

STUDY ON
“AWARENESS LEVEL AND RESTRICTING FACTORS IN PLAY FOR THE GENERAL
POPULATION WITH REGARD TO USING MOBILE TECHNOLOGY FOR
ACCESSIBILITY OF HEALTHCARE FACILITIES”

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Master of Business Administration (MBA)
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By
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Under the Guidance of
DR. VARSHA TANU

DECLARATION BY STUDENT

I hereby declare that this dissertation titled “Awareness and restricting factors for the general population from using mobile technology in accessibility of healthcare facilities” is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)
Mariya Asif
Date :-

CERTIFICATE

This is to certify that dissertation titled Study on Awareness and restricting factors for the general population from using mobile technology in accessibility of healthcare facilities is a record of the research work undertaken by Mariya Asif in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

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Date: 26th June 2022

Date: 26th June 2022

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ABSTRACT

TITLE - A STUDY ON AWARENESS LEVEL AND RESTRICTING FACTORS IN PLAY FOR THE GENERAL POPULATION WITH REGARD TO USING MOBILE TECHNOLOGY FOR ACCESSIBILITY OF HEALTHCARE FACILITIES”

Submitted By- Mariya Asif

Guided by – Dr. Varsha Tanu

INTRODUCTION-

Technology has completely changed the life of people during COVID. It has changed the perception and access to all the needs of people from shopping to ordering food. Technology has also brought a paradigm shift in the healthcare industry. Patients now have access to some of the best diagnostic tools, new and innovative treatments, and a myriad of minimally invasive procedures resulting in less pain and quicker healing. Remote consultations with specialists, targeted treatments, and the availability of intuitive mobile apps have led to improved patient care and a superior healthcare experience overall. Despite advancement in technology and impact of COVID, Indian population still has mixed response on accessing healthcare infrastructure through technology. The objective of this project is to understand the reach, perception and parameters that influence general population to use technology to access healthcare.

OBJECTIVES

1. To evaluate the awareness of virtual healthcare among the general population
2. To understand parameters influencing general population to use technology for accessing healthcare
3. To understand the factors which resist general population from using Online healthcare
4. To analyze the perspective of online doctor consultation
5. To understand the improvements required in service.
6. To suggest measures to improve the current service offered based on feedback.

METHODOLOGY

The period of study was for 3 months from – 21st March 2022 to 30th June 2022. To understand the reach, perception and parameters that influence general population to use technology to access healthcare I conducted primary research through Google survey. Based on these interviews, the relevant information regarding the awareness of telemedicine, its preference, advantages, and disadvantages was collected from the target group. The sample population was classified into 4 major groups wherein Group A consisted of Metropolitan cities, Group B consisted of Tier II cities, Group C consisted of Tier III cities and lastly the cities were classified as others.

- Tools used – Google Form
- Sampling Technique used – Simple Random Sampling
- Sample Size – 220
- Type of Research – Exploratory as well as conclusive Research.

KEYWORDS USED - *virtual healthcare, doctor consultation, treatment, awareness, telemedicine, patient*

FINDINGS AND CONCLUSIONS- A total of 220 responses were collected from across India from diverse group of age that is ranging from 18 years to 50 years and above.

Classifying the cities based on A-B-C Classification, gives a clear understanding of the sectors of cities and how well they are accustomed to online consultation and what is the room of growth of awareness in the same.

FOR CLASS A CITIES- The category of mostly urbanized cities, this classification city had particularly a lot of users of online doctor consultation and thus suggested diverse set of improvements in the service. The city A respondents were mostly (about 36.45%) from the age group of 40-50 with maximum of them occupied in corporate life, the family income over here ranges around 15-30 LPA for about 65% of the respondents, and nearly half of them (51.4%) were aware about the service. The preference of opting for Online Medical consultation was shown majorly for the age group 18-30 (52.94%) and 31- 40 years (51.52%). Their active participation in online medical consultation, helped me to gather responses regarding what all improvements they would like to see in this field where the major proportion about 75% of them wanted frequent connection with specialist, more options such as online nurses and psychologist access, Patient engagement while only 20% suggested for improvements in Physical lab testing, detailed consulting, easy understandable language. The major preventing factor seen was – lack of rapport formation, no physical examination and unavailability of certain services by about 63% of the respondents. To change the non-user to a user of this service class “A” city responses ask for assuring the confidentiality of a patients’ data while using the virtual consultation service, also more education about the service must be provided before becoming a user (45%), followed by Emergency care, up-to date health report, and stats regarding previous patient visits should also be known to new users which was opted by 35% of respondents.

FOR CLASS B CITIES- The category of slightly fewer urban cities, this had comparatively less users of service and mentioned a lot of prompting features which might make them potential users of service in future. The city B respondents majorly were from 40-50 age group – about 42.52%, with most of them occupied in government service (43.08%), earning around 5-15 LPA (60%), and about 82% of them were aware about the service but were not frequent users of the same. In case of cities of class “B” the maximum rejection of service was observed particularly among the age group of 31-40 (86.67%). Regarding what all improvements they would like to see in this field where the major proportion about 70% of them wanted awareness about the service, particularly special service for nurses, psychologist, also there’s a need to improve consultation for interacting with infants (pediatrician). The major preventing factor seen was – lack of rapport formation, no physical examination and problems with connecting with doctor virtually by about 65% of the respondents. About 20% of them were reluctant to use video calls, there was a communication barrier and believed in superiority of physical consultation. The prompting features of respondents from class “B” cities state that there should be enough appealing online presence of the service, easily accessible, convenient subscription plans, special offers for new patients, and even improved doctor connections, this was opted by about 60% of the respondents.

FOR CLASS C CITIES- This was the category of non-urban cities, this had least no. of users of service and mentioned a lot of preventing factors which stops them from using the service. The city C respondents had maximum responses from the age group of 40-50 (36.7%) as well with most of them engaged in Corporate as well as Government lifestyle, earning around 5-15 Lpa (66.67%), about 43.33% were aware about the service. In case of class C cities it was seen that the age group of 40-50 and 50 above both showed 100% rejection for online consultation. All the respondents (100%) of class “C” seek improvements in discount options on follow up visits, services for practical exam and lab testing. The major preventing factor seen was that about 68% of the respondents find the service to be untrustworthy and say it’s difficult to trust someone online, they also show inclination towards physical consultation, also they are unable to understand the benefits of the service. The prompting features of respondents from class “C” cities state that there should be services apart from online consultation particularly for those who are not able to access internet connectivity in these locations by 65%. There is also a demand for discounts and special offers for new patients, finally it is mentioned that the service should be made trustworthy to be accepted among the society by 35% of the respondents.

Chapter 1 Problem Statement

Technology has completely changed the life of people during COVID. It has changed the perception and access to all the needs of people from shopping to ordering food. Technology has also brought a paradigm shift in the healthcare industry. Patients now have access to some of the best diagnostic tools, new and innovative treatments, and a myriad of minimally invasive procedures resulting in less pain and quicker healing. Remote consultations with specialists, targeted treatments, and the availability of intuitive mobile apps have led to improved patient care and a superior healthcare experience overall. Despite advancement in technology and impact of COVID, Indian population still has mixed response on accessing healthcare infrastructure through technology. The objective of this project is to understand the reach, perception and parameters that influence general population to use technology to access healthcare. Through below mentioned data points, I would like to bring into your notice how Indians are moving towards the optimal utilization of digital healthcare services.

- 76% of Indian Healthcare professionals are already using EHR.
- 87% of Indians with access to their health data say they want their doctor to have the access as well.

I would also want to bring another big factor into your notice. 49% Indians say they know nothing about Electronic Health records.

Considering the healthcare infrastructure of India where 2/3rd of the Hospital are publicly owned but 75% of the volume goes to privately owned hospitals, we need to move towards achieving 3 big milestones, this will drastically increase the utilization of healthcare services through mobile technology.

- Providers must adopt to digital-health methods to provide services. (75% of healthcare providers in India are already using it)
- Our systems should be able share data in real time, a process which is called Interoperability.
- These data must be aggregated, analyzed and represented in a clinically useful and timely manner.

Technology is only useful to humans if they are able to understand it and use it for their betterment. Undoubtedly Digital health will be changing many lives in the future for good, and is changing many lives already. Through technology, providers are able to give services to regions where they can't reach physically. Access to this facility still remains a big concern for both providers and payers. Through this study, we will be observing the awareness, restrictions and accessibility of Indians towards the utilization of healthcare services using mobile technology.

Chapter 2

2.1 Background

The activities related to telemedicine started in 1999 in India, though the government recognized the potential of telemedicine in the year 2000. The Indian Space Research Organization deployed the first nation-wide SATCOM-based telemedicine network in 2001. Telemedicine was considered futuristic and experimental some years ago, but it is a reality today. It is now emerging as an important tool for convenient as well as specialized healthcare, particularly for patients in remote locations with limited access to standardized healthcare services. For patients who do not want to waste their time in the waiting room of the doctor's clinic, telemedicine can provide an alternative solution

Keywords: *virtual healthcare, doctor consultation, treatment, awareness, telemedicine, pateint*

2.2 Introduction

In an era, where everything is available at the click of a button it is no surprise that even a specialist doctor or a clinical examination could be done online. Online doctor consultation is a coveted field in India and can offer services like telehealth, telemedicine, telecare, and digital health care services. Virtual healthcare refers to the virtual visits that take place between patients and clinicians via communications technology the video and audio connectivity that allows virtual meetings to occur in real time, from virtually any location.

A virtual visit can be a videoconference between a doctor and a patient at home. In most situations, telemedicine is beneficial. It gives access to healthcare services in remote areas and to those with mobility issues such as the elderly. Therefore, it has the power to overcome geographical barriers to provide healthcare services. It may provide an opportunity to reduce healthcare spending and save time for the patient and caregiver. With the advent of telemedicine, a medical practitioner or hospital can consult with different specialists, irrespective of their location. Telemedicine helps patients to engage with their healthcare providers more frequently, in a convenient way, which may result in a better doctor–patient relationship. The follow-up of patients is likely to be better, which may improve outcomes.

Overall, telemedicine has the potential to provide better healthcare services to the masses. Online consultation has become popular in India because it is easier and safer to access healthcare via call, video, chat with doctors, especially during the COVID-19 pandemic.

The health ministry has urged people to take advantage of telemedicine services during the lockdown. And since then, the usage of online consultation apps and medicine delivery services has been on the rise. The pandemic has encouraged people to use the platform and consult a certified medical practitioner rather than resorting to self-medication. Online consultations are known for specialties such as Gynaecology and Dermatology, while other specialties like mental health, paediatrics, ENT, ophthalmology, and gastroenterology are all well-known departments. The telemedicine market in India is expected to reach \$5.4 Billion by 2025 with a CAGR of 31%

2.3 Importance of Online doctor consultation

COVID-19 virus has wreaked havoc around the world, infecting millions and raising fears of uncertainty. Consequently, Governments have imposed stringent social distancing and lockdown measures to control the spread and contain the pandemic. This has left, those with medical priorities for routine check-ups and other chronic diseases in a quandary. Amidst rising fears of disease infectivity from contaminated surfaces, people have turned their dependency on technology. Technology powered virtual consultation has stepped up into the spotlight aiding healthcare provider organizations, doctors, and patients with digital consultations aired at the safe environs of a hospital/clinic straight to a patient's home.

E-healthcare has emerged as an effective preventive solution to mitigate the spread of COVID-19. Telehealth technologies are bringing people, physicians, healthcare systems together, especially asymptomatic Coronavirus patients, to stay at home and consult specialists through video or audio channels, helping to reduce the spread of the virus among the patients and frontline emergency workers. Also, around 75% of the rural population is struggling with insufficient infrastructure and technological awareness. This is the reason online consultation might help overcome this issue.

- Bringing quality healthcare services to the rural areas of the country.
- Benefits the people of rural areas in bringing down the disparity in healthcare offerings between the rural and urban areas.
- Provides access to qualified healthcare providers, specialized consultation, accurate prognosis, timely diagnosis, and effective course of treatment.
- The people of urban areas, who have access to world-class hospitals and treatment facilities but do not have the time can seek help by online consultations.
- The patients can have real-time interactions through video conferencing solutions, or store and forward models which can capture patient and disease-related information through dictation, photos, videos, radiology, etc.
- The patients can get the benefits of an actual visit to the doctor without having to do so.
- Not just consultation and treatment, but many other services can be fulfilled through telemedicine, which brings together the best of both worlds - medicine and telecommunication.
- It helps in the dissemination of specialized knowledge among the medical community through advanced technology and peer-to-peer reviews.
- It is extremely useful for emergency medical consultations in times of an epidemic or crisis.

2.4 Current problems in the field

Despite the benefits of increased access to care, quality improvements and cost controls, virtual consultancy also comes with some challenges that patients and practitioners alike will need to overcome.

However, it has been reported that clinicians need to spend more time with disadvantaged patients to help them prepare for video calls and not everyone will have access to a web-enabled device or can afford the data to make a video call. Those who are hard of hearing or need translators or advocacy might have trouble accessing the support they need.

Negative aspects include the difficulty of maintaining the therapeutic relationship, limited patient engagement, and changes in patients' expectations. Regardless of the telehealth modality (telephone or video), reports show that some physicians were concerned about the lack of direct human contact, which made it difficult to foster the therapeutic relationship.

Poor patient engagement was also reported as a telehealth challenge, seen in areas such as providers' inability to reach patients (e.g., when patients would not answer the unidentified number) or reduced confidentiality of consultations (e.g., patients in public places or driving). For instance, people associated poor patient engagement with distractions caused by situations such as conducting their medical visits in inappropriate places (e.g., at a grocery store) or while driving.

2.5 Objectives

7. To evaluate the awareness of virtual healthcare among the general population
8. To understand parameters influencing general population to use technology for accessing healthcare
9. To understand the factors which resist general population from using Online healthcare
10. To analyze the perspective of online doctor consultation
11. To understand the improvements required in service.
12. To suggest measures to improve the current service offered based on feedback.

RESEARCH QUESTION -

What is the level of awareness and restricting factors in play for the general population with regard to using mobile technology for accessibility of healthcare facilities?

Chapter 3

Literature review

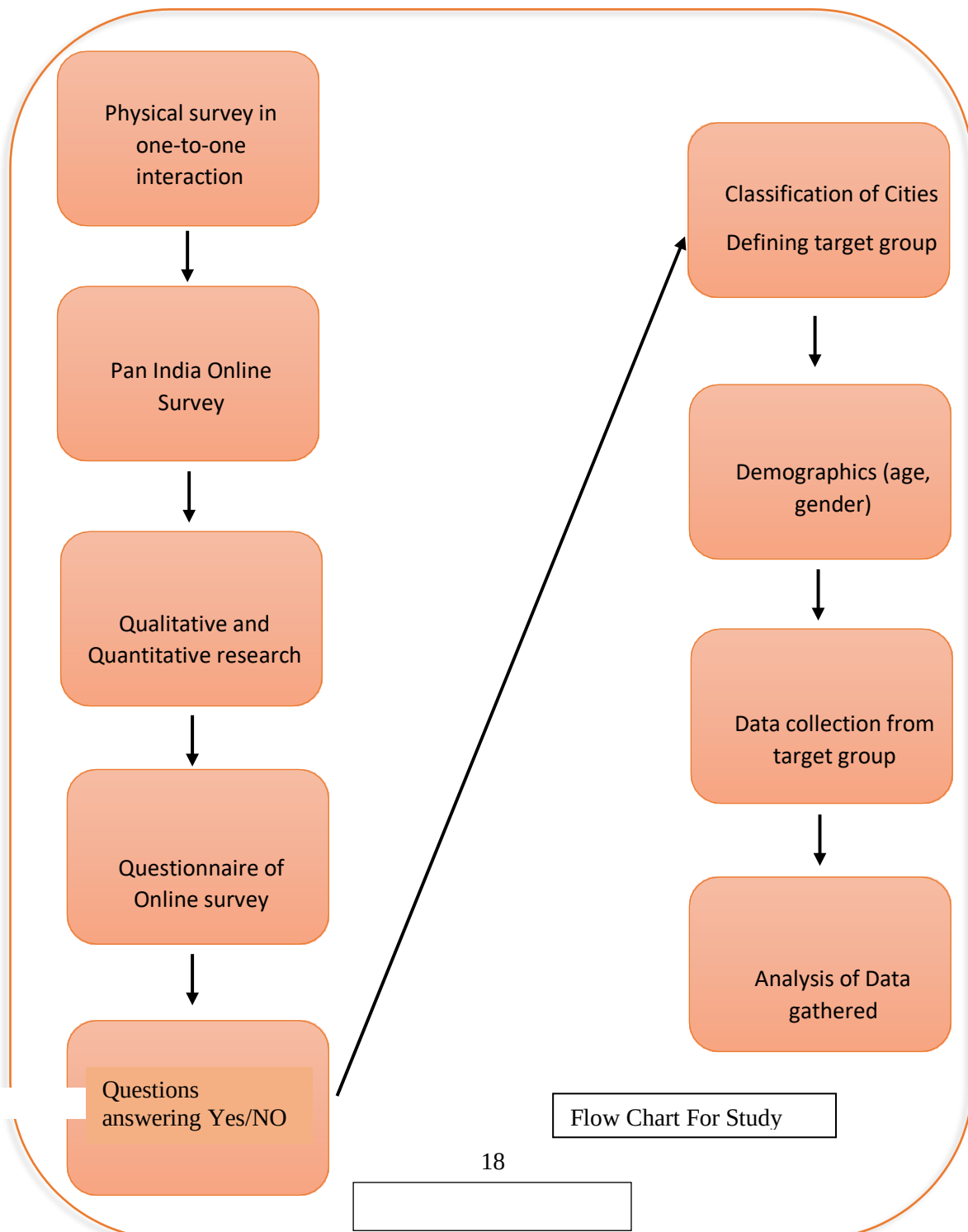
Over the decade many studies were done by market scholars across the globe to analyze the online doctor consultation. A study was conducted by Hari et.al (2018) in which he has stated the possible reasons behind the beginning of a new era of consultation, which is online medical consultation. It examines features and themes evident in the literature and in a range of currently operating platforms providing online medical consultation . Another cross-sectional, observational and web-based study was conducted by Neeraj et.al (2020) wherein they searched the Google Play Store with the search strategy “health apps in India”. In the results, 250 applications (apps) appeared. Out of 250 apps, finally, 22 apps were found to be providing online doctor consultation and/or doctor appointment booking-related services. They found that among the selected mHealth apps operating in India and providing doctor consultation-related services online/offline, Practo, mfine, DocsApp, 1mg, Netmeds, Lybrate, Medi Buddy, and Med life were found to be the eight most popular ones with over a million downloads and on average four-plus user rating out of five . Another survey was done to understand online consultation satisfaction of patients by Martin et.al (2017) a total of 239 patients in doctors’ offices were asked about their online seeking for health information and measuring health anxiety prior to the consultation, and their satisfaction with the consultation afterwards, results showed that health anxiety is positively related to seeking online health information and that health anxious people are less satisfied with the doctor consultation. Furthermore, people searching more extensively appreciated the duration of their physician’s consultation less, but only if they were relatively health anxious .

Similarly, an online survey was conducted by Nicol et.al to study the factors that can enhance the use of e-consultation in primary care. In total they conducted survey of 1706 patients, of these patients 90% had no prior e-consultation experience. The most prominent reasons for non-use of e-consultation use were not being aware of the existence of the service, the preference to see a doctor and e-consultation not being provided by a GP. 10% patients were motivated to use e-consultation, because e-consultation makes it possible to contact a GP at any time and because it enabled patients to ask additional questions after a visit to the doctor. In a pilot study in Southwest England by Hannah et.al it was noticed that patients were substantially more likely to utilize the system towards the beginning of the week 4. Out of all e-consultations, 58.8% occurred from Monday to Wednesday, with usage declining towards the end of the week: just a 12.4% of e-consultations were done at the weekend. In any case, 69.9% happened in between 7 am and 5 pm, with peaks seen around 10 am and 2 pm. There was some enthusiasm for evening usage as well, but this was much lower than daytime utilization 19.4% between 7 pm and midnight, with a peak around 8 pm . Another survey was conducted to understand the advantages and limitations of virtual online consultations by Trisha et.al to explore the advantages and limitations of video consultations, they conducted in-depth qualitative studies of real consultations (microlevel) embedded in an organizational case study, taking account of national context (macrolevel). The study is based in 2 contrasting clinical settings (diabetes and cancer) in a National Health Service (NHS) acute trust in London, UK . In a study conducted by Edwards et al (2017) it was seen that women were almost twice as likely to perform an e-consultation as men (64.7% vs. 35.3%) and over half of all users were age 25–44 years (median age 39). After the age of 45 years, use declined with

age, although young adults (age 18–24 years) also accounted for only a small proportion of total usage (8.7%) . According to survey conducted by Ibrahim et.al most Online Medical Consultation sites (79%) offer their services worldwide and are not bound by the country where their operating business is legally based. The remaining 21% are limited to the country of operation due to their dependence on local insurance or government rebates [8]. Improving the effectiveness of online healthcare platforms: An empirical study with multi period patient-doctor consultation data was conducted by Yefei et.al in 2019 by analyzing 77,248 patients' behaviors on an online healthcare platform covering the period 2017–2018, they found that the response time, the depth of interaction, and service content during the first consultation influence the patients' subsequent consultation behaviors significantly. Also, the effects of doctor response time, service content, and depth of interaction on patient satisfaction are different in different periods. Their findings offer managerial insights on managing patients' continuous consultation behaviors and enhancing their satisfaction by considering the time scope and service type. Also, they offer important insights into how online medical care can be delivered more effectively, so relieving the demand for traditional healthcare system capacity . The rapid development of online medical care, coupled with sudden pandemic of COVID-19, has led to a sharp increase in the number of online patient consultations during this period. The onset of the Covid-19 pandemic has significantly contributed to an extremely rapid transformation of healthcare systems worldwide, with telemedicine being one of its main drivers. This is since the pandemic situation; telemedicine is often the only possible form of patient care. A study was conducted by Magdalena et.al to understand the impact of medical teleconsultations on general practitioner-patient communication during COVID- 19. The respondents they were surveying were mainly women (56%), and the mean age of the studied patients was 55 years. The largest group of respondents were the elderly in the group of over 65 years (39.4%). The smallest group were young people up to 24 years of age (5.1%). Out of 100 respondents to the survey, 45.5% declared that they make appointments with GP rarely (once a quarter), and 27.3% sporadically (once a year). Only 9.1% of patients make appointments very often—several times a month. The main method of contacting the GP was by phone. Only 5% of people used video consultation. The most common reasons for contacting GP were routine or non-urgent matters. A large proportion of the survey respondents (40.4%) reported that the main reason for the consultation were administrative matters: prescription, referral to a specialist, dismissal, or a control (periodic) consultation (30.3%). Fewer respondents reported that they asked for a consultation because of preventive reasons (16.2%) and because of a first diagnosis or treatment (12.1%), which may be due to the fact that during a Covid -19 pandemic, patients avoid the consultation if they have not urgent reasons. Almost half of the respondents (46.5%) reported a very long waiting time for the expected teleconsultation (longer than 48 hours), which could have caused anxiety and lower the quality of medical teleconsultations .

Chapter 4: Research Methodology

- The period of study was for 3 months from – 21st March 2022 to 30th June 2022.
- To understand the reach, perception and parameters that influence general population to use technology to access healthcare we conducted primary research through Google survey. A total of 220 responses were collected from across India from diverse group of age that is ranging from 18 years to 50 years and above.
- Based on these interviews, the relevant information regarding the awareness of telemedicine, its preference, advantages, and disadvantages was collected from the target group.
- Sampling Technique used – Simple Random Sampling
- Sample Size – 220
- Type of Research – Exploratory as well as conclusive Research.



4.1 Interviews with target group

The research methodology includes both qualitative and quantitative approach. Few qualitative methods utilized include conducting in person interviews and circulating a digital questionnaire.

4.2 Collecting data from target group

Based on these interviews, the relevant information regarding the awareness of telemedicine, its preference, advantages, and disadvantages was collected from the target group.

4. 4 Sample Size

Sr. no	Class of city	Occupation status of respondents	Sample format (gender wise)		Respondents from each class of city
			Female	Male	
1.	A	Corporate	18	31	49
		Government service	7	12	19
		Homemaker	14	-	14
		Self-employed	5	17	22
					104
2.	B	Corporate	-	12	12
		Government service	14	16	30
		Homemaker	14	-	14
		Self-employed	-	8	8
					64
3.	C	Corporate	4	6	10
		Government service	6	2	8
		Homemaker	6	-	6
		Self-employed	2	4	6
					34
4.	Others	Corporate	1	4	5
		Government	4	2	6
		Homemaker	6	-	6
		Self-employed	2	3	5
					18
				Total Sample Size	220

Table No 1: Sample size of our study

Chapter 5

Data analysis

5.1 Data collected through physical survey

Physical Interview with people who were aware about Virtual Healthcare services

No. of respondent	Gender	Occupation	Age	Do you use virtual healthcare	How do you come to know about virtual healthcare	Why do you prefer it?	Why don't you prefer it?
1	Female	Homemaker	40	Yes	Suggested from Doctor himself	Its preferable to approach a doctor in an emergency even during Mid-night	
2	Male	Worker	46	Yes	Suggested from Doctor himself	Being a Diabetic patient it's better to stay in touch with doctor occasionally	
3	Female	Bank Employee	45	No	Advertisement		Not a frequent clinic visitor
4	Male	Gov. Servant	50	No	Advertisement		Physical visits are more connective
5	Male	Gov Servant	40	Yes	Friend circle	The doctor keeps a track of patient health	
6	Female	Homemaker	36	Yes	Friends	The virtual associates act as a reminder for patient health status	

7	Female	Student	22	Yes	Advertisement	Convenient	
8	Male	Employee	34	No	Social media		Quick procedure in physical mode
9	Male	Employee	38	Yes	Friend circle	keeps track of once physical health	
10	Female	Employee	35	No	Social media		Prefer Family doctor
Table No 2: Analysis of Physical survey.							

The Qualitative research over Problem statement began with collecting information from general masses in locality . The demographics of survey involved gathering information about the respondent's age, occupation, and gender. The questions involved during interaction process were about the usage of Online/Virtual Healthcare services, the source of service from which they came to know, (If yes) reason of the respondent for using such service, (If no) reason for not preferring the Online/Virtual healthcare service. The data had a varied set of response with 50-50% gender population of Male and Female. The average age group of the physical survey was 35-50 years of age. The general source of knowledge for knowing about the Virtual healthcare service is known to be Advertisement and social media also through friend circle. The respondent who were assertive about using Virtual/Online doctor consultation mentioned the reason that its preferable to approach a doctor in an emergency even during Mid-night, also one of the respondent being a Diabetic patient aid that it's better to stay in touch with doctor occasionally, reasons such as the doctor keeps a track of patient health, the virtual associates act as a reminder for patient health status, keeps track of once physical health were also noted. For people who have not used the online healthcare service mentioned that they are not a frequent clinic visitor, they say that a physical mode is a preferable option, few had family doctor visiting their place. To top with it the findings of this physical survey stat that it's pretty understandable from both the perspectives but it is to be known that such convenient service is available today providing benefits to different sorts of users.

5.2 Online survey

While the internet has long been a source of medical information, it has only recently been used for online private patient-doctor consultations. Online Medical Consultation (OMC) is now offered by many providers internationally with diverse models. It may also be of value for individuals with needs that regular health care services have not been able to meet. Internet-based health services offer health information, including advice from health care providers to individuals. A new service of that type is consultation with a doctor. This study reports a review of the literature on OMCs and an empirical analysis of reach of Virtual healthcare

services in different categories of city classified. To explore their major themes, these features have been studied for a better understanding of the promise on which these services operate. Resultant study shows OMC is a growing phenomenon featuring several interaction modalities, serving various medical consultation purposes, and accessible to consumers throughout India. The objective of this project is to understand the reach, perception and parameters that influence general population to use technology to access healthcare.

We found that an Internet based Ask the Doctor service is primarily consulted because it is convenient, but until now, these consultations have been mainly text-based, using communication by e-mail or by Internet servers. When the inquirer and the doctor already know each other, e-mail has been the main method of communication. Because the analyzed response was a combination of multiple-choice alternatives and a free-text option, both a quantitative analysis and a qualitative analysis were performed. The frequencies of the multiple-choice alternatives were computed using the Google survey form and the statistical analysis of data was performed using Tableau software. The survey received a varied set of response from different blocks of country which was further classified into 4 divisions based upon the Urban status of location as Class “A” being the top then Class “B” followed by Class “C” with cities which were not so urbanized, rest of the cities were included in others category.

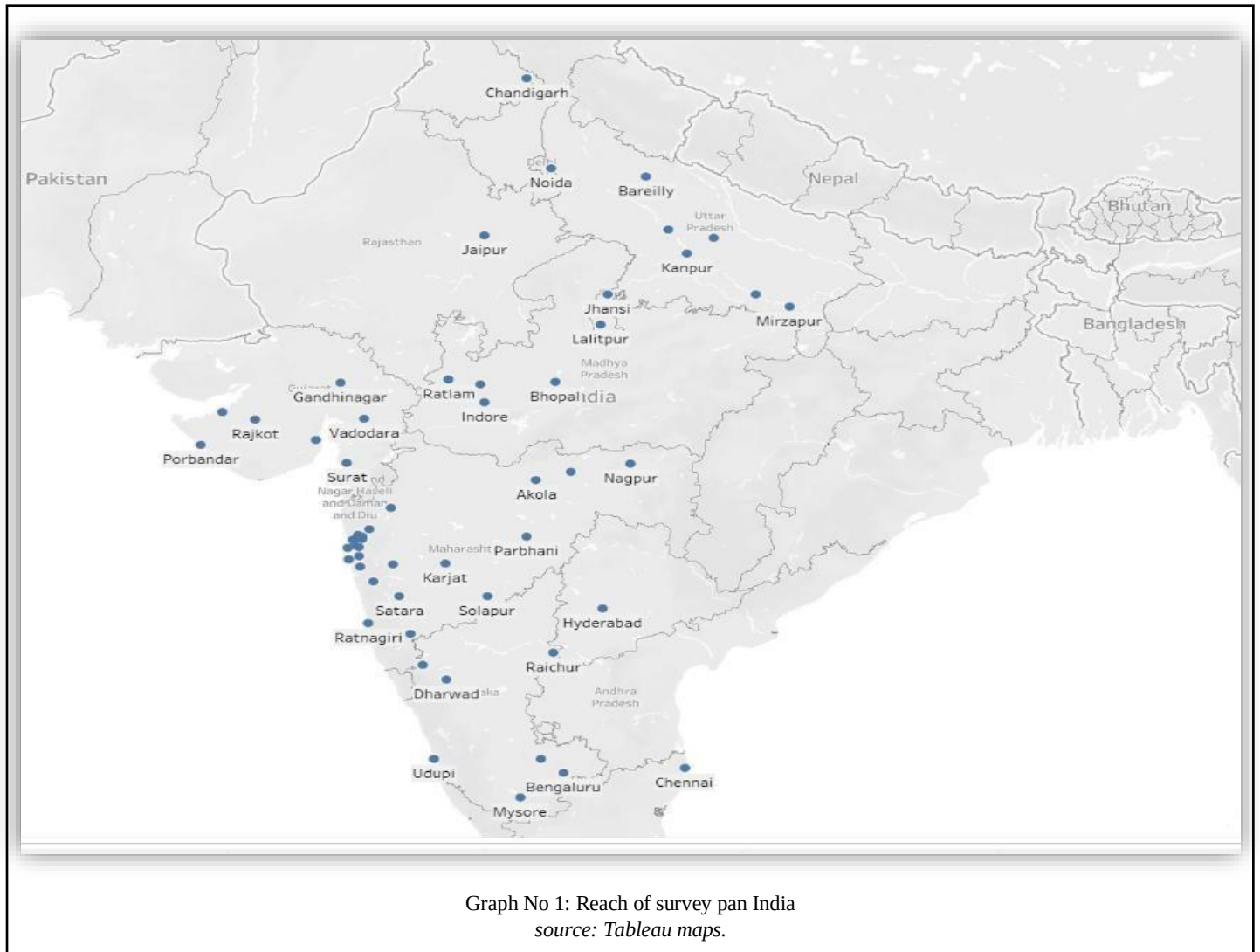
5.3 Usage of yes and no response system

The survey was qualitative based research which was meant to understand the general awareness and application of online doctor consultation service. Several questionnaire design texts emphasize a dual role of question wording: the wording needs to express what is being measured and tell respondents how to answer. Common examples are yes/no questions with ordinal or nominal response options, open-ended questions with closed-ended response options, and check-all-that apply questions with forced-choice response options. A slightly different type of mismatch utilizes a question stem that can be read as asking for two different types of answers with no indication of which type should be provided. We find that mismatched items generally have lower data quality than matched items and that substantive results differ significantly across matched and mismatched designs.

The survey focused primarily on getting answers in Yes and No response for the usage of Virtual healthcare service, further the data was analyzed accordingly. The yes responses were asked about the benefits and advantages of the service they used, also the satisfaction rate of the service they experienced was analyzed based on a scale of 1 to 5. In case of no responses people’s perception about not using the service was asked, they were also asked what would be the prompting features which they would like to have in the service to be a part of the Virtual Doctor consultation journey. Finally, they were also asked if they would like to use this service in future.

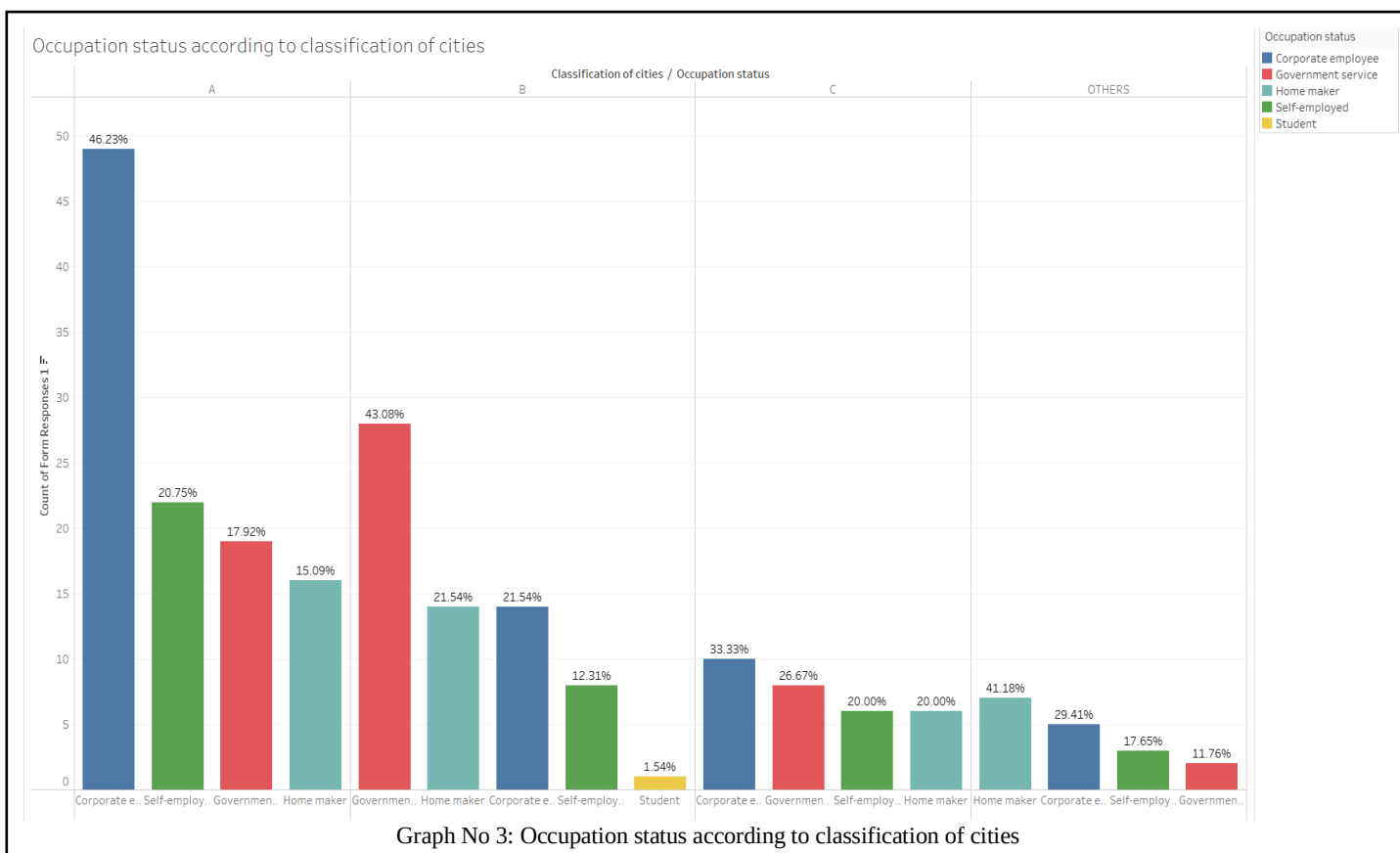
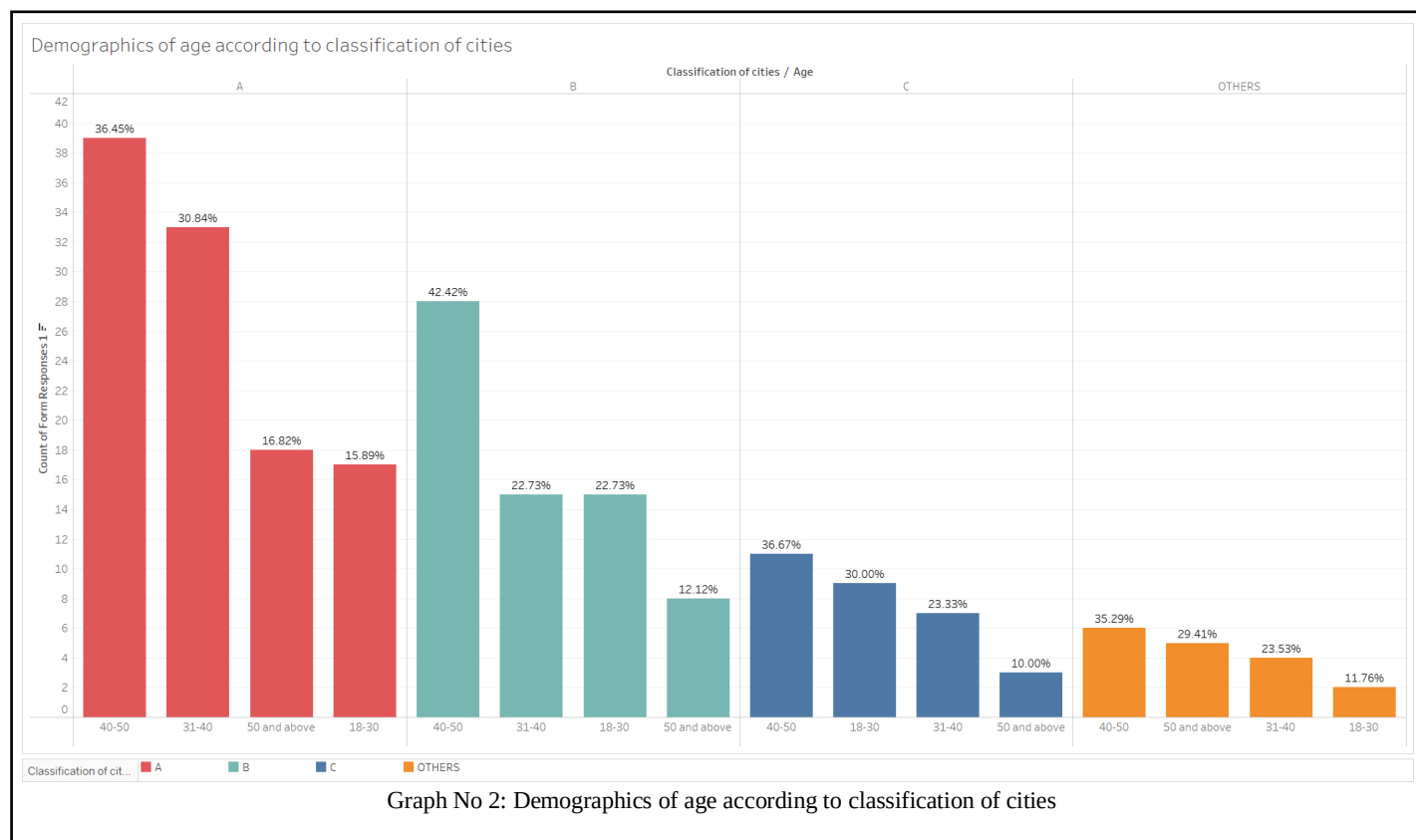
5.4 Analysis of Online survey

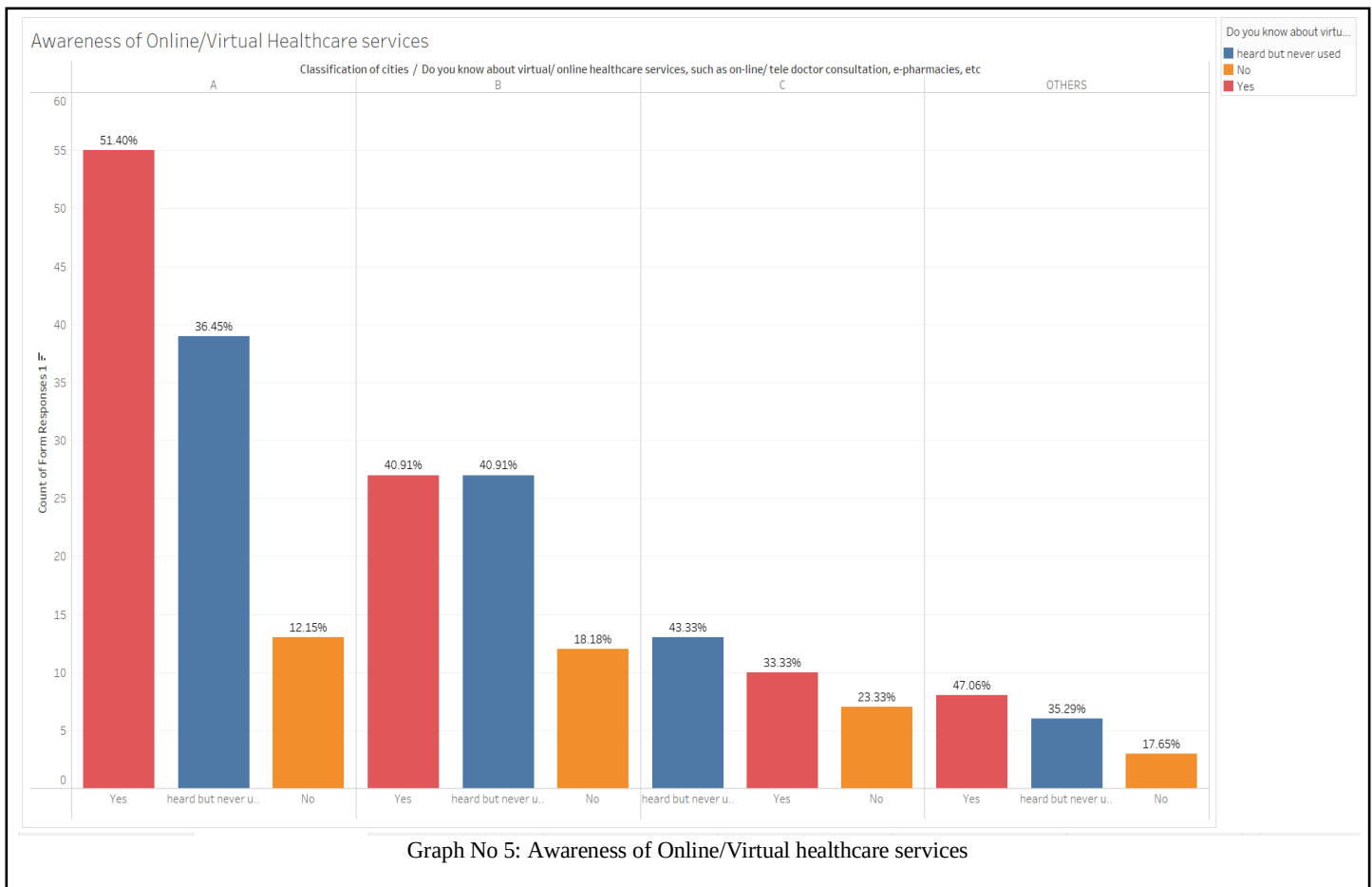
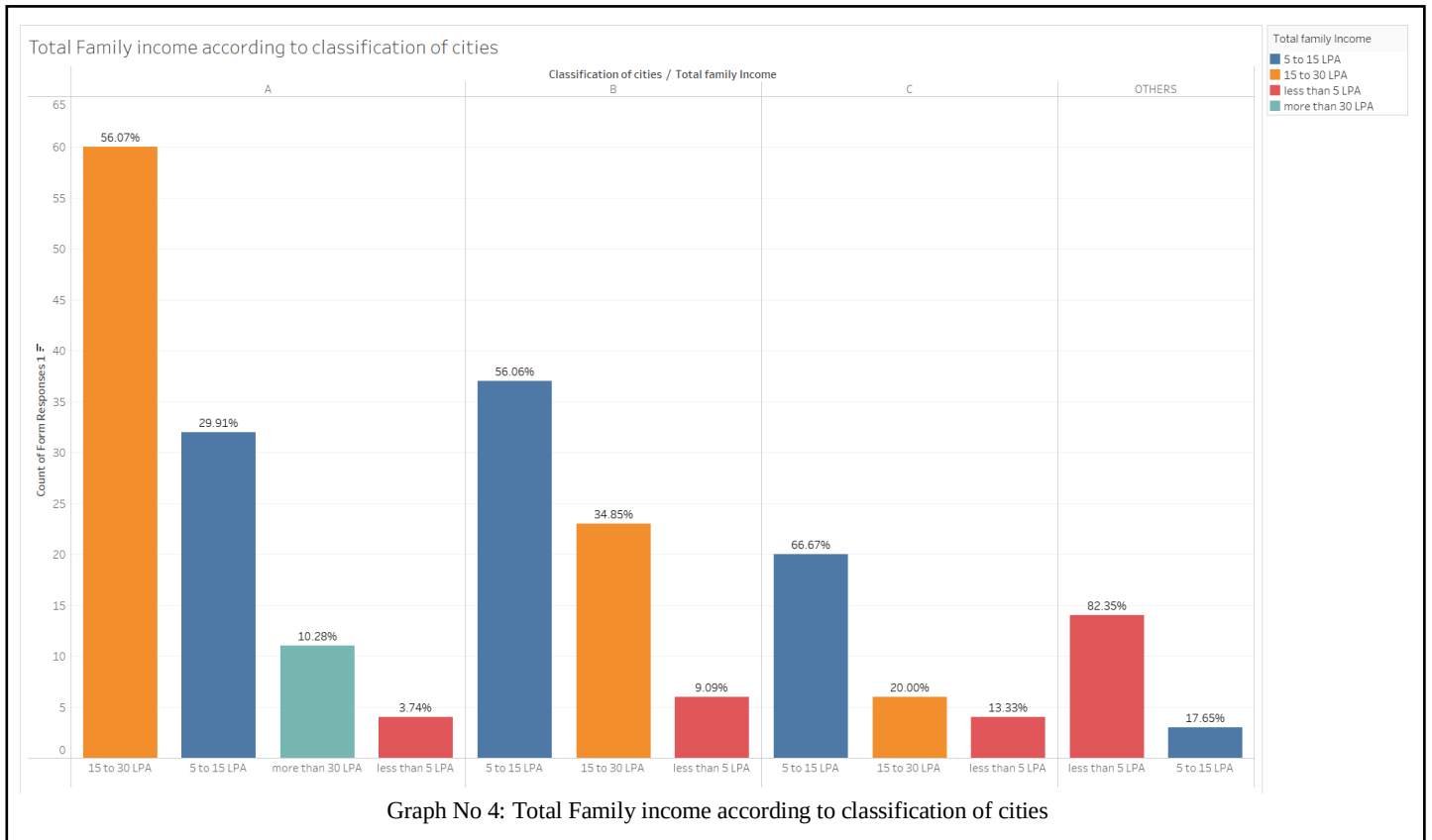
Telehealth adoption is increasing with each year, but most consumers still aren't onboard with the technology in healthcare, according to a recent report. So, to understand the reach, perception and parameters that influence general population to use technology to access healthcare we conducted primary research through Google survey. A total of 220 responses were collected from across India from diverse group of age that is ranging from 18 years to 50 years and above.



The above graph depicts the reach of our survey. The survey was conducted across India ranging from cities like Chandigarh to Mysore. Majorly the responses were from cities like Mumbai, Navi Mumbai, Thane, Bangalore, Mysore, etc. The cities were then classified into 4 major groups wherein Group A consisted of Metropolitan cities, Group B consisted of Tier II cities, Group C consisted of Tier III cities and lastly the cities were classified as others.

5.4.1 Demographics of survey under consideration (age, occupation status, total family income, awareness of virtual healthcare service) based on the classification of cities.





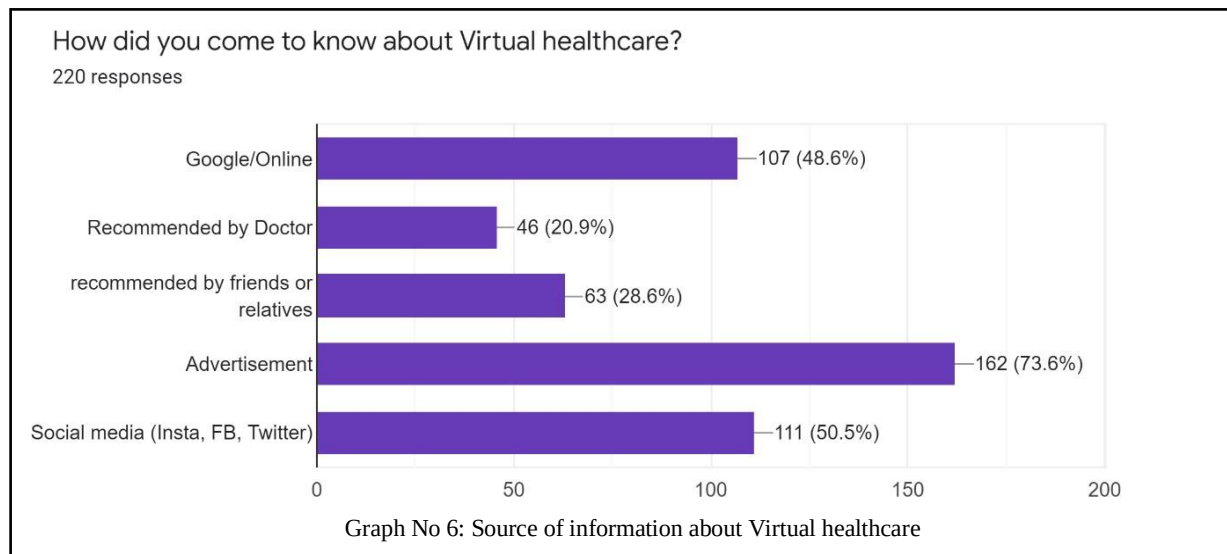
	A		B		C		Others		Referen ce
(% of total)	Max response	Minimum response	Max response	Minimum response	Max response	Min response	Max response	Min response	
Age	40-50 (36.45%)	18-30 (15.89%)	40-50 (42.52%)	50 and above (12.12%)	40 to 50 (36.67%)	50 and above (10%)	40-50 (36.69%)	18- 30 (11.76%)	Graph No 2
Occupation status	Corporate (46.2%)	Home maker (15.9%)	Government (43.08%)	Self Employed (12.31%)	Corporate + Government (50% and above)	Home maker (20%)	Home maker (41%)	Government (11%)	Graph No 3
Income	15- 30 LPA (65%)	Less than 5 LPA (3.74%)	5- 15 LPA (60%)	Less than 5 LPA (9%)	5 TO 15 LPA (66.67%)	Less than 5 LPA (13.33%)	Less than 5 LPA (82.35%)	5 TO 15 LPA (17%)	Graph No 4
Awareness	51.40% said yes	12.15% said no	82% are aware but never used	18.18% said no	43.33% said heard but never used	23% said no	47% said yes	17% said no	Graph No 5

Table No 3: Analysis of Age, income, Occupation status of our respondents and awareness about online consultation among them.

The table above depicts information about different demographics considered during the analysis of the study.

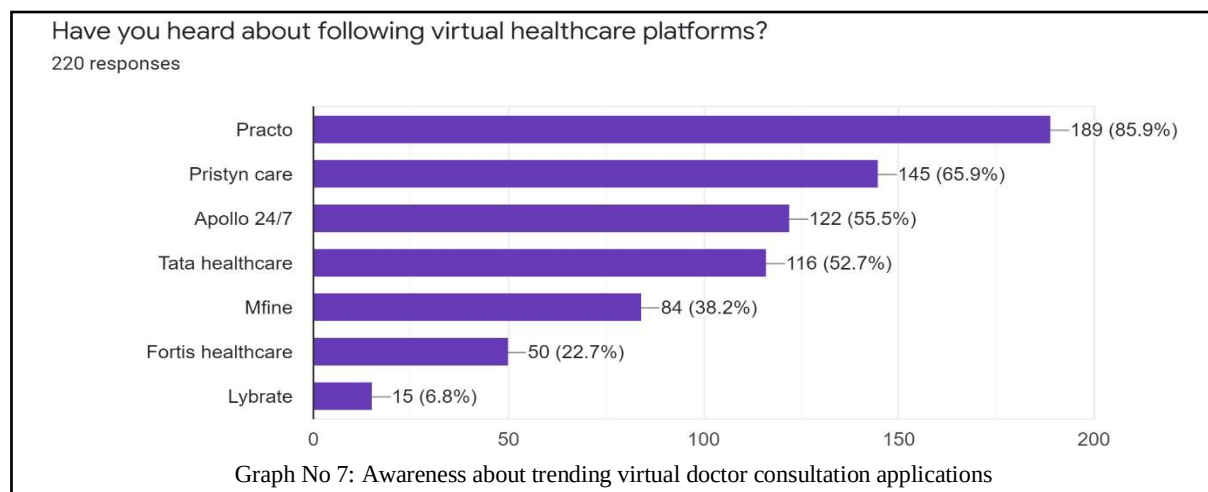
The city A respondents were mostly from the age group of 40-50 with maximum of them occupied in corporate life, the family income over here ranges around 15-30 LPA, and nearly half of them were aware about the service. The city B respondents received maximum were from 40-50 age group, with most of them occupied in government service, earning around 5-15 LPA, and nearly 80% of them were aware about the service. The city C respondents had maximum responses from the age group of 40-50 as well with most of them engaged in Corporate as well as Government lifestyle, earning around 5-15 Lpa, almost half of them were aware about the service.

5.4.2 Following are the responses of source of information for knowing about virtual healthcare service



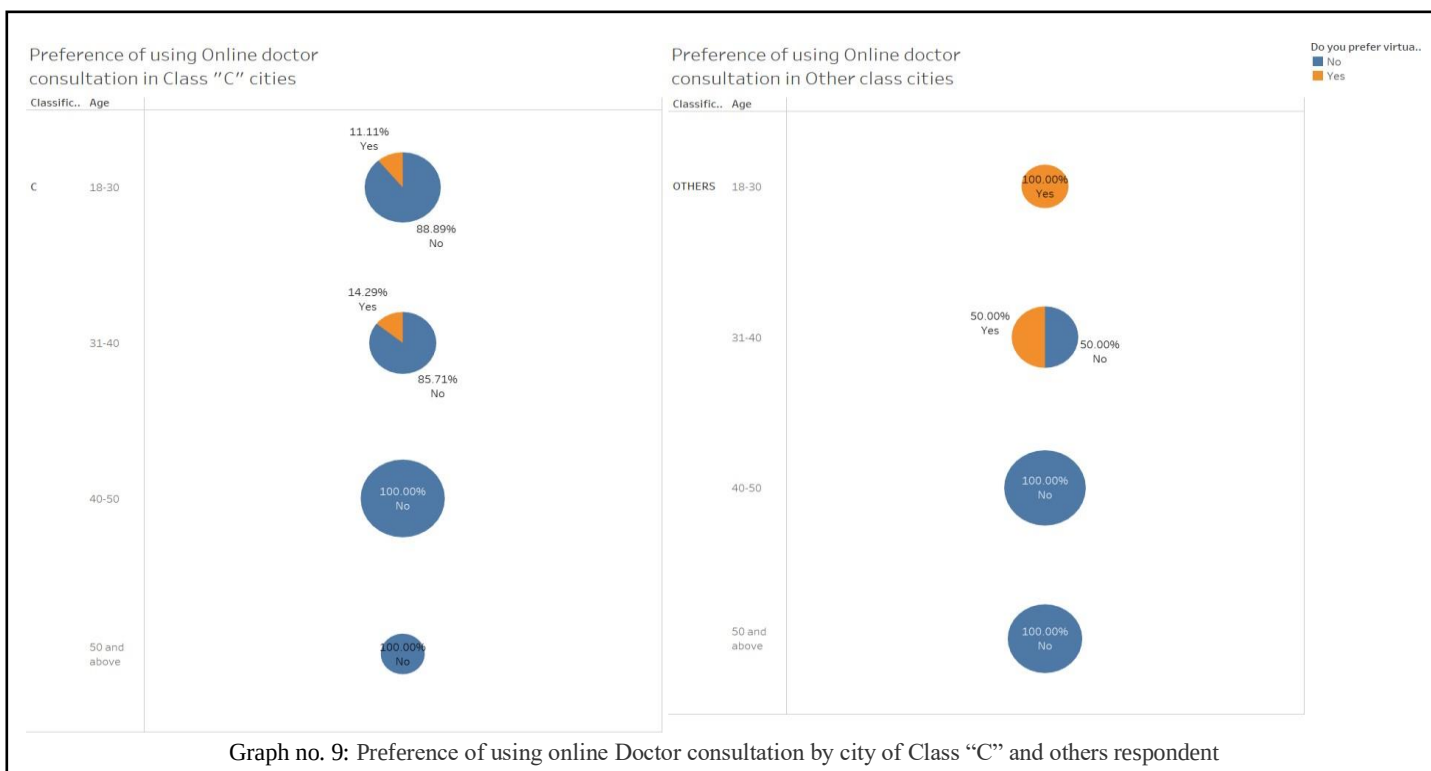
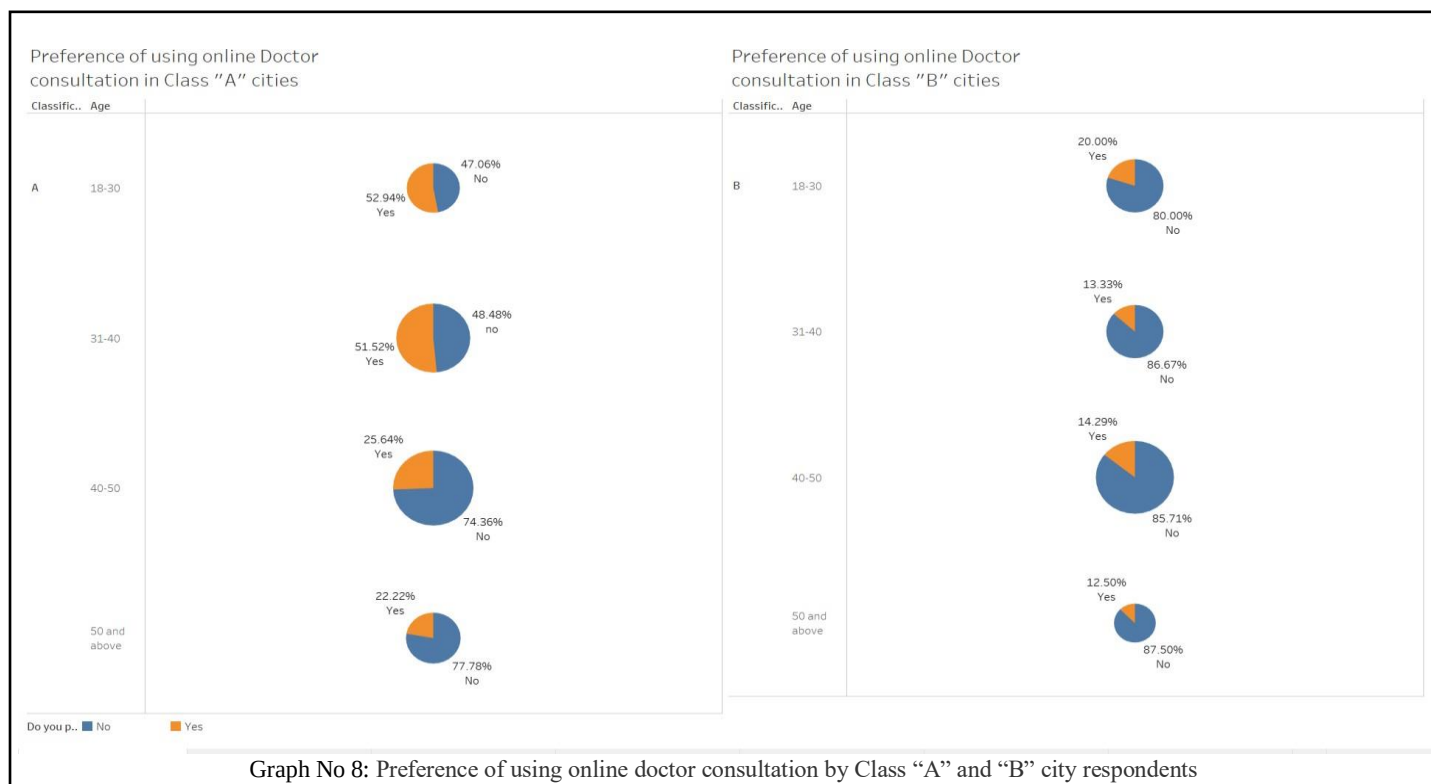
From our online survey we found that about 107 responses i.e., 48.6% of the respondents came to know about virtual healthcare through Google or other online web searches, about 46 respondents i.e., 20.9% of people came to know when they were recommended about the virtual healthcare by the doctor, 63 respondents i.e., 28.6% of people came to know about virtual healthcare when they were recommended about the same by their family or friends, 162 i.e., 73.6% respondents came to know via advertisements and 111 i.e., 50.5% respondents came to know about virtual healthcare through social media.

5.4.3 Awareness about trending virtual healthcare platforms



From the survey we came to know that most of our respondents that is 189 (85.9%) know about Practo online consultation app, 145 i.e., 65.9% of respondents have heard about Pristyn care, 122 i.e., 55.5% of respondents have heard about Apollo 24/7, about 116 i.e., 52.7% of respondents have heard about Tata healthcare, 84 i.e., 38.2% of respondents have heard about Mfine, 50 of our respondents i.e., 22.7% have heard about Fortis healthcare and 15 of our respondents i.e., 6.8% have heard about Lybrate.

5.4.4 Following are the responses of people's preference of using virtual healthcare over physical mode based on age group and classification of cities.

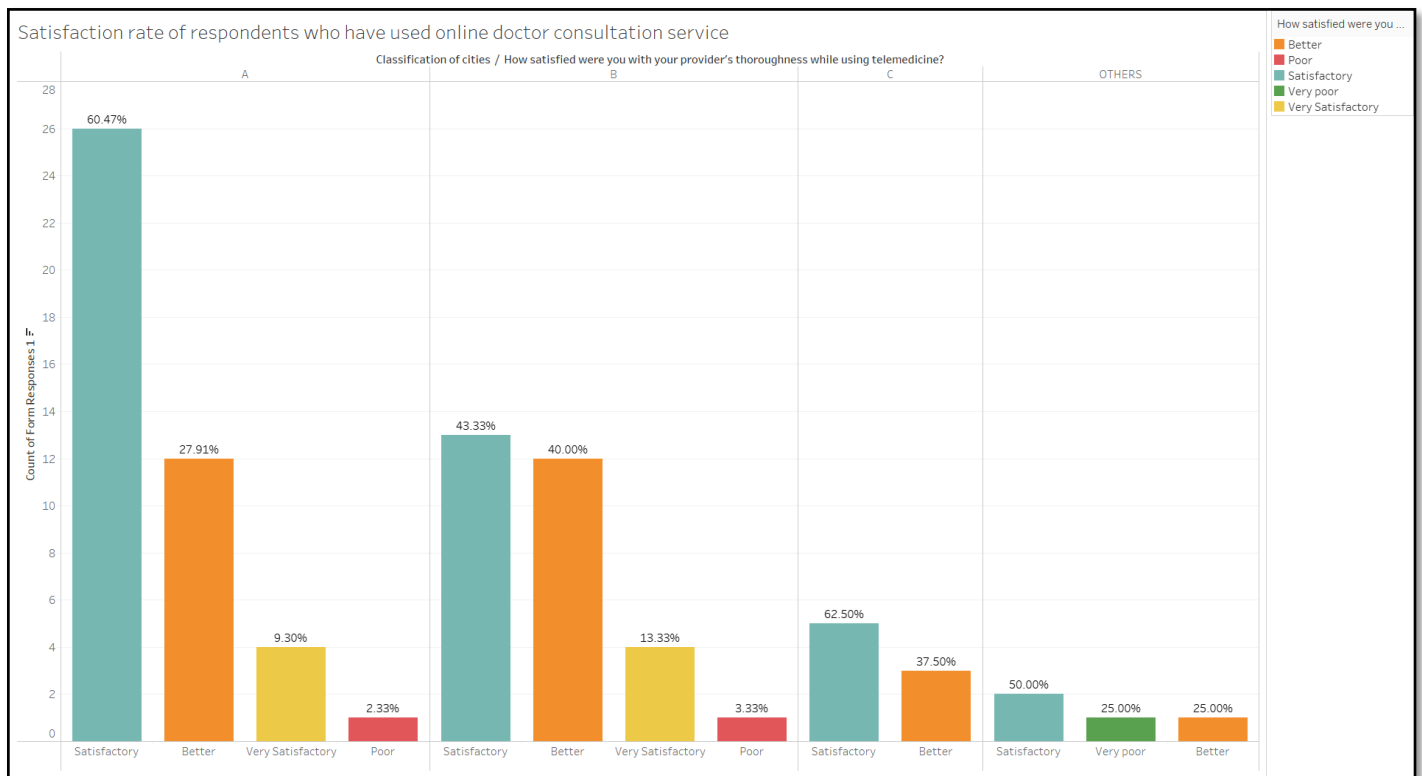


Age	Class A city		Class B city		Class C city		Other cities		Reference Graph no.
	Yes response	No response	Yes response	No response	Yes response	No response	Yes response	No response	
18-30	52.94%	47.06%	20.00%	80.00%	11.11%	88.89%	100%	0%	8
31-40	51.52%	48.48%	13.33%	86.67%	14.29%	85.71%	50%	50%	9
40-50	25.64%	74.36%	14.29%	85.71%	0%	100%	0%	100%	10
Above 50	22.22%	77.78%	12.50%	87.50%	0%	100%	0%	100%	11

Table No 4: Analysis of preferences of respondents in using Online doctor consultation service.

The above-mentioned table illustrates about the preferences of respondents in using Online doctor consultation service based on age group and classification of cities. It's seen that the cities of class "A" had maximum usage from age group of 18-30 as well as 31-40. In case of cities of class "B" the maximum rejection of service was observed particularly among the age group of 31-40 and 40-50 respectively. Similar, observations were found in cities of class "C".

5.4.5 The following graph illustrates about the satisfaction rate of users of Online doctor consultation service



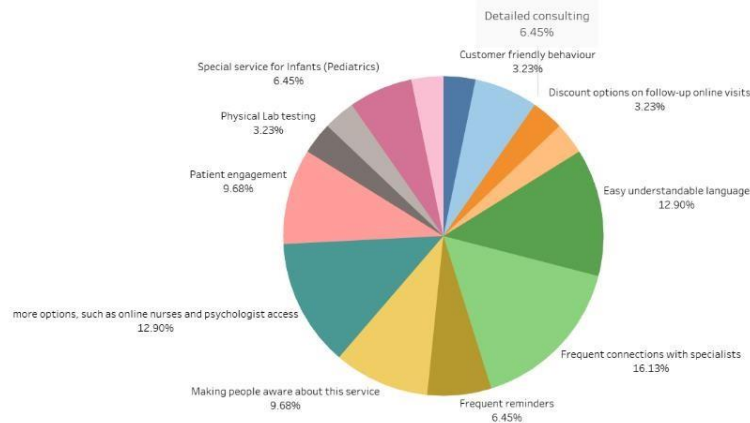
As seen in graph no. 10 its evident that people who have experienced the usage of online doctor consultation service have noteworthy experience. According to classification of cities the respondents of Class “A” city show that approx. 66% of the respondents are showing satisfactory response. Moving on if we try to understand the experience shared by class “B” city respondents then slight 50-50% satisfaction rate is shown in satisfactory and better responses. The scene in case of Class “C” and others show an avg response

5.4.6 The following pie charts illustrate about the improvements suggested by users of Virtual doctor consultation service based on classification of cities

Improvements wanted by Class A respondents

Classific...

A



What would you suggest...

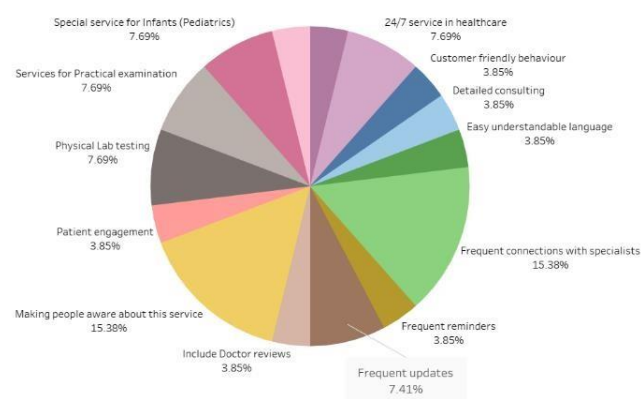
- Customer friendly beh...
- Detailed consulting
- Discount options on f...
- Easy availability
- Easy understandable l...
- Frequent connections ...
- Frequent reminders
- Making people aware ...
- more options, such as ...
- Patient engagement
- Physical Lab testing
- Services for Practical ...
- Special service for Inf...
- User friendly website

Graph no. 11: Improvements wanted by Class “A” respondents.

Improvements wanted by Class B respondents

Classific...

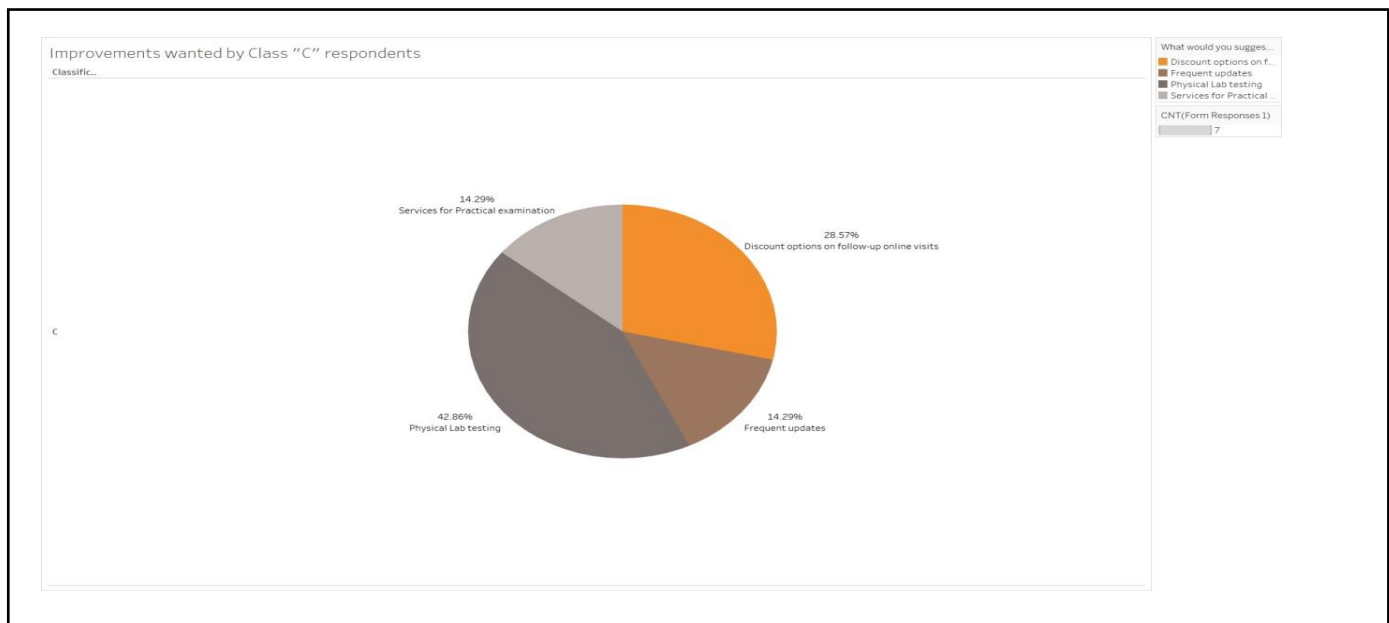
B



What would you suggest...

- 24/7 healthcare service
- 24/7 service in health...
- Customer friendly beh...
- Detailed consulting
- Easy understandable l...
- Frequent connections ...
- Frequent reminders
- Frequent updates
- Include Doctor reviews
- Making people aware ...
- Patient engagement
- Physical Lab testing
- Services for Practical ...
- Special service for Inf...
- User friendly website

Graph no. 12: Improvements wanted by Class “B” respondents.

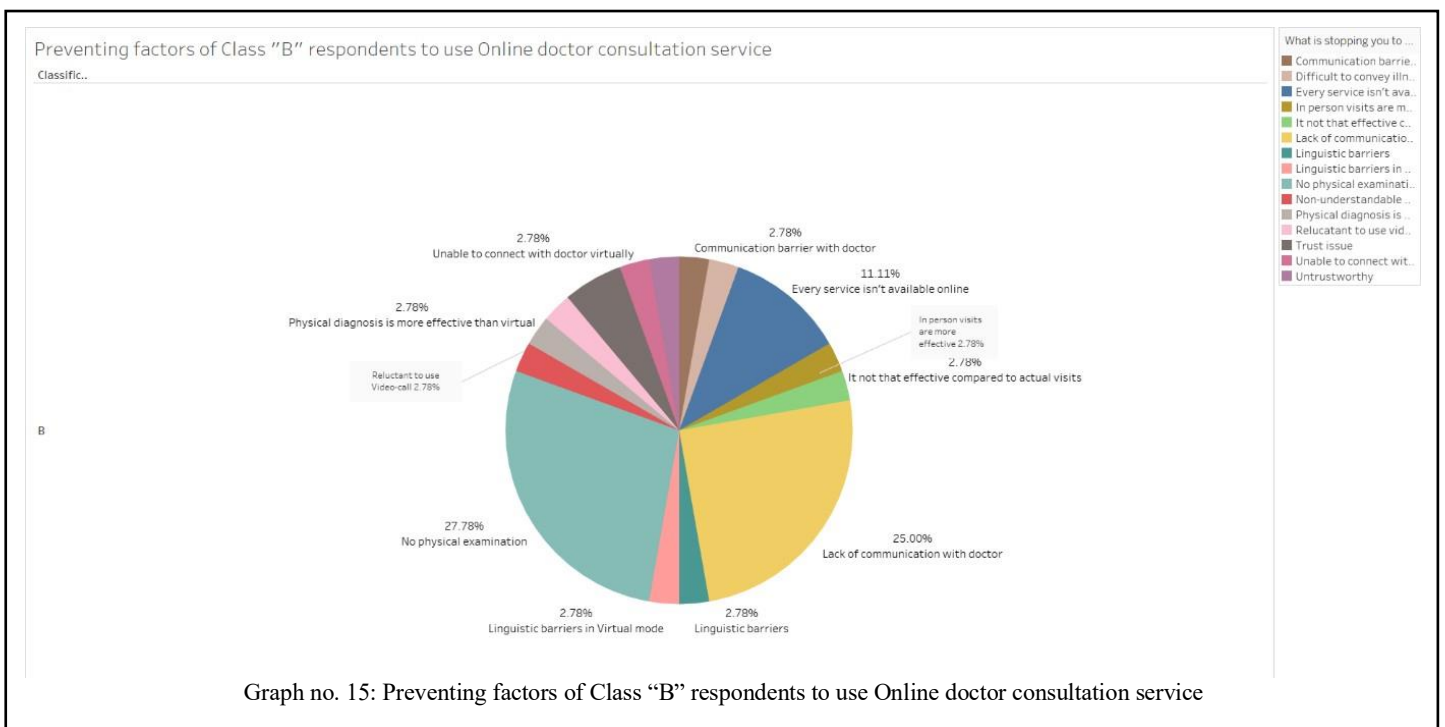
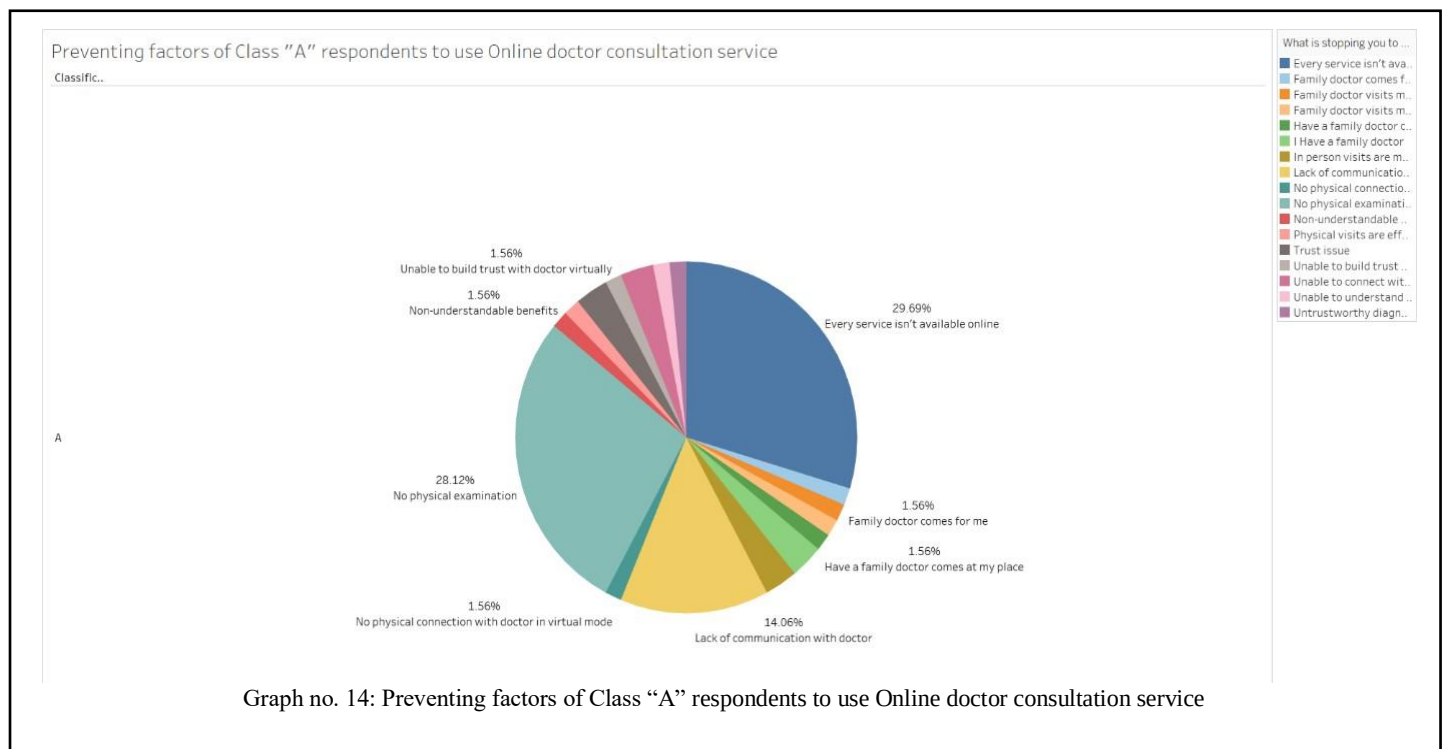


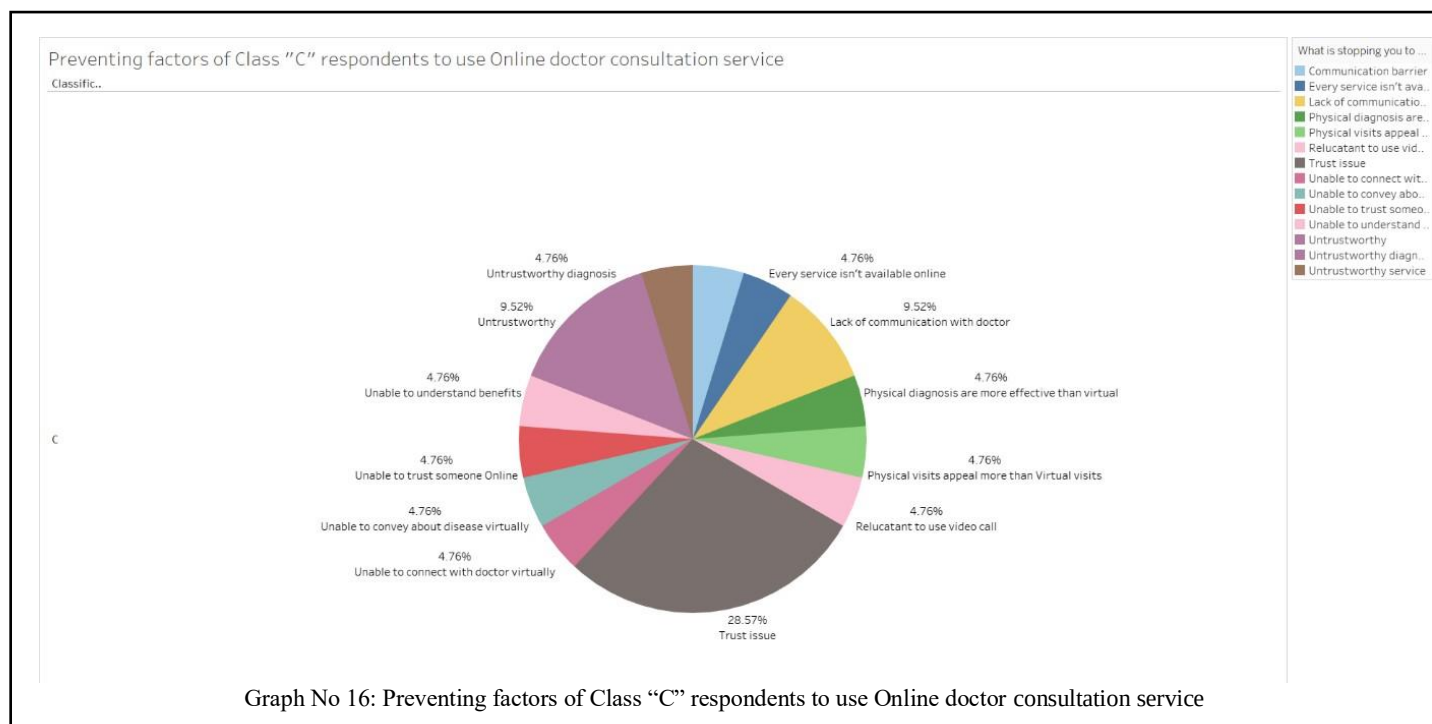
Class of city	Needed improvement	Share	Reference
Class A	Frequent connection with specialist, more options such as online nurses and psychologist access, Patient engagement	75%	Graph no.11
	Physical lab testing, detailed consulting, easy understandable language	20%	Graph no.11
Class B	Frequent connection with specialist, making people aware about the service, Special service for practical examination, special service for infants (pediatrician)	70%	Graph no.12
	Frequent updates, customer friendly behavior, Include doctor reviews	25%	Graph no.12
Class C	Discount options on follow-up online visits, services for practical examination, physical lab testing	100%	Graph no.13

Table No 5: Analysis of improvements needed in online consultation by our respondents.

The above table illustrates about the improvements required to be made in the service who are frequent users of Online doctor consultation service. The division is done based on the needs of different classes of cities. The class of city "A" respondents want improvements particularly in patient engagement, connection with specialist, detailed consulting etc. In case of respondents of class "B" the improvements are needed in making more people aware about the service, particularly special service for practical examination, also there's a need to improve consultation for interacting with infants (pediatrician). The respondents of class "C" seek improvements in subscription plans of the service particularly in follow up visits.

5.4.7 The following pie chart illustrates about the preventing factors experienced by non- users of Virtual doctor consultation service according to classification of cities



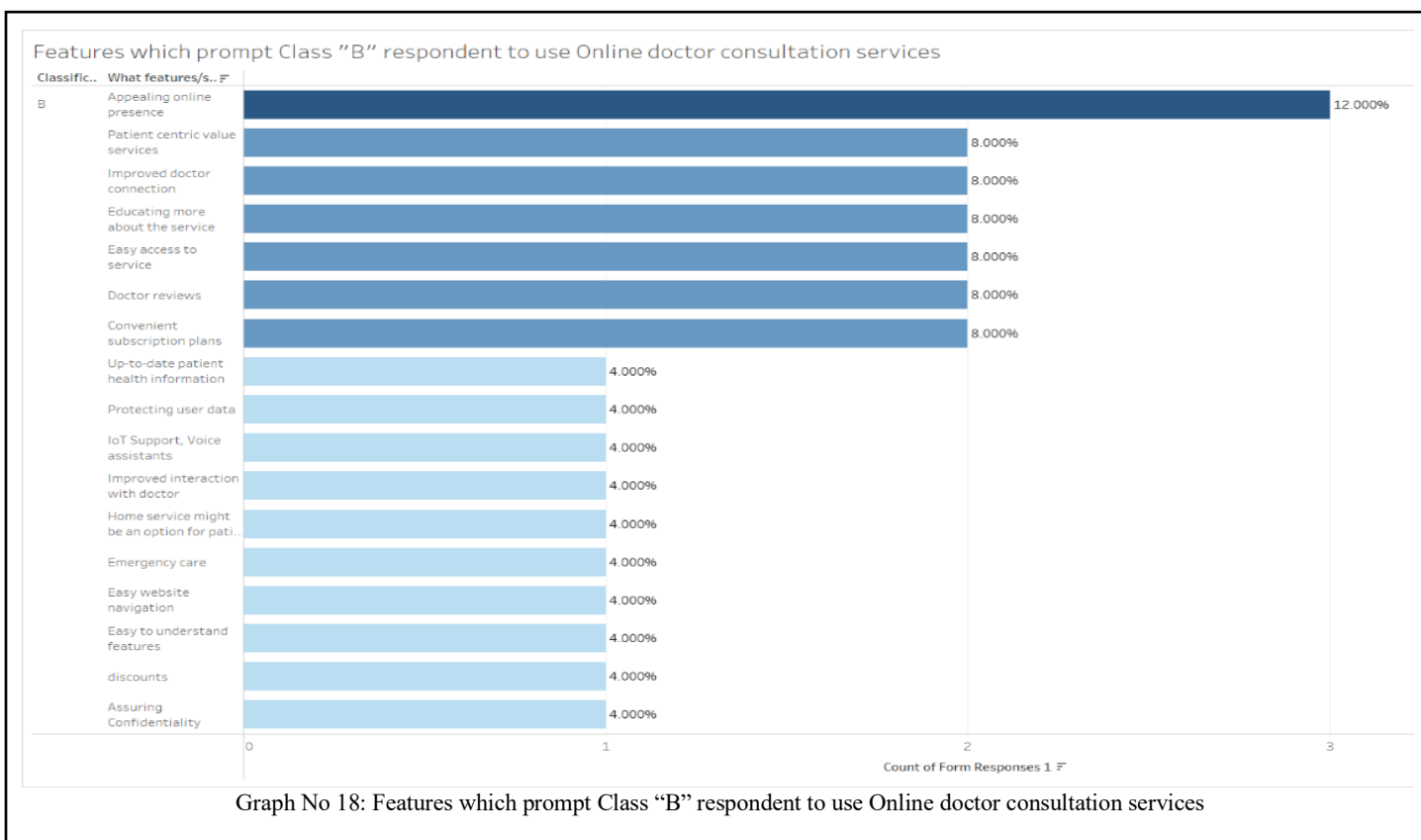
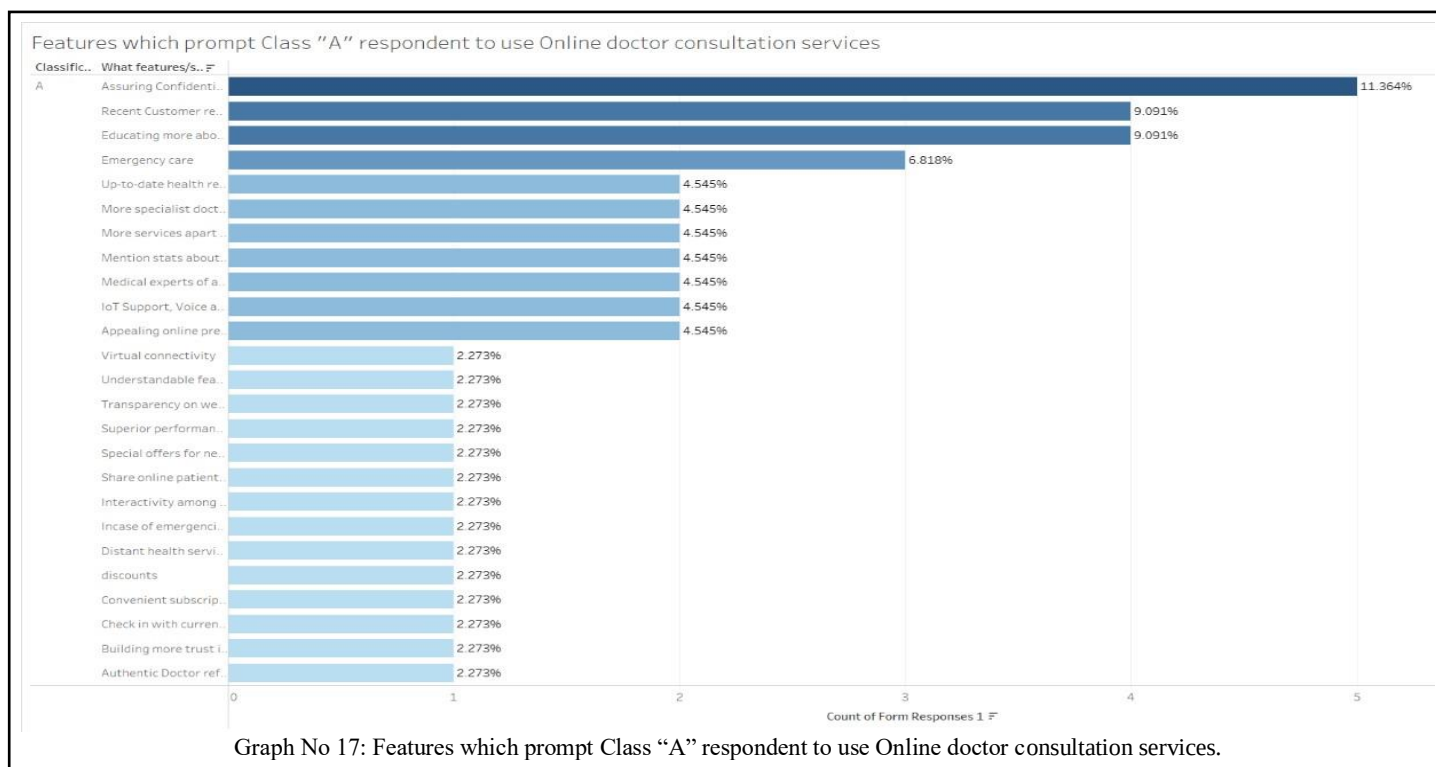


Class of city	Preventing factors	Share	Reference
Class A	Every service isn't available, no physical examination, lack of communication with doctor	63%	Graph 14
	Family doctor visiting home	15%	
Class B	Lack of communication with doctor, no physical examination, Unable to connect with doctor virtually,	65%	Graph 15
	Reluctant to use video call, Communication barrier with doctor, Physical diagnosis more effective than virtual.	20%	
Class C	Trust issue, Perception of untrustworthy service, lack of communication with doctor	68%	Graph 16
	Unable to trust online, physical visits are more appealing than virtual, unable to understand benefits	15%	

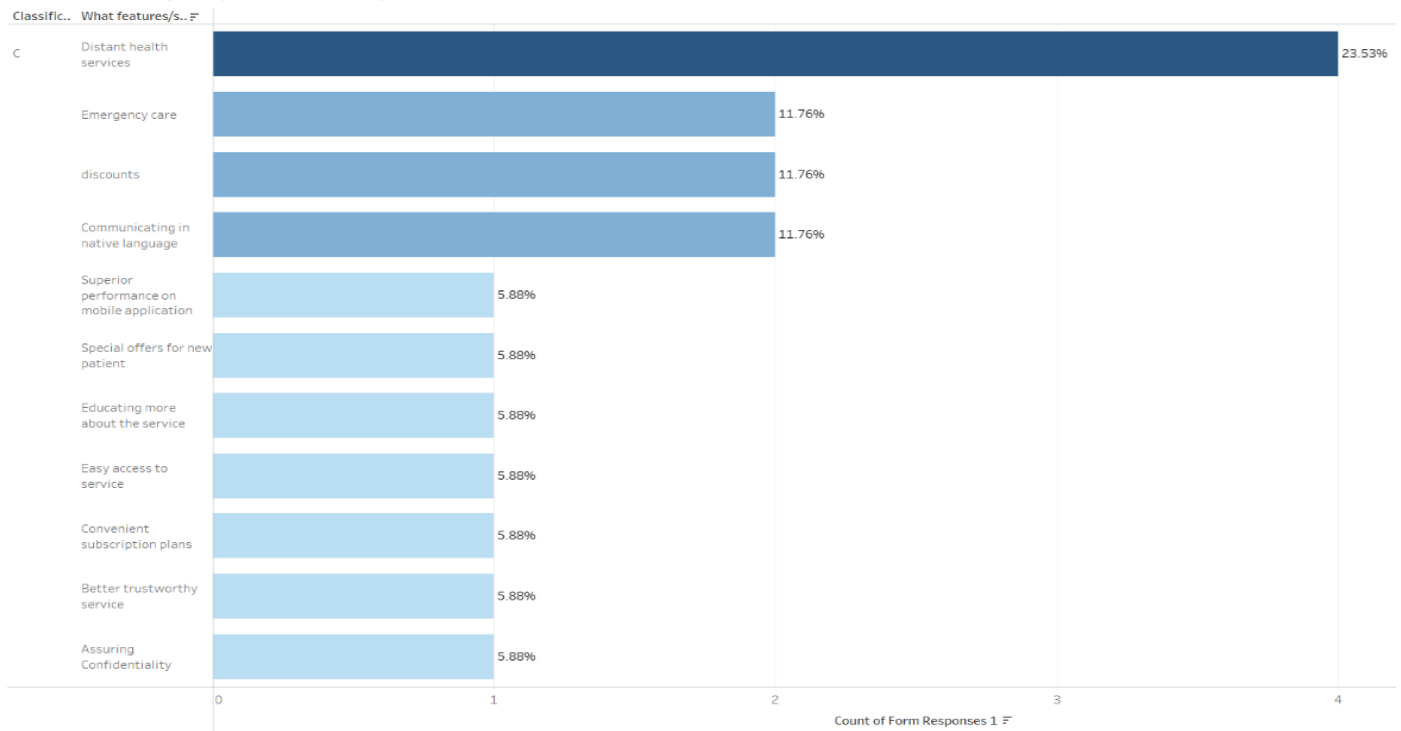
Table No 6: Preventing factors by our respondents to use online consultation

The table shown above depicts information about the preventing factors which non-users of service or those who have poor experience of service and no longer are users of online doctor consultation. The division is made based on the preventive factors of different classes of cities respondents. The respondents of Class "A" explain that there isn't every service available, no physical examination is found in the service, also there are frequent visits of family doctors which makes them unnecessary to have another online consultation. In case of class "B" respondents they find it difficult to connect with doctor virtually, they are reluctant to use video call for the same and suggest that physical diagnosis is more effective than the virtual ones. The respondents of class "C" find the service to be untrustworthy and say that it's difficult to trust someone online, even its reported from them that the physical visits are more appealing than the virtual one, also they are unable to understand the benefits of the service.

5.4.8 The following statistical data represents the prompting features suggested by non-users which might turn them into potential users of online doctor consultation services



Features which prompt Class "C" respondent to use Online doctor consultation services



Graph No 19: Features which prompt Class "C" respondent to use Online doctor consultation services

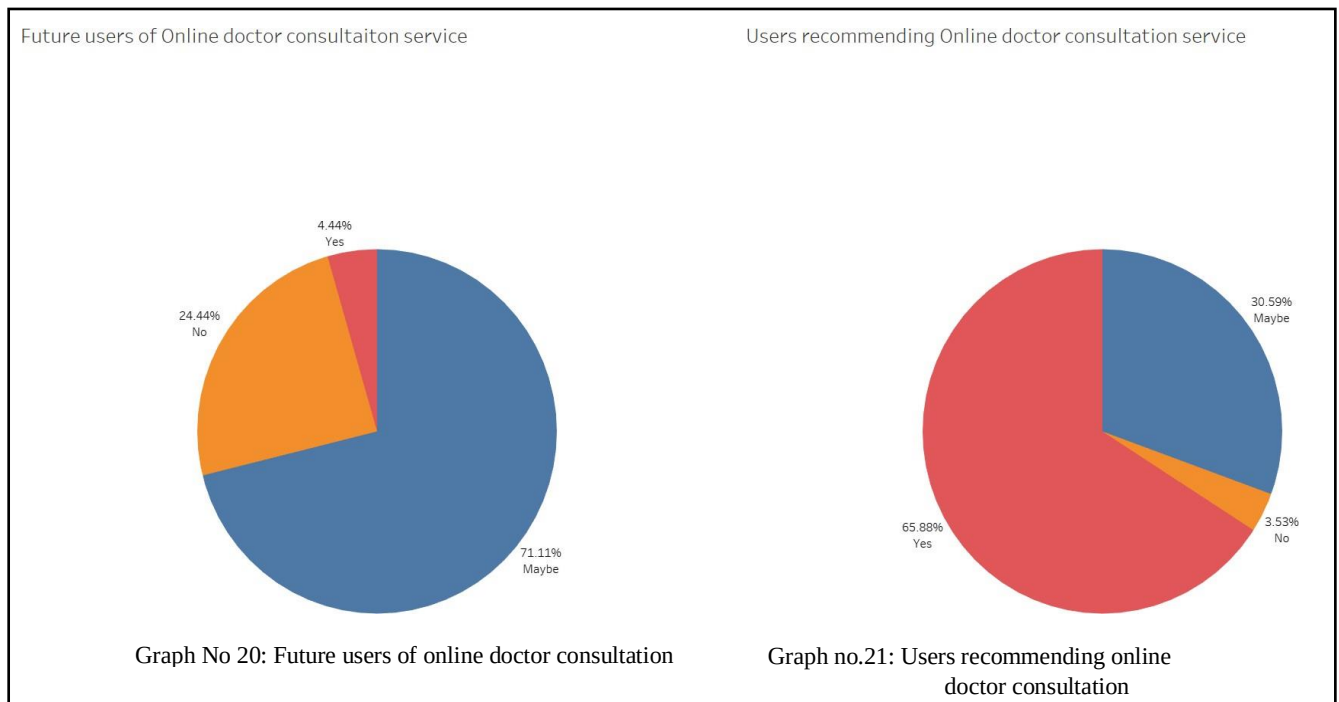
Classification of cities	Prompting features	Share	Reference
Class A	Assuring confidentiality, recent customer reviews, educating more about service, IoT support, voice assistants	45%	Graph 17
	Emergency care, up-to-date health report, more specialist doctor interaction, more services apart from virtual doctor consultation, mention stats about previous virtual customer visits	35%	
	Virtual connectivity, Understandable features, transparency about service, convenient subscription plans, special offers for new patient visits	20%	
Class B	Appealing online presence, Easy access to service, Convenient subscription plans, Improved doctor connection	60%	Graph 18
	Protecting user data, Home services for patient unable to access online service, Easy website navigation, discounts	40%	
Class C	Distant health services apart from online service, Emergency case, discounts	65%	Graph 19
	Educating more about the service, better trustworthy service, special offers for new patient	35%	

Table No 7: Features which prompt respondents to use online consultation

The above table illustrates the information about prompting features which might turn non-users of the service into future users of Online doctor consultation the data is based on responses received from different classes of the city. The class “A” city responses ask for assuring the confidentiality of a patients’ data while using the virtual consultation service, also more education about the service must be provided before becoming a user. Emergency care, up-to date health report, and stats regarding previous patient visits should also be known to new users. The prompting features of respondents from class “B” cities state that there should be enough appealing online presence of the service, easily accessible, convenient subscription plans, and even improved doctor connections can be a prompting feature for them too. In case of class “C” respondents the services apart from online consultation particularly for those who are not able to access internet connectivity in these locations.

There is also a demand for discounts and special offers for new patients, finally it is mentioned that the service should be made trustworthy to be accepted among the society.

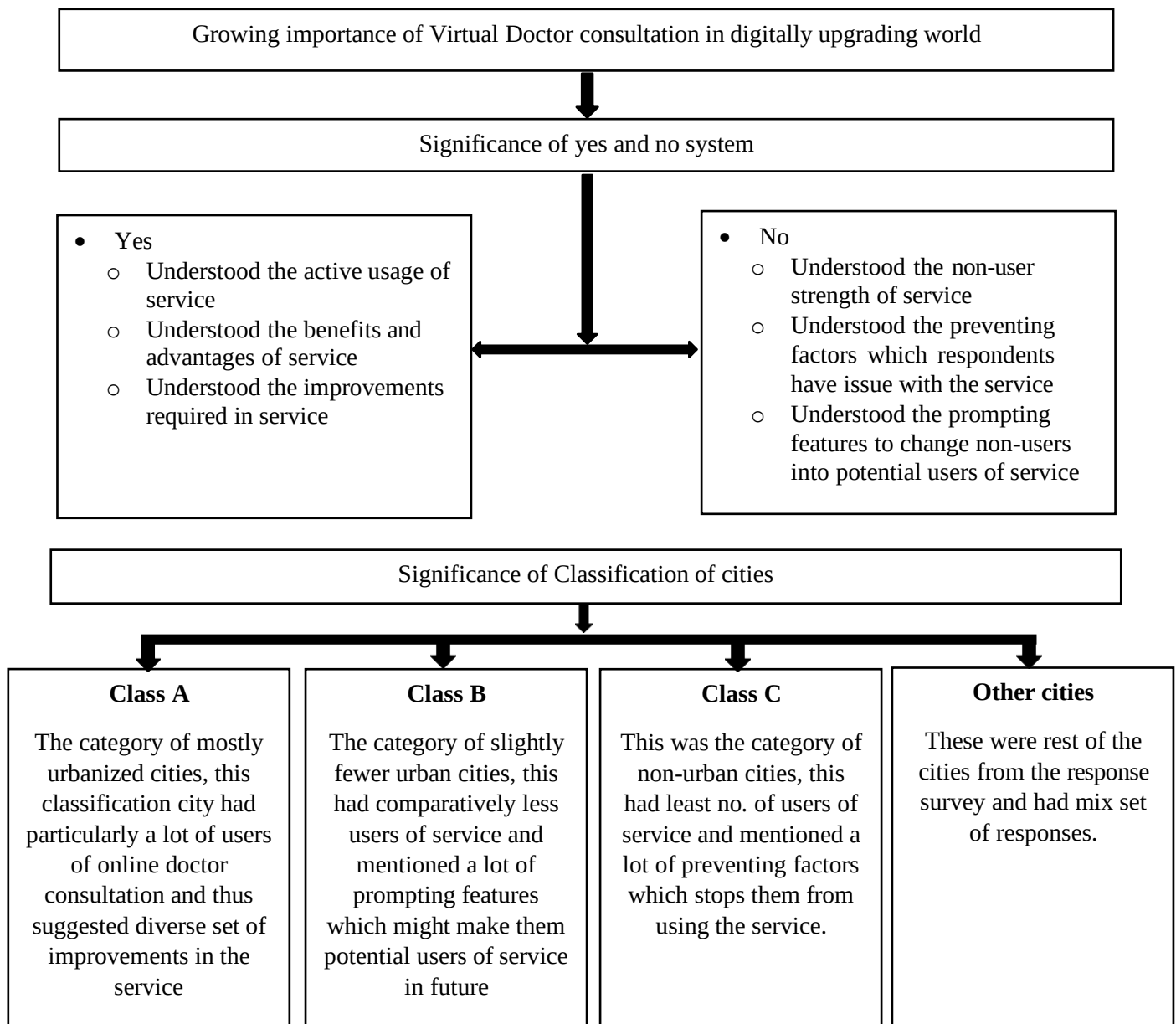
5.4.9 Following pie chart represents (graph 20) non-users of service looking forward in future to be potential users of online doctor consultation and (graph 21) represents the recommendation by users of service



From our survey, it was found that 4.44% of the total respondents answered ‘Yes’ i.e., they will be using online platforms for doctor’s consultation services and 24.44% answered it as ‘No’ i.e., they will not be using online doctor consultation services. Whereas, on the other hand, 71.11% answered it as ‘maybe’ i.e., they might or might not use online platforms for doctors’ consultation services.

In the other chart, it was found that 65.88 percent of the total respondents would recommend online doctor consultation services, 3.53 percent respondents would not be recommending these services and 30.59 percent might or might not recommend the online doctor consultation services.

5.5 Our understanding from problem statement



Getting to the objective of problem statement



What is the reach, perception and parameters that influence general population to use technology to access healthcare?



The reach of this service is nearly in whole country, probably because of various mass media and advertisement tools



The perception about the service is quite judgemental particularly in cities of Class “B” & “C”

The Influential factors are the benefits which the service provides for every user which makes them accept the service also recommend it further



It is to be noted that the Improvements asked by the frequent users particularly of Class “A” respondents should be administered



The prompting features suggested by respondents of Class “B” can if considered will make them future users of the service



The preventing factors mentioned by Class “C” respondents should be reconsidered and make services better to target that segment as well



The Online Healthcare platform has a lot of potential scope in healthcare industry, but it is very important to be noted that the Virtual service should be much better than Physical medium to influence more people to use this service.

Chapter 6 Findings and Conclusion

A total of 220 responses were collected from across India from diverse group of age that is ranging from 18 years to 50 years and above. The cities were classified into 4 major groups wherein Group A consisted of Metropolitan cities, Group B consisted of Tier II cities, Group C consisted of Tier III cities and lastly the cities were classified as others.

Classifying the cities based on A-B-C Classification, gives a clear understanding of the sectors of cities and how well they are accustomed to online consultation and what is the room of growth of awareness in the same.

FOR CLASS A CITIES- The category of mostly urbanized cities, this classification city had particularly a lot of users of online doctor consultation and thus suggested diverse set of improvements in the service. The city A respondents were mostly (about 36.45%) from the age group of 40-50 with maximum of them occupied in corporate life, the family income over here ranges around 15-30 LPA for about 65% of the respondents, and nearly half of them (51.4%) were aware about the service. The preference of opting for Online Medical consultation was shown majorly for the age group 18-30 (52.94%) and 31- 40 years (51.52%). Their active participation in online medical consultation, helped me to gather responses regarding what all improvements they would like to see in this field where the major proportion about 75% of them wanted frequent connection with specialist, more options such as online nurses and psychologist access, Patient engagement while only 20% suggested for improvements in Physical lab testing, detailed consulting, easy understandable language. The major preventing factor seen was – lack of rapport formation, no physical examination and unavailability of certain services by about 63% of the respondents. To change the non-user to a user of this service class “A” city responses ask for assuring the confidentiality of a patients’ data while using the virtual consultation service, also more education about the service must be provided before becoming a user (45%), followed by Emergency care, up-to date health report, and stats regarding previous patient visits should also be known to new users which was opted by 35% of respondents.

FOR CLASS B CITIES- The category of slightly fewer urban cities, this had comparatively less users of service and mentioned a lot of prompting features which might make them potential users of service in future. The city B respondents majorly were from 40-50 age group – about 42.52%, with most of them occupied in government service (43.08%), earning around 5-15 LPA (60%), and about 82% of them were aware about the service but were not frequent users of the same. In case of cities of class “B” the maximum rejection of service was observed particularly among the age group of 31-40 (86.67%). Regarding what all improvements they would like to see in this field where the major proportion about 70% of them wanted awareness about the service, particularly special service for nurses, psychologist, also there’s a need to improve consultation for interacting with infants (pediatrician). The major preventing factor seen was – lack of rapport formation, no physical examination and problems with connecting with doctor virtually by about 65% of the respondents. About 20% of them were reluctant to use video calls, there was a communication barrier and believed in superiority of physical consultation. The

prompting features of respondents from class “B” cities state that there should be enough appealing online presence of the service, easily accessible, convenient subscription plans, special offers for new patients, and even improved doctor connections, this was opted by about 60% of the respondents.

FOR CLASS C CITIES- This was the category of non-urban cities, this had least no. of users of service and mentioned a lot of preventing factors which stops them from using the service. The city C respondents had maximum responses from the age group of 40-50 (36.7%) as well with most of them engaged in Corporate as well as Government lifestyle, earning around 5-15 Lpa (66.67%), about 43.33% were aware about the service. In case of class C cities it was seen that the age group of 40-50 and 50 above both showed 100% rejection for online consultation. All the respondents (100%) of class “C” seek improvements in discount options on follow up visits, services for practical exam and lab testing. The major preventing factor seen was that about 68% of the respondents find the service to be untrustworthy and say it’s difficult to trust someone online, they also show inclination towards physical consultation, also they are unable to understand the benefits of the service. The prompting features of respondents from class “C” cities state that there should be services apart from online consultation particularly for those who are not able to access internet connectivity in these locations by 65%. There is also a demand for discounts and special offers for new patients, finally it is mentioned that the service should be made trustworthy to be accepted among the society by 35% of the respondents.

Chapter 7

7.1 Limitations/Areas of concern

1. A failed telehealth experience may be a reason for absolute dissatisfaction for patients. It can fail in terms of internet connectivity on either side or in terms of a low level of care provided from doctor's side
2. Some specialities essentially are not helpful to virtual care, such as physical therapy and examination or orthopaedic follow-ups
3. This model of care also raises the question of whether more medical test and investigations will be ordered in the absence of being able to physically conduct a physical examination of the patient
4. It also puts a doctor in the difficult situation of making a diagnosis without a proper understanding of the patient's medical history and social context, in addition to removing the opportunity to conduct a physical examination.

7.2 Solutions

The solution is devised based on the concerning necessities of yes and no responses received and also according to the classification of cities.

Class "A" city

The responses received from this category of city had highest no. of frequent users of the service so accordingly the responses mentioned few of the improvements needed to be considered for better service options.

- Healthcare organizations providing online healthcare services should keep these improvements in mind.
- For Class A cities, Tele Consultation will be useful in saving time of the patients, we can promote Tele consultation in cases of Primary Care and also in some cases of Secondary Care. In such cities, time consumption will be a very big concern for the patients, we can save time in Transportation and also waiting time in the hospital.

Class "B" city

The responses received from this category of city had comparatively less no. of users of online doctor consultation service, but the responses received mentioned various prompting features which might make them future user of the service. To be noted Class "B" respondents shown the highest share of being the future user of service when asked about if they would like to use this service in future.

- Healthcare organization should try implementing these prompting features in their service to turn the non-users of this service into potential users in future

Class “C” and others category city

This category of city had responses non-urban cities under study, the data had responses which showed a smaller number of users for online doctor consultation. The survey also showed data about various preventing factors which the respondents experience.

- Healthcare organizations should investigate these preventing factors or rather problems and turn them into solutions so as to attract more users of online doctor consultation service from this segment.

Suggestions

1. A personal touch and rapport building during an online conversation between doctor-patient is the need of the hour
2. Instead of stating a diagnosis online, a list of differential diagnosis can be suggested to the patient. Prevention should be the main theme of discussions online, instead of treatment
3. In case of non-availability of doctors or busy schedule, appropriate waiting time must be mentioned to the patients
4. A user-friendly interface so that the patient can attach all reports of the tests as well as previous treatment records including prescriptions since it will help the doctor to give you more appropriate advice

Annexure

Questionnaire for physical survey and online survey

Physical survey questionnaire

1. No. of respondent
2. Gender
3. Occupation
4. Age
5. Do you use virtual healthcare?
6. How do you come to know about virtual healthcare?
7. Why do you prefer it?
8. Why don't you prefer it?

Online survey questionnaire

1. Name
2. Age
3. Gender
4. Occupation status
5. What is your family status?
6. Total family Income
7. City of residence
8. Do you know about virtual/ online healthcare services, such as on-line/ tele doctor consultation, e-pharmacies, etc?
9. Which are the services you use in online/virtual healthcare
10. How did you come to know about Virtual healthcare?
11. Have you heard about following virtual healthcare platforms?
12. Do you prefer virtual healthcare platforms for your treatment?

Questionnaire for people who selected YES as an option

Yes, I prefer virtual healthcare platforms

1. What do you think are the benefits of online doctor consultation?
2. What are the different advantages of online doctor consultation?
3. Would you recommend using online doctor consultation to a family member or friend?
4. How satisfied were you with your provider's thoroughness while using telemedicine?
5. Did your healthcare provider give you easy-to-understand instructions?
6. What would you suggest improving online doctor consultation?

Questionnaire for people who selected NO as an option

No, I don't prefer virtual healthcare platforms

1. Are you aware of any apps/ websites which offer online doc consultation?
2. Would you ever want to access online/virtual doc consultation?
3. Do you know any family or friend using online consultation apps?
4. What is stopping you to use online consultation?
5. What features/services may prompt you to choose online/virtual consultation with doctor?

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