

EFFECTIVENESS OF TELEMEDICINE IN RURAL INDIA DURING PANDEMIC

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

Avinash Kumar

Under the Supervision and Guidance of

Dr. Prashant Sharma

2021

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2nd July 2021

INTERNSHIP CERTIFICATE

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Avinash Kumar** has successfully completed his two-month internship at **M-Insure Services Private Limited**, from **23rd April 2021 to 22nd June 2021**.

During his internship, we found him sincere and hardworking.

We wish him all the best for his future endeavours.

For M- Insure Services Private Limited



Priya Rajput
(For HR Department)

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

I hereby declare that this dissertation titled **Effectiveness of Telemedicine in Rural India during Pandemic**, submitted by **Avinash Kumar**, Enrolment No. **IIHMR/01/2019-21/0895** under the supervision of **Dr. Prashant Sharma** for award of MBA in Hospital and Health carried out during the period of **March – June 2021** embodies my original research work. I declare that it has not formed the basis for the award of any degree, diploma, associateship, fellowship, titles in any other institute or other similar institution of higher learning. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Avinash Kumar

TO WHOMSOEVER MAY CONCERN

CERTIFICATE

This is to certify that dissertation titled **Effectiveness of Telemedicine in Rural India during Pandemic**, is a record of the research work undertaken by **Avinash Kumar** 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.

The candidate's approach to the research study has been sincere, scientific, and analytical.
I wish him success in all her future endeavours.

Faculty Guide

IIHMR University, Jaipur

Date

School Dean

IIHMR University, Jaipur

Date

ABSTRACT

Title – Effectiveness of Telemedicine in Rural India During Pandemic

Author – Avinash Kumar

Introduction –

Telemedicine is the delivery of distant clinical services by real-time two-way contact between a patient and a healthcare professional via electronic audio and video technologies. As per World Health Organization definition “The delivery of healthcare services, where reaching out for a healthcare professional is not possible in different geographical regions. By means of Information and Communication Technology (ICT) healthcare professionals providing services for exchange of information for treatment, diagnosis, prevention of disease & injuries and for education or research.

India as a developing country, the feasibility of telemedicine acceptance and implementation is growing with positive attitude in an open strategy on infrastructure and many other ways.

Objectives –

- 1) To develop an open-source telemedicine platform for medical consultations, collaboration with partners
- 2) Setting up more e-clinics in different small regions of rural India to provide better access of healthcare

Method –

- Study Design: Exploratory and observational study
- Study Area: Rural parts of India
- Type of Data: Secondary Data
- Sample Size: Approximately 29000
- Duration of Study: 3 months
- Sampling Technique – Non-Convenience Sampling

Conclusion - Based on the observations of the study, this e-clinic platform helped us breaking the barriers of Tele-Medicine and provide an opportunity for better outreach with our customers. The e-clinic platform is very simple with high value to the customer yet very affordable. It is very important to understand that the risk of getting infection is very high during second wave of COVID and one should avoid visiting hospital for consultation. Doctors

and health professionals must create awareness for using Telemedicine. Confidentiality and privacy of data is maintained as per govt. protocols. Sustainability of Telemedicine must be maintained even after COVID, and it should be used as traditional care.

Keyword – Telemedicine, MFI, COVID, Cashpor, Patient, Healthcare

ACKNOWLEDGEMENT

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals.

I remain indebted to those entire individuals without those help this project would not have been completed. A special gratitude to my academic mentor **Dr. Prashant Sharma, Associate Professor, IIHMR University** for their guidance and support in completing the project and special thanks to **Prajakta Rakhe, OPS Manager (M-Insure)** for her constant support, guidance and keeping me motivated throughout this project.

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I would like to extend my gratitude towards the organization **M-Insure, Bangalore** and team for their kind co-operation and providing me all facilities to achieve my goal completing this project.

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ABBREVIATIONS

WHO	World Health Organization
SATCOM	Satellite Communication
CAGR	Compound Annual Growth Rate
VOIP	Voice Over Internet Protocol
ICT	Information & Communication Technology
MFI	Microfinance
CMC	Cashpor Microcredit Capital
RMP	Registered Medical Practitioner
PHC	Public Health Care

1. INTRODUCTION

1.1 TELEMEDICINE

Telemedicine is the delivery of distant clinical services by real-time two-way contact between a patient and a healthcare professional via electronic audio and video technologies. As per World Health Organization definition “The delivery of healthcare services, where reaching out for a healthcare professional is not possible in different geographical regions. By means of Information and Communication Technology (ICT) healthcare professionals providing services for exchange of information for treatment, diagnosis, prevention of disease & injuries and for education or research.

India as a developing country, the feasibility of telemedicine acceptance and implementation is growing with positive attitude in an open strategy on infrastructure and many other ways.

1.2 HISTORY

The National Aeronautics and Space Administration (NASA) and the Nebraska Psychology Institute were the first to adopt telemedicine as a manner of healthcare delivery in the late 1960s. Prior to this, telemedicine was evolved in following manner:

- Telephony and Telegraphy was established during 1920s
- Wireless/Radio was introduced during 1950s
- TV was introduced during 1960s
- Computer and Internet during 1990/2000

In late 2000, India launched telemedicine, with the Indian Space Research Organization (ISRO) launching the first telemedicine network, the SATCOM-based telemedicine network, in 2001. The Ministry of Health, Government of India has undertaken projects such as the Integrated Disease Surveillance Project (IDSP), the National Rural Telemedicine Network, the National Medical College Network, the National Cancer Network (ONCONET), and the Digital Medical Library Network in an effort to consolidate available health data and make easy access.

1.3 BRIDGING GAP BETWEEN RURAL & URBAN HEALTH

“Our country lives in villages”, the statement is justified from the fact that India has more than six lakh villages while there is approximately 7000 towns and urban centers. Out of a total population of India 69 percent population resides in rural areas. Like every other disparity in rural – urban India in terms of socio-economic parameters, there is also a huge gap in health sector and health care.

According to National Commission on Macroeconomic & health report, 80 percent of health infrastructure, manpower and other resources are agglomerated in urban centres where only 31 percent of population live. Likewise, NFHS results show that the neonatal and postnatal mortality in rural sector is about 50 percent higher than mortality rate in urban areas. There is a huge deficit in rural healthcare in terms of supply and demand. Rural healthcare is provided by a small number of government facilities or private nursing homes, both of which are unable to keep up with rising demand for specialized treatments. The unavailability of high-quality services force people to access health services from the nearby large cities.

Under the following circumstances Telemedicine can turn out to be a revolutionary milestone in bridging healthcare gap between rural and urban sector.

- High population size has led to low doctor to patient ratio i.e., 1:1400. Use of Telemedicine can reduce the ratio.
- Changing nature of disease like COVID-19 which restrict the movement of patient.
- Provides on easy and cheap access to health services without making a hole in public pocket.
- It will reduce the pressure on secondary and tertiary health care system.
- Bringing the small microfinance companies into scenario, which help the rural sector to provide health insurance at a very affordable rate.
- Setting up e-clinics into extremely rural regions of India, to provide better access of healthcare.
- Better digital penetration in rural areas.

The telemedicine market size has seen gradual increase in India, and it is expected to increase at a CAGR of 31 percent in next 5 year.

1.4 TELEMEDICINE GUIDELINES BY MEDICAL COUNCIL OF INDIA

In March 2020, the Medical Council of India's Board of Governors in Supersession released Telemedicine Practice Guidelines in collaboration with NITI Aayog, allowing registered medical practitioners to offer healthcare via Telemedicine. Registered Medical Practitioners (RMP) will take online course to practice Telemedicine, RMPs shall follow the same professionalism, norms, ethics, and standards as applicable to traditional care (8).

Mode of Communication:

- **Video:** Skype, Google meet, video on chat platforms
- **Audio:** Phone, VOIP, apps
- **Text:** SMS, chat-based applications, websites.

Telemedicine Guidelines in India

7 factors to be considered before scheduling a telemedicine session.

- a. Should have appropriate and as per context
- b. Identification of Registered Medical Practitioner and patient must be done before starting consultation
- c. Mode of telemedicine: as many applications can be used to deliver care. This load of innovation frameworks has their particular qualities, shortcomings and settings in which they might be suitable or deficient to provide proper care.
- d. Patient consent: it is very important aspect of telemedicine consultation. Depending on the situation consent can be implied or explicit.
- e. For evaluation of patient, exchange of information is required.
- f. Two types of consultation: first consult and follow-up consult
- g. Telemedicine Management:
 - Counselling – provide consultation related to some clinical condition
 - Health Education – provide education regarding some medical condition and case
 - Medication – refers to medicines, medicinal drugs, simply drugs or diagnosis prescribed by registered health professional.

1.5 INTRODUCTION OF MICROFINANCE WITH TELEMEDICINE

Microfinance, also called as microcredit, is a type of banking service that provides financial services to unemployed people or lower income stata groups that would not be able to receive them otherwise. (7).

Microfinance, or the giving of modest loans to groups of people with the objective of investing in self-employment projects, has proven to be a viable and effective technique for poverty reduction. There are numerous health-care delivery models to choose from. While some MFIs have formally partnered with healthcare providers to provide services to their customers, others have established a separate agency within their own structure to provide health services to its customers directly.

Cashpor Microcredit Capital (CMC) is one of the main organizations who is partnered with M-Insure in April 2019 and has been offering Telemedicine and E-clinic facilities for CMC's customers. **Tele-Medicine & E-Clinics:** The core node of the product is to utilize mobile forms of communication (phone calls, chat messaging, and video), customers can call this service 24/7 and receive a consultation from a certified doctor. Depending on the condition, the doctor may diagnose and recommend treatment or medication. Prescription is sent directly to customers mobile phone as a PDF or SMS depending on type of phone. In some cases, the doctor will refer the customer to a local physician/hospital or laboratory for investigative tests. In all cases, our team will maintain a digital medical record for each customer and will follow-up after an initial consultation. Regular routine follow-ups and handholding of the customers (patients) after doctors' advice are key part of the tele-health experience that we provide.

Proposed Model of Solution

Deployment of trained 'primary healthcare workers' on the field to bridge the gap between our customers (patients) and our tele-health agents. A 'primary healthcare worker' will be assigned each from CMC and M-Insure to a particular region for better outreach. In terms of education, these PHC workers would be required to hold a degree in pharmacy or social work/social engineering with specialization in public health practices.

PROCESS FLOWCHART

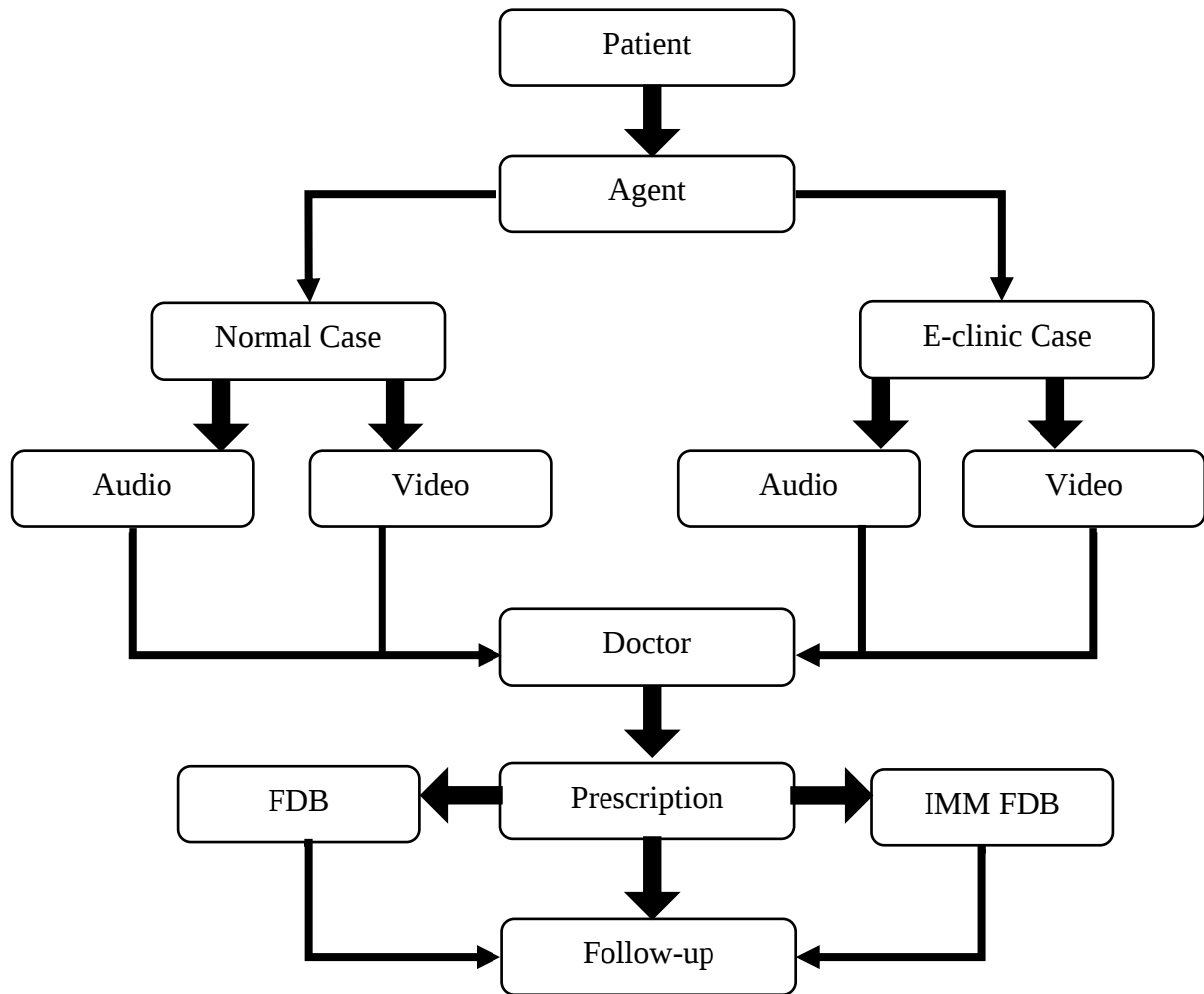


Figure 1: Process Flow Chart

AIM & OBJECTIVES

AIM:

To Increase the Efficacy of Telemedicine in Rural India

OBJECTIVES:

- Development of an open-source telemedicine platform for medical consultations, collaboration with partners
- Setting up e-clinics in different small regions of rural India to provide better access of healthcare

2. LITERATURE REVIEW

Author	Topic	Year	Research findings/Outcome
Leite et al.	New development: 'Healing at a Distance – Telemedicine and COVID-19	2020	• Places an emphasis on enhancing the telemedicine service. • Illustrates how telemedicine and other e-health care technologies can assist clinicians, medical staffs, and healthcare systems. • One of the key issues is the lack of rules & regulations in many countries. (9)
Elham et al.	The Role of Telehealth During COVID-19 Outbreak: A Systematic Review Based on Current Evidence	2020	• Evaluate the impact of telehealth services in illness prevention, diagnosis, control, and treatment in COVID outbreak. • Providing continuous care and avoiding physical contact helped in reducing mortality and morbidity in Pandemic. • Telehealth, an important tool in caring services while keeping patients and health providers

			safe during COVID-19 outbreak. (10)
Somen et al.	Provision of health services for microfinance clients: Analysis of evidence from India	2011	• A rising number of MFIs in India realise the social benefits of public including health as part of their portfolio. • One out of every four microfinance institutions provide health services. Small-scale health awareness campaigns to complicated health interventions are all part of these programmes. • Health education (58%) is the most common health intervention offered by MFIs, followed by health camps (24%), and health insurance (24%).

3. METHODOLOGY

STUDY DESIGN

Study Design: Exploratory and observational study

Type of Data: Secondary Data

Sample Size: Approximately 29000

Duration of Study: 3 months

STUDY POPULATION

All the user who are availing telemedicine facility through M-Insure company

ELIGIBILITY CRITERIA:

Inclusion Criteria

- All the users, staffs, employees, and their family member working in Microfinance companies and partnered with M-Insure.

Exclusion Criteria

- All the users who are not partnered with M-Insure will not part of this study.

DATA COLLECTION PROCESS:

Data was taken from M-Insure repository, only after all permissions and consent regarding the privacy of company is granted.

DATA ANALYSIS PROCEDURE:

Convenience Sampling is used. The collected data then compiled and analyzed by using Pivot tables & charts in Microsoft Excel.

ETHICAL CONSIDERATIONS:

Prior to the study, all aspects of confidentiality were assured to all the participants and of the organization. Only those people were eligible who are member of the organization and give a proper consent to participate in the study.

4. RESULTS

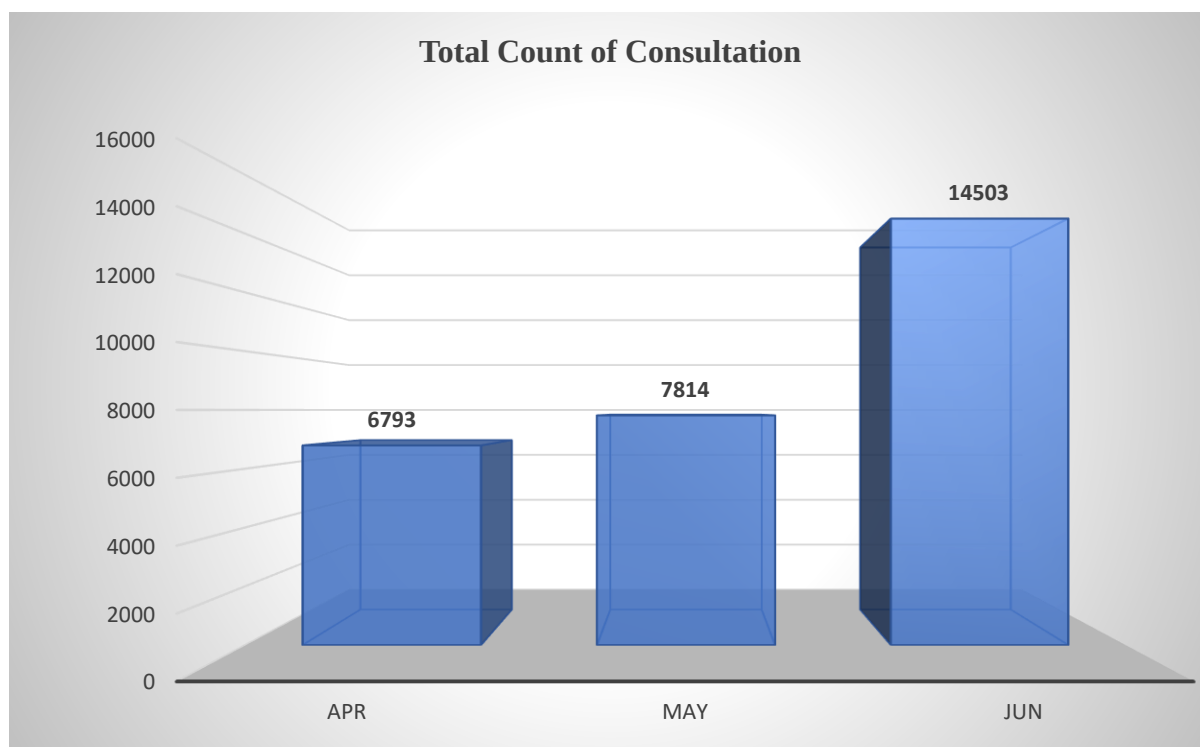


Figure 2: Count of consultation done in month of April to June

Interpretation: Figure depicts the total number of consultations done in the months of April, May and June. Drastic change in consultation in the month of June has been noticed as 350 E-clinics were launched.

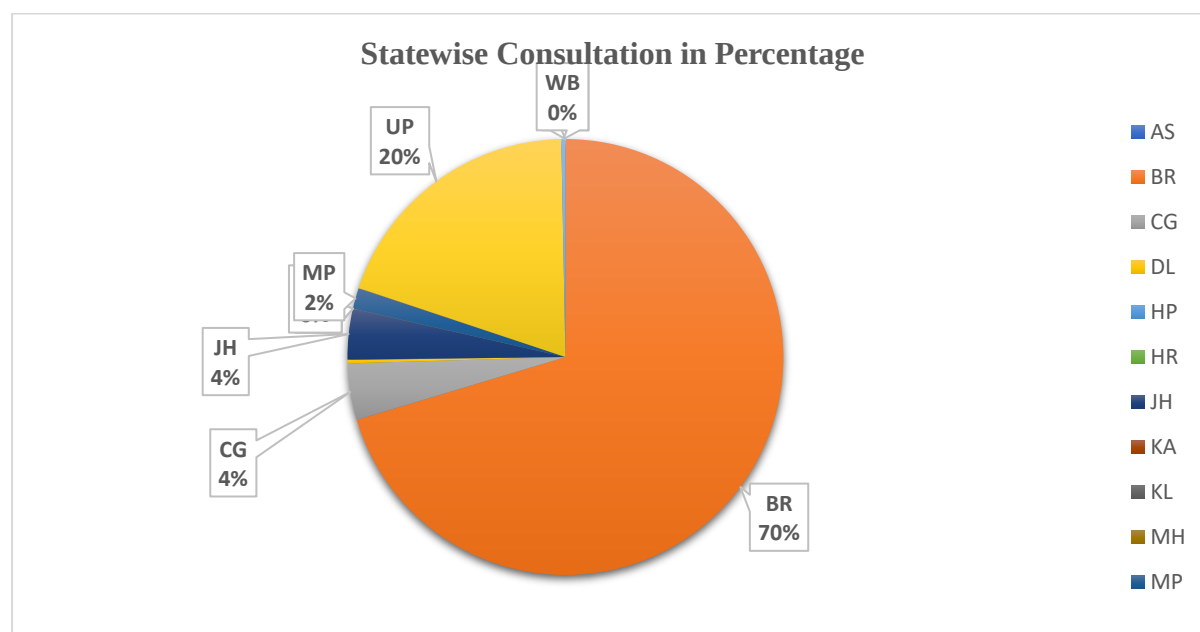


Figure 3: State-wise consultation done (Percentage)

Interpretation: Figure depicts the state-wise consultation in percentage. Among the states Bihar, UP, Jharkhand, Chhattisgarh, and MP are the top end users.

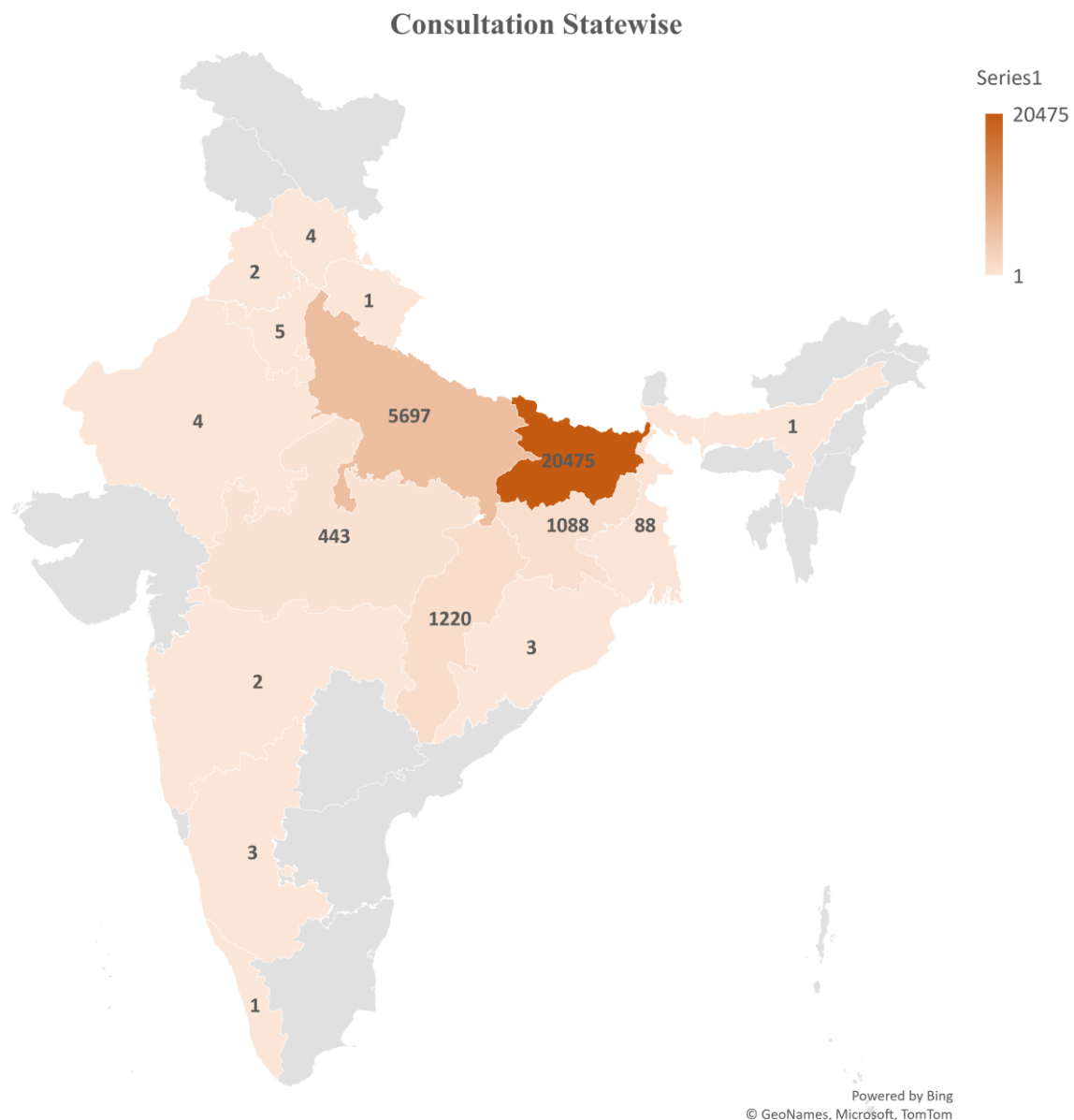


Figure 4: Distribution of cases across the country

Interpretation: The above map depicts the spatial distribution of consultation services/cases across the country conducted by the organization. The target area for shown in map is Hindi belt. Therefore, the number of consultations is more in Bihar & UP. High number of consultations in Bihar (20475) and UP (5697) can also attribute to its high population base, high population density and poor public health infrastructure. After UP & Bihar the more cases are from Jharkhand, Madhya Pradesh and Chhattisgarh.

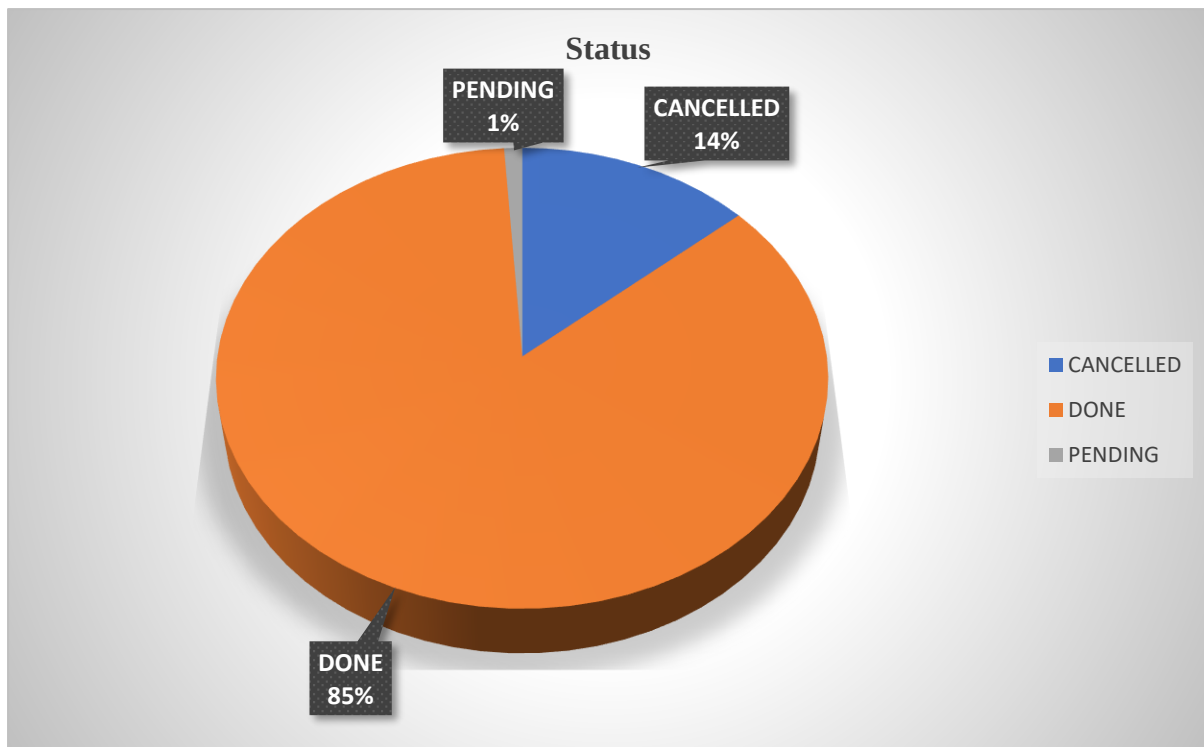


Figure 5: Status of the cases

Interpretation: The above graph depicts the status of cases. It is divided into three categories i.e., Done, Pending, and Cancelled. The ratio of done cases is 85 percent, pending 1 percent and cancelled case 14 percent. 14 percent of cancelled cases because patient could not be reached at the time of consultation (phone number not reachable or patient not available) and other reason was that patient does not require consultation anymore. 1 percent of cases are pending as the flow of patients are high and doctor could not attend the patients and another reason the patient did not take the follow-up after few days of consultation.

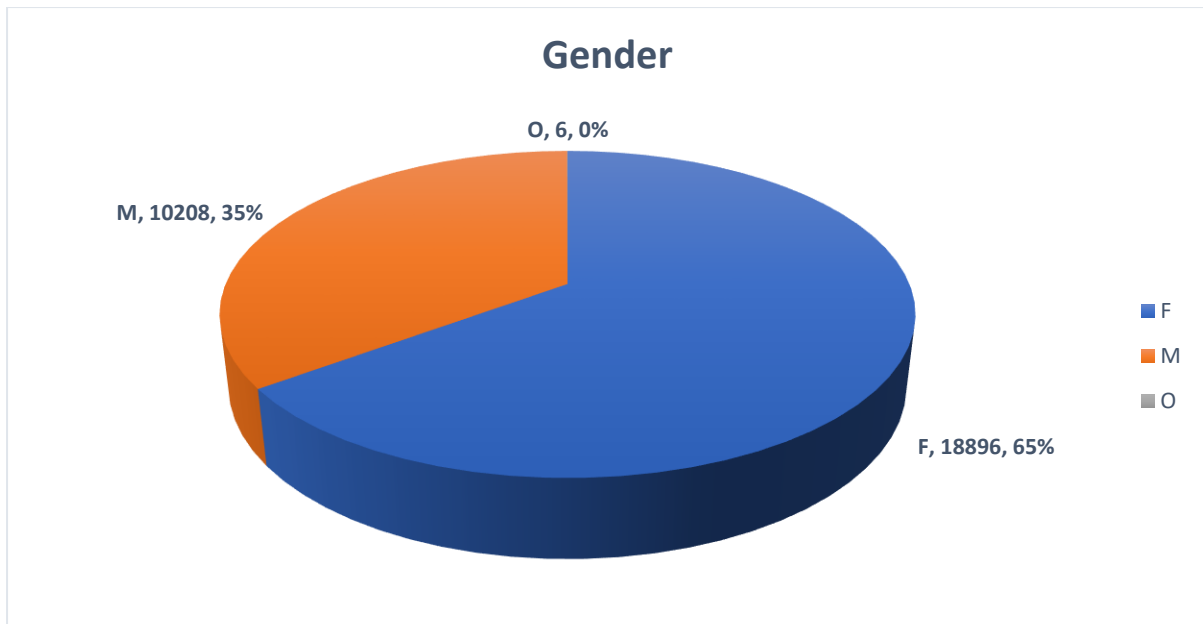


Figure 6: Gender

Interpretation: Above graph depicts the gender of patients, which shows 18896 cases (65%) are the females, 10208 cases (35%) are men and 6 cases are of other categories.

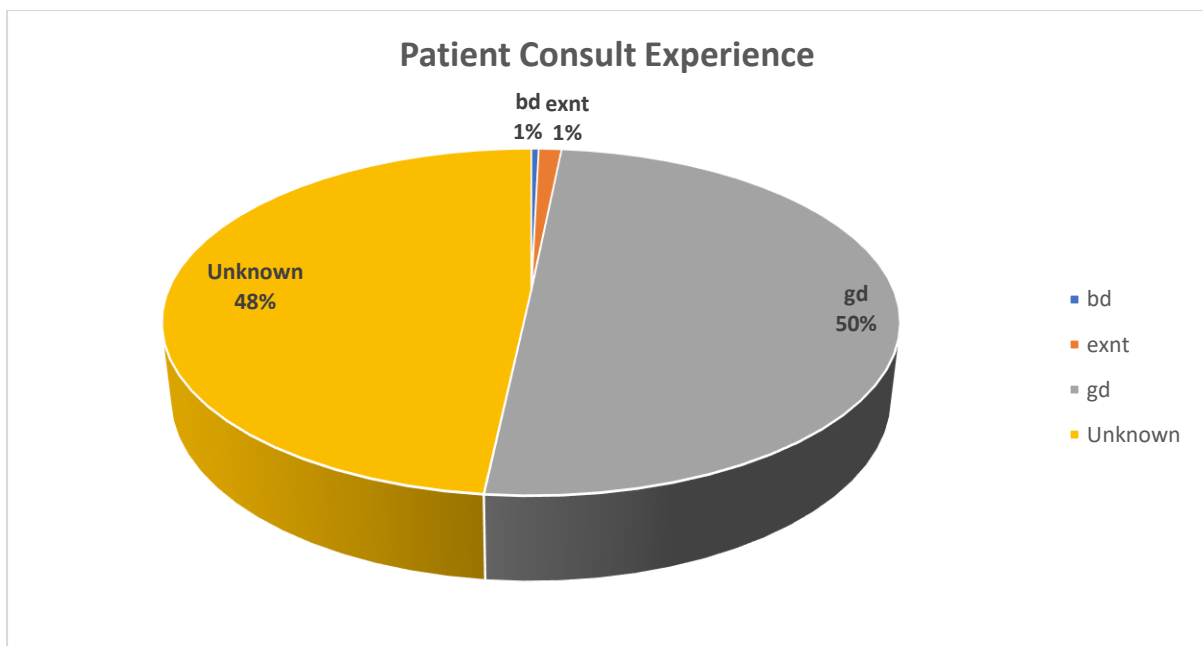


Figure 7: Consultation experience of patient

Interpretation: The above graph depicts that 348 users (1%) have excellent experience of teleconsultation, 14590 users (50%) have good consultation experience, 112 users (1%) have bad experience and 14060 users (40%) data is unknown.

5. RECOMMENDATION

- Strategy to start e-clinic could have done a bit earlier, as it would have helped a lot of patients who were unable to go to the hospitals during COVID.
- More e-clinic should be opened in different regions of India as consultation from southern and northern India is very less.
- To increase the customer base/area of influence the next targeted area should be the urban sprawls, rural urban fringe, and the hinterlands where the need for healthcare is most needed.
- Apart from this, organization should increase its base in other states like North-East, J&K, Gujarat where its presence is almost nil.
- 1% pending cases can be converted into done case by adding more doctors to the system with different specializations. Even if the cases increase randomly, we will have enough doctors to tackle the situation.
- Consultation experience of patient is based on various parameters such as
 - Consultation duration
 - Doctors' behavior
 - Duration of prescription received
 - Proper follow-up

48% unknown factor can be change into good or excellent consult experience by taking immediate feedback by organization's pharmacists.
- Leverage Jan Aushadi Kendra who can provide free medicines to BPL customers on the basis of our Prescription.
- **Rashtriya Arogya Nidhi** is a scheme in which government-run super specialty hospital/institution that gives financial support to patients who are below the poverty line and are suffering from life-threatening ailments.
- Ayushman Bharat is another Government scheme which may be used.
- With our model, we can further build Telemedicine where we may not event need physical infrastructure to support it. CHF can take smartphones to the field to get a video call from doctor or customers can call our phone numbers directly through their feature phone to get consultation on basic illnesses which are persistent 70% of the times.

6. CONCLUSION

Based on the observations of the study, this e-clinic model helped us breaking the barriers of Tele-Medicine and provide an opportunity for better outreach with our customers. The model is very simple with high value to the customer yet very affordable. In the regions where our services are being provided, customers really need access to basic facilities like trained personnel, local certified doctors (in case of referrals), access to medicines etc. that add value to their health and wellbeing. Therefore, customers from Cashpor would be served well if we go ahead with this proposed model.

Finally, a decision like this goes a long way in planning the future roadmap of products and processes for all the customers and for other partners (MFIs). Therefore, our endeavour would be to deploy more field agents/primary healthcare workers working directly with the customers in the coming future as well.

It is very important to understand that the risk of getting infection is very high during second wave of COVID and one should avoid visiting hospital for consultation. Doctors and health professionals must create awareness for using Telemedicine. Confidentiality and privacy of data is maintained as per govt. protocols. Sustainability of Telemedicine must be maintained even after COVID and it should be used as traditional care.

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