

Assessing the Impact of Telemedicine Services on Rural Women in Tamil Nadu

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Abstract

This study examines the impact of telemedicine services on rural women in Tamil Nadu, focusing on accessibility, affordability, and quality of healthcare delivery. Telemedicine has emerged as a transformative solution to bridge the gap between rural populations and urban healthcare facilities. The research investigates how digital health platforms improve medical consultation, diagnosis, and treatment among women in remote areas. It also explores the role of government initiatives and private healthcare providers in expanding telemedicine services. The study adopts a descriptive and analytical approach using both primary and secondary data sources. Key variables include health awareness, frequency of usage, satisfaction levels, and health outcomes. Findings indicate that telemedicine significantly reduces travel time and medical expenses for rural women. It enhances access to specialized healthcare services that are otherwise unavailable in villages. Additionally, telemedicine contributes to early diagnosis and timely treatment of diseases. However, challenges such as digital illiteracy, poor internet connectivity, and lack of technological infrastructure persist. The study also highlights socio-cultural barriers that affect adoption among rural women. Training and awareness programs are identified as crucial for improving usage. The research suggests policy measures to strengthen digital healthcare systems in rural areas. It emphasizes the need for collaborative efforts between government and stakeholders. Telemedicine is found to empower rural women by improving their health-seeking behavior. Overall, the study concludes that telemedicine plays a vital role in promoting inclusive healthcare. It recommends further investment in infrastructure and education. The findings provide valuable insights for policymakers and healthcare practitioners. This research contributes to the growing body of knowledge on digital health in India.

Keywords: Healthcare, telemedicine services, Travel burdens, Technological literacy and Barriers.

1 Introduction

Telemedicine, which is described as the remote diagnosis, treatment, consultation, and monitoring of patients through digital communication technology, is a contemporary shift in the delivery of healthcare. The World Health Organization (WHO, 2021) claims that telemedicine is a cutting-edge strategy for removing geographic constraints and delivering equitable healthcare, particularly in underprivileged rural areas. Because it provides privacy, convenience, less travel stress, and access to specialists who are otherwise inaccessible in remote health centers, telemedicine becomes a vital lifeline for rural women. According to Agrawal & Gupta (2020), telemedicine's conceptual strength is found in its ability to facilitate emergency medical guidance, improve continuity of care, and decrease treatment delays. Telemedicine is a bridge that connects remote populations with cutting-edge healthcare systems, not just a piece of technology. However, without sufficient digital literacy, reliable internet networks, user-friendly platforms, and sociocultural acceptance all of which are still significant gaps in rural India-Sundar & Ramanathan (2021) contend that telemedicine cannot operate effectively. Therefore, the telemedicine conceptual framework reveals the potential of digital health services while also highlighting the technological, cultural, and systemic barriers that affect rural women's access to and use of them.

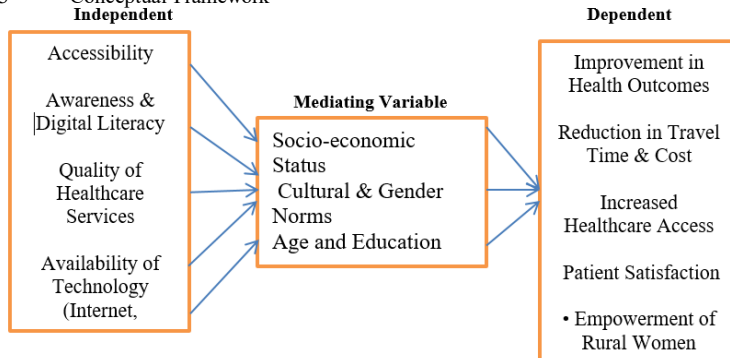
2 Review of Literature

Farooq (2025) reviewed evidence on telemedicine's impact on healthcare access, patient satisfaction, appointment adherence, and cost-effectiveness. The narrative synthesis indicated notable reductions in waiting times and improvements in adherence, with satisfaction levels consistently high across studies. Telemedicine demonstrated diagnostic comparability to in-person care and meaningful reductions in travel-related costs. However, digital literacy challenges and technological constraints affected substantial portions of patients, particularly those from low-income groups. The review concluded that while telemedicine strengthened access and satisfaction, sustainable implementation required addressing digital disparities through hybrid care models and inclusive policy measures.

Andriani and Soelasih (2025) analyzed factors shaping patient loyalty in telemedicine applications. Using survey data from 202 users in Jakarta and Structural Equation Modeling, they reported that brand image and e-service quality significantly affected patient satisfaction, which subsequently influenced trust and loyalty. Trust was shown to mediate the relationship between satisfaction and loyalty. The authors emphasized that enhancing e-service quality, maintaining a strong brand image, and ensuring patient satisfaction were essential for fostering patient loyalty within telemedicine platforms.

Srinivasan et al. (2025) examined patient and provider experiences with telemedicine in spine care during the COVID-19 pandemic. Survey findings from 407 patients showed high satisfaction with virtual visits, influenced by clear explanations, adequate visit time, and minimal technical issues. Satisfaction was not significantly affected by demographics such as education, age, or race. A complementary systematic review of patient and surgeon surveys indicated consistent satisfaction.

3 Conceptual Framework



4 Objectives Of The Study

- To analyse the relationship between the factors of Telemedicine services among Rural Women.
- To evaluate the association between the demographic profile of respondents and the usage pattern of Telemedicine.
- To enumerate the relationship between the factors influencing the Challenges and issues of Telemedicine services and the outcome factors of Telemedicine Acceptance and Satisfaction.

4.1 Hypothesis

- There is no relationship between lack of technology and age of the respondents.
- There is no relationship between poor health condition of rural women and age of the respondents.

4.2 Methodology

The researcher distributed 620 questionnaires to collect data, resulting in 600 responses, of which 586 were deemed usable. Consequently, the sample size is 586. The reliability value is 0.758, which exceeded 0.7 threshold, confirming the reliability of questionnaire. The KMO value stands at 0.781, which surpasses the 0.5

threshold. Thus, it is categorized as an excellent level of adequacy.

5 Results And Discussion

Descriptive Statistics on Age and Telemedicine Acceptance

Age	N	Mean	Std. Deviation
18-24 years	129	2.55	1.139
25-34 years	162	2.40	1.144
35-44 years	148	2.62	1.141
45-54 years	92	2.69	1.200
55 years and above	55	2.61	1.229
Total	586	2.55	1.160

Source: Primary Data

Table shows that mean telemedicine acceptance varies across age groups, with higher mean scores observed among women aged **45-54 years (Mean = 2.69)** and **35-44 years (Mean = 2.62)**. Younger respondents aged **25-34 years** report comparatively lower acceptance levels.

ANOVA on Age and Telemedicine Acceptance

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	6.304	4	1.576	21.172	.022
Within Groups	781.003	581	1.344		
Total	787.307	585			

Source: Primary Data

Table 4.4.2 indicates that the ANOVA result is **statistically significant** ($F = 21.172, p = 0.022$). This confirms that **age has a significant influence on telemedicine acceptance**. Hence, acceptance of telemedicine differs meaningfully across age groups.

Descriptive Statistics on Higher Education Level Completed and Telemedicine Acceptance

Higher Education Level Completed	N	Mean	Std. Deviation
No formal education	63	2.35	1.056
Primary (up to grade 5)	124	2.52	1.125
Secondary (grade 6-10)	156	2.47	1.131
Higher secondary (grade 11-12)	128	2.68	1.229
Graduate (Bachelor's degree or equivalent)	77	2.70	1.206
Post Graduate (Master's / PhD or higher)	38	2.62	1.212
Total	586	2.55	1.160

Source: Primary Data

Table 4.4.5 indicates that telemedicine acceptance increases with education, with **graduates (Mean = 2.70)** and **higher secondary respondents (Mean = 2.68)** showing higher acceptance.

Descriptive Statistics of the Cost & Affordability

Item code	Statements	Mean	Std. Deviation
COS	Telemedicine consultations are affordable for me.	3.81	.936
COS	Costs (data, call charges) make me hesitate to use telemedicine. (reverse-scored)	3.78	1.068
COS	Telemedicine reduces travel and related costs for seeking healthcare.	3.75	1.013
COS	I would use telemedicine more if it reduced my out-of-pocket costs.	3.61	1.074

Source: Primary Data

Table indicates that respondents moderately agree with statements related to **Cost & Affordability**, with mean scores ranging from **3.61 to 3.81**. Rural women generally perceive telemedicine as cost-effective, particularly due to reduced travel expenses.

Descriptive Statistics of the Trust in Telemedicine

Statements	Mean	Std. Deviation
I trust the quality of care provided through telemedicine.	3.56	1.228
Telemedicine providers act in my best interests.	3.91	.938
I believe telemedicine platforms protect my privacy.	3.85	.993
I feel safe discussing sensitive health issues via telemedicine.	3.89	1.015
I am concerned about how my personal health information is stored and used.	3.84	1.061

The reports mean values between **3.56 and 3.91**, indicating a moderately high level of **trust in telemedicine services**. Respondents generally trust healthcare providers and feel secure discussing sensitive health issues online.

Descriptive Statistics of the Satisfaction

Item code	Statements	Mean	Std. Deviation
SAT	I regularly use telemedicine for minor medical concerns.	3.82	1.075
SAT	Telemedicine has reduced some of my in-person clinic visits.	3.82	1.045
SAT	I have used telemedicine several times in the past year for healthcare needs.	3.79	1.035
SAT	I am satisfied with the telemedicine services I received.	3.84	.992
SAT	Telemedicine met my expectations for quality of care.	3.92	1.003
SAT	I would continue using and recommend telemedicine to other women in my community.	3.76	1.063

Source: Primary Data

Table shows that respondents exhibit **high satisfaction** with telemedicine services, with mean scores ranging from **3.76 to 3.92**. Women report frequent usage, reduced clinic visits, and positive experiences with service quality.

Total Variance Explained of Tele-Access & Infrastructure

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.323	83.074	83.074	3.323	83.074	83.074
2	.320	7.988	91.062			
3	.229	5.719	96.781			
4	.129	3.219	100.000			

Extraction Method: Principal Component Analysis.

Table 4.3.4 shows that the first component has an eigenvalue of **3.323**, explaining **83.074% of the total variance**. The remaining components have eigenvalues less than one and contribute marginal variance.

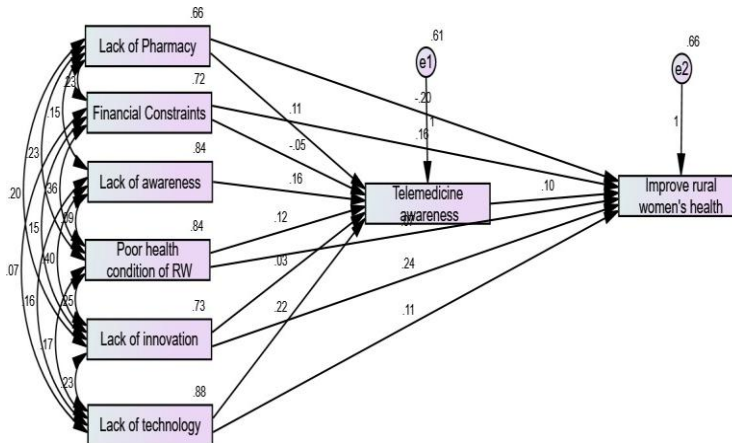
Total Variance Explained of Digital Literacy

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.184	79.596	79.596	3.184	79.596	79.596
2	.386	9.646	89.242			
3	.255	6.374	95.616			
4	.175	4.384	100.000			

Extraction Method: Principal Component Analysis.

As shown in Table 4.3.5, the first component accounts for **79.596% of the total variance** with an eigenvalue of **3.184**. All subsequent components have eigenvalues below one.

Structural Equation Model



Fit indices for modified model

- CFI (Comparative Fit Index): The CFI value of 0.906. It indicates a high degree of fit between the model and the observed data.
- GFI (Goodness of Fit Index) obtained is 0.963 surpasses the recommended value of above 0.90.
- NFI (Normed Fit Index): The NFI value of 0.905 surpasses the recommended threshold, signifying excellent model fit.
- IFI (Incremental Fit Index): The IFI value of 0.913 is well above the recommended threshold, indicating an excellent fit.
- Root Mean Square Residual (RMR) is 0.074 which is below 0.08. Thus it is over identified model.

Findings of The Study

- The descriptive analysis reveals that rural women generally report **moderate to high access to infrastructure**, including mobile network coverage, internet connectivity, and access to suitable devices for telemedicine, indicating that **basic technological infrastructure is largely available**.
- Respondents demonstrate **moderate to good levels of digital literacy**, particularly in using smartphones, accessing online health information, and following instructions for telemedicine consultations, suggesting that **digital skills are not a major barrier** for most respondents.
- The findings indicate a **high level of effort expectancy**, as respondents perceive telemedicine services to be easy to learn, easy to access, and simple to use. This suggests that **system complexity does not significantly hinder telemedicine usage** among rural women.
- In contrast, **perceived usefulness of telemedicine is relatively low**, with respondents expressing limited agreement regarding time-saving benefits, improved health outcomes, and effective family health management. This indicates a **gap between usability and perceived value** of telemedicine services.
- The analysis highlights **strong cultural and gender-related barriers**, including household decision-making constraints, social norms, and stigma associated with seeking healthcare through telemedicine, particularly for sensitive health issues.
- **Cost & Affordability (COST)** has a **positive and significant relationship** with **Social Influence, Acceptance, Satisfaction, and Trust** ($p < 0.01$), suggesting that affordable telemedicine services improve acceptance and user experience.
- Social Influence emerged as the **strongest predictor of Satisfaction**, indicating that encouragement from family, peers, and healthcare providers significantly enhances women's satisfaction with telemedicine.

Suggestions

- ✓ Awareness programs should focus on women aged 25–44, especially on maternal health, child care, and chronic illness management.
- ✓ Telemedicine awareness campaigns should involve husbands and family members to encourage supportive decision-making.
- ✓ Local-language digital literacy programs should be provided to help women with basic education confidently use telemedicine.
- ✓ Telemedicine services should offer flexible timings to suit housewives, agricultural workers, and daily wage earners.

Conclusion

The present study examined the challenges, acceptance, and satisfaction of telemedicine services among rural women with specific focus on technological readiness, socio-cultural influences, infrastructural preparedness, economic feasibility, trust, and usage behavior. The findings collectively reveal that telemedicine has emerged as a highly relevant and transformative healthcare solution for rural women; however, its effectiveness is critically dependent on psychological readiness, technological capability, and social-cultural environment rather than infrastructure alone.

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