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A Review of Telemedicine Adoption in India

STUDENT

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INTRODUCTION

- **Telemedicine** is the delivery of healthcare services using digital communication technologies, enabling doctors and patients to connect remotely for consultation, diagnosis, and treatment.
- It began in the early 2000s with ISRO-led pilot projects that connected rural clinics to urban specialists via satellite.
- The **COVID-19 pandemic** marked a major shift, driving rapid adoption of telemedicine as hospitals became overwhelmed and remote consultations became a necessity for safe and continued care.
- In 2020, the Indian government launched the **eSanjeevani** platform, significantly expanding access to healthcare across the country.
- The **private sector** also played a critical role by offering **digital consultations, online prescriptions, diagnostics, and medicine delivery** to urban and semi-urban populations.
- Despite growth, challenges such as **poor internet connectivity in rural areas, low digital literacy, privacy concerns, legal uncertainties**, and the inability of telemedicine to **replace physical examinations** continue to limit its full potential.

LITERATURE REVIEW

AUTHOR (YEAR)	SAMPLE SIZE	SAMPLING TECHNIQUE	SALIENT FEATURES
Rahul E et al (2024) – “Telemedicine in India: Transforming Patient Access”	500	Random Sampling	Evaluated telemedicine’s impact on patient access and satisfaction; found improved satisfaction but barriers in elderly adoption and internet connectivity.
Biswanath Ghosh Dastidar et al (2024) – “Exploring Telemedicine for Primary Healthcare”	400	Stratified Sampling	Reviewed telemedicine’s role in primary healthcare; identified need for culturally sensitive, context-aware solutions and lack of cost-effectiveness data.
Aparna Venkataraman et al (2023) – “Facilitators and Barriers for Telemedicine Systems in India”	450	Random Sampling	Synthesized stakeholder perspectives; identified infrastructure, regulatory, and cultural barriers to telemedicine scalability
Vikranth H Nagaraja et al (2024) – “Perspectives and Use of Telemedicine by Doctors in India”	400	Cross-sectional Survey	Explored doctors’ perceptions post-2020 guidelines; highlighted benefits like infection risk reduction, but issues with insurance coverage and low digital literacy among patients.

LITERATURE REVIEW

AUTHOR (YEAR)	SAMPLE SIZE	SAMPLING TECHNIQUE	SALIENT FEATURES
Eslavath Rajkumar et al (2023) “Applications, benefits and challenges of Telehealth in India”	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.
Satvik N Pai et al (2023) – “Understanding Medico-Legal Aspects of Telemedicine in India”	N/A	Literature Review	Provided an overview of legal and ethical concerns in telemedicine; emphasized the need for clear frameworks and training for practitioners
Saxena et al. (2024) – “Reimagining India's National Telemedicine Service (eSanjeevani)"	350	Convenience Sampling	Examined the eSanjeevani platform; identified scalability challenges, sub-optimal integration, and training gaps for healthcare workers.
Splinter, M. J. et al (2024) – “Patient perspectives on telemedicine during the COVID-19 pandemic”	320	Mixed Methods	Proposed a maturity model for teleconsultation platforms in India; highlighted the need for continuous monitoring and adaptability to user needs.

LITERATURE REVIEW

AUTHOR (YEAR)	SAMPLE SIZE	SAMPLING TECHNIQUE	SALIENT FEATURES
Yashoda Devi et al – "Digital Transformation and Rural Healthcare Disparities: A Mixed-Methods Approach"	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
Times of India (2025) - " Telemedicine Boost: Over 1,800 Patients Benefit from Free Expert Consultation"	1821	Not Specified	Highlighted the rapid growth of telemedicine in Telangana, benefitting millions including those in remote and tribal areas.
Yankappa et al. (2024) - "Clinicodemographic profile and clinical outcome of children presenting to the telemedicine center at the Institute of National Importance in India: A prospective observational study"	79	Prospective Observational	Described a successful initiative providing free expert consultations to economically disadvantaged patients in Nagpur.
Gopalan et al. (2025) – "A study on the legal complexities surrounding medical negligence in telemedicine in India"	400	Cross-sectional Survey	Covered the Prime Minister's emphasis on the role of technology and telemedicine in improving health outcomes and accessibility in India.

METHODOLOGY

Study Design

A systematic literature review was conducted to analyze telemedicine adoption in India, focusing on successes, challenges, and adoption trends by synthesizing findings from multiple peer-reviewed studies published between 2020 and 2025.

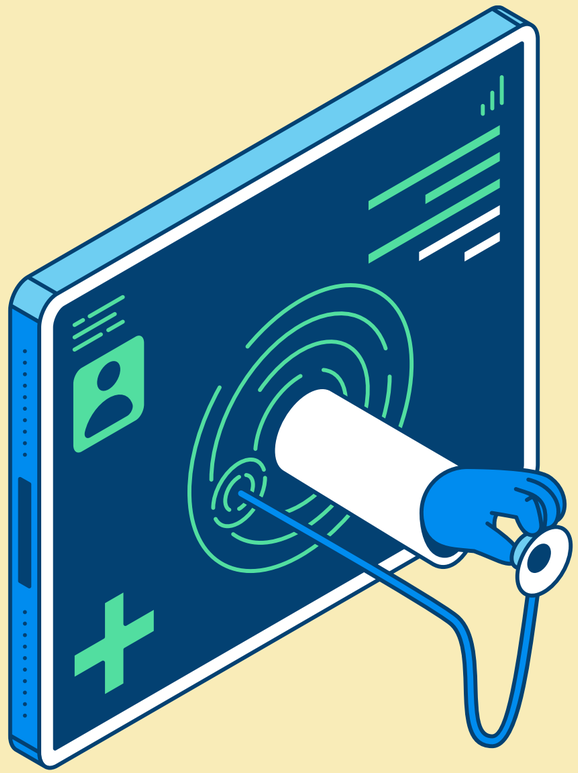
Inclusion Criteria

Included studies focused on telemedicine in India, were peer-reviewed, published between January 2020 and March 2025, and explored aspects like adoption, barriers, policy, or user perspectives.

Exclusion Criteria

Studies were excluded if they addressed non-telemedicine digital tools, lacked Indian data, were not peer-reviewed, or were published before 2020.

METHODOLOGY



Information Sources

Literature was sourced from databases like PubMed, Scopus, Web of Science, Google Scholar, and IEEE Xplore, along with clinical trial registers, official health websites (e.g., MoHFW, WHO), reference lists, and government policy documents.

Search Strategy

Key terms related to telemedicine in India were used, with filters for peer-reviewed articles published between 2020–2025. Boolean operators (AND, OR, NOT) refined searches across titles, abstracts, and keywords.

Selection Process

Studies were screened by title and abstract, followed by full-text review for eligible ones. Disagreements were resolved through peer consultation, and no automation tools were used

METHODOLOGY

Key Questions

1. What are the predominant facilitators and barriers contributing to the adoption 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 adoption of Telemedicine in India’s healthcare system?

RESULTS

Identification

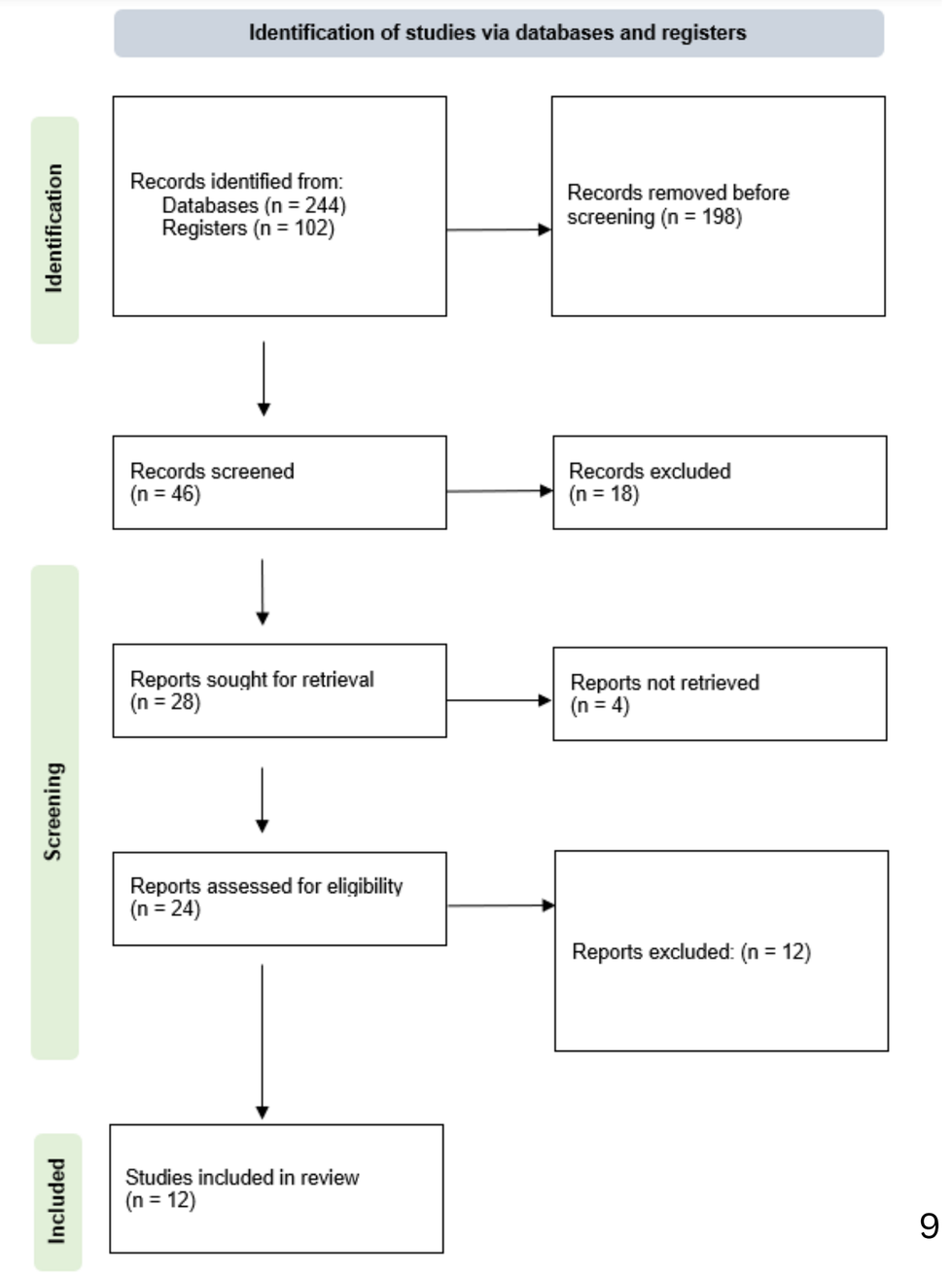
A total of 244 records were identified through academic databases and official sources. After removing duplicates and irrelevant titles, 46 records were selected for screening.

Screening

Following title, abstract, and full-text screening, 34 records were excluded due to non-Indian context, lack of focus on telemedicine, or access issues. This left 12 eligible studies.

Included

A total of 12 studies met all inclusion criteria and were included in the final review. These studies provided insights into the implementation, challenges, enablers, and outcomes of telemedicine services within the Indian healthcare context



RESULTS

AUTHOR (YEAR) & LOCATION	SAMPLE SIZE	SAMPLING TECHNIQUE	KEY FINDINGS
Rahul E et al (2024) – “Telemedicine in India: Transforming Patient Access” - India-wide	500	Random Sampling	Improved satisfaction with telemedicine; elderly face adoption barriers due to low digital literacy.
Biswanath Ghosh Dastidar et al (2024) – “Exploring Telemedicine for Primary Healthcare” - India-wide	400	Stratified Sampling	Telemedicine promising in primary care, but cultural adaptation and cost-effectiveness
Aparna Venkataraman et al (2023) – “Facilitators and Barriers for Telemedicine Systems in India” - India-wide	450	Random Sampling	Infrastructure, regulations, and cultural factors are major barriers to telemedicine scalability.
Vikranth H Nagaraja et al (2024) – “Perspectives and Use of Telemedicine by Doctors in India” - multiple states	400	Cross-sectional Survey	Doctors perceive telemedicine useful post-2020, but insurance and patient literacy remain issues.

RESULTS

AUTHOR (YEAR)	SAMPLE SIZE	SAMPLING TECHNIQUE	KEY FINDINGS
Eslavath Rajkumar et al (2023) “Applications, benefits and challenges of Telehealth in India” - India-wide	N/A	Systematic Review	Identified benefits (access, affordability), but major challenges like digital literacy and infrastructure gaps.
Satvik N Pai et al (2023) – “Understanding Medico-Legal Aspects of Telemedicine in India” - India-wide	N/A	Literature Review	Medico-legal clarity, training, and ethical frameworks required for safe telemedicine practice.
Saxena et al. (2024) – “Reimagining India's National Telemedicine Service (eSanjeevani)" - Kolkata	350	Convenience Sampling	eSanjeevani shows promise but faces scalability and integration challenges.
Splinter, M. J. et al (2024) – “Patient perspectives on telemedicine during the COVID-19 pandemic” - Inida-wide	320	Mixed Methods	Proposed maturity model for platforms; emphasized continuous monitoring and feedback loops.

RESULTS

AUTHOR (YEAR)	SAMPLE SIZE	SAMPLING TECHNIQUE	KEY FINDINGS
Yashoda Devi et al – "Digital Transformation and Rural Healthcare Disparities: A Mixed-Methods Approach" - Rural India (multi state)	450	Stratified Random Sampling	Telemedicine narrows rural access gaps, but digital literacy and infrastructure must improve in parallel.
Times of India (2025) - " Telemedicine Boost: Over 1,800 Patients Benefit from Free Expert Consultation" - Nagpur	1821	Not Specified	Free expert consultations benefited economically disadvantaged patients; plans for expansion underway.
Yankappa et al. (2024) - "Clinicodemographic profile and clinical outcome of children presenting to the telemedicine center at the Institute of National Importance in India: A prospective observational study" - India	79	Prospective Observational	Telemedicine effective in pediatric care; 83.5% showed improvement after two weeks.
Gopalan et al. (2025) – "A study on the legal complexities surrounding medical negligence in telemedicine in India" - Chennai	400	Cross-sectional Survey	Highlighted legal challenges in telemedicine, including medical negligence and data privacy concerns

RESULTS

Primary Factors Influencing Perception and Adoption

- Perceived usefulness and ease of use significantly shape telemedicine adoption among both patients and providers (Rajkumar et al., 2023; Nagaraja et al., 2024).
- Access and affordability are seen as major strengths, especially in rural and underserved regions (Rajkumar et al., 2023; Devi et al., 2024).
- Elderly users show low adoption due to limited digital literacy and fear of technology (Rahul et al., 2024).
- Doctors value telemedicine post-COVID but express concerns over insurance issues and patient awareness (Vikranth H Nagaraja et al., 2024).
- There is a strong call for targeted training programs and context-sensitive technology solutions (Ghosh Dastidar et al., 2024).

RESULTS

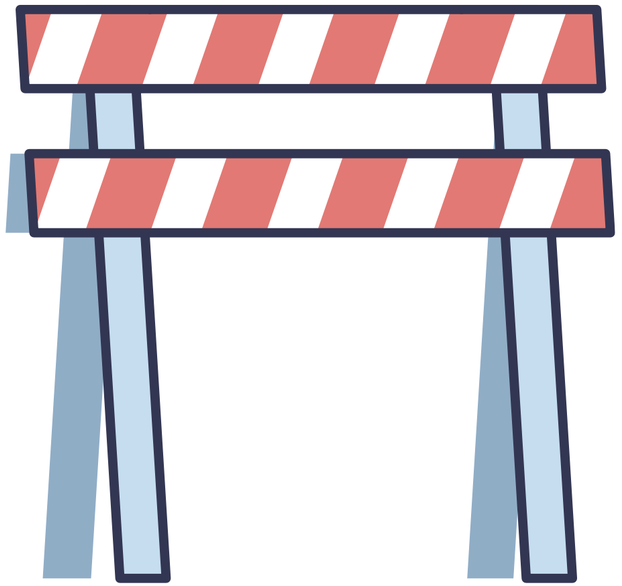
Socio-Economic, Cultural, and Technological Factors

- Socio-economic factors such as income, education, and digital access play a major role in telemedicine uptake (Devi et al., 2024).
- Cultural adaptation is often lacking; services that ignore local customs, languages, and values risk exclusion (Ghosh Dastidar et al., 2024).
- In rural settings, poor internet connectivity and low digital readiness slow down adoption (Devi et al., 2024).
- Elderly patients require simpler platforms and age-appropriate training to build confidence and usage (Rahul et al., 2024).

RESULTS

Barriers to Adoption

- Poor digital infrastructure, especially in rural India, limits telemedicine effectiveness (Aparna Venkataraman et al, 2023; Rajkumar et al., 2023).
- Low health and digital literacy prevent users from accessing or trusting teleconsultations (Rahul et al., 2024).
- Legal concerns about data privacy, consent, and medical liability reduce patient and provider confidence (Gopalan et al., 2025).
- Financial constraints, such as device affordability and data costs, exclude low-income populations (Nagaraja et al., 2024).
- Integration challenges with existing healthcare systems prevent seamless adoption



RESULTS

Facilitators of Adoption

- Physician endorsement and trust in healthcare providers greatly influence patient adoption (Patel et al., 2021).
- Clinical success, especially in fields like pediatrics, builds public confidence in telemedicine (Yankappa et al., 2024).
- Easy-to-use interfaces and accessible technology improve both patient and provider experiences (Nagaraja et al., 2024).
- Government platforms like eSanjeevani help normalize and scale virtual care services (Saxena et al., 2025).
- Positive user experiences and visible health improvements motivate continued use (Yankappa et al., 2024).

RESULTS

Demographic Variations

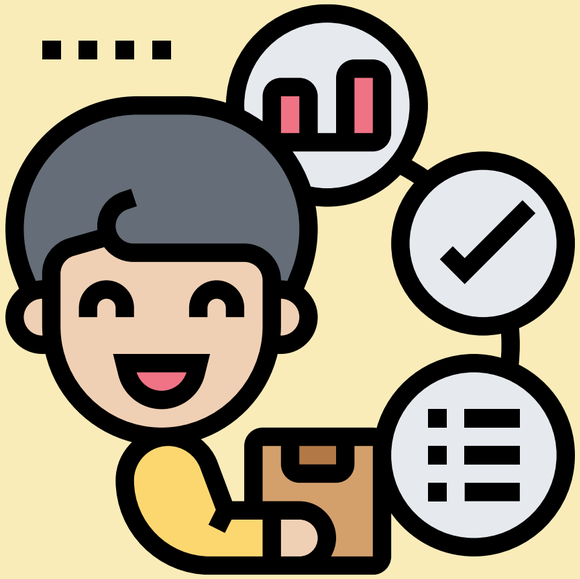
- Older adults face significant barriers due to lack of tech skills and comfort with virtual tools (Rahul et al., 2024).
- Younger users are more digitally literate but skeptical about data accuracy and platform reliability (Yadav & Gupta, 2017; Gopalan et al., 2025).
- Urban users have better access to devices and internet, while rural users face systemic gaps (Devi et al., 2024; Nagaraja et al., 2024).
- Gender and social roles affect access and decision-making, particularly for women in rural areas (Singh & Sharma, 2019)
- Disparities in awareness, affordability, and digital inclusion create uneven adoption across regions (Rajkumar et al., 2023).

S	W	O	T
Improved Accessibility and Coverage	Digital Divide	Expansion in Underserved Areas	Data Privacy
Cost-Effectiveness	Limited Health and Digital Literacy	Capacity Building Programs	Mistrust from Stakeholders
Strong Government Support	Lack of Cultural Adaptation	Public-Private Partnerships	Legal and Ethical Issues
Pandemic-Driven Acceleration	Poor Infrastructure	Localized App Development	
Urban Technological Willingness			

CONCLUSION

- Telemedicine in India has evolved into a vital tool for healthcare delivery, especially during the COVID-19 pandemic, improving access and affordability.
- Perceived usefulness, ease of use, and trust in healthcare providers significantly influence adoption.
- Major barriers include poor digital infrastructure, low digital literacy, legal uncertainty, and cultural resistance—especially in rural and elderly populations.
- Government initiatives like eSanjeevani have positively impacted adoption, particularly in urban and semi-urban areas.
- Demographic factors such as age, location, gender, and socio-economic status strongly affect how telemedicine is accessed and used.
- While promising, telemedicine’s future success depends on overcoming systemic, technological, and ethical challenges

RECOMMENDATION



- Expand digital literacy programs targeting rural and elderly populations to improve accessibility.
- Strengthen internet infrastructure and affordable tech access across underserved areas.
- Foster trust by integrating telemedicine into regular care and encouraging healthcare providers to recommend its use.
- Develop clear legal frameworks and data privacy protections to address ethical concerns and build user confidence.
- Promote culturally sensitive telemedicine platforms tailored to India’s diverse population

Thank You