



International scenario and best practices of telemedicine in India: A Comparative Study

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Abstract

The amount of health care service delivery through digital platforms has grown due to recent technological breakthroughs, smartphone availability, and improvements in internet speed and data transfer. Telemedicine services are still not widely used or integrated in India because of a number of obstacles. Lacking of administrative and regulatory clarity around the use of technology for service delivery and health service providers' reluctance to accept new innovations are the main causes. The health care sector is presently going through a significant and permanent transition. Despite its sluggish expansion in India, telemedicine and e-health will soon be clearly performed in the majority of Indian hospitals as a separate department before finally merging into the corresponding medical specialty. The present state of telehealth and telemedicine in India is evaluated in this review. Lastly, relevant literature and official papers from the Health Ministry were reviewed. The use of technology to deliver medical services and information remotely, without requiring patients and healthcare professionals to be in close physical contact, is known as telemedicine. India is a perfect place for telemedicine because of its vast population and diversified terrain. In 1999, telemedicine operations were initiated. The global expansion of telemedicine has been expedited by the coronavirus disease 2019 (COVID 19) pandemic. Artificial intelligence (AI) has the potential to improve and broaden telemedicine's capacity to handle a range of healthcare requirements, including patient monitoring, healthcare information technology (IT), intelligent diagnosis, and support. Since then, a SATCOM-based telemedicine network has been implemented nationwide by the Indian Space Research Organization. A number of government organizations, including the Ministry of Health & Family Welfare and the Department of Information Technology, state governments, and India's top medical and technological institutes, have taken steps to offer high-quality healthcare facilities to the nation's rural and isolated areas. These obstacles seem to be eliminated by the telemedicine practice guidelines published in March 2020 and the telepsychiatry operational guidelines published in May 2020, which support fair access to medical treatment. The writers of this paper address the extent of these recommendations.

Keywords: - Digital Platforms, COVID-19, Government Agencies, Telemedicine, Information Technology, Ministry Of Health & Family Welfare, Health Care.

“Telemedicine is enhancing access, improving efficiency, and boosting outcomes in healthcare systems worldwide.”

— *WHO (2025 webinar)*

INTRODUCTION

The use of information and communication technology to deliver clinical medical treatment remotely is known as telemedicine. It can enhance access to medical treatments that are frequently unavailable in remote rural regions and assist remove barriers related to distance. In emergency and critical care settings, it is also employed to save lives.^{1,2} Despite having distant forerunners, telemedicine is mostly a result of information and communication technology developed in the 20th century.

Though slowly, telemedicine is gaining up in India. Recently, a few private telemedicine clinics and service providers (providing second opinions with their counterparts in the industrialized nations) have opened in major Indian cities. Due to the low cost and nearly universal accessibility to the internet, 12 web-based telemedicine options are becoming more and more popular. The Indian government's Ministry of Communications and Information Technology has designated "telemedicine" as one of the nation's top development priorities.

Telemedicine scenario in India

Indian doctors have not made extensive use of telemedicine for patient contacts. The growth of telemedicine services in India has been greatly aided by government agencies such as the Indian Space Research Organization (ISRO), Department of Information Technology (DIT), Ministry of External Affairs, MOHFW, and state governments. These organizations have created telemedicine connections between large urban hospitals and several rural communities. Some Indian patients may find using telemedicine intimidating, particularly those who are elderly, illiterate, and lack the technological know-how to use the aforementioned consultation platforms. However, with the advent of cellphones, even these individuals might obtain healthcare through the user-friendly FaceTime (accessible on iPhones) or WhatsApp applications.

Telemedicine and legal issues

The Indian Medical Council (IMC) Act has published the guidelines developed by the MOHFW. According to the IMC Act of 1956, the recommendations are intended for RMPs. RMPs must follow these criteria and finish a required online course within three years of being notified if they wish to practice telemedicine. The Board of Governors, which will eventually replace the Medical Council of India, will create and make accessible the online program.

Telemedicine and diabetes

Diabetes is a chronic condition that need regular doctor visits for lifestyle guidance and treatment modifications. Patients can communicate with their doctors via telemedicine from the convenience of their homes rather than hospitals, which may raise their risk of contracting the coronavirus. In addition to analyzing the patient's history and self-monitored blood glucose (SMBG) and self-monitored blood pressure (SMBP) readings, doctors can engage with the patient and offer recommendations.

Telemedicine in the time of COVID-19 for diabetes

The following suggestions, which are compiled from several recommendations and advisories, are helpful if a doctor intends to begin telemedicine for patients with diabetes. A few of these items have been modified from MOHFW recommendations. Only state licensed medical practitioners (RMPs) are permitted to use telemedicine in India, according MOHFW regulations. Additionally, MOHFW's guideline.

Telemedicine is anticipated to become increasingly significant in the Indian setting because to the COVID-19 epidemic, and the aforementioned insights may have significance for the doctors engaged in the fight. The Indian government has also lately highlighted the issue by releasing pertinent recommendations aimed at simplifying telemedicine. Since most patients would attend primary care doctors rather than specialists at secondary and tertiary care facilities in the absence of public transportation, primary care doctors are expected to play a significant role in this situation.

While telehealth is a more general term that encompasses all healthcare services provided through technology, such as remote monitoring, patient education, and medical record management, telemedicine

specifically refers to the delivery of healthcare services and consultations through remote technologies like videoconferencing. To put it another way, telemedicine is a subset of telehealth, which is a broader category of medical services provided via technology. Telehealth encompasses all facets of healthcare that may be provided by technology, including patient monitoring, illness management, and medication adherence, whereas telemedicine concentrates on virtual consultations and diagnosis.

LITERATURE REVIEW

Ramamohan, V. (2024) One of the most important tools for dealing with the problems of scarce medical resources in healthcare institutions is telemedicine. However, because of perceived obstacles, its implementation in healthcare is not fully achieved.

Jazan, K. S. A. (2013) Telemedicine is a concept in healthcare delivery that uses telecommunications technology to allow doctors to evaluate patients who live far away, particularly in rural regions.

Adarsh, A. (2025) Rapid digitization, increased internet access, and changing healthcare demands are driving a revolutionary change in India's telemedicine business. Telemedicine has become a feasible way to close the gap between urban medical knowledge and rural healthcare shortfalls because to the COVID-19 pandemic's rise in demand.

Gupta, R. (2020) Even though telemedicine has only sometimes been employed in Indian healthcare, the 2020 Covid-19 epidemic gave the country's health services a unique chance to work together to expand access and coverage.

Objectives of the study

- To assess telemedicine's present state in India.
- To assess the success of government programs such as eSanjeevani.
- To recommend best practices for enhancing India's telemedicine offerings.
- To suggest legislative actions for India's telemedicine industry to expand sustainably.

Scope of the study

This study's objective is to examine the global telemedicine landscape and best practices, with a particular focus on India's healthcare system. The provision of healthcare services via information and communication technology is known as telemedicine, and it has become a crucial tool for enhancing accessibility, cost, and quality of treatment, especially in underserved and distant areas. Strong telemedicine frameworks that prioritize patient safety, confidentiality of data, interoperability, and integration with traditional healthcare systems have been built internationally by nations including the United States, the United Kingdom, and Australia. These models emphasize best practices including standardized procedures, safe online platforms, qualified medical personnel, and unambiguous moral and legal standards.

The paper examines the development of telemedicine in India since the Ministry of Health and Family Welfare published the Telemedicine Practice Guidelines in 2020, which offered a framework for teleconsultation services both legally and practically. Along with crucial components including patient permission, identification, documentation, and clinical decision-making, these recommendations include a variety of communication channels, including text, voice, and video.

METHODOLOGY

In order to thoroughly examine the global situation and best practices of telemedicine in India, this study uses a mixed-method research strategy that combines both qualitative and quantitative methodologies. A thorough examination of scholarly publications, official reports, policy papers, and international telemedicine case studies has been used to gather secondary data. Using an organized manner or scoping

review approach to map trends, models, and results of telemedicine services, major databases including PubMed, Scopus, and Google Scholar were utilized to find pertinent research.

In order to comprehend adoption rates, accessibility, cost-effectiveness, and patient satisfaction levels, data from previous surveys, reports, and telemedicine usage statistics were examined for the quantitative component. To analyze patterns and trends, descriptive statistical methods were employed.

The qualitative component comprises thematic analysis of expert viewpoints, policy guidelines, and healthcare provider experiences, as well as case studies and best practice models from both developed and developing nations. Technology adoption, organizational difficulties, and user perceptions have all been examined in several studies using techniques including focus groups, interviews, and key informant interviews.

A comprehensive grasp of telemedicine growth, obstacles, and best practices in both international and Indian contexts is ensured by this integrated technique.

Telemedicine Practice Guidelines

On March 25, 2020, the Board of Governors, which replaced the Medical Council of India, published the Telemedicine practice guidelines for registered medical practitioners (RMPs). The rules allow RMPs to use technology to provide healthcare. The guidelines' objective is to provide RMPs with precise, useful guidance about the application of technology innovations in medical practice. The guideline is a crucial first step in setting up telehealth services nationwide. This document outlines the scope, terminology, standards, procedures, and methodology for implementing telemedicine services. When providing telemedicine services, the roles and duties of patients, RMPs, healthcare professionals, and telehealth platforms are clearly defined.

Before beginning the teleconsultation, RMPs are required to validate the patient's identity and age. Consent types and methods for obtaining consent for online consultation are explained. There is a distinct classification of first and follow-up consultations. There are guidelines for consultation between RMPs, between RMPs and healthcare professionals, and between RMPs and caregivers. For a certain kind of consultation, drugs are divided into many lists (List O, A, B, and forbidden). In teleconsultations, emergency procedures are outlined. If a clinical emergency is detected, RMPs are required to recommend the patient for prompt in-person consultations.

Telepsychiatry Operational Guidelines

The Telepsychiatry operating guidelines—2020 were released in May 2020 by IPS, TSI, and NIMHANS, Bengaluru. 5 Psychiatrists working in India are the target audience for this telepsychiatry reference guide. In contrast to the telemedicine recommendations, which also included audio and text-based consultations, the guidelines mainly address video-based telepsychiatry services. The recommendations are intended to enable psychiatrists nationwide to establish and carry out telepsychiatric services.

The recommendations outline the clinical situations in which the telepsychiatry consultation should be discontinued and the affected individual should be referred for in-person evaluation and treatment. The function of a psychiatrist in a cooperative telepsychiatric consultation with a medical professional is described.

FUTURE DIRECTIONS

The enormous treatment gap may be closed by creative use of current technologies in the provision of mental health services. To promptly and efficiently handle the complaints, a number of mental health regulating bodies might be brought online. These developments might increase accountability and openness.

Prospects for the Future and Possible Difficulties Health and Healthcare: Handling Mobile Technologies and Data Sharing

In the medical area, technologies like the Internet of Services provide up new opportunities by lowering risks and operating times. Improved understanding of COVID-19 infection levels is made possible by

technology. Physicians are able to predict patient results after treatment. These technologies have the intelligence to address a number of healthcare-related problems, including detection, process simulation, analysis, and therapy selection. In the upcoming days, virtual healthcare consultations will be easily accessible, eliminating the necessity for in-person interactions. A new age in medicine is being ushered in by doctors using Internet-connected technology to digitally monitor their patients in remote areas and solve several ongoing COVID-19 pandemic concerns. In an emergency, the monitoring systems offer patient care.

There are numerous potential advantages of telemedicine, but there are also many drawbacks. The primary disadvantages of telemedicine include problems with the quality of health data, organizational and logistical difficulties, a breakdown in the interaction between health professionals, and a breakdown in the interface between health professionals and their patients.

Lack of control once knowledge is shared, inadequate benefits for information producers or administrators, irrational advantages resulting from a more sophisticated technological background, and technical concerns about data consistency, interoperability, and misinterpretation risks have all been identified as barriers to data exchange in Africa. It is recognized that many of the technological difficulties have been essentially overcome. Anxiety, danger, and insecurity issues are less common in regions like Africa where data exchange may not be optimum. Additionally, ethical issues might not be as frequently addressed or acknowledged in these nations.

CONCLUSION

The significance of digital health as an integrated component of public health has been demonstrated by pandemics, particularly when social distance is necessary or a medical institution is overburdened with people. AI can fight COVID-19; compared to earlier techniques, AI-assisted detection is quicker, safer, and more accurate. AI has been shown to be useful in the battle against COVID-19 in the areas of protein structure prediction, therapeutic monitoring, awareness, social control, and digital health. With the exception of a few situations where in-person consultation and/or hospitalization are required, telemedicine gives us the chance to carefully treat patients with diabetes during the COVID-19 lockdown period.

These recommendations may serve as a catalyst for delivering health services directly to service users. The rules primarily aid in reducing the uncertainty in the legislation and streamlining the procedure, particularly when non-essential out-patient services are discontinued and transportation facilities are reduced.

These recommendations open the door to a framework that will enhance the provision of health care services in a safe, practical, and economical manner. Psychiatrists can consult with patients anywhere in the nation, facilitating quick and fair access to all regions. The rules increase the chance of keeping patient records and provide legal protection for all parties involved. The crucial next step is to successfully translate the guidelines' vision into clinical practice.

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