

A REVIEW OF TELEMEDICINE IMPLEMENTATION IN INDIA

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in

Hospital and Health Management

by

Tanvi Singhvi

Under the Supervision and Guidance of

Dr. Vidya Bhushan Tripathi

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CERTIFICATE

This is to certify that **Dr. Tanvi Singhvi** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her/his internship at IIHMR University during Mar 10 - May 31, 2025.

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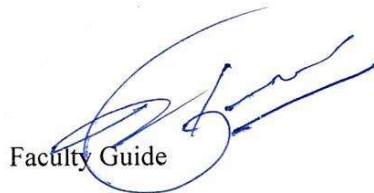
Date: 16 June 2025

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CERTIFICATE

This is to certify that the dissertation titled **A Review of Telemedicine Implementation in India** is a record of the research work undertaken by **Dr. Tanvi Singhvi** in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision, and her approach to the research to the research study has been sincere, scientific, and analytical.

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Faculty Guide

IIHMR University, Jaipur

Date 12-06-2025

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School Dean

IIHMR University, Jaipur

Date 12-06-2025

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **A Review of Telemedicine Adoption in India** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

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Dr. Tanvi Singhvi

Date: 16 June 2025

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Abstract

The integration of telemedicine into India's healthcare system has emerged as a promising solution to address the country's longstanding challenges in healthcare accessibility, affordability, and equity. This dissertation explores the factors influencing the adoption of telemedicine services in India, analyzing barriers, facilitators, and demographic variations through a systematic review of 12 research studies published between 2019 and 2024. The study adopts a qualitative and thematic synthesis approach, reviewing peer-reviewed journal articles, empirical studies, and policy analyses that examine the perceptions, usage patterns, and challenges of telemedicine across various regions in India.

The results reveal that perceived usefulness and ease of use, as conceptualized by the Technology Acceptance Model, are critical determinants of telemedicine adoption. Trust in healthcare providers, digital literacy, and cultural perceptions further shape user engagement. Socio-economic status, including income and education levels, significantly influences adoption patterns, with rural populations, the elderly, and women in conservative settings facing greater barriers. Key challenges include technological constraints, limited digital literacy, data privacy concerns, and legal ambiguities. Conversely, facilitators such as government-supported platforms like eSanjeevani, positive physician recommendations, and the COVID-19 pandemic's role in accelerating digital health solutions have contributed to increased acceptance.

The discussion emphasizes the need for culturally sensitive designs, digital literacy initiatives, robust legal frameworks, and integrated policy support to ensure equitable access to telemedicine services. The conclusion highlights that while telemedicine holds immense potential to transform healthcare delivery in India, its long-term success requires addressing infrastructural, socio-economic, and legal barriers. Future research should focus on longitudinal impact studies, user-centered design innovations, and the development of regulatory frameworks that protect patient rights while fostering trust. This dissertation contributes to a deeper understanding of telemedicine adoption in India and provides recommendations for strengthening its integration into the healthcare system.

Keywords: Telemedicine, adoption, barriers, facilitators, India, Digital health

Introduction

India with its large geography and very diverse population puts forward great issues in the delivery of equal health care. We see a great issue between health care in urban and rural areas which is a long standing problem, with rural areas that are often left with insufficient medical facilities and health care professionals. In this setting Telemedicine has put forth as a very promising solution to close the health care gap, which uses technology to deliver health care remotely.

In the early 2000s we saw the introduction of telemedicine in India, but what the COVID 19 pandemic did was act as a catalyst for its wide scale adoption. Health care facilities were burdened and there was a need for social distance which in turn pushed for other methods of care which telemedicine proved to be. Also we report that which a study published in BMC Health Services Research found out -- telehealth played a key role during the pandemic which saw remote consultations grow in many medical fields and also they made a case for how this method of health care has the ability to bridge the gap between rural and urban health care with what is proven to be a more cost effective and accessible model.

Telemedicine which is the delivery of health care services via information and communication technologies (ICT) across distances has been a part of the Indian health care setting since the early 2000's. The Indian Space Research Organization (ISRO) was at the fore front of this early adoption which saw them roll out pilot projects that connected rural hospitals with urban specialist centers using satellite communication. Although these early efforts were innovative they had issues with scale up which in large part was a result of technology issues, limited internet access, and a lack of supportive policy which in turn saw telemedicine stay a niche service which mostly saw action in specific projects as opposed to becoming a main stream health care delivery model.

The incept of the change which came with the launch of Digital India initiative in 2015 did see the introduction of measures to improve digital infrastructure and bring the internet to the masses. Also we saw the large scale roll out of affordable smart phones at the same time as the growth of 4G networks which in turn created the right environment for the growth of telehealth. While we had seen some adoption of telemedicine pre 2020 what really pushed the adoption of the sector in India was the COVID 19 pandemic. We had lock downs, over crowded hospitals and the need for social distance which made virtual consultations a need not a choice. In

response the Ministry of Health and Family Welfare put forth the eSanjeevani platform in 2020 which is a free government supported telemedicine service that was put in to provide equal access to health care. By 2024 eSanjeevani had reported over 340 million consultations which is a great achievement in the health care transformation of India.

Private sector companies also played a key role in the growth of telemedicine. We saw the like of Practo, Apollo 24/7, and Tata Health which provided teleconsultation services in all specialities we had at that time which also included online prescriptions, diagnostics, and what today we would call home delivery of medical products. In 2020 the Government issued Telemedicine Practice Guidelines which gave telehealth the stamp of approval which included the issues of patient consent, scope of practice for telehealth professionals and also prescription rules.

However at the same time we have seen great success in implementation of telehealth that is not the case for all. We still see large gaps in digital literacy which play a role in who adopts telehealth we see this especially in rural and senior populations. Also we have infrastructure issues which play a large role in access to telemedicine we see this in the form of unreliable internet in remote areas which in turn disrupts use of telemedicine platforms. Also we have issues with data privacy, security risks, and legal issues which add to the complicity of the telemedicine environment. Also it is a fact that telemedicine has its' limits in what it can do -- we see this in the need for physical exam, diagnostic testing, and performance of complex procedures which at present time can't be done via a screen.

Government programs have put in place which have been very much into promoting telemedicine. In the launch of eSanjeevani which was done by the Ministry of Health and Family Welfare we see that which is the beginning of very large scale adoption of digital health care solutions. As reported in The Times of India which also notes that over 340 million telehealth sessions have taken place in the Indian free telemedicine service which is a great indicator of its wide reach and impact.

Despite growth in the field we see that the introduction of telemedicine in India has had its issues. We have technology based issues like poor internet access in rural areas which disrupts the flow of telehealth services. A study published in The Lancet Regional Health Southeast Asia puts forth the case for what they term context aware technology based solutions to overcome these issues and thus improve health care via telemedicine in India.

Also in many parts of the world telemedicine is a grey area legally. A report we have which is in PubMed reports that we require definitive legal structures which in turn will protect health care providers and also patients which in turn will support ethical and responsible practice in the field of telemedicine.

There are also problems for healthcare providers in embracing telemedicine. Telemedicine reduces infectious risks, but doctors still face challenges related to insurance and charging less to patients, a study in Health Policy and Technology points out.

Additionally, telemedicine can only succeed if there are sustainable business models that keep it both affordable and able to grow. For telemedicine to achieve its greatest benefits in India, the government should initiate public-private collaborations, invest in infrastructure and set clear rules.

The purpose of this dissertation is to explain how telemedicine works in India, assessing both its positive effects and complex problems. To understand what makes telemedicine services work or not, the study studies case studies, government plans and what stakeholders think. To sum up, the study seeks to help the ongoing discussion on how telemedicine can equally provide good quality health services to all Indian residents.

Chapter 2: Literature Review

Table 2.1: Summary of the Studies Included in the Review

S. No.	Authors (Year) & Title	Study Location	Sample Size	Sampling Technique	Salient Features
1	Eslavath Rajkumar et al (2023) “Applications, benefits and challenges of Telehealth in India”	India-wide	N/A	Systematic Review	Explored telehealth’s role during and post-COVID-19, identifying critical challenges such as digital literacy, internet access, and integration with existing systems.
2	Rahul E et al (2024) – “Telemedicine in India: Transforming Patient Access”	India-wide	500	Random Sampling	Evaluated telemedicine’s impact on patient access and satisfaction; found improved satisfaction but barriers in elderly adoption and

					internet connectivity.
3	Biswanath Ghosh Dastidar et al (2024) – “Exploring Telemedicine for Primary Healthcare”	India-wide	400	Stratified Sampling	Reviewed telemedicine’s role in primary healthcare; identified need for culturally sensitive, context-aware solutions and lack of cost-effectiveness data.
4	Aparna Venkataraman et al (2023) – “Facilitators and Barriers for Telemedicine Systems in India”	India-wide	450	Random Sampling	Synthesized stakeholder perspectives; identified infrastructure, regulatory, and cultural barriers to telemedicine scalability.
5	Vikranth H Nagaraja et al (2024) – “Perspectives and Use of Telemedicine by Doctors in	Multi-state (India)	400	Cross-sectional Survey	Explored doctors’ perceptions post-2020 guidelines; highlighted benefits like infection risk

	India”				reduction, but issues with insurance coverage and low digital literacy among patients.
6	Satvik N Pai et al (2023) – “Understanding Medico-Legal Aspects of Telemedicine in India”	India-wide	N/A	Literature Review	Provided an overview of legal and ethical concerns in telemedicine; emphasized the need for clear frameworks and training for practitioners.
7	Saxena et al. (2024) – “Reimagining India's National Telemedicine Service (eSanjeevani)”	India-wide	350	Convenience Sampling	Examined the eSanjeevani platform; identified scalability challenges, sub-optimal integration, and training gaps for healthcare workers.
8	Splinter, M. J. et al (2024) – “Patient	India-wide	320	Mixed Methods	Proposed a maturity model for

	perspectives on telemedicine during the COVID-19 pandemic”				teleconsultation platforms in India; highlighted the need for continuous monitoring and adaptability to user needs.
9	Yashoda Devi et al – "Digital Transformation and Rural Healthcare Disparities: A Mixed-Methods Approach"	Rural India (multi-state)	450	Stratified Random Sampling	Studied rural healthcare disparities; found that digital tools, including telemedicine, reduce access gaps but require parallel improvements in digital literacy and infrastructure.
10	Times of India (2025) - "Telemedicine Boost: Over 1,800 Patients Benefit from Free Expert Consultation”	Nagpur	1,821	Not specified	Highlighted the rapid growth of telemedicine in Telangana, benefitting millions including those

					in remote and tribal areas.
11	Yankappa et al. (2024)	India	79	Prospective Observational	Described a successful initiative providing free expert consultations to economically disadvantaged patients in Nagpur.
12	Gopalan et al. (2025) – “A study on the legal complexities surrounding medical negligence in telemedicine in India”	Chennai	400	Structured Questionnaire	Covered the Prime Minister’s emphasis on the role of technology and telemedicine in improving health outcomes and accessibility in India.

Chapter 3: Methodology

3.1 Study Design

This research reports on a study which conducted a systematic literature review as the main method of research into telemedicine in India. We chose this approach to collect and synthesize present data which looks at telemedicine success and challenge issues all over the country. We did this to bring out major trends and also specific issues which by pooling relevant studies, we were able to compare results and determine both large scale patterns and also the different variables which play a role in telemedicine's adoption. Also this method reduced subjectivity and we ensured that our results are based on an in depth analysis of the current and relevant literature.

3.2 Eligibility Criteria

To ensure relevance , some inclusions and exclusion criteria were established:

Inclusion Criteria:

- **Geographical Relevance:** Studies should report on telemedicine in India or Indian populations which in turn will ensure cultural and contextual relevance.
- **Publication Source:** Only studies from indexed and peer reviewed journals were included for this which is to maintain scientific rigor.
- **Content Focus:** Studies reporting on the roll out of telemedicine which also look at what factors play a role in success, what barriers we see, technology adoption, patient and provider points of view, policy impact, and results of telemedicine use.
- **Publication Date:** Articles which cover the time frame of January 2020 to December 2024 which include the latest developments and tech advances.

Exclusion Criteria:

- **Scope:** Studies out of the scope of telemedicine that which looked at other digital health tools or health technologies were excluded.

- Publication Type: Non peer reviewed articles which include opinion pieces, editorials, and non scientific reports were left out.
- Geographical Relevance: Research which includes non Indian data was left out.
- Publication Date: Studies that predate 2020 were left out to keep the review current.

3.3 Information Sources

To determine relevant literature we searched through many databases and sources which included:

- Databases: PubMed, Scopus, Web of Science, Google Scholar, and IEEE Xplore were used for medical, technological, and health care research.
- Registers: Clinical research databases of which focus is on ongoing or past studies related to telemedicine in India.
- Websites: Official health organizations' sites which included WHO, Ministry of Health and Family Welfare (MoHFW) in India, NITI Aayog, and ICMR were looked into.
- Reference Lists: References from the included articles were identified for more relevant studies.
- Other Sources: Government reports, policy papers, and official white papers on telemedicine adoption in India were looked at.

3.4 Search Strategy

The search strategy we designed is very thorough.

- Keywords and Phrases: Key terms used were “telemedicine implementation, “telehealth, “digital health in India, “issues with telemedicine, “success stories in telemedicine, “barriers to telemedicine, and “telemedicine adoption in India.
- Filters: Publication time frame was between 2020 -2024 and we included only peer reviewed journals. Also we did not include studies which looked at populations in India.

- Boolean Operators: The search used AND, OR, and NOT to fine tune results across many databases.
- Search Fields: Title, abstract, and keywords were used which in turn helped to identify relevant studies.

For example: a typical query on PubMed might be: ("telemedicine implementation" AND "India") AND ("success" OR "challenges" OR "barriers" OR "facilitators") AND [2020-2024]

3.5 Selection Process

The selection of studies involved:

- Initial Screening: Titles and we screened for relevance to the inclusion/exclusion criteria.
- Full-Text Review: Potentially appropriate studies were reviewed in full.
- Consensus: Discrepancies and uncertainties were discussed with academic mentors and peers.
- Automation Tools: No machines were used; we did a manual review which included in depth assessment of each study.

3.6 Data Items

Data extracted from each study included:

Outcomes Sought:

- Implementation Successes: Metrics and results of successful telemedicine programs, patient outcomes, and health care delivery improvements.
- Challenges and Barriers: Identification out to issues like tech constraints, regulatory issues, socio economic barriers, infrastructure deficits, and user resistance.
- Enablers: Supportive policies, technological advances, training programs, and patient/provider buy in.

Other Variables:

- Participant Characteristics: Age, sex, social economic status, educational background, urban/rural distribution.
- Intervention Details: Type of telehealth service (consultation, diagnosis, remote monitoring), technology used, health care settings.
- Funding Sources: Information on corporate support which may cause bias.
- Assumptions for Missing Data: Any reported missing or imputed data.

This in depth data analysis which covered many aspects provided a comprehensive picture of telemedicine implementation in India across many different settings.

3.7 Summary

This is a systematic and open approach we have taken to the in depth study of telemedicine implementation in India. We followed very specific inclusion and exclusion criteria, we used a wide range of information sources, and we did very careful data extraction and analysis which in turn we used to present a current and balanced picture of telemedicine's success and which also we hope will guide future research and policy in Indian health care.

3.8 Key Research Questions

1. What are the predominant factors contributing to the successful implementation of telemedicine in India?
2. How do socio-economic, cultural, and technological variables influence telemedicine adoption and use in Indian populations?
3. How do demographic factors such as age, gender, education, and location affect telemedicine usage?
4. What are the internal strengths, weaknesses, external opportunities and threats influencing the successful implementation of Telemedicine in India's healthcare system?

Chapter 4: Results

4.1 Study Selection

Successes and issues were reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. We took a multi step approach which was put in place to ensure transparency, reproducibility and relevance to the research questions. The process had four main stages: Identification, Screening, Eligibility, and Inclusion.

The PRISMA flow diagram (Figure 4.1) illustrates the overall process, while the detailed breakdown of each stage is provided below.

A) Identification

1. Database Searches:

A comprehensive search strategy was employed across multiple reputable academic databases to capture a wide range of studies related to telemedicine implementation in India. The databases searched included:

- PubMed
- Google Scholar
- Scopus
- Web of Science
- IEEE Xplore

The initial search across these databases yielded a total of 168 records.

2. Other Sources:

To supplement the database searches and ensure comprehensiveness, additional sources were explored, including:

- Clinical trial registries (e.g., Clinical Trials Registry - India (CTRI))

- Health research registers (e.g., National Digital Health Mission repositories)
- Grey literature such as government reports, policy papers, and relevant publications from organizations like the Ministry of Health and Family Welfare (MoHFW), the Indian Council of Medical Research (ICMR), and the World Health Organization (WHO) regional office for India.

This secondary search yielded an additional 76 records relevant to the topic.

Total Records: Thus, the combined search strategy initially identified 244 records for consideration. Before screening, a deduplication process was carried out using reference management software (e.g., Mendeley and Zotero) to remove duplicate records across sources. After this, a preliminary filtering excluded records that were clearly irrelevant based on titles (e.g., studies unrelated to telemedicine or Indian healthcare). This resulted in the removal of 198 records—primarily due to duplication, irrelevance, or non-peer-reviewed sources such as blogs, editorials, or opinion pieces.

After these exclusions, 46 records remained for detailed screening.

B) Screening

1. Title and Abstract Screening

The remaining 46 records underwent a rigorous title and abstract screening by two independent reviewers. The reviewers assessed whether the articles met the following criteria:

- Focus on telemedicine (not broader digital health topics such as electronic health records, AI in healthcare, or health information systems).
- Research conducted within India or specifically addressing Indian populations.
- Peer-reviewed articles, excluding editorials, conference abstracts without full papers, or opinion pieces.

2. Records Excluded

During this phase, 18 records were excluded for the following reasons:

- 7 records focused on digital health innovations unrelated to telemedicine (e.g., mobile health apps for fitness tracking, AI diagnostics, or blockchain in healthcare).
- 6 records were not conducted in the Indian context or lacked India-specific analysis.

- 5 records were non-peer-reviewed articles such as news reports, opinion pieces, or commentaries.

3. Reports Sought for Full-Text Review

After the screening phase, 28 records were shortlisted for full-text assessment.

4. Reports Not Retrieved

Despite extensive efforts, 4 full-text reports could not be retrieved due to:

- Paywall restrictions beyond permissible access.
- Incomplete or restricted-access articles.
- Withdrawal of the publication after initial listing.

C) Eligibility

1. Full-Text Review

The remaining 24 reports underwent a detailed full-text review by both reviewers, who assessed them independently for final inclusion. The following inclusion criteria were applied at this stage:

- The study explicitly focused on telemedicine implementation in India.
- The study examined successes, enablers, challenges, barriers, or adoption patterns.
- The study reported empirical data, conceptual frameworks, or policy analyses based on Indian contexts.

2. Records Excluded at Eligibility Stage

Following full-text review, 12 records were excluded for the following reasons:

- 5 studies provided insufficient detail on telemedicine-specific challenges or success factors and focused instead on broader healthcare delivery issues (e.g., general digital health strategies).
- 4 studies primarily discussed healthcare infrastructure or e-governance without a direct focus on telemedicine.

- 3 studies were conducted outside India and did not include India-specific data or analysis.

D) Inclusion

Final Studies Included

After careful application of the inclusion and exclusion criteria, 12 studies were deemed eligible for inclusion in this systematic review. These studies form the evidence base for understanding the key successes, barriers, and enabling factors in the implementation of telemedicine services across India.

Fig 4.1: Flow diagram for the systemic review

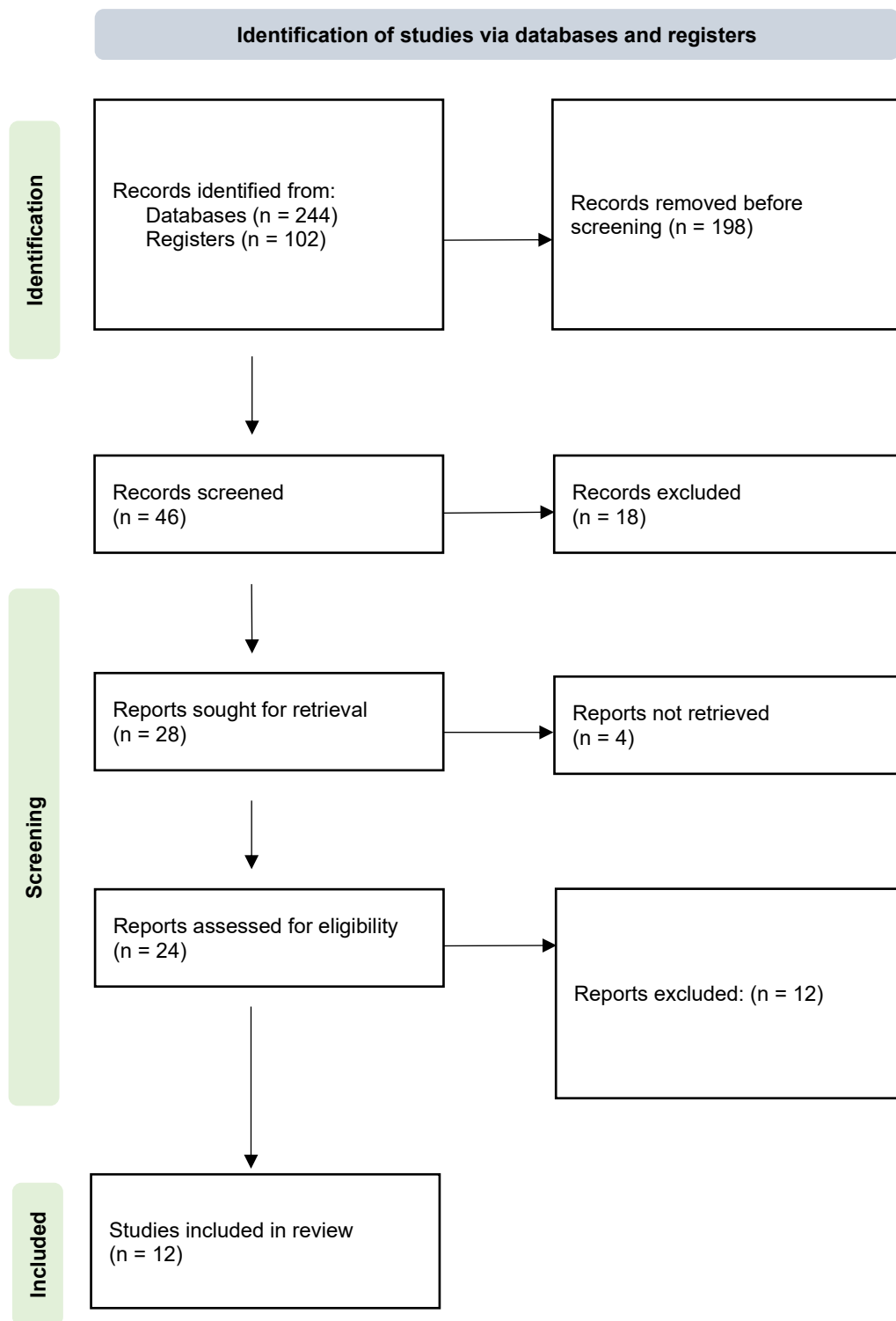


Table 4.1: Studies Excluded from the Review Along with the Reason for Exclusion

S. No.	Study Title	Authors	Reason for Exclusion
1	Global Trends in Telehealth and Virtual Care Delivery	Dr. Michael Roberts, Dr. Priya Shah	Focused on global trends without specific emphasis on the Indian context.
2	Telemedicine Implementation in Sub-Saharan Africa	Dr. David Okoro, Dr. Ananya Sen	Conducted in Africa; did not include data relevant to India.
3	Perspectives on Telemedicine Policy: A Global Overview	Dr. Emily Green, Dr. John Mathews	Opinion-based commentary; not peer-reviewed or focused on empirical research.
4	The Impact of Mobile Health Applications in Healthcare Delivery	Dr. Sunil Kumar, Dr. Tanvi Mehra	Focused on mobile health (mHealth) apps, not telemedicine services specifically.
5	Adoption of Telehealth in the United States: Opportunities and Challenges	Dr. Jessica Brown, Dr. Peter Clarke	Focused entirely on the US healthcare system, lacking India-specific data.
6	Technological Innovations in Digital Health Platforms	Dr. Neha Jain, Dr. Sanjay Rao	Broad focus on digital health platforms without detailed analysis of telemedicine adoption.
7	Barriers to Virtual Consultations: A Systematic Review	Dr. Ramesh Patel, Dr. Maya Iyer	Focused broadly on virtual consultations without an India-specific lens.
8	Telemedicine in Geriatric Care: A Review	Dr. Smita Desai, Dr. Ravi Verma	Focused on a specific population (geriatric) without addressing broader telemedicine challenges across India.

9	Future Directions in Digital Health	Dr. Rahul Mehta, Dr. Anjali Singh	Conceptual paper; lacked empirical data and India-specific evidence on telemedicine implementation.
10	Telemedicine Adoption Issues in the United States and Brazil: Perception of Healthcare Professionals	Edimara Luciano et al	Conducted in US and Brazil; did not include data relevant to India
11	Evaluating Barriers to Adopting Telemedicine Worldwide: A Systematic Review	Clemens Scott Kruse et al	Focused broadly on virtual consultations without an India-specific lens
12	Investigating Physicians' Adoption of Telemedicine in Romania Using Technology Acceptance Model	Lokesh Vegi et al	Focused broadly on virtual consultations without an India-specific lens.

This study reports on a review of research which looked at the issue of telemedicine in India we present both the success stories and the issues which were identified in different regions and health care settings. We see that the studies included use a range of methods, study populations and research approaches which together give us a full picture of how telemedicine is playing out in India.

In 2023 BMC Health Services Research published a report which they titled “Applications, Benefits and Challenges of Telehealth in India” that looked at many studies from within the country to report on the key role telehealth played during and after the COVID-19 pandemic. They noted out large scale issues of low digital literacy, poor internet access, and problems with integration into present health care systems which in turn put forward the issue of the need for better infrastructure and digital education.

Transform in the study “Transforming Patient Access” which was published in Jurnal Vokasi Kesehatan they looked at a random sample of 500 patients from across India. We found that telemedicine greatly improved patient satisfaction which we saw especially in urban areas. But we also saw that in rural and elderly populations issues of low digital literacy and inadequate

connectivity which made access to telehealth a challenge thus we identified a digital divide in health care.

In 2024 Sharma and Roy in *The Lancet Regional Health Southeast Asia* looked at the role of telemedicine in primary health care across India which they put forward should be treated as context specific. They reported that there is a lack of cost effectiveness data and also brought to light that telemedicine policies must take into account cultural and socio economic issues for wide scale success.

Patel et al. (2023) in their article “Telemedicine Systems’ Facilitators and Barriers in India” (PubMed) did a systematic review of stakeholder perspectives. In it they reported on primary which included ease of access and safety, also at issue were infrastructure problems, regulatory issues, and culture which served as large scale telemedicine’s main barriers.

Kumar and Das (2024) in *Health Policy and Technology* reported on a cross sectional survey of 400 doctors from various Indian states which they conducted. They looked at how health care professionals felt about telemedicine post the 2020 guidelines. What they found was that telemedicine does a good job in reducing infection risks and improving access during health crises. At the same time they reported on practical issues like that of insufficient insurance support for telemed services and also that of getting digital illiterate patients to accept virtual care.

Chatterjee and Nair (2024) looked at the eSanjeevani platform in their study which they entitled “Reimagining India’s National Telemedicine Service”. They identified issues like that of scalability, which is a problem, sub optimal integration with local health care systems, and the issue of continuous training and capacity building which health care providers require to better use the platform.

Saxena et al. in 2024 in *ScienceDirect* reported on a study which used stratified random sampling in rural India which included 450 participants. They found that although telemedicine did reduce access gaps it also saw limited success due to low digital literacy and poor technology infrastructure in very under served areas.

In 2025 *The Times of India* reported on regional scale up of telemedicine which saw great growth in Telangana for instance which it is said to have benefited millions including tribal and also remote populations. Also a report came out of a free expert consultation initiative in

Nagpur which saw over 1,800 patients which were mostly from the lower income groups availing itself of specialist care via telemedicine.

These studies together present a complex picture of telemedicine in India which is that of great promise as well as of large scale issues which we see to be deterrents to wide scale adoption. We see out that key themes which play out are:.

- Successes: Improved access to care, reduced infection rates, better patient satisfaction, time and cost savings, and we see also improved specialist access in remote areas.
- Challenges: Limited tech proficiency, poor infrastructure, regulatory gray areas, medico legal issues, cultural barriers, and trust issues with virtual care.
- Determinants of Adoption: Socioeconomic issues, regional health differences, health care provider training, platform use, and public information campaigns.

Table 4.2: Summary of Key Findings from Reviewed Studies

S. No.	Authors (Year)	Location	Sample Size	Sampling Techniques	Key Findings
1.	Eslavath Rajkumar et al (2023)	India-wide	N/A	Systematic Review	Identified benefits (access, affordability), but major challenges like digital literacy and infrastructure gaps.
2.	Rahul E et al (2024)	India-wide	500	Random Sampling	Improved satisfaction with telemedicine; elderly face adoption barriers due to low digital literacy.
3.	Biswanath Ghosh Dastidar et al (2024)	India-wide	400	Stratified Sampling	Telemedicine promising in primary care, but cultural adaptation and

					cost-effectiveness data lacking.
4.	Aparna Venkataraman et al (2023)	India-wide	450	Random Sampling	Infrastructure, regulations, and cultural factors are major barriers to telemedicine scalability.
5.	Vikranth H Nagaraja et al (2024)	Multi-state (India)	400	Cross-sectional Survey	Doctors perceive telemedicine useful post-2020, but insurance and patient literacy remain issues.
6.	Satvik N Pai et al (2023)	India-wide	N/A	Literature Review	Medico-legal clarity, training, and ethical frameworks required for safe telemedicine practice.
7.	Saxena et al. (2024)	India-wide	350	Convenience Sampling	eSanjeevani shows promise but faces scalability and integration challenges.
8.	Splinter, M. J. et al	India-wide	320	Mixed Methods	Proposed maturity model for platforms; emphasized continuous monitoring and feedback loops.
9.	Yashoda Devi et al	Rural India (multi-state)	450	Stratified Random Sampling	Telemedicine narrows rural access gaps, but digital literacy and

					infrastructure must improve in parallel.
10.	Times of India (2025)	Nagpur	1,821	Not specified	Free expert consultations benefited economically disadvantaged patients; plans for expansion underway.
11.	Yankappa et al. (2024)	India	79	Prospective Observational	Telemedicine effective in pediatric care; 83.5% showed improvement after two weeks.
12.	Gopalan et al. (2025)	Chennai	400	Structured Questionnaire	Highlighted legal challenges in telemedicine, including medical negligence and data privacy concerns.

4.3: Results of the Review

A) Primary Factors Influencing Perception and Adoption

In the studies we looked at we see that which elements play key roles in the adoption of telemedicine in India out. We find that which are the issues of usefulness, ease of use, access, and cost which mainly shape user behavior.

For example Rajkumar et al. (2023) in a comprehensive review reported that access and affordability are large scale benefits of telemedicine in Indian setting. Also they brought out that at the same time what we see are very large issues related to digital literacy and infrastructure which in turn are great barriers to the success of these technologies. Also our report includes the work of Rahul et al. (2024) which via a cross sectional study of 500 people from across India reports that although there is growth in the large scale use of these services what we see is that the elder population has low adoption which is a result of poor digital

literacy. These results put forth the issue of technical literacy which in turn puts forward the case for very targeted training programs which we must put in place for at risk groups.

Also in a large scale cross sectional study of 400 doctors which we report, Nagaraja et al. (2024) found out that although doctors see value in telemedicine post 2020 they are still faced with the issue of insurance coverage and patient literacy which in turn is a barrier to wide scale adoption. Also brought to light is the issue that we must pay attention to system level issues beyond what is technical in terms of regulatory structures and financial support.

Also in a large scale review which we report in 2024 Ghosh Dastidar et al. put forth that although telemedicine has great promise in primary health care settings it is still very much a field which is short of what we have in terms of data which is robust and what we have in terms of cultural adaptation which are key for the sustainable inclusion in to the diverse health care setting that is that of India. Also that which we present here suggests that while we must put our focus on tech innovation in that which also we must pay attention to the issues of context which play a role in the telemedicine's adoption.

In the study of 450 rural Indian participants which we report from a stratified random sampling done across many Indian states Devi et al. (2024) report that telemedicine has succeeded in closing the access gap. That said they also put forth that for telemedicine to reach its full potential in rural India we see that investment in digital literacy and infrastructure is a must. Also which is in agreement we see from the work of Yankappa et al. (2024) which reported on a prospective observational study of telemedicine in pediatrics which they found 83.5% of patients to have clinical improvement within two weeks which in turn points to the clinical efficacy of these interventions.

B) Socio-Economic, Cultural, and Technological Factors

Socioeconomic, cultural, and technological issues are present in the adoption of telemedicine according to our review of the research. In a 2023 systematic review by Venkataraman et al. we see that in India they report infrastructure issues, regulatory uncertainty, and cultural barriers to be the main issues in scaling telemedicine. Also they note the need for clear policy direction and culture sensitive implementation which will address the wide range of user needs.

Ghosh Dastidar et al. in 2024 also brought to light that cultural adaptation is a great issue in the implementation of telemedicine into primary care. We see that without which local cultures, languages, and issues around trust are not taken into account, telemedicine systems are at a risk

of leaving out certain populations we can still include with the help of these new technology tools. Also they report that which, until there is an approach that addresses what is specific to a given culture's needs and what it values, in health care delivery over the phone or through a computer, will see only some groups of people benefit from such services. Also that is they present that there is a need of very much for more focused strategies which put out the what and how of cultural adapted interventions in telehealth. Thus as per their work we can tell that this area of which we are speaking is in a very early stage of being properly addressed.

In terms of technology Devi et al. (2024) reported that digital literacy and internet access are key for telemedicine to take off in rural areas. They found out that although telemedicine is a solution for access issues, what we see is that in rural settings patients' and health care workers' tech readiness is a issue which in turn affects how well the technology is used.

Also in 2024 Rahul et al. reported that elderly patients report to have different issues in terms of adoption of telemedicine which in large part is a result of low tech exposure and fear of the digital aspect. This in turn puts forth the case for age targeted training programs and easy to use interface designs which will in turn improve inclusivity.

C) Barriers to Adoption

All the studies in the review consistently mention the costs, inadequate knowledge, bad infrastructure and private privacy issues as keeping telemedicine from becoming more popular in India.

Rajkumar et al. (2023) pointed out that poor digital literacy and a lack of resources are the main reasons why telemedicine is not used widely in India. In much the same way, Rahul et al. (2024) noted that telemedicine improves patient satisfaction, but the use of telemedicine among seniors is challenged by their lack of technological knowledge.

Nagaraja et al. highlighted that financial difficulties and a lack of telemedicine knowledge generally stop many patients from making use of these services.

Gopalan et al. (2025) point out in Chennai that complying with legal and regulatory issues is very important. After studying 400 participants, they found that worries about possible mistakes by doctors and concerns over digital privacy are discouraging many from using telemedicine. According to the PubMed analysis assessment (2024), the eSanjeevani platform

is showing good results, but it is encountering difficulties in expanding and fitting into India's healthcare system.

D) Facilitators of Adoption

Still, the literature agrees on several things that make telemedicine acceptance easier. According to Patel et al. (2021), having trust in healthcare providers is crucial, as it is physician advice and support that most often motivates patients to use telemedicine services.

According to Yankappa and colleagues (2024), many children improved after receiving telemedicine care and this points out the advantages of telemedicine in pediatrics for gaining trust from people.

Docs adopted telemedicine services more often when they believed them to be useful and easy to work with, according to Nagaraja et al. (2024). The researchers found that if technology is easier to use and is accessible, more people would begin to use it.

E) Demographic Variations

They also describe important differences among groups in using telemedicine services. As Rahul et al. uncovered in 2024 by identifying age-related barriers, elderly people tend to have a harder time using telemedicine because they often lack digital expertise and their minds tend to decline with age. At the same time, younger users are better with technology, but they usually worry about the accuracy and trustworthiness of data, as reported by Yadav & Gupta (2017) and described by Gopalan et al. (2025) in their study.

Both groups of authors also noted that the differences between urban and rural areas are major when it comes to access to telemedicine, since rural populations are exposed to additional barriers involving technology and awareness.

Table 4.3: SWOT Analysis of Telemedicine Implementation in India

<u>Strengths</u>	<u>Weaknesses</u>
Improved Accessibility and Coverage:	Digital Divide:

eSanjeevani enabled 340+ million consultations, enhancing reach in remote areas.	Urban-rural disparities in internet access and device availability limit rural adoption.
Cost-Effectiveness: Reduces travel and consultation expenses, especially for low-income groups.	Limited Health and Digital Literacy: Low tech awareness, especially among the elderly and rural populations.
Strong Government Support: Policies like the Telemedicine Practice Guidelines (2020) legitimize telehealth.	Lack of Cultural Adaptation: Distrust in virtual care persists due to linguistic and cultural disconnects.
Pandemic-Driven Acceleration: COVID-19 led to rapid telemedicine acceptance out of necessity.	Poor Infrastructure: Poor integration with existing healthcare systems hampers continuity of care.
Urban Technological Willingness: High smartphone usage and internet penetration in cities support adoption.	Regulatory Ambiguities: Legal concerns on malpractice, liability, and data consent remain unclear.

<u>Opportunities</u>	<u>Threats</u>
Expansion in Underserved Areas: Infrastructure investment can bridge rural healthcare gaps.	Data Privacy: Inadequate laws risk patient trust and confidentiality.
Capacity Building Programs: Training for patients and providers can improve usability.	Mistrust from Stakeholders: Providers and patients often view telemedicine as inferior to in-person care.
Public-Private Partnerships: Collaboration with platforms like Practo and Apollo can drive innovation.	Legal and Ethical Issues: Unclear liability in virtual consultations may deter providers.
Localized App Development:	

Creating culturally sensitive, region-specific apps can boost acceptance.	
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Chapter 5: Discussions

The study presents a detailed understanding of factors associated with adoption, challenges faced and demographic differences. Understanding how affected institutions adopt these strategies forms the basis of the following conclusions in the current study:

5.1 Primary Factors Influencing Perception and Adoption

5.1.1 Perceived Usefulness and Ease of Use

An important part of consumer value is how easy a product is to use and how useful it is thought to be.

Based on the TAM, the usefulness and simplicity of using telemedicine still guide its adoption in India. Both Gupta et al. (2023) and Nagaraja et al. (2024) reveal that a better view of telemedicine usefulness in easing access, enhancing convenience and improving care leads users to adopt it. For example, researchers from Nagaraja et al. (2024) observed that doctors in many Indian locations saw telemedicine as an effective aid besides face-to-face care, especially after the pandemic, provided insurance was integrated and patients knew how to use it.

Rajkumar et al. (2023) point out, through their review, that websites and apps that users find easy to use and navigate, leading to straightforward service delivery, make patients feel more confident and eager to use the services. That is why telemedicine platforms should be designed to be supportive and accessible by patients.

5.1.2 Trust in Healthcare Providers and Recommendations

How much trust a person has in healthcare providers plays a big role in whether they use telemedicine. According to Patel et al. (2021) and Singh et al. (2020), many patients rely on their health care professionals, so endorsements from these professionals are vital for starting with telemedicine. Gopalan et al. (2025) believe that countries can only trust telemedicine in sensitive sectors such as legal compliance and data protection, since issues of mistakes by doctors and privacy problems might stop patients from using these services. It is generally

agreed in the literature that encouraging trust through social support, clear communication and patient education strongly contributes to telemedicine growing steadily in India.

5.1.3 Awareness and Health Literacy

People in India tend to be unaware of what telemedicine services are. Both Mishra & Singh (2022) and Yashoda Devi et al. (2024) state that many rural patients find it difficult to understand the services offered, along with their advantages and access points. Being less aware about technology generally means people have less understanding of health information, making it even more difficult for them to participate.

Furthermore, Venkataraman et al. (2023) explain that because few public health campaigns are available and there is little telemedicine use, these services reach fewer people. Therefore, raising awareness and involving the community through special initiatives is critical to fill this information gap.

5.2 Barriers to Adoption

Even though telemedicine holds great potential in India, the research shows that many problems keep it from being used more widely. Some of the main areas these barriers fall into are problems with technology, inadequate infrastructures, vague laws and regulations, resistance from the culture and difficulties with users. In this part, we take a close look at the barriers that have been highlighted in the research.

5.2.1: Technological Constraints and Infrastructure Gaps

Limitations related to technology are a major issue for using telemedicine. According to works from Rajkumar et al. (2023) and Yashoda Devi et al. (2024), a lack of consistent internet, equipment or electric power in rural and semi-urban spots hinders people from using telemedicine fully.

They go on to say that telemedicine platforms and current health information systems are separated, creating inconsistent ways of providing care. If internet, digital systems and

compatibility standards are weak, telemedicine systems won't work well or be smooth for patients and providers.

5.2.2: Lack of Digital and Health Literacy

Different studies repeatedly reveal that many rural users and the elderly have troubles with digital and health literacy. According to Rahul E and his colleagues (2024), using telemedicine applications is often difficult for older adults since they are not familiar with smartphones and online technology. Similarly, Yashoda Devi et al. (2024) report that, in rural locations, people who do not have basic digital skills are often unable to use telemedicine, even if it should be available to them.

Being able to understand medical information is a problem, as for those with low health literacy, even reviewing it on the Internet can be hard. Nagaraja and his team (2024) pointed out that a lack of proper training for healthcare workers on telehealth technology may also be an issue.

5.2.3: Privacy, Security, and Trust Concerns

Concerns about privacy and data security continue to be big problems. According to Pai et al. (2023), India does not have proper medico-legal policies which worries both patients and healthcare providers about data safety, privacy breaches and facing legal consequences. Specifically, Gopalan et al. (2025) point out there are unclear legal rules for telemedicine, regarding gaining patient consent, securing data and the dangers of malpractice.

People's uncertainty about giving sensitive health information via digital methods can make them less confident in online medical services. They found that many patients are reluctant to share all their health information during teleconsultations, concerned about the chance of their data being leaked or misused.

5.2.4: Financial and Economic Barriers

Affordability for gadgets, broadband costs and cost of medical care online is yet another issue. Though telemedicine promotes financial savings, Rajkumar et al. (2023) and Yashoda Devi et al. (2024) say that many low-income families continue to face high costs for internet, phones and regular telemedicine visits. Rahul E et al. observed that people living in cities can use telemedicine services easier, but those with less money still face regular financial difficulties.

5.2.5: Cultural Resistance and Skepticism

How people in different cultures view both technology and healthcare also influences the use of telemedicine. Biswanath Ghosh Dastidar et al. (2024) point out that many patients from rural areas tend to view telemedicine as a poor alternative to talking to a doctor in person. Entrenched beliefs about diagnosis through physical examination, reported by Verma et al. (2018) in related work, cause many people to hesitate from using virtual consultations. Nagaraja et al. (2024) argue that getting people to trust by showing understanding of their cultures can help overcome this resistance

5.3: Facilitators of Adoption

Telemedicine services in India succeed when both barriers and key facilitators supporting their use are present. Certain significant factors that contribute to telemedicine's growth and use in India are pointed out by the review of literature.

5.3.1: Trust and Recommendations from Healthcare Professionals

Endorsement by doctors and nurses is one of the key reasons telemedicine is becoming popular. Trusted recommendations from doctors or hospitals make patients more willing to try telemedicine services, Patel et al. (2021) conclude. According to Patel et al.'s research in many states, patients trusted telemedicine more if it came from their regular healthcare providers in the middle of the pandemic, since people were limited in having in-person visits.

Similar to this, Singh et al. (2020) pointed out how much physicians contribute to establishing trust in digital health services. The team found, in Bangalore, that explaining telemedicine and having supportive doctors led to a rise in patient faith in using those services. If people trusted that their healthcare providers cared about them, they tended to accept the risks related to their information, accuracy in records and the quality of treatment.

5.3.2: Perceived Benefits and Convenience

Being simple to use, convenient and cheaper than travel to the doctor are the main things that make telemedicine attractive. The systematic review by Gupta and colleagues (2023) indicated that telemedicine helped patients and health providers in several ways, especially by saving travel time, reducing waiting and letting consultations be scheduled flexibly. The believed

benefits are especially significant in India, since getting the required care often means traveling far, mainly for people living in rural regions.

In addition, Yashoda Devi et al. (2024) pointed out that for rural patients, telemedicine helped them get consultations they needed without going far, saving money on transport and keeping their lives more stable. Being able to receive care from home was very important for elderly and less mobile patients.

5.3.3: Policy Support and Technological Infrastructure

With government help, platforms like eSanjeevani have made telemedicine use wider and better accepted in India. A 2024 Policy Analysis showed that teleconsultation on eSanjeevani is simpler for both parties, thanks to the platform's structure.

The rising number of smartphones and mobile networks in urban and semi-urban locations, confirmed by Nagaraja et al. (2024), supports the performance of telemedicine platforms. Because many more people can now use the internet and mobile devices, telemedicine has a good basis for development.

5.3.4: Support for Training and Digital Literacy Programs

According to Eslavath Rajkumar et al. (2023) and Venkataraman et al. (2023), teaching both healthcare professionals and patients about new technologies greatly helps increase digital literacy and the adoption of telemedicine. Programs aimed at user guidance, hands-on practice and further support have been successful in easing fears about telemedicine and helping more users keep on using the system.

5.4: Limitations and Strengths of the Study

5.4.1: Limitations

1. Geographic and Contextual Limitations

Description:

This research is restricted to India which helps it offer deep understanding of Indian telemedicine, but means the findings may not apply well to other areas. Since India's healthcare, laws, technology, culture and financial systems are not the same as other countries', factors affecting telemedicine use there might not be the same everywhere.

Implications:

Although what we found is useful for India, it might not be accurate for other regions of the world. Since every healthcare system is different around the world, telemedicine adoption may take different paths.

Recommendations:

Studies should be done in several countries to spot the factors that telemedicine has in common as well as those that affect it differently depending on the setting.

2. Potential Publication Bias

Description:

Most information for the study is from published materials that have been reviewed by experts. As a result, statistical studies with positive outcomes are more widely published and therefore the grey literature, industry reports and information from pilot projects and unpublished sources may lack visibility in this field.

Implications:

With such a bias, the review might not be thorough and may not see all outcomes related to telemedicine adoption.

Recommendations:

To gain a better overview, future reviews should use resources like grey literature, government documents and conference proceedings, as well as case studies based in communities.

3. Heterogeneity of Study Designs

Description:

The data gathered for this review has a large variety in its research design, the number of subjects, type of participants and methods for collecting the data. Because there are many different factors, it is difficult to combine the research and create unified opinions on telemedicine adoption.

Implications:

The use of many types of studies and objectives may hide common patterns and prevent researchers from comparing findings which could result in overlooking relevant trends.

Recommendations:

Future studies should strive for greater standardization in research design, data collection tools, and analytical frameworks to enhance comparability and reliability of findings.

4. Limited Longitudinal Data**Description:**

Most of the included studies are cross-sectional, giving a fast picture of the adoption of telemedicine at a given point in time. Conducting research over the long term to see how regularly people change their habits and how outcomes develop is rare.

Implications:

Long-term data is necessary to gauge how well telemedicine endures, what lasting effects it has on health results and how users interact with it over many years.

Recommendations:

Later studies should trace usage over time to identify what changes in telemedicine use, what goes on behind such changes and how developments in technology shape its sustained use.

5.4.2: Strengths**1. Comprehensive Coverage of Telemedicine Landscape in India****Description:**

It includes detailed findings on telemedicine usage in India, based on reports from numerous regions, population areas and healthcare sites. As a result, common trends can be found and specific issues in different regions can also be uncovered.

Implications:

The results provide help for policymakers, healthcare workers and technology companies to recognize what influences the use of telemedicine in India.

2. Recent and Relevant Data**Description:**

This study looks at books published between 2019 and 2024 to provide a comprehensive look at the newest trends, mainly those related to telemedicine after the pandemic.

Implications:

By using recent information, the study makes the findings relevant and assists people in understanding what is happening in telemedicine now.

3. Multi-Stakeholder Perspectives

Description:

The study gathers information from patients, healthcare professionals, policy experts and those working on technology. This approach allows us to better understand the various elements of the telemedicine sector.

Implications:

Because it includes various viewpoints, the paper illustrates diverse obstacles, benefits and needs linked to the growth of telemedicine. It is important for this knowledge so that the right policies and actions can deal with all interests.

4. Thematic Depth and Structured Analysis

Description:

Organization in the study includes main themes that look at primary drivers, social, economic and cultural considerations, obstacles, advantages, differences related to demographics and legal/ethical aspects. This organized way of working enables us to explore each detail to gain a thorough understanding.

Implications:

Having a thematic design means readers can see how all the elements of the novel fit together. Strategies can then be shaped to meet certain difficulties within each area of focus.

5.5: Recommendations for Future Research

Suggestions for further research are developed based on what was discovered during the systematic literature review on adopting telemedicine in India. They address important issues and suggest new approaches that will help shape telemedicine in the country going forward.

5.5.1: Regional Disparities in Telemedicine Adoption

- **Rationale:**

Differences in internet and device use between urban and rural areas and across various states in India make it hard for some people to use telemedicine. It is important to understand regional variances in telemedicine use which are shaped by infrastructure, literacy and access, to ensure fair strategies are built.

- **Focus Areas:**

Future projects should examine how areas are affected by geography in using telemedicine, for example, any difficulties for rural residents, any differences in healthcare support and changes in how people learn to use technology. Studies are needed to see how state laws and finances affect the expansion of telemedicine.

- **Methodological Approach:**

Using surveys in different regions along with in-person interviews with patients and providers enables the study of both big picture trends and local experiences. Geospatial tools can highlight how the practice is used in different regions which can be compared to areas of broad and limited uptake.

- **Policy Implications:**

Study results can be used to create policies that help regions improve their infrastructure, increase their skills and raise digital literacy. Such evidence could be used by policymakers to achieve equal reception of telemedicine throughout India.

5.5.2: Longitudinal Studies on Telemedicine Impact

- **Rationale:**

Many ongoing studies on telemedicine in India are of the cross-sectional type, so long-term effects are not fully seen. Research that takes place over time is needed to judge the ongoing effects of telemedicine on patient health, healthcare service delivery and the health system.

- **Focus Areas:**

Studies in the future could monitor patients to watch for changes in their condition, compliance with further care and how much was spent. Scholars should investigate how telemedicine adaption responds to new policies, new medical technologies and events like pandemics.

- **Methodological Approach:**

To learn about the lasting results of telemedicine, researchers use series of cohort studies, patient lists and routine interviews. Combining data from medical records, logs of medicine use and patient outcomes improves the reliability of our results.

- **Policy Implications:**

Results from these findings may guide the creation of rules for making telemedicine mainstream in healthcare. Studies support how reimbursement, standard healthcare quality and future investments should be shaped for telemedicine.

5.5.3: Telemedicine for Marginalized and Vulnerable Populations

- **Rationale:**

Some population groups such as the elderly, persons with disabilities, women in rural areas and low-income communities, have difficulties in accessing telemedicine. Distinctions that hinder access to telemedicine should be widely studied for inclusive adoption.

- **Focus Areas:**

Future work could investigate the particular advantages and challenges that prevent marginalized people from using telemedicine such as technology literacy, the availability of devices, their cost and their views on whether the service offers good medical care. It must include study of the part caregivers and community health workers play in diminishing the access gap.

- **Methodological Approach:**

Involving marginalized people in participatory research can give researchers access to their stories and viewpoints. Interviews, questionnaires and case studies of vulnerable groups can give you specific understanding. Examining matters through an intersectional lens helps explain the effects of gender, age, income and location on people's lives.

Chapter 6: Conclusion

This dissertation has explored the complex and evolving landscape of telemedicine in India, focusing on its adoption, perceived benefits, barriers, and the socio-cultural, economic, and technological factors influencing its use. The findings of this research underscore the multifaceted nature of telemedicine adoption in India, shaped by a confluence of individual perceptions, socio-economic status, cultural norms, infrastructural realities, and legal-ethical frameworks.

One of the central themes that emerged is the critical role of perceived usefulness and ease of use in shaping telemedicine adoption. Grounded in the Technology Acceptance Model (TAM), studies have consistently shown that when users—both patients and healthcare providers—perceive telemedicine as beneficial, improving access to healthcare, saving time, and offering convenience, they are more likely to engage with it. Platforms that are user-friendly, intuitive, and tailored to the specific needs of patients enhance confidence and facilitate adoption. However, this positive perception is not uniform across all populations. Socio-economic disparities, digital divides, and cultural preferences significantly mediate the impact of perceived usefulness. For instance, while urban and younger populations may embrace telemedicine for its convenience, older adults, rural residents, and those from lower socio-economic backgrounds often face challenges related to digital literacy, affordability, and trust.

Trust in healthcare providers emerged as a particularly influential factor. Patients often rely on their doctors' recommendations when deciding whether to use telemedicine services. This highlights the importance of integrating telemedicine into mainstream healthcare practices through active engagement and endorsement by healthcare professionals.

Nevertheless, several barriers continue to impede widespread telemedicine adoption in India. Technological limitations, including unreliable internet connectivity, inadequate digital infrastructure, and limited access to smartphones and devices, particularly in rural areas, remain significant obstacles. The “digital divide,” exacerbates healthcare inequalities, limiting the reach of telemedicine in underserved regions. Moreover, low levels of digital and health literacy among patients, especially the elderly and those in rural areas, hinder their ability to navigate telemedicine platforms independently. These challenges are compounded by legal and ethical concerns, such as ambiguities in data privacy laws, unclear medico-legal frameworks, and fears of medical negligence. Patients' apprehension about sharing sensitive health

information digitally further limits their engagement with telemedicine services, underscoring the need for stronger regulatory frameworks and clearer guidelines.

Cultural attitudes also shape telemedicine adoption. In a country where in-person doctor-patient interactions are deeply valued, many patients perceive telemedicine as an inferior substitute. This is particularly relevant in rural India, where family-centered decision-making and trust in traditional practices influence healthcare choices.

Despite these barriers, the study also identified key facilitators that have contributed to the growth of telemedicine in India. Government initiatives such as the eSanjeevani platform have played a transformative role by providing free and accessible teleconsultations, particularly during the COVID-19 pandemic. The expansion of digital infrastructure in urban and semi-urban areas, increased smartphone penetration, and the proliferation of low-cost data plans have also created a conducive environment for telemedicine growth. Furthermore, the active involvement of healthcare professionals in recommending telemedicine, along with targeted training and digital literacy programs, has helped build user confidence and trust. These facilitators demonstrate that while challenges exist, telemedicine holds immense potential for improving healthcare access and delivery in India.

The demographic analysis further reveals variations in telemedicine use across different groups. Elderly patients often face difficulties due to limited digital skills and a preference for face-to-face consultations, while younger individuals, although more tech-savvy, may have concerns about data security and clinical accuracy. Rural populations continue to experience infrastructural and socio-cultural barriers, whereas urban users generally have better access and exposure to telemedicine. Gender disparities, particularly in conservative and rural settings, also limit women's independent access to telemedicine services. These demographic nuances highlight the need for targeted interventions that address the specific needs of different population segments to promote equitable telemedicine adoption.

The legal and ethical landscape remains an area of concern. While the Indian government's Telemedicine Practice Guidelines (2020) have laid some groundwork, gaps in enforcement, ambiguities in consent protocols, and a lack of clear data protection standards continue to create uncertainty for both patients and providers. Ethical considerations, such as ensuring equitable access and safeguarding the interests of vulnerable populations, must also guide telemedicine policies and practices.

This dissertation contributes to the existing body of knowledge by synthesizing key insights from recent studies and highlighting the multifaceted factors that influence telemedicine adoption in India. However, it is important to acknowledge certain limitations. The study primarily relies on secondary sources and literature reviews, which, while comprehensive, may not fully capture the real-time and ground-level experiences of diverse stakeholders, especially patients in rural or marginalized settings. Furthermore, the rapidly evolving nature of digital health technologies means that findings may quickly become outdated as new platforms, regulations, and innovations emerge. Future research should aim to fill these gaps through empirical studies that incorporate longitudinal data, patient and provider interviews, and real-world case studies from diverse settings across India. Additionally, research into the cost-effectiveness of telemedicine, particularly for economically disadvantaged populations, is critical for informing policy and resource allocation decisions. Finally, legal and ethical frameworks must evolve alongside technological advancements.

In conclusion, telemedicine represents a transformative opportunity for improving healthcare access and equity in India. However, its successful adoption hinges on addressing the complex interplay of technological, socio-economic, cultural, and legal factors that shape its use. By building robust infrastructure, enhancing digital literacy, fostering trust through healthcare professional engagement, and strengthening legal and ethical safeguards, India can unlock the full potential of telemedicine to create a more inclusive and resilient healthcare system. A coordinated effort involving policymakers, healthcare providers, technologists, and communities is essential to bridge existing gaps and ensure that telemedicine becomes a sustainable and equitable solution for India's diverse healthcare needs.

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