

Exploring Doctors' Views and Challenges in Adopting Telemedicine in India: A Qualitative Study

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Abstract

Background

The COVID-19 pandemic has rapidly catalysed worldwide adoption and implementation of telemedicine in India. However, healthcare professionals' acceptance, views, and experiences with this technology are crucial for successful integration and sustained use. This qualitative study investigated doctors' perspectives, challenges, and experiences in adopting telemedicine in India post-COVID-19. The findings provide insights for developing strategies to optimize its implementation in the Indian healthcare system.

Methods

This study utilised a qualitative research design, specifically in-depth interviews, to gather data from doctors practicing in various healthcare settings throughout India. The collected data was analysed using a thematic approach, which involved identifying and analysing recurring patterns and themes from the interviews. Purposive sampling was used to ensure representation from diverse specialties, experience levels, and geographical locations.

Results

From the doctors' perspectives, major challenges were observed in the adoption of telemedicine in India. Some of them are lack of physical examination, non-availability of comprehensive and suitable application to practise telemedicine, and the awareness of technology by the stakeholders. The challenges they face in implementing and integrating telemedicine into their clinical practice, concerns regarding privacy and data security, and their readiness for sustained telemedicine adoption.

Discussion

There are multiple factors which influence the telemedicine adoption in India. The findings indicate that telemedicine practices should resemble and be aligned with traditional clinical workflows for effective and long-term integration of telemedicine into the Indian healthcare system. The findings of this study will contribute to enhancing healthcare access, quality, and resilience, ultimately ensuring efficient delivery in the post-pandemic era.

Keywords: telemedicine practice, challenges in telemedicine adoption, telemedicine applications and technology, qualitative study, government policy on telemedicine.

INTRODUCTION

The COVID-19 pandemic has profoundly affected health care systems worldwide, necessitating a fundamental shift in health care delivery.¹ Telemedicine has emerged as a crucial solution for bridging the gap between patients and healthcare providers while adhering to social distancing measures.² In India, the pandemic has accelerated the adoption of telemedicine, providing access to health care for diverse and vast populations; however, it is essential to understand doctors' views, challenges, and experiences in adopting this technology for its successful integration after post-COVID-19.³

Existing research has primarily focused on quantitative studies or patient perspectives, with a scarcity of qualitative studies specifically exploring doctors' perspectives and challenges in adopting telemedicine in India post-COVID-19. India's unique cultural, socioeconomic, and infrastructure-related aspects can significantly influence telemedicine adoption and implementation. It has now become imperative to go beyond the immediate post-COVID-19 period and gain insights into the challenges and perspectives to optimize the integration of telemedicine into routine healthcare practices.⁴⁻⁶

Comprehensive strategies need to be developed to overcome the challenges identified in telemedicine adoption. A holistic understanding of the opportunities, barriers, and best practices for telemedicine adoption among doctors in India is vital for successful integration and long-term impact on healthcare delivery.⁷

STUDY DESIGN AND METHODS

To ensure a diverse range of perspectives, purposive sampling was employed to balance various physician characteristics such as gender and years of medical practice. Primary care doctors from different regions across India were selected to participate in semi-structured interviews. Notably, all the doctors who participated in the interviews had prior experience with telemedicine, although the duration of their engagement varied. Some doctors had recently adopted telemedicine within 2-4 months before their interviews, whereas others had been using it for longer. This approach allowed for a comprehensive understanding of telemedicine experiences and perspectives across different stages of adoption.

Data collection

Direct emails and LinkedIn invitations were sent to 400 doctors for interviews, aiming to gather diverse perspectives. Eventually, 40 doctors consented to participate in the study. Doctors participated in recorded video conversations for interviews that took place in the first quarter of the last year. The interviewer followed a semi-structured interview guide that ensured consistency, while allowing flexibility in exploring individual perspectives.

The interviews were audio-recorded to capture the conversations accurately and were later transcribed verbatim for further analysis. All the doctors voluntarily participated in the interviews and did not receive any compensation for their participation in the study. This ensured the integrity and unbiased insights and perspectives about the status of telemedicine in India.

We evaluated theoretical saturation to ensure comprehensive data coverage. The point of theoretical saturation signifies that no new themes or insights emerge from the data, indicating that data collection has reached a sufficient saturation point.⁵

Qualitative analysis

Following the approach outlined by Terry et al., thematic analysis was employed to extract meaningful themes from the data.⁸ Each interview transcript was thoroughly reviewed, with a line-by-line analysis to identify relevant codes describing telemedicine barriers and facilitators in India. For effective data management, EXCEL 21 was used to organize and categorize the extracted information.

DATA ANALYSIS

The participants represented a diverse mix of male and female respondents (52% males and 48% females). These respondents encompassed various medical practices in India, including Allopathy, Dentistry, Ayurveda, Homeopathy, and Naturopathy. Among the participants, 45% held Bachelor of Medicine, Bachelor of Surgery (MBBS) degrees or higher, and 20% completed the Bachelor of Ayurvedic Medicine and Surgery (BAMS). The remaining respondents possessed qualifications such as Bachelor of Naturopathy and Yogic Sciences (BNYS), Bachelor of Homeopathic Medicine and Surgery (BHMS), Bachelor of Dental Surgery (BDS), Master of Dental Surgery (MDS), and other related degrees.

Despite the introduction of online consultation through telemedicine in India as early as 2001, widespread adoption has always presented a challenge, likely due to limited awareness and engagement with the practice.⁹ To test this presumption, the survey included a question to understand when doctors became aware of telemedicine in India. The findings revealed that 65% of respondents became aware of telemedicine when COVID-19 emerged in India. In contrast, 35% of the respondents reported having some knowledge of telemedicine before the pandemic.

Table 1. Participant Characteristics

Characteristics of Participants		
	N	%
Gender		
Male	21	52%
Female	19	48%
Field of Medicine		
BAMS	8	20%
BNYS	2	5%
BHMS	4	10%
BDS	1	3%
MDS	3	8%
MBBS	14	35%
MBBS, MD	8	20%
Years in Practice		
0-4 Yrs	18	45%
5-8 Yrs	11	28%
9-12 Yrs	7	18%
> 12 Yrs	4	10%
Knowledge of Telemedicine		
Pre-COVID-Pre 2019	14	35%
Post-COVID Since 2019	26	65%
1st Telemedicine Consultation		
Pre-COVID-Pre 2019	6	15%
Post-COVID Since 2019	34	85%

Furthermore, the survey indicated that 85% of the respondents began using telemedicine services only after the COVID-19 pandemic necessitated restrictions on physical movements.

The following sections highlight the major themes that emerged during the interviews, providing insights into physicians' perspectives regarding the benefits and challenges of telemedicine in India.

Telemedicine helps in increasing doctors' practice

All 40 respondents were of the view that telemedicine is an excellent tool which allows them to expand their practice beyond their immediate regions, cities, and states, allowing patients from distant locations to access healthcare services that would otherwise be inaccessible.

As governments implemented physical distancing measures and restrictions on non-essential movements to contain the spread of the virus, telemedicine quickly emerged as a robust solution for delivering healthcare remotely. This shift in healthcare delivery has gained widespread acceptance and experienced significant growth.¹⁰ Approximately 65% believed that telemedicine usage continued to increase, even after COVID-19. However, 35% of respondents held a different perspective, as illustrated in Fig. 1.

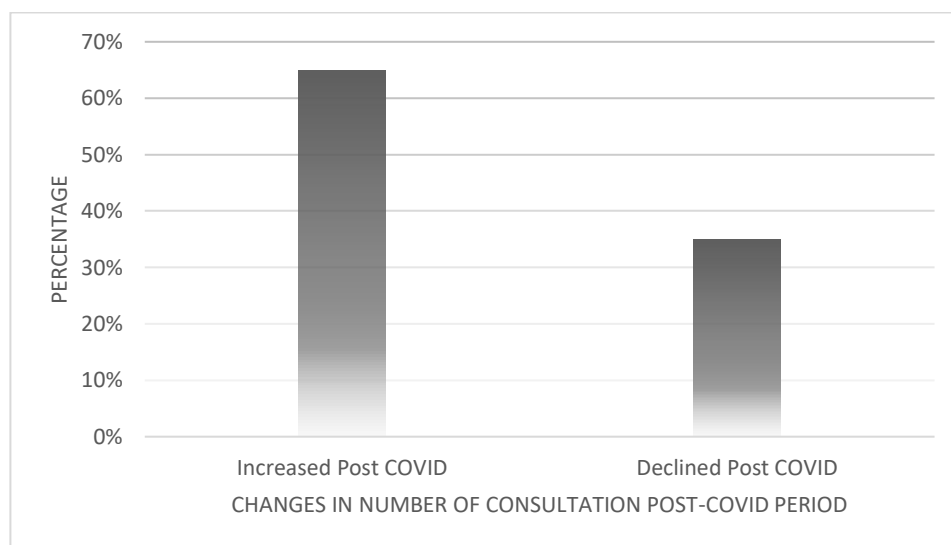


Fig. 1. Consultation Scenario Post-COVID

Studies and available data strongly indicate that the adoption and usage of telemedicine have remained consistently high even after the pandemic's peak.¹¹ To gain valuable insights into the current level of engagement with telemedicine, the survey revealed that 50% of respondents reported having more than 15 consultations per month. These consultations encompassed interactions with patients and consultations conducted through the employer's telemedicine platform. Additionally, 30% of doctors reported having 1-4 consultations per month, while 15% reported conducting 9-14 consultations monthly, as depicted in Fig. 2. These data provide valuable evidence for the continued and substantial utilization of telemedicine services by healthcare professionals in India.

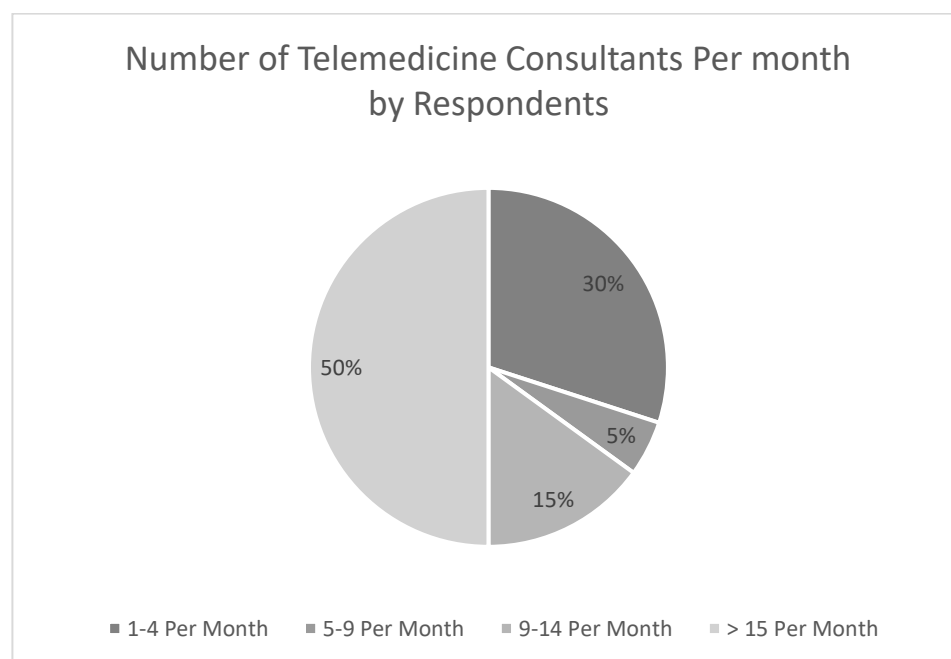


Fig. 2. Number of Telemedicine Consultants Per Month

The survey findings provided valuable insights into the factors contributing to the ongoing growth in telemedicine consultations. Approximately 43% of the respondents attributed the increasing demand to heightened awareness and understanding of telemedicine among patients and healthcare professionals. Furthermore, 40% of the respondents emphasized that telemedicine's ease of use and convenience significantly drove its continued growth. Another important factor that the survey identified was fear among patients visiting healthcare providers in locations susceptible to infections and the potential to transmit other viruses. This

concern accounts for the growth in telemedicine consultations as patients seek safer alternatives for receiving healthcare, as depicted in Fig. 3. These findings shed light on the key reasons for the sustained expansion of telemedicine, and highlight the benefits that continue to drive its popularity.

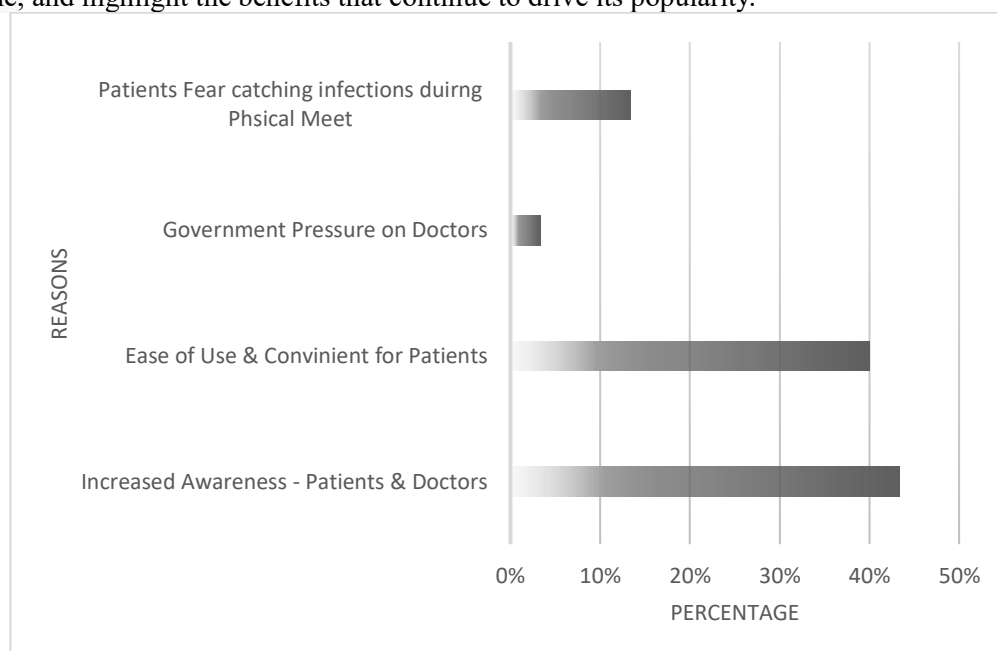


Fig. 3. Reasons for Growth in Consultations of Telemedicine Post-COVID

Telemedicine helps in improving patient care

Telemedicine is a valuable tool that improves patient care by enhancing access to healthcare, providing timely consultations, ensuring continuity of care, and empowering patients to actively participate in their healthcare journey.¹²

Regarding patient satisfaction with telemedicine consultations, 70% of the respondents expressed that they were generally satisfied with their online consultations, similar to their satisfaction with physical consultations. However, the remaining 30% believed that patients still gave more importance to conventional physical evaluation and consultation, resulting in lower satisfaction with telemedicine consultations.

When asked about the health issues or medical conditions most commonly addressed through telemedicine, nearly 50% of the respondents mentioned lifestyle and chronic health issues, such as diabetes and hypertension, as the primary focus of consultations. Patients often discuss sensitive topics, such as sexual health, which they may feel uncomfortable addressing during in-person consultations. Other health-related issues in telemedicine consultations include seasonal ailments, such as cough, cold, flu, dental, joint pain, hair, acne, and skin problems (Fig. 4).

Overall, the flexibility and effectiveness of telemedicine makes it an invaluable tool for providing healthcare services, addressing various health concerns, and meeting the needs of patients across different medical conditions and contexts.

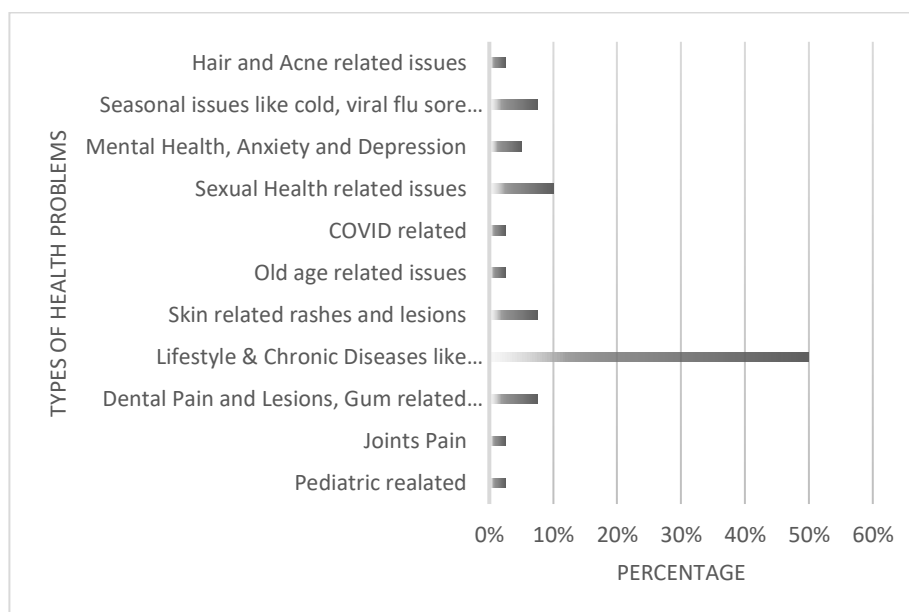


Fig. 4. Reasons for Telemedicine Consultation

When considering the challenges associated with telemedicine consultations, a significant proportion (approximately, 58%) of the respondents identified the inability to conduct a physical clinical evaluation as the major challenge. This limitation arises due to the remote nature of telemedicine, which restricts doctors from directly examining patients in person.

Furthermore, other challenges are more closely linked to doctors' practices and patients' preferences. These include doctors' adaptability to telemedicine practices and patients' willingness to virtually consult.¹³

In addition to these challenges, technology availability also affects the successful implementation of telemedicine. Respondents emphasized the need for proper internet connectivity and smartphones to participate in telemedicine consultations effectively.

Addressing these challenges is crucial to optimize the benefits of telemedicine. Efforts should be made to improve the technology infrastructure and ensure accessibility to reliable internet and smartphones, enabling a wider population to benefit from telemedicine services (Fig. 5).

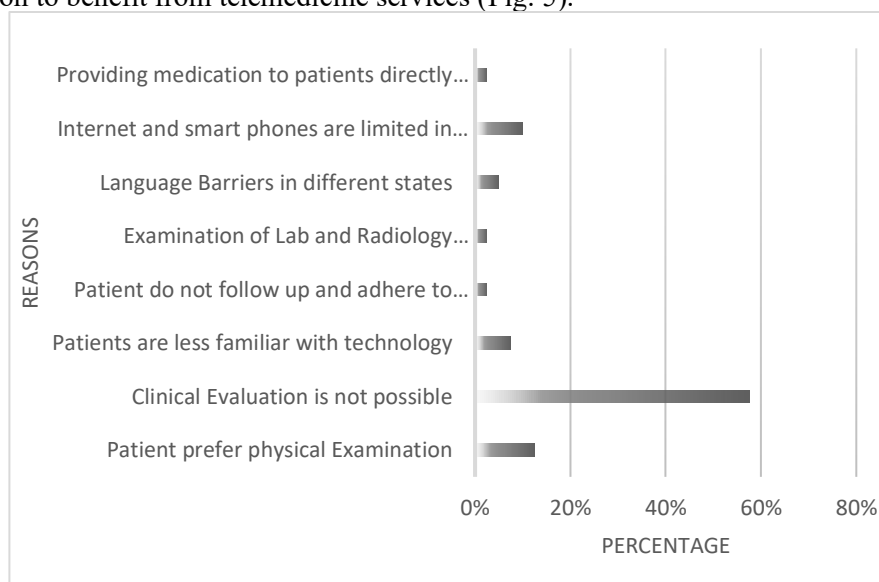


Fig. 5. Challenges Faced Using Teleconsultation

Despite these challenges, significant efforts are being made to address and overcome them in telemedicine. These endeavors include regulatory reforms, technological advancements, improved reimbursement policies, and ongoing research. Ongoing developments in regulations, technology, and policies will play a crucial role in shaping the future of telemedicine and will enable its widespread adoption in healthcare systems.¹⁴

Societal pressure to adopt telemedicine

Most doctors agree that during the COVID-19 pandemic, there was pressure to shift towards telemedicine due to restrictions on physical movement. Various factors contribute to this pressure, including patients' fear of contracting infections in physical outpatient departments (OPDs) and their inability to travel due to age-related issues. Approximately 58% of doctors still feel that there is ongoing pressure from society to continue telemedicine consultations. However, 42% of the respondents believed that there was no such pressure, and patients and doctors were now comfortable conducting physical consultations.

Several factors must be considered, including adequate infrastructure, regulatory support, privacy safeguards, and equitable telemedicine access. These measures are necessary to ensure that the benefits of telemedicine are realised for all members of society.¹³

Government policies and regulations on telemedicine

Providing a clear and supportive regulatory environment, regulations, and guidelines are crucial for mitigating the potential barriers and risks of telemedicine adoption. These measures foster trust, ensure quality care, protect patient interests, and promote the widespread adoption of telemedicine as a safe and effective healthcare delivery modality.¹⁵

When asked about their knowledge of any regulatory guidelines, framework, or communication received from Health Departments in the state or central government, 88% of the respondents admitted that they had not seen such communication. The remaining 12% confirmed that they received information either from third-party application providers or through medical conferences. However, the absence of clear guidelines affects decision making when selecting telemedicine consultations.

Addressing medico-legal concerns is crucial to instil confidence in healthcare providers and to ensure patient safety, privacy, and legal compliance in telemedicine adoption.¹⁶ When asked about the fear of medico-legal cases arising from telemedicine consultations, 52% of the respondents confirmed their fear, while 48% believed it was not an issue. The reasons shared by respondents for their fears included a lack of regulatory framework around telemedicine use, absence of physical examination, patients' reluctance to share complete medical details, lack of follow-up, and possible non-adherence to the diagnosis and prescription by patients.

To safeguard patient data privacy and security, telemedicine should implement robust privacy and security measures, adhere to regulations, and promote a data protection culture.⁵ This instils trust in patients, encourages wider adoption of telemedicine services, and ensures the confidentiality and integrity of patient information throughout the telemedicine process.¹⁷ There was a split among the respondents regarding the issue of patient health data privacy and security during telemedicine consultations. While half of them believe this is a concern, the other half does not concur. Some of the common reasons mentioned for this concern include a lack of trust in third-party applications, unclear regulations from the government on data management, and insecurity with cloud-based data storage used by some applications.

Patients' view on telemedicine

It is important to acknowledge that despite the growing acceptance and positive attitude towards telemedicine in India, challenges and barriers still need to be addressed. These include data privacy and security concerns, reliable internet connectivity in remote areas, technological literacy among certain patient groups, and cultural preferences for in-person consultations.³ Among the respondents, 55% believe that patients prefer telemedicine consultations over physical consultations due to the convenience and time saved from traveling to the outpatient department (OPD) from their location. Conversely, 25% of doctors believed that patients preferred online consultations, as telemedicine makes connecting and meeting with specialist doctors easier. Other motivations for telemedicine consultations included specific needs, such as COVID-related issues, OBGYN-

related issues, sexual health issues, old-age-related issues, and connectivity with remote and rural areas. These factors may restrict patients from traveling or may make them reluctant to attend face-to-face consultations.

It is important to note that the use of telemedicine during medical emergencies depends on the nature and severity of the situation. Traditional emergency medical services and in-person care remain essential in life-threatening emergencies that require immediate physical interventions. However, when remote assessment, guidance, and triage are feasible and appropriate, telemedicine can be a valuable tool to support healthcare providers and enhance patient care during medical emergencies.¹⁸ When asked if telemedicine consultations were conducted during medical emergencies, 74% of the respondents confirmed that they had. However, it is common for doctors attending these consultations during emergencies to encourage patients or caregivers to seek appropriate examinations at nearby healthcare facilities (Fig. 6).

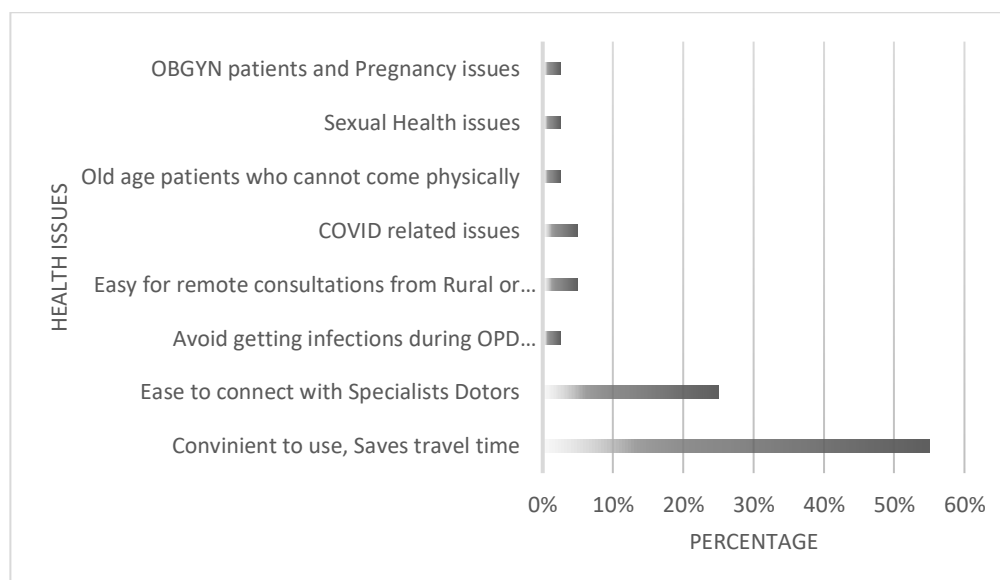


Fig. 6. The Reasons Why Patients Want Telemedicine

Technology in telemedicine

Telemedicine has the potential to address significant shortcomings in the healthcare system, particularly the scarcity of healthcare professionals and limited patient access to care.¹⁹ Respondents suggested developing guidelines to help doctors make informed decisions about the types of visits suitable for telemedicine versus in-person consultations. They also recommend establishing a 'virtual tech assistant' who collects medical history, organizes reports, and records patient vitals immediately before physician visits. Patients should also be encouraged to monitor their vital signs, such as blood pressure, pulse, temperature, and weight, and share measurements during telemedicine consultations. Furthermore, physicians should receive training to improve their diagnostic skills during telemedicine consultation.

Owing to the increasing popularity of telemedicine in India, developers and healthcare organizations have created dedicated applications to meet the growing demand for virtual healthcare services. These applications offer various features, including video consultations, online appointment booking, electronic health records, prescription management, and medication delivery.²⁰ According to the survey, phone-based services and various social messaging/video calling platforms, such as WhatsApp, Zoom Meeting, and Google Meet, were the preferred platforms for telemedicine consultations among respondents. Approximately 87% of participants reported using these channels for telemedicine consultation. Moreover, approximately 55% of the respondents acknowledged using one or more third-party applications to facilitate telemedicine consultation.

Although there are variations in the features and functionalities of different telemedicine applications in India, some commonalities can be observed. These common features provide a general overview, but it is important to note that each telemedicine application may have unique features, user interfaces, and additional services for patients to explore.²¹ Further, discussions with 22 doctors, who have experience using third-party telemedicine applications, revealed that the most commonly observed features in these applications were

appointment booking, video consultations, health data sharing, e-prescriptions, and online case papers. Some applications, such as Apollo Tele Health and Practo, offer additional features such as online test booking and medicine delivery.

DISCUSSION

The COVID-19 pandemic has led to a significant increase in the use of telemedicine due to restrictions on physical mobility.²² The literature review supports this rise in adoption, indicating that telemedicine utilization continues to grow even after the pandemic.¹¹ However, despite the substantial increase in adoption rates in India, there is a need to enhance telemedicine awareness and engagement among doctors and patients.²³ According to the research, 53% of the respondents expressed the need for increased awareness about telemedicine.

The insights provided by doctors in this study contribute to the existing literature by shedding light on the factors that influence the adoption of telemedicine among doctors in India.¹³ A significant finding indicates that telemedicine practices should resemble traditional clinical workflows, making the transition smoother and reducing the learning curve for adoption. This includes mirroring the patient's journey in an outpatient clinic from appointment booking to medicine delivery. It encompasses tasks such as sharing medical reports, managing queues, creating case histories, e-prescriptions, generating diagnosis papers, booking lab tests, sending follow-up reminders, providing referral options, and facilitating medical delivery. Most survey respondents emphasized the same, with an additional 10% expressing the need for further technological advancements to enable the online sharing of health reports and data.

The research findings align with the existing literature, emphasizing the importance of clear guidelines from the health department (government) regarding the proper utilization of telemedicine and ensuring patient data security and privacy, as confirmed by this study.¹⁴ Surprisingly, 88% of respondents reported not encountering such communication. Some of the remaining 12% received information from third-party application providers or from medical conferences. However, the lack of clear guidelines affects their decision making when selecting telemedicine consultations.

Table 2. Major Challenges, Benefits, and Suggested Strategies for Telemedicine Visits

Variables		Suggested strategies for telemedicine adoption
N	<i>Challenges</i>	
1	Telemedicine lacks physical examination.	Provide a medical assistant near the patient's location to accurately measure and capture patient vitals. Additionally, patients should learn to check their vitals (e.g., blood pressure, pulse oximetry, temperature, weight) and bring the measurements to the telemedicine consultation. Establish a 'virtual tech assistant' that collects medical history, aligns all reports, checks, and records patient vitals immediately before physician visits. Train physicians to refine their diagnostic skills when seeing patients via telemedicine.
2	Technology, awareness, and adoption are issues	To enhance telemedicine in the future, applications could be developed to include features such as patient reminders and communication, pharmacy home delivery, hospital bed booking, payment methods, record-keeping for medical history and consultation recordings, doctor referral options, and AI-based analysis of health records. Develop a telemedicine workflow similar to the outpatient department (OPD), providing a comparable experience to alleviate inhibitions regarding adoption. More organized telemedicine applications should be introduced and promoted to encourage more doctors to participate.
3	Patient's issues with adoption	The video consultation on the telemedicine application should be user-friendly, similar to commonly used platforms such as WhatsApp, Google Meet, and Zoom. Develop guidelines for doctors to determine which consultations suit telemedicine versus in-person.

		Both private and public telemedicine providers should create more awareness by discovering additional use cases and implementing positive word-of-mouth marketing strategies.
		Telemedicine should be promoted more for elderly patients, individuals with physical disabilities, and those who cannot travel to meet doctors physically.
		Promoting more specialist doctors on telemedicine will attract patients.
4	Regulatory issues impeding adoption.	Clear guidelines on telemedicine should be established by the health department (government). Regulations around medico-legal cases and patient health data management for telemedicine will reduce doctors' anxiety regarding adopting telemedicine.
	<i>Benefits</i>	
5	Patients' care with telemedicine	Mass media should create more awareness of telemedicine, emphasizing the benefits of different use cases. Emphasis should be placed on conducting follow-ups of offline consultations through telemedicine.
6	Telemedicine application	The user interface should be easy to use and similar to commonly used applications. A single government-approved application providing a single window for patients to connect with doctors will enable more customers to come on board and use telemedicine easily.
7	Health data privacy and security	Clear patient data security and privacy guidelines will increase patient trust and encourage adoption.

In India, patients and doctors use various telemedicine applications for online consultation.²³ The analysis of the responses from this study highlights a strong desire for a unified, user-friendly, and government-approved platform. This finding opens up future possibilities for investigating the consolidation of telemedicine applications into a government-governed and approved platform.

Understanding how to enhance telemedicine interactions and address the feelings of loss experienced by patients and doctors due to the absence of physical touch during these visits is crucial.²⁴ This finding holds significant importance, and additional studies should explore potential solutions for the clinical assessment of vital signs through telemedicine. Developing a technology, capable of capturing essential patient vitals, such as blood pressure, sugar levels, pulse oximetry, and body temperature, is important. Thus, telemedicine doctors can comprehensively understand their 'patients' health status, similar to physical consultations, as shown in Figure 7.

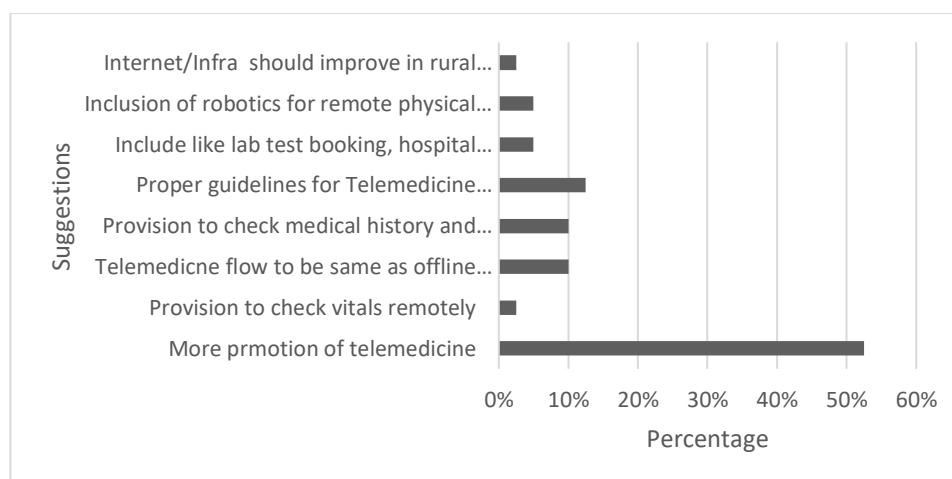


Fig. 7. Improvements Suggested in Telemedicine

This study has some limitations. Interviews were conducted and the participants included doctors from various practice settings. However, we needed to gather data on the frequency of offline consultations conducted by the doctors. This information would have been valuable in understanding the overall impact of telemedicine on their practice.

Additionally, we need to assess the extent of doctors' training in conducting telemedicine visits and their familiarity with video platforms for telemedicine purposes. However, due to the small number of doctors included, we needed to understand the benefits and challenges of telemedicine among practicing doctors.

CONCLUSIONS AND IMPLICATIONS

In conclusion, the COVID-19 pandemic has resulted in a significant increase in telemedicine utilization, primarily owing to limitations in physical mobility. There is a pressing need to enhance telemedicine awareness and engagement between doctors and patients. This study highlights the crucial role of collaboration between private and public entities in promoting telemedicine's advantages and facilitating its widespread adoption.

The research findings shed light on the factors influencing telemedicine adoption among doctors in India, particularly emphasizing the importance of aligning telemedicine practices with traditional clinical workflows. This study underscores the significance of clear guidelines from the health department to ensure appropriate utilization of telemedicine while safeguarding patient data security and privacy. The research also revealed the demand for a unified and user-friendly telemedicine platform approved by the government. This platform can consolidate existing applications and guarantee data security.

Furthermore, this study highlights the importance of evaluating the impact of absence of personal touch on telemedicine interactions and exploring solutions for remotely assessing vital signs. The development of technology capable of capturing and transmitting crucial patient vitals will enable telemedicine doctors to effectively assess the health status of their patients.

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