Acceptance of Telemedicine in Tier 2 and Tier 3 Cities

By

Alisha Eqbal

Dissertation submitted for the partial fulfillment of the

MBA Hospital and Health Management

Academic year, 2016-2018

The IIHMR University, Jaipur

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MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

TO WHOMSOEVER MAY CONCERN

This is to certify thatMs. Alisha Eqbal student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at Intellileo Technologies Pvt. Ltd. from 16th of February, 2018 to 11th of May, 2018

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all the success in all her future endeavors.

Dr. Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur

Dr. P R Sodani
Professor
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This certificate of internship is awarded to:

Alisha Eqbal

(A student of The IIHMR University having enrollment no: IIHMR-U/01/2016-18/0377)

In recognition of having successfully completed her Internship in the department of

Research & Development (R&D)
and has successfully completed her Project on

Acceptance of Telemedicine in Tier 2 & Tier 3 Cities

On 11-May-2018

From **Intellileo Technologies Pvt Ltd**

During this period, she came across as a committed, sincere & diligent person who has a strong drive and zeal for learning

We wish her all the best for future endeavors

Smita Hota.
Director

For, DIRECTOR
INTELLILEO TECHNOLOGIES PVT. LTD.
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THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled**"Acceptance of Telemedicine in Tier 2 & Tier 3 Cities"**and submitted by **Alisha Eqbal, MBA-HM 21-0377**under the supervision of **Dr. P.R. Sodani** for award of MBA in Hospital and Health from The IIHMR University carried out during the period from 16th of February, 2018 to 11th of May, 2018 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Alisha Eqbal

Signature

Abstract

Introduction: India is the world's largest democratic country, and second most populous country in the world. Despite recent successes in the economic front, India still faces many social challenges like poverty, illiteracy, sanitation, gender inequality, and lack of healthcare for all. The healthcare disparity is mainly due to shortage of trained health care professionals and lack of necessary infrastructure in remote areas of the country. Telemedicine as a tool for health care delivery, particularly in the rural areas where 68% of the population lives, has been addressed by the Government of India since the turn of the century using telemedicine. Telemedicine as a method of healthcare delivery has been successfully tested all over the country, and the results have been very promising. Methods: Literature search was done on Medline, Web of science and Google search engines using keywords telemedicine, India model of health care delivery. Results: We found that telemedicine as a healthcare delivery system has been effectively used in several underserved areas of India, through the initiatives taken by the federal, state governments as well as private sector. Conclusion: Although not a substitute for traditional healthcare system, telemedicine can be used to overcome healthcare disparities in the underserved areas. This approach for healthcare delivery can be replicated around the world, especially in the developing countries.

Acknowledgment

I bring taken exertions in this project. However, it might not have been conceivable without those sorts backing Furthermore help of numerous people and organization. I also want to extend my earnest on account of every one of them.

I am exceptionally obligated to Dr. Gopal Dash for his direction and consistent supervision and also to provide important data with respect to the project and likewise for his support in finishing the project.

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CONTENTS:

LIST OF FIGURES

LIST OF TABLES

LIST OF CHARTS

LIST OF ABBREVIATIONS

ICT: Information and Communication Technology
CAGR: Compound Annual Growth Rate
FY': Financial Year
MCI: Medical Council of India
TCC: Telemedicine Consultation Centers
TSC: Telemedicine Specialty Centers
UNICEF: United Nations Children's Fund

INTRODUCTION

This report is based on a study on the Acceptance of Telemedicine in Tier 2 & Tier 3 Cities. It has secured the essential introduction of both organization and Telemedicine, aim, and objectives, study design, data source or research methodology, concluded with the findings and recommendations to improve the acceptability of telemedicine in tier 2 & tier 3 cities.

Organizational Profile: Intellileo Technologies Pvt. Ltd. is a platform which provides online neurology and neuropsychology consultations. It mainly targets people from tier 2 and tier 3 cities and the rural areas who have a huge opportunity cost travelling and consulting a specialist. Words from the co-founder's desk "We are, a bunch of like-minded people having worked on various fields of Medicine, Information Technologies as well as Finance (Having worked more than 50 cumulative years) have come together to make the expertise of medical professionals more accessible and more affordable driven by technologies. We have come up with a platform called www.dehpa.com, which will be accessible through website as well as mobile apps through which people in need will be able to take expert opinions and advice. Intellileo, a health-tech start-up committed to improve the rural healthcare services with constant innovation. Our interactive and collaborative platform bring together the individuals looking for health services, the health experts and the healthcare devices who provides personalized care. The platform, Dehpa.com, was born of this desire to provide the best health advise to remote and rural people without being travel to meet in person with the doctor in bigger cities."

Vision: To extend the best medical services to remote and rural areas.

Mission:

- To make Dehpa the best platform for healthcare advise in coming future.
- To make great health service product and constantly keep it improving.
- To improve the faith with the help of technology and more transparency.

- To focus on innovation, be it machine learning or artificial intelligence for more personalized services.
- To focus mainly on one aim that to extend the best medical services to remote and rural areas.
- To minimize the travel time of people who come to bigger cities for consulting a renowned health specialist.

Services Available

Epilepsy

Vertigo and dizziness

Disease of the muscle and nerves

Stroke

Multiple Sclerosis

Psychological problems

Telemedicine

Telemedicine is the utilization of media transmission and data innovation to give clinical medicinal services from a distance. It has been utilized to overcome distance boundaries and to enhance access to therapeutic services that would regularly not be reliably accessible in far off rural groups. It is likewise used to spare lives in basic care and emergency circumstances.

Despite the fact that there were far off forerunners to telemedicine, it is basically a result of twentieth century media transmission and data advancements. These advancements allow interchanges amongst patient and medicinal staff with both comfort and loyalty, and in addition the transmission of restorative, imaging and wellbeing informatics information starting with one site then onto the next.

Early types of telemedicine accomplished with phone and radio have been supplemented with videotelephony, progressed symptomatic strategies bolstered by circulated customer/server applications, and moreover with telemedical gadgets to help in-home care.

Telemedicine in India

In India, a gigantic urban - provincial hole exists inside the general populace of India, out of which a sizeable lump of the country populace is disadvantaged of the basic and essential healthcare facilities. The shortfall of healthcare services experts in provincial zones is a noteworthy motivation behind why government and healthcare organizations are seeking to utilize technology and innovation as an intention to reach out to the destitute. Rural populace utilizes just 15% of the aggregate healthcare resources accessible to the Indian populace.

The use of innovation and technology in medicinal services arrangement of India has fundamentally changed the market flow, since the approach of ICT in healthcare market. E-Healthcare advancements can help in simple access of healthcare services administrations to patients in provincial India. This is foreseen to spare voyaging time and money for availing expert or second opinion however more imperative it will make a country Indian more advantageous in healthcare aspects. E-Health administrations and resources showcase in India has beated and has developed at a CAGR of 20.4% amid the period FY'2010-FY'2015. The commitment in incomes was completely made by IT medicinal services innovation which has offered broad comfort to the treatment centers, drug stores and labs to track patient's data. In spite of the broad development for e-health services and equipment market in India, the fragment will never have the capacity to supplant up close and personal conference with specialist, at center or in doctor's facility.

The telemedicine market has included the utilization of media transmission administrations to enhance the wellbeing status of a patient through trade of restorative data starting with one site then onto the next. The telemedicine administrations have been sectioned into Real Time telemedicine administrations and Store and Forward telemedicine administrations. Continuous telemedicine administrations incorporate telephonic call or video-conferencing call where both the specialist and the patient must be available in the meantime and constant association occurs between them while, in Store and Forward telemedicine administrations does not require both the specialist and the patient to be available in the meantime and transmission and evaluation of the restorative records should be possible at helpful time.

India Telemedicine Market has been fragmented by benefit zones, for example, Tele-radiology, Tele-meeting, Tele-ophthalmology, Tele-ICU, Tele-dermatology, Tele-surgery, Tele-pathology and Tele-psychiatry. The telemedicine advertise has been to a great extent ruled by Tele-radiology. Tele-radiology includes the electronic transmission of patient's

radiographic pictures, for example, x-beam, CT output or MRI from one area to radiologist sitting at another area for understanding. Tele-consultancy is the second biggest supporter of the income earned by Indian telemedicine industry amid FY'2015. Tele-consultancy is characterized as sound and video correspondence connect between the patient and the specialist or between specialists of various orders. Tele-ICU has been viewed as the third biggest classification in the telemedicine market of India.

It offers extraordinary compared to other alternatives for delivering healthcare services in tier 2 and tier 3 cities and geologically far off populace spread across India. Likewise it addresses to the issues of

• Inadequate healthcare facilities in tier 2 and tier 3 cities and difficult to reach zones.

• Problem of holding specialists in such regions where they are required to serve and spread broad health awareness.

• Specialists and super specialists can't be held back in tier 3 cities and rural regions as they will be professionally confined and end up outdated and even money related impetuses additionally can't anticipate it.

LEGALITY OF TELEMEDICINE IN INDIA

Without a particular law, as the act of Telemedicine is on a very basic level a mind boggling mix of 'Practice of medicine' with 'Information technology', without a doubt all the current laws identifying with both 'medicine' and 'technology' in India would apply to Telemedicine.

Hence, the practice of Telemedicine in India is governed by various statutes that generally relate to the practice of ‘medicine’ in India such as the Medical Council of India Act, 1956 (**MCI Act**) and the rules and regulations issued there under and state specific legislations where the business is proposed to be established. In terms of the MCI Act, once a doctor/medical practitioner is qualified and registered in any one of the state medical registers maintained by the respective states, a copy of his/her registration certificate is forwarded to the Medical Council of India for enrollment of his/her name in the Indian medical register (national database). In terms of Section 27 of the MCI Act, any person whose name is enrolled in the Indian medical register can practice as a medical practitioner in any state of India according to his qualifications. Hence, inter-state practice of Telemedicine by medical practitioners is permissible.

For all medical treatments through telemedicine or web-interface format, it is important to ensure that the prescriptions issued by the medical practitioner satisfy the requirements of being in writing and signed by a registered medical practitioner, in accordance with the Drugs and Cosmetic Rules 1945, without which, the prescription will be invalid in the eyes of the law.

Telemedicine would also be governed by the Information Technology Act, 2000 which provides for standards in relation to information technology in general although it does not relate to the provision of healthcare services by using information technology. Issues related to security, privacy and confidentiality of patient data and potential misuse and even abuse of electronic records in the form of unauthorised interception and/or disclosure would need to be considered.

In the absence of any central or overarching legislations providing for registration or licenses for practicing Telemedicine in India, state specific laws governing the practice of 'medicine' generally have to be considered.

Recommended Guidelines & Standards for Practice of Telemedicine in India

The Department of Information Technology, Ministry of Communications and Information Technology issued Recommended Guidelines & Standards for Practice of Telemedicine in India (**Guidelines**) in May, 2003. As the name suggests, these Guidelines are not binding, although it is advisable to follow them as various issues arising from Telemedicine have yet not been tested by Indian Courts.

The Guidelines delineate the necessary information in terms of introduction to Telemedicine, including, definitions and concepts, standards required for hardware, software and clinical devices, including the security aspects and finally the Telemedicine process guidelines.

The Guidelines recommend that each healthcare provider should have a unique provider identifier which will flow to all its programs and telemedicine consultation centres (**TCC**). Each of the telemedicine speciality centres (**TSC**) and TCCs are also recommended to have a separate unique and universal identifier code. It is further recommended that each patient also be identified by a unique and universal patient identifier so that one central patient information record can be assimilated, comprehensive medical databases can be built, or if the patient wants, he/she can move across multiple providers without losing data.

The Guidelines also spell out the hardware and software (including detailed configuration and specifications) which is recommended for the setting up of the TCC and TSCs. In the absence of a legislation governing Telemedicine, it is suggested that the machinery and equipment of the vendor complies with the specifications given in the Guidelines so as to dilute potential liability issues at a later stage.

The Guidelines provide adequate risk mitigation at various stages in the process of Telemedicine and thereby must be closely consulted while setting up Telemedicine organizations.

Some of the popular Telemedicine business models prevalent in India include captive and incentivized multi-tier structures. While the captive model (in which the TSC and the TCC are owned and controlled by the operating entity) opens up a myriad of liability issues for the operating entity vis-à-vis the employees, local regulations applicable to operating diagnostic centres, TSC and TCC, etc. and involves a substantial investment in equipment and networking infrastructure, the incentivized model (a franchise based outsourced model) is usually aimed at minimizing the liability exposure on the operating entity since most of the inter-tier work force is outsourced based on an incentive structure.

For entities not otherwise engaged or established in the medical services sector, an incentivized multi-tier structure is the preferred option to minimize the liability exposure on the operating entity. However, a captive structure offers greater functional autonomy, though it requires larger seed investments as well.

Government Initiatives

With quick introduction and potential development of Telemedicine systems, it was felt that a prescribed **set** of standards and guidelines should be set up and always refined, to advance coordinated development of routine with regards to Telemedicine in the nation. As part of this undertaking, Department of Information Technology, Government of India, under a high power Committee detailed an arrangement of 'Norms &Guidelines for Practice of Telemedicine in India'. The activity is being taken further by the Union Ministry of Health and Family who has set up a Task Force for Telemedicine in India with a subgroup for Telemedicine Standards. The different individuals from the subgroup were drawn from various government and private offices/Institutions that took activities in the type of advancement of for the most part adequate norms and rules in Telemedicine. The Subgroup under convenorship of the creator has presented this record on appropriate norms and rules for telemedicine hone in India for finding a way to make these compulsory.

The Ministry of Health and Family Welfare has additionally perceived the positive effect of telemedicine in enhancing healthcare services in nation. It has chosen to set up national provincial telemedicine network. In this task, a national system for interlinking every medicinal school/University Hospitals the nation over has been proposed. This system named National Medical College Network is for proceeding with medicinal training and e-health services everywhere throughout the nation. Officially 150 medical universities around the nation have been interconnected by high speed fiber - optic based web under National

Knowledge Network Project. In the field of healthcare delivery, National Rural Telemedicine Network is attempting to interconnect fringe heath facilities focusing in rural regions with regional healing facility/tertiary care focusing and teaching hospitals. [1,2].

Population-based classification[edit]

"The Reserve Bank of India (RBI) classifies centres into six tiers based on population. The tables below shows the classification."

Classification of centres (tier-wise)

Population classification	Population (2001 Census)
Tier-1	100,000 and above
Tier-2	50,000 to 99,999
Tier-3	20,000 to 49,999
Tier-4	10,000 to 19,999
Tier-5	5,000 to 9,999
Tier-6	less than 5000

Table 1: Population based classification of Indian Cities

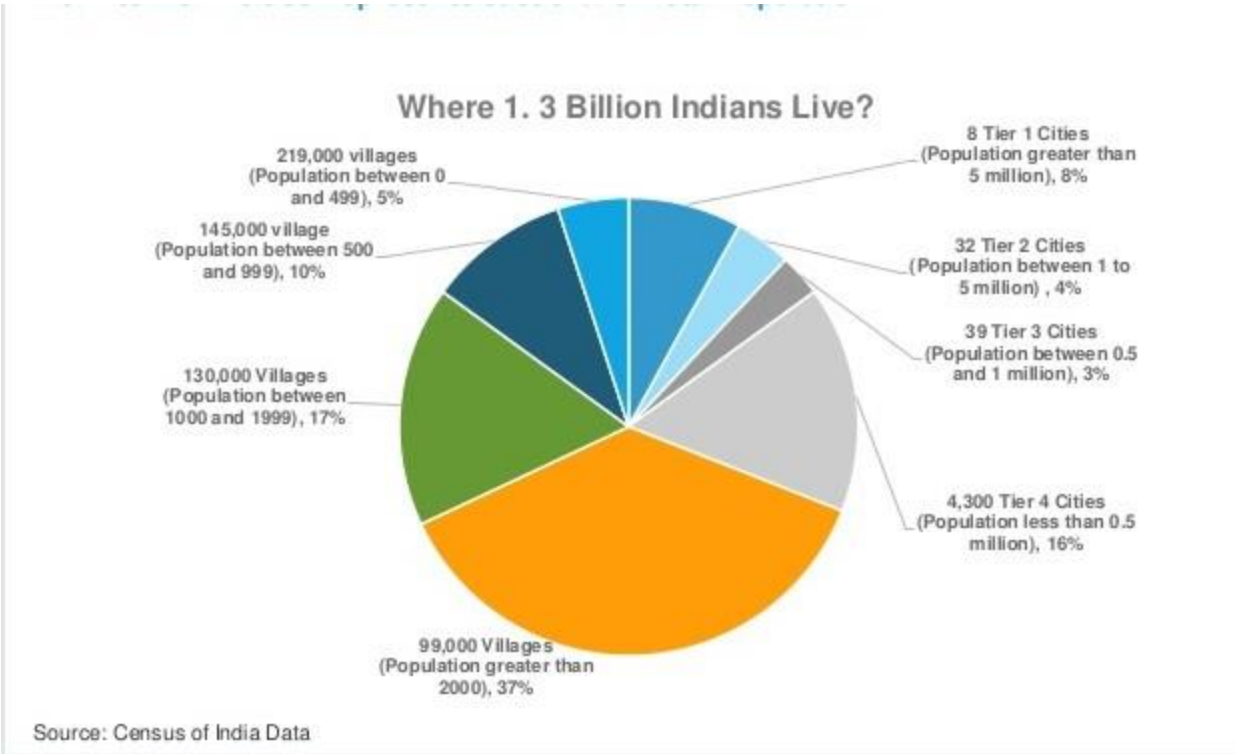


Fig 1: Population based classification of Indian cities with other population segments

Aim: Acceptance of Telemedicine in Tier 2 & Tier 3 Cities

Objectives:

- to understand the current scenario and future growth of Telemedicine in healthcare sector in remote and rural areas, mostly the tier II and tier III cities.
- to understand the requirement of the available resources such as internet for the benefits and betterment of the telemedicine process.
- to study the acceptance of telemedicine by people traveling to big cities for consulting experts.
- to find out the current understanding of the society about telemedicine and online consultations.
- To study the feasibility of such concept and driving factors for people.

Literature Review

Literature search was done on Medline, Web of science and Google search engines using keywords telemedicine, India model of health care delivery. It was to identify relevant literature on Telemedicine in Health based on which examples of the use of Telemedicine in the practice of public health, telemedicine and healthcare were identified, their added value analyzed. The websites have been searched for publications, including grey literature, on the use of telemedicine in health care.

Ken Research in their report titled "India e-health services market outlook to 2020 - focus on on-call home healthcare, telemedicine, m-health and healthcare it segment", (2015) they carried out a study and provided a comprehensive analysis of e-health services market in India. The study revealed that the telemedicine market of India is one of the most thriving markets. With growing linkages between internet and delivery of healthcare services, the concept of telemedicine especially in the rural & remote areas has gained greater importance. Factors such as inclining demand from consumers for cheap & quality healthcare services along with the limited access to doctors in rural areas have been leading the growth in demand for telemedicine services in India. The telemedicine market in India has showcased remarkable growth of 20.4% during 2010-2015 . The market for telemedicine in India is projected to grow furthermore by 2020 [3].

Kartik Deshpande, Bob Frantz, Laura Lukehart, and Becky Trevino in their research paper titled "Telemedicine in Rural India: Opportunities and Challenges for the Private Sector", (2012) they carried out a study to explore and focus on the ecosystem required to create a sustainable telemedicine infrastructure within India. The research further revealed that there are two levels of development in rural India. Rural hospitals – which are in larger rural cities – have access to ISRO satellite network and are supported by Apollo Telemedicine, Narayana Hrudayalaya, and other major hospitals. In even more rural areas, where individuals live far from hospitals, infrastructure is much more limited, large scale providers are not present, and funding is more difficult to find. These, and other barriers, cause telemedicine in rural regions without hospitals to still be in a development phase [4].

Nishith Desai Associates in their research paper titled "e – health in India", (2017) they carried out a study to seek existing laws and regulations for telemedicine. The paper revealed that some e-Health services have set ups that merely facilitate the interaction between the patient and the service provider and are not directly involved in the provision of the services. In such cases, the service provider would be considered an intermediary under the Intermediary Guidelines and the IT Act. There are certain relaxations that are given to intermediaries in terms of liability of third party data or communication, provided they

observe certain due diligence requirements under the Intermediary Guidelines. These requirements are extensive, and include having terms of use in place, removal of offending/unlawful material within 36 hours of a request and appointing a grievance officer. The relaxation would apply only if the intermediary does not initiate the transmission of the data/communication, select the receiver of the transmission or select or modify the information in the transmission [5].

Debjit Bhowmik, S. Duraivel, Rajnish Kumar Singh, and K.P. Sampath Kumar in their journal titled "Telemedicine- An Innovating Healthcare System In India" (2013) quoted that Skype, biometrics, M-health which is use of mobile phones and E-health are all set to make an entry into India's primary health centres PHCs and sub-centers as the health ministry steps on the gas to go hi-tech. The steering committee on health has said that in the 12th plan 2012-17, all district hospitals would be linked to leading tertiary care centers through telemedicine, Skype and similar audio visual media. M-health will be used to speed up transmission of data. India will also put in place a Citizen Health Information System CHIS - a biometric based health information system which will constantly update health record of every citizen-family. The system will incorporate registration of births, deaths and cause of death. Maternal and infant death reviews, nutrition surveillance, particularly among under-six children and women, service delivery in the public health system, hospital information service besides improving access of public to their own health information and medical records would be the primary function of the CHIS [6].

B. Bowonder, Mohit Bansal, and A. Sharnitha Giridhar in their study on Apollo Hospitals Telemedicine Project titled "A Telemedicine Platform", they made an attempt to understand the working of telemedicine. The study revealed that telemedicine is a multiple application ICT platform. Though telemedicine has enormous potential to reduce the digital divide by increasing the reach, good highspeed links are essential for its success. The volume of transactions is likely to be the critical success factor and hence the strategy has to be to create more transactions if it has to be made sustainable. The concept is not quite as it is a virtual consultation practice with a different cultural experience. The success of telemedicine depends on connectivity and volume of transactions. Probably, a viable strategy could be to introduce telemedicine in small towns where there is lack of facilities, but connectivity extension could be easier [7].

Thakar S, Rajagopal N, Mani S, Shyam M, Aryan S, Rao AS, Srinivasa R, Mohan D, and Hegde AS in their report titled "Comparison of telemedicine with in-person care for follow-up after elective neurosurgery: results of a cost-effectiveness analysis of 1200 patients using patient-perceived utility scores", (2018) they carried out a study to evaluate the cost-effectiveness of TM consultations for follow-up care of a large population of patients who underwent neurosurgical procedures. The study revealed that telemedicine care dominates the in-person care strategy by providing more effective and less expensive follow-up care for a remote post-neurosurgical care population in India. In the authors' setting, this benefit of telemedicine is sustainable even if half the telemedicine consultations turn out to be unsuccessful. The viability of telemedicine as a cost-effective care protocol is attributed to a combination of factors, like an adequate patient volume utilizing telemedicine, patient utility, success rate of telemedicine, and the patient travel distance [8].

Sanjit Bagchi in his article titled **"**Telemedicine in Rural India", (2006) they carried out a study on "Can Telemedicine Bridge the Divide?". The study mentioned a quote by Dr. Devi Shetty: "In terms of disease management, there is [a] 99% possibility that the person who is unwell does not require [an] operation. If you don't operate you don't need to touch the patient. And if you don't need to touch the patient, you don't need to be there. You can be anywhere, since the decision on healthcare management is based on history and interpretation of images and chemistry … so technically speaking, 99% of health-care problems can be managed by the doctors staying at a remote place—linked by telemedicine ." [9]

Research Methodology

Study Area: The study was conducted in various hospitals across Bengaluru where there were larger footfall of patients from tier 2 and tier 3 cities.

Type of Study: Cross sectional study

Duration: 3 months

Type of Data: Primary data which is defined as data used in research originally obtained through the direct efforts of the researcher through surveys, interviews and direct observation.

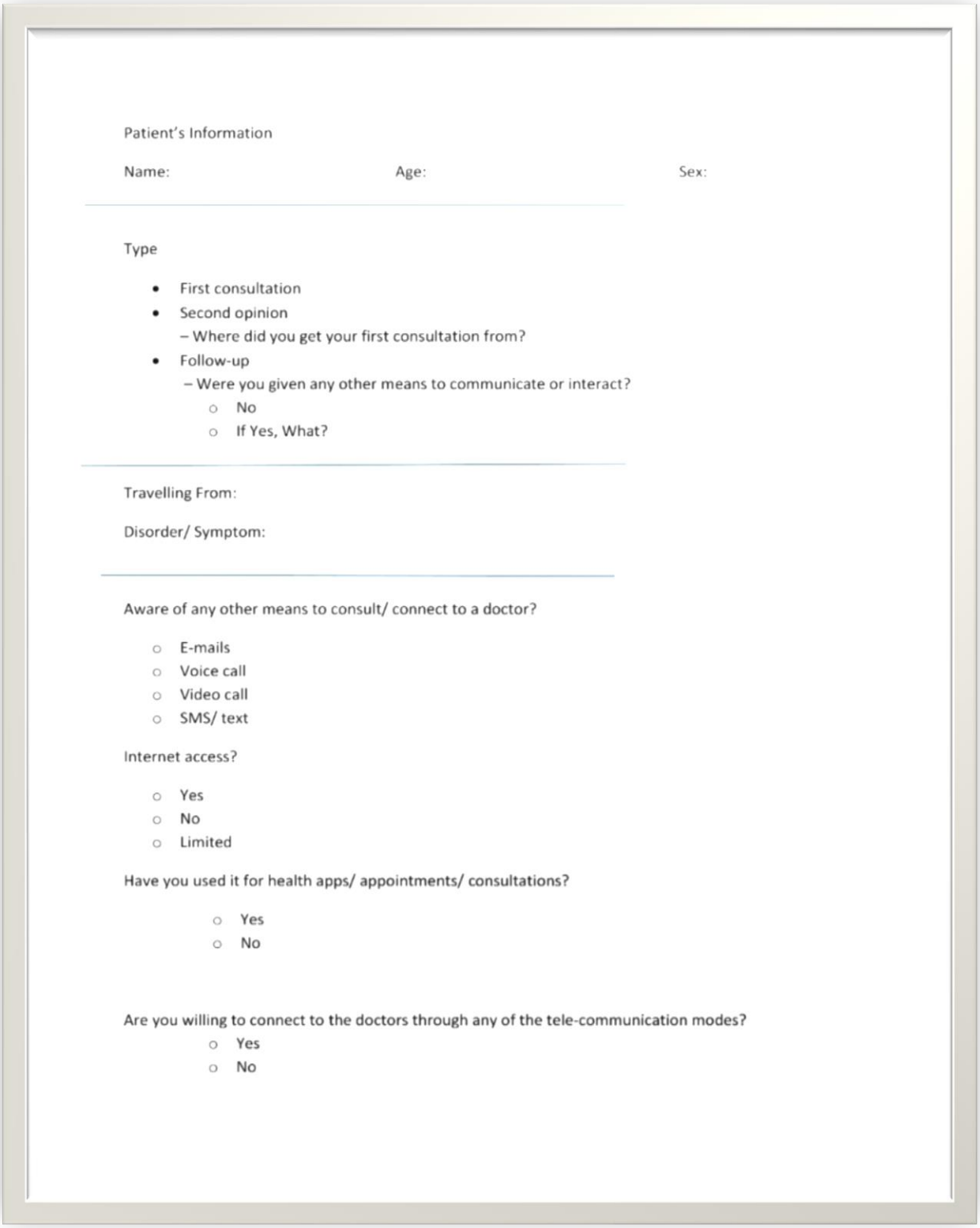
Sampling Technique: Random Sampling technique

Tool for Data Collection:

An instrument (fig: 1) created for research was designed keeping in consideration the data that was required

DATA SOURCE

Data were collected by means of participant-patient/ bystanders interaction in various hospitals of Bengaluru. A large chunk of patients visiting these hospitals were from tier 1 and tier 2 cities.



Patient's Information

Name: Age: Sex:

Type

- First consultation
- Second opinion
  – Where did you get your first consultation from?
- Follow-up
  – Were you given any other means to communicate or interact?
    - No
    - If Yes, What?

Travelling From:

Disorder/ Symptom:

Aware of any other means to consult/ connect to a doctor?

- E-mails
- Voice call
- Video call
- SMS/ text

Internet access?

- Yes
- No
- Limited

Have you used it for health apps/ appointments/ consultations?

- Yes
- No

Are you willing to connect to the doctors through any of the tele-communication modes?

- Yes
- No

Fig 2: Questionnaire designed to collect data by interacting with the patients

METHOD FOR DATA ANALYSIS

For analysis of the data frequency or percent distribution analysis will be applied. Percentage for the ultimate responses (Willing or not) from the samples will be calculated separately after classifying them under different sections which are as follows:

- Gender
- Internet accessibility
- Awareness about telecommunication in medicine and other health applications
- Different age groups – (0 to 30 yrs.), (31 to 40 yrs.), (41 to 50 yrs.), (50+ yrs.)
- Course of disease/ disability – (0 to 6 months), (7 to 24 months), (25 to 60 months), (60+ months).

RESULTS

GENDER

Count of Willing to connect through telemedicine	Column Labels		
Row Labels	Female	Male	Grand Total
Clueless	22	30	52
No	4	18	22
Yes	28	42	70
Grand Total	**54**	**90**	**144**

Table 2: Responses of all males and females separately on their willingness to connect or consult a doctor through telemedicine

The table shows that there were collectively 70 positive responses from the patients, 28 from female patients and 42 from male patients And, collectively 22 negative responses from the patients, 4 from the female patients and 18 from male patients. And, a total of 52 patients, 22 female and 30 male patients were clueless.

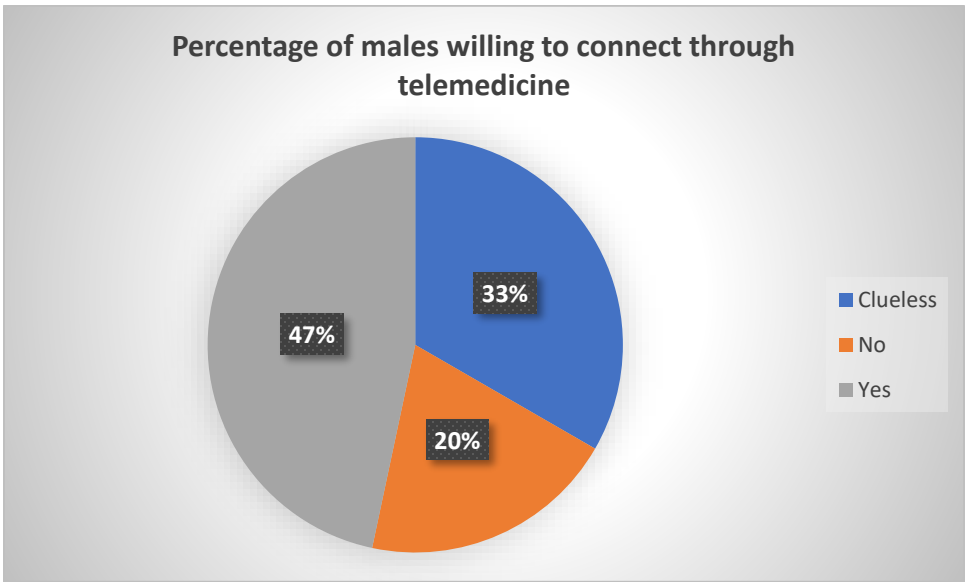


Chart 1: Percentage of Males Wiling to Connect Through Telemedicine

Percentage of males willing to connect through telemedicine – 47%
Percentage of males not willing to connect through telemedicine – 20%
Percentage of males who were clueless or not sure about wanting to connect through telemedicine – 33%

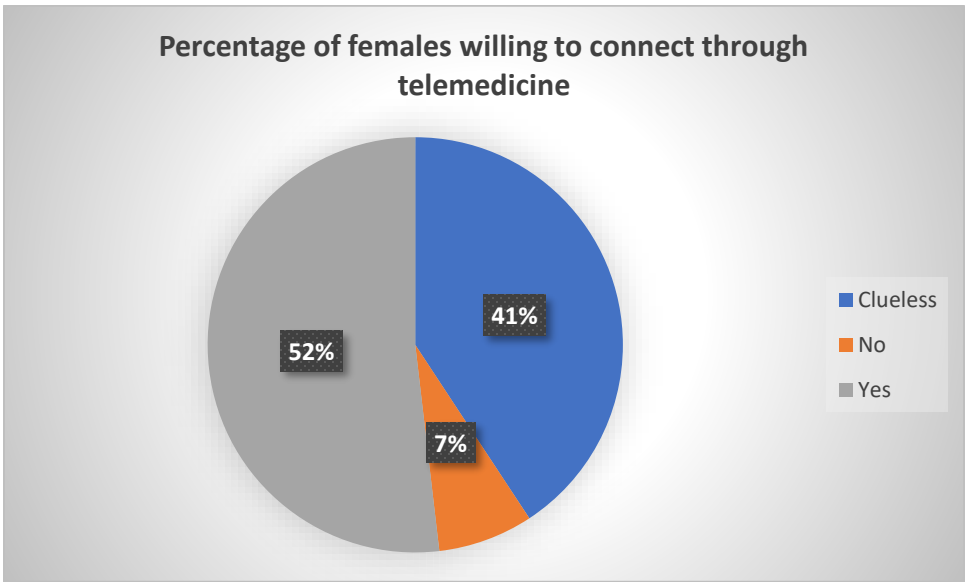


Chart 2: Percentage of females willing to connect through telemedicine

Percentage of females with a positive response (willing to connect through telemedicine)- 52%

Percentage of females with a negative response (not willing to connect through telemedicine)- 7%
Percentage of females with neither a positive nor a negative response (Clueless/ Not sure)- 41%

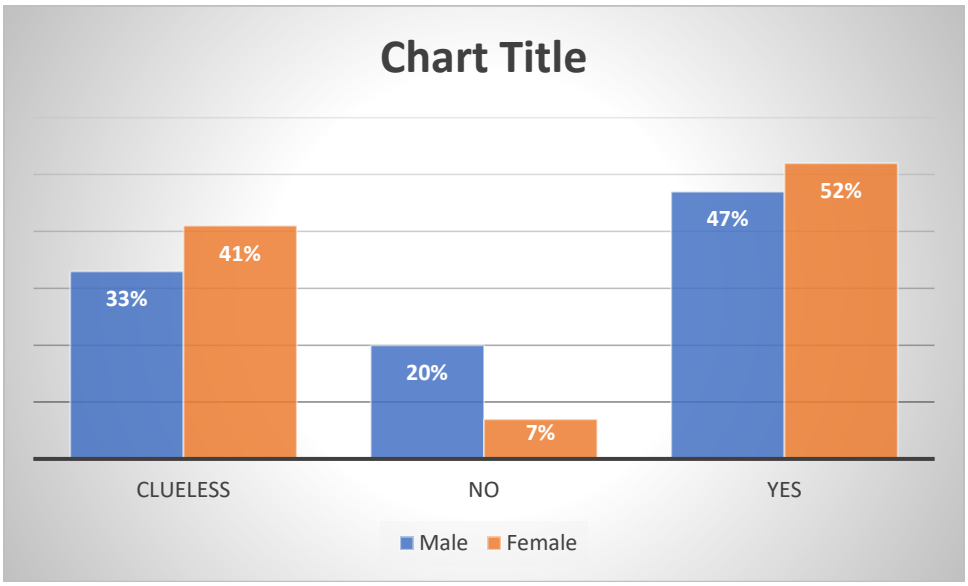


Chart 3: Comparison of the responses in above chart 2 and chart 3

A difference of 5% is evaluated between the positive responses of male patients and female patients.
13% less of female negative responses than the percent of male negative responses.
8% of less male patients were clueless when asked about connecting through telemedicine.

ACCESS TO INTERNET

Count of Willing to connect through telemedicine	Column Labels		
Row Labels	Access	No Access	Grand Total
Clueless	4	48	52
No	14	8	22
Yes	50	20	70
Grand Total	**68**	**76**	**144**

Table 3: Count of patients having internet access and no access willing to connect through telemedicine

The table shows that there were collectively 70 positive responses, 50 from patients having internet access and, 20 from patients having no internet access.
There were a total off 22 negative responses, 14 from people having internet access and, 8 from patients having no internet access.
A total of 52, 4 patients with internet access and 48 patients with no internet access were clueless.

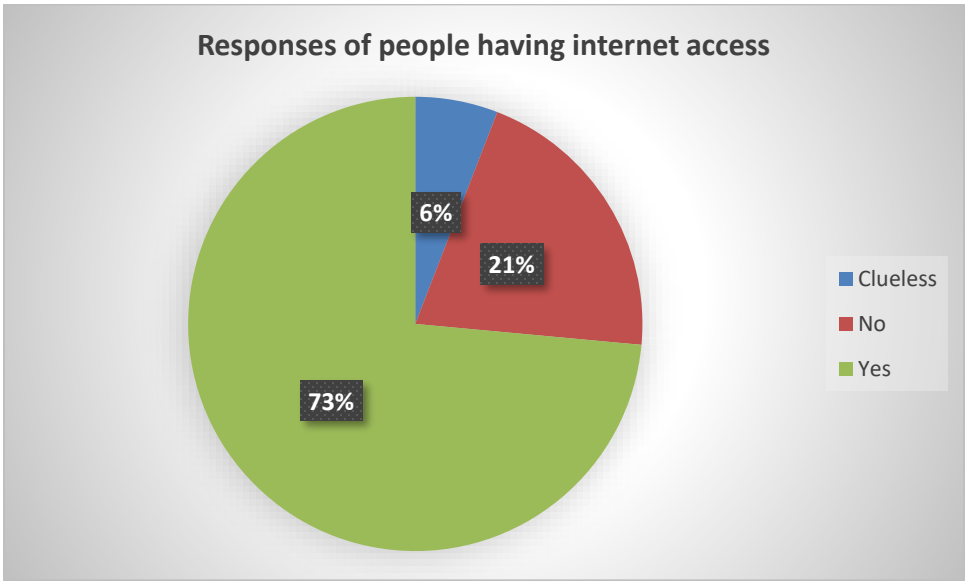


Chart 4: Percentage of people having internet access and willing to connect through telemedicine

Percentage of patients having internet access and also willing to connect through telemedicine- 73%
Percentage of patients having internet access but not willing to connect through telemedicine- 21%
Percentage of patients having internet access but clueless but wiling to connect through telemedicine- 6%

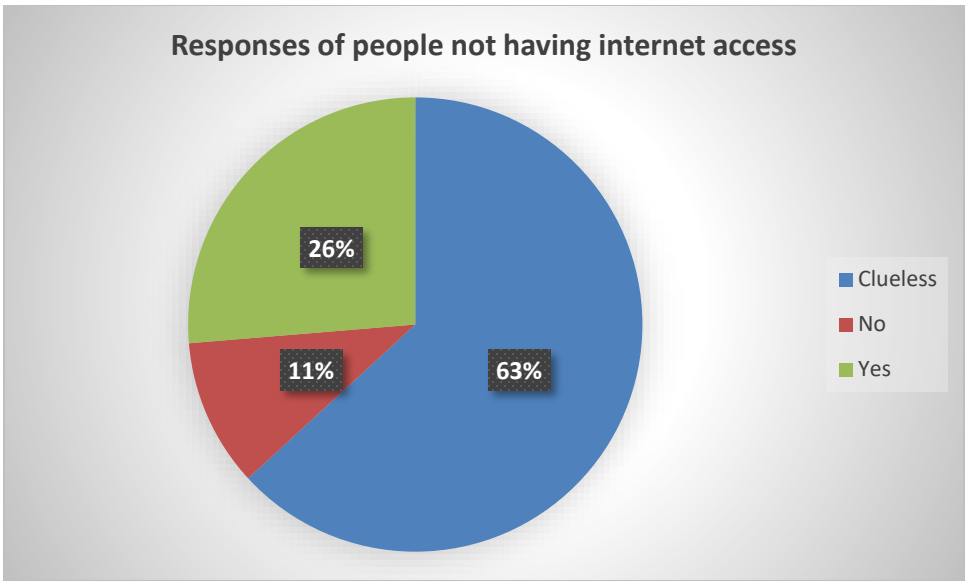


Chart 5: Percentage of patients having no internet access and willing to connect through
Telemedicine

Percentage of patients having no internet access but willing to connect through telemedicine- 26%
Percentage of patients having no internet access and also not willing to connect through telemedicine- 11%
Percentage of patients having no internet access and also clueless about connecting through telemedicine- 63%

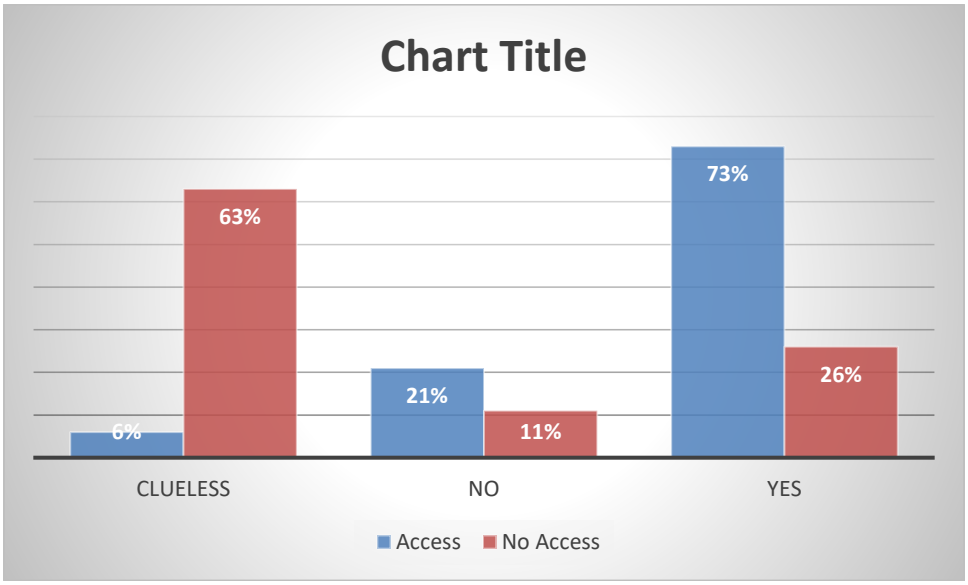


Chart 6: Comparison of responses of patients having internet access and patients having no internet access

A difference of 47% is evaluated between the positive responses of patients having internet access and patients having no internet access.
10% less of negative responses from patients having no internet access than the percent of negative responses from the patients with internet access.
57% of more patients with no internet access were clueless when asked about connecting through telemedicine.

AWARENESS

Count of Willing to connect through telemedicine	Column Labels		
Row Labels	Aware	Not Aware	Grand Total
Clueless	0	52	52
No	6	16	22
Yes	22	48	70
Grand Total	**28**	**106**	**144**

Table 4: Count of patients aware and not aware about health applications willing to connect through telemedicine

The table shows that there were collectively 70 positive responses, 22 from patients aware of health applications and, 48 from patients not aware of health applications
There were a total of 22 negative responses, 14 from people having internet access and, 8 from patients having no internet access.
A total of 52, 22 patients aware of health applications and 52 patients not aware of health applications were clueless.

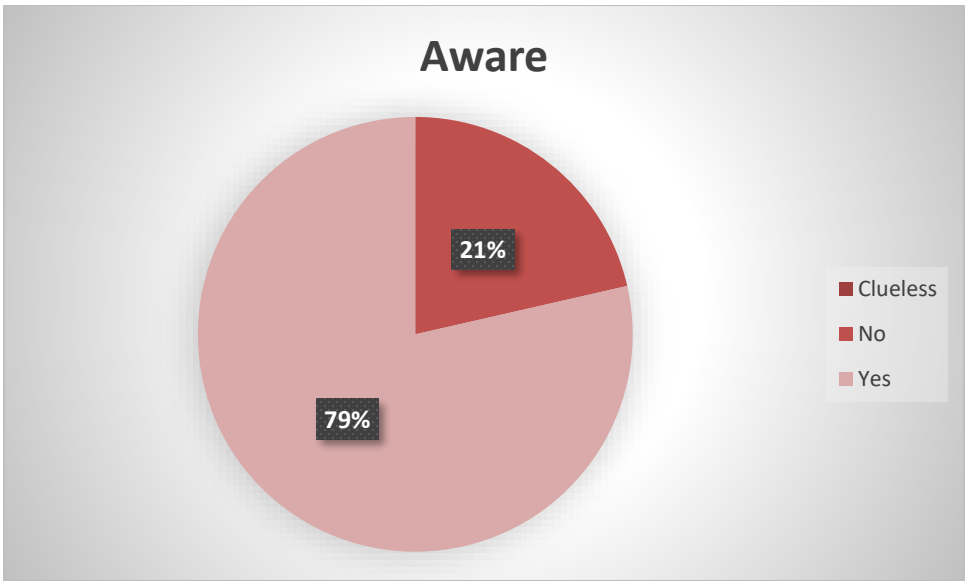


Chart 7: Percentage of people aware of health applications and willing to connect through internet

Percentage of people aware of health applications and willing to connect through telemedicine- 79%
Percentage of people aware of health applications but not willing to connect through telemedicine- 21%
0% of patients aware of health applications were found clueless about the idea of willing through telemedicine

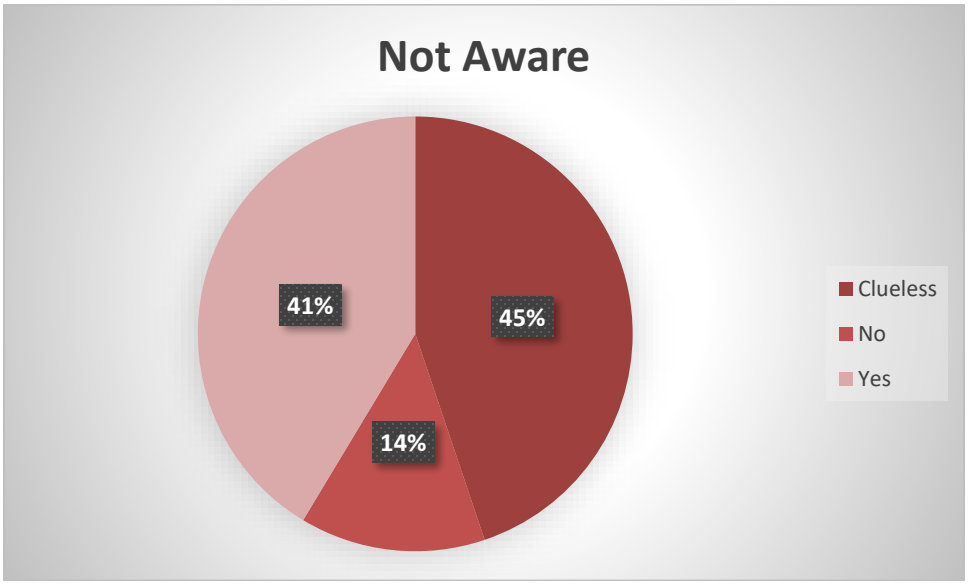


Chart 8: Percentage of people aware of health applications and willing to connect through internet

Percentage of patients not aware of health applications and willing to connect through telemedicine- 41%
Percentage of patients not aware of health applications but not willing to connect through telemedicine- 45%
14% of patients not aware of health application were found clueless about the idea of willing through telemedicine

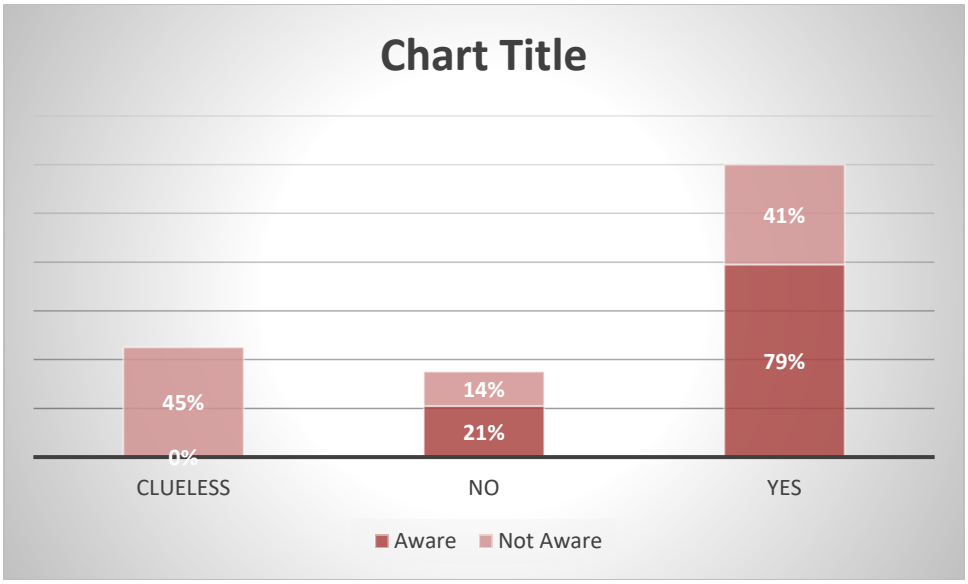


Chart 9: Comparison of responses from patient aware of health applications and patients not aware of health applications on connecting through telemedicine

A difference of 38% is evaluated between the positive responses of patients aware of health applications and patients not aware of health applications.
21% negative responses from patients aware of health applications and 14% of negative responses from the patients not aware of health applications.
0% of patients aware of health applications and 45% of patients not aware of health applications were clueless when asked about connecting through telemedicine.

Different age groups

Count of willing to connect through telemedicine	Column Labels				
Row Labels	**(0-30 yrs.)**	**(30-40 yrs.)**	**(40-50 yrs.)**	**(50+ yrs.)**	**Grand Total**
Clueless	8	8	6	30	52
No	10	0	4	8	22
Yes	26	8	14	22	70
Grand Total	**44**	**16**	**24**	**60**	**144**

Table 5: Counts of people of different age groups on willing to connect through telemedicine

The table shows that there were collectively 70 positive responses, 26 from patients of age group 0 to 30 years, 8 from patients of age group 30 to 40 years, 14 from patients of age group 40 to 50 years and 22 from patients of age above 50

There were a total of 22 negative responses, 10 from patients of age group 0 to 30 years, 0 from patients of age group 30 to 40 years, 4 from patients of age group 40 to 50 years and 8 from patients of age above 50

A total of 52 patients, 8 patients of age group 0 to 30 years, 8 from patients of age group 30 to 40 years, 6 patients of age group 40 to 50 years and 30 patients of age above 50 were clueless.

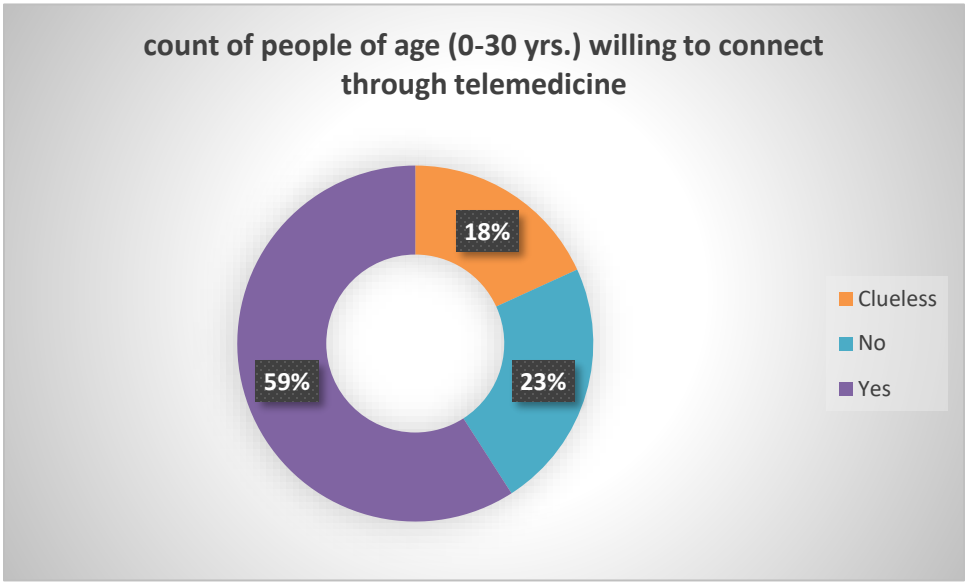


Chart 10: Count of people of age (0-30 yrs.) willing to connect through telemedicine

Percentage of patients of age group 0 to 30 years willing to connect through telemedicine- 59%
Percentage of patients of age group 0 to 30 years not willing to connect through telemedicine- 23%
18% of patients of age group 0 to 30 years were found clueless about the idea of willing through telemedicine.

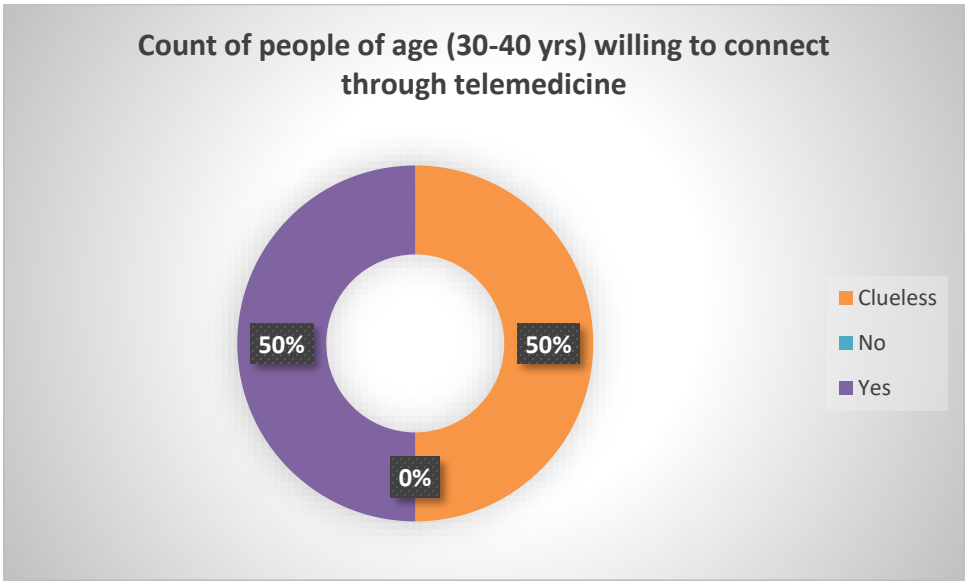


Chart 11: Count of people of age (30-40 yrs.) willing to connect through telemedicine

Percentage of patients of age group 30 to 40 years willing to connect through telemedicine- 50%
Percentage of patients of age group 30 to 40 years not willing to connect through telemedicine- 50%
0% of patients of age group 30 to 40 years were found clueless about the idea of willing through telemedicine

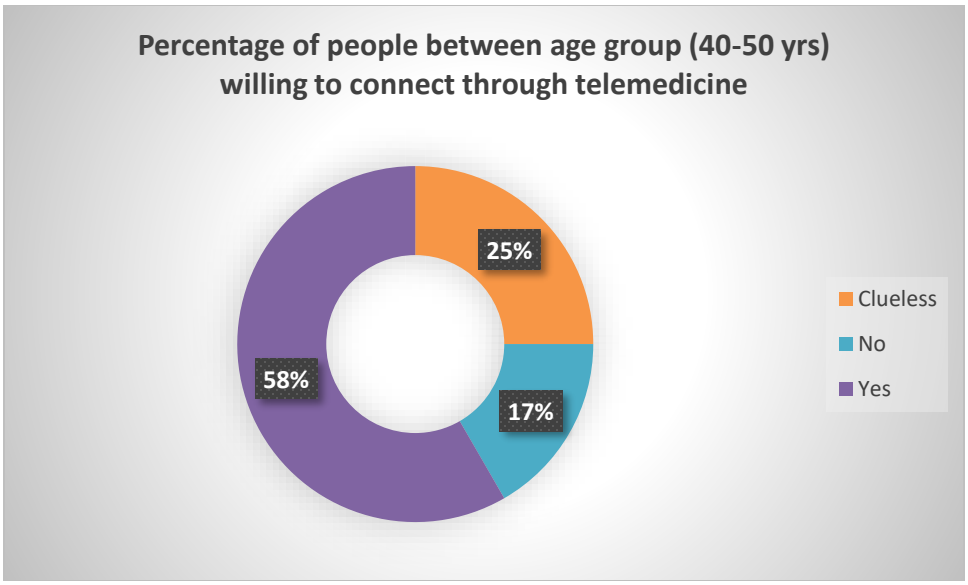


Chart 12: Percentage of people of age (40-50 yrs.) willing to connect through telemedicine

Percentage of patients of age group 40 to 50 years willing to connect through telemedicine- 58%
Percentage of patients of age group 40 to 50 years not willing to connect through telemedicine- 17%
25% of patients of age 50 above years were found clueless about the idea of willing through telemedicine.

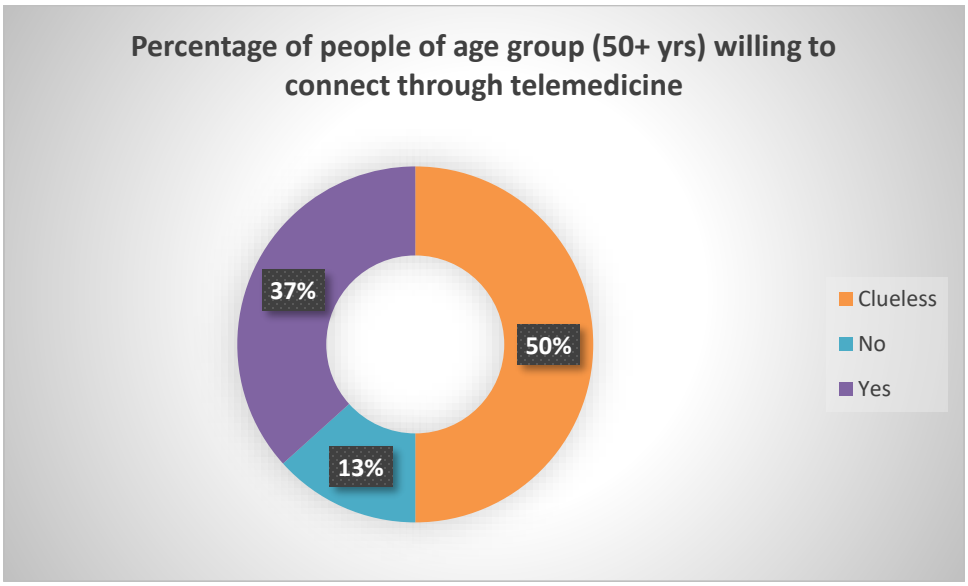


Chart 13: Count of people of age (50+ yrs.) willing to connect through telemedicine

Percentage of patients of age 50+ years willing to connect through telemedicine- 37%
Percentage of patients of age 50+ years not willing to connect through telemedicine- 13%
50% of patients of age 50+ years were found clueless about the idea of willing through telemedicine

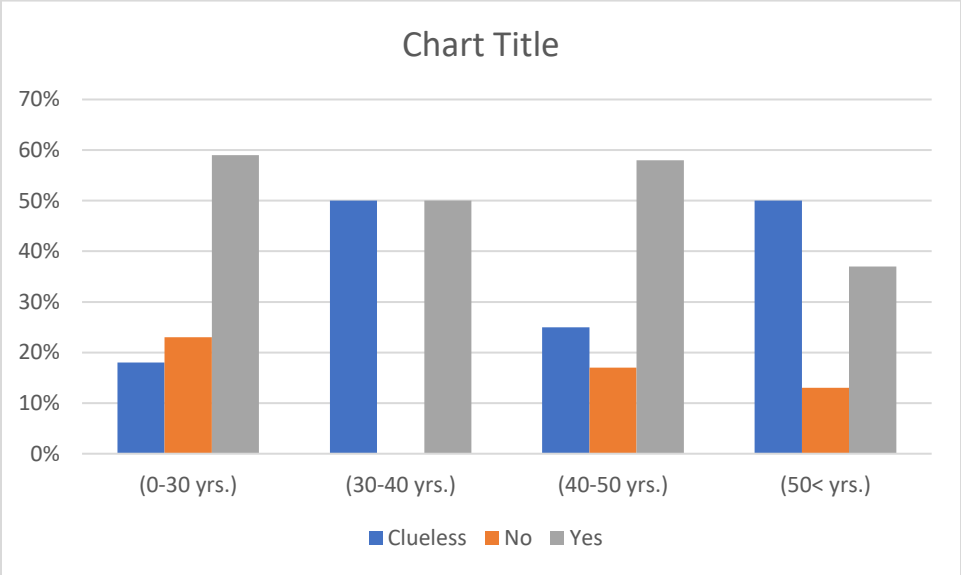


Chart 14: Comparison of responses from patients of different age groups on connecting through telemedicine

The highest positive response was received from the patients of age group 0 to 30 years i.e. 59% and the lowest positive response was received from patients of age above 50 i.e. 37%.

The highest negative response was received from the patients of age group 0 to 30 years i.e. 23% and the lowest negative response was received from patients of age group 30 to 40 years i.e. 0%

Patients of age group 0 to 30 years with the lowest percentage of 18% and patients of age groups (30-40 years) and 50 above with the highest percentage of 50 % were clueless were clueless when asked about connecting through the telemedicine.

Course of disease

Count of Willing to connect through telemedicine	Column Labels 0-6 months	7-24 months	25-60 months	(60<)months	Grand Total
Clueless	30	10	8	4	52
No	18	2	0	2	22
Yes	24	10	18	8	70
Grand Total	**82**	**22**	**26**	**14**	**144**

Table 5: Counts of people of different groups of course of disease on willing to connect through telemedicine

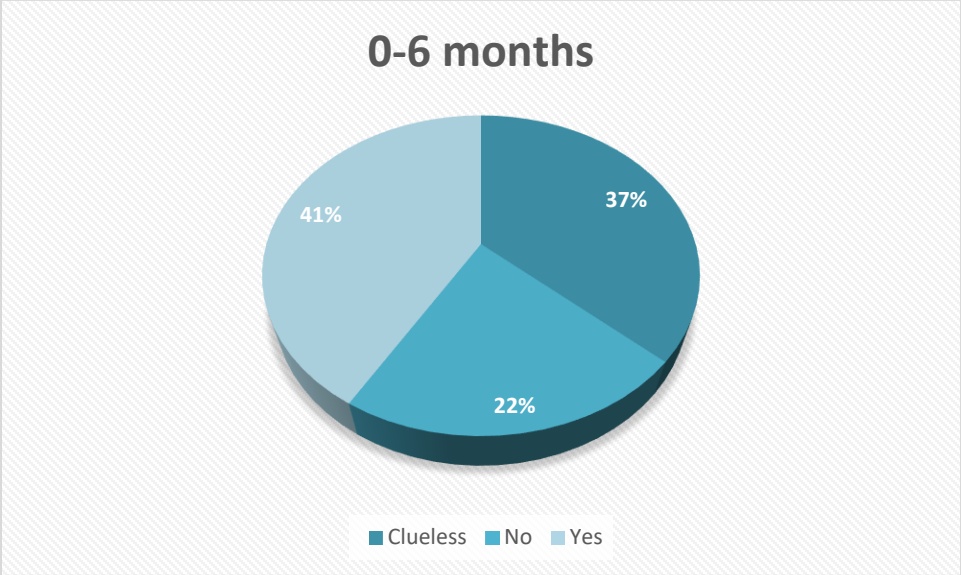


Chart 15: Percentage of people of 0 to 6 months of course of disease willing to connect through telemedicine

Percentage of patients of group 0 to 6 months of course of disease willing to connect through telemedicine- 41%
Percentage of patients of group 0 to 6 months of course of disease not willing to connect through telemedicine- 27%
37% of patients of group 0 to 6 months of course of disease were found clueless about the idea of willing through telemedicine

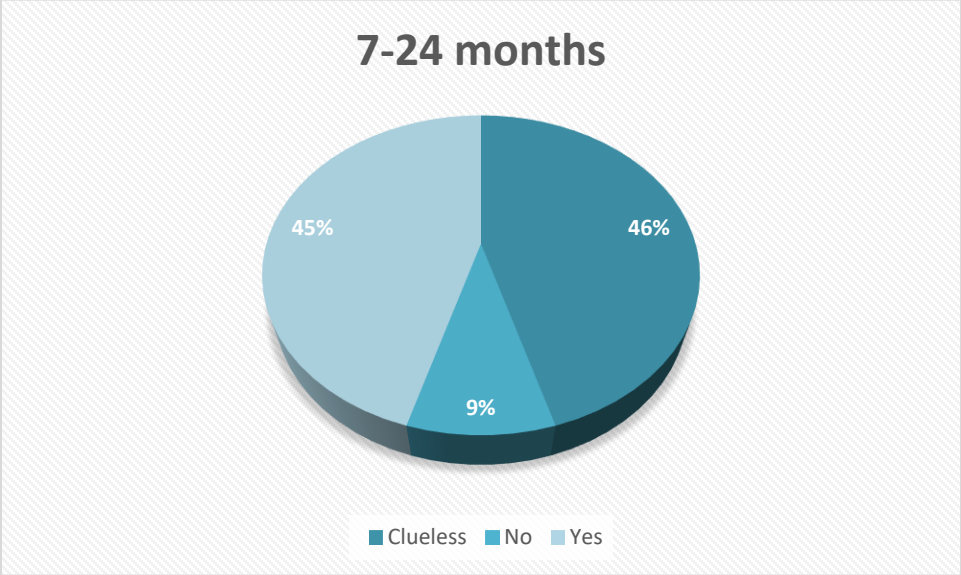


Chart 16: Percentage of people of 7 to 24 months of course of disease willing to connect through telemedicine

Percentage of patients of group 7 to 24 months of course of disease willing to connect through telemedicine- 45%
Percentage of patients of group 7 to 24 months of course of disease not willing to connect through telemedicine- 9%
9% of patients of group 7 to 24 months of course of disease were found clueless about the idea of willing through telemedicine.

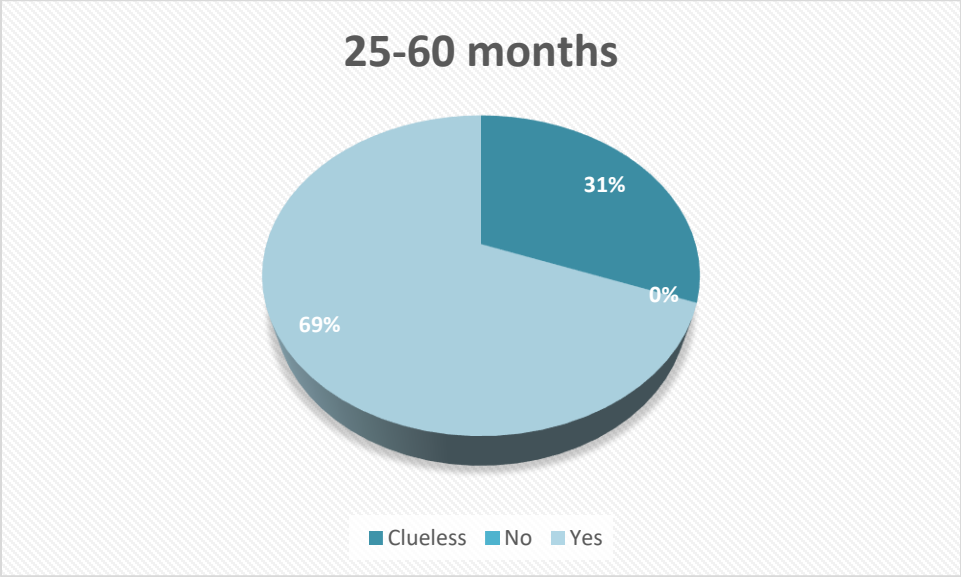


Chart 17: Percentage of people of 25 to 60 months of course of disease willing to connect through telemedicine

Percentage of patients of group 25 to 60 months of course of disease willing to connect through telemedicine- 69%
Percentage of patients of group 25 to 60 months of course of disease not willing to connect through telemedicine- 31%
0% of patients of group 25 to 60 months of course of disease were found clueless about the idea of willing through telemedicine.

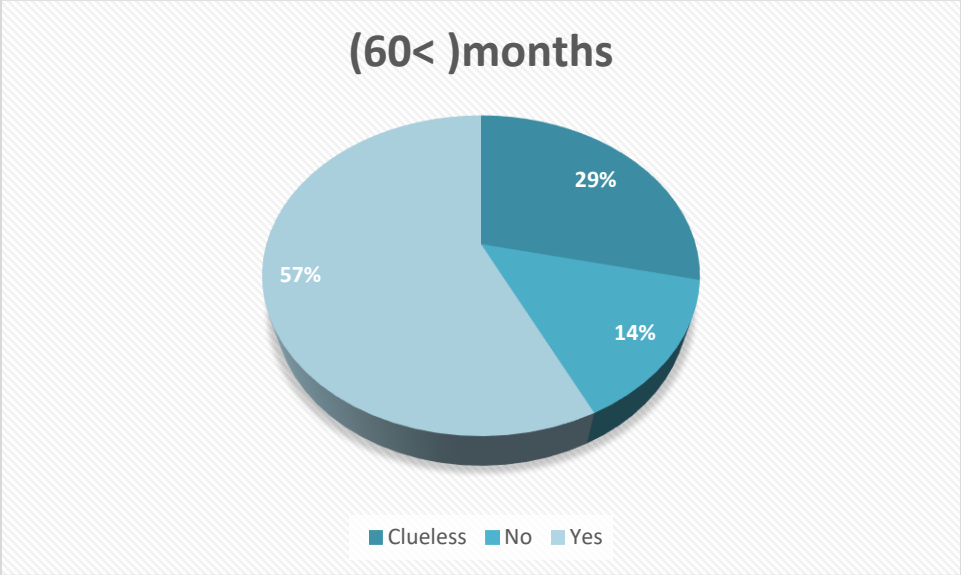


Chart 18: Percentage of people with more than 60 months of course of disease willing to connect through telemedicine

Percentage of patients above 60 months of course of disease willing to connect through telemedicine- 57%
Percentage of patients above 60 months of course of disease not willing to connect through telemedicine- 14%
29% of patients of above 60 months of course of disease were found clueless about the idea of willing through telemedicine.

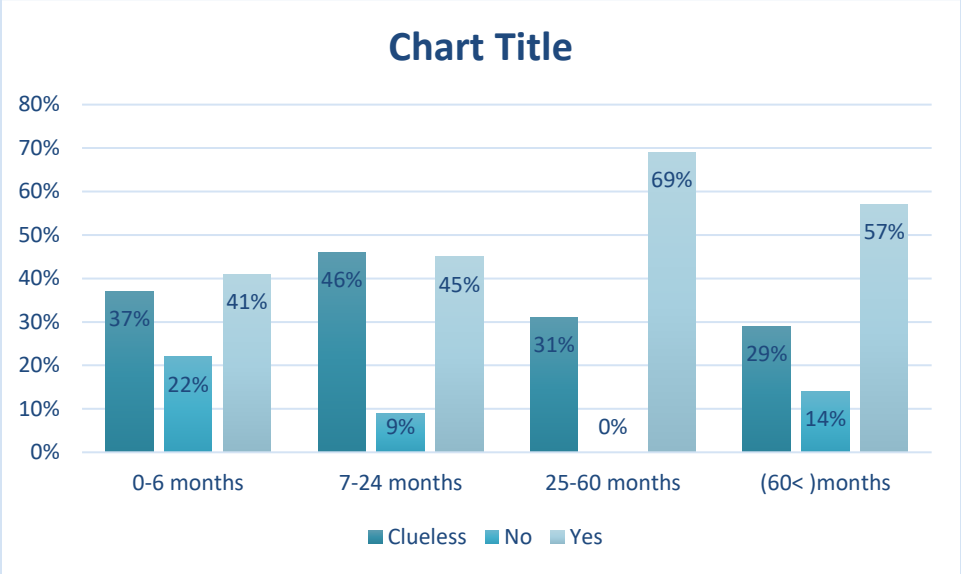


Chart 19: Comparison of responses from patient of different groups of course of disease on connecting through telemedicine

The highest positive response was received from the patients of group 25 to 60 months of course of disease i.e. 69% and the lowest positive response was received from patients of group 0 to 6 months of course of disease i.e. 41%.

The highest negative response was received from the patients of group 0 to 6 months of course of disease i.e. 22% and the lowest negative response was received from patients of group 25 to 60 months of course of disease i.e. 0%

Patients of more than 60 months of course of disease with the lowest percentage of 29% and patients of group 7 to 24 months of course of disease with the highest percentage of 46 % were clueless when asked about connecting through the telemedicine.

Tests of Difference	Null Hypothesis	Alternate Hypothesis	Calculated χ2	Tabulated χ2 at 95% Confidence Interval	Null Hypothesis (Accepted/ Rejected)	Alternate Hypothesis (Accepted/ Rejected)
Gender and Acceptability	There is no difference between Gender and Acceptability	There is difference between Gender and Acceptability	4.202517	5.991	Accepted	Rejected
Internet access and acceptability	There is no difference between Internet access and Acceptability	There is difference between Internet access and Acceptability	51.43859	5.991	Rejected	Accepted
Awareness and acceptability	There is no difference between awareness and Acceptability	There is difference between awareness and Acceptability	19.83075	5.991	Rejected	Accepted
Age group and acceptability	There is no difference between age group and Acceptability	There is difference between age group and Acceptability	59426.74	12.592	Rejected	Accepted
Course of disease and acceptability	There is no difference between course of disease and acceptability	There is difference between course of disease and acceptability	19.56007	12.592	Rejected	Accepted

Inferences:

As per the study there is no difference between gender and acceptability whereas there is difference between internet access, age groups, awareness, course of disease and acceptability of telemedicine.

FINDINGS & DISCUSSION

Out of all the male patients who had internet access, 63% gave a positive response
Out of all the female patients who had internet access, 91% responded positively
All the female who had internet access and were also aware of health applications responded positively
All the male patients who had internet access and were also aware of health applications, 70% of them responded positively

The principle challenges looked by telemedicine viewing its far-reaching acknowledgment as a technique for healthcare delivery, is in approving its effect on clinical results with logical thoroughness. There are different issues like institutionalization of the strategies and procedures utilized for healthcare delivery, payment by insurance providers and cost benefit analysis that should be settled. All things considered, telemedicine as a method for healthcare services delivery framework has a part to play in global healthcare framework. India's creditable utilization of telemedicine early gives it an edge. At current the test is to coordinate telemedicine nodal focuses all over the nation and use the services of these focuses in the field of public health, particularly in the area of child and maternal health. These health projects can fill in as good examples for developing nations the whole way across the world.

Support of federal government for a nationwide network has been critical for the success of telemedicine programs in India. International agencies, such as World Bank, UNICEF, private enterprises, and other regional players are the other key players in the success of these telemedicine programs. Recently, RAFT telemedicine network project has demonstrated that telemedicine and e-health can be used to improve basic healthcare in many low to middle income countries [3]. Telemedicine is already being recognized around the world to have a proven value in several subspecialties of medicine, such as cardiology, dermatology and neurology [4-5].

Its success in India and its extrapolation to the global platform is something that holds the key to universal health care.

CONCLUSION

India consumers, especially the more youthful and middle age bunches are progressively getting to be mindful and inclined towards e-wellbeing commercial center administrations. There exists an immense market request of online meetings with the specialists as it causes patients to get therapeutic counsel from specialists of specific ailment from anyplace on the planet. With the appearance of e-wellbeing commercial center geologies or physical separation has not existed as the obstruction. Because of simple openness, comfort and reasonableness a few patients are choosing e-wellbeing commercial center administrations as patients don't need to remain in long lines holding up outside the healing centers.

The telemedicine market of India is a standout amongst the most flourishing markets. With developing linkages amongst web and conveyance of healthcare services, the idea of telemedicine particularly in the country and remote territories has increased more noteworthy significance. Factors, for example, slanting demand from consumers for inexpensive and quality healthcare services benefits alongside the constrained access to specialists in country regions have been driving the development popular for telemedicine benefits in India. The telemedicine market in India has exhibited astounding development of ~% amid 2014-2015. The market for telemedicine in India is anticipated to develop at a CAGR of ~% in 2016-2020 and achieve INR ~ crore in 2020.

This is foreseen to spare travelling time, money and other resources for avail and benefit from professional healthcare services yet more vital it will make the rural population more advantageous. E-Health administrations and types of gear showcase in India has outflanked and has developed at a CAGR of 20.4% amid the period FY'2010-FY'2015.

With the successful execution of different telemedicine health services held by both private and government divisions, there is developing hopefulness in regards to the part of telemedicine in the healthcare segment in India. Entrepreneurs with a social cause like World

Health Partners a private non-benefit organisation, have set up healthcare services delivery framework in India in view of telemedicine. The part of telemedicine in healthcare delivery is a vital factor in the accomplishment of plans of action of Aravind Eye Hospital and Sankar Nethralaya in the field of ophthalmology and Narayan Hrudayalaya in the field of cardiovascular surgery [6-7]. All around the globe, a few examinations have demonstrated a positive effect of telemedicine on healthcare delivery system.

Patterned advancement in the field of the network, for example, broadband, 3G and 4G network services and IT have made tele- health-based facilities conclusion to reality in the nation. Nearness of unrivaled healthcare providing organizations in the nation fortifies the capacity to give first class telemedicine services and consultations. Besides, government activities to improve healthcare facilities across the nation promotes generous opportunities for telemedicine in India.

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