

ANALYZING THE EFFECTIVENESS OF TELEMEDICINE IN DELIVERING MENTAL HEALTH SERVICES TO RURAL COMMUNITIES

Bendi Sairam¹, M Ramsagar Reddy², Rohin Rameswarapu³, Bhooma Venkata Ramana⁴

Received : 01/11/2023
Received in revised form : 07/12/2023
Accepted : 22/12/2023

Keywords:

Telemedicine, Mental Health, Rural Healthcare, Patient Satisfaction, Cost-Effectiveness, Accessibility.

Corresponding Author:

Dr. Bhooma Venkata Ramana,
Email: drramana0705@gmail.com.

DOI: 10.47009/jamp.2023.5.6.183

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 887-890



¹Assistant Professor, Department of Psychiatry, Government Medical College, Srikakulam, Andhra Pradesh, India.

²Associate Professor, Department of Community Medicine, Government Medical College, Srikakulam, Andhra Pradesh, India.

³Assistant Professor, Department of Community Medicine, Mallareddy Medical College for Women, Hyderabad, Telangana, India.

⁴Associate Professor, Department of Community Medicine, Government Medical College, Srikakulam, Andhra Pradesh, India.

Abstract

Background: Mental health services in rural areas face challenges like limited access and high costs. Telemedicine has emerged as a potential solution to these challenges, but its effectiveness in this context requires thorough evaluation. **Objective:** This study aims to assess the effectiveness, cost-efficiency, and accessibility of telemedicine in providing mental health services to rural communities, compared to traditional in-person therapy. **Material & Methods:** A sample of 100 individuals from rural communities participated in this study. The evaluation was based on five key parameters: patient satisfaction, treatment adherence, symptom reduction, cost-effectiveness, and accessibility improvements. Data were collected through surveys, treatment records, and financial analysis. **Results:** Patient Satisfaction: High levels of satisfaction were observed, with an average score of 8.2/10, and 85% of patients rating their satisfaction at 7 or above. Treatment Adherence: The average adherence rate was 92%, with 78% of patients showing more than 90% adherence. Symptom Reduction: Significant symptom reduction was noted, with average scores decreasing from 60 to 35 out of 100. 70% of patients experienced a reduction of 20 points or more. Cost-Effectiveness: Telemedicine sessions were more cost-effective, with an average cost of ₹500 per session compared to ₹800 for in-person sessions. The overall cost reduction was 37.5%. Accessibility Improvements: Telemedicine saved an average of 1 hour of travel time per session, with 90% of patients reporting easier access to care. **Conclusion:** Telemedicine is a viable, effective, and cost-efficient alternative for delivering mental health services in rural areas. It shows promise in enhancing patient satisfaction, adherence, and symptom management, while also reducing costs and improving accessibility. This study supports the integration of telemedicine into rural mental health care practices.

INTRODUCTION

The landscape of mental health services has been undergoing a significant transformation, particularly in the context of rural healthcare.^[1] Traditional in-person therapy, while effective, often encounters substantial barriers in these areas, including limited access to specialized care, travel-related challenges, and higher costs of service delivery.^[2] These barriers can lead to underutilization of mental health services, exacerbating the issues faced by individuals in rural communities. Telemedicine,

with its ability to provide remote healthcare services via telecommunications technology, emerges as a promising solution to these challenges.^[3]

The utilization of telemedicine in mental health, often referred to as telepsychiatry, has shown potential in bridging the gap between the need for mental health services and their availability in rural settings.^[4,5] This approach aligns with the increasing digitization of healthcare and the growing emphasis on making healthcare services more accessible and patient-centric. Telemedicine offers multiple advantages, including the reduction of travel time and costs, the convenience of receiving care at

home, and the potential to connect patients with specialists who might be geographically distant.^[6,7] However, the adoption of telemedicine in the realm of mental health care in rural areas warrants a thorough investigation. Key questions include its effectiveness in managing mental health conditions compared to traditional methods, its cost-efficiency, patient satisfaction, treatment adherence, and its overall impact on accessibility to care⁸. Addressing these questions is crucial to understand the viability and potential of telemedicine as a mainstream healthcare service in rural settings.^[9]

This study aims to evaluate the effectiveness of telemedicine in delivering mental health services to rural communities. By examining a range of parameters including patient satisfaction, treatment adherence, symptom reduction, cost-effectiveness, and accessibility improvements, the study seeks to provide comprehensive insights into the benefits and limitations of telemedicine in rural mental health care. The findings of this study are expected to contribute valuable information for healthcare providers, policymakers, and stakeholders in making informed decisions about integrating telemedicine into mental health service delivery in rural areas.

MATERIALS AND METHODS

Study Design and Period

This study employed a cross-sectional design, conducted over a one-year period from January 2022 to December 2022.

Study Setting

The research was carried out at the Government Medical College in Srikakulam, a region characterized by its rural demographics and unique healthcare needs. This setting provided an ideal context for examining the effectiveness of telemedicine in rural mental health care.

Participants

The study sample comprised 100 individuals from the surrounding rural areas of Srikakulam. Participants were eligible if they were aged 18 years or older, had access to a device capable of supporting telemedicine (such as a smartphone or computer with internet connectivity), and were seeking mental health services during the study period.

Data Collection Methods

Telemedicine Services: Participants received mental health services via telemedicine, which included video consultations, remote monitoring, and digital communication with healthcare providers.

Surveys and Questionnaires: Standardized tools were used to measure patient satisfaction and symptom severity. Satisfaction was assessed using a 10-point Likert scale, while symptom severity was measured using a standardized mental health symptom scale.

Treatment Adherence Records: Adherence was tracked through digital logs of telemedicine session attendance and completion.

Cost Analysis: Financial data were collected to compare the costs of telemedicine sessions against traditional in-person therapy costs. This included session fees and ancillary costs.

Accessibility Analysis

Data on travel time and ease of access to care were gathered through participant feedback and travel logs.

Statistical Analysis

Data were analyzed using appropriate statistical methods. Descriptive statistics were used to summarize the data. The effectiveness of telemedicine was assessed by comparing pre- and post-treatment symptom scores. Cost-effectiveness was evaluated by comparing the costs of telemedicine with traditional in-person therapy.

Ethical Considerations

The study was conducted in accordance with ethical guidelines. Participants provided informed consent, and confidentiality was maintained throughout the research process. The study protocol was reviewed and approved by the Institutional Ethics Committee, Government Medical College, Srikakulam, Andhra Pradesh, India.

RESULTS

Patient Satisfaction: This study demonstrates high levels of patient satisfaction with telemedicine for mental health services in rural areas. The average satisfaction score was notably high at 8.2 out of 10. Furthermore, a significant majority (85%) of patients reported a satisfaction score of 7 or higher. This indicates a strong positive reception of telemedicine services among participants (Table No: 1)

Treatment Adherence: The adherence to treatment via telemedicine was exceptionally high. The average adherence rate was 92%, indicating that the majority of the patients consistently attended their scheduled telemedicine sessions. Additionally, 78% of the patients showed an adherence rate of over 90%, suggesting that telemedicine facilitates a high level of engagement in mental health treatment (Table No: 2)

Symptom Reduction: The effectiveness of telemedicine in symptom management was evident. There was a substantial decrease in symptom severity post-treatment, with the average score dropping from 60 to 35 out of 100. This 25-point reduction signifies a clinically meaningful improvement. Moreover, 70% of patients experienced a reduction of 20 points or more, highlighting the potential of telemedicine in effectively managing mental health symptoms (Table No: 3).

Cost-Effectiveness: The economic analysis revealed telemedicine to be a cost-effective

alternative to traditional in-person therapy. The average cost per telemedicine session was ₹500, significantly lower than the ₹800 average cost for in-person sessions. The total cost for a patient undergoing telemedicine treatment (₹15,000 for 30 sessions) represented a 37.5% reduction compared to in-person therapy. These findings underscore the financial viability of telemedicine, especially in resource-constrained settings (Table No: 4).

Accessibility Improvements: Telemedicine significantly improved the accessibility of mental health services. On average, patients saved an hour of travel time per session. This aspect is particularly crucial in rural areas where access to mental health care is often limited. Additionally, 90% of the patients reported easier access to care, demonstrating that telemedicine can effectively bridge the gap in healthcare accessibility (Table No: 5).

Table 1: Patient Satisfaction

Parameter	Value
Average Satisfaction Score	8.2
Patients with Score ≥ 7	85%

Table 2: Treatment Adherence

Parameter	Value
Average Adherence Rate	92%
Patients with $>90\%$ Adherence	78%

Table 3: Symptom Reduction

Parameter	Value
Average Pre-Treatment Symptom Score	60/100
Average Post-Treatment Symptom Score	35/100
Patients with ≥ 20 -point Reduction	70%

Table 4: Cost-Effectiveness

Parameter	Value (INR)
Average Cost per Session for Telemedicine	₹500
Average Cost per Session for In-Person Therapy	₹800
Average Total Cost per Patient for Telemedicine	₹15,000 (30 sessions)
Percentage Cost Reduction Compared to In-Person	37.5%

Table 5: Accessibility Improvements

Parameter	Value
Average Travel Time Saved per Session	1 hour
Patients Reporting Easier Access	90%

DISCUSSION

The findings of this study provide valuable insights into the role of telemedicine in enhancing mental health care services in rural areas, specifically within the context of Government Medical College Srikakulam. The results reveal several key aspects that warrant discussion.

Effectiveness of Telemedicine: The high patient satisfaction scores (average of 8.2 out of 10) and the significant reduction in symptom severity (average score reduction from 60 to 35 out of 100) underscore the effectiveness of telemedicine. These outcomes suggest that telemedicine can be as effective as traditional in-person therapy in treating mental health conditions, especially in rural settings where access to mental health professionals is limited.^[10]

Treatment Adherence: The observed high treatment adherence rates (92% average adherence) indicate that telemedicine may facilitate better engagement with mental health services. This could be attributed to the convenience and accessibility of telemedicine, which reduces the barriers of travel

and time constraints that often hinder regular attendance in traditional settings.^[11]

Cost-Effectiveness: The study highlights the cost benefits of telemedicine, with a 37.5% reduction in costs compared to in-person therapy. This cost-effectiveness is a crucial factor in rural areas, where economic constraints can be a significant barrier to accessing mental health care. The lower cost of telemedicine sessions could make mental health services more accessible to a broader segment of the population.^[12]

Accessibility Improvements: The substantial travel time savings (1 hour per session) and the 90% of patients reporting easier access to care reflect the substantial impact of telemedicine on improving accessibility. In rural areas, where distance and transportation can be significant barriers, telemedicine provides a practical solution.^[13]

Implications for Policy and Practice: These findings have important implications for healthcare policy and practice. They advocate for the integration of telemedicine into mainstream mental health services, especially in rural settings. Policymakers and healthcare providers should

consider these benefits while planning and implementing mental health services.^[14]

Limitations and Future Research: While the study provides promising results, its limitations must be acknowledged. The focus on a single geographic area may limit the generalizability of the findings. Future research should involve a broader demographic and geographic scope to validate these findings further. Additionally, longitudinal studies would be beneficial to assess the long-term effectiveness and patient adherence to telemedicine.

CONCLUSION

Our study demonstrates that telemedicine is an effective, cost-efficient, and accessible method for delivering mental health services in rural areas. The high levels of patient satisfaction, adherence, and symptom reduction, coupled with economic benefits and improved accessibility, make a compelling case for the broader adoption of telemedicine in rural mental health care.

REFERENCES

1. Hand LJ. The Role of Telemedicine in Rural Mental Health Care Around the Globe. *Telemed J E Health*. 2022 Mar;28(3):285-294. doi: 10.1089/tmj.2020.0536. Epub 2021 May 31. PMID: 34061678.
2. Butzner M, Cuffee Y. Telehealth Interventions and Outcomes Across Rural Communities in the United States: Narrative Review. *J Med Internet Res*. 2021 Aug 26;23(8):e29575. doi: 10.2196/29575. PMID: 34435965; PMCID: PMC8430850.
3. Rajkumar E, Gopi A, Joshi A, et al. Applications, benefits and challenges of telehealth in India during COVID-19 pandemic and beyond: a systematic review. *BMC Health Serv Res*. 2023;23:7. <https://doi.org/10.1186/s12913-022-08970-8>.
4. Schaffer CT, Nakrani P, Pirraglia PA. Telemental Health Care: A Review of Efficacy and Interventions. *Telehealth and Medicine Today*. 2020;5(4). <https://doi.org/10.30953/tmt.v5.218>.
5. Perle JG, Nierenberg B. How Psychological Telehealth Can Alleviate Society's Mental Health Burden: A Literature Review. *J Technol Hum Serv*. 2013;31(1):22-41. doi: 10.1080/15228835.2012.760332.
6. Talarico I. The use of telehealth to increase mental health services access and promote medication adherence in rural locations. *J Am Assoc Nurse Pract*. 2021 Jan 8;33(11):1074-1079. doi: 10.1097/JXX.0000000000000495. PMID: 33463982.
7. Tarlow KR, McCord CE, Du Y, Hammett J, Wills T. Rural mental health service utilization in a Texas telepsychology clinic. *J Clin Psychol*. 2020 Jun;76(6):1004-1014. doi: 10.1002/jclp.22903. Epub 2019 Dec 10. PMID: 31820830.
8. Molfenter T, Heitkamp T, Murphy AA, Tapscott S, Behlman S, Cody OJ. Use of Telehealth in Mental Health (MH) Services During and After COVID-19. *Community Ment Health J*. 2021 Oct;57(7):1244-1251. doi: 10.1007/s10597-021-00861-2. Epub 2021 Jun 24. PMID: 34165695; PMCID: PMC8222700.
9. Zhou X, Snoswell CL, Harding LE, Bambling M, Edirippulige S, Bai X, Smith AC. The Role of Telehealth in Reducing the Mental Health Burden from COVID-19. *Telemed J E Health*. 2020 Apr;26(4):377-379. doi: 10.1089/tmj.2020.0068. Epub 2020 Mar 23. PMID: 32202977.
10. Langarizadeh M, Tabatabaei MS, Tavakol K, Naghipour M, Rostami A, Moghbeli F. Telemental Health Care, an Effective Alternative to Conventional Mental Care: a Systematic Review. *Acta Inform Med*. 2017 Dec;25(4):240-246. doi: 10.5455/aim.2017.25.240-246. PMID: 29284913; PMCID: PMC5723163.
11. Gros DF, Yoder M, Tuerk PW, Lozano BE, Acierno R. Exposure therapy for PTSD delivered to veterans via telehealth: predictors of treatment completion and outcome and comparison to treatment delivered in person. *Behav Ther*. 2011 Jun;42(2):276-83. doi: 10.1016/j.beth.2010.07.005. Epub 2011 Jan 27. PMID: 21496512.
12. Jakubowski KP, Jhamb M, Yabes J, Gujral S, Oberlin LE, Bender FH, Steel JL. Technology-assisted cognitive-behavioral therapy intervention for end-stage renal disease. *Transl Behav Med*. 2020 Aug 7;10(3):657-663. doi: 10.1093/tbm/ibz077. PMID: 31131853; PMCID: PMC7413192.
13. Stewart RW, Orengo-Aguayo RE, Cohen JA, Mannarino AP, de Arellano MA. A Pilot Study of Trauma-Focused Cognitive-Behavioral Therapy Delivered via Telehealth Technology. *Child Maltreat*. 2017 Nov;22(4):324-333. doi: 10.1177/1077559517725403. Epub 2017 Sep 4. PMID: 28868894.
14. Grubaugh AL, Cain GD, Elhai JD, Patrick SL, Frueh BC. Attitudes toward medical and mental health care delivered via telehealth applications among rural and urban primary care patients. *J Nerv Ment Dis*. 2008 Feb;196(2):166-70. doi: 10.1097/NMD.0b013e318162aa2d. PMID: 18277227.