How to Cite:
Unnikrishnan, S., & Kumari, D. A. (2022). Attitude of practitioners from siddha system of medicine towards the implementation of personalised patient care management (PPCM) with special reference to siddha health care centers in Chennai. *International Journal of Health Sciences*, *6*(S3), 7889–7897. https://doi.org/10.53730/ijhs.v6nS3.7808

Attitude of practitioners from siddha system of medicine towards the implementation of personalised patient care management (PPCM) with special reference to siddha health care centers in Chennai

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***Abstract*---** Traditional Medicine system has its strong roots towards the existence and wellbeing of the Mankind. This system has been developed based on the experience since the Humankind came to existence in this world. The world has moulded itself to bring out this treasured medical system in a well organised way of utilisation to the needy public. One such traditional medical system is Siddha System of Medicine. It has its origin from Southern part of India with history beyond 3000 years. The Modern era of Information-technology based approach for Personalised Patient Care Management system has taken a phenomenal growth. However, the said technological advancement is yet to be organised and implemented in all sectors of Siddha Health Care centres. This will also facilitate health care professionals for making appropriate decisions in Patient care with the help of the available information and tools. Accordingly, the attitude of the Practitioners is required to be assessed before implementation. This study aims to bring out the attitude of Siddha Practitioners towards impact of Information technology based Personalised Patient Care Management (PPCM) in the Siddha Health care centres in Chennai. To assess the attitude of Siddha Practitioners towards the implementation of Information Technology based Personalised Patient Care Management. A survey was carried out among the 159 Siddha Practitioners cross sectionally in and around Chennai District. A validated questionnaire comprising of socio-demographic and a five-

point Likert's Scale based questionnaire was administered after receiving consent from the respondents. At about 70 – 80% of the respondents agreed that the Personalised Patient Care Management application such as Individual genetic data, Diagnostic data, Electronic Health Record, Real time access data for Patients information are essential for Siddha Health Care centres in Chennai. In the overall response it was observed that 85.9 % of Practitioners agree that the implementation of PPCM in the Siddha Health Care Centres will assist towards maintaining the Diagnostic data of Patients However, 66.7% of Siddha Practitioners disagreed to the statement that PPCM will assist Safety, Privacy & Security of Patient data. Most of the Siddha Practitioners who responded for the survey agreed that the role of Personalised Patient Care Management (PPCM) will assist towards improvement of health care quality. However, there were many respondents who disagreed that the safety, privacy and security of patient data could be maintained in PPCM. The need of appropriate safety standards of the Patients data is to be ensured and proper awareness and training pertaining to its application is to be conducted for effective utilisation of PPCM in patient care.

***Keywords*---** personalised care, Siddha health care, electronic health record, public health research.

Introduction

Traditional Medical System has evolved with numerous experience based medical practices. One such oldest medical system practiced in Southern part of India is Siddha System of Medicine which has its history beyond 3000 years [1]. Siddha practitioners work with an aim towards preserving the health and wellbeing of the patient. Generally, the Medical practitioners dependent towards accurate and complete information of patients for appropriate application of their professional knowledge for adopting better diagnosis and treatment procedures. Non-availability of appropriate information of patients may provide a chance for medical errors and delayed patient care. However, this can be eliminated easily if adequate Information Technology based support system is available for the practitioners.

The development of Information technology has helped hospitals streamline the health-care system. Personalised Patient Care Management (PPCM) uses both computer hardware and software to analyse healthcare data towards clinical decision-making treating patients [2]. This provides accurate data and assist the health care provider's performance towards clinical efficiency and better patient care outcomes. The patient disease trajectories are heterogeneous in nature. Therefore, one type of Siddha treatment may not fit for all types of patients as the same will not be effective for both patient outcomes and use of limited resources. For effective utilisation of scares resources, a personalised patient management and Siddha treatment based on their unique characteristics are to be developed.

Allopathic Practitioners are more aware regarding the Personalised Patient Care Management applications such as Electronic Health Records [3], Telemedicine, Clinical Decision Support System and others. However, only very limited literatures are available for Siddha System of Medicine regarding such health care applications. Implementation of these applications in the Siddha health care centres will help Siddha practitioners towards better diagnosis and provide health advise and manage patient data in a more convenient way. The AYUSH research portal developed by Ministry of Ayush also serves as a knowledge base repository. This portal allows towards updating the information pertaining to AYUSH System and allied sciences that are required for the researchers, academicians and students. The listed study specifics pertaining to clinical research, pre-clinical research, pharmacological research, and fundamental research including links on evidence-based research criteria are easily accessible to end users.

THERAN (The Research Application Nexus) is a Hospital Management Information System developed by the Central Council for Research in Siddha, Ministry of Ayush, with the goal of providing a comprehensive solution for the development of Hospital Management Information Systems in the Ministry of Ayush [4]. The Government of India has made this project citizen-centric in order to deliver Electronic Health Records to all beneficiaries receiving Ayush health services through the Ministry of Ayush's connected Research Councils, National Institutes, and other related entities. This helps siddha health care practitioners, academicians, and researchers diagnose and treat patients, as well as perform other studies. Theran Software's repositories are beneficial.

Aside from the benefits, a few issues such as patient data privacy, confidentiality, and security [5], Practitioners' resistance to paper-based documentation systems, the maintenance cost for such a system, user-friendly access, lack of awareness about PPCM and its application and so on may hinder the implementation and use of these applications. As a result, it is always advisable to examine and address the attitude of healthcare practitioners toward these difficulties before implementing any Information Technology based application for improved acceptability and sustainability [6]. This study looks at how Siddha Practitioners feel about the influence of PPCM on patient data management, public health, patient care, education, and research, with the goal of assisting planners in determining the scope of installing and using a system. [7], [8], [9], [10].

Materials and Methods

A cross-sectional survey of 159 siddha Practitioners in and around Chennai District was conducted. Data was collected using a standardised and validated questionnaire with 16 items about healthcare professionals' attitudes toward the impact of Personalised Patient Care Management. Their responses were collected using a five-point Likert's Scale ranging from Strongly Agree to Strongly Disagree, with a score range of 5 to 1. The questionnaire's content was created from discussions with domain experts, namely Siddha Practitioners with experience working with the Personalised Patient Care Management application. The respondents were already familiar with the computerised system, so the questionnaire's content was tailored to their day-to-day interactions with it. A total of 159 Practitioners agreed to take part in the survey and were available at

the time. The Practitioners were initially given an overview of the study, including its goals and objectives, as well as the survey's purpose. The respondents gave their informed agreement to be a part of the study, and the data was collected through questionnaire from the willing respondents. The responses for the parameters were recorded by giving relevant options ranging from Strongly Agree to Strongly Disagree. The collected data was further analysed using SPSS 23 for frequency and percentage, t-test, Chi square, and U test to determine the relationship between responses and other variables, with P0.05 considered significant. Certain ethical issues pertaining to the respondent privacy and confidentiality of information provided were addressed during and after data collection. Also, the respondents were informed that their personal information and responses would be kept confidentially except for the required data that would be used for the study aim.

Results

Response from 159 Siddha Practitioners in respect of their attitude about Personalised Patient Care Management was collected and presented in the form of tables and discussed hereunder:

Characteristics of the respondents

Table 1
Socio-Demographic details of Siddha Practitioners in Chennai

		GENDER						
		Total		Male		Female		Type of test
		Mean	S.D.	Mean	S.D.	Mean	S.D.	t-test
Age in years		35.72	6.686	36.52	6.762	34.80	6.534	0.11
Experience as Siddha Practitioner in years		6.25	5.369	7.15	5.605	5.19	4.904	0.023
		n	%	N	%	n	%	Chi-Square test
Residence	Chennai	110	69.60%	61	71.80%	49	67.10 %	
	Around Chennai	49	30.40%	25	28.20%	24	32.90 %	0.604
	Total	159	100.00%	86	100.00%	73	100.00 %	
Marital status	Married	96	60.40%	53	61.60%	43	58.90 %	
	Unmarried	53	33.30%	28	32.60%	25	34.20 %	
	Widow	1	0.60%	0	0.00%	1	1.40%	
	Divorce	9	5.70%	5	5.80%	4	5.50%	0.894

	Total	159	100.00%	86	100.00%	73	100.00 %	
Education	BSMS	106	66.70%	52	60.50%	54	74.00 %	
	PG	53	33.30%	34	39.50%	19	26.00 %	0.0971
	Total	159	100.00%	86	100.00%	73	100.00 %	
Nature of Job	Central Government	73	46.20%	32	37.60%	41	56.20 %	
	Private Practice	68	43.00%	45	52.90%	23	31.50 %	
	State Government	18	10.80%	9	9.40%	9	12.30 %	0.025
	Total	159	100.00%	86	100.00%	73	100.00 %	
Monthly Income (In Rupees)	<50,000	32	20.10%	23	10.50%	9	12.30 %	U-test
	50,001-1,00,000	92	57.90%	54	62.80%	38	52.10 %	
	>1,00,001	35	2.00%	9	26.70%	26	35.60 %	<0.000
	Total	159	100.00%	86	100.00%	73	100.00 %	
Patient per day (in numbers)	1 to 10	44	28.40%	23	27.40%	21	29.60 %	
	11 to 20	52	31.60%	33	36.90%	19	25.40 %	
	21 to 30	29	18.70%	15	17.90%	14	19.70 %	
	> 30	34	21.30%	15	17.90%	19	25.40 %	0.655
	Total	159	100.00%	86	100.00%	73	100.00 %	

For Age and experience (in years): t-test, For Residence, Martial Status, Education, Nature of Job: Chi-square test and For Monthly Income (per month), Patient per day (in numbers): U-test

Results

Table 1. displays the demographic details of the respondents. A total of 159 Siddha Practitioners responded out of which 86 were male and 73 female. The average age of Male Practitioners were 36.51 Years and that of Female are 35.73 Years. 61.6% of Male and 58.9% of female were married respectively. 52.9% of Male Practitioners were Private Practitioners and 37.6% from Central Government. Similarly, 56.2% of female Practitioners were from Central Government and 31.5% were Private Practitioners. 62.8% of Male were earning

30000-60000 per month. However, 52.1% of female was in the above income group. 36.9% of the Male Practitioners had a daily patient statistics between 10-19. Whereas, for female Practitioners it was 29.6% for the patient statistics between 1-9.

Table 2
Response on Personalised Patient care Management System

		TOTAL		AGE GROUP					GENDER				
				25-35		>36		Test	MALE		FEMALE		Test
		N	%	N1	%	N2	%		N3	%	N4	%	
Safety, Privacy and Security of patient data	SA	2	1.30%	1	1.00%	1	1.00%	0.003	1	1.20%	1	1.40%	0.048
	A	15	9.40%	9	9.20%	6	9.80%		8	9.30%	7	9.60%	
	N	36	22.60%	26	26.50%	10	16.40%		27	31.40%	9	12.30%	
	DA	90	56.60%	59	60.20%	31	50.80%		44	51.20%	46	63.00%	
	SDA	16	10.10%	3	3.10%	13	21.30%		6	7.00%	10	13.70%	
	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	
Multiple diagnostic comparison options	SA	34	21.70%	29	29.90%	5	8.30%	0.002	26	31.00%	4	11.00%	0.044
	A	24	15.30%	13	13.40%	11	18.30%		12	14.30%	44	16.40%	
	N	11	7.00%	9	9.30%	2	3.30%		6	7.10%	5	6.80%	
	DA	80	51.00%	44	45.40%	36	60.00%		36	42.90%	12	60.30%	
	SDA	10	5.10%	3	2.10%	7	5.50%		6	4.80%	8	5.50%	
	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	
Real time access of patient data	SA	5	1.90%	4	3.10%	0	0.00%	0.027	4	2.40%	1	1.40%	0.697
	A	63	40.10%	31	32.00%	32	53.30%		30	35.70%	33	45.20%	
	N	37	23.60%	28	28.90%	9	15.00%		23	27.40%	14	19.20%	
	DA	44	28.00%	27	27.80%	17	28.30%		24	28.60%	20	27.40%	
	SDA	10	6.40%	8	8.20%	3	3.30%		5	6.00%	5	6.80%	
	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	
Electronic health record of patients	SA	0	0.00%	0	0.00%	0	0.00%	<0.000	0	0.00%	0	0.00%	0.527
	A	122	77.20%	65	67.00%	57	93.40%		68	80.00%	54	74.00%	
	N	29	18.40%	25	25.80%	4	6.60%		15	17.60%	14	19.20%	
	DA	6	3.80%	6	6.20%	0	0.00%		3	2.40%	4	5.50%	
	SDA	2	0.60%	2	1.00%	0	0.00%		0	0.00%	1	1.40%	
	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	
Individual genetic data of patients	SA	13	7.00%	11	11.30%	0	0.00%	<0.000	8	7.10%	5	6.80%	0.771
	A	115	73.20%	75	77.30%	41	66.70%		59	70.20%	56	76.70%	
	N	9	5.70%	6	6.20%	3	5.00%		6	7.10%	3	4.10%	
	DA	22	14.00%	6	5.20%	17	28.30%		13	15.50%	9	12.30%	
	SDA	0	0.00%	0	0.00%	0	0.00%		0	0.00%	0	0.00%	
	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	
Diagnostic data of patients	SA	12	7.60%	12	12.40%	0	0.00%	0.001	9	8.30%	5	6.80%	0.519
	A	125	78.30%	79	80.40%	46	75.00%		63	75.00%	60	82.20%	
	N	3	1.90%	1	1.00%	2	3.30%		1	1.20%	2	2.70%	
	DA	19	12.10%	6	6.20%	13	21.70%		13	15.50%	6	8.20%	
	SDA	0	0.00%	0	0.00%	0	0.00%		0	0.00%	0	0.00%	
	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	
Centralized patient data repository	SA	2	1.30%	2	2.10%	0	0.00%	0.259	1	1.20%	1	1.40%	0.783
	A	63	40.10%	42	42.30%	22	36.70%		17	44.00%	26	35.60%	
	N	43	26.80%	28	28.90%	14	23.30%		22	25.00%	21	28.80%	
	DA	50	31.20%	26	26.80%	24	38.30%		26	29.80%	24	32.90%	
	SDA	1	0.60%	0	0.00%	1	1.70%		0	0.00%	1	1.40%	

	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	
Early detection of epidemic outbreak	SA	0	0.00%	0	0.00%	0	0.00%	0.027	0	0.00%	0	0.00%	0.088
	A	46	29.30%	26	26.80%	20	33.30%		21	25.00%	25	34.20%	
	N	33	21.00%	24	24.70%	9	15.00%		24	28.60%	9	12.30%	
	DA	71	43.90%	38	39.20%	32	51.70%		36	40.50%	35	47.90%	
	SDA	9	5.70%	9	9.30%	0	0.00%		5	6.00%	4	5.50%	
	TOTAL	159	100.00%	98	100.00%	61	100.00%		86	100.00%	73	100.00%	

Results

Table 2. shows the response of the Siddha Practitioners towards the Attitude pertaining the implementation of Personalised Patient care Management System. In the overall response it was observed that 85.9 % of Practitioners strongly agree and agree that the implementation of PPCM in the Siddha Health Care Centers will assist towards maintaining the Diagnostic data of Patients and 80.2% & 77.2% of them opined that Individual genetic data and Electronic Health Record of Patients could be maintained with PPCM respectively. Similarly, 66.7% of Siddha Practitioners strongly disagreed and disagreed that PPCM will assist Safety, Privacy & Security of Patient data. 56.1% and 49.6% of them Strongly Disagreed and Disagreed towards Early detection of Epidemic outbreak and Multiple Diagnostic comparison option respectively. 76.7 % of Female Siddha Practitioners Disagreed (both SD & D) that PPCM will assist towards Safety , Privacy & Security of Patient data. However, only 66.7% of Male counter parts disagreed and 31.4% Male Practitioners were undecided. 65.8% of Female Practitioners Strongly Disagreed or Disagreed that PPCM will assist towards "Multiple Diagnostic Comparison". Whereas, 45.3% Male respondents agreed (both SA & A) with the statement.

Out of 8 items 7 had statistically significant differences in terms of age. The single item without significant differences was "PPCM will assist towards Centralised Patient data repository". 72 % of elderly Practitioners Disagreed (both AD & D) that PPCM will assist towards Safety , Privacy & Security of Patient data. Whereas, 26.5 % of the younger Practitioners could not decide it. 70% of elder Practitioners Strongly Disagreed or Disagreed that PPCM will assist towards Multiple Diagnostic Comparison. Whereas, 43.3% of younger Practitioners Agreed (both SA & A) for the same. In other hand 93.4% of elderly Practitioners agreed that PPCM will assist towards maintaining Electronic Health Record of Patients whereas only 67 % of younger Practitioners agreed. 88.6% of Younger Practitioners Strongly agreed and Agreed that PPCM will assist towards maintaining Individual genetic data of Patients. Whereas 28.3% of Elder Practitioners Disagreed for that. 51.7% of Elder Practitioners Disagreed that PPCM will assist towards Early detection of epidemic outbreak. Whereas 24.7% of Younger were neutral in that. This reveals the foresight based on the experience of elder Practitioners.

Discussions

Telemedicine and other improvements in Personalised Patient Care Management, such as audio and video conferencing, allow healthcare personnel to attend to multiple patients at once. The above applications will lower the cost of treatment

and have shown to be tremendously useful in emergency situations where a patient in a remote location requires professional guidance and consultation. Electronic health records are linked to the same. This will allow healthcare providers to share the collected data with patients and other associated service providers. These tools are extremely useful for doing transdisciplinary research and interacting with researchers who are spread around the globe.

About 75 – 80% of the respondents agreed that the PPCM application such as Individual genetic data, Electronic Health Record, Diagnostic data, Real time access data for Patients information are essential for Siddha Health Care centres in Chennai. In the overall response it was observed that 85.9 % of Practitioners agree that the implementation of PPCM in the Siddha Health Care Centres will assist towards maintaining the Diagnostic data of Patients and 80.2% & 77.2% of them opined that Individual genetic data and Electronic Health Record of Patients could be maintained with PPCM respectively. Similarly, 66.7% of Siddha Practitioners disagreed to the statement that PPCM will assist Safety, Privacy & Security of Patient data. 56.1% and 49.6% of them Disagreed towards Early detection of Epidemic outbreak and Multiple Diagnostic comparison option respectively.

Further scope of the study

These type of studies could be conducted in a large number of Siddha centres to determine the degree of perspective and attitude of Siddha Practitioners, allowing researchers to propose a common Personalised Patient Care Management system that would connect all Siddha centres at par towards assessment of health information and share their expertise and knowledge towards providing better health care quality.

Conclusion

Patients' satisfaction with health care, as well as the quality and safety of service, are among the reform priorities for Personalised Patient Care Management. The application of the PPCM promotes service fairness and doctor-patient relationships by increasing patient satisfaction. The PPCM is recognised as one of the most promising tools for healthcare professionals who practise Siddha in terms of patient data and domain knowledge management. Despite the fact that the majority of respondents thought that PPCM can improve the quality of health care, many others disagreed that patient data can be kept safe, private, and secure in PPCM. The need of appropriate safety standards of the Patients data is to be ensured and training program on the subject is to be conducted for effective utilisation of PPCM and its application towards Patient care, Research and Education.

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