

Digital Initiatives in Hospitals and Related Consumer Insights

By

Sonal Verma

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2018-2020



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

Digital Initiatives in Hospitals and Related Consumer Insights

By

Sonal Verma

*Dissertation submitted in partial fulfillment of award of
MBA Hospital and Health Management*

Academic year, 2018-2020

*Medanta The Medicity Global Health Pvt Ltd, Gurgaon,
Haryana*



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

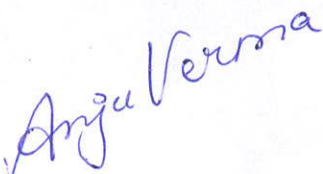
Date: 27.05.2020

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. Sonal Verma** has completed her internship, Digital Initiatives in hospital and related consumer insights, in the department of IT (**Information Technology**) from 17.02.2020 to 17.05.2020 with Global Health Private Ltd. (GHPL) Medanta – The Medicity.

We wish her all the best for her future endeavors.

For **GLOBAL HEALTH PVT. LTD**



Anju Verma
General Manager - HR



Acknowledgement

I would like to express my special thanks to Col. Dr. Ashok Kaushik (Dean Academics and Student Affairs, IIHMR University) and Mr. Hem Bhargava (Placement & Training Head, IIHMR University) for giving me the golden opportunity to pursue my dissertation in Medanta Hospital, Gurugram.

Secondly, I would also like to thank my parents and friends who helped me a lot in finalizing my projects within the limited time frame.

I am using this opportunity to express my gratitude to everyone who supported me throughout the course of my dissertation period at Medanta- The Medicity, Gurugram.

I am highly thankful to **Mr. Rajiv Sikka, Chief Technological Officer, Medanta-The Medicity**, for granting me the Opportunity for training. **Mr. Himanshu Bhardwaj, General manager- IT**, for being helpful, supportive and receptive. His dynamic thinking, his broad and profound knowledge, his critical thinking has given me constant encouragement to achieve the task allotted and perform better.

I express warm thanks to **Mr. Harinder Singh (Vice- President -IT)** for his constant support and guidance throughout my conduct at Medanta.

Also, my successful completion of the projects would not have been possible without the helping deeds the entire IT department and staff of Medanta Hospital as they are always being so cooperative. Without their co-operation and warm attitude this project would have been a distant dream.

I would also like to thank my mentor **Dr. Sameer Phadnis (Professor IIHMR University)** for his constant supervision and support in completing the project.

Dated: JUNE 18th, 2020

Place: DELHI

Sonal Verma

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled “**Digital initiatives in hospitals and related consumer insights**” and submitted by **Sonal Verma Enrolment No. 0826** under the supervision of **Dr. Sameer Phadnis** for award of MBA in Hospital Management of the IIHMR University carried out during the period from Feb 17, 2020 to May 17, 2020 . embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute per other similar institution of higher learning.

Sonal Verma

Signature

ABSTRACT

Digitization of the healthcare industry is bringing a huge change in the aspects of healthcare facilities, operations and care delivery which is enabling smarter choices, better utilization of time and resources. Digitization is helping to make the approach more patient centric allowing the patients to involve in their treatment process, faster access to care and improves access to experts.

This study is done to understand the various digital initiatives taken in hospitals and how they are affecting the delivery system. Also, a survey was conducted to access the medical consultation journey of healthcare consumers and their awareness of the digital consultation services and to study the factors which influence the choice of medical consultation. The study is quantitative and descriptive cross- sectional. Methodology included a questionnaire- based survey circulated among respondents between the age group of 20-60. The sampling technique used for the study is non-probability convenient sampling. Digitization makes it easier for patients and hospital professionals to remain on the same page. As seen from the survey most patients are aware of the offerings provided by their choice of hospitals. Also, gone are the days when a patient had to maintain a thick file of medical records or stand in que for appointment for every medical appointment. Particularly with medical emergencies, patients used to be at the mercy of the attendants who may or may not be acquainted with the patient's profile. Digitization has removed these roadblocks to keep both patients and their doctors well informed of every situation. Although awareness levels are high among patients of these initiatives, some use a hybrid approach of sticking to the old traditions related to some aspect areas such as not using online booking that frequently or consulting a doctor in person or preferring a call instead of video based platforms which are more efficient mediums. To address these issues, hospitals will need to deliver the last mile push using digital media for higher awareness and adoption of these services. Demonstrations can also go a long way in helping patients switch from preferring traditional solutions to digital ones.

Digitization is growing rapidly and is clearly here to stay. Despite being shunned by professionals and patients on some fronts, the technology is rapidly becoming a norm and embracing it will only benefit the patients.

Keywords- Digitization, Telemedicine, EMR, EHR

INDEX

1.	INTRODUCTION
2.	OBJECTIVES AND RESEARCH QUESTION
3.	REVIEW OF LITERATURE
4.	METHODOLOGY
5.	FINDINGS
6.	CONCLUSION
7.	SUGGESTIONS
8.	REFERENCES
9.	ANNEXURES

LIST OF FIGURES AND GRAPHS

1.	Healthcare facility preference among healthcare consumers
2.	Choice of healthcare facilities on falling sick
3.	C Turn-around time (TAT) for consultation
4.	Choice of healthcare facilities on falling sick
5.	Awareness of doctor's credentials
6.	Awareness on Factors influencing consultation doctor's credentials
7.	Reasons for delay in consultation
8.	Awareness on online consultation
9.	Preference on online consultation
10.	Online payment for consultation
11.	Awareness on digital services
12.	Satisfaction rate on Digital services
13.	Awareness on digital services
14.	Preference of digital services
15.	Awareness on digital services
16.	Awareness on digital mode of consultation
17.	Digital consultation preference
18.	Online consultation rating
19.	Digital consultation preference (least preferred)
20.	Digital consultation preference (most preferred)

DIGITAL INITIATIVES IN HOSPITALS AND RELATED CONSUMER INSIGHTS

INTRODUCTION

Digitization of the healthcare industry is bringing a huge change in the aspects of healthcare facilities, operations and care delivery which has led to utilization of time and resources in a better way and making smarter choices. Digitization is helping to make the approach more patient centric enabling them a faster access to experts, also provides faster access to care. Various issues have been overcome with the help of digitization like management of data, resources, decision makers, stakeholders, multiple departments that are involved in the delivery of healthcare services.⁵

This study is done to understand the various digital initiatives taken in hospitals and how they are affecting the delivery system. Also, a survey was conducted to access the medical consultation journey of healthcare consumers and their awareness of the digital consultation services.

Various digital initiatives taken in hospitals are-

- Telemedicine
- EHR
- RFID tagging
- VR-AR programs to train doctors

Telemedicine – With the emergence of telemedicine healthcare facilities have been made more accessible than ever. Virtual treatment of patients can be done successfully with the help of telemedicine facility who come with minor complaints and conditions and when their treatment can be done without in person consultation also. In fact, nearly 75% of the visits made to all regular doctors could be handled effectively with the help of virtual consultation through phone, video call or chat according to American Medical Association and Wellness Council of America. In this study common diseases are included like common cold, flu, sinusitis and bladder or urinary tract infections. In this study about 60% of the telemedicine consultation ended up with the doctors writing a prescription.⁶

Hospitals provide consultation facilities over various mode – video call, phone call, chat and in person. Hospitals provide applications and portals to book appointments online for various modes of consultation based on the availability of slots. Through the application or portal, the patient as well doctor can access the medical reports, prescription of patient. The status of telemedicine is emerging from niche status to the mainstream as there has been a huge increase across our society in the social use of video.⁷

‘Medintegra Web’ which is a web enabled telemedicine application used by Apollo Hospital, New Delhi is used by healthcare professionals- doctors, nurses and hospitals to reach out to patients in the areas which are not accessible and can be provided with interactive healthcare with the help of modern technology and telecommunications.⁸

The patient’s data collected is collected by the software and it is converted into a secure and confidential EMR which is **Electronic Medical Records** which is then studied by the authorized specialist when the data is transferred to the Telemedicine Specialty Center.

Based on the investigation, the specialist offers his /her opinion which is transmitted back to the grass root (peripheral) where the doctor is able to treat the patient accurately and without any further delay.⁸

Features of application-

- EMR records patient's medical information diagnostic results, past surgeries, vitals, current and past medications, treatment plan.
- It helps to transfer medical records
- Helps booking telemedicine consultation with doctors
- Use to make confirmation of digital consultation
- Doctors can prescribe medications as well order medications for patient with the help of EMR
- Diagnostic reports of patient such as X-ray, Ultrasound images, MRI, CT scan reports can also be viewed.⁸

Another most widely used digitalization technique in hospitals is Electronic Medical Records(EMR). Also called EHR -Electronic health records. EMR is used to records medical information of a patient like health history including diagnosis, medicines, tests, allergies, treatment plans and immunization. These records can be seen by the healthcare providers involved in the treatment of patient. And help to make recommendations. Integrated EMR are used by doctors in their device to access data securely.⁹ Other important features of EMR are-

- e-prescribing – It marks the end of paper prescription pads. All prescriptions can be automated using secure e-prescribing technology, validation can be made easier, and forged prescriptions can be avoided.¹¹
- Electronic results - EHR allows users to access lab results, X-ray images, radiology reports electronically, and avoiding duplication of tests.¹¹
- Automated admissions – At the time of admission, the EHR can reduce unnecessary processes by automatically capturing details from the primary care physician, auto-filling patient history, generating dashboard of historical physical stats and avoid filling out forms with redundant questions.¹²
- Engaged and informed patients – It can also allow to engage patients by allowing to them syncing data themselves through home monitoring devices and to receive educational material via the EHR.¹³

The implantation of EHR started in Max healthcare hospitals in 2009 and they achieved Stage 6 level of the EMR adoption model. Apollo groups has also achieved Stage 6 level of the EMR adoption model by implementing EHR in four of its hospitals.

Sankara Nethralaya, with the help of Tata Consultancy Services, has initiated an EMR system in its satellite clinics and hospitals in Chennai. They also offer it to other hospitals.¹⁴

VR programs to train doctors- VR are still in their infancy days, they have already begun to leave their mark in the healthcare industry. These immersive technologies are bringing about transformational change in the workings of the healthcare sector.

Virtual training will likely become more prevalent in the future. Virtual training has become more prevalent among students and seasoned clinical , while hands on and in-person medical training can also never go away. Virtual training can help surgeons map out their surgeries before conducting them—they can also share footage of the actual surgery with students and colleagues. Virtual training also can increase specialized expertise available to a larger audience, which can be particularly important when geography and costs are factors.

Other features are-

- Increased engagement - Simulations of the surgical procedures allow enhanced patient engagement with their doctors and consider outcomes and results of surgeries
- Better Training – The virtual training to doctors via simulations of the procedures of surgery improve skills of all involved
- Additional R&D - Research and development into procedures can be aided by simulation by targeting various health conditions and consider multitude of different medical scenarios so that the teams can be prepared for precise interventions when necessary
- Better information - Immersive technology lends a helping hand to the team in surgeries through additional anatomy information of the patients by simulating patient specific reconstruction of anatomy through effective image-based tracking and spatial data
- Mobile Communication – AR also supports handheld mobile technology which can be also be accessed through a handheld scanner or camera device. The tech is useful as it can communicate spatial information easily and improves accessibility.

In February 2007, Global Hospitals Hyderabad organized the first-ever live VR surgical training for 700 doctors and students from across India. The VR feed from the operation theatre was live telecast on the sidelines of a medical conference where students -wearing VR headsets -witnessed laparoscopy surgery performed by foremost urologists in the country.

RFID tagging-

Digital technologies are aiding many hospitals in increasing on premise physical security with its emergence. RFID tags are used to locate patients by tagging the wristbands of patients, employees and visitors' badges. The function of RFID tracking to locate people in real time during urgent situation. The same tagging system can be extended to certain pieces of equipment, including any robotic helpers within the hospital .¹⁹

“Patient Mantra” is being used by Apollo Hospitals Chennai which is an Icegen Real-time locating system (RTLS/RFID) which is used to for the movement of around 250 patients per day through a series of up to 26 diagnostic procedures. It helps to avoid delay related to the movement of patient from one checkpoint to another. In the department-centric world of hospital management, however, one department's needs are not necessarily compatible with another department's priorities.

An effective tracking software of hospital and Orchestration of their resource plan of care for patient impacts a patient's length of stay. “Length of stay, in turn, has a direct bearing on capacity management and, ultimately, hospital costs and revenues.”²

AIM OF THE STUDY-

- 1.To assess the digital initiatives taken in a tertiary hospital.
- 2.To ascertain the medical consultation journey of healthcare consumers and their awareness of digital consultation services.

RESEARCH QUESTION – What are the factors which influence choice of medical consultation and Common TAT for consultation?

REVIEW OF LITERATURE

In the report, “**The effects of electronic medical record adoption outcomes in US hospitals**”, researchers **Yong-Fang Kuo and Jinhyung Lee**¹ studied the relationship between 30-day re-hospitalization, length of stay, inpatient mortality, 30-day mortality, and basic EMR adoption. His overall approach focused on comparing outcomes for the 2 years before and after the year of adoption of Electronic Medical Records at 708 acute-care hospitals in the US during the 2000-2007 period. The effects of EMR were looked at by two methods – 1) the outcomes by quarter for the period mentioned among hospitals which adopted EMR ; 2) the hospitals which adopted Electronic Medical Records to those that did not using a generalized linear model.

End Results: The Hospitals that had adopted Electronic Medical Records experienced a 0.182% (at 95% CI: -0.218 to -0.002) lower 30-day mortality, 0.11 days’ reduced length of stay but a 0.19% (with CI at95%: 0.0006 to 0.0033) increase in 30-day re-hospitalization in the 2years after Electronic Medical Records adoption. The association of Electronic Medical Records adoption with results did also differ by type of admission of a patient (medical vs. surgical)

In the 2018 report, “**Impact of digitalization on patient experience**”,² Deloitte noted that technology is reshaping the relationship between all major participants of healthcare cycle - patients, healthcare providers and the healthcare providers. Connecting healthcare providers and patients, the treatments can be improved by use of real-time curated data.

Digital technology indeed has the expected potential to transform the healthcare industry in a sustainable way and it can balance out the relationship between medical professionals and patient. The report stated that nearly 80% of the surveyed doctors believed tele-medicine is a better way to manage chronic diseases. In a survey of US healthcare consumers on telemedicine, it was discovered that about 48% were also for chronic disease monitoring, 49% patients were actually interested in using telemedicine in post-surgical care, while 32% were for minor injury, and 36% were interested in care while travelling. In 2017 alone, 78,000 new mhealth apps were added to smartphone app stores. The number of mhealth apps on the 2 platforms increased notably. From 2016 to 2017, iOS has recorded a growth rate of 20% while android recorded a 50% growth rate. 42% healthcare apps encouraged the users to improve the monitoring and management of personal health. Such apps had a great range of use from chronic care management to personal monitoring to population health analysis.

These developments have transformed healthcare from a provider-driven marketplace to a patient-centric health ecosystem. Patients are now becoming increasingly engaged in and responsible for their own health as they utilize technologies more every day and as a result, help the providers add value to their patients

In the study, “**PACS: from project to reality. Report of experiences on full digitalization of the radiology department of a major hospital**”, researcher **W. Gross Fengels**³ performed a pilot study aimed to evaluate the time needed and resulting effects of a complete digitalization of a radiological department of a major hospital having about 28,000 in-patients, and about 35,000 out-patients/year and 856 beds. Afterwards, intensive preparations were performed, and the hospital-network was completed, within a 2-year period, all the radiological functions (excluding mammography), reporting stations, and the archives were changed to a complete digital workflow. All modalities, provided by 3 distinct companies, got connected by DICOM-work lists. The picture-files, about 4 GB/day, were automatically routed to the workstations (n = 10), where the reporting and file shows were performed to the digital archive and to the peripheral viewing-stations (n = 44). The distribution of the digital pictures took place all over the hospital including

the ORs and special units. It was noted that the complete digitalization increased the attractiveness and productivity of the radiology department and helped to shorten therapeutic and diagnostic decision-making.³

In a study on “**Measuring the operational impact of digitized hospital records: a mixed methods study by Philip J. Scott.**”⁴, data was collected from OP consultations during follow up by non-clinical observers in two NHS hospitals with approach based on work sampling where there was specification of clinician time usage. Quantitative data was analyzed using two-way ANOVA models and the Mann-Whitney *U* test. To qualitatively explore the experience of doctors who used digitized records a focus group discussion was done. With the help of these methods quantitative and qualitative results were synthesized.

Results- During the study 406 were analyzed. Significant difference was found in consultation time between hospitals where $p = 0.016$ and with use of paper record the difference was found in consultation times between hospitals with $p = 0.003$. Whereas with the use of digitized records there was also a significant difference in consultation times between specialties within hospital where $p = 0.001$. When the outliers were excluded it was observed that there was no significant difference in the consultation time in the paper records and manual records in the same hospital, either at site where $p \geq 0.285$ or specialty level where $p \geq 0.122$.

It was confirmed during the focus group discussion the most recent document was an important document in the file of patient's record as it contains most of the information which is required. It was also observed that digitization of medical records can be done in hospitals as it didn't affect the operation in a detrimental way. Inherent differences between specialties can outweigh the differences between paper and digitized records. For digitized medical records to be reliable and usable the important factor is that the operational processes must be smooth and consistent.

METHODOLOGY

STUDY SITE – A tertiary hospital in Gurugram.

STUDY POPULATION: Healthcare consumers in India

- **Inclusion Criteria** : Healthcare consumers of age between 20- 60
- **Exclusion Criteria** : Healthcare consumers below 20 years of age and above 60 years

STUDY PERIOD : The duration of study was 3 months starting from **17th Feb 2020 to 17th May 2020**.

STUDY DESIGN : The study is Descriptive cross-sectional as no intervention was done and collection of relevant data is done at a given point in time to assess the knowledge and experience of healthcare consumers.

SAMPLING – The sampling technique used was **non probability convenient sampling** because the sample population selected were conveniently available. The questionnaire was floated to the respondents through email and WhatsApp text.

SAMPLE SIZE – 80. This study includes respondents with age 20 onwards to 60 considering the respondents avail healthcare facilities. Diversity in the age of respondents give wide perspective about healthcare seeking behavior.

DATA COLLECTION METHOD – Methodology includes **questionnaire-based survey** circulated among respondents of age 20-60. Sampling technique used was nonprobability **convenient sampling**. The questionnaire consists of 27 close ended questions. The secondary data was collected through review of research papers and relevant websites.

DATA COLLECTION TOOL – The content of the questionnaire included various parameters related to medical consultation journey of healthcare consumers, their awareness on digital consultation services and their preference for different type of healthcare facilities. This study also focused on various factors influencing the choice of medical consultation and the factors causing delay in consultation. The questionnaire was developed based on the objective of the study and various literature review.

DATA ANALYSIS – The data collected by the respondents was analyzed with the help of MS-EXCEL and the results are presented in the other section of this report. Pattern analysis in population was done using univariate analysis, and bivariate analysis using cross tabulation. Contingency tables were also prepared for cross tabulation of data under bivariate analysis.

FINDINGS

In the survey, participation by gender was higher from women (55%) than men (45%)

Majority of the respondents belonged to the age group of 26-30 (46%) followed by 20-25 (45%)

1. Healthcare facility preference among healthcare consumers

What kind of healthcare facility you usually visit?
80 responses

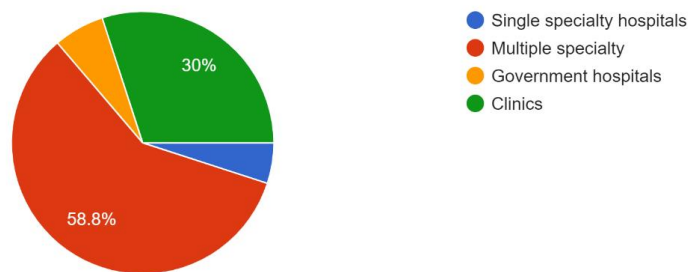


Figure 1 - Healthcare facility preference among healthcare consumers

- ~59% (47) of the respondents usually visit a Multiple specialty hospital while 30% (24) prefer to visit a local clinic

2. Choice of healthcare facilities on falling sick

Suppose you are sick what do you usually do ?
80 responses

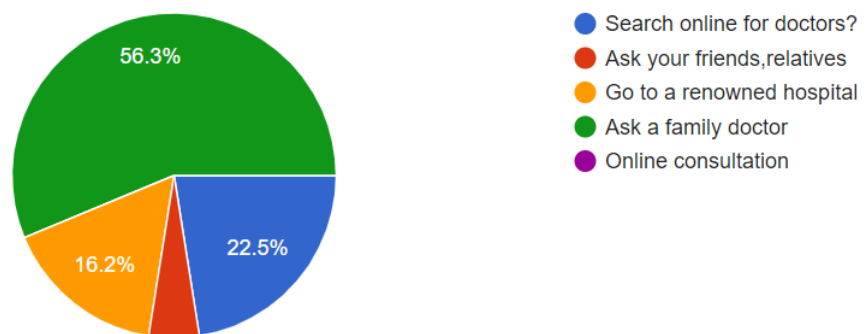


Figure 2- Choice of healthcare facilities on falling sick

- When the respondents fell sick, 56% (45) preferred to consult a family doctor first, while 22.5% (18) searched for a doctor online, and 16% (13) went to a renowned hospital and none of the respondents consider online consultation as a first action step
 - Women (59.1%) prefer to consult a family doctor more than men (52.8)

- However, men (25%) are more likely to search online for doctors than women (20.5%)
- But women (18.2%) are more likely to go to a renowned hospital than men (13.9%)
- Men (8.3%) are more likely to consult a relative or a friend than women (2.3%)

gender	Ask a family doctor	Ask your friends,relatives	Go to a renowned hospital	Search online for doctors?
Female	0.590909	0.022727	0.181818	0.204545
Male	0.527778	0.083333	0.138889	0.250000

3. Turn-around time (TAT) for consultation in different healthcare facilities

How much time did you have to wait for the consultation?

80 responses

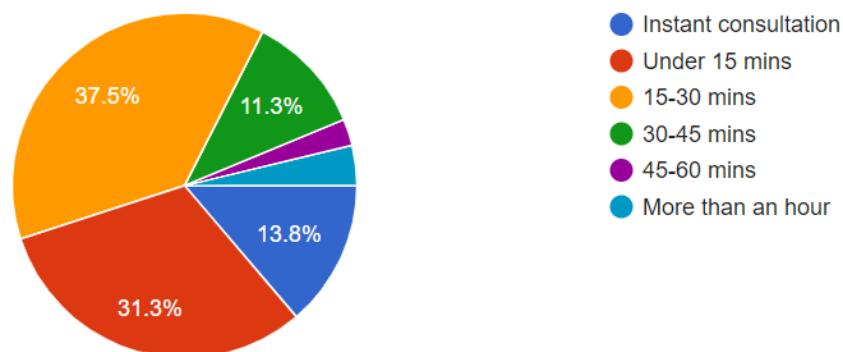


Figure 3 - Turn-around time (TAT) for consultation

- 45%(36) respondents reported a wait time of **less than 15 minutes** for their last consultation and 37.5%(30) responded that they had to wait between **15-30 minutes**
 - Respondents who visited a clinic reported slightly less wait time than respondents who visited Private hospitals for their last consultation
 - 17% of Private hospitals consultees reported instant consultation compared to 11% of Clinic consultees
 - More respondents reported a wait time of less than 15 minutes who visited clinic (48.1%) than those who visited a private hospital (44.7%)
 - A higher share of Clinic visitors (40.7%) reported a wait time of

last_visit_facility_type	15-30 mins	30-45 mins	45-60 mins	Instant consultation	More than an hour	Under 15 mins
Clinic	0.407407	0.037037	0.000000	0.111111	0.074074	0.370370
Private hospital	0.361702	0.148936	0.021277	0.170213	0.021277	0.276596

4. Awareness of doctor's credentials

Were you aware of the doctor's credentials?(Years of experience, hospital served in, specialty, etc)

80 responses

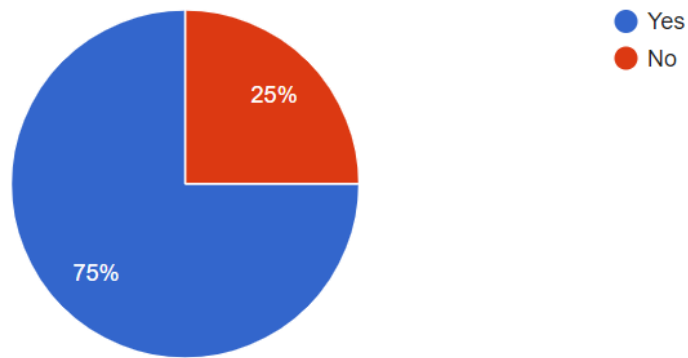


Figure 4 - Awareness on doctor's credentials

- 75%(60) of the respondents were aware of the doctor's credentials
 - Comparing gender awareness, 80.6% of men reported awareness of credentials as compared to 70.5% of women

gender	Unaware of Credentials	Aware of Credentials
Female	0.295455	0.704545
Male	0.194444	0.805556

5. In the next question, importance of multiple factors which influence the choice of medical consultation was asked

On a scale of 1-5, how important do you find the following when finding a doctor for consultation? (5 being most important)

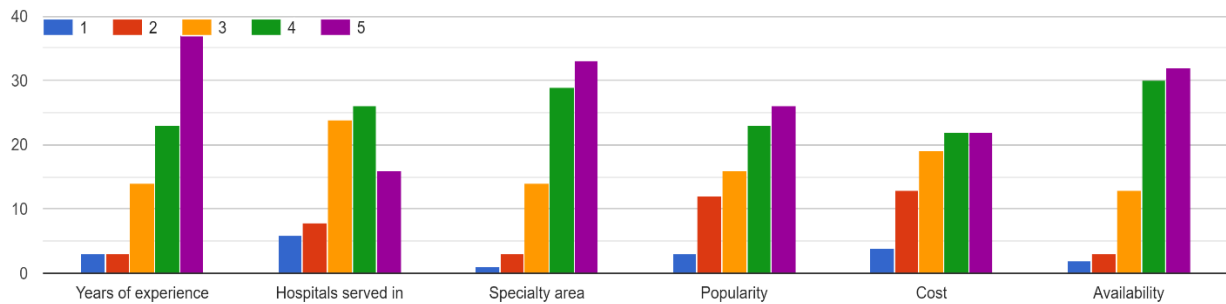


Figure 5- Factors influencing consultation

- Doctor's experience, specialty area, and availability were very important factors for the respondents
- Hospitals served in and cost were less important factors

Reasons for delay in consultation

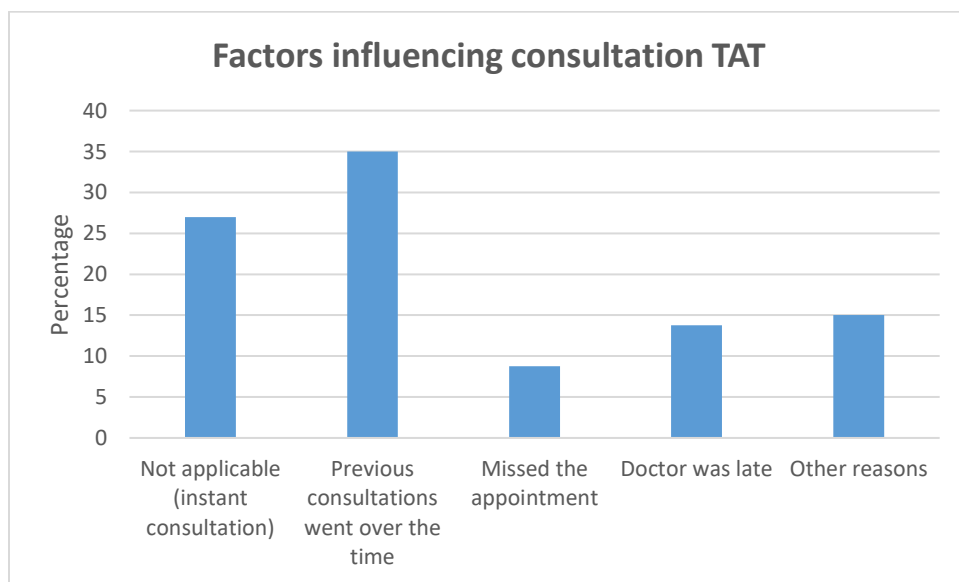


Figure 6 - Reasons for delay in consultation

- Majority of the respondents (35%) stated that the reason for delay in consultation is that the previous consultation went over time followed by the reason that the doctor was late (13.75%).

6. In the next set of questions, the awareness and usage of online consultation booking apps or portals was assessed

Are you aware of any online consultation booking app or portal?

80 responses

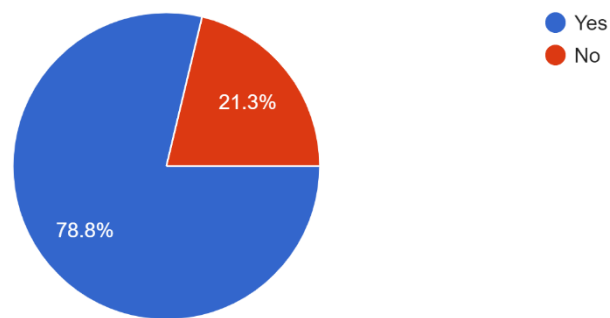


Figure 7 – Awareness on consultation app or portals

- About 79% (63) of participants were aware of online consultation booking apps and portals

Do you make online appointments for doctors' consultation?

80 responses

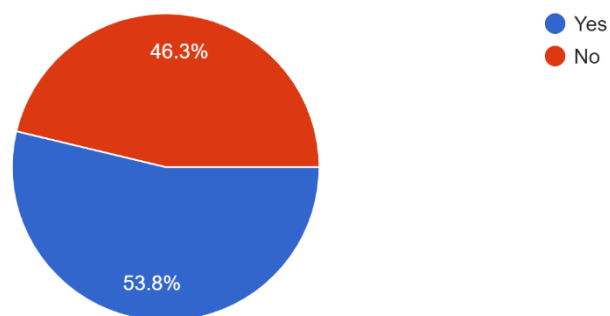


Figure 8 – Preference on online consultation

- However only 53.8% (33) use the service of making an online appointment for doctor's consultation (directly or indirectly)
 - Also, only 57% of the participants who were aware of online consultation booking apps and portals, have made an online appointment for doctor's consultation
 - Among the individuals who make an online appointment, 67.4% have done so less than 2 times while about 28% have done it between 2-4 times

How often do you make an online appointment for doctor's consultation?

43 responses

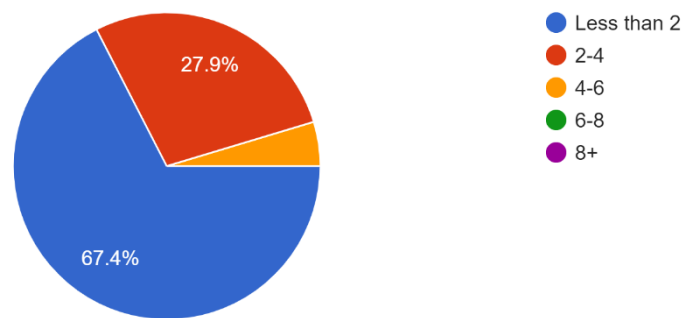


Figure 9- Preference on online consultation

- 67.4% (29) of the respondents make less than 2 online appointments for consultation

Do you have to make payment online at the time of booking a consultation?

43 responses

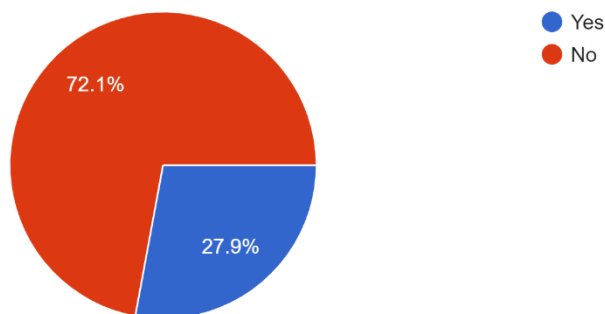


Figure 10 – Online payment for consultation

- 72% (31) responders also made a payment online at the time of booking a consultation

10. The next set of questions dug into awareness of digital services which fall under the domain of EHR.

Do you usually maintain or carry your old prescriptions and reports w/

80 responses

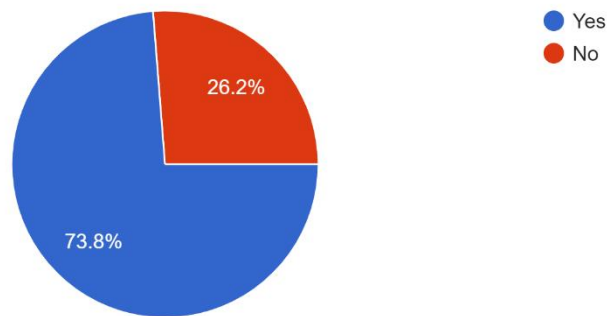


Figure 11- Awareness on digital services

- Majority (73.8%) of respondents (59) have to maintain/carry their old prescriptions when they visit a doctor
 - The remaining respondents were either not aware about storage of digital treatment history or their healthcare provider does not provide facility to digitally store patient's past history

How satisfied will you be if you didn't have to maintain or carry your old prescriptions and reports when you visit a doctor? (1 being least satisfied and 5 being highly satisfied)

80 responses

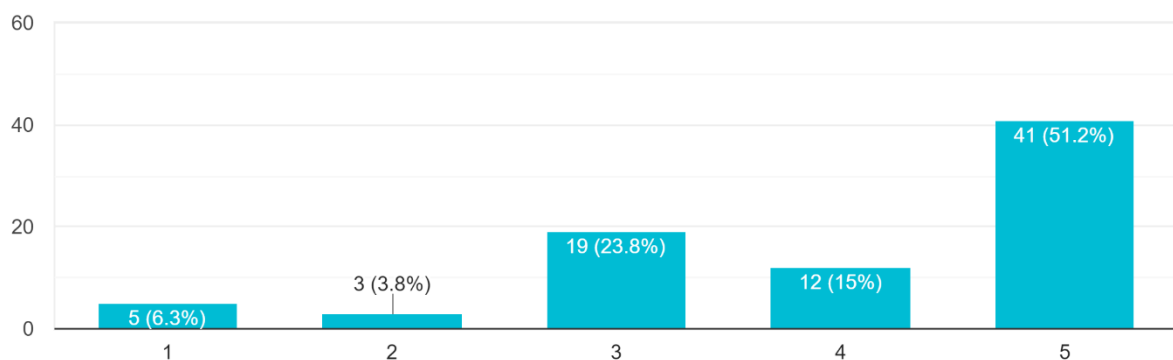


Figure 12 – Satisfaction rate on Digital services

- 66% of the respondents said they'll be more than satisfied if they didn't have to maintain/carry their old prescriptions and reports when they visit a doctor

Are you aware that some hospitals now maintain digitized records of your treatment history for future use and access?

80 responses

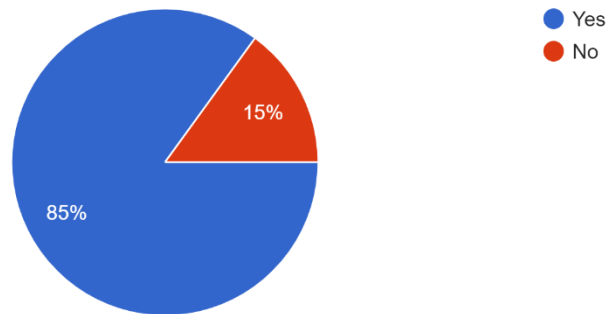


Figure 13- Awareness on digital services

- 85% (68) of respondents said they were aware that some hospitals now maintain digitized records of their treatment history for future use and access
 - Male (86.1%) respondents showed more awareness than Female (84.1%) respondents

gender	unaware_digital_history	aware_digital_history
Female	0.159091	0.840909
Male	0.138889	0.861111

Do you know that some hospitals allow you to access your lab reports online without visiting the hospital?

80 responses

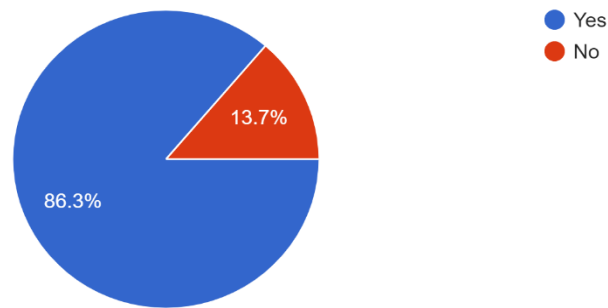


Figure 14 – Awareness on digital services

- 86.3% (69) said they were aware that some hospitals allow them to access their lab reports online without visiting the hospital
 - Female (90.9%) respondents were more aware than male (80.6%) respondents on accessing their lab reports online

gender	unaware_online_reports	aware_online_reports
Female	0.090909	0.909091
Male	0.194444	0.805556

Are you aware that in case you get admitted in a hospital, your doctor can see your reports, vitals, prescriptions without being present in the hospital in real-time?

80 responses

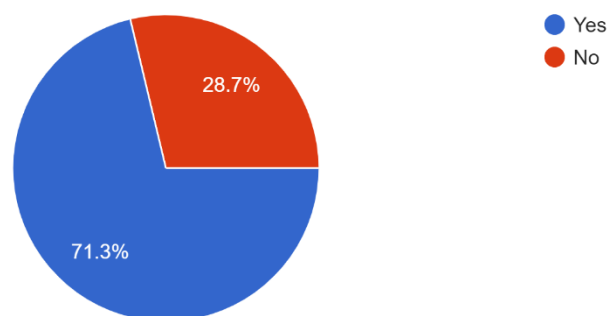


Figure 15 – Awareness on digital services

- 71% (53) respondents were also aware that their doctor can see their reports, vitals, prescriptions without being present in the hospital in real-time in case they get admitted in a hospital

11. Awareness on digital mode of consultation

Are you aware that you can consult a doctor through video call or phone call?

80 responses

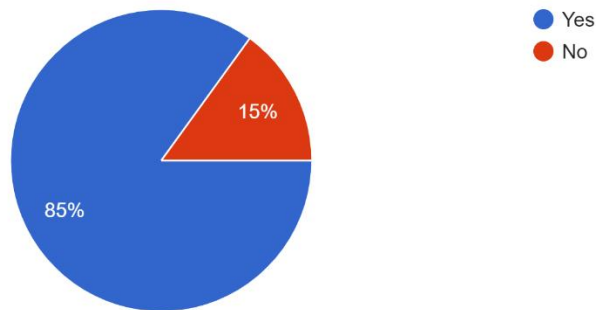


Figure 16 – Awareness on digital mode of consultation

- 85% (68) respondents said they were aware that they can consult a doctor through video call or phone call
 - Female (86.4%) respondents were slightly more aware than their Male (83.3%) counterparts on telemedicine based mediums of consultation

gender	unaware_telemedicine	aware_telemedicine
Female	0.136364	0.863636
Male	0.166667	0.833333

12. In the next set of questions, the respondents experience and preference of telemedicine mediums were assessed.

Have you ever consulted with a doctor on call or video?
80 responses

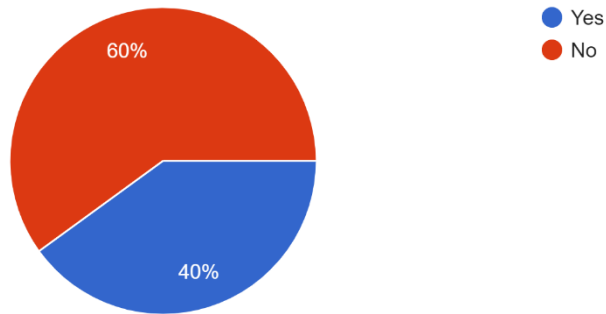


Figure 17 - Digital consultation preference

- 40% (32) respondents said they had consulted with a doctor on call or video

On a scale of 1-5 , how would you rate the experience of following mediums of consultation?

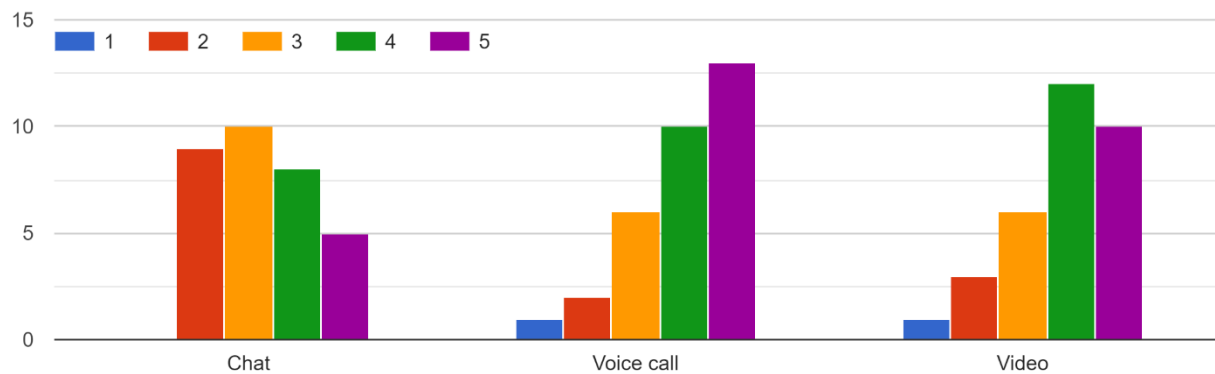


Figure 18 – Online consultation rating

- Respondents rated their experience of Voice Call (71.9%) and Video (68.8%) consultation highly

Which option do you prefer MOST?

32 responses

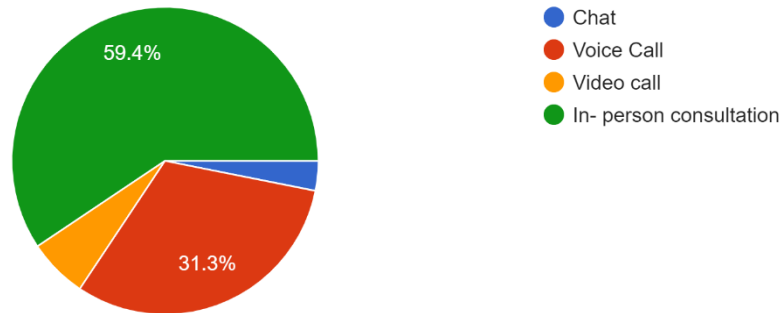


Figure 19- Digital consultation preference (most preferred)

- 59.4% (19) respondents choosed In-person consultation as the most preferred medium of consultation followed by 31.3% (10) voice call

Which option do you prefer LEAST?

32 responses

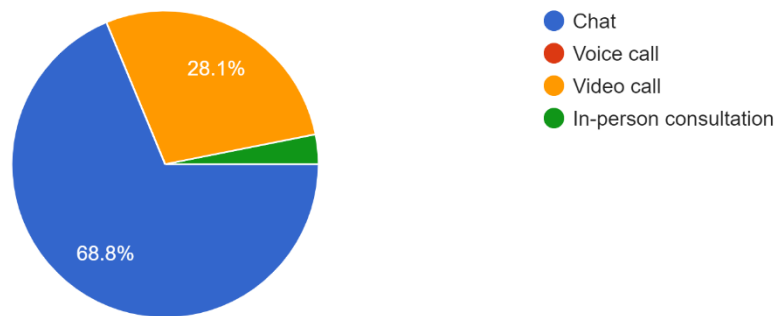


Figure 20 – Digital consultation preference (least preferred)

- 68.8 % (22) Respondents preferred chat the least.
- Also, Out of the total respondents who visit multiple speciality hospital 63.83% make online appointments
- 73 % of the respondents who visit private hospitals prefer to engage with a healthcare facility which provide 24*7 consultation at a cost

CONCLUSION

As part of a trillion-dollar industry, hospitals can greatly benefit from digitization. In fact, some hospitals already use technology to ensure better patient management and care. While a few in the industry complain about the new ways for healthcare deliverance, the ones who have adopted these new ways reap rewards of the first-mover advantage that has strengthened their position for years to come.

Digitization makes it easier for patients and hospital professionals to remain on the same page. As seen from the survey most patients are aware of the offerings provided by their choice of hospitals. Also, gone are the days when a patient had to maintain a thick file of medical records or stand in queue for appointment for every medical appointment. Particularly with medical emergencies, patients used to be at the mercy of the attendants who may or may not be acquainted with the patient's profile. Digitization has removed these roadblocks to keep both patients and their doctors well informed of every situation.

Although awareness levels are high among patients of these initiatives, some use a hybrid approach of sticking to the old traditions related to some aspect areas such as not using online booking that frequently or consulting a doctor in person or preferring a call instead of video based platforms which are more efficient mediums.

To address these issues, hospitals will need to deliver the last mile push using digital media for higher awareness and adoption of these services. Demonstrations can also go a long way in helping patients switch from preferring traditional solutions to digital ones.

Digitization is growing rapidly and is clearly here to stay. Despite being shunned by professionals and patients on some fronts, the technology is rapidly becoming a norm and embracing it will only benefit the patients.

SUGGESTIONS

- Hospitals should identify the inhibitions of consumers and try to end them to enable transition to telemedicine
- A good search ranking or online advertisement campaign can help acquire more customers. Hospitals should increase their digital marketing (SEM) and search ranking (SEO) initiatives as searching for doctor online is the second most common action performed by someone when they fall sick
- Telemedicine benefits for patients should be promoted with a focus on time saving for patients to overcome dissatisfaction. Telemedicine should also be pitched as first consultation medium for higher efficiency.

REFERENCE

1. Lee, J., Kuo, Y. & Goodwin, J.S. The effect of electronic medical record adoption on outcomes in US hospitals. *BMC Health Serv Res* **13**, 39 (2013)
2. Deloitte (2018) A journey towards smart health the impact of digitalization on patient experience.
3. Gross-Fengels W, Meideck C, Seimens P, et al. PACS from project to reality. Report of experiences on full digitalization of the radiology department of a major hospital. *Radiologe*. 2002;42:119-124.
4. Scott, P.J., Curley, P.J., Williams, P.B. *et al*. Measuring the operational impact of digitized hospital records: a mixed methods study. *BMC Med Inform Decis Mak* **16**, 143 (2016)
5. Digitization of healthcare Industry: Using Technology to Transform Care – Cisco report.2018
6. Practicefusion.com,blodgehr-vs-emr,2018
7. Deloitte Report 2018 Impact of digitalization on patient experience.
8. Synapse.koreamed.orgDOI,2Fhir.2016.22.4.261
9. Deloitte.com,content,/Deloitte/global/Documents/Life-Sciences-Health-Care/us-lshc-hospital-of-the-future.2018
10. Arpost.com 2019/12/24/how-ar-and-vr-creating-ripples-healthcare-industry,2019

ANNEXURE

1. **Name-** _____
2. **Gender** _____
3. **You belong to which age group**
 - a. 20-25
 - b. 26-30
 - c. 31-35
 - d. 35-40
 - e. 40-45
 - f. 45-50
 - g. 50-60**

4.What kind of healthcare facility you usually visit?

- a. Single specialty hospital
- b. Multiple specialty
- c. Govt hospitals
- d. Clinics

5.Suppose you are sick what do you usually do?

- a. Search online for doctors
- b. Ask your friends, relatives
- c. Go to a nearby clinic
- d. Go to a renowned hospital
- e. Ask a family doctor
- f. Online consultation

6.When did you last visit a hospital?

- a. Within 30 days
- b. 30-60 days
- c. 60-90 days
- d. 90+ but less than a year
- e. 7.More than a year

7. What kind of healthcare facility did you visit the last time you were sick?

- a. Private hospital
- b. Online consultation
- c. Govt hospitals
- d. Clinics

8. How much time did you have to wait for the consultation?

- a. Instant consultation
- b. Under 15 mins
- c. 15-30 mins
- d. 30-45 mins
- e. 45-60 mins
- f. More than an hour

9. Reason for delay in consultation

- a. Previous consultations went over the time
- b. Missed the appointment
- c. Doctor was late
- d. Other reasons
- e. Not applicable (instant consultation)

10. How much time did you spend for the whole consultation process? (Includes travel time, consultation, waiting time, appointment booking)

- a. Less than 30 mins
- b. 30-60 mins
- c. 60-90 mins
- d. 90-120 mins

11. Were you aware of doctor's credentials? (Years of experience, hospital served in, specialty, etc.)

- a. Yes
- b. No

12. On a scale of 1-5, how important do you find the following about choosing a doctor?

- a. Years of experience
- b. Hospitals served in
- c. Specialty area
- d. Popularity
- e. Cost
- f. Availability

13. Is the doctor available 24*7 for consultation?

- a. Yes
- b. No

14. Are you aware of any online consultation booking app or portal?

- a. Yes
- b. No

15. Would you prefer engaging with a private hospital which gives you 24*7 consultation services? (at a cost)

- a. Yes
- b. No

16. Do you make online appointments for doctors' consultation?

- a. Yes
- b. No

17. How often do you make an online appointment for doctor's consultation? (if Yes above)

- a. Less than 2
- b. 2-4
- c. 4-6
- d. 6-8
- e. 8+

18. Do you have to make payments online at the time of booking a consultation?

- a. Yes
- b. No

19. Do you usually maintain or carry your old prescriptions and reports when you visit a doctor?

- a. Yes
- b. No

20. How satisfied will you be if you didn't have to maintain or carry your old prescriptions and reports when you visit a doctor? (range)

21. Are you aware that some hospitals now maintain digitized records of your treatment history for future use and access?

- a. Yes
- b. No

22. Do you know that some hospitals allow you to access your lab reports online without visiting the hospital?

- c. Yes
- d. No

23. Are you aware that in case you get admitted in a hospital, your doctor can see your reports, vitals, prescriptions without being present in hospital in real-time?

- a. Yes
- b. No

24. Are you aware that you can consult a doctor through video call or phone call by booking online appointment?

- a. Yes
- b. No

If yes mention-

25. Have you ever consulted with a doctor on call or video or chat?

- a. Yes
- b. No

If yes mention-

26. On a scale of 1 – 5, how would you rate the experience of following mediums of consultation:

- a. Chat
- b. Voice call
- c. Video

27. Which option do you prefer MOST:

- a. Chat
- b. Voice call
- c. Video
- d. In-person consultation

28. Why?

29. Which option do you prefer LEAST:

- a. Chat
- b. Voice call
- c. Video
- d. In-person consultation

30. Why?