

USE OF TELEMEDICINE TO IMPROVE HEALTHCARE DELIVERY IN URBAN INDIA

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of Master

of Business Administration (MBA)

in

Hospital and Health Management

by

Dr. Ashwika Datey

Under the Supervision and Guidance of

Dr. Seema Mehta

2023

USE OF TELEMEDICINE TO IMPROVE HEALTHCARE DELIVERY IN URBAN INDIA

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of Master

of Business Administration (MBA)

in

Hospital and Health Management

by

Dr. Ashwika Datey

Under the Supervision and Guidance of

Dr. Seema Mehta

2023

DECLARATION BY STUDENT

I hereby declare that this dissertation title '**USE OF TELEMEDICINE TO IMPROVE HEALTHCARE DELIVERY IN URBAN INDIA**'_Bonafede record of my original researchwork. 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 Information derived from the published or unpublished workof others has been duly acknowledged in the text.

Ashwika

(Signature)

Name of Student

Dr.Ashwika

Datey

Date: 22 May23

CERTIFICATE

This is to certify that dissertation titled title '**USE OF TELEMEDICINE TO IMPROVE HEALTHCARE DELIVERY IN URBAN INDIA**' is a record of the research

work undertaken by (Name of Student) in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management)/MBA (Pharmaceutical Management)/MBA (Development Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

Dr. Seema Mehta

Faculty Guide
IIHMR University, Jaipur

Dr. Mahindra Kumar

School Dean

IIHMR University, Jaipur

3rd June, 2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Ashwika Datey, Final Year Student of MBA-HHM from IIHMR University, Jaipur, Rajasthan has undertaken Summer Internship through virtual mode with our organization to have an overview and understanding of Rural Markets and Future of Telemedicine in Rural India, with our organization for the period from 1st March, 2023 to 31st May, 2023

During the period of her internship, she has been found to be a quick learner, sincere and always open to learn new things. She will be an asset to the organization she joins.

We wish Dr. Ashwika Datey all the best and success in her career endeavours.

Yours faithfully
for **Medyseva Technology Private Limited**



(Dr. Vishesh Kasliwal)
MD



medyseva
अच्छी सेहत का वादा

i. Abstract

Background: Telehealth has changed the healthcare scene, especially in Indian cities. Technological advancements and the increasing use of internet resources have made telehealth more accessible and cheaper to consumers. This left a significant impact on the way healthcare is provided in India, particularly in metropolitan areas. People who are unable to go to hospitals can now receive healthcare services through telemedicine. Furthermore, it has increased the quality of healthcare services by reducing patient wait times and allowing physicians to see more patients every day. Telehealth has also made specialized healthcare treatments available in remote places, which is critical in urban areas where experts are few. The current pandemic has underlined the need for telemedicine in healthcare delivery.

Methodology: To provide support for the conclusions of past investigations, the study used a literature review methodology.

The five components of the study review approach are the research questions, search tactics, inclusion and exclusion requirement, data gathering and data mining, and conclusions.

Conclusion:

In urban India, telemedicine has significantly increased access to healthcare services. Telemedicine enables people to communicate with healthcare specialists remotely, overcoming geographic barriers, in a nation with a large population and a sparse healthcare infrastructure.

By utilizing technology, healthcare providers can improve workflow, cut down on wait times, and see more patients. Doctors can deliver prompt care thanks to online consultations and remote monitoring, which speed up diagnosis and treatment.

Overall, telemedicine continues to be crucial in improving urban India's access to healthcare services, increasing efficiency, and offering specialized care. It has the potential to change the healthcare system, enabling more people to access and afford high-quality healthcare.

Keywords: Healthcare delivery, telemedicine, Telemedicine consultation, Urban region, Urban India, Medical services, Urban healthcare.

ii. Acknowledgement

I would like to appreciate the Placement Cell, IIHMR University and Dharmendra sir (HR) and Dr. Vishesh (CEO) of Medyseva company, for giving me a chance to be a part of Medyseva Rural Telemedicine company and to carry out my dissertation project.

I would like to extend my sincere thanks to my mentor, Dr. Seema Mehta Ma'am, Associate Professor at IIHMR University, who provided me with careful supervision, academic direction, and moral support during my research.

My dissertation thesis was successfully completed with the help of Mohit Jain sir, Vice-president operations, Medyseva Company. It gives me great pleasure to express my sincere gratitude to him that he provided support, advice, and assistance throughout my dissertation period.

No words can adequately explain how grateful I am to my deserving family members, whose constant, devoted, and invaluable support and blessings allowed me to finish this project.

Thankyou.

iii. CONTENTS

S.NO	TOPIC	PAGE NUMBER
i.	Abstract	VI
ii.	Acknowledgement	VII
1.	INTRODUCTION	1
1.1	Process Brief	1-2
1.2	Purpose	1-2
1.3	Problem	1-2
1.4	Objective	1-2
1.5	Importance	1-2
2.	LITERATURE REVIEW	2-6
3.	METHODOLOGY	7
3.1	Research Questions	7
3.2	Research Objectives	7
3.3	Search Strategy	7
3.6	Inclusion Criteria	8
3.7	Exclusion Criteria	8
3.8	Data Extraction and Synthesis	9
4.	STUDY FINDINGS	9

4.1	Awareness and Skills in Physicians	9
4.2	Cost-Effectiveness	10
4.3	Telemedicine to Improve Accessibility to Healthcare in India	10
5	<u>CONCLUSION</u>	11
IV.	References	12
1.	<u>List Of Figures</u>	
1.1	Search Strategy	8

<u>Abbreviations</u>	
NDHAI	National Digital Health Authority of India
NeHA	National e-Health Authority
NHP	National Health Portal's
GOI	Government Of India

Mohfw	Ministry of Health and Family Welfare
NMCN	National Medical College Network
IT	Information Technology

1. Introduction

Telemedicine is a medical service that communicates via digital communication and data transmission devices. It is referred to the entire spectrum of products developed to help individuals and doctors or health professionals. It has a variety of uses, like remote management, telehealth nursing, and remote both mental and physical rehabilitation. It increases accessibility to enhances medical services, Optimises the efficacy and safety of emergency services, reduces the amount of time required to establish a diagnosis, and cuts expenses for physicians and patients by simplifying clinical processes and also by cutting travel costs to hospitals.¹

Telehealth has improved access to high-quality medical services. Medical care will now be more personalized for patients. They may also consult with the better medical doctors by using online software applications.¹

It has been emerged as an important tool for enhancing access to healthcare in urban areas in India. The use of telemedicine in India has the potential to address the shortage of doctors and healthcare professionals in urban areas, improve patient outcomes, and reduce healthcare costs. Telemedicine can help address the lack of access to specialist care and improve health outcomes for patients in remote areas, where medical resources are limited.²

Telemedicine has been effective in providing remote consultations, diagnosis, and treatment to patients in urban areas. It is found that telemedicine has been used effectively to treat patients with COVID-19 in India, reducing the risk of transmission and improving access to care.³ Similarly, it has been used effectively to manage diabetes in urban areas, reducing the need for in-person consultations and improving patient outcomes.⁴

India, with a population of over 1.366 billion people, over seventy-three millions of whom are poor and a substantial number of them cannot earn enough to buy costly healthcare packages for treatments. It goes without saying that healthcare is still at the forefront of human needs given the terrible poverty a nation like India experiences.^{4,6}

A significant portion of healthcare expenses are reported to be covered by an individual's income.⁶

Modern amenities for patients are expensive to supply in the privatised health care industry. Middle-class families find it impossible to afford this additional cost since therapy becomes a luxury. Even if the government has made some bold investments to improve the infrastructure careful planning is still needed to make them a reality. Therefore, telemedicine is a preferable alternative and has the potential to be used in a nation like India that is still developing technologically. The country's overall healthcare system will undoubtedly advance more if this is properly incorporated, however no studies have been published in the literature or suggested any implementation plans. As a result, this paper suggests a model.^{6,8}

Apart from the potential advantages of telemedicine in India, there are still a number of issues that must be resolved, such as the requirement for suitable infrastructure, technological support, and governing structures. For digital health interventions to be successful in India, they must be scaled up and incorporated into the country's national healthcare system.⁷

In general, telemedicine has the potential to revolutionise the way healthcare is provided in metropolitan regions of India by better patient outcomes, lowering costs, and enhancing access to care. But for it to reach its full potential, the problems with its implementation and integration into the healthcare system must be resolved.⁸

The project will investigate how telemedicine influences healthcare delivery in urban India. The research is going to take at the benefits and drawbacks of telehealth implementation, in addition to how it influences patient outcomes, healthcare provider satisfaction, and medical expenses. The results of this study could offer important insights into how telemedicine might revolutionize the provision of healthcare in urban areas and could guide the creation of policies and strategies to encourage its adoption and implementation in India.

2. Literature Review

Author	Objective	Conclusion
1. Reimagining India's Health System: Technology Levers for Universal Health Care. <i>Vijay Chandru</i> ^{1,3} , <i>Sharad Sharma</i> ^{2,3} and <i>Raghu Dharmaraju</i> ^{1,3}	To define the relationships and efficiencies involving technologies and another component of health systems, notably human capital, funding, government, and public participation.	Technology can facilitate citizen involvement by listening to and noting their needs, choices, or fiduciary interests. Enhanced text-, language-, and multimedia-processing technologies are being employed to improve descriptive study methodologies across the board, including ethnography, narrative format, phenomenology, grounded theory, and case studies. A promising future endeavours

		are one wherein non-profit entities and qualitative investigators related to public health and citizen engagement will collaborate with technologists to develop alternatives that reflect the goal of research in improving results toward healthcare for all.
2. In eHealth in India today, the nature of work, the challenges and the finances: an interview-based study <i>Szymon Jarosławski and Gayatri Saberwal</i>	To comprehend the many types of eHealth projects available in India today, as well as the issues they confront and the sources of their funding.	Without government engagement, it is unknown if eHealth will have a broad and long-term influence., particularly in rural regions. Nonetheless, government-run schemes seem unlikely to be successful.
3. Telemedicine in India: Where do we stand. <i>Vinoth G. Chellaiyan¹ , Nirupama A. Y.¹ , Neha Taneja²</i>	To learn about the existing state of telemedicine in India and its potential.	Despite its enormous promise, telehealth has yet to attain the 'boom' that was predicted. It is hindered by a lack of awareness and professional knowledge, as well as the usage of new technology. Governments are increasingly taking a serious interest in improving telehealth practices, results in gradual but steady improvement in its use for public health. Telehealth practices are expected to attain their full scope in a few years.
4. Cost-effective Telemedicine System to combat COVID-19 in India: A proposed Model. <i>Debanjana Ghosh</i>	To address the recent pandemic it offers a paradigm and methods for incorporating telemedicine into the existing healthcare system. The concept tries to develop a cost-effective method for treating patients in a timely manner.	The suggested model is presently primarily aimed at battling COVID-19, but it may be expanded to treat any type of illness. The current health system has always supported the rich society, but implementing these models through telehealth would not

		deprive the urban region, but will also be committed to all other places with the same personnel. Though the initial expense of installation will be slightly greater, when viewed it as a potential future prospect, the amount is minimal when compared to the current framework.
5. Multichannel Delivery in Healthcare: The Impact of Telemedicine Centres in Southern India. <i>Kraig Delana</i>	To find thorough assessments of the influence of telemedicine clinics on patients' care seeking behaviours in impoverished countries.	We discovered that telemedicine centres significantly boost the total patient visit rate. The degree of this impact, however, is greater in individuals with simple problems (e.g., refractive faults) than in those with complicated disorders (e.g., glaucoma). Furthermore, these numbered up visits result in more treatments for minor illnesses (e.g., glasses prescription) yet not for difficult ones (e.g., cataract surgery). Telehealth centres also did minimise hospital visits, particularly for basic patients. Finally, the impact of creating a telemedicine centre varies significantly based on the proximity patients are from both the telehealth centre and the hospital.

6. Everything You Wanted to Know about Smart Health Care: Evaluating the Different Technologies and Components of the Internet of Things for Better Health. <u>Prabha Sundaravadivel</u>	Smart healthcare's significance, requirements, and uses, as well as present market dynamics and products. To have a better understanding of the many platforms available for doing more research on this ever-changing topic.	Because effective healthcare has multifaceted applications, investigators have a lot of room to continually invent new products and enhance old designs. The move to smart healthcare services is a continuous and gradual process. This is mostly because healthcare workers must be continually taught and persuaded to adjust to the digital world. More research issues and ailments can be addressed, and better lifestyles can be adopted, by filling the gap between the researchers and medical professionals. Though smart healthcare solutions powered by IoT can enhance revenue while improving the standard of life, such advantages can be quickly outweighed if security is compromised. Additional precautions must be made to deal with risks and secure potential data at both the consumer and supplier levels.
7. Telemedicine for healthcare: Capabilities, features, barriers, and applications. <u>Abid Haleem,^a Mohd Javaid,^{a,*} Ravi Pratap Singh,^b and Rajiv Suman^c</u>	The purpose of the study is to investigate the important capabilities, characteristics of the treatment process, and challenges to the use of telemedicine in healthcare.	Telemedicine is a crucial technique for connecting physicians with patients to make sure long-term lifestyle adjustments are made. It provides several advantages for medical office personnel. This often relieves the strain during patient check-in and allows staff to focus on higher-value duties. Physicians with online visit capacity may provide care for patients online while perhaps supporting other afflicted procedures and lowers

		distance limits by electronically transmitting detailed information regarding the diagnosis and illness prevention between the physician and the patient.
8. The outlook of doctors toward telemedicine: A cross-sectional study of knowledge, awareness, and attitude in central India. <i>Alok Singh, Ajaya K. Sahoo, Suryaprakash Dhaneria, Dhyuti Gupta</i>	The current study aimed to assess the degree of awareness, knowledge, and attitude towards telehealth within faculty members in tertiary-care centres in Chhattisgarh, India.	Even though most faculty members pedagogy have a favourable attitude for the usage of telehealth, the majority of pedagogy performed below the median. In addition, projected degree of knowledge and awareness was moderate.
9. Telemedicine during and post-COVID 19: The insights of neurosurgery patients and physicians. Kareem El Naamani a , Rawad Abbas a , Sarah Mukhtar a , Omar El Fadel a , Anish Sathe a , Adina S. Kazan a , Rayan El Hajjar b , Georgios S. Sioutas a , Stavropoula I. Tjoumakaris a , Sonu Menachem Maimonides Bhaskar c , Nabeel A. Herial a , Michael R. Gooch a , Robert H.	COVID-19 has resulted in a large increase in telehealth use as patients and clinicians sought to limit offline contact with a person in order to limit the spread and effect of the pandemic. Through surveys, the study intends to further understand telehealth during this era in terms of its utilization, effectiveness, and both patient and physician's satisfaction.	Under the current conditions, telehealth has emerged as a key force in the healthcare system. Both doctors and patients had shown high levels of agreement when using telehealth, which might be critical in expanding access to healthcare in underserved regions beyond the epidemic.

3. Methodology

To provide support for the conclusions of past investigations, the study used a fast literature review methodology.

The five components of the study review approach are the research question, search tactics, inclusion and exclusion requirements, data gathering and data mining, and conclusions.

3.1 RESEARCH QUESTION:

What role does telemedicine play in improving overall healthcare delivery in urban India?

3.2. RESEARCH OBJECTIVES:

- To assess the level of awareness and adoption of telemedicine among healthcare professionals in urban areas in India.
- To determine the cost-effectiveness and accessibility of telemedicine to improve healthcare delivery in urban India.

3.3 Search Strategy

To address the research question certain search techniques was used, which is mentioned as we go ahead with the topic.

Relying upon the search phrase and the data pool to be investigated, a search tactics were carried out. To perform online searches in electronic databases, search strings were created utilising keyword words and Booleans (OR/AND) were used in the search terms. Impact, effect, telemedicine, Telehealth, hospital at home, Virtual healthcare, digitalized medical care, Healthcare delivery, Urban India, awareness, and cost efficiency were among the search terms that were employed.

The pertinent research for this paper were collected from renowned scientific data sets and online libraries chosen as they were remained as a excellent libraries for information systems, social science, and medical science. PubMed, Google Scholar, Scopus and Sci-hub (which is used for the obtaining research papers of the authors, which cannot be access if they are locked or must purchase for a review) are the few examples of scientific databases and digital libraries. Additionally, they offer options for advanced search to narrow their prime words

searches by publication group, year, and discipline. The relevant literature searches were done between May 8 and May 15, 2023.

Using the mentioned keywords, 122 articles were found in the search results. Twelve papers were removed after being discovered to be duplicates. As a result, there are now 112 papers left in total, out of which 43 papers were excluded; because it was not easily accessible which left me with 69 research articles. The rest of the papers were examined in accordance with inclusion and exclusion as well as the quality assessment criteria. As a result, 15 articles were discovered to match the requirements.

Fig.1.1- Search Strategy



Inclusion, Exclusion Criteria

3.4 Inclusion criteria

- English-language studies on telehealth services, delivery of healthcare, cost efficiency, and public awareness.
- From 2019 until the present, articles from journals and conference proceedings.
- Based on the title and abstract content, studies that suggest potential solutions to research concerns
- Evidence is provided via a review of the literature, qualitative or quantitative trial, and experimental research.

- Easily available article/ free research paper from digital libraries.
- Preferably Indian research papers.

a. Exclusion criteria

- Journal papers and conference proceedings that aren't in English language.
- Neither papers nor conferences are acceptable before the year 2019.
- Eliminate same research by preserving most recent and complete version.
- Research that provides no practical, theoretical, trial, or statistical proof.

3.6 Data Gathering and Synthesis

The goal is to analyse and establish the selected paper to answer the research questions, relevant data from the chosen papers were gathered, examined, and synthesized.

4. Study Finding

The study is focused on extracting data of current situation of telemedicine (awareness among doctor's post COVID 19, cost-effectiveness and How telemedicine is being used in India to improve access to healthcare).

Awareness and skills in physicians

The boom in telemedicine had increase after the COVID 19 hit the nation, which was later declared as pandemic. Coming to the current scenario, as people had adapted the new normal post COVID, they had become dependent on the technologies for almost everything.⁸

In these, healthcare being the most important and critical aspect of everyone's life, had become number one priority for people and to fulfil that, healthcare industry began to expand more to give efficient services to people.^{9,10,11}

Coming back to current scenario, A study conducted by Vinoth et al. (2019) titled "Telemedicine in India: Where do we stand?" aimed to know the knowledge, attitude, and practices among doctors regarding telehealth in India. This study involved a survey of 300 doctors from various specialties across India.²

The findings revealed that while doctors had a positive attitude towards telemedicine, their knowledge and utilization of telemedicine services were relatively low. Only 34% of the

surveyed doctors were aware of the guidelines (by GOI) and regulations related to telemedicine, and a mere 11% had undergone specific training in telemedicine. Furthermore, the study highlighted the need for improved infrastructure, connectivity, and awareness among doctors to fully leverage the benefits of telemedicine in India.^{2,12}

In different research, 90.9% of the physicians agreed that telemedicine is crucial. Most people had positive perceptions of and readiness to use telemedicine in their careers. For telemedicine to be successful in India, it is crucial to have appropriate and efficient communication channels as well as user, professional, and student awareness.¹⁰

Accordingly, one of the articles, which stated that, teaching doctors are enthusiastic in using telemedicine in practical situations, they have limited technical skills in this area. Though telemedicine can be practised with this level of knowledge, the culprit has to be their low competency in IT, which is not their main expertise.^{14,15}

Even though doctors who practise modern medicine are generally knowledgeable and skilled, further webinars or seminars are required to further their education. Since telemedicine is sort new technology in the Indian health industry, research is necessary to determine how knowledgeable and skilled health professionals are about it.¹⁶ As above-mentioned research mentioned training and skillset training of the healthcare professionals, my observational addition from all these article would be that, acceptance is the key for physicians, as most of them have strong opinion about the conventional mode of practicing.^{8,16}

Cost-effectiveness

The cost of building the infrastructure for e-health and home care has decreased significantly, generating interest in its use and enabling organisations to plan and implement effective methods of care delivery. Through web-based applications (teleconsultations and conferences) and multimedia techniques (digital pictures and videos), the internet has increased the potential for e-health.^{7,17}

Chronic lifestyle illnesses and an ageing population can be found in India. Therefore, it is essential for the industry's revenue development to promote home care, e-healthcare, and a shift to cost-effective treatment alternatives at the primary, secondary, and tertiary levels of healthcare.¹⁵ Home care and technology-driven healthcare will increasingly play a key role in the delivery of healthcare across the country, proving to be more inexpensive and accessible to individuals who would not otherwise be able to receive high-quality healthcare services.¹⁵

According to one research, telemedicine deployment in Asian region; might be helpful approach as it could increase, efficiency of medical treatment (saves time and travel expenditures). Furthermore, it surely has the potential to better the patient's quality of life, cut overall healthcare costs, and enhance access to important medical treatments^{8,18}

The NDHAI / NeHA is being established as part of the NHP e-health division with the goal of providing high-quality medical services to Indians which is secure and has the economical use of ICTs in overall health and related fields.^{2,7}

One of the primary drawbacks of this research is that it is impossible to conclude from scientific research that there aren't many studies on the cost-utility and affordability of e-health, m-health, and telemedicine platforms because there are private research studies conducted by private companies and various public health systems that aren't directly available to the public.^{2,7}

Telemedicine to improve accessibility to healthcare in India

Modern telemedicine captures clinical data utilizing the patient's or doctor's already-owned computing gear and inexpensive, self-owned gadgets such as cell phone a camera, wearable biosensors, so on, which makes it simple to use and requiring no specialist training. The adoption of modern telemedicine technology allows the typical individual to have easier access to professional physicians without interrupting their daily duties. It also spares time, money, and medical expenses.¹⁹ It also makes healthcare providers' jobs easier by lowering the number of missed and delayed appointments, increasing revenue and number of patients, and improving follow-up and health outcomes.^{7,12}

Government programs:

The Government of India has initiated several telemedicine-related programs. For example, in 2020, the Mohfw developed the "eSanjeevani" telemedicine portal, which offers free online medical consultations throughout the country. This effort has aided in closing the healthcare access gap, especially in rural and distant locations.¹²

Telemedicine services in the country are overseen jointly by the Mohfw and the Department of IT.² The Telehealth Division of the Governments Mohfw department has developed a National Telemedicine Portal for implementation of green field project on e-health, as well as NMCN that brings together medical institutions across the nation to fulfil the intention to set up e-Education and a National Rural Telemedicine Network for the delivery of e-Healthcare.^{2,12}

As of now, telemedicine has only served to launch the digital health industry. Additionally, it has provided a solid foundation for innovation and transformation in the provision of high-quality healthcare.

5. Conclusion

In urban India, telemedicine has significantly increased access to healthcare services. Telemedicine enables people to communicate with healthcare specialists remotely, overcoming geographic barriers, in a nation with a large population and a sparse healthcare infrastructure.^{8,20}

By utilizing technology, healthcare providers can improve workflow, cut down on wait times, and see more patients. Doctors can deliver prompt care thanks to online consultations and remote monitoring, which speed up diagnosis and treatment.^{21,22}

It's crucial to remember that telemedicine has its limitations as well. Some medical illnesses may need physical examinations or diagnostic tests, so not all medical conditions can be adequately treated through virtual consultations. Additionally, not everyone may have access to the necessary technology or reliable internet connectivity, which can hinder widespread adoption. Furthermore, maintaining patient privacy and data security in telemedicine practices must be ensured to build trust among patients and healthcare providers.

Overall, telemedicine continues to have an impactful role in expanding the availability of healthcare, increasing efficiency, and delivering specialized treatment in urban India. It can change the healthcare landscape by making high-quality treatment more accessible and inexpensive to a bigger audience.

III. References

1. Abid Haleem,^a Mohd Javaid,^{a,*} Ravi Pratap Singh,^b and Rajiv Suman; Telemedicine for healthcare: Capabilities, features, barriers, and applications. Published online; Elsevier 2021 Jul 24.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8590973/>
2. Chellaiyan, Vinoth G.¹; Nirupama, A. Y.¹; Taneja, Neha²; Telemedicine in India Where do we stand? *Journal of Family Medicine and Primary Care*, June 2019.

https://journals.lww.com/jfmpc/Fulltext/2019/08060/Telemedicine_in_India__Where_do_we_stand_.12.aspx

3. Bokolo Anthony Jnr; Use of Telemedicine and Virtual Care for Remote Treatment in Response to COVID-19 Pandemic. Published online, PMC 2020 Jun 15.
<https://pubmed.ncbi.nlm.nih.gov/32542571/>
4. Felix Aberer, Daniel A. Hochfellner & Julia K. Mader; Application of Telemedicine in Diabetes Care: The Time is Now; Springer link, 20 January 2021.
<https://link.springer.com/article/10.1007/s13300-020-00996-7>
5. Neema Agarwal, Payal Jain¹, Rambha Pathak², Rakesh Gupta; Telemedicine in India: A tool for transforming health care in the era of COVID-19 pandemic
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7482629/>
6. Debanjana Ghosh, Piyali Mukherjee; Cost-effective Telemedicine System to combat COVID-19 in India: A proposed Model PMC, 2020 Jul 28.
https://www.researchgate.net/publication/346133320_Cost-effective_Telemedicine_System_to_combat_COVID-19_in_India_A_proposed_Model
7. Sambit Dash¹, Ramasamy Aarth², Viswanathan Mohan; Telemedicine during COVID-19 in India-a new policy and its challenges, PMC, 2021 May 19.
<https://pubmed.ncbi.nlm.nih.gov/34012012/>
8. Kareem El Naamani a, Rawad Abbas a, Sarah Mukhtar a, Omar El Fadel a, Anish Sathe a, Adina S. Kazan a, Rayan El Hajjar b, Georgios S. Sioutas a, Stavropoula I. Tjounmakaris a, Sonu Menachem Maimonides Bhaskar c, Nabeel A. Heria a, Michael R. Gooch a, Robert H. Rosenwasser a, Pascal Jabbour a; Telemedicine during and post-COVID 19: The insights of neurosurgery patients and physicians; PMC, 2022 May.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8894734/>
9. Nileswar Das¹, Shubham Narnoli², Apinderjit Kaur¹, Siddharth Sarkar¹, Yatan Pal Singh Balhara; Attitude to telemedicine in the times of COVID-19 pandemic: Opinion of medical practitioners from India; PMC, 2020 Oct
<https://pubmed.ncbi.nlm.nih.gov/32652668/>

10. Prateek Malhotra, Anandhi Ramachandran, Ruby Chauhan, Disha Soni, Nupur Garg; Assessment of Knowledge, Perception, and Willingness of using Telemedicine among Medical and Allied Healthcare Students Studying in Private Institutions, VOL. 5 NO. 4, HEALTH AND MEDICINE TODAY, 2020

<https://telehealthandmedicinetoday.com/index.php/journal/article/view/228>
11. Vijay Chandru^{1,3}, Sharad Sharma^{2,3} and Raghu Dharmaraju¹, Reimagining India's Health System: Technology Levers for Universal Health Care. *Journal of the Indian Institute of Science*; 07 September 2022

<https://link.springer.com/article/10.1007/s41745-022-00326-9>
12. Telemedicine Practice Guidelines Enabling Registered Medical Practitioners to Provide Healthcare Using Telemedicine, BOARD OF GOVERNORS In supersession of the Medical Council of India, 25 March 2020.
<https://www.mohfw.gov.in/pdf/Telemedicine.pdf>
13. Ministry of health and family welfare, Govt of India. National telemedicine portal [Internet]. Telemedicine division. Available from: <http://nmcn.in/>.
<https://main.mohfw.gov.in/Organisation/departments-health-and-family-welfare/e-Health-Telemedicine>
14. Going Digital: The Essential Guide to Getting Started in Telemedicine. August, 03, 2020. Available from: <https://www.hcplive.com/view/going-digital-the-essential-guide-to-getting-started-in-telemedicine>. [Last accessed on 2021 May 10]
<https://www.medicaleconomics.com/view/going-digital-the-essential-guide-to-getting-started-in-telemedicine>
15. Alok Singh, Ajaya K. Sahoo, Suryaprakash Dhaneria, Dhyuti Gupta The outlook of doctors toward telemedicine: A cross-sectional study of knowledge, awareness, and attitude in central India, PMID, 2021 Oct.
<https://pubmed.ncbi.nlm.nih.gov/34934656/>
16. ANIL BINDU SUKUMARAN¹, MANJU LEELA², KANNAN SURESH³, Himiki Selvin⁴, REGI JOSE⁵, SHILPA PRAKASH⁶, DIVIJA VIJITH⁷, PV BENNY⁸
Awareness and Skills of Modern Telemedicine Practice among Doctors in Kerala A Cross sectional study; *Journal of Clinical and Diagnostic Research*. 2022 Apr.

[https://www.jcdr.net/articles/PDF/16209/51754_CE\[Ra1\]_F\[SH\]_PF1\(SC_SS\)_PFA\(SC_KM\)_PN\(KM\).pdf](https://www.jcdr.net/articles/PDF/16209/51754_CE[Ra1]_F[SH]_PF1(SC_SS)_PFA(SC_KM)_PN(KM).pdf)

17. Affordable and accessible: Why India needs telemedicine. Forbes, Apr 6, 2022.

<https://www.forbesindia.com/blog/health/affordable-and-accessible-why-india-needs-telemedicine/>

18. Salsabilla A, Azzahra AB, Syafitri RIP, Supadmi W, Suwantika AA; Cost-Effectiveness of Telemedicine in Asia: A Scoping Review, Journal of Multidisciplinary Healthcare, Volume 14, 29 December 2021

<https://www.dovepress.com/cost-effectiveness-of-telemedicine-in-asia-a-scoping-review-peer-reviewed-fulltext-article-JMDH>

19. Telemedicine is much more than convenience, accessibility and affordability, The Times Of India, December 7, 2022.

<https://timesofindia.indiatimes.com/blogs/voices/telemedicine-is-much-more-than-convenience-accessibility-and-affordability/>

20. A.S. Albahri ^{a b}, Jwan K. Alwan ^c, Zahraa K. Taha ^d, Sura F. Ismail ^e, Rula A. Hamid ^e, A.A. Zaidan ^a, O.S. Albahri ^a, B.B. Zaidan ^{a g}, A.H. Alamoodi ^a, M.A. Alsalem ^fIoT-based telemedicine for disease prevention and health promotion: State-of-the-Art, Volume 173, Elsevier, 1 January 2021.

<https://www.sciencedirect.com/science/article/abs/pii/S1084804520303374#preview-section-introduction>

21. 7 Major Areas Where Telemedicine Can Be Applied, 2019

<https://www.gslab.com/blogs/application-areas-of-telemedicine#:~:text=Telepsychiatry%20can%20include%20a%20range,traumatic%20stress%20disorder%2C%20and%20schizophrenia.>

22. Revathi G. Maraju , Sonali G. Choudhari , Mohammed Kamran Shaikh , Sonali K. Borkar , Harshal Mendhe 1; Role of Telemedicine and Digital Technology in Public Health in India: A Narrative Review, Cureus ,03/10/2023

https://assets.cureus.com/uploads/review_article/pdf/126488/20230410-13686-1h8wy3q.pdf

