



# FACTORS AFFECTING OR INFLUENCING USE OF TELEMEDICINE IN CURRENT SOCIETAL SCENERIO

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**Abstract:** Telemedicine has potential to help individuals in rural areas overcome geographical barriers and to improve access to care. The factors that influence the implementation and use of telehealth in critical access hospitals are in needed to be explored and used in a proper manner to provide the required services. This study gives a brief about such factors that affect or influences the use of telemedicine in current societal scenario.

Although telemedicine use has become more prevalent, prior to the COVID-19 pandemic, it was not widespread; thus, its benefits have not been fully realized. For telehealth to show potential benefits in the long term beyond the public health emergency, its services must fit into changes in the health care landscape, including the advent of alternative care delivery and payment models, greater integration of physical and behavioural health services, and efforts to address workforce challenges. Health care organizations around the world have become increasingly interested in acquiring and implementing telemedicine technology to improve or extend existing patient care and services. The ultimate success of telemedicine in an adopting organization requires adequate attention to both technological and managerial issues.

**Index Terms** - Telemedicine, healthcare industry, hospital, treatment, innovation

## I. INTRODUCTION

Telemedicine is the use of electronic communication and information technologies to provide healthcare services remotely. The aim of telemedicine is to enhance access to medical care, improve the quality of health services, and reduce the costs of healthcare. Telemedicine enables healthcare providers to diagnose, consult, treat, and monitor patients without the need for physical visits to a healthcare facility.

Telemedicine technology includes virtual consultations, remote monitoring devices, and telehealth services that allow healthcare providers to communicate with patients and access their health information from a distance. Telemedicine services range from simple telehealth consultations to complex telemedicine systems that enable remote monitoring of patients with chronic conditions.

The benefits of telemedicine are numerous, including improved access to healthcare for people living in rural or remote areas, increased patient satisfaction, reduced healthcare costs, and improved patient outcomes. Telemedicine also provides healthcare providers with an opportunity to provide care to patients who are unable to visit a healthcare facility due to physical or financial limitations.

Telemedicine is a rapidly growing field that utilizes technology to provide medical services and health information remotely. With the advancements in communication technology, telemedicine has become an essential tool in modern healthcare systems. The technology provides medical professionals the ability to diagnose, monitor, and treat patients through remote communication, including phone calls, video conferencing, and email. This innovative method of delivering healthcare has numerous benefits for both patients and healthcare providers, including improved access to care, reduced costs, and improved patient outcomes. Telemedicine has been particularly useful in rural areas where access to medical care is limited, and during the current COVID-19 pandemic, it has become a crucial tool in limiting the spread of the virus. Despite these benefits, telemedicine has also faced challenges including privacy and security concerns, reimbursement issues, and technology limitations. Nevertheless, telemedicine continues to play an increasingly important role in the delivery of healthcare and has the potential to revolutionize the way medical services are provided.

In conclusion, telemedicine is an innovative solution that is transforming healthcare delivery. With the increasing use of technology in healthcare, telemedicine is poised to play a critical role in improving access to medical care, reducing the costs of healthcare, and improving patient outcomes.

## TELEMEDICINE IN INDIA:

Telemedicine has been gaining popularity in India in recent years, as a way to address the shortage of healthcare providers in rural and remote areas, and to improve access to medical care. The Indian government has been actively promoting the use of telemedicine, with the establishment of telemedicine networks, and the introduction of policies and regulations to support the growth of this industry.

Telemedicine in India is being used for a variety of purposes, including remote consultation and diagnosis, disease management, and telemonitoring. It is being adopted by both public and private healthcare organizations, with a focus on serving low-income communities and people living in rural areas.

One of the key benefits of telemedicine in India is that it allows patients to access medical care from the comfort of their own homes, reducing the need for travel and saving time and money. It also helps to reduce the burden on already over-crowded hospitals and healthcare facilities.

Despite its potential benefits, telemedicine in India faces several challenges, including limited access to technology, lack of awareness and understanding of telemedicine among the general population, and inadequate infrastructure and support. To fully realize the potential of telemedicine in India, it will be necessary to address these challenges and ensure that patients have access to high-quality, affordable telemedicine services.

WHO recommends a doctor-population ratio of 1:1000 while the current doctor population ratio in India is only 1:834. Training of new physicians is time consuming and expensive, hence the doctor to patient ratio can be expected to remain low for a 7 long time to come. This deficit is partly being made up by the active telemedicine services in various parts of the country.

ISRO (Indian Space Research Organization) made a modest beginning in telemedicine in India with a Telemedicine Pilot Project in 2001, linking Chennai's Apollo Hospital with the Apollo Rural Hospital at Aragonda village in the Chittoor district of Andhra Pradesh. Initiatives taken by ISRO, Department of Information Technology (DIT), Ministry of External Affairs, Ministry of Health and Family Welfare and the state governments played a vital role in the development of telemedicine services in India.

**AROGYASREE** is online mobile telemedicine conglomerate uniting several hospitals, mobile medical specialists and rural mobile clinics. This project is an initiative of the Indian Council for Medical Research (ICMR). They collaborated with a group of scientists from the University of Karlsruhe in Germany who are working on the design of an ECG vest that could be used to continuously monitor a patient's ECG without hospitalization.

### Below listed are some hospitals in India which Practices telemedicine.

1. Amrita Telemedicine Services  
Specialties: Tele-Cardiology, Tele- Radiology, Tele- Dermatology, Tele- Pathology, TeleOphthalmology, Tele- Psychiatric, Tele-Mentoring and Mobile Telemedicine Unit.
2. E-Hospital or AIIMS - Telemedicine Services (Free Consultation)  
Specialties: All
3. Apollo Hospital - Teleclinic Services  
Specialties: All
4. Rajagiri Telemedicine Services  
Specialties: All
5. E-Sanjeevani OPD - National Teleconsultation Service (Free Consultation)  
Specialties: All
6. Kaveri Hospitals - Telemedicine Service  
Specialties: Cardiology, Cardiothoracic Surgery, Gastroenterology, General Medicine & Diabetology, Neurosurgery & Neurology, Paediatrics, Urology, Vascular Surgery
7. MIOT Telemedicine  
Specialties: All
8. CMC Teleconsultation  
Specialties: Not Specified

## I. OBJECTIVE OF RESEARCH

- Analyse telemedicine usage.
- Explore the pros and cons of using telemedicine.
- Be aware of barriers to the development of telemedicine in hospitals. market.
- Find out how the Indian population seeks out telemedicine and whether they will. Prefer telemedicine over face-to-face diagnosis.
- Understand telemedicine and the factors that have influenced the development of telemedicine.

## II. SCOPE OF RESEARCH

In this research, we essayed to gather better insights about perception towards telemedicine from the ends of the users, non-users, and potential users. By incorporating the outcomes, we tried to highlight weak areas in the current provision of telemedicine services and suggest possible explanations and solutions. Both exploratory and descriptive research questions were incorporated into our study.

In this study, social media users of India were surveyed based on the idea that a person who has internet access, little knowledge of technology or education and is an active user on any social media, should have the required access to be able to use telemedicine services. The only instrument used in this survey was a questionnaire.

Respondents were not specifically selected based on whether or not they were telemedicine users.

## III. RESEARCH METHODOLOGY

This study used both snowball and convenience sampling methods. Because the questionnaire was distributed online, a random sampling method was used. A link to the survey was shared with friends, family and acquaintances on Facebook and they asked to pass it on to others. Respondents were not selected according to any special criteria.

### 3.1 Population and Sample

Survey respondents came from a mix of social strategies and occupations in India, including students, job seekers, housewives, public and private sector employees, engineers, doctors, entrepreneurs and managers.

### 3.2 Data and Sources of Data

A questionnaire completed in Google form was chosen as the research tool. The questionnaire included different question blocks. The set presented to respondents is based on the answers selected for the original question. Two separate sets are for users and non-users of telemedicine services. The questions were in MCQ format and check boxes. Ideas for some of the questions were taken from telemedicine surveys. Questions were asked on a 5-point Likert scale to evaluate user experience and user satisfaction.

Online distribution of the questionnaire and completion of the data collection process took 16 days. The sample size of the study will be 207 respondents.

### 3.3 Theoretical framework

Telemedicine has gained significant attention in recent years, and India has not been left behind. With the rapid growth of technology and the need to address the healthcare challenges in the country, telemedicine has emerged as a promising solution. The literature review on telemedicine in India highlights several aspects of this innovative healthcare model, including its benefits, challenges, and implementation.

The diffusion of innovation paradigm is used to discuss factors influencing the adoption of telemedicine, according to **Nir Menachemi and Darrell E. Burke's paper from 2005**. Empirical and anecdotal research focuses on five characteristics that affect the adoption rates of innovations by the following four adopter groups: physicians, patients, hospital administrators, and payers. Also discussed are the consequences.

**Karl Putnam, Sharon E. Thompson, M. Adam Mahmood, and Parand Mansouri-Rad (2013)** Factors Affecting the Adoption of Telemedicine: Culture Matters The current study looks into how culture affects telemedicine adoption as well as patient information privacy, security, and policy. The findings, based on the SEM analysis of the data gathered in the United States, show that culture significantly influences the uptake of telemedicine.

**(2015) Merchant KA, Ward MM, and Mueller KJ** One of the pillars of the Triple Aim is improving access to care, and one way to do this is through telemedicine (also known as telehealth). The growth of telemedicine services in the US, however, has been relatively gradual. Using the 2013 HIMSS (Healthcare Information and Management Systems Society) Analytics national database of 4,727 non-specialty hospitals, we previously assessed the level of adoption of hospital-based telemedicine. Our analysis showed that radiology departments had the highest percentage of operational telemedicine implementations (15.7%), followed by emergency/trauma care programs (7.5%) and cardiology/stroke/heart attack programs (6.8%). Existing databases, however, are restricted because they cannot distinguish between a respondent hospital's status as a "hub" (providing telemedicine services) or a "spoke" (receiving telemedicine services).

In their study, which was released in **2018, Mohammadreza Maleki, Seyed Masood Mousavi, Omid Khosravizadeh, Mohammad Heidari, Mehdi Raadabadi, and Mina Jahanpour** discuss how using modern technology, like TTCC, can significantly change how these diseases are treated. This is because various malignancies are becoming more common. Therefore, if the evolution plan conflicts with the corporate culture, national culture, or organizational structure of experts in this field, resistance will rise.

**2020: S. Balaji and C. Ranganathan** Telemedicine is still not widely used by ambulatory clinics in the United States, despite its obvious benefits and rising demand. It is crucial to ascertain why telemedicine adoption rates among ambulatory providers are so low.

The unified theory of acceptance and use of technology (UTAUT), the protection motivation theory (PMT), and the DeLone & McLean information success model are three well-known theories that **S. Rahi, M.M. Khan, and Mahmoud Alghizzawi (2020)** integrated to examine how patients behave when utilizing telemedicine health services. The combination of UTAUT, PMT, and the information success model of DeLone & McLean, according to the results of structural equation modeling, explained 80.4% of the variation in patients' attitudes toward the use of telemedicine health services.

**(2021) Anees B. Chagpar** With the assumption that patients had access to a computer and the internet, the coronavirus disease 2019 pandemic precipitated a rise in telemedicine. We wanted to know how many Americans used computers and the internet before the pandemic and whether there were any disparities in this using a population-based sample.

**Joe Lintz (2022)** To address and reduce COVID-19 person-to-person transmission in the U.S. and abroad as the epidemic has spread across a number of communities globally, telemedicine has been promoted and intensified. This study examined the main barriers to primary care physicians using telemedicine in a primary care clinic in north Texas during the pandemic.

**3.4 Limitations of the Research Study:**

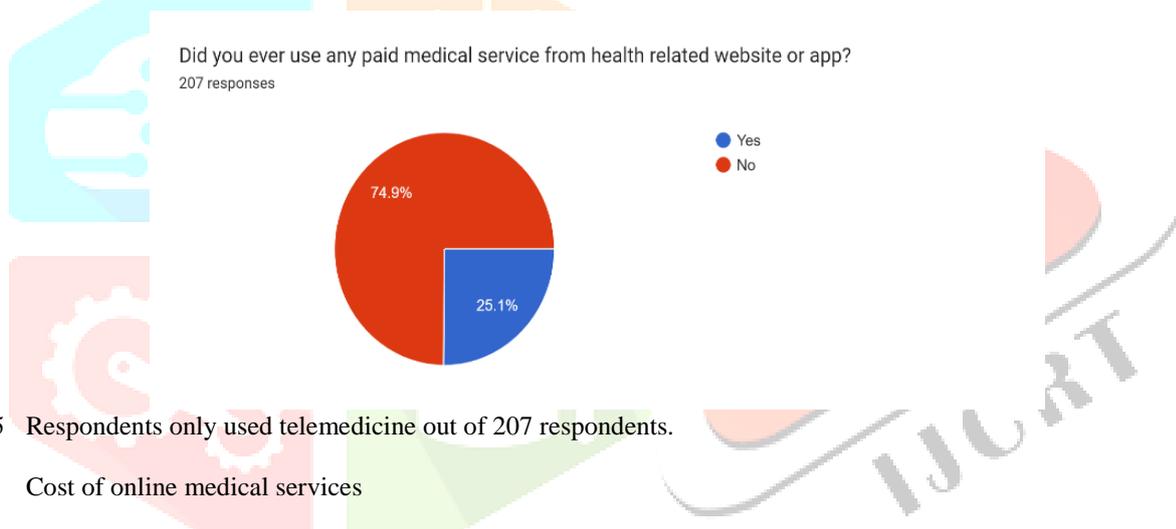
One of the major limitations is the sample size of 207 respondents. A much larger sample size would give more reliable results. You may not know about users who do not use social networks or offline, but a large population of India is not familiar with the proper knowledge of technology and internet access.

Many factors must be explored before adopting a new technology, which can be very difficult for a developing country like India with its diverse culture and beliefs.

**3.5 Statistical tools**

Data is formed on the basis of questioner circulated, which is divided into two sub divisions, i.e., users and non-users of telemedicine.

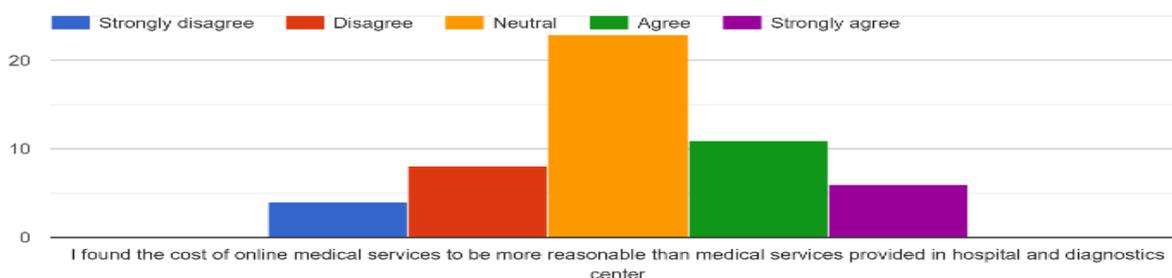
1. Did you ever used any medical service from website or app?



55 Respondents only used telemedicine out of 207 respondents.

2. Cost of online medical services

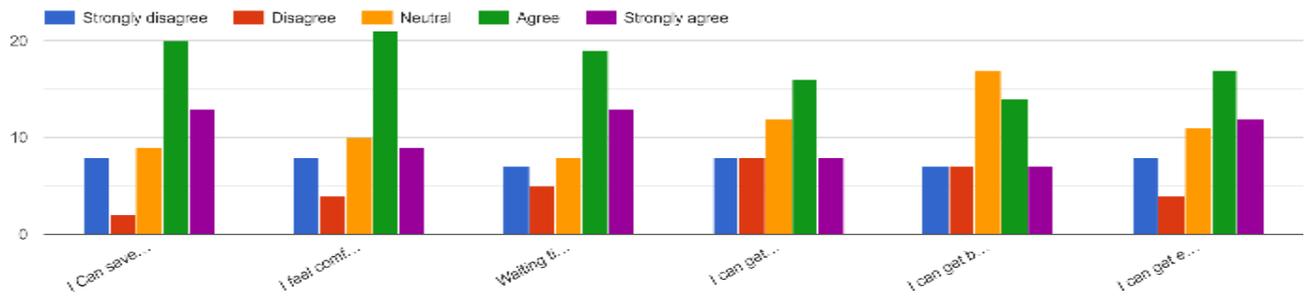
Cost of Online medical Services



17 respondents think it's reasonable but 23 respondents are neutral about cost.

3. Convenience of using online service

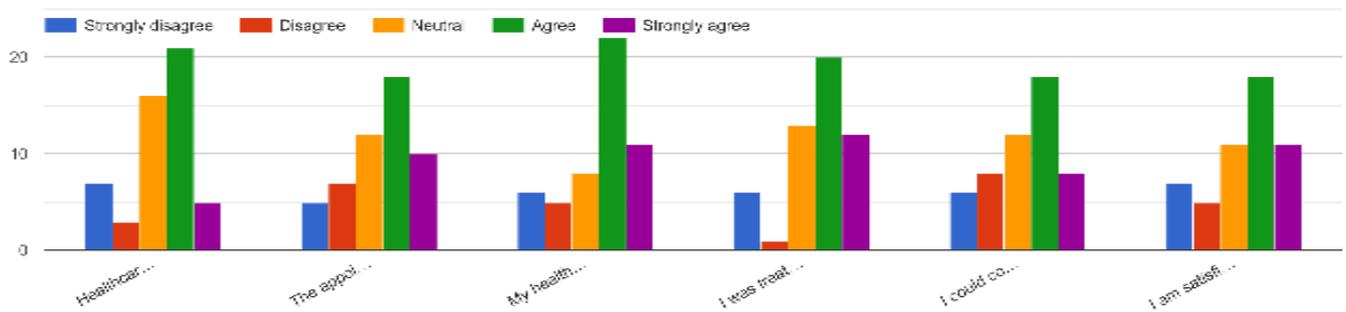
Convenience of online medical services



Most of people find it more convenient from physical diagnosis.

4. Quality of service

Quality of Service

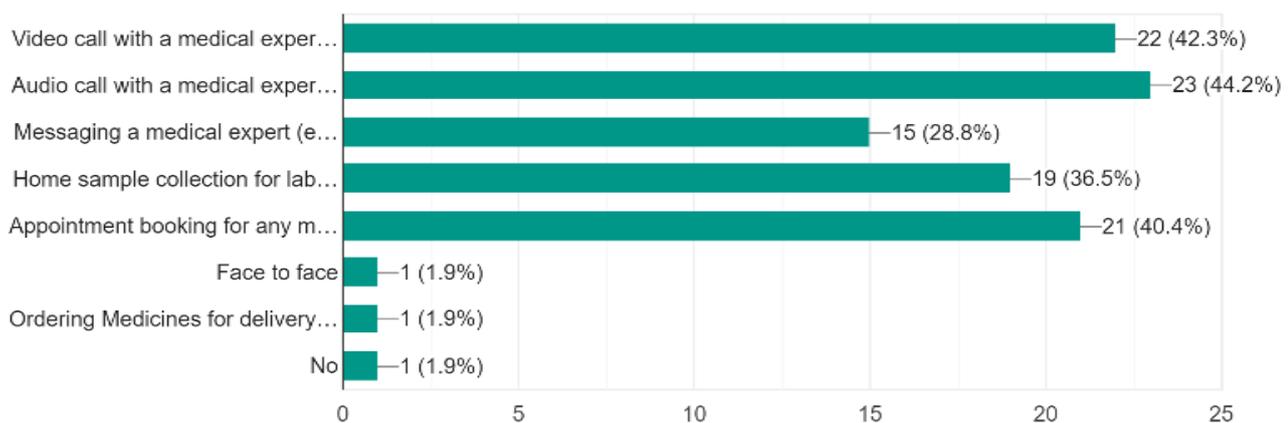


Higher percentage of respondent said that quality of service is maintained.

5. Type of service mostly used.

What type of services did you use?

52 responses

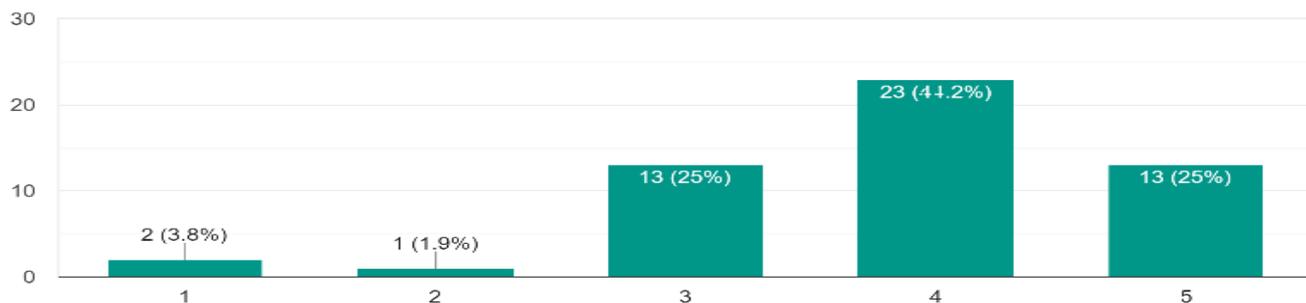


Most service used are video and audio calling.

6. Overall experience of user

How was your overall experience of using online medical services?

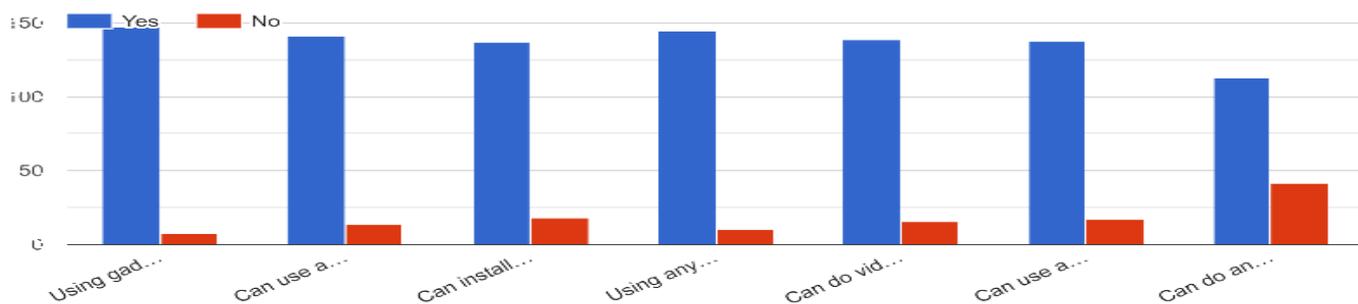
52 responses



23 respondents have a positive experience.

7. Technical knowledge of non-user.

Technological Knowledge



144 respondents are technical friendly out of 155.

8. Use of online shopping

Online Shopping Experience

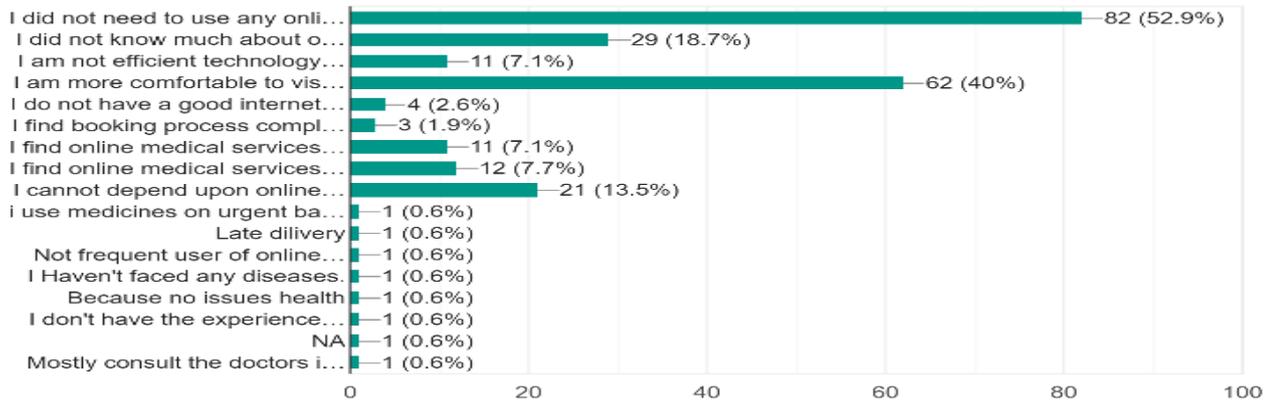


Higher number of people are using online shopping through app or website.

9. Reason of not using online health service.

Why have you not used any online medical/health services till now?

155 responses



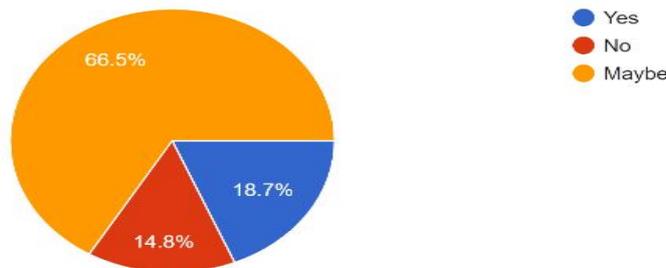
More count of people has discovered that they didn't find any to use online services.

10. Will use in future?



Will you like to use any paid medical services in future?

155 responses



66.5% of people are not sure about future use while 18.7% people want to use it.

IV. RESULTS AND DISCUSSION

The survey is based on cumulative data obtained from 207 respondents from different graphical zones, age, profession and qualification. Overall graphical valuation represents the following data i.e. the highest group of respondents is 19-25age group 58.5% (121) followed by 45 + age group 14% (29) is involved with 37.2% and 50.2% qualification for graduate and post graduate. 25.1% (52) are only existing users of telemedicine and 74.9% (155) didn't used telemedicine services till date, which is more than 50% weighting of the survey.

Coming in 25.1% (52) of telemedicine Users who have mostly used online services are apollo247 and practo, with the highest number of video calling and audio calling facility. People here highly agree with the convenience, quality of service, privacy and ease of use they get through telemedicine, while in case of cost, most respondents are neutral about online services versus offline services. 36 users have positively rated their overall experience from scale 1-5 and 63.5% of users want to recommend telemedicine to their family and friends.

Non users of telemedicine, 74.9% (155) have basic knowledge of technology, like using gadgets, email services, video calling and also using online shopping platforms through any website or app. We find the main reason for not using telemedicine is that 52.9% of respondents did not feel the need to use it, followed by 40% people are more comfortable visiting their daily doctor. And also, 18.7% of respondents don't know much more about telemedicine. Here are some other reasons, like 13.5% trust issue, 7.1% risky, 7.7% think it is costly.

## V. CONCLUSION

This study sheds some light on the reasons for which non-users have not used telemedicine services. One of the reasons was less knowledge about telemedicine that results in more reliability of daily doctor and doesn't find a need to use it. Both users and non-users have selected reasons in favour of future use of telemedicine services like using it during emergencies, time saving, convenient to take service from home, and immediate and minor medical issues. This information gives direction to the development of service positioning strategy.

Geographical insights are both a barrier and an advantage in adoption of telemedicine in India like the lack of infrastructure, particularly in rural areas, while being a valuable tool in addressing the shortage of medical professionals by enabling doctors to provide services to multiple patients simultaneously. This information will aid in effective market segmentation and targeting.

### Recommendation:

- India's adoption of telemedicine has been driven by both the government and the private sector by improving access to health services, including launching telemedicine networks, establishing telemedicine centers in rural areas, and reducing costs.
- Students use telemedicine. Platforms must develop consulting packages or offer discounts on consulting services.
- Platforms should create video content and articles that describe their services in an easy-to-understand way and clearly explain the booking process. There should be more resources explaining how to use the service and the benefits of using telemedicine. Telemedicine platforms need more promotional activities.

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