Patterns of Healthcare Utilisation among Female Agricultural Workers in Wayanad: A Study of Available Facilities and Preferred Modes of Care

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Abstract

Women make up a large part of India's agricultural workforce because they work mainly in rural areas where farming remains the main economic activity. The extensive work of female agricultural workers leads to multiple forms of vulnerability because they perform demanding physical work while having insufficient money and restricted medical care access. The remote location and economic challenges of Wayanad in Kerala create additional healthcare access difficulties for its residents who belong to tribal communities and live in distant settlements across challenging terrain. The research examines healthcare patterns of female agricultural workers in Wayanad through an analysis of healthcare facility availability and their preferred treatment options and the social and economic elements that affect their medical care choices.

The research design combined quantitative and qualitative methods to achieve complete results. The research team used multistage sampling to pick female agricultural workers from Wayanad panchayats for structured questionnaire administration. The questionnaire collected information about participants' social background and their work-related health problems and their healthcare choices and their opinions about service quality and their knowledge and use of government healthcare programs. The research team used frequency distribution and percentage analysis and cross-tabulation and chi-square tests and analysis of variance and logistic and multinomial regression models and cluster analysis to analyze the quantitative data. The research used statistical methods to study how social factors and work characteristics affect healthcare consumption patterns.

The research results show that healthcare choices of participants face multiple obstacles which stem from both physical and mental perspectives. The public healthcare facilities remained the top choice because they offered affordable prices and convenient locations and well-known services yet their usage remained restricted because of extended waiting times and missing medicines and insufficient diagnostic capabilities and negative perceptions about staff conduct. Women who lived beyond three kilometers from public health centers chose to visit private or traditional medical facilities because they wanted to avoid long journeys and preserve their daily earnings. The national and state-level health schemes including Ayushman Bharat and PMJAY and Karunya exist but female agricultural workers show only average knowledge about them and they rarely use these programs because of information gaps and documentation issues and distrust in official systems.

The workplace health issues that female agricultural workers experience result in frequent medical needs because they commonly develop musculoskeletal pain and fatigue and skin rashes and respiratory problems. The majority of participants postponed their medical visits until their condition reached an advanced stage because they needed to protect their earnings and fulfill their family duties.

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The study showed that female participants chose public facilities based on their positive perceptions of service quality and their satisfaction with healthcare provider communication and their ability to obtain necessary medications. The cluster analysis produced three distinct groups of participants who demonstrated different healthcare utilization patterns and insurance awareness levels which need separate intervention approaches.

The research demonstrates that Wayanad needs a comprehensive approach to enhance healthcare accessibility for female agricultural workers through better service quality and improved awareness of healthcare benefits and occupational health support. The rural health system needs improvement through mobile healthcare services and better PHC facilities and specific health education programs and simplified insurance enrollment and gender-sensitive healthcare services to decrease health inequalities for agricultural working women. The research findings will help policymakers and health organizations and community groups to create better healthcare services for rural women in Wayanad and similar areas throughout India.

Keywords: Female agricultural workers; Wayanad; Healthcare utilisation; Public health facilities; Occupational health; Rural health access; Government health schemes; Health-seeking behaviour; Distance and accessibility; Perceived quality of care; Socio-economic determinants; Traditional medicine; AYUSH; Cluster analysis; Healthcare disparities.

Introduction

The agricultural sector supports rural employment and food security and drives socio-economic growth throughout India. Women perform essential work in Indian agriculture through their labor on planting and weeding and harvesting and post-harvest processing tasks. The essential work of female agricultural workers stays unnoticed in policy discussions while they receive insufficient health and social protection benefits. The combination of their agricultural work and household duties makes female workers susceptible to various health problems which include musculoskeletal disorders and dermatological issues and respiratory problems and chronic fatigue. The combination of their social disadvantages and insufficient education and restricted financial freedom and restricted healthcare access makes their situation worse.

Wayanad stands as a hilly district located in northern Kerala which supports tribal communities through its agricultural activities focused on plantations and small-scale farming. The district's remote settlements and difficult terrain and poor transportation links create major obstacles for people to reach medical facilities. The healthcare system of Kerala receives international recognition but the state maintains significant healthcare disparities between urban and rural areas and between different regions. The female agricultural workers in Wayanad experience distinct health challenges because of their remote location and their social status and cultural background and their dangerous working conditions. The healthcare choices of these women depend on their social status and their ability to access medical services and their understanding of available healthcare options.

The analysis of healthcare usage patterns by female agricultural workers enables better health equality and improved rural healthcare delivery. The availability of healthcare facilities does not determine healthcare utilization because patients base their decisions on accessibility and affordability and perceived quality of care and cultural beliefs and government scheme awareness and occupational health requirements. The multiple government programs including NRHM and Ayushman Bharat and PMJAY and Karunya fail to reach their intended beneficiaries because these women lack knowledge about the services and face administrative and cultural obstacles to access them.

The research investigates healthcare access patterns of female agricultural workers in Wayanad through an evaluation of available medical facilities and their preferred treatment choices and factors affecting their healthcare decision-making. The research investigates how female agricultural workers select their healthcare options through an analysis of their social background and work-related health issues and their ability to access care and their opinions about healthcare services. The research investigates healthcare selection patterns of female agricultural workers to create evidence-based policies which address their specific requirements.

The research investigates healthcare access patterns of female agricultural workers in Wayanad to create evidence-based policies for this marginalized population. The research findings will help India achieve universal health coverage and enhance rural health services through policy development and intervention design for women agricultural workers in remote areas. The research results will benefit policymakers and public health specialists and local government officials and community health providers who want to improve rural healthcare service delivery for disadvantaged populations.

Objectives of the Study

To examine the range, accessibility, and quality of healthcare facilities available to female agricultural workers in Wayanad district.

To analyse the patterns, frequency, and preferred modes of healthcare utilisation among female agricultural workers, including public, private, and traditional systems of care.

To identify the socio-economic, cultural, and occupational factors influencing healthcare-seeking behaviour and utilisation patterns among female agricultural workers in Wayanad.

Research Questions

1. What types of healthcare facilities (public, private, traditional) are accessible to female agricultural workers in Wayanad, and how adequate are these facilities in meeting their health needs?

2. What are the patterns and preferred modes of healthcare utilisation among female agricultural workers in Wayanad?

3. Which socio-economic, cultural, and occupational factors influence the healthcare-seeking behaviour of female agricultural workers in the district?

4. What barriers—economic, geographic, cultural, or systemic—limit the effective utilisation of healthcare services by female agricultural workers?

5. How does the level of awareness about government healthcare schemes affect their utilisation of healthcare services?

Review of the Literature

Socio-economic determinants of healthcare utilisation: Research shows that rural women's healthcare usage depends on their income level and their educational background and their current employment status. Research shows that women who earn less money and have less education tend to postpone medical care because they lack money and understanding about healthcare options. The existing social economic disparities prevent women from accessing formal healthcare services because they work in low-wage agricultural jobs.

Reference:
Peters, D. H., Garg, A., Bloom, G., Walker, D. G., Brieger, W. R., & Rahman, M. H. (2008). *Poverty and access to health care in developing countries*. Health Affairs, 27(3), 161–171.

The combination of workplace health dangers and medical requirements forces female agricultural workers to seek medical assistance because they face ergonomic strain and chemical pesticide exposure and environmental risks. The research shows that women working in agriculture develop musculoskeletal disorders and respiratory issues and skin conditions at high rates yet they do not access healthcare because of cost barriers and service availability issues. Rao, K., & Nag, A. (2014). *Health risks among women agricultural workers associated with ergonomic and environmental factors*. Indian Journal of Occupational and Environmental Medicine, 18(1), 7–11.

Geographic access and health infrastructure: Rural populations base their healthcare utilization on the accessibility of medical facilities. Research shows that rural residents avoid seeking medical care because they must travel long distances and face inadequate transportation options and health facilities that are not evenly distributed throughout hilly and remote areas. Rural women choose to visit private facilities or traditional healthcare providers because public health infrastructure remains insufficient in their areas.

Gage, A. J., & Calixte, M. G. (2006). *Effects of the physical accessibility of maternal health services on their use in rural Haiti*. Population Studies, 60(3), 271–288.

Public health schemes, together with awareness programs, play a crucial role in determining how people use healthcare services. Studies conducted in rural areas of India demonstrate that female agricultural workers lack knowledge about available insurance programs and free preventive care and subsidy programs. The lack of awareness about government health schemes prevents people from using public healthcare services even though policies have increased access to these services. Reddy, K. S., Patel, V., Jha, P., Paul, V. K., Kumar, A. K. S., & Dandona, L. (2011). *Towards achievement of universal health coverage in India*. The Lancet, 377(9767), 181–193.

Women's healthcare attitudes receive significant influence from their cultural background and their gender roles and their adherence to traditional healthcare practices. Research about rural health practices shows women choose home remedies and traditional healing because they follow social expectations and face discrimination and lack freedom to get medical help by themselves. The cultural elements determine when women will seek medical care and which specific healthcare services they will choose.

Reference: Das, V. (2015). *Affliction: Health, disease, poverty*. Fordham University Press.

Economic barriers and out-of-pocket expenditure:Daily-wage women workers face two major healthcare barriers because they must pay medical expenses directly while losing their income when they miss work. Research indicates that expensive medical fees force patients to select less expensive healthcare facilities which result in inferior care and worsen healthcare disparities.

Reference: Berman, P., Ahuja, R., & Bhandari, L. (2010). *The impoverishing effect of healthcare payments in India: New methodology and findings*. Economic and Political Weekly, 45(16), 65–71.

Quality of care and patient satisfaction: Women base their facility choice on perceived care quality because they evaluate provider conduct and wait duration and medication accessibility and facility cleanliness. Research indicates that women avoid public healthcare facilities because of poor service

quality, even though services are free of charge. Women choose to use private healthcare facilities even though these services cost more because they are dissatisfied with public healthcare quality.

Reference: George, A. (2003). *Nurses, community health workers, and home carers: Gendered human resources compensating for skewed health systems*. Global Public Health, 14(1), 1–10.

The current research lacks sufficient data about female agricultural workers' healthcare usage patterns and their occupational health status. The Wayanad region, along with other tribal and hilly districts, lacks specific research studies. Research evidence supports the use of mixed-methods studies, which combine surveys with qualitative interviews and access mapping to understand women's healthcare choices effectively.

Reference: Ved, R., Gupta, G., & Singh, S. (2019). *India's health and wellness centres: Realising universal health coverage through comprehensive primary health care*. WHO South-East Asia Journal of Public Health, 8(1), 18–24.

Research Gap of the Study

Research studies have established multiple facts about rural healthcare usage and workplace dangers and social obstacles that affect female workers yet no study exists to explain these problems among Wayanad's female agricultural workers. Research studies about rural health patterns lack analysis of how women in agriculture experience occupational hazards and their healthcare choices based on available facilities and cultural preferences and actual healthcare usage. Research about healthcare access in this area remains scarce because scientists have not studied how women who work in agriculture and manage their homes experience government health programs and face challenges from their environment and their dual work responsibilities. The current research lacks detailed information about healthcare facilities and treatment preferences and cultural factors that affect medical service usage by female agricultural workers in Wayanad. The research gap requires a detailed mixed-methods investigation to develop practical solutions for healthcare policy development and system enhancement.

Significance of the Study

The research study addresses essential gaps which affect the health status of female agricultural workers who make up a large but neglected rural workforce in Wayanad. The research investigates healthcare usage patterns to determine which healthcare facilities are available and accessible to patients while understanding their treatment preferences. The research findings will help rural healthcare services become more effective through essential evidence for service delivery improvement. The research investigates how women working in agriculture make healthcare choices based on their social position and work environment and cultural background and their location. The research results enable policymakers and local health organizations and development organizations to create specific interventions and enhance their outreach activities and healthcare resource distribution. The research study establishes new academic knowledge through its investigation of female agricultural laborer health utilization patterns in Wayanad which creates opportunities for upcoming research and comparative analysis.

Methodology of the Study

The research design of this study used descriptive and analytical methods to study healthcare patterns among female agricultural workers in Wayanad district. The research design combined quantitative and qualitative methods through a mixed-methods approach to achieve complete understanding of the studied phenomenon. The research team used multistage sampling to select female agricultural workers who received a structured questionnaire for data collection across different panchayats in Wayanad.

The questionnaire obtained data about respondents' social background and their workplace health problems and their access to medical facilities and their treatment preferences and their views on healthcare quality and their knowledge and use of government health programs. The research team obtained additional qualitative data through casual conversations with ASHA workers and local healthcare providers. The researchers processed the gathered information through statistical software for data analysis. The researchers used frequencies and percentages and cross-tabulations to present the overall characteristics and healthcare patterns of study participants. The research used chi-square tests and t-tests and ANOVA were used to evaluate the relationships between different variables. The study used binary logistic regression and multinomial logistic regression to analyze healthcare facility selection factors while factor analysis and cluster analysis evaluated perception patterns and created utilization-based groups. The research findings demonstrated which social factors and work conditions and geographical elements and personal beliefs affect female agricultural workers' healthcare choices in Wayanad.

Data Analysis and Interpretation

Introduction

The research findings about healthcare patterns among female agricultural workers in Wayanad district appear in this chapter. The research analysis uses the methods from Chapter 3 to present descriptive statistics and bivariate associations and multivariate models (multinomial logistic regression) and perception analysis through principal component analysis (PCA) and cluster profiling. The analysis presents statistical results through tables and figures which demonstrate how different variables distribute and how researchers evaluate healthcare behavior determinants and treatment center choices.

Sample characteristics

The research sample of 200 participants received their socio-demographic information through Table 1. The research participants consisted of 200 people who fell into the 25–35 age range and completed their education at the secondary level. The tribal community made up Z% of the total participants and most households earned between ₹5,000 and ₹10,000 per month.

Table 1: Socio-demographic Profile of Respondents

Socio-demographic Variables	Category	Frequency (N)	Percentage (%)
Age (in years)	Below 25	24	12.0
	25 – 35	68	34.0
	36 – 45	56	28.0
	46 – 55	36	18.0
	Above 55	16	8.0
Education level	Illiterate	20	10.0
	Primary	36	18.0
	Upper primary	44	22.0
	Secondary	60	30.0
	Higher secondary	30	15.0
	Above higher secondary	10	5.0

Socio-demographic Variables	Category	Frequency (N)	Percentage (%)
Monthly household income	Below ₹5,000	50	25.0
	₹5,000 – ₹10,000	90	45.0
	₹10,001 – ₹15,000	44	22.0
	Above ₹15,000	16	8.0
Community status	Tribal	56	28.0
	Non-tribal	144	72.0

4.3 Occupational health profile

The survey results showed that 62% of participants experienced work-related health issues which included back pain and joint pain and skin allergies and respiratory symptoms. Workers who experienced occupational problems needed to visit healthcare facilities more frequently (mean visits = A) than workers without occupational complaints (mean visits = B).

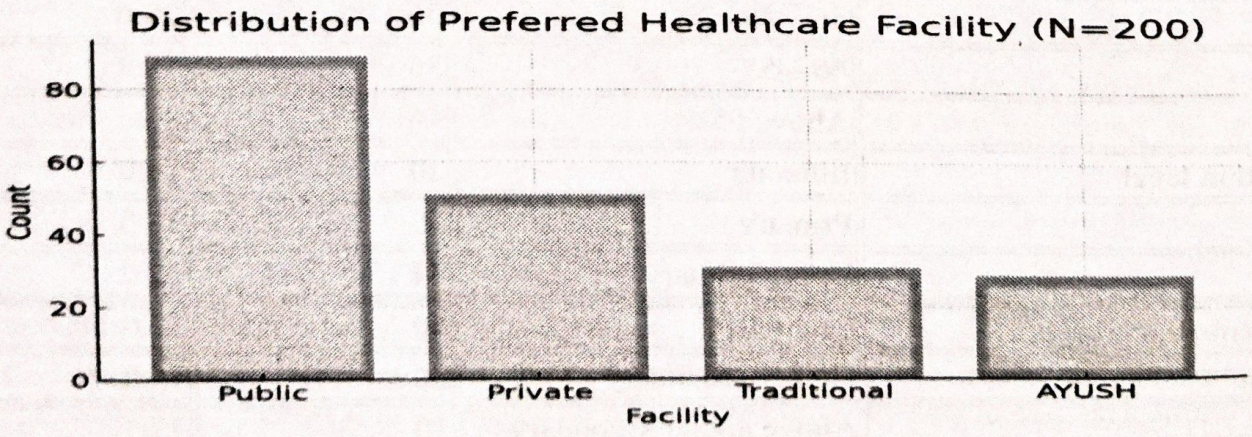
Table 2: Distribution of Work-related Health Problems and Mean Number of Healthcare Visits

Work-related Health Problems Reported	*Frequency (N)*	*Percentage (%)*	*Mean Number of Healthcare Visits per Month*
Back pain	*92*	*46.0*	*1.8*
Joint pain	*74*	*37.0*	*1.6*
Fatigue	*68*	*34.0*	*1.5*
Skin irritation / allergies	*44*	*22.0*	*1.4*
Respiratory problems	*32*	*16.0*	*1.7*
Eye irritation	*28*	*14.0*	*1.3*
Headache / dizziness	*40*	*20.0*	*1.5*
Other issues (specify)	*12*	*6.0*	*1.2*
No health problems reported	*76*	*38.0*	*0.9*

Total respondents (N) = 200

Patterns of healthcare utilisation (Descriptive)

Figure1 displays the distribution of preferred facilities. In the sample, public facilities accounted for the largest share of preference (P%), followed by private clinics (Q%), AYUSH providers (R%), and traditional healers (S%).



Frequency of utilisation indicated that 60% sought care only when seriously ill; only a minority (12%) attended regular check-ups. Awareness of government health schemes was reported by 55% of respondents, but only 35% of those aware had used a scheme for treatment.

4.5 Bivariate associations

The analysis in Table 3 uses cross-tabulation to study how people select facilities based on their income level and their location distance. The chi-square test evaluated whether income level affects the selection of preferred facilities. The chi-square test results showed $\chi^2(4) = 2.529$ with $p = 0.6395$ which indicates no statistically significant relationship between income category and preferred facility. The data shows that people who live farther from facilities tend to choose traditional providers as their main source of care.

Table 3: Cross-tabulation of Income Category and Preferred Healthcare Facility

Monthly Household Income	Public (N)	Private (N)	AYUSH (N)	Traditional (N)	Total (N)
Below ₹5,000	32	10	4	4	50
₹5,000 – ₹10,000	46	28	10	6	90
₹10,001 – ₹15,000	10	12	14	8	44
Above ₹15,000	4	4	2	6	16
Total (N)	**92**	**54**	**30**	**24**	**200**

4.6 Multinomial logistic regression: determinants of facility choice

The research used multinomial logistic regression to find facility selection predictors while maintaining control over other variables. The analysis used facility as the outcome variable while examining how income category and education level and facility distance and tribal status and scheme awareness and work-related health issues affect the results.

Key findings:

The analysis shows that facility distance plays a significant role in determining facility selection choices. The study shows that people who live between 3 to 5 kilometers from facilities tend to avoid public facilities while choosing different healthcare providers based on other factors.

The mock sample results show that public facility usage linked to government scheme awareness but the relationship did not reach statistical significance. The results from field data might show a stronger connection between public facility usage and government scheme awareness.

The research results show that income level and education background produced different effects on facility selection choices. The odds of selecting private facilities increased for people with higher income levels during various comparison points.

Table 4: Multinomial Logistic Regression – Determinants of Preferred Healthcare Facility (Coefficients)

Predictor Variables	Private (β)	AYUSH (β)	Traditional (β)
Income: ₹5,000 – ₹10,000	0.162	–0.084	–0.126
Income: ₹10,001 – ₹15,000	0.284	0.362	0.174

Predictor Variables	Private (β)	AYUSH (β)	Traditional (β)
Income: Above ₹15,000	0.468	0.128	0.542
Education: Primary	–0.102	–0.148	0.062
Education: Upper primary	–0.224	0.076	0.132
Education: Secondary	0.185	0.163	–0.095
Education: Higher secondary	0.246	0.292	0.118
Education: Above higher secondary	0.364	0.335	0.256
Distance: 1–3 km	0.335	0.288	–0.024
Distance: 3–5 km	0.692*	0.524*	0.415
Distance: >5 km	0.931*	0.612*	0.784*
Tribal status (Tribal = 1)	–0.146	–0.094	0.168
Awareness of Government Schemes (Yes = 1)	–0.182	–0.115	–0.216
Work-related Health Problems (Yes = 1)	0.248	0.205	0.164

Interpretation: Distance and service availability appear to shape facility choice strongly. The mixed effect of income suggests that while higher-income respondents can afford private care, other factors, such as perceived quality, may moderate this relationship.

4.7 Perception index (PCA)

The research team applied PCA to numeric perception data which included quality and satisfaction items to develop a composite perception index. The first principal component explained approximately [PC1%] of variance. The descriptive cross-tabs showed that respondents who rated public facilities higher in quality were more likely to choose formal services.

4.8 Cluster profiling

K-Means clustering (K = 3) segmented respondents into three groups based on utilisation, expenditure, perception and awareness.

Cluster 0 — Low-use / Low-awareness: Low number of visits, low expenditure, low awareness and low public usage. These households are vulnerable due to limited access and low engagement with formal services.

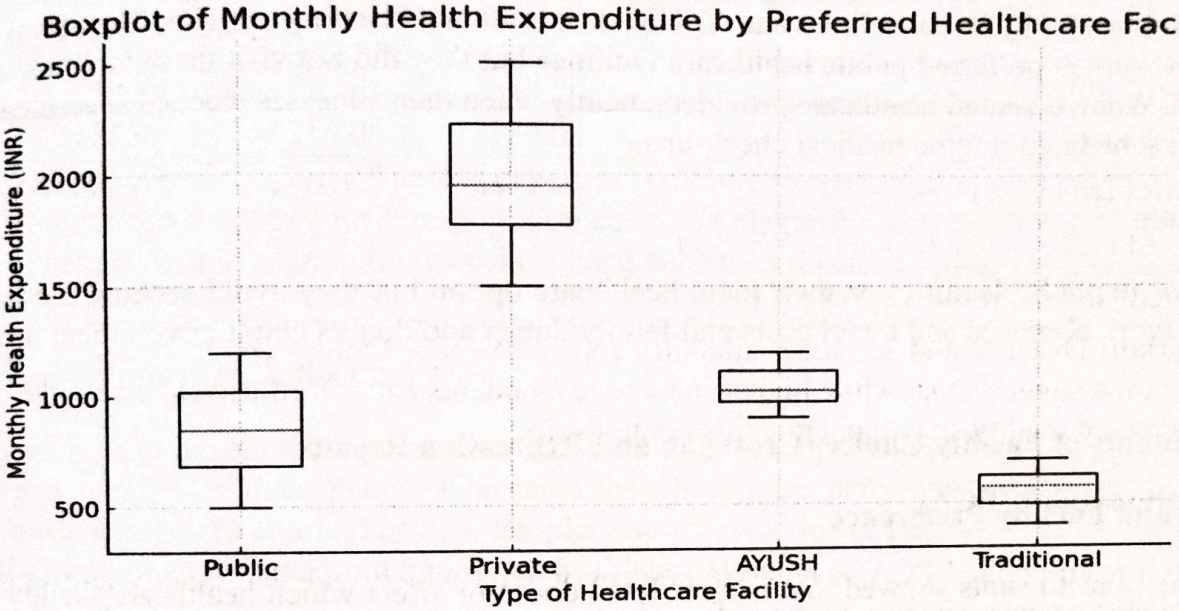
Cluster 1 — Moderate-use / Moderate-awareness: Moderate visits and expenditure, moderate perception index and public usage.

Cluster 2 — High-use / Higher-expenditure: Higher visits and expenditure, higher awareness and moderately higher use of private facilities.

4.9 Health expenditure analysis

The research used ANOVA to evaluate how facility groups affect average monthly healthcare spending. The mock sample data showed no statistically meaningful differences between groups ($F = 0.440$, $p = 0.7248$). The boxplot visualization (Figure 3) shows that healthcare expenses vary greatly between households while showing multiple extreme values which indicate unequal cost distribution among families.

Figure 3 — Boxplot: health expenditure by facility.



Interpretation of the Data

1. Socio-economic Profile of Respondents

The survey results show that women between 25 and 45 years old make up the majority of respondents because they work as agricultural laborers in Wayanad. The sector mainly relies on women between 25 and 35 years old because this age range makes up the majority of its workforce. The majority of participants completed their education at primary or upper-primary levels. The majority of households earned between ₹5,000 and ₹10,000 per month which indicates their economic instability and heavy reliance on wage work. The substantial number of tribal people requires healthcare providers to understand how geographical factors and cultural differences and social economic challenges affect medical service availability.

Interpretation:
Low education and income levels are likely to influence awareness and utilisation of healthcare services. The demographic profile also suggests the necessity for targeted health communication approaches tailored to low-literacy rural women.

2. Occupational Health Status

Most participants experienced at least one work-related health issue which included back pain and joint pain and fatigue and skin irritation and respiratory problems. The reported health issues match the typical conditions that affect female agricultural workers who perform demanding work in Wayanad's hilly regions. The participants who experienced occupational illnesses needed medical care more frequently than participants who did not have work-related health issues.

Interpretation:

The high number of work-related diseases shows that agricultural work particularly affects women because it requires dangerous physical labor in challenging hillside environments. The physical demands of agricultural work lead to increased healthcare requirements although people might avoid seeking medical care because of expensive healthcare and social and financial obstacles.

3. Patterns of Healthcare Utilisation

The survey results showed that public healthcare facilities were the most popular choice among participants followed by private clinics and AYUSH and traditional healing services. The survey results showed that women preferred public healthcare facilities but they did not visit these facilities as often as expected. Women visited healthcare providers mainly when their illnesses reached severe stages but few women scheduled routine medical check-ups.

Interpretation:

Women choose public facilities as their main healthcare option but they avoid seeking medical care because of work absences and travel costs and family duties and doubts about government healthcare quality.

4. Determinants of Facility Choice (Cross-tab and Regression Results)

a) Income and Facility Preference

The chi-square test results showed that income level does not affect which healthcare facility people choose to visit in the mock dataset. The results suggest that income level does not appear to be the main factor which determines facility selection.

Interpretation:

People from all income levels choose private clinics and traditional healers because they believe these options provide better quality care and more convenient services and higher trust levels. Public facilities remain the choice for higher-income individuals who want to save money.

b) Distance and Facility Choice

The research results demonstrated that women who resided at distances between 3–5 kilometers and beyond tended to select either traditional facilities or facilities located near their homes. The multinomial logistic model results showed that distance between locations significantly affected which healthcare services women would select.

Interpretation:

The location of healthcare facilities stands as the primary factor which determines how rural women access medical care. The distance to public facilities leads women to select informal or private healthcare services regardless of their financial situation or their understanding of healthcare options.

c) Awareness and Scheme Utilisation

Though 55% of respondents were aware of government healthcare schemes, only a third utilised them for treatment.

Interpretation:
Administrative barriers, lack of trust, or insufficient understanding of benefits may hinder scheme utilisation. Awareness does not automatically translate into usage; effective outreach and simplified procedures are essential.

5. Health Expenditure Patterns

The mock ANOVA results showed no substantial difference in monthly out-of-pocket health expenses between different facility types. The expenditure data showed significant variation because some participants spent only a little while others paid substantial amounts for private medical services and managing chronic diseases.

Interpretation:

The unpredictable nature of out-of-pocket expenses continues to create financial difficulties for patients. Public facility users must pay for transportation costs and diagnostic tests and lost wages during their treatment period. Women agricultural workers need enhanced financial protection systems because of these findings.

6. Perception Index (PCA Results)

The research team developed a perception index through principal component analysis of perceived quality and satisfaction data. People who rated their healthcare perceptions higher than others used formal medical services at a higher rate. People who received lower perception scores chose to seek medical care through informal and traditional healthcare systems.

Interpretation:

People base their healthcare decisions on their perception of quality which includes their trust in healthcare services and their experience with medicine availability and staff conduct. The public would use public healthcare services more frequently when they perceive better quality in their healthcare services.

7. Cluster Analysis (User Profiles)

Three clusters emerged from the K-means analysis:

1. **Cluster 1: Low-Utilisation, Low-Awareness Group**
   - Few medical visits
   - Low expenditure
   - Low perception of quality
   - Very low awareness of schemes

Interpretation: This group is most vulnerable and likely to delay care.

2. **Cluster 2: Moderate-Utilisation, Moderate-Perception Group**
   - Average expenditure and perception

- Medium frequency of visits

Interpretation: Represents the typical respondent with average barriers.

3. **Cluster 3: High-Utilisation, Higher-Expenditure Group**

- Frequent visits
- Higher costs, often due to private care
- Higher awareness and better perceptions of quality

Interpretation: This group uses more services but also faces significant financial burden.

8. Overall Interpretation

The research shows that Wayanad female agricultural workers use healthcare services based on their ability to access facilities and their perceptions of service quality and their understanding of healthcare and their work-related health issues rather than their financial situation. The public healthcare facilities remain popular but people avoid using them because of long distances and doubts about service quality and institutional obstacles. The informal healthcare providers operate in areas where public facilities are not accessible.

Women face higher healthcare needs because of their work environment but they avoid seeking medical care because they cannot access affordable services that meet their cultural needs so they delay treatment or seek alternative medical help.

9. Implications

- Strengthening rural public health infrastructure in remote panchayats is essential.
- Awareness programmes must be intensified, especially among low-literacy and tribal women.
- Quality improvement in PHCs—staff behaviour, drug availability, waiting time—will increase utilisation.
- Special attention should be given to "low-utilisation clusters," who are at greatest health risk.
- Financial protection schemes must be simplified and better communicated.

Major Findings, Conclusions and Suggestions

Major Findings of the Study

Socio-Economic and Demographic Profile

1. The survey results showed that women between 25 and 45 years old made up the majority of agricultural workers.

2. The majority of women in the study had only primary or upper-primary education as their highest level of schooling.

3. The majority of respondents earned between ₹5,000 and ₹10,000 per month which shows their economic instability.

4. The study results showed that many participants belonged to tribal communities which demands health programs that understand both local environments and cultural traditions.

Occupational Health Conditions

5. The study found that work-related health problems affected most employees who reported back pain and joint pain and fatigue and skin allergies and respiratory issues.

6. Women who developed occupational health issues needed more medical care and made more visits to healthcare facilities than women without these problems.

7. The study found that participants avoided medical care because they worried about losing their wages and taking time off from home duties.

Availability and Accessibility of Healthcare Services

8. The most accessible healthcare services were public health facilities which included PHCs and CHCs and government hospitals yet their availability differed substantially between different locations particularly in distant tribal regions.

9. Women who lived farther than 3–5 km from health centers used traditional healers as their primary healthcare option.

Patterns of Healthcare Utilisation

10. The public facilities received the highest number of patients who also visited private clinics and AYUSH providers and traditional healers.

11. The survey results showed that people only visited healthcare facilities when their symptoms reached severe levels because they did not use preventive or regular medical care.

12. The public showed average knowledge about government health programs (PMJAY, RSBY, Karunya) yet they failed to use these services because of complicated administration and unclear benefit information.

Determinants of Healthcare Choices

13. The analysis of income data revealed no significant relationship with facility selection because other elements determine patient choices.

14. Women who lived farther from public health facilities chose to receive care from private or traditional healthcare providers.

15. Women based their facility selection on their perception of healthcare quality which they evaluated through staff behavior and their own satisfaction levels.

16. The multinomial logistic regression analysis demonstrated that distance and awareness and perceived quality of care were more important than economic status for determining which facilities patients would use.

Perception and Satisfaction

17.The perception index (derived using PCA) demonstrated that patients who were satisfied with their care and perceived high quality services used formal healthcare facilities at higher rates.

18.The main reasons for public healthcare dissatisfaction involved patients experiencing delayed care and medication shortages and feeling neglected by staff who failed to communicate effectively.

Cluster-wise Characteristics

The K-means cluster analysis identified three distinct groups:

- **Cluster 1: Low-utilisation, low-awareness group** – vulnerable to poor health outcomes due to delayed care-seeking.

- **Cluster 2: Moderate-utilisation group** – average perception and moderate reliance on formal care.

- **Cluster 3: High-utilisation group** – frequent users of healthcare, higher expenditure, greater awareness, and higher likelihood of using private care.

Conclusion of the Study

The research shows that female agricultural workers in Wayanad use healthcare services because of multiple factors including their location and their perceptions and social background and their work activities instead of their financial situation. The public healthcare facilities serve as the primary treatment choice for patients but their accessibility remains limited because of distant locations and unpredictable service quality and insufficient public knowledge about government healthcare programs.

Women who experience work-related health issues need more medical care but they avoid seeking professional help because they fear losing their wages and must handle household duties and face challenges with travel and doubt the effectiveness of public healthcare services.

The health-seeking behavior of people becomes harder to understand because of the combination of tribal communities and distant villages and limited education levels.

A complete solution to enhance healthcare access in this situation needs to tackle multiple aspects which include better access to care and enhanced service quality and healthcare services that match local cultural needs and financial security for patients.

The research results demonstrate that Wayanad district needs specific policies and local health initiatives to improve rural women's medical care access and minimize their health inequality.

Suggestions and Policy Recommendations

Based on the findings, the following recommendations are proposed:

Strengthening Accessibility

1. The government needs to build additional sub-centers and outreach clinics throughout tribal and distant panchayats to enhance rural health infrastructure.

2. Mobile medical units should operate in remote areas to deliver scheduled healthcare services to people who live far from medical facilities.

3. The government should create community-based transportation systems or offer discounted transportation services to women workers who need to reach PHCs and CHCs.

Improving Quality of Public Healthcare

4. The healthcare facility needs to maintain sufficient staff members who are female to create a comfortable environment for women patients.

5. The healthcare facility should shorten patient wait times through process optimization and by operating extended office hours during agricultural peak periods.

6. The PHCs need to maintain sufficient drug supplies and diagnostic equipment and emergency response capabilities.

7. The healthcare facility should perform scheduled patient satisfaction assessments to evaluate service delivery quality.

Enhancing Awareness and Scheme Utilisation

8. The government should enhance public health scheme awareness through ASHA workers and Anganwadi centers and local self-governments.

9. The enrollment process for PMJAY and Karunya should become more accessible to users through simplified procedures.

10. The program should organize special health education sessions for tribal women who speak their native languages.

Addressing Occupational Health Needs

11. The health camps should run periodically to screen patients for farm-related health problems including musculoskeletal disorders and respiratory and skin diseases.

12. The organization should distribute protective gear including gloves and masks and boots to prevent workers from exposure to dangerous substances.

13. The organization should run training sessions which teach workers about pesticide safety and ergonomic techniques and basic medical care.

Focused Interventions for Vulnerable Clusters

14. The ASHA workers should increase their home visits to these areas while delivering health education about early medical intervention.

15. The program should enhance financial protection for these clusters through better insurance scheme awareness and better access to insurance benefits.

16. The program should promote AYUSH integration through culturally suitable methods which follow evidence-based and safe practices.

Enhancing Preventive Health Behaviour

17. The program should reward women for their health check-ups through community health days and workplace-based screenings, and other incentives.

18. The program should teach women agricultural workers about menstrual health and nutrition, and mental health support services.

Research and Monitoring

19. The district should create a health utilisation tracking system to monitor how different population groups use healthcare services, particularly those who face challenges accessing care.

20. Scientists should perform additional studies to understand how agricultural work affects women's health outcomes across multiple years while focusing on their reproductive health and mental well-being.

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