

**A STUDY ON AWARENESS, USAGE AND PERCEPTION OF
DOCTORS TOWARDS MEDICAL APPLICATION IN DELHI CITY**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the
degree of Master of Business Administration

(MBA)

in

Pharmaceutical Management

by

Sahil Malik

Under the Supervision and Guidance of

Dr. Saurabh Banerjee

2021

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **A Study on Awareness, Usage and Perception of Doctors Towards Medical Application in Delhi City** 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Sahil Malik

19-June-2021

CERTIFICATE

This is to certify that **Sahil Malik** in partial fulfillment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur has successfully completed her/his internship at (name of the organization) during March 22, 2021 to June 19, 2021.

Place:
Date:

Preceptor/Head of the Organization
Name of the organization

ACKNOWLEDGEMENT

I obligingly owe the accomplishment of this Dissertation to the almighty and our family whose love and blessings will be with us in every movement of our life .

I would want to express my heartfelt gratitude to Dr. Saurabh Banerjee for giving me the opportunity to grow professionally.

I also extend our gratitude to my Industry Guide Deep Raina for his useful recommendations, assistance and strong interest throughout the study that helped me in completing this work. I thank him for the freedom of thought, expression and trust which was greatly bestowed upon me. I would also like to pay my gratitude to the entire team of **Polymedicure Ltd** who has helped me by sparing their valuable time and extended their support and guidance to help me achieve my task successfully?

I'm very much indebted and thankful to all the Doctors for their participation and cooperation. Last but not the least I would like to thank my family for supporting and standing with me in successfully completing the project.

ABSTRACT

The global market for healthcare information technology is growing. According to reports, the widespread usage of mobile phone technology in the delivery of health care facilities is becoming the standard. Numerous descriptions of m-health have been suggested, but nobody appears to have gained widespread acceptance. M-health, for example, “involves the use of mobile technologies to improve health services,” according to Mirza. Short and long-distance cellular innovation as well as device-based mobile technology are all possibilities. These devices offer text messaging (Short Message Service - SMS), audio / video messaging (Multimedia Messaging Service - MMS), cell phone and web accessibility, digital media playback, and application software support. By offering programs and assistance to health care professionals (such as academic achievement, treatment aid, or treatment planning) or concentrating communication among Medicare services (such as meeting reminders and lab results notification), m-Health initiatives aim to focus on improving Medicare delivering services processes, obstructing traditional methods of sharing information.

Background:

M-Health is critical to the concept of ubiquitous health care, in which data and support services can reach whomever, whenever, and everywhere by removing territorial, chronological, and other boundaries. Despite the paucity of scientific evidence supporting the efficacy of m-health, many organisations have welcomed it as the core of the "patient 2.0". m-Health also provides an economical option for expanding health awareness sickness prevention, care access and surveillance in lowlands, where pilot efforts are common.

Objective:

This is the major study that was carried out in Delhi to determine doctors' digital savvy and attitudes regarding medical apps.

Method:

The data for the study was gathered using an online questionnaire that was created in Google Forms and divided into three segments. This google form was then disseminated to doctors through email and the responses were acquired from the google account at the time of analysis.

The analysis of the retrieved data was done as per objectives through MS. Excel. Data analysis toolkit of add-ins in excel was used for data analysis.

Result:

Only 13 (2.2 percent) of the 600 doctors polled thought digital apps and websites were annoying. There are 587 people left (97.8 percent) Doctors considered the apps to be effective in networking, saving time, and offering information on how to use digital apps and websites in daily practice. Practo had been heard of by 452 doctors, and 236 of them were using it, making it the most well-known and used mobile medical app. DocPlexus was heard by 364 doctors and used by 102, with Lybrate being the second most popular app, with 134 doctors using it and 329 hearing it. 1Mg was heard by 125 doctors and 8 were using it. Netmeds was heard by 112 and 5 were using it. Curofy was heard by 300 and 31 were using it. Medscape was heard by 248 and 39 were using it and According to the data, 46.5 percent of doctors said that advertisements had no impact on their prescribing behaviour, 23 percent said that advertisements had an impact on their prescribing behaviour, and 30.5 percent said they were unsure whether advertisements had an impact on their prescribing behaviour.

Conclusion:

This analysis contributed to the body of knowledge by presenting a new paradigm to explain medical practitioners' adoption of mobile health applications. Furthermore, employing a dataset from a developing nation provided a different perspective on the dynamics that influence the usage of mHealth apps.

Furthermore, this analysis added to previous research on mobile healthcare app views and preferences. In order to expand the scope of the current study, the authors recommend further research into an examination of doctors' knowledge of and use of smartphone healthcare apps.

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Introduction

The demand for healthcare information technology is growing dramatically. The usage of mobile applications in healthcare delivery is on the rise, according to reports, services are becoming more common. Today the capabilities of smartphone applications are comparable to those of computer programs, Smartphones are capable of internet browsing, data management, video content streaming, project organization and computer game play that would otherwise require a computer, due to their portability and proximity to the user. ^[1] The employment of smartphone and tablet technology in the health-care setting has sparked considerable attention. This enthusiasm has focused attention on the topic of mobile health (mHealth), which is defined as the delivery of health care and related services via communications devices. In sophisticated health-care systems, the majority of health-care personnel carry such devices in their pockets. Patients can utilize the apps on their own devices to improve their relationship with their doctors, get more engaged with their own health, and become more involved as a result. Patients can use the patient-facing mobile app to get direct information about their health conditions and step-by-step instructions on how to treat them as effectively as possible. ^[2] Corpulence operation, colorectal surgical treatment, vascular operation, hernia operation, pain managing, and urology are just a few of the medical sectors where mHealth apps have been tested. ^[1]

The necessity for novel diagnostic and therapeutic approaches due to the current coronavirus illness pandemic of 2019 has accelerated the rise in demand for digital medical solutions. From the beginning of the pandemic 2019 to early 2020, consumers who used virtual visits increased from 15% to 19%, with a peak of 28% in April 2020. Consumer use of virtual visits has been expanding since 2018, even before COVID-19. ^[3] Even after COVID-19, 80% of respondents expect to have another virtual visit. In terms, of programming the number of smartphone applications has extended surpassed 100,000 in just over three years. Simultaneously, there is an increase in study concerning the effects of smartphone technologies and applications in health facilities. Medical Health Apps and Medical apps have the potential, especially for chronic conditions, because they can help patients manage their own care in a variety of ways. But, on contrary many HCPs (Healthcare Providers) state that their main worries about employing mHealth in healthcare delivery include geographic limits, the requirement for intractability, trained control, and efficient supervision of persistent illnesses. ^[3,4]

In this study the emphasis is on medical applications, which are digital tools that aid clinical decision-making, facilitate communication between medical practitioners, increase patient interaction, and, most significantly, offer health information to healthcare professionals. ^[5] These apps are often used as reference and information management tools in clinical practice, with a growing trend of medical practitioners using apps. The utilization of digital tools to build up digital clinics, telemonitoring sessions, online data interpretation, and video education platforms is perfect for maintaining medical treatment during the shortage of specialist workers. Since the inception of medical apps, it has been clear that they are swiftly becoming one of the most important utilising clinical information and executing practice efficiently, particularly in younger health professionals. ^[5,6] Many of these apps are of various quality and function, and they are compatible with all the most recent smart gadgets, some are open to use, while others require a fee to use their advanced features. ^[7]

Further, mHealth is another unique approach to provide healthcare services a promising technological integration potential. It serves as a framework for improving quality of care, production, and economy, along with judgment processes and exposure to medical assistance. The adoption of mHealth apps by the public would provide additional information about a patient's medical history, which would aid in the diagnostic process. The research has recognized and classified as number of primary sectors for the usage of mHealth in **(Table-1)**.

Communication, decision assistance, education, tracking, and monitoring were the most common categories in these investigations. ^[8] These categories also serve as a summary of the main points of the goal of implementing mHealth in practice Self-monitoring apps, such as those for diabetes, asthma, and stress management, wellness and training, and nutrition and physical activity management, were shown to be the most popular mHealth apps, according to studies. ^[7,8] A variety of new prospects and difficulties have developed with mHealth, according to the literature. As a potential chance, mHealth was stressed as a valuable means for health care transport in underdeveloped nations, as well as an improvement in doctor-to-doctor contact. ^[8] In addition, mobile phone involvement strategies were also widely employed in healthcare, with SMS notice being one of the most successful and widely utilized techniques.

Table 1: mHealth Categorization

Research	Categories
A Thorough Analysis of Smartphone-Based Application Scenarios	• A database of drugs or medical data • Reference to medical information • Conclusion support • Educational kits • Tracing tools • Calculator for medical purposes
A qualitative information composition of healthcare professionals' viewpoints and observations of adopting mHealth systems to enable basic medical services	• Education and awareness • Information approach • Examining and conformity • Illness and trauma tracing • Health data groups • Analysis and discussion
Employing surgical apps: Mobile and tablet apps have proven to be effective in clinical settings.	• Data management • Time organisation • Health history care and entrance • Telecommunications • conferring • Quotation and data congregation • Scientific decision making • Patient supervising • Medical instruction and education

The healthcare professionals use mHealth apps and devices for different purposes like for:

1. Information management: -

- Writing notes
- Precept notes.
- Record auditory.
- Clicking snapshots.
- Manage info and pictures.
- Use e-book reader.
- Open cloud service time

2. Time Management: -

- Plan schedules
- Slate summits
- Record phone program

3. Patient monitoring: -

- Examine patient wellbeing.
- Check patient site.
- Supervise patient treatment.
- Gather medical records.
- Observe heart functioning.

4. Clinical decision making: -

- Medical judgment sustenance systems
- Medical care regulations
- Infection examination supports.
- Variance diagnosis supports.
- Health Check calculators
- Research Laboratory test instructing & analysis.
- Remedial assessments

5. Reference and information gathering: -

- Health manuals
- Medicinal periodicals
- Therapeutic literature
- Literature examine gateways.
- Drug recommendation manuals
- Health broadcast

With all this, there are certain susceptibilities associated with mHealth and the biggest hurdles in mHealth app adoption were deemed to be technological, psychological, and regulatory limitations, as a result mobile technology may be undervalued in the long run. ^[9] More investment and development in intervention and alliances among system designers, psychology experts and medical professionals is required to increase the usage of mobile care services. ^[10] Notions of disruption from using technology in everyday tasks, the additional effort needed in multiple tasks, viewed raise in amount of work within constrained work time, and notions of feeble connections are all deterrents to using mHealth technologies in the workplace, according to healthcare providers. ^[10] Cultural, social, and educational constraints also impede the spread of mHealth in poorer nations. The literature revealed that mHealth is still in its infancy. ^[11,12] Multiplatform mHealth development necessitates compatibility across mobile apps and hospital systems from a technical standpoint. Above all, there is a demand for dependable and credible

apps on the market, as well as solutions to concerns like low battery life and processing delays on mobile devices. ^[11,12] Some of the widely used medical applications used by medical professionals are:

Table 2: Application and Function

Name of Applications	Function
Epocrates	Provide drug-related information. Checking for drug interactions is one of the most important things you can do. Product releases and medical news feeds, Lookup a journal article
Medscape	Health Calculators, Drug Reference Tool, Drug Interaction Checker, and Current Medical News
Curofy	Cases, publications, and medical guidelines are discussed.
DocPlexus	Doctors' social networking platform
Practo	Practice Management Software
Lybrate	Practice Management Software
1Mg	Purchase medications via the internet. Health and drug information, practice management software
Netmeds	Online pharmacy store
Daily Round	Case studies, a drug reference, and drug calculators
Medipta	Reports, Practice management, and a database of pharmacies, diagnostic labs, hospitals, ambulance services, and blood banks are all available on the cloud platform.

Study Rationale

Health care in India is rising at a quick pace and currently valued at US\$ 200billion and is likely to touch US\$ 372 Billion by 2022. Digital intervention in India is driving at a CAGR of 23%. As per Inc42's The State of Innovation Community Report 2018, there are 4,892 entrepreneurs in the Indian health-tech field. The overall amount invested in health-tech startups increased by 45.06 percent in 2018. Between 2014 and 2018, India's health-tech establishment grew a sum of \$504 million. The Indian mobile healthcare market was worth INR 39.83 billion in 2018 and is expected to grow to INR 197.14 billion by 2024, with a CAGR of 31.07 percent between 2019 and 2024. According to a recent survey, India was placed among the developing countries in terms of mHealth adoption maturity and Nearly 48% of consumers said they expect Chronic disease management will change because of mHealth. and 48% expect to change their medicine and 49% think their overall health. Six out of ten customers (59%) anticipate mHealth to transform the way they obtain health-related information, and 48% expect it to impact the way they connect with doctors. 59 percent of consumers who have used mHealth services say they have replaced some doctor or nurse visits. Consumers desire to adopt mHealth for three reasons: having easier access to their physician or medical provider , saving cost on medical care , and having more command over their wellness .

According to Global Market Insights Forecast's current market insight study, titled "**Global Mobile Health Market by platform**", the global mobile medical apps market is forecasted to reach USD >805 billion by 2030 from USD 54 Billion in 2020. The worldwide business for smartphone mhealth applications is predicted to develop at a compound annual growth rate of 30% between the years 2021 and 2030, pushed by the quick launch of 4G and 5G services along with the expanding internet penetration and offering of smartphones at accessible rates are some of the factors which are helping growth to the market. According to a report, the number of individuals utilizing mobile internet in 2015 was over 1.9 billion, and by 2020, that figure will have risen to over 3 billion. Furthermore, the increasing use of connected medical equipment, as well as the penetration of smart devices, is prominent to an upsurge in the use of mHealth applications for illness management.

In recent years, medical applications have had a significant impact on patients' lives by giving them more power over their medical decisions. As of 2020, there are over 400,000 mHealth

apps available in the app store. Although the market is still in its infancy, it has the potential to drastically alter the healthcare industry's future. This technology trend has alleviated healthcare professionals' problems and made the decision-making process easier. These apps are designed to provide information, manage patient data, access journals, and connect users with other healthcare professionals for case discussion. Mobile medical apps could also be used to diagnose and detect life-endangering long-lasting diseases, as well as their successful management and inhibition, resulting in major improvements in patient care and outcomes. The goal of this study is to examine doctors' digital awareness and perceptions of medical apps, based on current trends in the medical app market and the impact of digitalization in the field of medicine.

Literature Review

Table 3: Literature Review of the study

S. No	Source	Author	Title	Findings
1.	Google Scholar	Emre Sezrin <i>et al.</i> (2017)	A mixed method study: An examination of clinicians' knowledge of and the use of mobile health apps	The goal of the study was to learn more about physicians' knowledge of mobile health applications and their objectives to employ them in their practise. Perceived Quality, Mobile Stress, Perceived Availability Of service, and Individual Creativeness were determined to be the key contributors to Behaviour Intention in the study. Also, the main enablers of mHealth app adoption, according to qualitative coding, were information collecting and communication. Lack of knowledge and investment, on the other hand, were seen as the most significant impediments to using mHealth apps.
2.	Google Scholar	Soner Yildirim <i>et al.</i> (2016)	Understanding physicians' attitudes toward adopting mobile health applications in service.	The goal of this research was to learn how doctors who don't use mobile health applications in their practice feel about them. This method provided a fresh viewpoint on the literature in terms of possible purposes to utilize mHealth

				applications and attitudes about them. In this regard, the study not only provided non-user physicians' perspectives, but it is also the only study that we are aware of that investigates non-user physicians' perceptions on mHealth application acceptance.
3.	PubMed	Rebecca Smith <i>et al.</i> 2015	A qualitative evaluation of the capacity for the use of mobile health in the treatment of coronary artery disease in Kerala	The major themes that were discovered in relation to the contemporary challenges of cardiovascular diseases (CVD); Patient illness awareness was low, primary prevention was difficult to implement, and patients' lives were unhealthy. As per participants, the primary purpose of modern smartphone usage is to make calls. Mobile health's goals are to improve access to medical care information, provide alerts for consultations, prescriptions, and lifestyle modification, reduce time, cost, and transportation, and enhance ASHA work performance. It was found in the study in this population, mHealth could be used in three ways: (1) as a teaching tool for bettering health education programs and lifestyle factors; (2) to make the most use of limited funds by conquering geographical and monetary restrictions; and (3) To promote illness assessment and care, provide consultation and diagnosis alerts to support healthcare utilization.
4.	PubMed	Marie Desmartis <i>et al.</i> (2016)	A systematic evaluation of healthcare professionals' usage of mobile health	The search method returned 4223 possibly published documents, 33 of which met the inclusion criteria. The following were the major viewed acceptance variables for m-health at the personal, institutional, and experiential levels: viewed usefulness and convenience of use, layout and operational concerns, expense,

				duration, confidentiality concerns, closeness with the innovation, risk assessment, and engagement with the others (colleagues, patients, and management). This organized analysis gives a collection of important elements that may be used to identify the obstacles and potential for healthcare practitioners to use mobile health.
5.	PubMed	Vikrant Kanwar <i>et al.</i> (2015)	m-Health: A Detailed Overview of Healthcare Providers' Knowledge, Perspective, and Behaviour in Himachal Pradesh, North India	From August 1 to September 30, 2014, 592 Healthcare Providers (HCPs) were polled for their opinions. Faculty and students from the two medical institutions, as well as HCPs from all 12 districts, were included. The adoption and utilisation of m-health by all stakeholders is critical to its revolutionary potential. According to the report, because HCPs in Himachal Pradesh are still using smartphone valuation solutions and are computer proficient, thus addressing their specific issues could lead to m-health adoption in the state.
6.	PubMed	Anita Das <i>et al.</i> (2014)	mhealth IT: The impact of user experience and form factor on doctor-patient conversation	The goal of the research was to see how various mobile informational devices used by clinicians at point-of-care situations affect aspects of doctor-patient interaction such face-to-face interaction, non – verbal conversation and action visibility. It was found that Many of these affordances were lacking in digital information devices, according to the study: physicians' movements were not apparent to patients, user interfaces required a lot of attention, gesturing was more difficult, and re-establishing eye contact took longer.
7.	PubMed	Elina Geroge <i>et al.</i> (2016)	University students in Coastal South	The study synthesized results that the individuals had a high level of general awareness regarding mHealth. However, both streams of

			India's views and insights of mhealth.	students have little understanding in many key areas, emphasising the need for increased awareness and sensitization.
8.	Google Scholar	Paul F. Langer <i>et al.</i> (2021)	An empirical analysis of the consumer standpoint on the drivers of mHealth effectiveness	The study constructed a structural equation model with antecedents on consumer attitude regarding mHealth and customer satisfaction with the mHealth application based on the outcome of a comprehensive study, qualitative analysis of current apps, and quasi user and specialist interviews. These characteristics impact whether or not users will continue to use the app and whether or not they will recommend it to others. Also, the study used structural equation modelling for assessing results.
9.	PubMed	Helmut Krcmar <i>et al.</i> (2013)	Factors influencing doctor acceptance of mobile health in ambulatory care	To uncover characteristics that affect technological acceptability in terms of Technology use, this research assesses the views, beliefs, and competence of outpatient care doctors. The aspects that determine the perceived utility and convenience of usage of e-health services are examined in this study, which builds on prior work from acceptance and use of technology research in healthcare. Relying on these research evidence, we draw conclusions for the designing and distribution of e-health solutions, along with recommendations for communicating the notion to physicians in outpatient care and reward schemes for using e-health.
10.	PubMed	Pavel Andreev <i>et al.</i> (2020)	A conceptual framework and recognition for mHealth and assessed quality care delivery	The goal of the project was to examine, build, and test a model of how mobile health (mHealth) influences clinicians' views of treatment quality (PQoC). The degree of mHealth utilisation and Task-

				technology fit (TTF) were found to have a beneficial influence on physicians' PQoC, with the TTF immediate impact being two times stronger than utilisation. Self-efficacy also has the largest direct and overall impact on mHealth adoption.; technology aspects drive TTF creation, followed by task characteristics.
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Research Outline

This thesis is a framework based on 600 participant responses that has been analysed and the results were synthesized. The following is how the rest of this work is organized: Chapter (introduction) introduces key concepts and background information for this work's motivation, as well as the thesis's research contexts. The overall and specific goals of this thesis are detailed in chapter (Research Aims). Chapter (Discussion) discusses the major findings in relation to the research contexts and the work as a whole, while its next chapter study limitations and future perspectives. The concluding reflections of the thesis work are included in the last chapter (Conclusion).

Research Aim

The main purpose of the research study was to study and give analysis on doctor's perception and attitude intention on prescribability of the mHealth applications in Delhi city.

The goal of this research was to conduct primary research in Delhi among General Practitioners (GPs) in order to ascertain the current ongoing perception towards mHealth usage.

Research Question

“A Study on Awareness, Usage and Perception of Doctors towards Medical Application in Delhi City”

Study objective

This is the major study that was carried out in Delhi to determine doctors' digital savvy and attitudes regarding medical apps.

1. To Determine whether doctors are aware of the various medical apps.
2. To discover which medical apps are popular among Mumbai's doctors.
3. To learn how doctors feel about medical apps.

Research methodology

Study design: - Cross sectional survey.

Sampling method: - Simple random sampling.

Sampling population: - Doctors.

Sample size: - 600.

Sample area: - Delhi city.

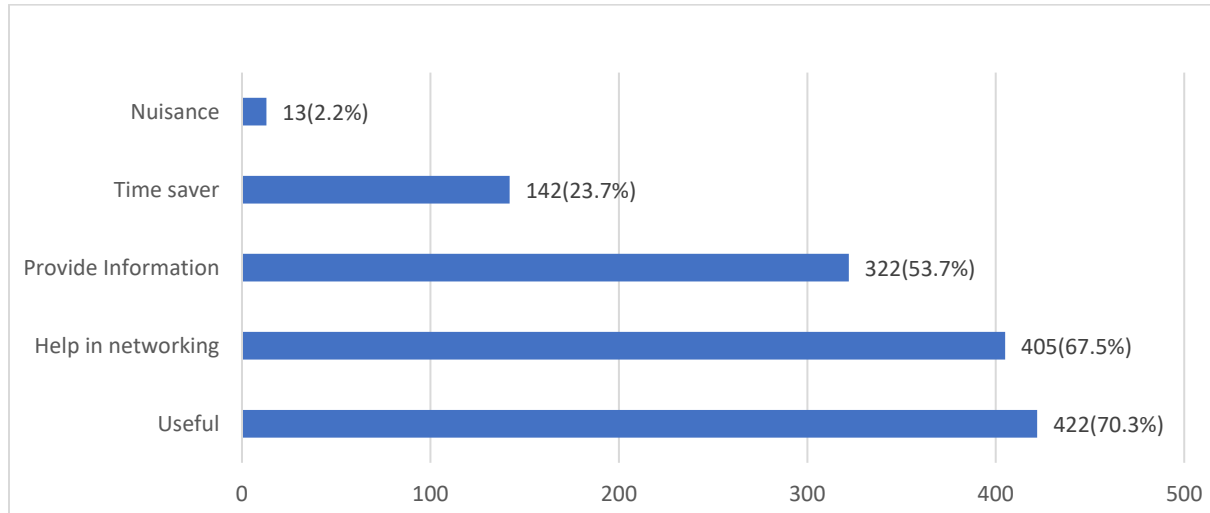
Time period: - 90 days.

Data compilation: - The records for the study was assembled utilizing an virtual questionnaire that was created in Google Forms and divided into three segments. This google form was then disseminated to doctors through email and the responses were acquired from the google account at the time of analysis.

Data Analysis: - The analysis of the retrieved data was done as per objectives through MS. Excel. Data analysis toolkit of add-ins in excel was used for data analysis.

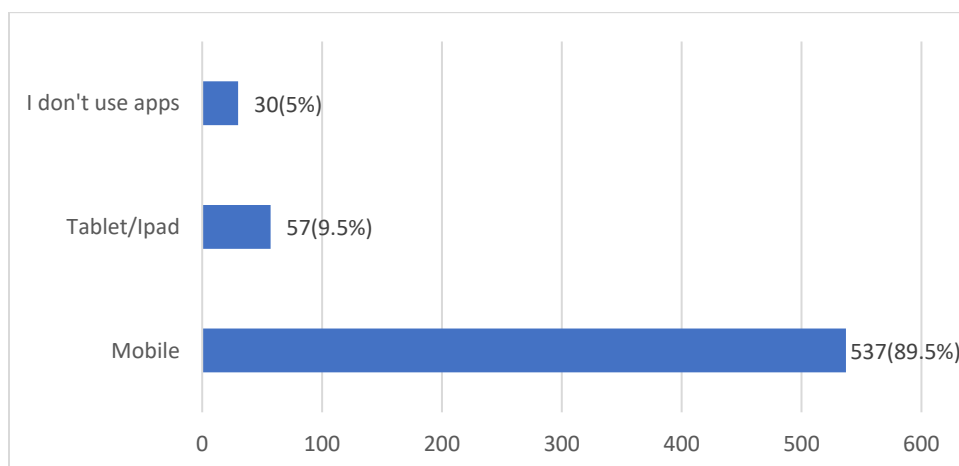
Study Result

Graph 1: In-practice use of digital apps and websites



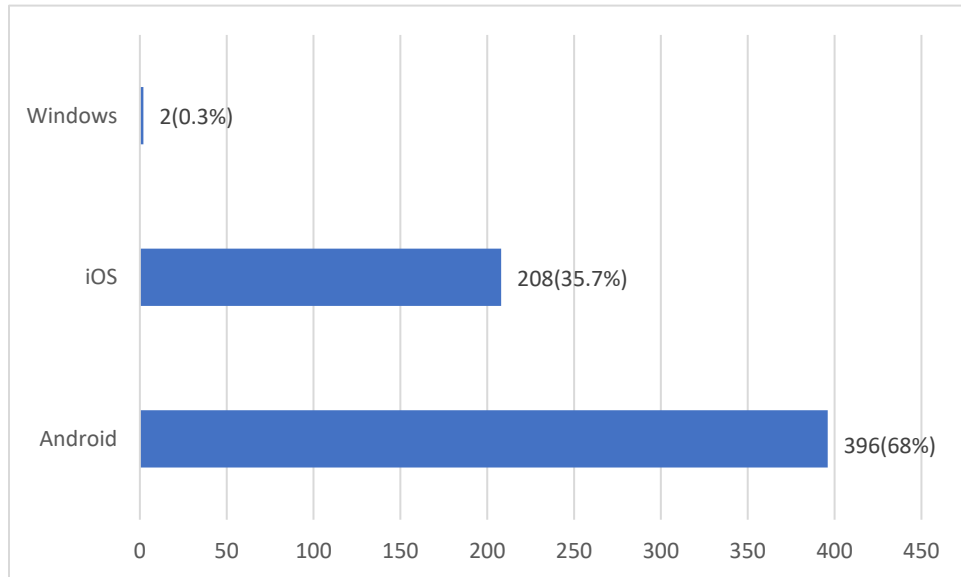
Only 13 (2.2 percent) of the 600 doctors polled thought digital apps and websites were annoying. There are 587 people left (97.8 percent) Doctors considered the apps to be effective in networking, saving time, and offering information on how to use digital apps and websites in daily practice.

Graph 2: The device on which the apps were used



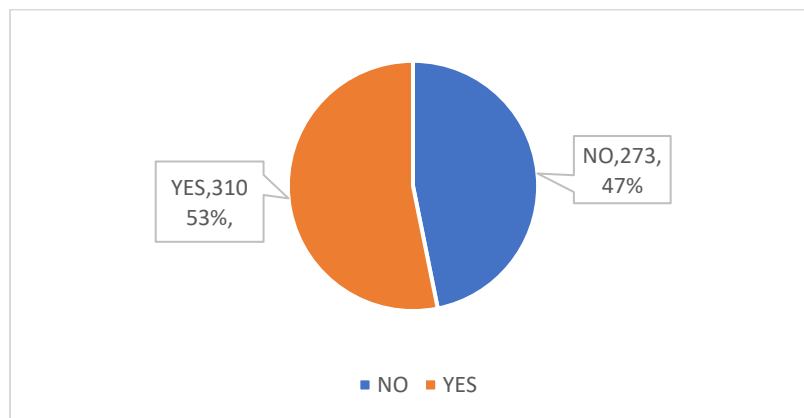
Out of 600 doctors, 537 (89.5%) solely used the apps on their phones, while 57 (9.5%) used them on other devices such as tablets and iPads. Doctors utilized no digital apps in 30 percent of cases.

Graph 3: Operating system of the device used by doctors



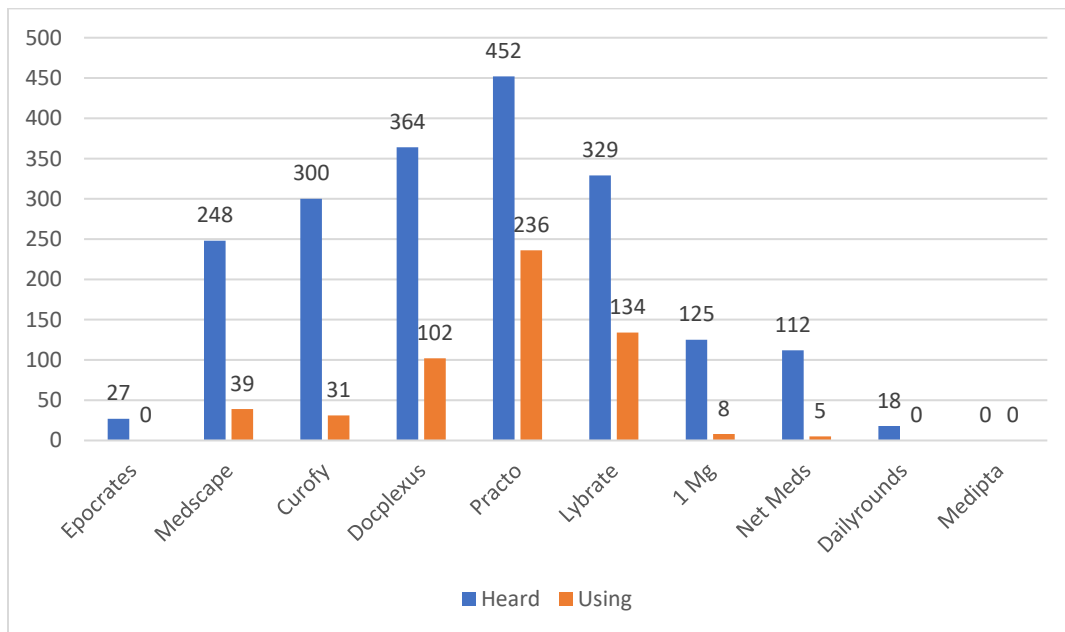
Android was found to be the most popular operating system among 396 doctors, whereas Windows was used by only 0.3 percent of them and iOS is used by 208 doctors.

Graph 4: Usage of medical app among the doctors



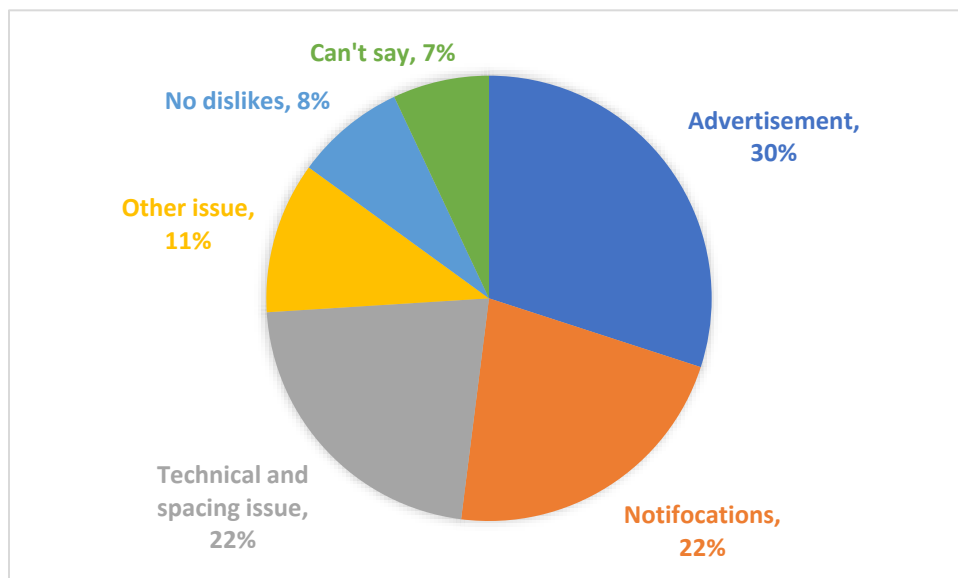
Out of 583 responses, more than 53% of doctors use medical applications, while 47% do not.

Graph 5: Digital usage among doctors



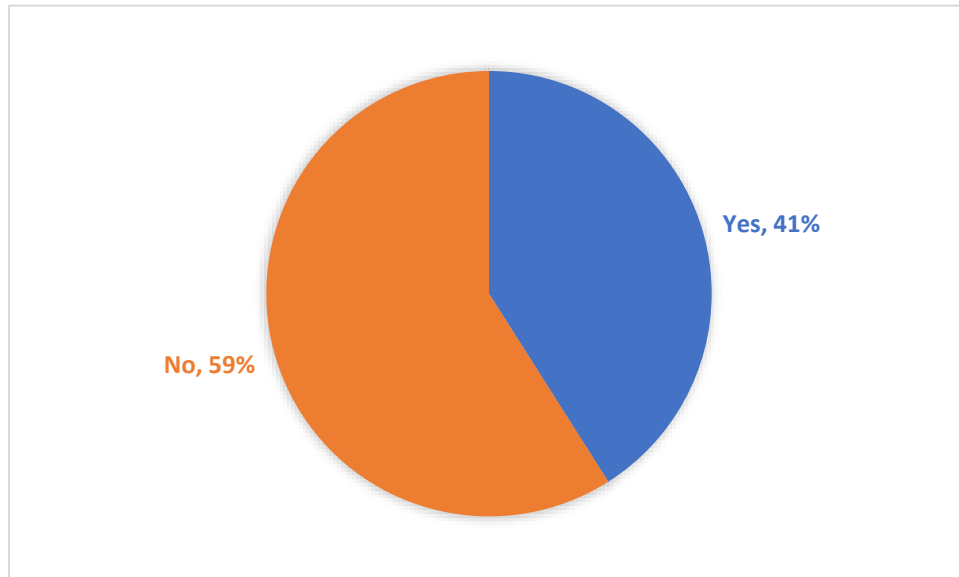
Practo had been heard of by 452 doctors, and 236 of them were using it, making it the most well-known and used mobile medical app. DocPlexus was heard by 364 doctors and used by 102, with Lybrate being the second most popular app, with 134 doctors using it and 329 hearing it. 1Mg was heard by 125 doctors and 8 were using it. Netmeds was heard by 112 and 5 were using it. Curofy was heard by 300 and 31 were using it. Medscape was heard by 248 and 39 were using it.

Graph 6: Major Dislikes



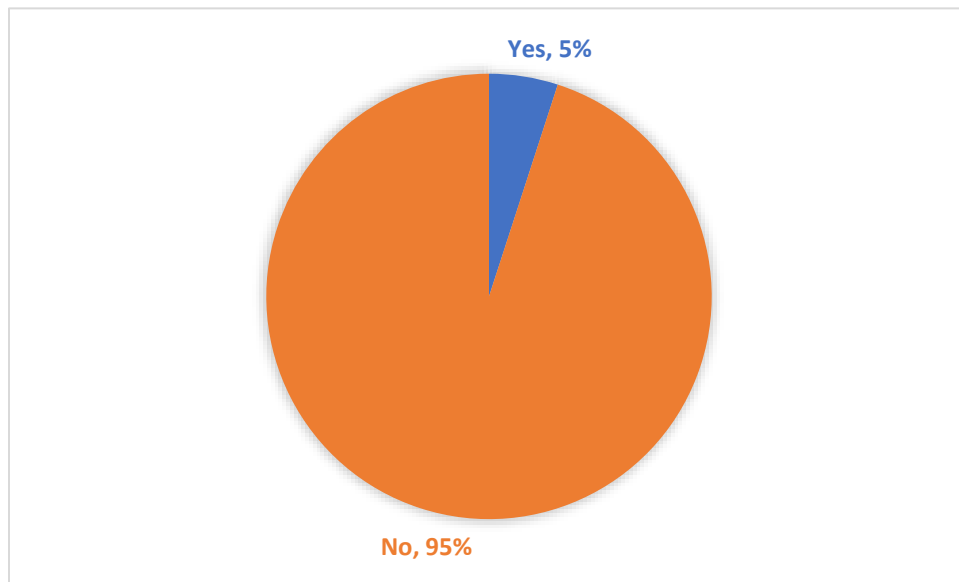
Advertising-related issues were the doctors' major big complaint, accounting for 30% of the vote, and included elements like excessive and irrelevant advertising. The app's overabundance of notifications, as well as technical issues such as the app not running properly or interruptions in between, were other big annoyances (22%) While 8% of doctors claimed they had no concerns and 7% said they had no take.

Graph 7: Payment for Full Access



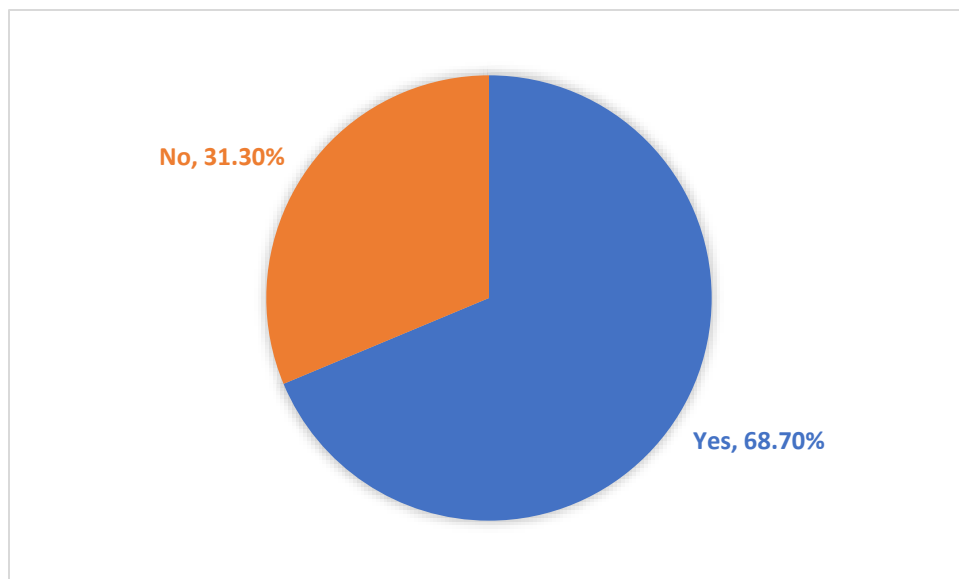
59 percent of doctors said they would not pay to access the app's complete features, which include numerous in-app purchases, while 41 percent said they would pay to access the app's many functions.

Graph 8: Use of apps developed by Pharmaceutical Company



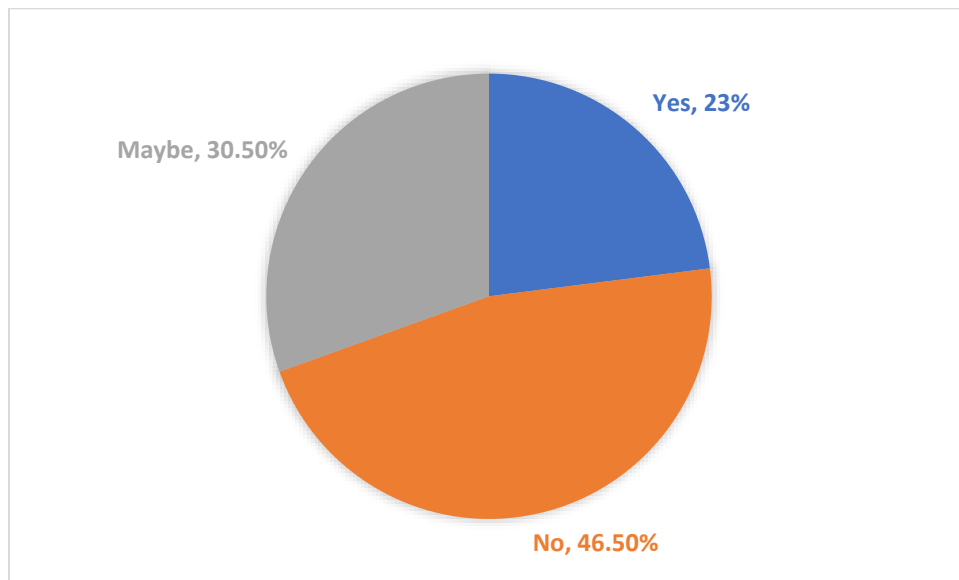
It was discovered that 95% of doctors have never used a pharmaceutical company-developed app, and that among the 5% who have, major apps from companies such as Cipla, GSK, and Jansen were discovered.

Graph 9: Preference for products linked to the doctor's field in ads given to them.



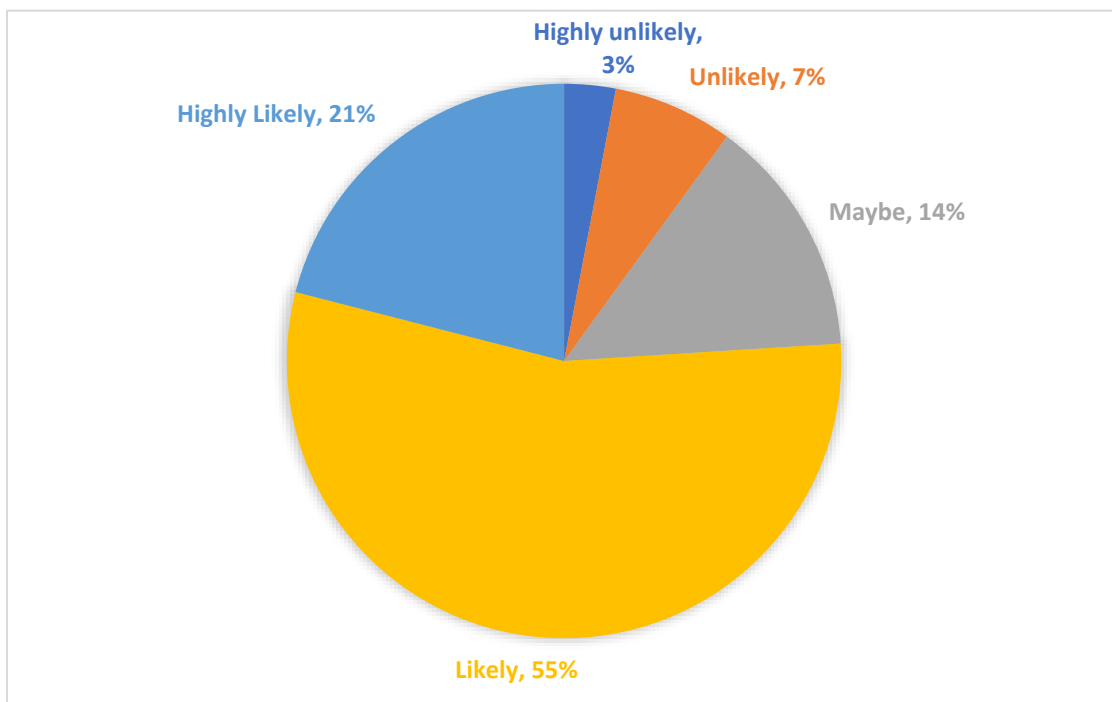
According to the preceding research, 68.7% of doctors prefer to see marketing relating to their field of interest, whereas 31.3 percent prefer not to see such advertisements.

Graph 10: The effect of marketing on doctors' prescribing habits



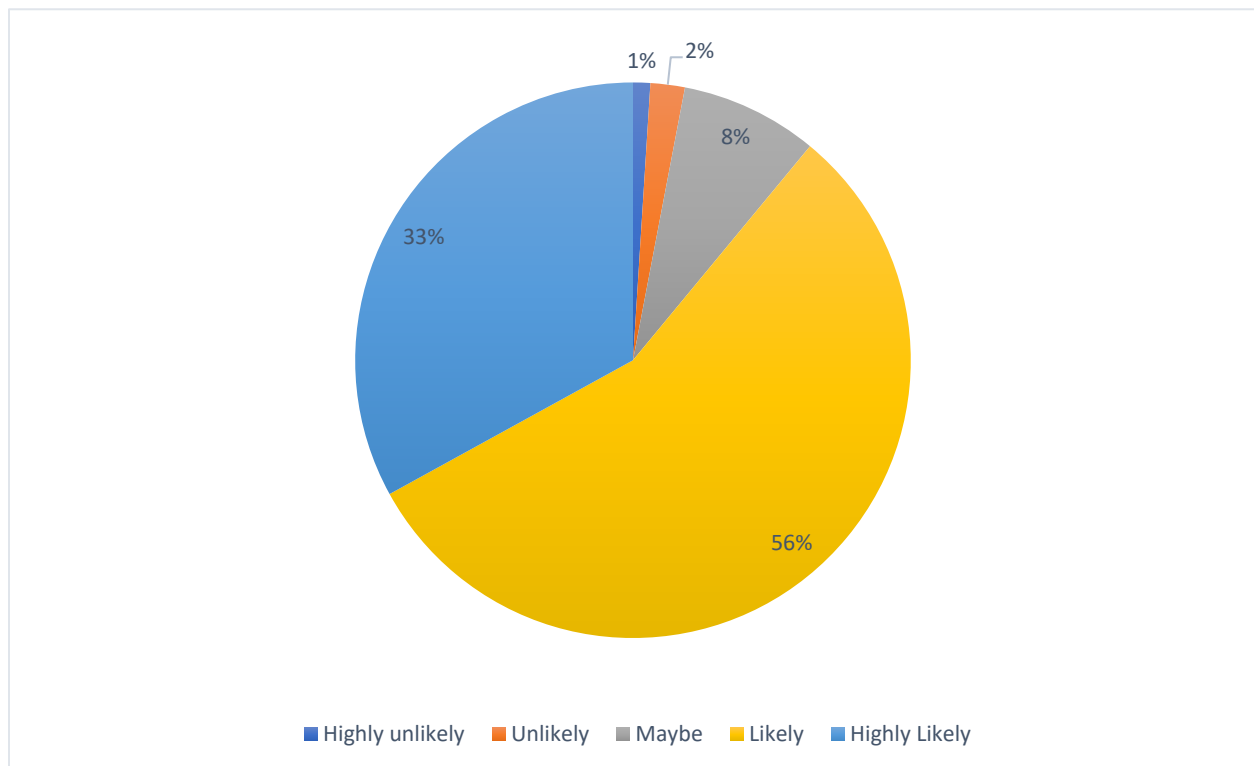
According to the data, 46.5 percent of doctors said that advertisements had no impact on their prescribing behaviour, 23 percent said that advertisements had an impact on their prescribing behaviour, and 30.5 percent said they were unsure whether advertisements had an impact on their prescribing behaviour.

Graph 11: Doctors' opinions on the use of apps that improve patient interaction



76 percent of doctors are in favour of using apps to promote patient connection, while 14 percent are unsure.

Graph 12: Doctors' attitudes toward the use of apps that improve their interaction with other doctors and physicians.



89 percent of doctors were in favour of using apps to increase their interaction with other physicians and doctors, while only 8% were unsure.

Study Discussion

The overarching goal of this theory is to assess the evidence of mHealth app effectiveness, as well as to investigate doctors' interest in and perceptions of medical applications, as well as their prescription in general practise in Delhi. A survey of practitioners in Delhi was conducted to attain this goal. The corpus of data on currently available standalone mHealth applications is examined in this thesis, with an emphasis on their "perception" in general clinical setting. The focus is here since here is where great lead applications can be readily combined into medical practice and benefit both patients and physicians. The viewpoints of practising general

practitioners were found to be essential in fulfilling the thesis's goals and addressing the hurdles to app prescription, which can be utilized as a starting point for more study.

The results of the conducted study synthesised the data, indicating that the majority of doctors found digital apps useful in their lives in terms of providing information and saving time, while only 13 doctors out of 600 sample size found digital apps to be a nuisance, and that 95% of doctors used the apps, with the most use being made on mobile phones. Doctors were the most common users of the Android operating system. This offered broad information on how frequently doctors use apps and on which devices they use them the most. The term "perception" and "attitude" was coined and described as "now available, proved useful, and preferably stand-alone" health apps because of the huge sum of apps accessible in app stores. Only a few apps appeared to have a significant, although small to medium, impact on patient health, according to the assessment.

Further, it was observed that it was shown that out of 583 clinicians, 310 (53%) used medical applications in their daily practise and also recommend it to their patients.

There was a notable finding that there was a lot of diversity in the overall number of applications recommended by participants. This could be due to variances in their digital proclivity and flexibility in changing prescription behaviour, as well as the level of faith they placed in various mHealth apps, processes, and credibility.

A list of 10 apps was compiled from the apps with the most downloads on the app store and playstore, including Epocrates, Curofy, Medscape, Docplexus, Practo, Lybrate, Net medicines, 1Mg Medipta, and Dailyround.

Practo was discovered to be the most popular app, with features like as online patient appointments and information, and it was also the most heard app among doctors in Delhi. DocPlexus was heard by 364 doctors and used by 102, with Lybrate being the second most popular app, with 134 doctors using it and 329 hearing it. Even though two large online pharmacy (Net Meds, 1Mg) retail apps delivering medicine online were included in the list, they were not widely known or used by doctors, with only 13 doctors using them. However, the app introduction videos are meant to supplement GPs' knowledge and comfort with the applications by providing further education and training. Many GPs, on the other hand, did not gain or

remember much information from them. Furthermore, gaining a meaningful understanding of the applications would need more in-depth knowledge and continuing exposure than merely seeing a 2-minute clip once. The end-of-study feedback interviews offered new information about the intention and GP perception habits. According to the interviews, personal familiarity with the apps, as well as recognizing the application's brand image, are probably as important as knowing the application's name and reliability in creating confident prescribing behaviours. Paradigm of mHealth use through doctor's perception is very dynamic. This thesis attempted to accomplish this by using a step-by-step analysis of behavioural characteristics of doctors to identify app prescription facilitators, and then effectively developing and testing a customised implementation intervention. As mHealth applications make up such a minor part of the new technology environment invading healthcare, it's essential to look at the big picture of these technologies and how they're progressing. According to the Gartner Excitement Process, every modern innovation tool that enters healthcare is surrounded by a large bubble of excitement that bursts open with closer inspection, showing the actual value they may provide to medical care. To increase the applicability, development, and value of second- and third-generation applications in the future, we need to rethink the design, as well as improved testing.

In conversations with patients and doctors, it was discovered that prescribing mHealth apps is seen as unavoidable and viable. GPs are aware of the huge number of apps available and are bewildered by them. They have highlighted the need for a higher trustworthy source of health applications outside of application stores. People prefer their physicians to be reliable providers of knowledge. However, the main barriers for GPs were cultural differences in digital tendency for both GPs and patients; insufficient knowledge about app belief and absence of a credible source to access applications; the time investment that GPs and patients must make; and the confidentiality, protection, and reliability concerns that surround health applications. In the study, Advertising-related issues, such as excessive and irrelevant advertising, appeared as the most disliked aspect among doctors, accounting for 30% of the total. The other main complaint was related to the app's excessive alerts, as well as technical issues such as the app not working properly or interruptions in between, which 8 percent of users experienced while using these apps. According to the data gathered, only 41% of doctors were interested in paying for premium features, while 59 percent were not. Many pharmaceutical companies have also built applications, but it was shown that 95% of doctors had not used any app developed by a

pharmaceutical business, and of the 5% that have, big apps from Cipla, GSK, and Jansen were discovered. So, this also reflected some major lacking parts of mHealth. This was also the one that may be influenced by the study's execution methods. Additional suggestions from the GPs who took part in the study included the need of the mHealth app training and support, application prescribing abilities, and, most importantly, a trustworthy provider of tools at their hands. We can use behaviour modification tactics to solve the issue of a lack of resources and knowledge. Recognize the value of modern innovation, including its capacity to shorten appointment times and keep the patient energized between sessions, can help to overcome possible obstacles.

According to the statistics of the study report, 68.7% of doctors like to see commercials that are directly connected to their area of interest and practise and can be beneficial, whereas 31.3 percent of doctors are not interested in seeing such advertisements. Also, in terms of the impact of advertisements on prescribing behaviour, 46.5 percent said that advertisements had no impact on their prescribing behaviour, 23 percent said that advertisements had an impact on their prescribing behaviour, and 30.5 percent said that advertisements had an impact on their prescribing behaviour. Although doctors were unsure whether advertisements had an impact on their prescription behaviour, it is clear that an effective campaign would be enjoyed by doctors if it is connected to their area of interest. Result towards perceiving the benefit of the mHealth application in order to include them in actual use is shown by 76 percent of doctors who said that they would utilise apps to improve doctor-patient relationship, while 14 percent said they would not. Doctors were split on whether or not to utilise such apps, with only a handful stating that they were not interested. In conclusion, doctors want more interaction with their patients, which may be beneficial in the long run. 89 percent of doctors expressed interest in using apps that would boost their interaction with other physicians and doctors, such as those that might be used for case discussion and information exchange. These applications may be developed and modified to help increase these types of interactions. As the use of digital technology has grown in recent years, many survey reports have revealed that approximately 2, 59,000 medical apps exist, with 30 percent of those being for medical practitioners depending on their functions. Because digital technology is more cost effective and interactive, doctors are also more likely to use such apps. As a result, the development of such applications may be more important, and existing apps should aim to improve on the different challenges that arise as along.

I have also observed through this that because of mHealth apps are such a minor portion of the new technological landscape that it is infiltrating healthcare, it's vital to take a step back and look at the wider image of these tools and their advancement. The Gartner Excitement Process demonstrates that each revolutionary technology tool that enters Medicare is accompanied by a large froth of excitement that bursts when evaluated closely, showing the actual value they may provide to healthcare. mHealth applications are causing widespread disappointment somewhere, since these are not and have not ever been the cure that we all think any modern technology would be. We need to rethink the design to enhance online and real apps, as well as improved testing to boost the apps' usefulness, stability, and value, because most mHealth apps fail to provide proven health benefits. if we do so then we can only expect to attain the Enlightenment Angle. Furthermore, on modern and improved smartphone and wristwatch models, numerous wellness features and detectors, such as walk, sleep tracking, nutritional cost calculation, and meditation, are now available as native smartphone functionalities. As a result, the necessity to download additional apps or purchase separate fitness trackers is gradually diminishing, particularly in health and fitness. As a result, the healthcare category will likely have the most massive effect of mobile health, which has a much narrower customer base than Health and Wellness but needs high amount of supervision, creating mHealth applications a less valuable area of health innovation, but this decrease in context will be favourable to regulative opportunities.

In the use of technology, doctor perception and intentions are critical. As a result, academics, application developers, team leaders, and legislators may find the interests, desires, and traits of physicians reported in this study valuable. Although, despite having a high level of knowledge and a good attitude, respondents' willingness to expand their use of mHealth was low. As a result, there is a pressing need in Delhi to extend mHealth coverage.

The entire topic of m-health is receiving a lot of attention across the world since it provides an excellent way to transmit support and details to both patients and health care providers, and it might be a potential tool to help in medical care. The outcomes of this main study provide a common platform for academics to fully discuss the complexities and possibilities surrounding healthcare professionals' usage of mobile health technology.

Overall, the findings include a wide range of topics related to mHealth services in Delhi, including their possibilities and problems. To make the most of the possibility that this technology provides, the possibilities and constraints must be thoroughly recognised in situations comparable to Delhi. Despite the fact that numerous mHealth services have been available for quite some time, there has been a lack of awareness about their presence. This is another element that contributes to the poor use of both private and public sector services. It is essential that the existence of these services be publicly publicised in order to increase their utilisation.

Study Limitation

The thesis' main strength is its ground-breaking investigation of mHealth app perception, use, and practicability in general practise, in addition to the findings it provides to the corpus of skills in the field of applied mHealth research. The selection bias inherent in survey study, as well as the low response rate, are both drawbacks of our survey study. In contrast, the average age, years of training, and geographical distribution statistics of the GPs in our study did not match the national GP workforce data. One of the study's weaknesses is its small sample size, which is skewed toward usually healthy individuals from higher socio - economic areas and Practitioners from the metropolitan region. Even though I attempted to overcome this constraint by purposefully selecting participants from a wide range of ages and practice insight, future research should focus on patients with lengthy health complications, those from village and remote locations as well as those from low socioeconomic areas. A lack of dataset convergence, member verification, a reflection of possible examiner partiality towards app ability, and a lack of careful testing of survey questions are among the other problems. The study fails to assess the menace of partiality or integrate the menace of prejudice results into the overall synthesis, making it difficult for the reader to recognise the overall quality of the research. Due to a lack of awareness of threat of prejudice assessment, the authors were unable to address this constraint in their presentations. Furthermore, we were unable to analyse RCTs of health and wellbeing apps published in the preceding year since they are still to be included in any observational studies, and we purposefully intended to synthesize only Delhi GP's primary data. Furthermore, app availability information was frequently not available in depth. The study may have also suffered from self-reporting biases due to a self-reported and cross-sectional survey. Furthermore, the quantitative form of the study limited the gathering of all relevant data within a scale.

Recommendations

As we go closer to a digitalized world. Physicians want to discover a whole new world that is simple, convenient, and time-saving. These medical apps are extremely helpful in this regard. These apps give data, save time, and assist with day-to-day monitoring. As a result, these medical apps play an important role in a doctor's practise.

For app developers,

- A. **Advertisement boom should be halted** - Medical app developers should halt the proliferation of advertisements on their apps. Unnecessary advertising in these apps was identified as a key source of dissatisfaction in this study. Physicians like advertisements that are relevant to their field of practise. When people are using these apps, they are distracted by irrelevant popups. As a result, app developers should only offer adverts that are relevant to their users' interests. In order for the app to be effective, the supplier must consider the expectations of consumers (doctors) while building it, resulting in improved customer happiness and experience
- B. **User experience must be improved** - User experience is critical to user retention. We learned and noticed various technical concerns from this study that play a crucial impact in the doctor's impression of the application. Aside from that, regular updates always aid in bug fixes, which aid in the application's seamless operation. As a result, app crashes and memory spacing issues can be avoided
- C. **Accurate and valuable data** - Information of great worth plays a significant role in the app's market development. As unethical and false data usually has a negative impact on satisfaction and results in dissatisfaction. In the world of medicine, data integrity is one of the most critical functions that developers must consider.
- D. **App development in a new segment** - Based on the data, we've established that physicians prefer apps that aid physicians-patient interactions and physicians-physicians' interactions. As a result, these app developers can create new upgrades or apps that improve this experience.

For Pharmaceuticals Company:

Most of the doctors do not use pharmaceutical company-provided apps, and many doctors even are unaware of their existence. These applications have the potential to play a key role in the formation of doctor relationships., as well as offer up new avenues for pharmaceutical corporations in terms of digital marketing. Given current societal trends and the paradigm shift towards a digitalized world, it is highly advised that pharmaceutical businesses establish mobile applications, as they may be a very useful tool for marketing, product promotion, and maintaining relationships with doctors.

Future Perspective

Because anybody may create and distribute healthcare apps in the play store without performing them, patients must now experience them through observation and experimentation. GPs must be sure that healthcare apps have been proved to operate, that they have appropriate privacy and confidentiality legal constraints, and that they are at the very least useable before prescribing them. Separate app assessments and literature reviews on app evidence, on the other hand, require time and are difficult for doctors to do on their own. As a result, we feel that having an unbiased and credible resource to perform app assessments and provide a database of reliable mHealth applications is important in providing prescriptible apps to practicing physicians.

Conclusion

This report contributed to the field by offering a new model for explaining healthcare providers' adoption of mobile health apps. Furthermore, employing a dataset from a developing nation provided a different perspective on the dynamics that influence the usage of mHealth apps.

Furthermore, this report added to previous research on mobile healthcare app views and preferences. The authors suggest that more research be done into healthcare professionals' consciousness and use of mHealth apps to broaden the scope of the current study. mHealth apps are Enlarging the size of the sample and target populace to include additional specialties would be a good start in this direction. A longitudinal approach to reporting behavioural changes in the

use of a mHealth app over time is also recommended. The aspects that determine the perceived utility and convenience of need for e-health systems are investigated in this study, which builds on prior work from technology adoption studies in healthcare. Based on these empirical findings, we make recommendations for the layout and operation of e-health services, including how to promote the notion to doctors in outpatient clinics and legal frameworks for using e-health. However, Despite Delhi's advances in information technology, doctors in Karachi have just a basic understanding of telemedicine. The government should take steps to improve opportunities for doctors to learn about mHealth and apply what they've learned in their clinical settings. This study, which was undertaken to better understand mHealth among healthcare professionals from various sectors, discovered that doctors had a good awareness of the technology's requirement and operational technique.

First and foremost, the app selection is critical, with the user's assessment of the tool's utility being the most important factor. Second, comprehensive face-to-face support is essential for a smooth transition to a more intensive telemedicine approach. Last but not least, the absence of control over people's capacity to utilise the apps is a significant stumbling block.

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