



IMPACT OF TELEMEDICINE SERVICES AMONG RURAL WOMEN IN TAMILNADU

Krithiga Devi R ¹  and P.Sasikumar ² 

¹ Research Scholar (Part-time), School of Management Studies, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai.

² Assistant Professor and Research Supervisor, School of Management Studies, Vels Institute of Science Technology and Advanced Studies (VISTAS), Chennai.
krithigadevi2024@gmail.com

ABSTRACT. This study will assess the impact of the services of telemedicine on healthcare access among Tamil Nadu rural women. This study highlights the challenges of rural women in adopting telemedicine due to the lack of technological literacy and innovative infrastructure. The telemedicine has begun as a transformative tool in addressing the healthcare discrepancies, particularly in the rural areas. The awareness campaigns and community engagement play a most important role in promoting the acceptance and utilization of telemedicine services. The involvement of local leaders and influencers can help in reaping the support of community. The telemedicine services focusing on maternal and child health to make impact on improving the healthcare outcomes for children and women in rural areas. The findings highlight the improvement in healthcare access, reduced travel burdens, emphasizing convenience, reduced barriers to receiving medical advice and increased awareness of health issues. Telemedicine advices were particularly beneficial in addressing routine check-ups, maternal health concerns and chronic disease management.

Keywords: healthcare, telemedicine, travel burdens, technological literacy and barriers.

1 INTRODUCTION

The effectiveness of telemedicine will improve the healthcare access of rural women. The access of healthcare services is one of the critical factor of well-being of rural women. The remote delivery of healthcare services through the technologies has emerged as a favourable solution to bridge the geographical gap and improve healthcare access. Telemedicine is developed with the use of telecommunication technologies to deliver health care related services. These services include different technologies (Grigsby, 1995, Allen, 1995) including audio-only format, full-motion video and still images. The robotics (Satava, 1992; Minsky, 1979). Telemedicine data has employed terrestrial lines, radio and satellites (Chouinard, 1983).

© The Author(s) 2024

N. V. Suresh and P. S. Buvanewari (eds.), *Proceedings of the International Conference on Digital Transformation in Business: Navigating the New Frontiers Beyond Boundaries (DTBNNF 2024)*, Advances in Economics, Business and Management Research 283,

https://doi.org/10.2991/978-94-6463-433-4_42

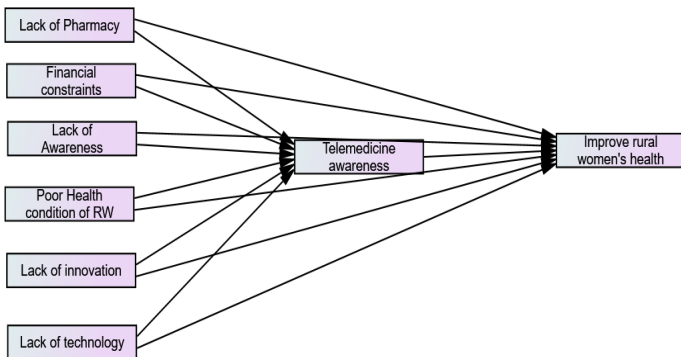
The cultural richness and geography, is marked by disparities in healthcare infrastructure, with rural areas facing unique challenges in accessing quality and timely healthcare. The most commonly used application of telemedicine is transmission of radiologic images (Ho et al., 1995). The rural women, constituting an important portion of the population, transportation, encounter barriers related to distance and cultural norms that limit the ability to access healthcare services regularly. Establishing the evaluation mechanisms and continuous monitoring is crucial for evaluating the impact of telemedicine services, identify the areas to be improved, and ensuring the continued delivery of high-quality healthcare. Addressing the challenges of telemedicine is crucial for rural women's well-being and improving their health outcomes.

2 REVIEW OF LITERATURE

Doarn, Ferguson and Scott (1995) ascertained that, the important activities of telemedicine applications throughout the world. The latest telecommunication technologies were used in the health units (1991, Cawthon et al). The implementation of telemedicine services among rural women is challenging for healthcare providers (Hellstein and Basquill, 1990). Identify the challenges create an accessible healthcare system for the rural women. The community members and technology developers are essential to the development of telemedicine. They have telemedicine to provide care to persons living on the Pacific Ocean's remote islands (1993, Delaplain et al). They organised the telemedicine units to Macedonia, Croatia, and Haiti (Crowther, 1995), for the effectiveness of telemedicine. The lack of telemedicine reduce the number of patient (Grigsby, 1995) and need to conductive telemedicine programs for the effectiveness of telemedicine (Perednia and Brown (1995). The cultural factors play an important role in shaping the telemedicine services. Adapting telehealth services to be aligned with beliefs and practices is important for the successful implementation.

3 CONCEPTUAL FRAMEWORK

Figure: 1



4 OBJECTIVES OF THE STUDY

- To study the telemedicine services available in the rural area.
- To analyse lack of awareness and poor health conditions of rural women.

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 200 questionnaires to collect data, resulting in 196 responses, of which 193 were deemed usable. Consequently, the sample size is 193. 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

5.1 Community Table:

	Initial	Extraction
Lack of Pharmacy	1.000	.645
Financial Constraints	1.000	.582
Lack of awareness	1.000	.496
Poor health condition of RW	1.000	.484
Lack of innovation	1.000	.591
Lack of technology	1.000	.590
Telemedicine awareness	1.000	.382
Improve rural women's health	1.000	.460
Extraction Method: PCA.		

The extraction values are ranging from 0.382 to 0.645 which indicates, minimum variance is 38.2% and the maximum is 64.5%.

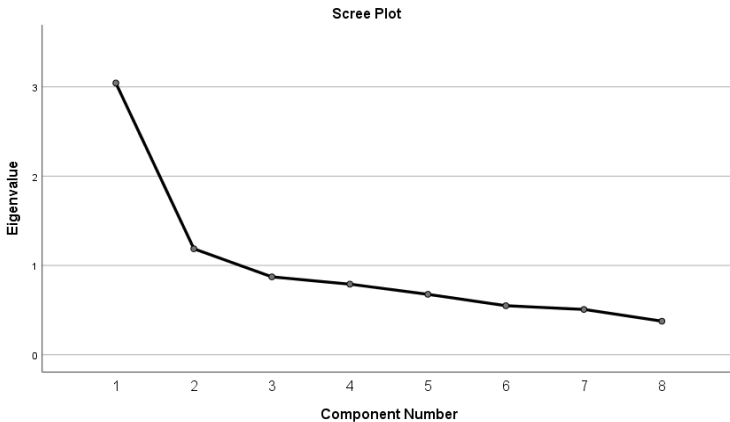
5.2 TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of	Cumulative %	Total	% of	Cumulative %	Total	% of	Cumulative %
		Variance			Variance			Variance	
1	3.043	38.034	38.034	3.043	38.034	38.034	2.427	30.343	30.343
2	1.187	14.836	52.870	1.187	14.836	52.870	1.802	22.527	52.870
3	.872	10.901	63.771						
4	.790	9.879	73.649						
5	.676	8.455	82.104						
6	.549	6.860	88.964						
7	.507	6.342	95.306						
8	.376	4.694	100.000						

Extraction Method: PCA.

The first component = 30.343 and second component = 52.870. The Eigen value for the first factor is 3.043 and second factor is 1.187.

Chart 1: Scree Plot



5.3 ROTATED COMPONENT MATRIX

	Component	
	1	2
Lack of Pharmacy	.788	
Financial Constraints	.751	
Poor health condition of RW	.643	
Lack of innovation	.617	.459
Lack of awareness	.614	
Lack of technology		.767
Improve rural women's health		.671
Telemedicine awareness		.566
Extraction Method: PCA.		
Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Factor: 1

- Lack of Pharmacy
- Financial Constraints
- Poor health condition of RW
- Lack of innovation
- Lack of awareness
- All the above items were loaded above 0.60 which is in the acceptable level of 0.05. All these items reflect one construct.

Factor: 2

- Lack of technology
- Improve rural women's health
- Telemedicine awareness
- All the items were loaded above 0.50 which is in the acceptable level of 0.05. All these items reflect one construct.

5.4 ANOVA

Hypothesis Testing

There is no relationship between lack of technology and age of the respondents.

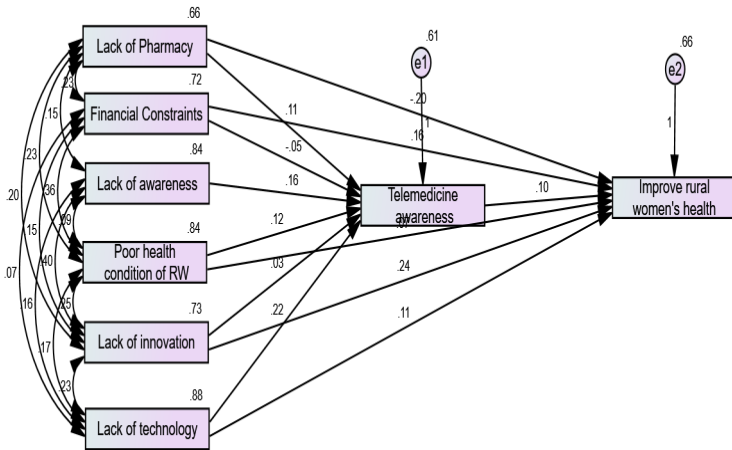
There is no relationship between poor health condition of rural women and age of the respondents.

Table 4						
		Sum of Squares	df	Mean Square	F	Sig.
Lack of Pharmacy	Between Groups	3.247	4	.812	1.162	.329
	Within Groups	131.365	188	.699		
	Total	134.611	192			
Financial Con-straints	Between Groups	1.864	4	.466	.635	.638
	Within Groups	137.970	188	.734		
	Total	139.834	192			
Lack of awareness	Between Groups	2.297	4	.574	.672	.612
	Within Groups	160.698	188	.855		
	Total	162.995	192			
Poor health condition of RW	Between Groups	5.778	4	1.445	1.663	.160
	Within Groups	163.351	188	.869		
	Total	169.130	192			
Lack of innovation	Between Groups	2.581	4	.645	.810	.520
	Within Groups	149.793	188	.797		
	Total	152.373	192			
Lack of technology	Between Groups	1.457	4	.364	.401	.808
	Within Groups	170.668	188	.908		
	Total	172.124	192			
Telemed-icine awareness	Between Groups	4.891	4	1.223	1.636	.167
	Within Groups	140.467	188	.747		
	Total	145.358	192			
Improve rural women's health	Between Groups	3.043	4	.761	.944	.440
	Within Groups	151.537	188	.806		
	Total	154.580	192			

The p-value of lack of pharmacy, financial constraints, poor health condition of RW, lack of innovation, lack of awareness, lack of technology, improve rural women's health and telemedicine awareness are more than 0.05 at 5% level of significance. Thus, this study reveals there is no significant relationship between the above variables and age of the respondents.

5.5 SEM

Figure: 2



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.

5.6 TESTING SIGNIFICANCE OF THE DIMENSIONS OF TELEMEDICINE AND RURAL WOMEN

Table: 5

			Esti- mate	S.E.	C.R.	P
Telemedicine aware- ness	<---	Lack of Pharmacy	.112	.078	1.450	.147
Telemedicine aware- ness	<---	Financial Constraints	-.048	.078	-.614	.539
Telemedicine aware- ness	<---	Lack of	.164	.072	2.269	.023

			Esti- mate	S.E.	C.R.	P
ness		awareness				
Telemedicine aware- ness	<---	Poor health condition of RW	.118	.073	1.623	.105
Telemedicine aware- ness	<---	Lack of inno- vation	.032	.084	.381	.703
Telemedicine aware- ness	<---	Lack of technology	.225	.064	3.514	* **
Improve rural wom- en health	<---	Lack of inno- vation	.237	.077	3.057	.002
Improve rural wom- en health	<---	Telemedicine awareness	.096	.074	1.296	.195
Improve rural wom- en health	<---	Poor health condition of RW	.074	.076	.970	.332
Improve rural wom- en health	<---	Financial Constraints	.161	.080	2.015	.044
Improve rural wom- en health	<---	Lack of Pharmacy	-.197	.080	-2.453	.014
Improve rural wom- en health	<---	Lack of tech- nology	.110	.068	1.614	.106

• The above table shows that, lack of awareness having a significant effect over telemedicine awareness with p = 0.023, lack of technology having a significant effect over telemedicine awareness with p = 0.000, lack of innovation is having a significant effect over improve rural women health with p = 0.002, financial constraints having a significant effect over improve rural women health with p = 0.044 and lack of pharmacy having a significant effect over improve rural women health with p = 0.014.

6 RECOMMENDATIONS

The companies need to invest in the development of telecommunication in rural areas to ensure high-speed internet connectivity and facilitating smooth telemedicine interactions. They should implement the digital literacy programs, specifically at rural women to engage effectively in virtual healthcare consultations, use smartphones and develop their ability to access telemedicine platforms. Need to provide training to the healthcare providers to ensure that telemedicine services are delivered in a proper manner that aligns with the practices of the rural women. Support in telemedicine platforms to address the issues like language barriers, ensuring that healthcare providers are communicate effectively with the rural women in their language. The regulatory frameworks and supportive government policies that promote the integration of telemedicine and offering incentives to the healthcare providers. Conduct the educational campaigns to increase the awareness about the usage and benefits of telemedicine services among the rural women, to improve their health.

7 CONCLUSION

The impact of telemedicine services among the rural women is a complex phenomenon. The integration of tele-health initiatives in the rural areas is most important for the improvements in health outcomes, healthcare access and rural women well-being. Telemedicine services contribute to positive health outcomes among the rural women by improving the access to timely medical consultations and facilitating the management of chronic conditions. Telemedicine indicates geographical barriers, providing rural women with a convenient means of seeking healthcare. The challenges and benefits related to access of technology, such as availability of smartphone, internet connectivity might hinder the adoption of telemedicine services among the rural women. Utilizing telemedicine, including potential cost savings for rural women and the affordability of services need to be addressed to ensure the equitable access to healthcare. Digital literacy programs for rural women and adequate training for healthcare providers are crucial elements in the implementation of telemedicine services. Thus, regulatory frameworks and supportive government policies are essential for creating an enabling environment for telemedicine.

REFERENCES

1. Allen A, Cox R and Thomas C (1992) Telemedicine in Kansas. *Kansas Medicine*, 93:323–325.
2. Bashshur R (1978) Public Acceptance of Telemedicine in a Rural Community. *Biosciences Communications*, 4:17–38.
3. Bashshur RL (1995) On the Definition and Evaluation of Telemedicine. *Telemedicine Journal*, 1:19–30.

4. Bashshur RL and Armstrong PA. (1976), Telemedicine: A New Mode for the Delivery of Health Care. *Inquiry*, 13:233–244.
5. Bashshur R and Lovett J. (1977), Assessment of Telemedicine: Results of the Initial Experience. *Aviation, Space, and Environmental Medicine*, 48:65–70.
6. Chouinard J, (1983), Satellite Contributions to Telemedicine: Canadian CME Experiences. *Canadian Medical Association Journal*, 128:850–855.
7. Conrath DW, Dunn EV, Bloor WG and Tranquada B (1977), A Clinical Evaluation of Four Alternative Telemedicine Systems. *Behavioral Science*, 22:12–21.
8. Crowther JB and Poropatich R (1995), Telemedicine in the U.S. Army: Case Reports From Somalia and Croatia. *Telemedicine Journal*, 1:73–80.
9. Cunningham N, Marshall C and Glazer E, (1978), Telemedicine in Pediatric Primary Care: Favorable Experience in Nurse-Staffed Inner-City Clinic. *Journal of the American Medical Association*, 240:2749–2751.
10. Delaplain CB, Lindborg CE, Norton SA and Hastings JE, (1993), Tripler Pioneers Telemedicine Across the Pacific. *Hawaii Medical Journal*, 52:338–339
11. Ferguson EW, Doarn CR, Scott JC. (1995), Survey of Global Telemedicine. *Journal of Medical Systems*, 19:35–46.
12. Fisk NM, Bower S, Sepulveda W and et al., (1995), Fetal Telemedicine: Interactive Transfer of Realtime Ultrasound and Video via ISDN for Remote Consultation. *Journal of Telemedicine and Telecare*, 1:38–44.
13. Gravenstein JS, Berzina-Moettus L, Regan A and Pao YH. (1975), Laser Mediated Telemedicine in Anesthesia. *Anesthesia and Analgesia*, 53:605–609.
14. Grigsby J, (1995), Current Status of Domestic Telemedicine. *Journal of Medical Systems*, 19:19–27.
15. Grundy BL, Jones PK and Lovitt A (1982), Telemedicine in Critical Care: Problems in Design, Implementation, and Assessment. *Critical Care Medicine*, 10:471–475.
16. Higgins CA, Conrath DW and Dunn EV, (1984), Provider Acceptance of Telemedicine Systems in Remote Areas of Ontario. *Journal of Family Practice*, 18:285–289.
17. House M, Keough E, Hillman D and et al. (1987), Into Africa: The Telemedicine Links Between Canada, Kenya and Uganda. *Canadian Medical Association Journal*, 136:398–400.
18. House AM and Roberts JM, (1977), Telemedicine in Canada. *Canadian Medical Association Journal*, 117:386–388.
19. Houtchens BA, Clemmer TP, Holloway HC and et al, (1993), Telemedicine and International Disaster Response: Medical Consultation to Armenia and Russia Via a Telemedicine Spacebridge. *Prehospital and Disaster Medicine*, 8:57–66.
20. Justice JW and Decker PG (1979), Telemedicine in a Rural Health Delivery System. *Advances in Biomedical Engineering*, 7:101–171.
21. Llewellyn CH. (1995), The Role of Telemedicine in Disaster Medicine. *Journal of Medical Systems*, 19:29–34.
22. Lovett JE and Bashshur RL (1979) Telemedicine in the USA: An Overview. *Telecommunications Policy*, 3–14.
23. Ong K, Chia P, Ng WL and Choo M (1995), A Telemedicine System for High-Quality Transmission of Paper Electrocardiographic Reports. *Journal of Telemedicine and Telecare*, 1:27–33.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

