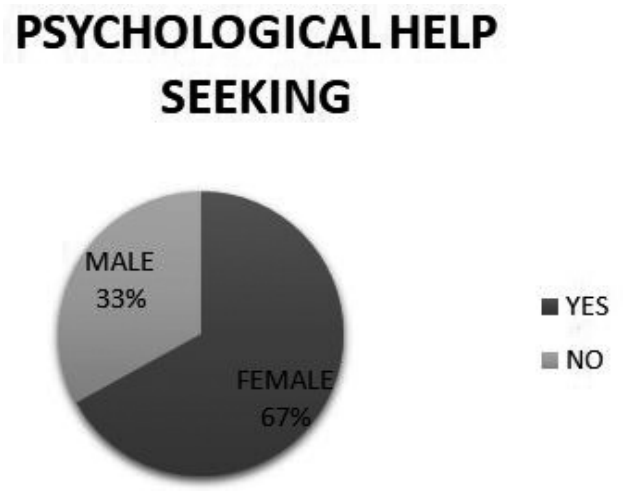


Figure 6

Figure 6 shows the percentage level of psychological help-seeking on the mental health of participants. This part shows that female participants are seeking for psychological help which is categorized as poor health 67% (N= 67) and less seeking help which categorized as good health is 33% (N=33).

Conflict of Interest: We certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

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Acute Lung Rejection: An Important Factor for Long Term Survival in Lung Transplantation

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ABSTRACT

Pulmonary transplantation has been used as treatment of choice in patients with advanced disease. Since the introduction of immunosuppressive and new advancement in postoperative management, the survival rate of lung transplantation has improved. However in the long run, survival rate decreases years after lung transplantation. According to ISHLTH 32nd report, survival rate decreased to 54% after 5 years, and decreased to 31% after 10 years. Leading cause of mortality was found to be graft failure, which may be caused by acute rejection or chronic rejection. Based on the mechanism of action, acute rejection can be classified into acute cellular rejection (ACR), and antibody mediated rejection (AMR). Due to unspecific signs and symptoms in acute rejection, diagnostic procedures must be conducted to help diagnosis. Various modalities are available, but lung biopsy is still considered as the gold standard. Treatment for acute rejection varies in different centers. There are no published guidelines discussing treatment for lung rejection due to lack of published evidence. Further studies evaluating the pathogenesis, diagnosis modalities, and treatment of choice for acute rejection are needed to improve patients' survival rate.

Keywords: *antibody mediated rejection (AMR), acute cellular rejection (ACR)*

INTRODUCTION

Lung transplantation has been used as last resort treatment for selected patients with end stage lung disease in hope of better quality of life and increased survival.[1] Immunology plays a key factor in the survival rate of transplant patients.

Lung transplantation conducted in 1960s and 1970s showed poor results, due to rejection leading to allograft dysfunction. When cyclosporine was introduced as immunosuppressive agents, survival rate increased. However, finding a comprehensive, continuous medical care to sustain lung transplant patient survival is still very challenging. New advances in operative methods and post-surgical care have been developed for the past 30 years; nonetheless the five-year survival rate remains in the range of 55%.[2]

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This was supported by The International Society for Heart and Lung Transplantation (ISHLT) 32nd report, which showed 1 year survival rate to be 80%, 65% after 3 years, 54% after 5 years, and 31% after 10 years. [3]

Based on ISHLT 32nd report, major causes of death 0-30 days after surgery were graft failure (24,3%), and infection (19,4%). Furthermore, main causes of death for 31 days-1 year after transplantation were infection (37,4%), and graft failure (16,6%). Major causes of 3-5 years after transplantation were bronchiolitis (29,6%), followed by infection (18,4%), and graft failure (17,6%). [3]Due to various term used in different centers, graft failure in this report, could have represented acute rejection, bronchiolitis obliterans syndrome (BOS) or chronic rejection and primary graft dysfunction.[3] In conclusion, immune aspects in lung transplant patients is very important both in short term and long term survival in patients receiving lung transplantation.

Based on the phases of rejection, it can be classified into three groups, hyperacute rejection, acute rejection and chronic lung rejection.[4]

Hyperacute Rejection: Hyperacute rejection is a rare form of rejection; it happens within minutes to hours after initial perfusion.[4] Preexisting antibodies formed after exposure to antigen in pregnancy, blood transfusion or transplantation. Antibodies bind to the antigen in graft tissue for example, HLA or ABO antigen, causing complement system activation and cell-mediated injury.[5]

Frost et al, reported the first case of hyperacute lung rejection in 1996. The patient was a 40 years old white woman who underwent a left lung transplant procedure from a woman with the same blood type due to chronic obstructive pulmonary disease. A screening for patient's panel reactive antibodies (PRA) and routine donor lung evaluation (chest radiography, bronchoscopy, gram staining from bronchial lavage) were conducted. Patient's PRA level before transplantation was 11%. No abnormalities were found in donor routine evaluation. One hour after lung transplantation completed, airway pressures suddenly increased, frothy sputum emerged, oxygen level and blood pressure decreased. Radiological, pathological, immunology, electron microscopy examination showed characteristics of hyper acute rejection. Cross match then conducted and showed an increased level of IgG antibody to HLA-B8, which patient's reacted to. Finally, patient underwent pneumonectomy after no improvement from plasmapheresis and cyclophosphamide therapy. Unfortunately, at the end the patient died from sepsis and renal failure.[6]

Since the implementation of crossmatching to test compatibility between lung donor and recipient, the incidence of hyperacute rejection has greatly decreased. There are several cases reported in published reports and mostly showing poor outcome.[7]

Acute Rejection: Acute rejection is mediated by immune system, which involves two different pathways: acute cellular rejection (ACR) and antibody mediated rejection (AMR). Acute rejection usually develops early after transplantation within 6 months after surgery.[4]

Acute cellular rejection (ACR): Major his to compatibility complex (MHC) or in human known as human leukocyte antigen (HLA) is a polymorphic cell-surface molecules, which gives us the ability to distinguish between self and non-self antigen.[7]HLA is classified into two groups, Class I genes (A, B and Cw loci), and class II genes (DR, DQ and DP loci). Class I genes are expressed in almost all nucleated cells, it mostly presents endogenous antigen to CD8+ T cells. Class II genes are found in B cells, monocytes, and antigen presenting cells (APC) such as dendritic cells. It presents exogenous antigen to CD4+ T cells.[8]ACR is a complex process. First, through direct pathway, donor APCs presents foreign antigen to recipient T cells. Then after donor APCs die out, donor antigen are presented by recipients APCs, which known as the indirect pathway.[7,9]

Antigen presented to T cells triggers various immune cascades. Presentation to CD8+ T cells activates the cytotoxic pathway; Tc cells (cytotoxic T cells) then release cytotoxic proteins, eventually leads to apoptosis of the target cell. On the other hand, antigen presented to CD4+ T cells stimulates various types of helper T cells (Th) such as Th1 cells, Th2 cells, and Th 17 cells. Th1 cells play a significant role in allograft rejection.[7-9]Furthermore, latest research showed that Th2 cells and Th17 cells also contribute to lung rejection. Activated Th cells produce various cytokines, activating macrophages, B-lymphocytes, resulting in target cell destruction.[7]

Due to genetic polymorphism in HLA, lung transplantation is extremely challenging, Mismatch between HLA and immune system activates immune cascades, resulting in allograft failure.

Signs and symptoms: Patients with abnormal pathological finding, may be asymptomatic or may exhibit various signs and symptoms, such as dyspnea, low grade-fever, sputum production, hypoxia, cough and abnormal lung auscultation.[10]Various non-invasive modalities such as radiographic imaging and spirometry have been used to help doctors distinguish between acute lung rejection and other etiologies. Radiological finding may show ground glass opacities, septal thickening, reduced lung volumes and pleural effusion.[8]Despite the significant difference exhibited between acute lung rejection and normal lungs evaluated by these non invasive modalities, it has poor specificity to distinguish lung rejection from other etiologies. Therefore, transbronchial biopsy should be conducted as a gold standard diagnosis for acute lung rejection.[8-11]

Pathologic finding: Lung rejection can affect both vascular and airway systems. Based Lung Rejection Study Group published by ISLTH in 2007,in general it can be classified into two groups, acute rejection and chronic rejection. Acute rejection is subdivided into acute rejection (Grade A), and acute airway rejection (Grade B). Chronic rejection is subdivided into, chronic airway rejection (Grade C) and chronic vascular rejection (Grade D).[11]

Table 1: Pathological Classification of Lung Rejection

Category of rejection	Grade	Histologic Findings
Grade A: acute rejection	0–None	Normal lung histology pathology finding
	1–Minimal	Dispersed, sparse perivascular mononuclear infiltrates. Eosinophils and endothelialitis are not found
	2–Mild	More frequent and unequivocal perivascular mononuclear infiltrates present. Eosinophils and endotheliatitis may be found
	3–Moderate	Dense perivascular infiltrates, may extend to interstitial spaces. Endotheliatitis, eosinophils and neutrophils can be found
	4–Severe	Diffuse perivascular, interstitial, air space infiltrates with lung destruction and endothelialitis.
Grade B: small airways inflammation (lymphocytic bronchiolitis)	0–None	No sign of brochial inflammation
	1R–Low grade	Infrequent, thinly dispersed mononuclear cells in bronchioles submucosa
	2R–High grade	Larger and activated mononuclear cells in submucosa, more eosinophils and plasmacytoid cells found. Epithelial damage is present
	X–Ungradable	Low quality tissue sample, no bronchial tissue present
Grade C: chronic airway rejection (obliterative bronchiolitis)	0–Absent	No evidence of chronic airway rejection
	1–Present	Eosinophilic hyaline fibrosis found in the sub-mucosa of bronchioles causing obliteration of airway
Grade D: chronic vascular rejection	No grading	Fibrointimal thickening found in arteries and veins, poorly cellular hyaline sclerosisin veins; evaluated by open biopsy

Treatment: Treatment for acute cellular rejection varies by institution. Initiation of ACR therapy is usually indicated for ACR grade A2 or higher. Therapy for patients with grade A1 and B is still controversial; it is still unclear whether early therapy would decrease the risk for bronchiolitis obliterans in the long run.[8]

The treatment of choice of ACR is pulse steroid. The dose given is variable. Patient is given intravenous corticosteroid with dose ranges from 125 mg to 1000 mg for 3 days, followed by prednisolone taper. Patients with persistent or recurrent rejection may need increased dose or repeated dose of corticosteroid, change of immuno suppression regiment, and further evaluation by various experts in lung transplant.[8]

Antibody Mediated Rejection (AMR): Antibody mediated rejection in lung transplantation is still not well recognized, due to difficulties in diagnosis.[12]AMR initially known as hyperacute rejection, where preformed antibodies developed after patients were presensitized with antigens through blood transfusion, pregnancy or transplantation.[13] However, when the incidence of hyperacute rejection decreased, AMR remained as one of the cause of acute rejection.[13]AMR was not fully acknowledged in the ISHLT 1990 and 1996 working formulation. ISHLT 2007 consensus stated that capillary injury is suggestive sign of AMR; therefore immunological examination may be performed to help diagnosis.[12]

Mechanism: In presensitized patients, B cells proliferate rapidly, producing donor specific anti-human leukocyte antigen (HLA) antibodies (DSA).[14]MHC ligation can result in lung injury both by complement dependent direct injury (classical, alternative, lectin pathway) and complement independent mechanism.[12]A number of researches have reported multiple complement independent pathway involved of lung rejection such as, stimulate exocytosis of von wille brand factor (vWF) and P-selectin, resulting in platelet aggregation and inflammation, increase signaling cascades such as, FAK, SCR, PI3k, AKTand increased production of fibroblast like growth factor receptor resulting in smooth muscle proliferation and production of inflammatory mediators.[14]

Pathological Finding: The pathological findings in AMR are not specific, consequently other modalities such as DSA, C4d must be taken into consideration for the diagnosis of AMR. According to ISHLT statement, histopathological findings of neutrophilic capillaritis,

neutrophilic septal margination, high grade acute cellular rejection (≥A3), persistent or recurrent acute cellular rejection acute lung injury pattern, diffuse alveolar damage, high grade lymphocytic bronchiolitis (B2R), persistent low-grade lymphocytic bronchiolitis (B1R), obliterative bronchiolitis (C1), arteritis in the absence of infection or cellular rejection, graft dysfunction without morphologic explanation, and any histologic findings with new onset DSA positivity.[15]

Diagnostic Criteria: In 2016 ISHLT consensus report about AMR rejection of the lung, AMR is classified as clinical when there is a presence of allograft dysfunction, or as subclinical when there is a pathological abnormality from biopsy examination, with normal allograft function. Both clinical and subclinical AMR are further classified into 3 groups, possible, probable and definite based on histologic, immunology examination. Diagnostic criteria based on ISHLTH consensus are presented in the table below.[14]

Table 2: Diagnostic Criteria for Clinical Antibody-mediated Rejection[14]

Classification	Exclusion other etiologies	Histopathology examination	C4d	DSA level
Definite	+	+	+	+
Probable	+	+	-	+
Probable	+	+	+	-
Probable	+	-	+	+
Probable	-	+	+	+
Possible	+	+	-	-
Possible	+	-	-	+
Possible	+	-	+	-
Possible	-	+	+	-
Possible	-	+	-	+
Possible	-	-	+	+

+positive or present - absent

Table 3: Diagnostic Criteria of Subclinical Antibody-mediated Rejection[14]

Classification	Histopathology examination	C4d	DSA level
Definite	+	+	+
Probable	+	-	+
Probable	-	+	+
Probable	+	+	-
Possible	+	-	-
Possible	-	+	-
Possible	-	+	+

+positive or present; - absent

Patients with clinical AMR experience allograft dysfunction. Patient may be asymptomatic when the changes are minimal, or clinically showing lung function disturbance and exhibit some abnormalities in radiologic examination when the changes are significant.[14]

Treatment: There has not been any randomized critical trial or guidelines evaluating treatment for AMR. There are multiple modalities with different mechanism of action available. One of the mechanisms is to remove circulating antibodies using plasmapheresis. Other mechanism is to suppress B cell activity with intravenous immunoglobulin, or monoclonal antibody such as rituximab.[8,14]High dose corticosteroid has been used for AMR in heart and kidney transplantation. Due to possibility of steroid resistance, corticosteroid may be used together with other treatment to treat AMR in lung transplantation.[16]Other modalities, such as proteasome inhibitors (bortezomib), and complement inhibitor

(eculizumab) are also available as treatment of choice for AMR. However, optimal dosing and treatment of choice are still not discovered due to lack of evidence.[16]

CONCLUSION

Acute rejection is one of the main causes of mortality and morbidity in lung transplant patients. The ability to diagnose acute rejection accurately is needed to give the proper treatment and importantly preventing further damage. Further research on acute rejection especially acute mediated rejection and studies observe the best treatment regiments for acute rejection are needed to increase lung transplant patients' survival.

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Conflict of Interest: Nil

Ethical Clearance: This is an article review and need no Ethical clearance

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The Incidence of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in Dr. Saiful Anwar General Hospital Malang, Indonesia from 2012-2017

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ABSTRACT

Stevens Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are rare but unpredictable severe hypersensitive reactions with high significant mortality and potentially life-threatening. Indonesia has a large population but study of SJS/TEN in Indonesia is still limited. The purpose of our study was to describe data the patients profile, incidence, mortality, and related diseases based on ICD-10 nomenclature system of all patients with SJS and TEN, retrospectively. Medical records of hospitalized patients with SJS (L51.1), TEN (L51.2) and SJS/TEN overlap (L51.3) from January 1, 2012 to December 31, 2017 in dr.Saiful Anwar General Hospital Malang, Indonesia were reviewed. The study has obtained 75 SJS/TEN (63 SJS; 12 TEN) patients data from 2012 – 2017 with incidence rate was 12.5 cases per years. No SJS/TEN overlap was observed. This study demonstrates that SJS/TEN were more frequent in middle adulthood than other age groups. In SJS, female were more frequent than male. In contrast, male more susceptible to TEN than female. The mortality rate was 9.5% in SJS and 16.7% in TEN or 10.67% in total. Based on ICD-10 classification, eye and adnexa disorder, infection, and endocrine, nutritional, metabolic abnormality were the most frequent complication in SJS and TEN.

***Keywords**: Incidence; Stevens Johnson syndrome; toxic epidermal necrolysis; ICD-10*

INTRODUCTION

Stevens Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are grouped as the epidermal necrolysis condition that can be fatal and potentially long life threatening. Both condition have the similar entity because of clinical appearances, cause, and symptoms. Whereas physicians had observed the progression of SJS phenotype to TEN phenotype. Previously, clinicians distinguished erythema multiforme majus and SJS/TEN because of demographic, associated diseases, causes and severity.[1] The diagnosis is probable if three or more following criteria are present. The criteria are erosions of mucous membrane on at least two different sites spots or atypical targets, skin blister, skin pain, Nikolsky's sign, and detachment of epidermal sheets. The definitive diagnosis is confirmed by clinical photographs and/or skin biopsy. The extensive apoptosis of keratinocyte on the epidermal sheets can be observed histologically.[2]typically drug-induced, mucocutaneous disease. TEN has a high mortality rate, making early diagnosis and treatment of paramount importance. New but experimental diagnostic tools that measure serum granulysin and high-mobility group protein B1 (HMGB1 Refer to the

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clinical classification, SJS involves skin detachment less than 10% of the TBSA, SJS/TEN-overlap has epidermal detachment between 10% and 29%, whereas in TEN affect exfoliation greater than 30% of the TBSA.[3]Stevens-Johnson syndrome, and toxic epidermal necrolysis, we needed to define criteria for classifying the cases and standardize the collection of data so that cases could be reliably diagnosed according to this classification. Based on review of case histories and photographs of patients, a group of experts proposed a classification based on the pattern of erythema multiforme-like lesions (categorized as typical targets, raised or flat atypical targets, and purpuric macules The mortality risk in SJS/TEN is related to septic shock condition and multiple organ failure. Several factors have impacted on mortality are age, severity of reaction, recent malignancy, and recent infection. The previous study has report that the mortality rates were approximatelly 12%, 29%, and 46% for SJS, SJS/TEN overlap, and TEN, respectively.[4] Roujeau *et al* stated that at least 70%-80% of cases of SJS and TEN are drug induced.[5]may be because they are easily detected. Most (probably more than 90% The use of antibacterial, anticonvulsant, allopurinol, NSAID, chlormezanone, and corticosteroids is associated with increase risk of SJS/TEN. The incidence of SJS and TEN in general population is 1.2 to 6 and 0.4 to 1.2 cases per million per year, respectively.[6] While the incidence of TEN per year in the HIV-infection population is approximately 1000-fold higher than in general population.[7] The incidence of SJS/TEN in Indonesia is poor published, compared to our large population and hospital numbers in Indonesia. Hence, this paper aimed to extend the previous data from Indonesia studies by examining the incidence of SJS/TEN in dr.Saiful Anwar General Hospital, Malang, Indonesia.

MATERIALS AND METHOD

A retrospective study was conducted at the dr.Saiful Anwar General Hospital Malang, Indonesia, whereas an assessment was made of all medical records of hospitalized patients with SJS/TEN from January 1, 2012 to December 31, 2017. Our hospital is one of two most referral centres as a tertiary service to a population of ~39 million people in East Java, Indonesia. Based on the ICD-10 nomenclature, we referred to L51.1, L51.2, and L51.3 for SJS, TEN, and SJS/TEN overlap, respectively. The International Classification of Diseases, 10th revision (ICD-10) is a medical cataloging system by World Health Organization (WHO) and the diagnostic classification standard for a clinical and research purposes.[8] All diagnoses have been confirmed by dermatologist and venereologist during medical care. Patients were classified into SJS and TEN according to the total area with positive Nikolsky's sign. The diseases were registered as a main diagnosis, a complication diagnosis, or other diagnosis and determined as a concurrent clinical condition. Additional data including demographic information (age, sex), patients admission and remission, mortality, and billing system were collected. The age was classified based on socio-economic function by United Nations.[9] The study was approved by Institutional Ethical Commision of Health Research of dr.Saiful Anwar Hospital by Ethical Clearance no:400/92/K.3/302/2017. Data anonymity were maintained and patient identity was protected.

RESULTS

A total of 75 cases of SJS (L51.1) and TEN (L51.2) were identified from 2012 to 2017. There were 63 cases (84%) hospital admissions due to SJS and 12 cases (16%) of TEN. No SJS/TEN overlap was observed. Figure 1 shows the peak of incidence in 2015 (17 cases) and decreases in 2016 (7 cases). The most patients (81.3%) were recovered during medical treatment. Two types of insurances that were used for medical charges are national and district insurances. District insurances is full covered by district government without insurance premium payment. About one third patients using private payment (Table 1).

Table 1: Patients demographic, admission, remission, and billing system of SJS and TEN cases from 2012 to 2017

Variable	Number (n = 75) (%)
Sex	
Male (29 SJS; 8 TEN)	37 (49.33)
Female (34 SJS: 4 TEN)	38 (50.67)
Age (y) at diagnosis	
Mean	35.0 (SD 19.0)
Minimal-maximal	2 – 85
Median	35
Mode	35
Diagnosis	
SJS	63 (84)
TEN	12 (16)

Conted…

Patients admission	
Dermatology & venereology	29 (38.67)
Internist	26 (34.67)
Pediatric	13 (17.33)
Neurology	2 (2.67)
Neuro-surgery	2 (2.67)
Plastic surgery & reconstruction	2 (2.67)
Orthopaedic & trauma	1 (1.33)
Patients remission/discharge	
Recovered	61 (81.3)
Discharged againts medical advice	6 (8.0)
Referred to other hospital	1 (1.3)
Death (6 SJS; 1 TEN)	7 (9.3)
Patients billing system (n = 72)	
National insurance	46 (63.89)
District insurance	5 (6.94)
Private	21 (29.17)

Sex Distribution: The sex distribution per year are presented in Figure 1. Using ANOVA two-factor without replication, there was no different significant between male and female patients number per year (Pvalue 0.89≥0.05). Figure 1 also compares the distribution of SJS and TEN among male and female patients per year. The ratio of SJS and TEN in male was 3.6:1 and 8.5:1 in female. So that, SJS was more common in female, in contrast to TEN where more common in male. In addition, our data showed that the incident of male with TEN were doubling over the female, however, SJS in male and female were relatively constant.

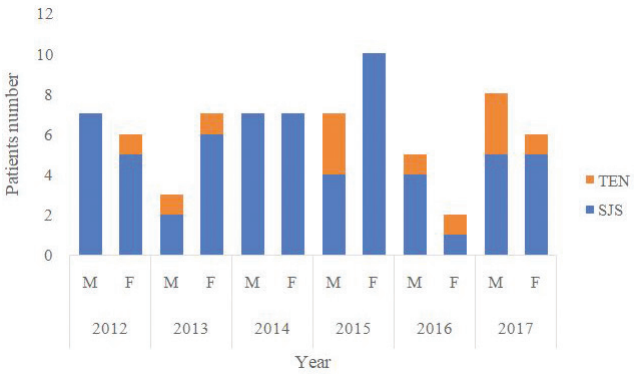

Figure 1: The distribution of patients SJS and TEN according to the gender from 2012 to 2017 (n = 75)

Age Distribution: There was a high variance on case number distribution of each groups (Mean, 15; SD, 10). From the all cases, mean, median, and mode of patiens age was similar, 35 years (minimum to maximum was 2-85 years, SD 19) (Fig. 1). The mode of male and female age were 30 and 28, respectively. The mean and median of male were similar, 31 years. But, it getting older in female, 40 years. Male cases were dominant compare to female at young age, but there was no male case after 64 years. However, female cases reached the peak at middle age and decrease gradually.

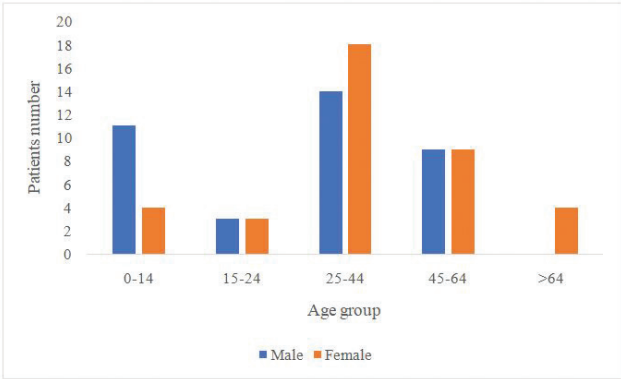

Figure 2: Age group of patients

Concomittant diseases and mortality: Sixty-one patients were admitted as SJS (L51.1) and TEN (L51.2) as main diagnosis. And 14 cases of SJS/TEN were registered as complication and other diagnosis. The main diagnosis of the later were HIV infection (8 cases), tumour and malignancy (2 cases), tuberculosis of nervous system, autoimmune disease, pulmonal hypertensi, and chronic kidney disease. The most frequent concurrent condition in all patients was eye disorder such as blepharitis and conjunctivitis were the most complication diseases, followed by sepsis, anemia, malnutrition, dispepsia, urosepsis, pneumonia and and metabolic abnormality such as increase transaminase and azotemia.

Seven cases were death during treatments. One of them was died before 48 hours after hospitalized. Sepsis was the most cause of death (4 cases), followed by multiple infections related to HIV (2 cases) and pneumonia (1 case). In additional, from 6 patients who discharged as request, one of them who diagnosed TEN was known death after two days of discharge. The ages of the deceased cases varied from 12 to 70 years, with an average age of 42 years. Thus the mortality rate was 10.67% in total (8 out of 75; 4 males and 4 females). The percentages for SJS and TEN were 9.5% and 16.7%, respectively. Particularly in patient with HIV-infections the mortality rate was 16.7%.

DISCUSSION

In this study, the incidence of SJS/TEN (12.5 cases per year) seems to be consistent during 6 years period and supported the previous findings in Indonesia.[10–12] But, this number still higher than several institutional studies in other countries with incidence average is 8.1 cases per years.[13–22]we retrospectively analyzed cases of SJS and TEN treated in 2 university hospitals during 2000-2013. Results Fifty-two cases of SJS (21 males and 31 females; average age, 55.1 years The differences can be explained by the lower referral level and fewer service coverage of the reference hospital. On the other hand, the result was much lower than SJS/TEN cases in South Africa.[16] This variation may be due to the most comorbid diagnosis of SJS/TEN cases in South Africa was HIV-positive. Whereas the increased prevalence of SJS/TEN in patients with HIV is well known.

Our ratio number between male and female patients were contrasts with statement in Valeyrie-Allanore *et al* that SJS and TEN could affect female more frequent than male in the adult population.[23] Interestingly, in case TEN alone, the male cases were twice of female cases. However, the number indicates that there were a variation comparison between male and females patients from different studies.

Our study show that the widely spread from young to old individual and reach the peak in productive age group then decrease with age. In contrast with our result, other study also reported that SJS/TEN will increase with age after the fourth decade. When SJS/TEN affect the older age probably this related to the primary diseases and causative agents.[13,20] Contrary, the disease-related factors such as HIV and tuberculosis infections were usually found in the middle age.[24] This corresponds with our finding that 12 patients with HIV-infection were in the middle age. This finding suggests that the causative agent responsible for age distribution of SJS/TEN.

The most patients (38.67%) were admitted to the ward dermatology and venereology, corresponding with the clinical characteristic of SJS/TEN as a mucocutaneous disease. Furthermore, 13 patients (17.33%) with 12 years and below were hospitalized in pediatric ward. The incidence seems to be similar with other research from Singapore which recorded 13 patients in pediatric ward for 7 years period.[25] Interestingly, internist ward also considerable for SJS/TEN patients related to the concomittant disease. It includes patients with HIV, hypertension, tuberculosis, malignancy, kidney disease and autoimmune disease. Patients who admitted to neurology and neuro-surgery had previous disease such as tuberculosis of nervous system and the central nervous system tumor, respectively.

The diseases of eye and adnexa as the most complication diseases confirms that SJS/TEN patients manifest severe conjunctivitis due to ocular surface inflammation which could leading to damage and loss of vision. Ocular surface complication is common in SJS/TEN giving rise 20% to 79%.[26]

Based on our 6 years experience period, the number of mortality was about 1 to 2 patients per year, although the number of patients admission were fluctuated. According to Sekula *et al*., the mortality rates was lower.[4] Higher mortality rate might be releted to the develop of SJS to TEN during hospitalization due to the late of hospital admission. Furthermore, the lack of information on disease symptom and the late withdrawal of causative drugs may increase mortality.[17]

Some screening programme have been done before associated drugs were prescribed in many countries. The review prove that those cost-effectiveness for associated initiating drug such as carbamazepine and allopurinol and should be implemented in the national policy.[27,28]

The case number in our region is relatively high and the disease is unpredictable. So that, this research will serve as a base for future studies of SJS/TEN, management and administration improvement, and preventive implementation programme possibility in our country. Finally, a limitation of this current study has only examined the incidence and demography of SJS/TEN in small area without exploring the causative agents.

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Dynamic Transmission of Dengue Hemorraghic Fever and Climate Variability Patterns in Jakarta

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ABSTRACT

Dengue hemorrhagic fever (DHF) has become an endemic in major cities in Indonesia. Climate change, and poor level of awareness and knowledge of the community in Indonesia causes the case of DHF to continue to exist and it tends to increase. In the extraordinary events in 2015 the morbidity rate reached 50.75. The Intergovernmental Panel on Climate Change (IPCC) prediction in 1996 stated that the incidence of dengue hemorrhagic fever in Indonesia will increase threefold from 2070, if the environment and community conditions do not change. This study aims to produce a system dynamics model with ecological analysis to determine the dynamics of the DHF incidence with climate variability patterns in the Special Capital Region of Jakarta. The design of this study is ecologic study with hypothesis test, modeling, simulation, and intervention. Interviews with respondents include the level of knowledge, attitudes, and behavior (PSP) of the community. Measurement of climate factor includes rainfall, temperature, humidity, and CO2 level in the ambient environment. The results of DHF system dynamics model simulation show the program intervention scenario that has the most significant effect on the decline of Breeding Places and the decrease of DHF cases by increasing the participation of the community to actively control water places that are potential for mosquito breeding places.

Keywords*: system dynamics model, intervention, simulation, dengue hemorrhagic fever, climate change*

INTRODUCTION

The increasing population has caused cases of communal disease to increase. DHF cases in Indonesia first appeared in Surabaya in 1968. Based on the number of cases, Indonesia ranked second after Thailand and even the Ministry of Health said that the number of DHF morbidity since it was found in 1968 in Surabaya continued to increase from 0.05 in 1968 to 35.19 in 1998 when it was recognized, there was a relationship between environmental changes and an increase in cases of disease. This morbidity rate continues to increase every year, and in 2005 it became 43.31; in 2014 it became 39.80 with a total of 100,347 cases and in 2015 it reached 50.75. For example, in 2014, until mid-December, recorded dengue fever patients in 34 provinces in Indonesia were 71,668 people, and 641 of them died.

The number of environmental factors that are identified as having an effect on the incidence of DHF which tend to recurred encourage researchers to figure out what environmental factors can be used as indicators in predicting the occurrence of DHF cases and DHF transmission system in Jakarta, as well as predicting the incidence of DHF through intervention models on system dynamics.

This study produces a dynamics model of DHF transmission in relation to climate variability patterns

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that will contribute to improvements in development on a local and even national scale. The dynamics model of DHF transmission is expected to be an innovation to reduce the incidence of DHF, especially in Jakarta.

METHOD

This study includes ecological studies by using hypothesis test. Modeling and simulation is carried out to identify factors that are relevant to future DHF cases. The eminence of this study links environmental factors in ecology such as rainfall, temperature and humidity as well as basic indicators of air quality, namely $CO_{2,}$ with vectors of DHF.

Study related to the determination of dynamics model to recognize early warning of the emergence of DHF cases has been started since 2006. It is expected that the patterns that have been found are continued in the concept of this study for a broader area, namely in Jakarta, Bogor, Depok, Tangerang and Bekasi (Jabodetabek).

The samples in this study are air quality sample, vector sample, case sample, house sample, and respondent sample. Air quality sample is taken from the research location. Vector sample is adult *Aedes* mosquitoes caught from the respondents' house. Case samples are DHF experienced by respondents in the last two years. House sample is determined based on WHO standards for larvae and mosquito surveys according to the area and population: "Cluster Design Sampling".[1]

The minimum number of samples calculated based on the prevalence of DHF in the preliminary study was 14%, while the expected prevalence of control variables that had been found was 4%. In the hypothesis test using a 5% confidence level and 90% test strength. The distribution of household sample was carried out by dividing the sample proportionally according to the number of cities in the Special Capital Region of Jakarta, namely Central Jakarta, East Jakarta, South Jakarta, West Jakarta, and North Jakarta. In each region, a total of 40 houses were taken with individual analysis units.

The study is conducted within three years starting in 2018. Data is collected from the Special Capital Region of Jakarta, include: Environmental data (rainfall, temperature, humidity, vector, and CO_2 level in the ambient air through direct measurements at the sampling point) and Community data to find out the knowledge, attitudes and behavior of the community about DHF.

Rainfall measurements are carried out every rainy day using rain gauge. Temperature and humidity are measured using thermo hygrometer, and CO_2 level is measured using RAC sampler. The vector data collection of adult *Aedes* mosquitoes is carried out by purposive sampling in several households in each region.

Community data collection is carried out through interviews using a questionnaire to determine social, economic and education status of the community, as well as knowledge, attitudes and behavior of the community about DHF, prevention and eradication of *Aedes* vectors.

To obtain the concept of DHF control in the future, a system dynamics model is used. The stages of the study to obtain the research outcome are: (1) validation of environmental components (2) demonstration of the model in the relevant environment, (3) report on comprehensive activities. In this study, the case of DHF is considered as one of the components of the causal system in a scenario simulated through intervention.

Simulation is carried out through modeling, model production, simulation and validation of the simulation results stages to determine the compatibility between the simulation results and the imitated mechanism. Simulation results are used to understand process behavior and predict future trends.[2]

RESULTS AND DISCUSSION

The first year of the study has been conducted in the Special Capital Region of Jakarta, namely in the Central Jakarta (Harapan Mulya Urban Village, Kemayoran Sub-district), East Jakarta (Malaka Jaya Urban Village, Duren Sawit Sub-district), South Jakarta (Lenteng Agung Urban Village, Jagakarsa Sub-district), West Jakarta (Tomang Urban Village, Grogol Petamburan Sub-district), and North Jakarta (Kelapa Gading Timur Urban Village, Kelapa Gading Sub-district). Collection of environmental data and community data about DHF is carried out in the five regions from July to September 2018.

In general, community in Special Capital Region of Jakarta has a good knowledge (56.5%), attitude (68.0%) and behavior (58.0%) on understanding DHF. This result related with former research that knowledge has a significant relationship with community attitude and behavior regarding DHF control. [3,4] Person with a good knowledge regarding DHF will do any prevention to control DHF compare with person without any knowledge about DHF. [5]

Community living in West Jakarta has the highest number on a good knowledge, attitude, and behavior regarding DHF, but there are still any cases of DHF. If we compare with community living in Central Jakarta, the number of community with a good knowledge, attitude, and behavior are lower but there are not any cases of DHF (Figure 1). This result happen because there are another factors related to someone's knowledge like demography factors such as: age, gender, job, and education.[6]

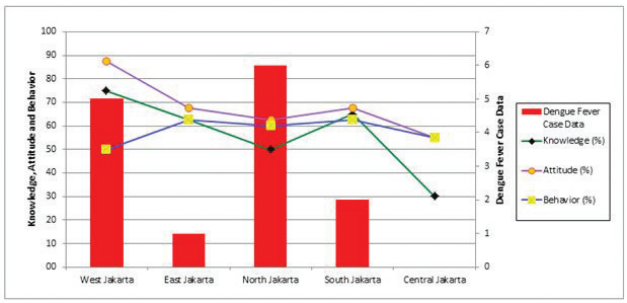

Figure 1: Knowledge, Attitude, and Behavior Regarding DHF Cases

Climate would affect mosquitoes transmission regarding any factors.[7] The spread rate of viruses increases on season transition which marked with rainfall and high temperatures.[8] High temperatures will increase larva development, adult mosquitoes biting habit, gonotrophic developmental, and extrinsic viruses incubation period in mosquiotes. [9,10] *Aedes aegypti* has a positively related to areas with high relative humidity. [11] Factors that directly related to the number of mosquito landing rate are temperature and humidity due to their effects on activities and metabolism.

During sampling, there was not in rainy season in Jakarta, so there was no rainfall data. Temperature and humidity in North Jakarta was the highest. This condition is directly proportional with the number of mosquitoes landing rate and DHF cases that happen (figure 2).

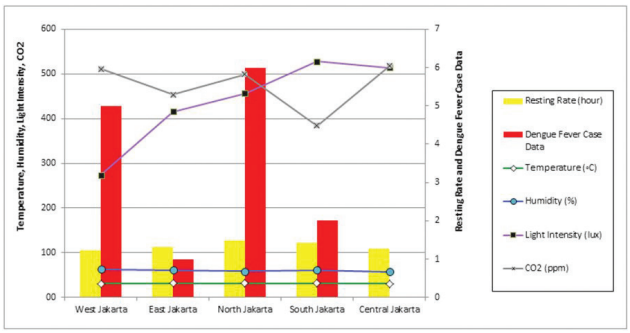

Figure 2: Temperature, Humidity, Light Intensity, and CO_2 on Mosquitoes Landing Rate and DHF Cases

Dengue Hemorraghic Fever Case Prediction based on Model Simulation Based on Figure 3, it is known that climate variability patterns affect the incidence of DHF because the life of the disease vectors and dengue virus as an agent is very dependent on environmental conditions. Temperature, humidity, air chemical composition, water chemical composition as the breeding place for mosquitoes, rainfall, wind speed and other environmental factors are the limiting factors of its life. Therefore, the environmental system associated with the incidence of DHF has 4 subsystems, namely: climate subsystem, *Aedes* mosquito, human and DHF. These four subsystems are interconnected and they influence each other.

Climate subsystem is a series of climate factors related to global climate change that triggers an increase in global earth temperature. As a result, this global warming phenomenon can affect living things. The most dominant insect causing DHF is *Aedes aegypti*. CH_4, N_2O, CO_2 and CFC-11 are gases that cause the global climate change or the so-called greenhouse effect if it is at a concentration exceeding normal concentration. The increase in global temperatures will increase sea surface temperatures so that the next impact is to encourage the El Nino phenomenon. According to the World Meteorological Organization (WMO), there is a relationship between the occurrence of El Nino and the incidence of DHF in Indonesia.[12] This cycle forms the climate subsystem in the model.

The second subsystem is the *Aedes* mosquitoes, from eggs to adult mosquitoes, which is indicated by a positive arrow. The connecting factor of the climate subsystem and mosquito subsystem is the breeding places for mosquitoes. Breeding places are highly affected by rainfall. When rainfall is high, containers are easily filled with water and this relationship is indicated by a positive arrow. Another connecting factor of the climate subsystem is the ambient temperature which then affects the Extrinsic Incubation Period (EIP). Extrinsic Incubation Period is influenced by environmental temperature, humidity, level of viremia in humans, and viral strains.[13] Temperature increase will shorten EIP and increase transmission. Temperatures that increase to 34°C will affect the temperature of the water in breeding places which also accelerates the hatching of eggs into larvae.

Vector subsystem and disease subsystem are connected by Landing Rate and the role of dengue virus

factors. The presence of DHF is determined by the contact between mosquitoes and humans. It is assumed that the larger the mosquito population the higher the Landing Rate, so the connecting arrow becomes positive. The larger the *Aedes* mosquito population the larger the infective *Aedes* population that carries the Dengue virus. This relationship is indicated by a positive arrow.

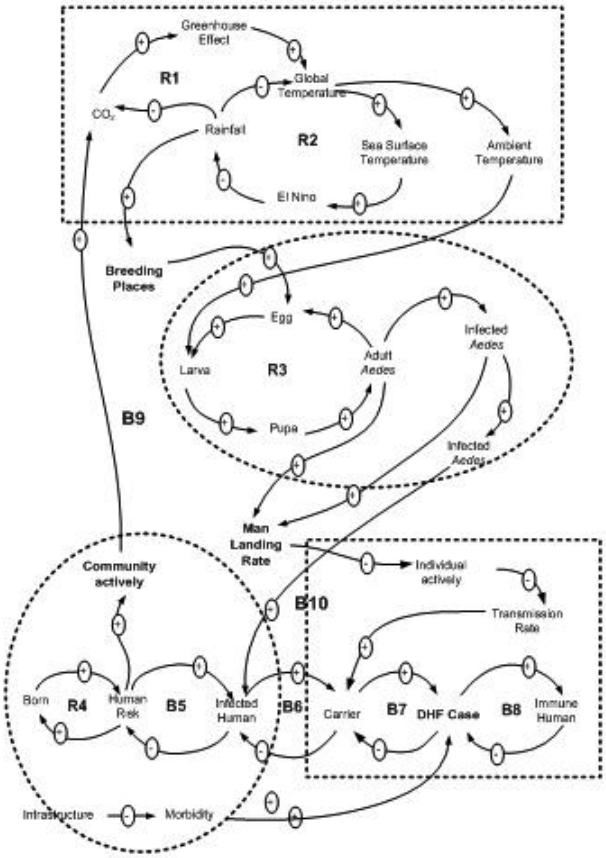

Figure 3: Dynamics System Model of DHF Cases with Community Role Improvement (PSP) intervention

After the *Aedes* mosquito bites a human, the virus replicates in the human body. The more viruses incubated into humans the more humans become infectious so that the number of DHF cases in the community increases. This link is indicated by a positive arrow.

Human activity is indicated by the intensity of petroleum fuels usage. The impact of fuel utilization is the increase of CO_2 emissions; the relationship is indicated by a positive arrow. The Landing Rate factor is also related to the human subsystem through the individual activeness factor. The more inactive a person is, the easier for mosquitoes to approach, especially during peak hours.

In this case, intervention in increasing the knowledge, attitudes and behavior (PSP) of the community is required. From the analysis, it is known that the factors that are significantly related to the occurrence of DHF in the community are knowledge, attitudes and behavior factors. This program provides community awareness education. This relationship is indicated by a positive arrow for PSP. Figure 3 shows the diagram stock flow scheme which is the model production stage, where all variables are included as factors that influence the incidence of DHF.

CONCLUSIONS

System dynamics model simulation of DHF shows the program intervention scenario that has the most significant effect on the decline of Breeding Places and the decrease in DHF cases is by increasing the participation of the community to actively control water places that are potential to be mosquito breeding places. Environmental factors influence DHF cases and the vectors *Aedes aegypti* and dengue viruses related to climate change. The Indonesia geography, knowledge, attitude and practice have caused DHF cases were increase.

Simulation in this study has produced a model that can be used for other infectious diseases. Through system dynamics modeling, the transmission model of the disease can be known in details, so that the most effective interventions can be determined in handling infectious disease cases.

Conflict of Interest Statement: The authors of this research declare that there is no conflict of interest related to this study

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Knowledge about Lung Cancer and Awareness of its Risk Factors among the University Students

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ABSTRACT

Background: Lung cancer is the second most common cause of death due to cancer. In Malaysia, lung cancer accounts for 13.8% of all cancers in males and 3.8% of all cancers in females. Most of the cases are diagnosed after the age of 60 years. The incidence of lung cancer diagnosis is relatively low. A good knowledge and awareness about its risk factors is essential for early detection and prevention.

Material and Method: Cross-sectional descriptive study includes 246 respondents studying in the university between age 18 and 25 years of age. Opportunistic sampling technique was used.

Result: Female students exhibited the good knowledge about lung cancer and awareness about its risk factors. The knowledge and awareness of lung cancer was more in bumiputras compared to no-bumiputras which was statistically significant. Unmarried students and medical students had good knowledge as well as awareness about risk factors of lung cancers when compared to Unmarried and non- medical students respectively. Non-smokers had good knowledge and awareness about risk factors of lung cancer than smokers which was statistically.

Conclusion: Female students in medical field who were less than age of 22, and bumiputra status had good knowledge and awareness about the risk factors for lung cancer. Non-smoker students had good level of knowledge about lung cancer and awareness of the risk factor when compared to current smoker students.

Keywords*: Lung cancer, Medical, University Students, Awareness, Risk factors*

INTRODUCTION

Lung cancer being one of the most common cancers is a leading cause of cancer death in both men and women. The cancer cases occur mostly in low to middle income countries[1]. The geographical and ethnical distribution is varied in different parts of the world. In males the incidence is higher. In Eastern Asia it was 50.4 per 100,000 of population in males. Notably low incidence rates are observed in Middle and Western Africa which is 2.0 and 1.7 per 100,000 respectively of population. In women, the incidence rates are generally lower, and the geographical pattern is little different, mainly reflecting different historical exposure to tobacco smoking. Thus, the highest estimated rates are in Northern America which is 33.8% and Northern Europe which is 23.7% with a relatively high rate in Eastern Asia which is 19.2% and the lowest rates in Western and Middle Africa which is 1.1% and 0.8% respectively[2].

Based on World Health Organization 2014 report, lung cancer causes 19.1 deaths per 100,000 populations in Malaysia. It is almost 4,088 deaths per year which is 3.22% of all deaths. Lung cancer is the second most common cause of death due to cancer in the country. The risk of lung cancer increases with the duration and number of cigarettes smoked. If a smoker quits smoking, it can significantly reduce the chances of

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developing lung cancer[3]. In Malaysia, lung cancer accounts for 13.8% of all cancers in males and 3.8% of all cancers in females. The male to female ratio in terms of incidence of lung cancer is 2.8:1. In Malaysia most cases of lung cancer are diagnosed after the age of 60 years. The incidence of lung cancer diagnosis below the age of 40 is relatively low (approximately 6.2%)[4]. Small cell lung cancer occurs almost exclusively in heavy smokers and is less common compared to non-small cell lung cancer. Adenocarcinoma is more common in younger patients and presents at later stage as the disease remains asymptomatic in early stages. One of the study had shown that all patients with age less that 40 years present in stage IIIb or with metastasis compared to older patients[5]. Studies have suggested that the leading cause of death from cancer is the non–small-cell lung cancer worldwide. It is a debilitating disease with poor quality of life[6,7]. This study was undertaken to evaluate the knowledge about lung cancer and awareness about its risk factors among university students.

MATERIAL AND METHOD

Study Design: This cross-sectional descriptive study was conducted to evaluate the level of knowledge on lung cancer and awareness about its risk factors among the university students. Convenience sampling technique was used to collect sample. The total number of respondents were 246 as calculated by the formula, sample size = . Where e = Margin of error (as a decimal) z = Confidence level (as a z-score) p = prevalence of respondent, from previous research. The n =246). The study population includes the students from medical faculty (Medical School, Faculty of Health and Life Sciences) and non- medical faculty (Faculty of Business and Management Program and Faculty of Information Science and Engineering). It included students between the 18 to 25 years not suffering from lung cancer. Ethical clearance was obtained from the research and ethical committee of the institution. The questionnaire was developed in English covering the objectives of the study by an extensive literature search. The focus was on the of knowledge of lung cancer and awareness of the risk factors. The ambiguity in the wordings of the questionnaire was tested by distributing it to randomly selected 25 university students. Based on their response and feedback the questionnaire was modified and later administered to the participants. Informed consent was obtained from all the participants.

The questionnaire consisted of eight questions each for knowledge of lung cancer and awareness of risk factors. Of the eight questions if more than six questions were answered correctly, it was considered as good knowledge and awareness. To analyze the data, the study group was divided based on the gender, smoking behavior, the course they studied educational level. Data analysis was done by using SPSS tool version 23. Statistical analysis was done by chi-square statistical test.

RESULTS

Knowledge of Lung cancer: We observed that 33.3% of male students had good knowledge and 16.7% poor knowledge when compared to 41.1% female students with good knowledge and 8.9% poor knowledge. The difference in the knowledge of lung cancer between male and female students is statistically significant (Table 1).

We also observed that difference in the knowledge about lung cancer between the students aged less than 22 and more than 22 years. Bumiputra students had good knowledge as compared to non-bumiputra students. The difference in knowledge about lung cancer between bumiputra and non- bumiputra students is statistically significant Un-married students had better knowledge than married students. Moreover, 45.5% medical students exhibited good knowledge and 4.5% of poor knowledge when compared with 28.9% nonmedical students who had shown good knowledge and 21.1% of poor knowledge. The difference between these two groups is statistically significant. Lastly, 26% of smoker exhibited good knowledge and 24% of poor knowledge as for the non-smoker students with 48.4% good knowledge and 1.6% of poor knowledge. There is a statistically significant difference in knowledge about lung cancer between smoker and non-smoker students (Table 2).

Table 1: Knowledge about lung cancer and awareness of risk factors among male and female students

(N = 246)		Good awareness of risk factor Frequency (%)	Poor awareness of risk risk factor Frequency (%)	p-value
Sex	Male	81 (32.9)	42 (17.1)	0.000
	Female	102 (41.5)	21 (8.5)	
(N = 246)		**Good knowledge Lung cancer Frequency (%)**	**Poor knowledge lung cancer Frequency (%)**	**p-value**
Sex	Male	82 (33.3)	41(16.7)	0.000
	Female	101 (41.1)	22 (8.9)	

Table 2: Knowledge of lung cancer

		Good knowledge	Poor knowledge	P-Value
		Frequency	Frequency	
Age	Less than 22	42	15	0.238
	More than 22	40	26	
Race	Bumiputra	51	17	0.007
	Non-Bumiputra	31	24	
Marital status	Single	78	36	0.315
	Married	4	5	
Faculty	Medical	42	8	0.000
	Non- Medical	40	33	
Smoking status	Current smoker	56	39	0.000
	Non- smoker	26	2	

Awareness of risk factor: It was observed that statistically significant difference in awareness about risk factors of lung cancer between males and females (Table 1). There are statistically significance differences in the knowledge about lung cancer between Bumiputra and non-numiputra students ($p<0.05$). Moreover, medical students had statistically significant good knowledge compared with nonmedical Lastly smokers had good knowledge and compared to the non-smoker students. It was statistically significant (Table 3).

Table 3: Awareness of the risk factor of lung cancer

		Good awareness	Poor awareness	p-value
		Frequency	Frequency	
Age	Less than 22	42	15	0.129
	More than 22	39	27	
Race	Malaysian	50	18	0.018
	Non-Malaysian	31	24	
Marital status	Single	77	37	0.317
	Married	4	5	
Faculty	Medical	41	9	0.013
	Non- Medical	40	33	
Smoking status	Current smoker	55	40	0.000
	Non- smoker	26	2	

DISCUSSION

The present study shows that most of the female students were having good knowledge of lung cancer when compared to male students. Our observation is similar to the observation made by Al-Haqwi, Tamim, & Asery, who reported 50.2% of male students and 6.5% of female students are smoker and female students are found to be having high level of knowledge compared to male students[8]. Omair et al, too had shown that smoking was more prevalent among males (26%) compared to female (1.7%) and female students had better knowledge than males[9].

Bumiputra students had higher level of knowledge about lung cancer compared to non- bumiputra students. Yew & Noor, also had stated that Chinese population who are non-bumiputras had higher prevalence of getting lung cancer[10]. Similar observation done by Lim, Yahaya, Lim, & Registry, declared that the prevalence of lung cancer was highest among the non-bumiputra especially the Chinese population. This is because the non- bumiputras had a low level of knowledge about lung cancer especially about the risk factors[11].

According to knowledge about lung cancer, the present study shows that 112 of medical students and 71 of non-medical students are having good knowledge about lung cancer showing higher level of knowledge among the medical students about lung cancer compared to non-medical students. As stated by Khatiwada et al, 80% of the medical students had good knowledge when compared to non-medical students[12]. As per knowledge about lung cancer, the present study shows that 64 of current smokers and 119 of non-smoker students have gained good knowledge about lung cancer. This shows that the non-smoker students have high level of knowledge about lung cancer compared to current smoker students. Cheng as well as and Doll & Hill made similar observation[13, 14].

Awareness of risk factors of lung cancer: In the present study we found that female students are having high level of awareness of the risk factor as compared to male students. This is supported by previous study by Chawla et al. who stated that the prevalence of getting lung cancer was higher among the male compared to female students[15]. Similar observation was observed by Bjomson et al., 1994 where the prevalence of smoking was higher especially among the males [16].

Bumiputra students had good awareness of the risk factor than non-bumiputra students. Yew & Noor, stated that the prevalence of getting lung cancer was higher among the non-bumiputra[10]. This is because they have poor level of awareness about lung cancer and the risk factor. This shows that bumiputras had greater level of awareness of the risk factor than non-bumiputra.

Present study had shown that medical students have high level of awareness of the risk factor compared to non-medical students. This observation is supported with Khatiwada et al[12]. The non-smoker students had higher level of awareness of the risk factor compared to current smoker students. This observation is consistent with Cheng, 1995. This shows that non-smokers had higher level of awareness about lung cancer risk factor compared with current smoker[13].

CONCLUSION

It can be concluded that most of the students of the University are having a good knowledge about lung cancer and awareness of its risk factor. Despite that, small number of students are still not aware and not having proper education about lung cancer. Female students in medical field who were less than age of 22, non- smoker and bumiputra status proved that they had adequate knowledge and awareness about the risk factors for lung cancer. Non-smoker students had good level of knowledge about lung cancer and awareness of the risk factor when compared to current smoker students.

Medical students had significantly high level of knowledge about lung cancer and awareness of the risk factor when compared to non-medical students. Bumiputra students have statistically highly significant level of knowledge about lung cancer and awareness of the risk factor compared to non-bumiputra students.

Limitations: The limitations of this study were limited time to collect data, difficult in getting answer for the questionnaire from the female students who are smokers.

Ethical Clearance: Taken from research and ethical committee of the institution.

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Community Treatment Security Index in Makassar City

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ABSTRACT

The safety of treatment must be a concern, especially for people who decide to do self-medication. Irrational treatment affects unwanted effects. The purpose of this study was to analyze several treatment safety indicators to serve as the safety index of self-medication. This type of research is a survey using a cross sectional study design. Research location of Makassar city area with 4 regions, namely 1. North 2. East 3. South and 4. West. Research sites are pharmacies and drug stores. The number of pharmacy samples is 84 and 21 drug stores. Each pharmacy or store is taken 3 to 4 respondents. The sample size is 400 respondents. 306 for respondents who came to buy medicine at the pharmacy and 96 respondents who came to buy medicine at a drug store. The sampling technique is multistage random sampling. processing data using Confirmatory Factor Analysis. The instrument used in this study is a structured quiz. The results of the study indicate that the use of drugs for the purpose of self-medication must refer to medication safety indicators to ensure that respondents are safe for the drugs used. Of the six treatment indicators, the score for the treatment safety index was obtained with 3 categories: Less (<1.64), Enough (1.64- <3.28), Safe (≥3.28). Based on the treatment safety index, it was found that respondents who did self-medication at pharmacies or drug stores to deal with pain complaints 281 (70.3%) were in the safe category.

***Keywords**: Self-medication, Treatment Safety Index*

INTRODUCTION

Self-medication or self-medication becomes increasingly important in dealing with health, where the community is given a large role in making decisions to deal with diseases that are considered capable of being overcome, the role of the community can improve self-empowerment[1,8,16]. Self-medication contributes to access to medical treatment because it does not use medical services and prescription drugs, so costs can be minimized, but undesirable risks such as excessive drug use, duration of treatment, improper drug dosages, and undesired drug effects can occur and the important strategy is to maximize benefits and minimize risks[2,3,5,9].

The safety of drug use is a key element of public safety to avoid drug side effects. Proper and safe use of drugs is a method to increase awareness in terms of drug use[4,7,10]. Identification regarding the safety of drug use is the first step that must be taken before making a decision to choose and implement treatment[11,12]. Medication errors are caused by improper use of drugs and the consequences can endanger health[13,14,15]. The use of drugs is said to be safe if the drug used does not provide a hazard that can cause problems or threats to their health. There are 6 categories of security indicators that are used for self-medication, among others: 1) Appropriate drug selection, 2) Precise drug dosage, 3) Appropriate use of drugs, 4) Proper drug information, 5) Proper drug storage, and 6) Alert drug side effects. Treatment safety indicators must be a parameter in carrying out self-medication so that the drugs used do not provide hazards that can cause problems or threats to their health[2,3,4]. The purpose of this study was to analyze some of the safety indicators of treatment as a safety index of self-medication.

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MATERIAL AND METHOD

This type of research is a survey with a cross sectional study method. This research was carried

out at pharmacies and drug stores spread across 14 sub-districts of Makassar City, then divided into four regions, namely North, East, South and West. The number of samples is 84 pharmacies and 21 drug stores, where each region consists of 21 pharmacies and 7 drug stores. Each pharmacy or store is taken 3 to 4 respondents. The sample size is 400 respondents. 306 for respondents who came to buy medicine at the pharmacy and 96 respondents who came to buy medicine at a drug store. Exogenous variables in the study are indicators of treatment safety and endogenous variables are the safety index of treatment. The sampling technique is multistage random sampling. Statistical analysis and processing of data using Confirmatory Factor Analysis (CFA) using the Amos Program. The instrument used is a structured questionnaire, how to collect data using an enumerator.

FINDINGS

Based on the results of the analysis and formulas obtained, the calculation of the scores of each indicator and the safety index score of the self-medication with the following results:

Table 1: Indicator Scores and Treatment Safety Index in Makassar Communities Doing Self-Treatment in Makassar City

Indicator/Index	$\bar{x}$	SD	Minimum	Maximum
Choose	1,08	0,36	0,00	1,26
Dose	1,15	0,37	0,00	1,32
Way	1,21	0,35	0,00	1,35
Inform	0,88	0,45	0,00	1,23
Save it	1,24	0,67	0,00	1,67
Effect	0,43	0,59	0,00	1,47
Secure	3,66	1,05	0,00	4,92

Table 2: Indicator Scores and Treatment Safety Index in Makassar Communities Doing Self-Treatment at Pharmacies and Drug Stores in Makassar City

Indicator/Index	Pharmacy				Drug Store			
Choose	$\bar{x}$	SD	Min	Max	$\bar{x}$	SD	Min	Max
Dose	1,07	0,38	0,00	1,26	1,12	0,29	0,00	1,26
Way	1,15	0,36	0,00	1,32	1,14	0,38	0,00	1,32
Inform	1,22	0,33	0,00	1,35	1,16	0,41	0,00	1,35
Save it	0,89	0,43	0,00	1,23	0,83	0,49	0,00	1,23
Effect	1,24	0,68	0,00	1,67	1,22	0,66	0,00	1,67
Secure	0,44	0,60	0,00	1,47	0,37	0,55	0,00	1,47
	3,69	1,01	0,00	4,92	3,56	1,15	0,50	4,92

The treatment safety index category of respondents who do self-medication is expressed in 3 categories, namely less, sufficient, and safe based on index score and safety indicator of treatment.

Table 3: Treatment Safety Index Category in Respondents Who Have Self Treatment in Makassar City

Category	Pharmacy	Drug Store	Total
Less (<1,64)	12 (3,9%)	11 (11,7%)	23 (5,8%)
Enough (1,64-<3,28)	75 (24,5%)	21 (22,3%)	96 (24,0%)
Secure (≥3,28)	219 (71,6%)	62 (66,0%)	281 (70,3%)
Total	306 (100,0%)	94 (100,0%)	400(100,0%)

Table 3. shows that the treatment safety index category of respondents who do self-medication at pharmacies and drug stores is in the safe category.

DISCUSSION

So that the body isn't considered a problem that must be troubled, so there are no steps taken to handle the condition. The results of confirmatory factor analysis of the 6 safety indicators of self-medication indicate that there is an influence of drug selection indicators on treatment safety. Indicator values for drug selection indicate that drug selection contributes to the safety of treatment. Statement 4 on the drug selection indicator gives a value of $\lambda = 0.48$, which indicates that the respondent knows the drug purchased is often used when the same pain complaint occurs, but the understanding and knowledge of the content of the drug and other products is not enough. For the drug dosage indicator in statement 2, it was shown that the duration of drinking had an effect on the dose of the drug taken by the respondent. The duration of treatment depends on the complaints of illness and disease experienced. The longer the duration of the drug, the greater the concentration of the drug exposed in the body and the side effects caused will be even greater. Indicators of caution side effects of drugs indicate that drug side effects can affect the safety of treatment, but understanding and knowledge of drug side effects still need to be improved. The results of the scores on the indicator values and the treatment safety index of the people in Makassar City who carry out self-medication show that the index values are in the safe category (≥3.28). This indicates that the people in Makassar City have carried out self-medication according to guidelines for rational drug use. Rational medicine is a drug that meets the exact criteria of drug selection, the right dosage, the exact method of use, the exact information of the drug, the proper storage of the drug, and being aware of the side effects of the drug[6,9,12].

CONCLUSION

Based on the treatment indicator analysis, the scores of the treatment safety index compiler were obtained with 3 index categories, namely Less (<1.64), Enough (1.64-<3.28), and Safe (≥3.28). Based on the treatment safety index obtained shows that the majority of respondents who do self-medication are in the safe category.

Conflict of Interest: Between researchers and respondents there was no conflict of interest in this study.

Source of Funding: This research received funding from the Makassar of Health Polytechnic.

Ethical Clearance: Research ethics was obtained from the health research ethics commission of the faculty of Public Health Airlangga University in Surabaya Indonesia.

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Early Detection of Risk Factors and Severity of Airway Obstruction Through Measurement of Critical Values of FVC and FEV_1 on Bus Terminal Officers

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ABSTRACT

Purpose: The purpose of this study was to explain the extent to which critical values of FVC and FEV1 were able to predict risk factors for severity of airway obstruction in bus terminal Officers in Solo Raya Indonesia.

Method: This study used a descriptive survey design with a cross-sectional approach. The sample of this study was the bus terminal Officers in Solo Raya Indonesia who work in the field of traffic, vehicle inspection, and parking. The sample consisted of 139 random respondents. The severity of airway obstruction was measured through critical values of FVC and FEV1 using Spirometry. The research data analysis technique used the Logistic Regression Test with a significance level of 95%.

Result: The results of this study showed that the prevalence of sex for the majority of men was 64.7%, the age group 43-50 years was 30.9%, the years of service of 21-30 years was 38.8%, and the severity of obstruction of the airway was mostly in the light category of 52.5 %. The measurement model for critical values of FVC and FEV1 was able to predict the significant severity of obstruction of airway by 80.7% and the traffic officers were at higher risk of obstructing airway significantly by 3.88 times compared to those working in parking, or vehicle inspection as indicated by $\rho = 0.008 < 0.05$; at least, the traffic officers had 1,420 to 10,637 times higher to get airway obstruction.

Conclusion: Officers who serve in the field of traffic work have a tendency to be exposed to exhaust emissions of motorized vehicles on the highway, so there is a risk of an increase in the severity of road obstruction compared to those in other occupations. For this reason, the need for early detection through routine inspection and increasing the capacity of traffic Officers and road transport in an effort to prevent the severity of airway obstruction through the movement of work safety discipline using masks. This is important because of the risk of exposure to exhaust gas emission air pollution on the highway.

Keywords*: Severity, respiratory tract obstruction, FVC, FEV1, Officer.*

INTRODUCTION

The growth of the automotive industry, ease of loans, and increased public purchasing power has increased the number of motorized vehicles. This triggers air pollution which can reduce air quality which can endanger human health. World Health Organization (2017) reports globally that in 2015 there were more than 3.17 million people in the world died by exposure to indoor and outdoor air pollution, as well as dust and smoke. Jeems (2015) explains that the level of air pollution in Indonesia is currently ranked the 8th most deadly, with an average mortality rate of 50,000 people per year. This is lower than China, with an average of 1.3 million people dying every year.

From the perspective of nursing, the impact of air pollution can cause disruption to the airway, both obstruction, and electricity. Chronic Obstructive

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Pulmonary Disease (COPD) is a term often used in groups of lung diseases that last a long time and are characterized by increased resistance to air flow. The disease currently has become a serious health problem in Indonesia, along with increasing life expectancy and the increased exposure to risk factors, such as smokers, and air pollution. Global Obstruction Lung Disease/GOLD (2015) explains that there are around 3 million people dying of COPD in 2005, it means 5% of all deaths globally. In 2002 COPD was the fifth leading cause of death in the world and is estimated to be the third leading cause of death worldwide in 2030[1].

Basic Health Research (2013) explained that in 2007 the mortality rate from COPD was ranked 6th out of 10 causes of death in Indonesia and the average prevalence of COPD was 3.7%. The survey results in five provincial hospitals in Indonesia (West Java, Central Java, East Java, Lampung and South Sumatra) in 2004 showed COPD ranked first in the number of patients at 35%, followed by bronchial asthma by 33%, lung cancer by 30% and the other 2%[2].

The purpose of this study is to explain the extent to which critical values of FVC and FEV1 are able to predict risk factors for airway obstruction severity in bus terminal Officers in Solo Raya Indonesia.

RESEARCH METHOD

Research design: This study uses a descriptive survey design with a cross-sectional approach. The severity of obstruction of the airway in this study was assessed based on the results of measurements of critical values of FVC and FEV1 using Spirometry. The data analysis technique of this study uses the Logistic Regression Test with a significant level of 95%.

Sample and Setting: The sample in this study was randomly selected from bus terminal officers who worked in the field of vehicle inspection, traffic, and parking in the area of Solo Raya, Indonesia. The FVC and FEV1 critical values of all bus terminal officers were examined using Spirometry. Inclusion criteria were officers who still work in the bus terminal who work in vehicle inspection, traffic, and parking, and do not have a smoking history.

Research instrument: The research data was collected through FVC and FEV1 measurements using calibrated spirometry.

RESULTS

Demographic Characteristic: Of the 155 FVC and FEV1 study subjects measured using Spirometry, 139 respondents (89.7%) met the sample criteria and 16 respondents (10.3%) did not meet the sample criteria. Based on the characteristics of 139 respondents, the picture is as follows:

Table 1: Demographic Characteristic (n = 139)

Characteristic	n	%
Sex		
Men	90	64.7
Women	49	35.3
Age		
19-26 years	24	17.3
27-34 years	30	21.6
35-42 years	29	20.9
43-50 years	43	30.9
51-58 years	13	9.4
Education		
Elementary school	3	2.2
Junior high school	10	7.2
Senior high school	79	58.8
Bachelor	47	33.8
Years of service		
<10 years	36	25.9
10-20 years	49	35.3
20-30 years	54	38.8
Field of work	71	51.1
Traffic		
Parking	32	23.0
Vehicle inspection	36	25.9
Airway Obstruction		
Airway obstruction negative	44	31.7
Airway obstruction positive	95	68.3
Nasal Severity		
Normal	43	30.9
Mild	73	52.5
Moderate	23	16.5
Severe	0	0

Based on table 1, out of 139 subjects conducted the study found that 64.7% men and 35.3% women, 30.9% were 43-50 years old, 58.8% were high school graduates, years of service were 20-30 years (38.8%), and 51.1% of respondents work in the traffic sector.

Based on the results of the Chi-Square Test shown in table 2, it can be explained that the characteristics of age, years of service, and fields of work have a significant correlation with the level of obstruction of the airway. While sex and education do not show a correlation with the level of obstruction of airway.

Table 2: Correlation between the severity of airway obstruction and sex, years of service, fields of work, and education (n = 139)

Variable	Chi-Square	Sig.
Sex * Obstruction level	0.612	0.736
Age*Obstruction level	15.615	0.048
Years of service* Obstruction level	10.119	0.038
Fields of work*Obstruction level	111.490	0.000
Education*Obstruction level	2.770	0.837

Table 3: Critical value of FVC and FEV_1

FVC-1			FVC-2			FVC-3			FVC Acceptable			FEV_1	FEV1/ FVC	%
Value	f	%	Value	f	%	Value	f	%	Value	f	%			
1.22	3	2.2	1.59	3	2.2	1.59	3	2.2	1.59	3	2.2	1.34	0.84	84
1.35	4	2.9	1.81	4	2.9	1.81	4	2.9	1.81	4	2.9	1.41	0.78	78
1.42	4	2.9	1.91	4	2.9	1.91	4	2.9	1.91	4	2.9	1.34	0.70	70
1.49	8	5.8	2.17	4	2.9	2.17	4	2.9	2.17	4	2.9	2.13	0.98	98
1.84	4	2.9	2.46	8	5.8	2.46	8	5.8	2.46	8	5.8	2.11	0.86	86
2.06	4	2.9	2.49	4	2.9	2.49	4	2.9	2.49	4	2.9	1.43	0.57	57
2.29	4	2.9	2.5	3	2.2	2.5	3	2.2	2.5	3	2.2	2.04	0.82	82
2.37	4	2.9	2.51	1	0.7	2.51	1	0.7	2.51	1	0.7	2.06	0.82	82
2.46	4	2.9	2.53	4	2.9	2.53	4	2.9	2.53	4	2.9	2.46	0.97	97
2.5	1	0.7	2.62	3	2.2	2.62	3	2.2	2.62	3	2.2	2.08	0.79	79
2.51	4	2.9	2.82	3	2.2	2.82	3	2.2	2.82	3	2.2	2.44	0.87	87
2.52	4	2.9	2.94	8	5.8	2.94	8	5.8	2.94	8	5.8	2.9	0.99	99
2.54	3	2.2	2.98	4	2.9	2.98	4	2.9	2.98	4	2.9	2.06	0.69	69
2.57	8	5.8	3.08	2	1.4	3.08	2	1.4	3.08	2	1.4	2.29	0.74	74
2.85	8	5.8	3.23	8	5.8	3.23	8	5.8	3.23	8	5.8	2.46	0.76	76
2.96	4	2.9	3.26	4	2.9	3.26	4	2.9	3.26	4	2.9	2.45	0.75	75
2.98	7	5	3.4	5	3.6	3.4	5	3.6	3.4	5	3.6	2.6	0.76	76
3.05	4	2.9	3.42	2	1.4	3.42	2	1.4	3.42	2	1.4	2.57	0.75	75
3.08	8	5.8	3.52	1	0.7	3.52	1	0.7	3.52	1	0.7	3.41	0.97	97
3.14	4	2.9	3.53	4	2.9	3.53	4	2.9	3.53	4	2.9	2.46	0.70	70
3.2	3	2.2	3.55	4	2.9	3.55	4	2.9	3.55	4	2.9	2.72	0.77	77
3.32	5	3.6	3.56	4	2.9	3.56	4	2.9	3.56	4	2.9	2.82	0.79	79
3.33	2	1.4	3.57	8	5.8	3.57	8	5.8	3.57	8	5.8	2.56	0.72	72
3.45	4	2.9	3.58	7	5	3.58	7	5	3.58	7	5	3.4	0.95	95
3.49	7	5	3.59	4	2.9	3.59	4	2.9	3.59	4	2.9	1.41	0.39	39
3.52	4	2.9	3.74	4	2.9	3.74	4	2.9	3.74	4	2.9	2.83	0.76	76
3.53	2	1.4	3.78	4	2.9	3.78	4	2.9	3.78	4	2.9	2.9	0.77	77
3.71	4	2.9	3.83	4	2.9	3.83	4	2.9	3.83	4	2.9	2.76	0.72	72
3.78	4	2.9	3.86	8	5.8	3.86	8	5.8	3.86	8	5.8	2.52	0.65	65
4.43	3	2.2	4.52	3	2.2	4.52	3	2.2	4.52	3	2.2	3.41	0.75	75

Conted…

4.53	3	2.2	4.68	3	2.2	4.68	3	2.2	4.68	3	2.2	2.67	0.57	57
4.57	4	2.9	4.78	4	2.9	4.78	4	2.9	4.78	4	2.9	2.64	0.55	55
			4.82	3	2.2	4.82	3	2.2	4.8	3	2.2	3.4	0.71	71
Total	139	100	Total	139	100	Total	139	100	Total	139	100	Total	139	100

This study used three-times Spirometry to measure the critical values of FVC and FEV1. Table 3 showed that 90 respondents (68.3%) experienced airway obstruction and 44 (31.7%) of the remaining respondents did not experience airway obstruction. For the airway obstruction level, 52.5% of respondents experienced mild airway obstruction, a moderate level of 16.5%, and a normal level of 30.9%.

Obstruction Severity Prediction: The results of the logistic regression statistics showed that the predictive value of the logistic regression model was shown in overall percentage which is equal to 80.7%, the Exp (B) value is 3.88, $\rho = 0.008$. It means that the measurement model for the critical value of FVC and FEV1 was able to correctly predict the severity of airway obstruction by 80.7%. While the odds ratio value shown in the Exp (B) value is 3.88, which means that the traffic officers have an airway obstruction risk of 3.88 times higher than those who work in vehicle inspection and parking.

Table 4: Logistic Regression Statistics Test Results

Logistic Regression Test	Results	ρ	CI Exp (B) 95%	
			Lower	Upper
Exp (B)	3.88	0.008	1.420	10.637
Predicted	80.7%			

DISCUSSION

The results of this study indicated that out of 139 respondents in the bus terminal were male (64.7%) with the prevalence of age groups between 43-50 years. Men are more adaptable and more quickly to make decisions in solving problems at the bus terminal. These characteristics are consistent with a retrospective study conducted by Sun et al. (2015) which explained that patients in Korea who were examined using spirometry and diagnosed with Chronic obstructive pulmonary disease (COPD) were mostly men (404 samples) and the rest were women[3]. In addition, the literature review conducted by Rycroft, Heyes, Lanza, & Becker (2012) explains that out of 2838 articles, more men experience airway obstruction than women[4].

The results of this study differed from the cross-sectional study conducted by Schneider et al. (2009) which explains that 57.7% of the 219 subjects affected by this disease were women[5]. However, the characteristics of the sex ratio must be considered because even though men are more likely to be exposed to airway obstruction, this does not mean that men are more likely to be affected by the disease; differences in sex ratios in the population or sample studied affect the results of a study.

The prevalence of most age groups in this study was 43-50 years (64.7%). This research was carried out in the bus terminal management environment in Solo Raya Indonesia so that the age group was more productive, but the work did not determine and became a factor that influenced lung function. This is consistent with the research conducted by Mokoagow, Uyainah, Subardi, Rumende, & Amin (2014) which explains that the percentage of age <60 years is more than other groups[6]. The age group characteristic in this study was differed the retrospective study conducted by Damiputra et al. (2016), which explained that the age category of 56-65 years was higher than other age groups.

Most of the years of service characteristic in this study were 20-30 years (38.8%). Furthermore, the characteristics of years of service in this study have a correlation with airway obstruction. Years of service are risk factors that are directly related to the length of exposure to automotive air pollution in bus terminals which increases the risk of respiratory disorders. The results of this study are consistent with the research conducted by Guo et al. (2018) which explained that long-term exposure to air pollution (particulate matter) is associated with a decrease in lung function[7]. Long-term exposure to air pollution (particulate matter) is also associated with an increased risk of COPD events.

This showed that the traffic officers in the bus terminal have a risk of having airway obstruction 3.88 times higher than those in other fields. This means that traffic officers have a higher risk to be exposed to automotive emissions. Thus, people who live or do their

activities around the highway are more often exposed to pollutants whose levels depend on the conditions of each road. This is in accordance with research conducted by Dement et al. (2015) on construction workers that explained that construction workers were solid predictors of the risk of COPD[8]. The results of this study were also in accordance with the research conducted by Rice et al., (2015) which explained that those who live less than 100 m from the highway experienced a decrease in FEV1 value of 5.0 ml/year[3].

CONCLUSION

Officers who serve in the field of traffic work have a tendency to be exposed to exhaust emissions of motorized vehicles on the highway, so there is a risk of an increase in the severity of road obstruction compared to those in other occupations. For this reason, the need for early detection through routine inspection and increasing the capacity of traffic managers and road transport in an effort to prevent the severity of airway obstruction through the movement of work safety discipline using masks. This is important because of the risk of exposure to exhaust gas emission air pollution on the highway.

Ethical Clearance: This study obtained the Certificate of Ethical Clearance from the Research Ethics Committee of Dr Moewardi General Hospital number 405/V/HREC/2017.

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Conflict of Interest: None.

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