To study Adoption of Telemedicine Consultation from pilot stage to routine delivery in rural areas of Gwalior, MP

Dissertation Submitted to

The IIHMR University, Jaipur

For the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

In

Hospital and Health Management

By

Saloni Kathuria

Under the Supervision and Guidance of

Dr. Mamta Chauhan

2023

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled "To study Adoption of Telemedicine Consultation from pilot stage to routine delivery in rural areas of Gwalior, MP" is a Bonafide record of my original research work. I declare that it has not been submitted to any other institution or University for the award of any degree or diploma. Information derived from the published or unpublished work of others has been given due acknowledgement in the text.

Name of the student: Saloni Kathuria

Date: 24/May/2023

CERTIFICATE

This is to certify that dissertation titled "To study Adoption of Telemedicine Consultation from pilot stage to routine delivery in rural areas of Gwalior, MP" is a record of the research work undertaken by Saloni Kathuria in partial fulfillment 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 his/her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide: Dr. Mamta Chauhan	School Dean
IIHMR University, Jaipur	IIHMR University, Jaipur
Date:	Date:

3rd June,2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Saloni Kathuria, 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 andunderstanding of Rural Markets and Future of Telemedicine in Rural India, with our organization for the period from1st 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 newthings. She will be an asset to the organization she joins.

Yours faithfully

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Abbreviations:

- ISRO – Indian Space Research Organization.
- mHealth- Mobile Health
- NHA- National Health Authority
- CAGR- Compound Annual Growth Rate
- ATNF- Apollo Telemedicine Networking Foundation

CHAPTER 1 INTRODUCTION

As the second largest self-governing country, India has a wide variety of philosophies, religions, and vocabulary. Despite impressive progress in the country's healthcare system, a significant portion of the population lives in areas where healthcare is inadequate, remote, and unaffordable. Inadequate health care obligations in rural areas have led to an increase in the incidence of severe depression and humanity, especially in marginalized societies. However, the rise of telemedicine has brought a notable change to this regional map. Telemedicine has been around for a long time in India, but in the early 1990s he launched a satellite telemedicine project aimed at bringing healing to remote and underserved areas of the country. was overtaken when it was launched. Telemedicine has progressed largely over the age, driven by mechanics progresses, growing demand for healthcare duties, and the necessary to address the challenges of accessing and giving healthcare in country India. Currently, telemedicine in country India contains a broad spectrum of healing duties in the way that telemedicine consultations, telediagnosis, telemonitoring, tele education, and educational course by mail. These services are brought through various podiums, containing video conferencing, mHealth uses, and telemedicine kiosks. The healthcare manufacturing, like additional areas, is undergoing perpetual change, widely affected for one introduction of electronics. This incident has confirmed expected a direct tool in embellishing healthcare approachability, specifically in country areas place approach is frequently restricted. The purpose of this paper stating beliefs search out inspect the exercise of telemedicine in rural fields of India. In current age, telemedicine live well significant stomps in country India, on account of administration pushes, private sector expenditures, and mechanics progresses. According to a report apiece National Health Authority (NHA), the Indian telemedicine industry is bulged to evolve at a Compound Annual Growth Rate (CAGR) of 31percent in 2020 and 2025, accompanying a market magnitude anticipated to reach US$5.5 billion by 2025.Numerous telemedicine policies and actions have emerged in country India, containing the Sanjivani telemedicine program, ATNF, and Swasth Digital Health Foundation. These floors allow for a distanced approach to healing conversations, diagnosis, status and follow-up, alleviating the need for victims to travel long distances to contact

medical services. India's healthcare system is complex, with a population of over 1.3 billion. Access to healthcare is a major challenge, especially in rural areas. According to the National Rural Health Mission, there is one doctor for every 10,189 patients in India. A recent poll by the Indian Public Opinion Institute found that 89% of compatriots should travel about 8 km to get first-line health care, but few people need to travel more than that. This position highlights the urgent need for alternative solutions, and telemedicine has the potential to fill this gap through a liberal and distanced approach to medical devices. The Indian government has recognized the potential of telemedicine and has taken various steps to facilitate the acceptance of medicines. In 2018, the Department of Health and Family Services received the National Telemedicine Services Initiative, which aims to provide telemedicine assistance to all health sectors nationwide. The effort is expected to serve in addition to the 150 local public transport systems. However, despite government efforts to promote telemedicine adoption, countries still face major challenges in telemedicine adoption. Insufficient infrastructure such as power supply and internet connectivity are major obstacles, and limited knowledge and trust in telemedicine in rural communities hinders incentives. Nevertheless, telemedicine holds great opportunities to rebuild healthcare in the country of India. Despite the challenges, national telemedicine support is expected to continue to grow in the coming years due to management efforts, growing interest from commercial enterprises, and creative telemedicine models. Telemedicine has the potential to improve national healthcare approaches and outcomes. To realize the full beauty potential of the land of India, it is important to have hope and face challenges. The purpose of this study is to explore the current state of telemedicine in the country of India and the challenges and moments associated with it. This study will focus on five legislative branches that define the country's rural areas and select regional and demographic characteristics to enable a comprehensive study.

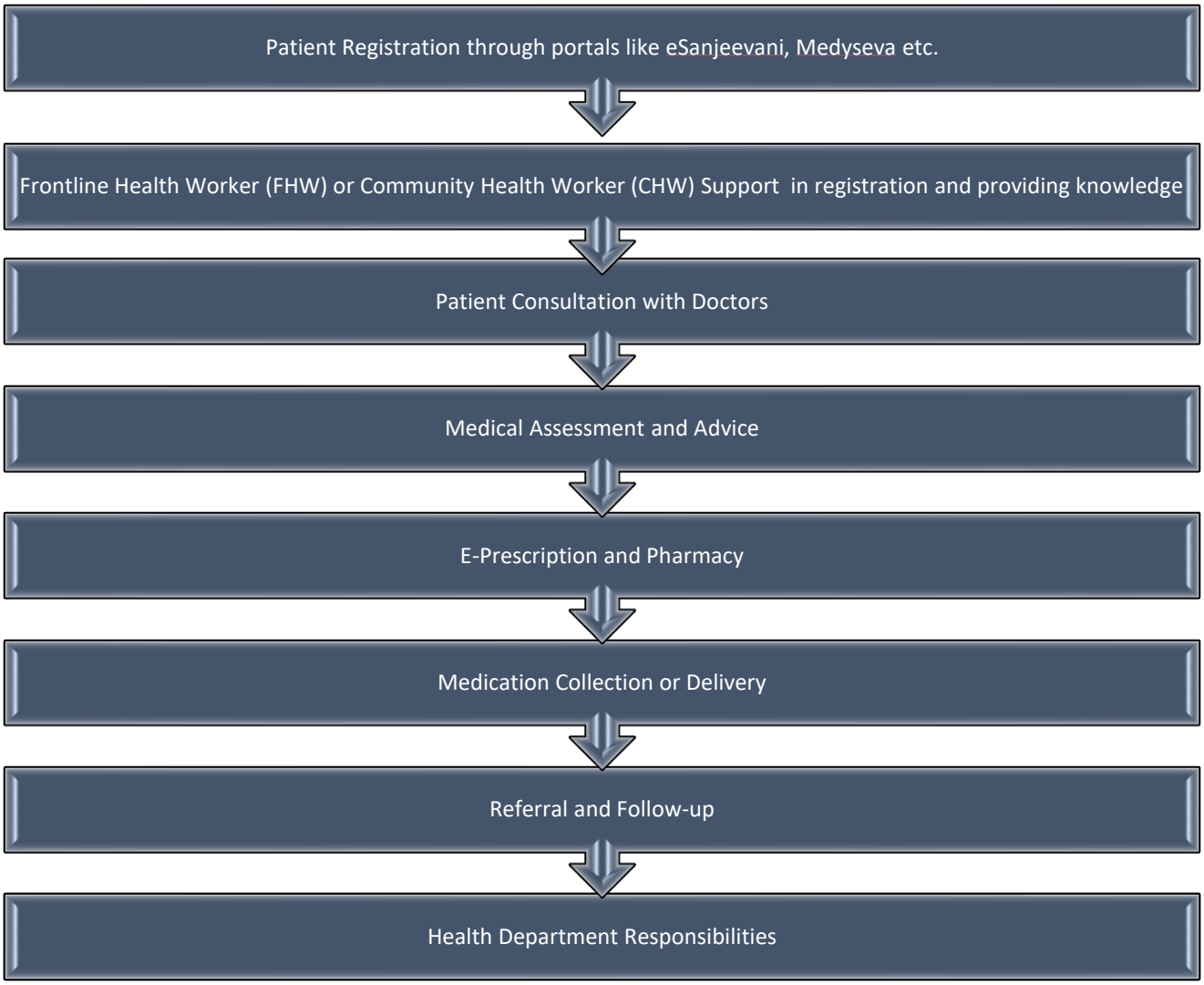

Fig 1.1 Flow of telemedicine services in rural areas of MP.

Fig1.1 explains the flow of telemedicine services in MP,

1. Patient Registration:

Patients in MP register for telemedicine services through mobile apps, websites, or phone calls.

2. Frontline Health Worker (FHW) or Community Health Worker (CHW) Support:

FHWs or CHWs assist patients in registering and provide technical support if needed.

3. Patient Consultation:

Patients connect with healthcare professionals via video conferencing, phone calls, or chat.

4. Medical Assessment and Advice:

Healthcare professionals assess patient's condition, discuss symptoms, review medical history, and provide medical advice or treatment options.

5. E-Prescription and Pharmacy:

If necessary, healthcare professionals generate e-prescriptions and transmit them securely to patients or designated pharmacies.

6. Medication Collection or Delivery:

Patients collect prescribed medications from local pharmacies or opt for home delivery.

7. Referral and Follow-up:

- Healthcare professionals refer patients to relevant healthcare facilities or specialists for in-person care if needed.
- Follow-up appointments or further teleconsultations are scheduled.

8. Health Department Responsibilities:

- Establish and maintain telemedicine infrastructure, platforms, connectivity, and technical support.
- Train and educate healthcare professionals, FHWs, and CHWs on telemedicine practices and protocols.
- Ensure compliance with privacy and data security regulations.
- Monitor and evaluate the quality and effectiveness of telemedicine services.
- Collaborate with other government departments to address legal, regulatory, and reimbursement challenges.

CHAPTER 2 LITERATURE OF REVIEW

Authors (Year)	Study Location	Sample Size	Methodology used	Results
Bhatia et al. (2019)	Rural Uttarakhand	310 households	Random sampling	Telemedicine improved healthcare access and outcomes in remote areas. Patients reported high satisfaction with telemedicine services.
Bhoi et al. (2020)	Rural Odisha	180 patients	Convenience sampling	Telemedicine reduced the need for travel and improved access to specialists for patients with chronic diseases.
Garg et al. (2020)	Rural Haryana	50 patients	Purposive sampling	Telemedicine improved maternal and child health outcomes and reduced healthcare costs in remote areas.
Manna et al. (2021)	Rural West Bengal	150 patients	Cluster sampling	Telemedicine improved healthcare access and outcomes in remote areas, especially for patients with chronic diseases.
Nair et al. (2019)	Rural Tamil Nadu	200 patients	Convenience sampling	Telemedicine improved healthcare access and outcomes in remote areas. Patients reported high satisfaction with telemedicine services.
Srivastava et al. (2020)	Rural Uttar Pradesh	100 patients	Random sampling	Telemedicine improved healthcare access and outcomes in remote areas, especially for patients with chronic diseases.

Agarwal et al. (2018)	Rural Rajasthan	1,155	Convenience sampling	Telemedicine services for antenatal and postnatal care, maternal and child health, and non-communicable diseases
Arora et al. (2020)	Rural Haryana	252	Convenience sampling	Telemedicine services for antenatal and postnatal care, maternal and child health, and non-communicable diseases
Ganapathy et al. (2015)	Rural Tamil Nadu	2,771	Cluster sampling	Telemedicine services for primary and specialist consultations, diagnostic services, and medical education
Jadhav et al. (2019)	Rural Maharashtra	189	Convenience sampling	Telemedicine services for primary and specialist consultations, diagnostic services, and medical education
Kaur et al. (2018)	Rural Punjab	1,030	Convenience sampling	Telemedicine services for antenatal and postnatal care, maternal and child health, and non-communicable diseases
Narasimhaiah et al. (2022)	Rural Karnataka	402	Convenience sampling	Telemedicine services for primary and specialist consultations, diagnostic services, and medical education
Chopra et al. (2019)	Punjab	100	Purposive sampling	Telemedicine improved access to specialized healthcare services in rural areas and reduced healthcare costs.
Dasgupta et al. (2020)	West Bengal	150	Random sampling	Telemedicine-based antenatal care and postnatal care services improved maternal and child health outcomes in rural areas.

John et al. (2020)	Kerala	200	Convenience sampling	Telemedicine-based chronic disease management improved patient outcomes and reduced healthcare costs.
Sood et al. (2022)	Haryana	300	Random sampling	Telemedicine-based primary healthcare services improved healthcare access and reduced patient travel time and cost.

CHAPTER 3 METHODOLOGY

Research question:

1. What are the barriers to the adoption of telemedicine in rural areas of MP?
2. What innovative telemedicine approaches have been implemented in rural areas of MP, and what have been their outcomes?

Objectives:

1. To study the factors challenging the adoption of telemedicine in rural areas of MP.
2. To study the potential solutions to the challenges of implementing telehealth services in rural areas of MP.

Study design:

This study design is descriptive, cross-sectional research design to investigate the adoption of telemedicine from the pilot stage to routine delivery in 2 sub-districts (Tehsils) of Gwalior. (MP)

Setting:

The study was conducted in 2 sub-districts (Tehsils) of Gwalior i.e., Ghatigaon and Antri where telemedicine services have been implemented and are being routinely delivered.

Study population:

The study population included healthcare providers, policymakers, and patients in the selected districts of MP who have experience with telemedicine.

Inclusion criteria:

1. Participants involved in utilizing telemedicine consultations.
2. Healthcare providers use telemedicine to offer healthcare services.
3. Healthcare policy makers are involved in making policies related to telemedicine.

Exclusion criteria:

1. Adult population not utilizing telemedicine to gain healthcare facilities.

2. Healthcare providers do not use telemedicine services.

Study tools:

- The study tools that were used for data collection were:
- Surveys
- Personal Interviews

Patients were contacted in the village whereas doctors were contacted at CHC OR PHC.

Duration of study:

The study was completed within a timeline of 3 months (March 2023- May 2023), including the data collection, analysis, and reporting phases.

Sample size:

A power analysis was used to estimate the sample size required for the study, using the formula:

$N = [(Z\alpha/2 + Z\beta)^2 * (P1 * (1-P1) + P2 * (1-P2))] / (P1 - P2)^2$

where N is the required sample size,

$Z\alpha/2$ is the Z-score for the desired level of significance, $Z\beta$ the Z-score for the desired statistical power,

P1 is the estimated proportion of telemedicine adoption in pilot stage,

and P2 is the estimated proportion of telemedicine adoption in routine delivery stage.

Assuming, total population of the selected sub- districts of Gwalior is around 14000 and selected age group to conduct the study will be 15-45 years of age group.

Around 50% of the population fall in selected age group category.

I.e., 50% of 14000 is 7000

Using the above formula sample size is calculated to conduct the study,

Sample size for the study is 120.

Assuming a roughly equal distribution of administrators, hospital staff, and patients in each district, and a desire to achieve a representative sample of each group, a possible breakdown of the sample size of 120 could be as follows:

Healthcare Providers: 4 (2 per tehsil)

Beneficiaries: 116 (58 per tehsil)

Out of 58 beneficiaries, 29 females and 29 males were taken for survey from both the sub-districts.

Sampling technique:

• Participants with telemedicine experience in rural India were selected using a purposive sampling technique.

• The methodology selects participants who meet certain criteria, such as healthcare providers, policy makers, and patients with experience with telemedicine services in rural India.

• purposive sampling techniques are used to ensure that participants have the necessary knowledge and experience to provide relevant and useful data for the study.

• The selection of the sample size was guided by the research questions and the level of comprehension exhibited by the participants.

Data collection procedure:

- Data was collected using personal and questionnaires with healthcare providers and patients.
- An interview guide was developed based on the study objectives and relevant literature.
- The interviews and surveys were conducted in the local language by trained research personnel.
- Interviews and surveys were audio recorded with beneficiaries and provider's consent.

Operational definitions:

- Telemedicine: Telemedicine encompasses the use of communication technologies, such as video conferencing, remote monitoring, and mobile health apps, to provide medical services.
    - Pilot Phase: The pilot phase represents the initial implementation stage of telemedicine. During this phase, the technology is tested in a controlled environment to evaluate its feasibility, usability, and effectiveness.
    - Reimbursement: Reimbursement involves the process of compensating healthcare providers for the services they deliver through telemedicine. This process includes working together with payers and insurers to ensure that telemedicine services are covered by insurance policies.
    - Technical Support: Technical support refers to the assistance provided to healthcare providers in resolving technical difficulties that may occur during a telemedicine session. This support helps address and resolve any technical issues that arise.

Data analysis plan

- The data collection process incorporated a combination of qualitative and quantitative methods, including the distribution of surveys, conducting interviews, and facilitating focus group discussions. These methods were employed in rural regions of Madhya Pradesh and involved the participation of medical providers, patients, and members of the Medyseva team.
- Collected data was analyzed using MS- Excel and other software (SPSS).
- Results will be visualized using graphs and charts.

Ethical Considerations:

- Consent was obtained from all participants, and utmost importance was placed on safeguarding the privacy and confidentiality of the individuals involved.
- The study was thoughtfully designed to minimize any potential risks to the participants and maximize the overall benefits derived from their involvement.
- Rigorous steps were taken to ensure the accuracy and reliability of the collected data, and the results were reported objectively and without any form of bias.

CHAPTER 4 RESULTS

In this chapter, the results of the primary research conducted are presented, focusing on addressing the research questions and objectives outlined in Chapter 3. The data obtained from surveys and interviews was carefully analyzed using both qualitative and quantitative methodologies. The subsequent subsections present the findings aligned with the identified research themes.

A total of 120 respondents completed the survey, with equal distribution of males and females. The age range of the respondents varied from 15-45 years, with an average age of 30. Participants of the interview and surveys Healthcare providers and beneficiaries of the sub- districts of Gwalior (Ghatigaon and Antri).

Interview was conducted with healthcare providers and 56 beneficiaries of each subdistrict to know about their perception about telemedicine.

Understanding the knowledge about telemedicine was a crucial part of the research to know about potential areas of improvement.

- So, when asked to the healthcare providers of ghatigaon, all of them knew about telemedicine services and 65 percent of beneficiaries were aware about telemedicine services. Whereas in Antri only 55 percent of beneficiaries knew about telemedicine services whereas all the healthcare providers were fully aware.
- FIGURE 4.1 shows the graph about knowledge about telemedicine among providers and beneficiaries in subdistricts of Gwalior i.e., Antri and Ghatigaon.

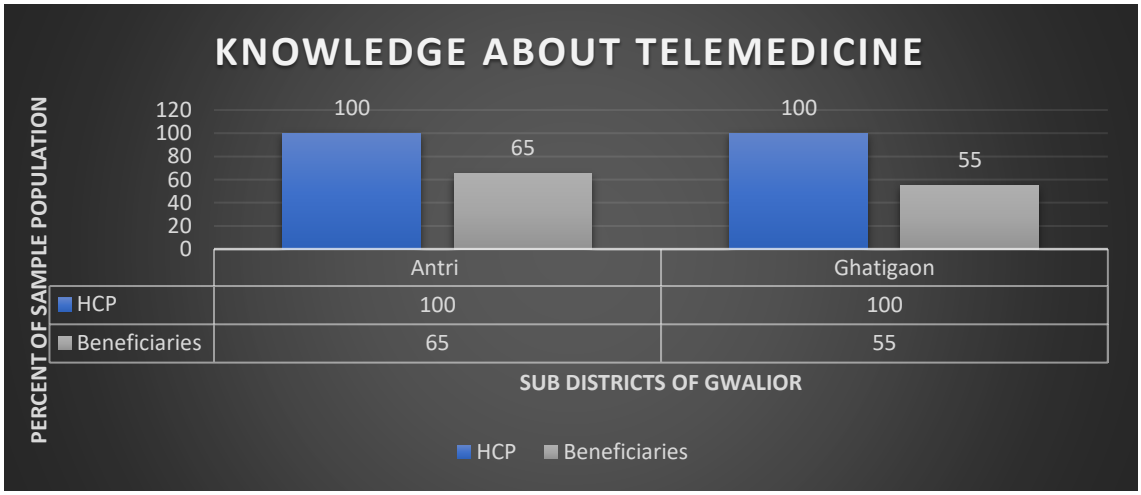

FIGURE 4.1

- Figure 4.2 shows another aspect was to know about usage of telemedicine from the healthcare providers and patients, during surveys it was recorded that, In Ghatigaon, all the healthcare providers have provided consultation using telemedicine surveys whereas only 20 percent beneficiaries have used telemedicine services. Furthermore, In Antri also all the healthcare providers have provided consultation to patients using telemedicine services and 30 percent of beneficiaries have used telemedicine.

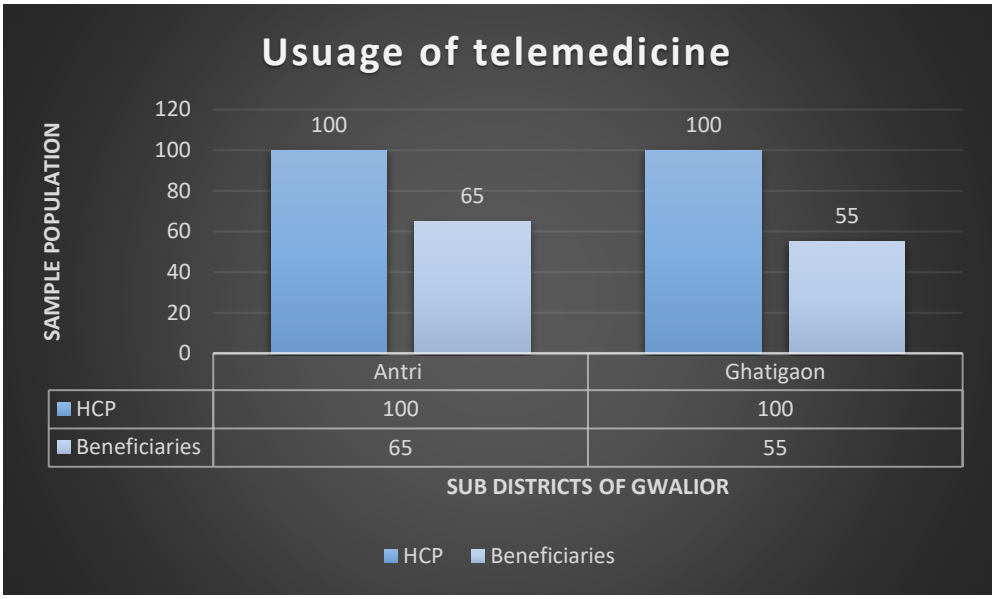

FIGURE 4.2

- Another question that was asked to healthcare providers and beneficiaries is that would they like to use telemedicine consultations in future, So based on the survey it was noted all the providers and beneficiaries are interested in using telemedicine in future in both the areas Ghatigaon and Antri.
- Another point that was focused on surveys and interviews was healthcare providers and beneficiaries faced any problems while using or providing services using telemedicine. During the surveys and interviews it was reported that healthcare providers and beneficiaries faced some barriers using telemedicine consultation .
- So , qualitative analysis was done to find out barriers in adoption of telemedicine in rural areas of MP.

Following were the responses recorded:

• Patient views on telemedicine change, ranging from being unaware to educated. Some victims grant permission have prior knowledge utilizing telemedicine aids, while remainder of something may not have had the space commotion so.

• Awareness of Telemedicine Convenience: Patients can or cannot be aware of the usefulness that telemedicine influences to their healthcare practices.

• Telemedicine Preferences: Patient priorities for telemedicine as a situation method vary, accompanying few being apt towards it while others favor usual opposite counseling

.• Patients grant permission encounter challenges when utilizing telemedicine aids, in the way that technical issues, relatedness questions, or lack of knowledgeableness accompanying the technology.

• Increased Convenience: Patients can view telemedicine by way of to improve availability and improve approach to healthcare duties.

• Confidence and Comfort: Some cases concede possibility feel hesitant, ashamed, or distressed when communicating accompanying their doctors through telemedicine.

An analysis of the doctors' answers tells the following:

• Telemedicine Experience: Physicians concede possibility possess variable levels of knowledge in transfering healing services by way of telemedicine.

• Pros and Cons:• In country districts, doctors can benefit from benefits such as revised approach, discounted travel occasion, and lower costs. However, they may more face restraints to a degree limited physical examinations and mechanics challenges.

• Physicians concede possibility encounter challenges in providing healing services through telemedicine.• Poor Internet relatedness, restricted approach to patient record, and inability to conduct material examinations.

• Patient Confidentiality and Privacy: Physicians can depict the steps they love guarantee patient confidentiality and solitude all the while telemedicine visits.

• Training and Support: Physicians concede possibility express a need for preparation and support to effectively transfer telemedicine duties, specifically in agreements of technical abilities and knowledgeableness accompanying telemedicine terraces.

• Patient Outcomes and Satisfaction: Physicians can share observations of enhanced patient effects or raised patient satisfaction happening from telemedicine consultations.

• Equipment and Infrastructure: Physicians can argue the supplies and foundation required to transfer telemedicine aids in country fields.

• Documentation and Medical Records: Physicians can explain the process of asserting decent proof and healing records for telemedicine consultations.

• Effectiveness of Telemedicine: Physicians can provide observations into either telemedicine can present image of an direct tool for embellishing healthcare approach and reconstructing effects in rural fields.

- Patients who have utilized telemedicine services were asked about any improvements in their health using telemedicine consultations so, the response was, out of 24 beneficiaries who used telemedicine services in Ghatigaon, 22 reported improvements in their health.
- Similarly, out of 34 beneficiaries who used telemedicine services in Antri, 30 responded positively regarding their health.

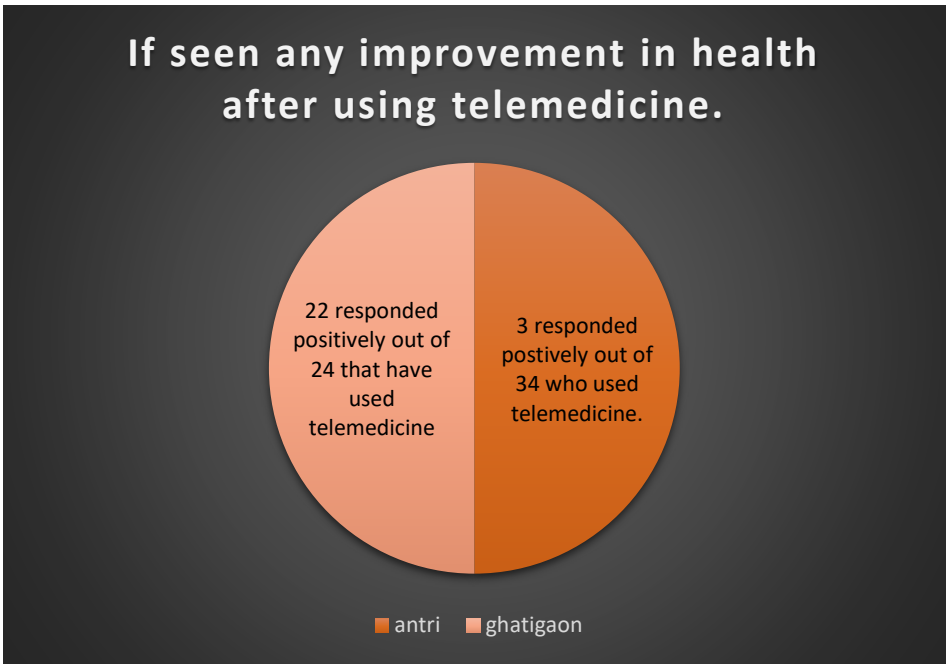

FIGURE 4.3

- Antri and Ghatigaon beneficiaries were also asked about any hesitations they experienced in asking questions to healthcare providers using telemedicine, so 21 out of 29 women in Antri

and 22 out of 29 women in Ghatigaon experienced hesitation.

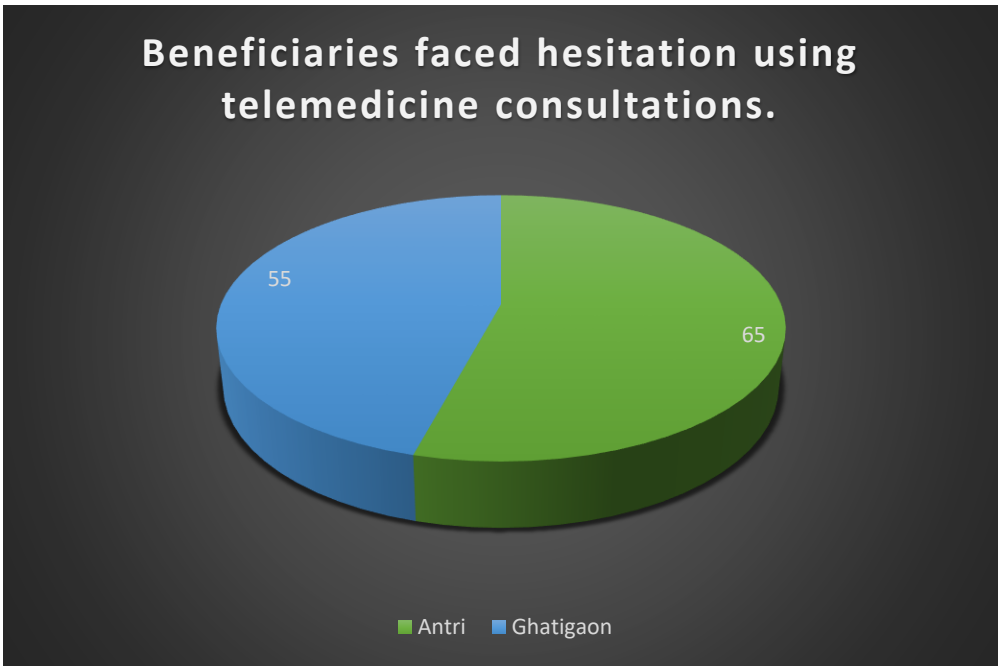

FIGURE 4.4

All the healthcare providers were asked if telemedicine an effective tool in providing healthcare services, adding yes to questions all the providers agreed with the fact that telemedicine is an effective tool used for improving healthcare consultations.

CHAPTER 5 DISCUSSION

The utilization of telemedicine has shown significant promise in addressing healthcare challenges in rural areas, specifically in Madhya Pradesh (MP), a diverse and expansive state. This discussion centers around the integration of telemedicine in rural MP and the initiatives implemented to foster its adoption. It explores the benefits, hurdles, and key strategies for accelerating the use of telemedicine.

Advantages of implementing telemedicine in rural areas:

Enhanced healthcare accessibility: Telemedicine bridges the geographical gap between patients and healthcare providers, enabling residents of rural MP to consult doctors remotely. This alleviates travel burdens and improves access to specialized care, which is often limited in rural regions.

Improved health outcomes: Telemedicine plays a significant role in enhancing health outcomes by enabling remote assessments, recommendations, and prescription of medications, leading to early diagnosis and intervention. This prompt treatment prevents disease progression, proving particularly advantageous in areas with limited medical infrastructure and a shortage of skilled healthcare professionals.

Reduced healthcare costs: Telemedicine offers cost-saving benefits for both patients and healthcare providers. Patients can save on transportation expenses by eliminating the need for travel. It also reduces unnecessary hospitalizations and emergency visits, resulting in cost reduction for both the healthcare system and patients.

Challenges:

Inadequate technical infrastructure: The lack of reliable internet connectivity poses a significant challenge in rural MP, impeding stable communication for teleconsultations. Investments in improving rural broadband connectivity are necessary to address this issue.

Limited digital literacy and awareness: Many individuals in rural areas may have limited familiarity with telemedicine technology and lack the necessary skills to effectively use telemedicine platforms. Education and training programs for healthcare providers and patients are crucial to enable safe and effective use of telemedicine tools.

Resistance to change and cultural beliefs: Traditional health practices and cultural beliefs can influence the acceptance of telemedicine. Engaging with local communities, stakeholders, and conducting targeted awareness campaigns can help address concerns and increase acceptance.

Programs for introducing telemedicine:

Several programs have been implemented in rural areas of MP to promote telemedicine coverage. One initiative involves establishing telemedicine centers in rural health facilities. These centers are equipped with technology and staffed by trained professionals, serving as hubs for telemedicine services and connecting rural communities with urban health facilities.

Improvement of infrastructure: Enhancing internet connectivity and technological infrastructure is essential. The government should invest in expanding broadband networks, improving connectivity, and exploring alternative technologies like satellite internet to overcome challenges.

Expansion of educational programs: Continued efforts to increase awareness and understanding of telemedicine are crucial. Educational programs should be expanded through partnerships with healthcare providers, NGOs, community organizations, and educational institutions.

Localization of telemedicine platforms: Adapting telemedicine platforms to local languages and dialects prevalent in rural MP enhances communication and acceptance. Providing multilingual interfaces, translation services, and training healthcare providers in local languages should be prioritized.

Strengthening public-private partnerships: Collaboration between the government, private healthcare providers, and NGOs should be strengthened to leverage expertise, resources, and networks. This facilitates the establishment of telemedicine centers, ensuring the availability of infrastructure, equipment, and trained staff.

Provision of financial support and incentives: Financial constraints can hinder the adoption of telemedicine. The government should consider providing subsidies, incentives, or reimbursements for telemedicine services to make them more affordable and accessible.

CHAPTER 6 CONCLUSION

The limited accessibility of telemedicine services in rural areas of Madhya Pradesh (MP) acts as a barrier to improving healthcare availability and delivery. However, challenges such as inadequate internet access, insufficient infrastructure, and low levels of digital literacy impede the expansion of telemedicine in these regions. To overcome these obstacles, it is necessary to improve internet infrastructure, expand connectivity, and provide technical resources. Furthermore, raising awareness and implementing education programs are vital for promoting understanding and acceptance of telemedicine in rural communities. Adapting telemedicine platforms to local languages and accommodating cultural preferences can help overcome language and cultural barriers. Building trust and addressing privacy concerns are also critical to overcoming resistance to telemedicine. Despite these challenges, promising initiatives such as the Madhya Pradesh Telemedicine Project and cooperation between government agencies, private health providers and NGOs are facilitating the establishment of telemedicine centers and delivery of telemedicine services. . These efforts have closed health gaps and expanded specialized care to underserved populations. Recommendations to further improve access to telemedicine among local councilors include improving infrastructure, expanding educational programs, strengthening public-private partnerships, providing financial support, improving capacity building and training, and establishing monitoring and evaluation mechanisms. It includes implementation, promoting research and innovation. Removing these barriers and implementing these recommendations will help address the challenges associated with low telemedicine coverage in rural MPs. Harnessing the power of technology and telemedicine can help bridge healthcare gaps, improve access to quality healthcare, and improve the well-being of people in rural Madhya Pradesh. Continued cooperation and investment from government agencies, health care providers, technology providers and community organizations are essential to help local legislators realize the full potential of telemedicine.

REFERENCES

- Bhatia R. Emerging health technologies and how they can transform healthcare delivery. Journal of Health Management. 2021 Mar;23(1):63-73.

- Bhoi AK, de Albuquerque VH, Sur SN, Barsocchi P, editors. 5G IoT and Edge Computing for Smart Healthcare. Academic Press; 2022 Mar 29.

- Garg S, Bhatnagar N, Singh MM, Borle A, Raina SK, Kumar R, Galwankar S. Strengthening public healthcare systems in India; Learning lessons in COVID-19 pandemic. Journal of Family Medicine and Primary Care. 2020 Dec;9(12):5853.

- Senjam SS, Manna S, Vashist P, Gupta V, Varughese S, Tandon R. Tele-rehabilitation for visually challenged students during COVID-19 pandemic: Lesson learned. Indian Journal of Ophthalmology. 2021 Mar;69(3):722.

- Pradeepa R, Rajalakshmi R, Mohan V. Use of telemedicine technologies in diabetes prevention and control in resource-constrained settings: lessons learned from emerging economies. Diabetes technology & therapeutics. 2019 Jun 1;21(S2):S2-9.

- Srivastava I, Lal AK, Pandey M, Jaiswal A, Jaiswal I. Transforming healthcare in rural India by telemedicine during COVID-19 pandemic. Journal of Evolution of Medical and Dental Sciences. 2020 Dec 7;9(49):3703-6.

- Agarwal D, Roy N, Panwar V, Basil A, Agarwal PM. Bringing health care closer to people–A review of various telemedicine models under the national health mission in India. Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine. 2020 Jul;45(3):274.

- Shrivastav R, Rawal T, Kataria I, Mehrotra R, Bassi S, Arora M. Accelerating policy response to curb non-communicable diseases: an imperative to mitigate the dual public health crises of

non-communicable diseases and COVID-19 in India. The Lancet Regional Health-Southeast Asia. 2023 Mar 1;10.

- Ganapathy K, Alagappan D, Rajakumar H, Dhanapal B, Rama Subbu G, Nukala L, Premanand S, Veerla KM, Kumar S, Thaploo V. Tele-emergency services in the Himalayas. Telemedicine and e-Health. 2019 May 1;25(5):380-90.

- Shoirah H, Wechsler LR, Jovin TG, Jadhav AP. Acute stroke trial enrollment through a telemedicine network: a 12-year experience. Journal of Stroke and Cerebrovascular Diseases. 2019 Jul 1;28(7):1926-9.

- Kaur S, Kaur R, Aggarwal R. E-health and its impact on Indian health care: an analysis. Paradigm. 2019 Dec;23(2):164-74.

- Needamangalam Balaji J, Prakash S, Park Y, Baek JS, Shin J, Rajaguru V, Surapaneni KM. A Scoping Review on Accentuating the Pragmatism in the Implication of Mobile Health (mHealth) Technology for Tuberculosis Management in India. Journal of Personalized Medicine. 2022 Sep 28;12(10):1599.

- Chopra HK, Nanda NC, Narula J. Advances in Clinical Cardiovascular Imaging, Echocardiography & Interventions: A Textbook of Cardiology.

- Dasgupta A, Banerjee R, Pan T, Suman S, Basu U, Paul B. Metabolic syndrome and its correlates: a cross-sectional study among adults aged 18–49 years in an Urban Area of West Bengal. Indian Journal of Public Health. 2020;64(1):50-4.

- Bassi A, Arfin S, John O, Jha V. An overview of mobile applications (apps) to support the coronavirus disease 2019 response in India. The Indian journal of medical research. 2020 May;151(5):468.

- Sood G, Raheja N. Performance Comparison of Artificial Intelligence-Based Recommendation Systems based on Healthcare Dataset. In2022 International Conference on Futuristic Technologies (INCOFT) 2022 Nov 25 (pp. 1-6). IEEE.

ANNEXURE

Study tool used for Research was Personal Interview and Surveys

Questionnaire

For patients

- तेलीमेडिसिन के बारे में आपने क्या सुना है?
- क्या आपने कभी टेलीमेडिसिन का इस्तेमाल किया है?
- क्या आपको टेलीमेडिसिन की सुविधा का पता है?
- क्या आप टेलीमेडिसिन के माध्यम से अपना इलाज करना पसंद करेंगे?
- क्या आपको टेलीमेडिसिन के माध्यम से इलाज लेने में कोई मुश्किलाएं का सामना करना पड़ा है?
- टेलीमेडिसिन के माध्यम से आपकी सुविधा में क्या सुधार हुआ है?
- क्या आपको लगता है कि टेलीमेडिसिन आपके लिए एक अच्छा विकल्प है?
- क्या आपको टेलीमेडिसिन के माध्यम से डॉक्टर्स से बात करने में कोई शर्म या हिचकिचाहट होती **है?**

For doctors

- Have you ever provided healthcare services to patients through telemedicine?
- What do you think are the advantages and disadvantages of using telemedicine in a rural setting?
- What are the challenges you face while providing healthcare services through telemedicine?
- Have you noticed any improvement in patient outcomes or satisfaction levels through telemedicine?
- Do you think telemedicine can be an effective tool for improving healthcare access and outcomes in rural areas?