INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD)
© 2026 IJNRD | Volume 11, Issue 3, March 2026 | ISSN: 2456-4184 | IJNRD.ORG

A REVIEW ON THE BENEFITS, CHALLENGES, AND BARRIERS OF TELEMEDICINE IN HEALTHCARE DELIVERY SYSTEM

[1]Dr. Neha Tiwari, [2]Dr. Girija Kumari,
[1]MBBS, MSC Student, [2]Assistant Professor,
[1]Department of Clinical Research, Amity University Haryana

Abstract: This study has been undertaken to evaluate the benefits and challenges of telemedicine in the healthcare delivery system. Technology is discussed in relation to ease of use for healthcare providers and patient use. Privacy issues were assessed concerning safety and surveillance. Method: A literature review was done using Google Scholar, PubMed, and other databases to find articles published between 2018 and 2026. Limits used to narrow the search were full text, peer reviewed, English language, human only, and dates between 2000 and 2025. Results: The literature search located 29 articles. Conclusion: The articles had mixed results for advantages and challenges at the healthcare provider level and the patient level. Issues with weak signals, misinterpreted data, and patient reading errors were assessed for safety issues, healthcare accessibility, and cost effectiveness were also discussed

IndexTerms **- Telemedicine, Telehealth, Barriers, Covid19**

1.INTRODUCTION

Telemedicine is the practice of medical service providers, such as physicians and other medical professionals, providing healthcare services through information and communication technologies that permit precise data and information to be exchanged between medical doctors and patients regarding the diagnosis, treatment, and prevention of various illnesses, as well as supporting patient counselling and health promotion (Abouzid et al., 2022). As defined by the WHO, telemedicine is the provision of healthcare, particularly in situations where distance is a significant concern, by all healthcare professionals utilizing information and communication technology to share accurate information for diagnosing, treating, and preventing illnesses and injuries and conducting research and assessments, as well as facilitating the continuous education of healthcare providers, all aimed at promoting the health of individuals and communities (Maroju et al., 2023). Particularly in the middle of the present COVID-19 pandemic, telemedicine is a service that is quickly developing to enhance access to high-quality, efficient, and affordable healthcare (Kichloo et al., 2020).

These services are being upgraded by cutting-edge technologies like artificial intelligence. But challenges still exist, such as gaps in digital literacy and worries about data security. To fully achieve the potential of telemedicine, we need to improve digital infrastructure, strengthen data protection, adapt platforms culturally, and raise digital literacy. For millions of rural Indians, the quality of life and access to healthcare can be greatly enhanced by the effective use of telemedicine (Aswini Ashokan, 2024). Both the general public and clinicians have access to mobile applications thanks to the increasing prevalence of mobile phones, and smartphones in particular (Randall & Winchester, 2022). Telemedicine practices reduce travel costs, save time, lower medical costs, and make it easier for the average person to see specialists without interfering with their daily obligations. They also provide clinical information and allow consultation and discussion between medical professionals and patients, regardless of the patient's location. Additionally, telemedicine increases the possibility of improved documentation and record-keeping (Agarwal et al., 2020). Telemedicine has proven to be an effective tool in a variety of health-related fields, such as screening, education, research, and direct healthcare delivery. Its uses include treating chronic illnesses like diabetes and hypertension, managing infectious infections like COVID-19, supporting rehabilitation initiatives, and involving caregivers in the care of people with disabilities. In order to better serve those in need of assistance, mental health services have also seen a growing movement toward teleservices, which use a variety of techniques like text-based communication and videoconferencing (Abd El Mawgod et al., 2024; Holčapek et al., 2023).

There have been innumerable pros and challenges/barriers of telemedicine. There is one use of telemedicine to monitor patients who had already received a diagnosis which was the main benefit, whereas the inability to provide privacy and security and the occurrence of medical errors as well as technology were the main drawbacks. Governments should legalize telemedicine by passing legislation that forbids its usage other than for medical decision-making or opinion-sharing between physicians (Yassa et al., 2022).

2.METHODOLOGY

A literature review was conducted using Google Scholar, Pub Med, and other databases to find articles published between 2000 and 2025. The words "telemedicine," "digital technology," "COVID-19," and "benefits" were used. The inclusion criteria were publications between 2000 and 2025, published works that are in English, and articles related to telemedicine in all contexts. We removed duplicates , works that were put down in languages other than English, unpublished works, and resources that did not have much to do with telemedicine. Figure 1 depicts the Preferred Reporting Items for Systemic Reviews and Meta-Analyses (PRISMA) method followed for the literature analysis.

3. REVIEW

Benefits of telemedicine

By removing geographical restrictions and enabling remote or rural consultations, telemedicine has completely transformed access to healthcare everywhere. In India, the eSanjeevani platform has been essential, particularly during the COVID-19 pandemic. Despite its advantages, telemedicine implementation is fraught with difficulties and obstacles. The purpose of this scoping review is to pinpoint these difficulties, obstacles, and enablers in the Indian setting (Arora et al., 2024). Although telemedicine has a lot of potential to improve remote healthcare reachability in India, there are several obstacles that must be overcome before it can be successfully used. It is crucial to strengthen the digital framework, improve digital literacy, standardize protocols, and create precise regulatory frameworks. Adoption of telemedicine can be further aided by teamwork and customized strategies that honor regional customs. For telemedicine to be used sustainably and effectively in India, ongoing research and public awareness initiatives are required.

Healthcare accessibility

Healthcare accessibility is an intricate term with several aspects, which includes people's capacity to receive healthcare services when needed. Affordability, accessibility, availability, accommodation, and acceptability are some of these crucial factors. The financial viability of medical related services and people's capacity to pay related expenses are related to affordability. The simple way to medical related services and their geographic vicinity are crucial aspects of availability. The presence of every kind of healthcare resource, such as staff and technology, to successfully meet patients' requirements is referred to as availability. The way health-related services are designed should be taken care of so that patients' limitations and preferences are reflected in accommodations. Acceptability assesses how well healthcare services meet patients' expectations and are culturally appropriate. There are many attributes, which include race, ethnicity, socioeconomic level, age, gender, handicap status, sexual orientation, gender identity, and place of residence, that continue to contribute to disparities in healthcare access. To guarantee that everyone, including underrepresented groups, has fair access to high-end quality healthcare, it is essential to address these discrepancies. To close current gaps, improvements to healthcare infrastructure, regulatory frameworks, and budget distribution are required (Anawade et al., 2024).

By providing people in remote or disadvantaged areas with access to necessary medical services, telemedicine has become a crucial instrument in improving geographic availability to healthcare and has the potential to significantly reduce health disparities (Ezeamii et al., 2024). Telemedicine has been shown to lower healthcare expenditures, improve drug reconciliation, and prevent exposure to communicable diseases—all of which are very important during public health emergencies like pandemics and emergencies (Chellaiyan et al., 2019; Soltane et al., 2024). However, numerous difficulties and barriers, including operational difficulties, communication barriers, regulatory barriers, infrastructure limitations, and legal restrictions, pose serious issues, especially for vulnerable groups like those with disabilities. Healthcare professionals must include tactics into their practices to interact with and assist these communities in order to increase access to telemedicine for underprivileged patients (Shende & Wagh, 2024), guaranteeing fair access to crucial telehealth services. To guarantee equitable and comprehensive access to telemedicine for everyone, it is also critical to address issues like digital literacy, the availability of essential equipment, communication tools, and legislative and regulatory hurdles (Anawade et al., 2024).

Cost effectiveness

In remote areas where access to face-to-face medical consultation may be restricted, telemedicine offers a promising way to provide affordable outpatient care (Maugeri et al., 2024). However, despite its potential advantages, obstacles like the initial expense of telemedicine deployment and the shortcomings of current payment methods make it difficult for it to be widely adopted, especially in smaller rural hospitals where its effects would be most noticeable. The distribution of expenses among stakeholders, the effectiveness of telemedicine in terms of patient satisfaction and good therapeutic outcomes, and the indirect savings gained through reductions in patients' lost productivity are the three main elements that determine how cost-effective telemedicine is. Compared to their urban populations, rural populations use telemedicine services at lower rates. Due to poor health and digital literacy, older people, those with lower incomes, and those with lower educational attainment are disproportionately affected. With the aim of overcoming financial obstacles, hospitals could extend grants and funding opportunities to the smallest remote sites. Healthcare providers should simultaneously take proactive measures to reach underserved communities and guarantee fair access to necessary telehealth services (Anawade et al., 2024).

By lessening travel-related charges and improving healthcare accessibility and efficiency, telemedicine can ease patients' financial constraints, especially in rural areas. However, despite its capacity, widespread adoption is hampered by issues including the upfront charges associated with telemedicine deployment and the restraint of current payment mechanisms, particularly for smaller rural institutions. Additionally, telemedicine use can be hampered by issues including low reimbursement rates, complicated licensing requirements, poor framework, and regulatory barriers, especially for at-risk populations like those with disabilities (Aihara et al., 2025). While telemedicine gives chances to remove obstacles and increase the reach of healthcare, these issues must be resolved to provide fair access for all patients, regardless of their living standards or financial situation. To overcome these obstacles and guarantee that telemedicine continues to be available to everyone who stands to gain from its revolutionary capacity, legislators and executives in the healthcare industry are actively working together (Anawade et al., 2024).

Barriers /challenges in telemedicine

Availability of health-related services is hampered by different issues, all of which add to the complicated picture of healthcare accessibility. Exorbitant out-of-pocket prices force many people to put basic needs before medical care, ultimately postponing vital treatment, which makes out-of-pocket healthcare charges a significant barrier, even for those with insurance. Furthermore, accessibility issues are made worse by transportation availability, especially in remote areas where people have restricted access to transportation infrastructure, making it difficult for them to get essential medical care. Health inequities are sustained by unspoken prejudices and institutional unfairness in the healthcare sector, which cause underprivileged people to shun healthcare and put off seeking treatment (Ezeamii et al., 2024). Additionally, even though telemedicine offers chances to increase the availability of healthcare services, it also brings with it a new set of difficulties, especially for people with disabilities, such as operational difficulties, infrastructure constraints, regulatory complexities, communication barriers, and legislative obstacles (Anawade et al., 2024).

Technological barriers

The digital divide is a major obstacle. Even while mobile devices and high-speed internet have been more widely available in recent years, access to these technologies is still restricted in many places. The digital gap may restrict patients' access to telemedicine treatments, especially in rural and low-income locations. Additionally, telemedicine platforms may be challenging for elderly folks and others with poor technological skills. For telemedicine to provide equitable access to healthcare services, closing the digital divide is essential (Shawwa, 2023). The lack of portable platforms like tablets, PDAs, and cell phones; the inadequate state of equipment and therapeutic devices at client counselling facilities; the flawed nature of human-machine communication or software; slow internet speeds; and unclear audio and visual communication. Issues with service bandwidth, inadequate health and telecommunications infrastructure, and restricted computer access (Ansarian & Baharlouei, 2023; Hadian et al., 2024, 2024).

Privacy and security concerns

Another significant obstacle to telemedicine is privacy and security issues. When utilizing telemedicine systems, healthcare providers must make sure that patient data is safe and secure. However, preserving security and privacy in telemedicine presents numerous difficulties. For instance, patients might use unprotected gadgets or internet connections, leaving them open to cyberattacks. Building confidence between consumers and healthcare providers in telemedicine requires addressing privacy and security issues (Shawwa, 2023). The utilization and sharing of patient data is crucial to AI-enabled telemedicine. Sensitive information loss and data breaches are possible in places with inadequate infrastructure and resources to enable data security and privacy (Sharma et al., 2023).

In general, people's trust and willingness to participate in digital health innovation, implementation, and/or assessment also seem to be impacted by worries about data privacy and security. Patients frequently needed guarantees that no unauthorized individuals or groups would be able to access their personal information. As an illustration, "we have encountered a limitation in communicating with patients about the protections in place for patient confidentiality and privacy." Care managers are the first-line healthcare professionals who respond to patient inquiries; yet, because they lack technical knowledge of the system, they have required extra assistance in answering patients' technical inquiries about data transmission and security.(Baines et al., 2022) Trust, which is thought to be especially challenging to create while talking online or discussing digital health breakthroughs that entailed data sharing online, was frequently tied to discussions about data privacy and security. Trust was frequently mentioned as being essential to promoting significant patient involvement and engagement, especially with regard to data sharing, and it may be a crucial topic for further research. It also seems to be crucial to make sure that everyone involved in informing patients and the public about digital advancements is well-supported and knowledgeable about data security and privacy. talking about developments in digital health that involved online data sharing. Trust was frequently mentioned as being essential to promoting significant patient involvement and engagement, especially with regard to data sharing, and it may be a crucial topic for further research. It also seems to be crucial to make sure that everyone involved in informing patients and the public about digital advancements is well-supported and knowledgeable about data security and privacy (Ansarian & Baharlouei, 2023; Baines et al., 2022; Scheibner et al., 2021).

Future of telemedicine

In the future, after completing a simple and fast registration process, patients will schedule an appointment with the physician of their choice. Patients will upload their medical history, verification documents, medical reports, and previous prescriptions rather than typing. An appropriate feature that enables the physician to develop an urgent care plan is the patient interface. It helps the doctor to decide by showing a summary of the patient's medical and personal records. Both emergent and non-emergent services can be promptly provided by mobilizing local healthcare resources. This will free up physicians to focus on complex, high-demand situations in person rather than low-level problems that may be addressed remotely. In the future, non-emergency circumstances will be discharged early, while emergency departments will employ video consultations to triage their patients. As a result, patient conditions are better, and there is less emergency diversion. To get ready for the future, several healthcare organizations are using telemedicine application software. It linked people seeking care at the remote institution with cardiologists. They will also supplement the standard system and reduce the time needed for follow-up sessions. The next big issue in virtual healthcare is remote patient management, which is creating a lot of opportunity for various companies (Haleem et al., 2021).

The use of telemedicine has been steadily rising, and it has great promise for improving patient disease management, increasing access to healthcare, and enabling monitoring between medical visits (Serper & Volk, 2018). Remote patient monitoring (RPM) is one of the most important anticipated developments in telemedicine. RPM helps people monitor their health by enabling them to utilize a device that transmits health information to their phone or tablet (Shende & Wagh, 2024) .Wearable Technology and Remote Monitoring: A new era of individualized healthcare is being ushered in via telemedicine. Fitbit Charge, Amazfit Bip, Garmin Vivosmart, smartwatches, and fitness trackers are examples of wearable technology with sensors that can continually monitor a variety of health variables and offer real-time data to patients and healthcare providers. With wearables, people can monitor things like blood pressure, heart rate, sleep patterns, and levels of physical activity (Hu et al., 2025; Khan et al., 2026). The development of developing technologies is closely linked to the future of telemedicine in emergency care. Rapid risk assessment and clinical decision support are made possible by the growing integration of artificial intelligence (AI) and machine learning into tele-triage systems. AI-driven solutions, for example, might prioritize high-risk patients for prompt intervention by analysing vital signs, symptoms, and medical history. Solar-powered telemedicine kits, mobile teleconsultation vans, and community-based hubs with minimal digital infrastructure requirements are examples of innovations targeted at low resource-situations (Idahor et al., 2025). In the years to come, we can anticipate a paradigm shift in healthcare delivery and payments as these technologies develop and become more integrated into healthcare systems (Shukla et al., 2025).

4. DISCUSSION

Since the start of the pandemic, telemedicine visits have been increasingly popular. The review emphasizes how important telemedicine is to improving access to healthcare. Through remote consultations, monitoring, and diagnosis made possible by technological improvements, telemedicine successfully solves a number of obstacles preventing people from accessing healthcare services. While round-the-clock availability improves temporal accessibility, telemedicine greatly improves geographic accessibility by extending healthcare reach to underserved and distant places. Additionally, telemedicine promotes health equity and enhances health outcomes by successfully reducing financial, social, and infrastructure barriers. Legislators should pass laws that encourage the use of telemedicine while protecting patient privacy and safety. Healthcare professionals must embrace telemedicine as a supplement to conventional care delivery models and incorporate it into their practices. At the same time, IT firms should keep coming up with new ideas to create user-friendly telemedicine platforms that meet the needs of patients and clinicians. By working together, stakeholders can take advantage of telemedicine's revolutionary potential, increasing healthcare accessibility and improving people's health and well-being everywhere.

With the aim of maximizing the delivery of telemedicine treatment, we should improve training programs for doctors and nurses. To evaluate the efficacy of telemedicine more thoroughly, include a wider spectrum of patients, including those from various socioeconomic backgrounds. To verify the validity and effectiveness of telemedicine in various settings, repeat this study in several medical facilities. To gain a better understanding of the long-term effects of telemedicine on patient experience, continue to monitor patient satisfaction. To determine whether telemedicine integration into emergency treatment is financially feasible, conduct a cost-effectiveness study. Additionally, using more recent platforms and technologies in telemedicine interventions, such as video consultations, to improve patient participation, accessibility, and dependability.

5. CONCLUSION

A crucial component of the healthcare system might be telemedicine. Telemedicine can provide effective, affordable, and dependable healthcare delivery to remote underprivileged areas, even though technology cannot completely replace in-person face-to-face consultations or emergency situations. Because it offers a chance for ongoing medical education and research, it is also an important educational resource for doctors worldwide. Applying telemedicine during the COVID-19 pandemic can lessen the strain on the healthcare system and lower the danger of the virus spreading. Telemedicine can play a critical role in pandemics. Our nations are unable to benefit from telemedicine due to several barriers. These concerns must be taken into consideration by the government and pertinent agencies. Regardless of whether they are in a big metropolis or a remote rural area, everyone has

the right to receive adequate healthcare while maintaining the privacy of the patient, and telemedicine can help us effectively accomplish this objective.

6. ACKNOWLEDGMENT

The authors are thankful to Amity University Haryana.

7. REFERENCES

[1] Abd Mawgod, M.M., Alshutayli, A.A., 2024. Awareness and perception of telemedicine among the general population in the central, northern, and western regions of Saudi Arabia. Cureus, e64895.

[2] Abouzid, M.R., Elshafei, S.M., Elkhawas, I. and Elbana, M.K. 2022. Applications of telemedicine in the Middle East and North Africa region: Benefits gained and challenges faced. Cureus, e26611.

[3] Agarwal, N., Jain, P., Pathak, R. and Gupta, R. 2020. Telemedicine in India: A tool for transforming health care in the era of COVID-19 pandemic. Journal of Education and Health Promotion, 9(1): 190.

[4] Aihara, H., Kawachi, I. and Sommers, B.D. 2025. Impact of telemedicine on health expenditures during the COVID-19 pandemic in Japan: Quasi-experimental study. Journal of Medical Internet Research, 27: e72051.

[5] Anawade, P.A., Sharma, D. and Gahane, S. 2024. A comprehensive review on exploring the impact of telemedicine on healthcare accessibility. Cureus, e55996.

[6] Ansarian, M. and Baharlouei, Z. 2023. Applications and challenges of telemedicine: Privacy-preservation as a case study. Archives of Iranian Medicine, 26(11): 654–661.

[7] Arora, S., Huda, R.K., Verma, S., Khetan, M. and Sangwan, R.K. 2024. Challenges, barriers, and facilitators in telemedicine implementation in India: A scoping review. Cureus, e67388.

[8] Ashokan, A. 2024. Telemedicine: Bridging the gap in providing primary care to rural area patients across India. Telehealth and Medicine Today, 9(5).

[9] Baines, R., Bradwell, H., Edwards, K., Stevens, S., Prime, S., Tredinnick-Rowe, J., Sibley, M. and Chatterjee, A. 2022. Meaningful patient and public involvement in digital health innovation, implementation and evaluation: A systematic review. Health Expectations, 25(4): 1232–1245.

[10] Chellaiyan, V., Nirupama, A. and Taneja, N. 2019. Telemedicine in India: Where do we stand? Journal of Family Medicine and Primary Care, 8(6): 1872.

[11] Ezeamii, V.C., Okobi, O.E., Wambai-Sani, H., Perera, G.S., Zaynieva, S., Okonkwo, C.C., Ohaiba, M.M., William-Enemali, P.C., Obodo, O.R. and Obiefuna, N.G. 2024. Revolutionizing healthcare: How telemedicine is improving patient outcomes and expanding access to care. Cureus, e63881.

[12] Hadian, M., Jelodar, Z.K., Khanbebin, M.J., Atafimanesh, P., Asiabar, A.S. and Dehagani, S.M.H. 2024. Challenges of implementing telemedicine technology: A systematized review. International Journal of Preventive Medicine, 15.

[13] Haleem, A., Javaid, M., Singh, R.P. and Suman, R. 2021. Telemedicine for healthcare: Capabilities, features, barriers, and applications. Sensors International, 2: 100117.

[14] Holčapek, T., Šolc, M. and Šustek, P. 2023. Telemedicine and the standard of care: A call for a new approach? Frontiers in Public Health, 11: 1184971.

[15] Hu, S., Song, D., Wan, S., Zhang, S., Luo, C., Li, N., Liu, G., Vasconcelos, J.D.G.E.S., De Carvalho, L.L.C., Neobísi, E., Da Costa, M.L.B., Etchu Takounjou, J., Neves, K.M.D., Dos Ramos Da Conceição, L., Da Costa Encarnação, M. and Zhao, L.Y. 2025. Digital health: Current applications, challenges, and future directions for enhancing healthcare quality and safety. Frontiers in Public Health, 13: 1646802.

[16] Idahor, C.O., Ogunfuwa, O., Ogbonna, N., Ogbeide, O.A., Abe, O. and Oore-ofe, O. 2025. Transforming emergency care through telemedicine: A narrative review. Cureus, e98481.

[17] Khan, P.A., Badole, P.J. and Shaikh, D. 2026. Telemedicine and digital health: The future for pharmaceutical companies and health care. Indian Journal of Pharmacology, 58(1): 24–34.

[18] Kichloo, A., Albosta, M., Dettloff, K., Wani, F., El-Amir, Z., Singh, J., Aljadah, M., Chakinala, R.C., Kanugula, A.K., Solanki, S. and Chugh, S. 2020. Telemedicine, the current COVID-19 pandemic and the future: A narrative review and perspectives moving forward in the USA. Family Medicine and Community Health, 8(3): e000530.

[19] Maroju, R.G., Choudhari, S.G., Shaikh, M.K., Borkar, S.K. and Mendhe, H. 2023. Role of telemedicine and digital technology in public health in India: A narrative review. Cureus, e35986.

[20] Maugeri, A., Barchitta, M., Basile, G. and Agodi, A. 2024. Public and research interest in telemedicine from 2017 to 2022: Infodemiology study of Google Trends data and bibliometric analysis of scientific literature. Journal of Medical Internet Research, 26: e50088.

[21] Randall, M.H. and Winchester, D.E. 2022. The new role of telehealth in contemporary medicine. Current Cardiology Reports, 24(3): 271–275.

[22] Scheibner, J., Sleigh, J., Ienca, M. and Vayena, E. 2021. Benefits, challenges, and contributors to success for national eHealth systems implementation: A scoping review. Journal of the American Medical Informatics Association, 28(9): 2039–2049.

[23] Serper, M. and Volk, M.L. 2018. Current and future applications of telemedicine to optimize the delivery of care in chronic liver disease. Clinical Gastroenterology and Hepatology, 16(2): 157–161.e8.

[24] Sharma, S., Rawal, R. and Shah, D. 2023. Addressing the challenges of AI-based telemedicine: Best practices and lessons learned. Journal of Education and Health Promotion, 12(1).

[25] Shawwa, L. 2023. The use of telemedicine in medical education and patient care. Cureus, e37766.

[26] Shende, V. and Wagh, V. 2024. Role of telemedicine and telehealth in public healthcare sector: A narrative review. Cureus, e69102.

[27] Shukla, R., Bagotia, H., Satish, P., Kamath, H.S., Chatterjee, S., Savariah, D., Kaulgud, V., Gobburi, H. and Acharya, S. 2025. Fintech and healthtech synergism: Pioneering a digital healthcare revolution for accessible, affordable, and effective patient-centered care. Journal of Family Medicine and Primary Care, 14(3): 820–824.

[28] Soltane, H.B., Lazrak, I., Chelly, S., Khrouf, M., Younes, S., Haddaji, O., Mahjoub, M. and Mezgar, Z. 2024. Place of telemedicine in the organization of emergency care: Feasibility and benefits. BMC Emergency Medicine, 24(1): 160.

[29] Yassa, H.A., Mohamed Hussein, A.A., Makhlouf, H.A., Makhlouf, N.A., Youssef, H.M.S., Sotohy, R.S. and Essa, A.A. 2022. Pros and cons of telemedicine in diagnosis and management: A cross sectional survey. Electronic Journal of General Medicine, 19(5): em394.