

STUDY ON THE SCOPE OF TELEMEDICINE SERVICES DURING THE PANDEMIC

Dissertation Submitted to



The IIHMR University, Jaipur
for the partial fulfillment for the award of the degree of
Master of Business Administration (MBA)

in

Hospital and Health Management

by

AJIL R

Under the Supervision and Guidance of

Dr. Vinod Kumar S.V

2021

STUDY ON THE SCOPE OF TELEMEDICINE SERVICES DURING THE PANDEMIC

Dissertation Submitted to



The IIHMR University, Jaipur
for the partial fulfillment for the award of the degree of
Master of Business Administration (MBA)

in

Hospital and Health Management

by

AJIL R

Under the Supervision and Guidance of

Dr. Vinod Kumar S.V

2021

DECLARATION BY STUDENT

I hereby declare that this dissertation title “**Study on the scope of telemedicine services during the pandemic**” is the bonafide record of my original researchwork. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature)

Ajil. R

03/07/2021

TO WHOMSOEVER IT MAY CONCERN

Date: 01-07-2021

This is to certify that **Ajil R** has successfully completed his tenure as a Business Development Consultant from 1st April 2021 to 30th June 2021 at Impact Guru Technology Ventures Pvt. Ltd. His performance during the tenure was found to be good.

We wish him all the very best for his future endeavors.

Regards,

A handwritten signature in blue ink, appearing to read "Sandeep Kumar Tripathy".

Sandeep Kumar Tripathy
(Senior VP Business Development)
Impact Guru Technology Ventures Pvt. Ltd

CERTIFICATE

This is to certify that dissertation titled **Study on the Scope of Telemedicine services during the Pandemic** is a record of the research work undertaken by Ajil R in partial fulfillment of the requirements for the award of the degree of MBA Hospital and Health Management from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific and analytical.

Dr. Vinod Kumar SV

Professor, IIHMR University, Jaipur

07/03/2021

Dr. Dhirendra Kumar

Dean, IIHMR University, Jaipur

07/03/2021

ABSTRACT

Title –

STUDY ON THE SCOPE OF TELEMEDICINE SERVICES DURING THE PANDEMIC

Background-

Telemedicine is defined as the delivery of the healthcare services, remotely, by all healthcare professionals using the information and communication technologies for the diagnosis, treatment and prevention of diseases and injuries. The healthcare delivery is really challenging in India especially during the Covid time. Telemedicine has a number of benefits such as the reduce the accessibility and availability of healthcare services and increase the scope of healthcare delivery.

Objectives-

The study was conducted to find the scope of telemedicine services, the perception the community have towards the services and the medical specialties they consulted using the telemedicine services.

Methodology-

The study is a cross-sectional study in nature. The method included a questionnaire-based survey circulated among the respondents above the age of 18 years who use WhatsApp. The sampling technique is convenience sampling. The questionnaire composed of two parts for capturing the sociodemographic information and telemedicine services information respectively,

Results-

The results shows that majority of the respondents (89%) are aware about telemedicine and more than half of the respondents (55%) have availed the telemedicine services. Respondents from both rural and urban are have proper knowledge about the telemedicine services. The major reasons that the respondents raised for not availing telemedicine services are they prefer physical consultation and lack of their knowledge. Respondents who got infected with Covid-19 also used telemedicine services, which actually shows the importance of treatment availability. The community used telemedicine services to consult general specialty and super specialty consultants. As majority of the respondents (33) consulted general medicine services. The technical glitches and incomplete discussion were the major limitation the respondents faced.

Conclusion-

Telemedicine services become popular among the community irrespective of their area of residence, education, gender, occupation and other sociodemographic background. Respondents from all the section have availed telemedicine services. Among the geographical disparity, respondents from rural areas availed telemedicine more.

Telemedicine is a viable healthcare delivery model keeping in mind that comprehensive, compassionate and professional health can be meted out to the community in the comfort of their homes. Telemedicine served to reduce the inequalities in healthcare accessibility and availability during the period and provided services remotely through various sources. The community actually utilized the telemedicine services and only some people are not aware about the telemedicine services. The community is still ready to avail the services if they get the services.

ACKNOWLEDGEMENT

The successful completion of internship and outcome of this project required a lot of guidance from different people and I consider myself fortunate to have so many people around to guide me.

I express my deepest gratitude and special thanks to Mr. Sandeep Tripathy, Vice President-Business Head (ImpactGuru) for his inspiring guidance, outstanding cooperation and constant encouragement.

I feel highly elated to keep on records of my sincere gratitude to my mentor guide Dr Vinod Kumar S.V, Professor, IIHMR University, Jaipur for his constant encouragement, support, sagacious guidance and inspiration.

I am extremely indebted to all members of the business development divisions of ImpactGuru for their continuous support during my internship.

I express my sincere gratitude to all respondents who trusted and given their consent for participating in my study. Lastly, I would also like to thank my Parents for their blessings and support, without it would have been difficult to complete the project in scheduled time.

The successful completion of the internship and outcome of this project required a lot of guidance from different people, and I consider myself fortunate to have so many people around to guide me.

Thanks to one and all.

Ajil R

TABLE OF CONTENT

S.No.	CONTENT	PAGE
	LIST OF FIGURES	10
	LIST OF TABLES	11
	LIST OF ABBREVIATIONS	12
1.	INTRODUCTION	13
2.	BACKGROUND	15
3	RATIONALE	17
4	LITERATURE REVIEW	18
5	RESEARCH QUESTIONS	22
6	RESEARCH OBJECTIVES	22
7	MATERIALS AND METHOD	23
8	RESULTS & FINDINGS	24
9	DISCUSSION	37
10	CONCLUSION	38
11	RECOMMENDATIONS	39
12	LIMITATION	40
13	ANNEXURE	41
14	REFERENCES	46

LIST OF FIGURES

Fig 2.1	The process flow of telemedicine services
Fig 8.1	Use of different social media platforms by the respondents
Fig 8.2	Use of online transaction platforms/ Wallets by the respondents
Fig 8.3	The main reasons for not being availed any type of telemedicine services
Fig 8.4	The medical specialists the respondents consulted through telemedicine services
Fig 8.5	The main reason for adopting Telemedicine services
Fig 8.6	The benefit of using Telemedicine among the respondents
Fig 8.7	The platform which was used for availing the Telemedicine services
Fig 8.8	The limitations experienced by the respondents during the Telemedicine consultation.
Fig 8.9	The user satisfaction after using Telemedicine services

LIST OF TABLES

Table 8.1	Sociodemographic characteristics and use of telemedicine services
Table 8.2	Table showing the data of the respondents who availed telemedicine services

LIST OF ABBREVIATIONS

WHO : World Health Organization

TM : Telemedicine

RM : Registered medical practitioners

ATM : Appropriate for Telemedicine

NATM: Not appropriate for Telemedicine

1.INTRODUCTION

India is the second most populous country in the world with the population of more than 120 crores. (1)

“The World Health Organization recommends a doctor–population ratio of 1:1000 in India, while the current doctor population ratio is only 0.62:1000” (2). This ratio is more apprehensive in the wake of COVID-19 outbreak, so an easy way to reach out to the patient in need can be through telemedicine services at least in some part of the country.

WHO has defined telemedicine as, “The delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities.” (4) The word “telemedicine” literally translates to ‘healing at a distance’. It often is used as the umbrella term to encompass health care delivery in addition to other activities such as education, research, health surveillance, and public health promotion (6).

Some of the best examples of the successfully established telemedicine services in India are mammography services at the Sri Ganga Ram Hospital, Delhi; Oncology services at Regional Cancer Center, Trivandrum; surgical services at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow and many more in the list. (6,7).

Private hospitals also showed interest in the field. Some of the major private sectors in India in telemedicine services include Narayana Health, Apollo Telemedicine Enterprises, Asia Heart Foundation, Escorts Heart Institute, Aravind Eye Care and Amrita Institute of Medical Sciences. (7)

According to the report of Statista Research Department, the approximate smart phone users in India was estimated to reach over 760 million in 2021. The users can avail the telemedicine services if they are aware about the operation of a smart phone. Telemedicine is one of the latest services which helps people to get the health services quickly.

The impact of telemedicine services including the quality-of-service delivery to community is a major concern for health delivery during the pandemic. Telemedicine can strengthen

primary healthcare delivery and can reduce the prevailing socio-economic disparities in healthcare access over the long term. In response to the Covid-19 pandemic, the telemedicine services got expanded to maintain the essential medical care. Even after the Covid-19 pandemic gets controlled, the telemedicine has the potential to address many limitations and immense scope of developments. (7)

So, in order to reduce the gap in the healthcare functionality telemedicine will be a major stepping stone in India. However, there has been a concern on the telemedicine practice. The registered medical professionals faced lack of clear guidelines, raised doubts on the telemedicine practices. The 2018 judgement of the High Court of Bombay had created uncertainty about the place and legitimacy of telemedicine because an appropriate framework does not exist.

On March 25th, 2020, the Ministry of Health and Family Welfare, India, had released the “Telemedicine Practice Guidelines” for allopathic registered medical practitioners (RMPs). This guideline is prepared by the Board of Governors, Medical Council of India, in partnership with the National Institution for Transforming India (Aayog). This would be included in the Appendix V of 2002 Regulations on “Professional Conduct and Ethics” under the Indian Medical Council Act, 1956.

Initially in India, there was no legalization or guidelines on telemedicine practices. The existing provisions under the Indian Medical Council Act 1956, the Indian Medical Council, Drugs & Cosmetics Act, 1940 and Rules 1945, Clinical Establishment Act, 2010, Information Technology Act, 2010, Information technology Act, 2000 and the Information Technology Rules 2011 primarily govern the practice of medicine and information technology. Gaps in legislation and the uncertainty of rules pose a risk for both the doctors and their patients.

All the established guidelines will help to realize the full potential of the technological advancement for health care delivery. This guideline provides norms and protocols relating to the doctor- patient relationship, issues of negligence and liability, evaluation of the services, management and treatment, informed consent, continuity of care, patient history, referrals for emergency services, medical records, privacy and security of the patient records and exchange of information, prescribing and reimbursement, health education and counselling. (16).

The Ministry of Health and Family Welfare introduced the e- Sajneevani OPD as a free teleconsultation Service. The service provides audio-video consultation services, e-prescription etc.

2.BACKGROUND

Telemedicine has a number of benefits. It can increase the timely accessibility to appropriate interventions such as the rapid access and some services which may not be otherwise accessible could be accessed.

The healthcare delivery is really challenging in India especially during the Covid time. The particular reasons such as the large geographical distances and the limitation in the available resources.

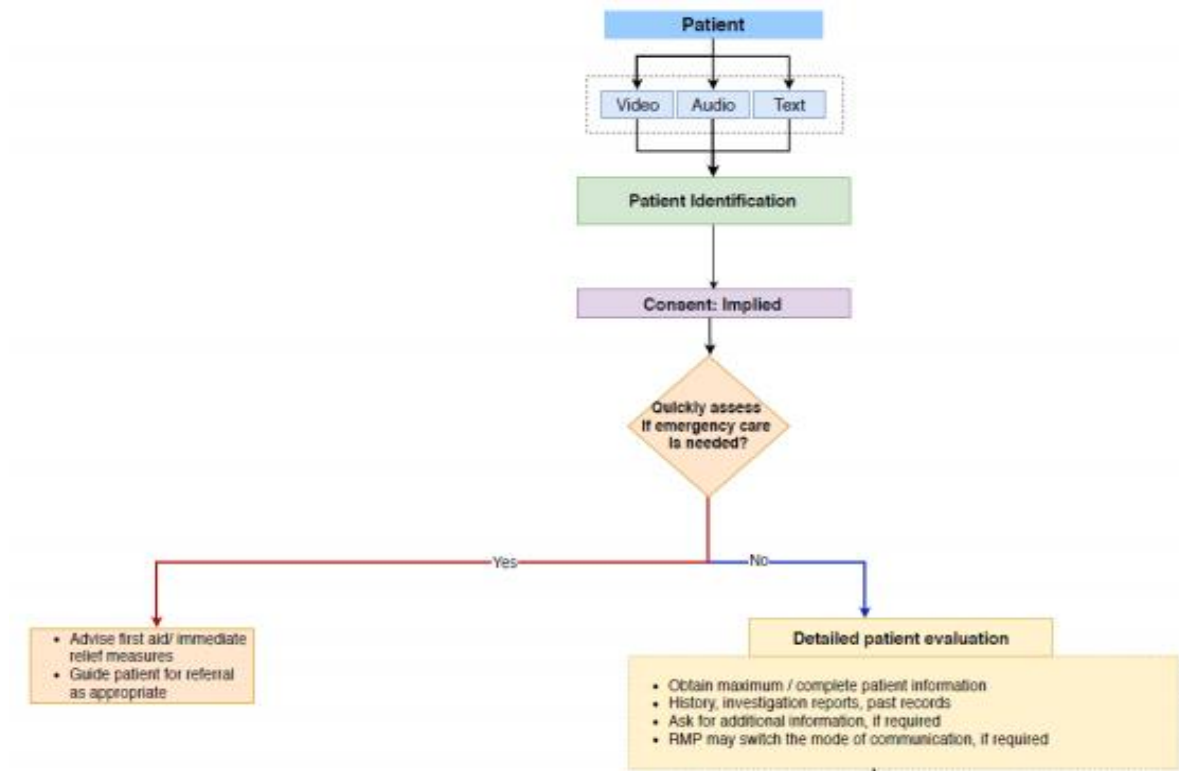
The advantages of telemedicine can be stated as the cost saving and patients don't need to travel to distant places for the consultation and treatment. Telemedicine can also play an important role in reducing the cases where there is no need for the patients to physically see the consultant.

The Covid-19 pandemic posed unique challenges. Even though telemedicine will not solve all the challenges, but it can utilize to evaluate and manage the patients. Telemedicine system can be conducted to prevent the risk to both patients and healthcare professionals. It can also provide rapid medical service to the community. Mainstreaming telemedicine services will reduce the inequities and barriers to the access.

However, there has been concern on the practice of telemedicine. Lack of knowledge within the community can be a harbinger for the proper availability of the services.

The population must be aware about the services offered and it will increase the reach of the services. With telemedicine services, there is really a higher chance of maintenance of records and it must be documented. The services must be done with compliance to the existing legal framework.

Figure 2.1: The process flow of telemedicine services



Source: Ministry of Health & Family Welfare, Government of India website.

3.RATIONALE

After the Covid-19 disease transmission people from both urban and rural showed interest of accepting things using the service of devices and online. This study was conducted to find whether the community have availed the Telemedicine services. The importance of treatment availability and treatment continuity is a major stepping stone for the success of healthcare delivery. The curtailing condition have wreaked havoc in the total healthcare system delivery. The main aim of this study is to find their perception and the type of specialty services available on the telemedicine services.

This study was also conducted to know the type of services they availed and the doctor specialist they consulted and if they don't use any type of telemedicine ,then what was the major reason for that. The result will give some information about the areas to be focused more for expanding Telemedicine services further.

4.LITERETURE REVIEW

S. No.	Title and Author	Study Location, Year	Sampling Technique	Study findings and Salient features
1.	A Phased Approach for the Adaptation of Telemedicine in Diabetes Management, Vinaytosh Mishra	India, 2020	An unstructured interview of a diabetes specialist.	The study points out the phased approach for the adaptation of Telemedicine in managing diabetes. The study classified patients into two groups and their dependence on Telemedicine services. The people appropriate for falling under group 1 (ATM) require less physical interaction, or can be performed by a less skilled healthcare professional or by the patient. The components falling under group 2 (NATM) require relatively more physical interaction.
2.	Telemedicine Across the Globe-Position Paper From the COVID-19 Pandemic Health System Resilience PROGRAM (REPROGRAM) International	World, 2020	A quantitative study on existing telemedicine frameworks and policies of various countries/regions and their implementation stage are analyzed using Gladhart and	The study enlisted that there are many issues related to the implementation of Telemedicine services such as the limited access to technology, lack of knowledge, language and socioeconomic barriers. The existing systems must be developed using various implementation depending on the situation of the country.

	Consortium (Part 1), Sonu Bhaskar et all		Pan American Health Organization (PAHO/WHO) hat models.	
3.	Pediatric subspecialty telemedicine uses from the patient and provider perspective. Rajdeep Pooni et all.	USA, 2021	A cross- sectional mixed- methods study of patients, families, and providers participating in telemedicine pediatric subspecialty at the Stanford University hospital.	The study showed that telemedicine has delivered care to pediatric patients during the pandemic and people easily adapted to this new system with a good satisfaction rate. The providers felt that it was safest for the patients to conduct visits virtually. The patients gave positive reviews and rating for the services.
4.	Evaluation of patient and doctor perception toward the use of telemedicine in Apollo Tele Health Services, India. Rajesh V. Acharya ¹ and Jasuma J. Rai	India, 2016	A cross sectional study among 122 participants (71 doctors and 51 patients).	The study conducted among the doctor and patient perception toward the use of telemedicine services showed that telemedicine in healthcare could prove to be useful to patients in distant regions and to rural doctors in India. In the near future, telemedicine can be considered as an alternate to face to face patient care. 90 % of the participants found that the telemedicine is cost

				effective. The problems encountered with the telemedicine services were technical issues, time scheduling by the doctors, some patients felt uncomfortable to face camera.
5.	Implementation of telemedicine system to improve and expand covid-19 screening and evaluation: a reflection on action research approach and the management of the possible spread of the pandemic, Mohammed Aslam Khan	India, 2020	A longitudinal study on the COSET Telemedicine system.	The study found that the implementation of Telemedicine system with the mobile application is the best way to implement social distancing. This can improve the growing shortage of health care system. Especially the treatment associated with Covid-19 patients.

6	Impact of COVID-19 pandemic lockdown on occupational therapy practice and use of telerehabilitation – A cross sectional study, B. Ganesan et al.	India, 2021	Cross sectional survey study design conducted using web based google online form April 2020-May 2020.	The study conducted among the occupational therapist found that 60.7% of Occupational therapists used Telemedicine service as the telerehabilitation for their patients. Telerehabilitation system was implemented during the lockdown for children with autistic problems and other medical conditions. Thus, telemedicine could help the continuity of care and treatment.
7.	A Cross Sectional Study to Assess the Impact of Telemedicine on Health Care Services in Primary Health Centre, North India, A.Singh et al	India, 2020.	A cross sectional study on all the patients attended telemedicine unit.	The study showed that 72 % of the study subjects had not previously heard about telemedicine. The common barrier faced by the participants to use the telemedicine was because of the non-user-friendly software.
8	Turning a New Chapter in Neurosurgery Outpatient Services:	India, 2021	A cross sectional study through telephonic survey of neurological	The results showed the satisfaction of the users. Majority of the participants agreed with the telemedicine usage and the challenges they

	Telemedicine A “Savior” in this Pandemic, Amol Rheja et all.		patients who availed telemedicine services.	faced were also found. Many of the respondents have smartphones, but only a fraction of them were consulted using video-based teleconsultants. The service was made on time as per the appointment. The participants faced challenges like the poor connectivity and poor verbal communication and discussion.
--	--	--	--	--

5.RESEARCH QUESTIONS

1. What is the scope of telemedicine healthcare services?
2. What perception do the community have towards the telemedicine services?
3. Which medical specialties used telemedicine the most to interact by the community during the period?

6.RESEARCH OBJECTIVES

1. To evaluate the scope of telemedicine services during the pandemic.
2. To explore the perception of the community, have towards telemedicine services during the pandemic.
3. To assess the preferences among different medical specialties towards telemedicine services.

7.MATERIALS AND METHODS

Nature and the scope of the study

This is a cross sectional descriptive study and it seeks to identify the growth of telemedicine services among the community. The major reasons for not being availing any type of telemedicine services are also aimed in this study. This study also aims at identifying and understanding the type of specialties they consulted and the major problems they faced during the consultation, their awareness regarding the telemedicine services available.

Sampling

The study included the respondents with ages 18 onwards, with consideration of the respondents with ages 18 year onwards as the age group play a role while seeking telemedicine healthcare services. Diversity of the respondents in the sociodemographic factors gave a wide perspective and input about the telemedicine services. The diversity will also provide an insight on the use of technology for availing the proper healthcare services.

Primary data was collected from 200 respondents using a questionnaire. The participants were a mixture of different categories such as people from urban and rural area, people of different age groups and people with different income. The database included the direct and indirect contacts of the author from the school, college and the society. Special attention was taken to ensure a diverse mix to the extent possible, in terms of age group, gender and rural and urban community.

The questionnaire was shared to the respondents with the consent, and the collected data was analyzed on MS-Excel. The study duration was of three months started from 22 March, 2021 and ending on June 19,2021.

Data Collection Process

The study is a quantitative and cross-sectional study in nature. The survey was done with all those who are willing to participate were asked to fill the questionnaire after taking the consent. The questions were composed of closed-ended and open ended; self-administered, and developed in English language.

There were be two parts in the questionnaire. 1st part was based on the sociodemographic features and the 2nd part consisted of a total of 14 questions regarding the perception and experience of the participants. The overall sample of 200 participants was reached using convenience sampling.

The inclusion criteria were that all the respondents who have smartphones and willing to take part in the study. The exclusion criteria were participants who did not complete the questionnaire

Research Tool

The questionnaire's content included various parameter related to telemedicine services. It has been included with various platforms and types for seeking telemedicine services for the community. Another aspect included on the questionnaire's part is the reason for not availing any type of telemedicine services by the population who didn't use any type of telemedicine services. Other than the aforementioned aspects, the study helps in understanding the awareness of the respondents and their willingness to avail telemedicine services, any regional disparity in availing telemedicine services, the accessibility among different category of the community, the utilization of the government run telemedicine service e-Sanjeevini. The questionnaire was developed after the review of literature, findings and then understood and identified the specific issues pertaining to the telemedicine services.

Data analysis

The MS- Excel software was used to analyze the data collected from the respondents and the results & findings are presented.

8.RESULTS & FINDINGS

The graphical and tabular representation of the result of the survey is given below.

Table 8.1 : Sociodemographic characteristics and use of telemedicine services

<u>Sociodemographic factors</u>	<u>Number (%)</u>	<u>Aware of telemedicine services</u>	<u>Availed Telemedicine services</u>	<u>Aware but not availed telemedicine services</u>	<u>Showed interest to avail telemedicine</u>
<u>Age (years)</u>	<u>N</u>				
<u>18-34</u>	102 (51%)	87 (85 %)	44 (43 %)	43 (42%)	42 (41%)
<u>35-49</u>	48 (47 %)	42(87%)	22 (46%)	20 (41%)	16 (33%)
<u>50 and above</u>	50 (49 %)	49 (98%)	43 (86%)	06 (12%)	5 (10%)
<u>Total</u>	200	178 (89%)	109 (55%)	69 (35%)	63 (32%)
<u>Gender</u>					
<u>Male</u>	86 (43%)	77 (89%)	44	33	30
<u>Female</u>	114 (57%)	101 (88%)	65	36	33
<u>Area of Residence</u>					
<u>Urban</u>	95 (47%)	82 (86%)	41	68	36
<u>Rural</u>	105 (53%)	96 (91%)	68	28	27
<u>Level of Education</u>					
<u>High School</u>	07 (3.5%)	07 (100%)	0	0	0
<u>Secondary</u>	30 (15%)	29 (96%)	27	2	2
<u>Graduation</u>	77 (38.5%)	62 (80%)	34	9	27
<u>Post-Graduation</u>	86 (43%)	80 (93%)	41	39	34

Occupation

<u>Govt Job</u>	18 (9%)	18 (100 %)	15	3	1
<u>Private Job</u>	119 (59%)	115 (96%)	63	52	42
<u>Student</u>	26 (13%)	21 (80%)	11	10	14
<u>Business</u>	20 (10%)	20 (100%)	17	3	2
<u>Retired</u>	4 (2%)	4 (100%)	3	0	1
<u>Unemployed</u>	13 (7%)	10 (76%)	8	2	3

- The age of the respondents varied from 18 years to 67 years with the highest respondents of from the age group 18-34, that is 102 respondents. A large number of people in this age group are generally users of most of the online services. But out of this group, only 44 (43 %) respondents availed the telemedicine services. There are 48 participants in the age group 35-49 and a total of 22 (46 %) respondents availed the telemedicine services. There are 50 participants among the age group 50 plus and a total of 43(86 %) respondents availed the telemedicine services.
- Majority respondents (43) in age group 50 and above availed the telemedicine services more.
- More respondents (15) in age group 18-34 are not aware about the telemedicine services and 58 respondents in same age group not availed any type of telemedicine compared to the other age groups.
- The male-female respondents of the study were coming to be 86-114. The participants were slightly more from the female gender.
- The urban- rural population of the respondents were coming to be 95-105. There were 58 rural-female and 56 urban-female respondents. There were 47 rural-male and 39 urban-male respondents.
- The majority of the respondents (86) were to be post graduate, 77 respondents with graduation and the least number of respondents (7) only have education up to high school. All the 7 participants with the level of education up to high school used telemedicine services.
- Majority of the respondents from the rural area (91 %) are aware about the telemedicine services, which shows that the improvement of the knowledge of the rural population. While the knowledge of telemedicine services among the respondents from urban area was 86 %.
- More than half of the respondents (119) have private jobs and 63 people used telemedicine services from the category. This class of people majorly used the telemedicine services.
- A majority of the respondents (178) were found to be aware about the telemedicine services. This shows that telemedicine service has reached to most of the community. Most of the respondents (96) from the rural area are aware about the

telemedicine services. This shows that the growth of telemedicine services beyond the rural-urban disparity.

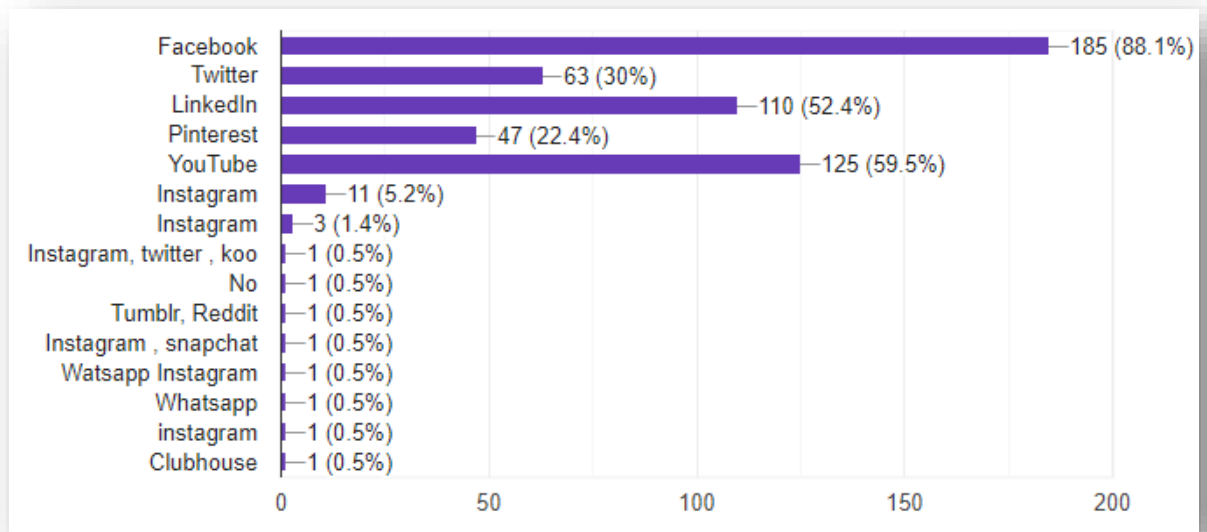
- Only 22 respondents were not aware about the telemedicine services.
- Among the 178 respondents who were aware about the telemedicine services, 109 respondents (61%) used telemedicine services. Almost 54 % of the total respondents used the telemedicine services. They used it for various reasons.
- 91 participants didn't avail any type of telemedicine services due to various reasons.
- Most of the respondents from rural area (91%) were about the telemedicine services compared to the urban area respondents (86%) who were aware about telemedicine services.
- Among the 91 respondents who never used any type of telemedicine services, 63 respondents showed their interest to avail telemedicine service for their coming consultations. This actually shows that the respondents will definitely avail the service if it reaches to them. So, the growth of telemedicine service is still there with the proportion of those who never used it.
- The respondents who never used any telemedicine services showed a positive approach for availing any the services for future and the respondents from the urban area (63 %) showed interest to avail telemedicine services.

Appropriateness of appointment scheduling for consultation		Number of times the telemedicine availed		Telemedicine use before the pandemic	Patient history taken by the consultant		Patient history not taken by the consultant
Correct Appointment Schedule	Delayed appointment schedule	Single	Multiple	Used	Not used		
102	07	66	41	52	57	102	7

Table 8.2 : Table showing the data of the respondents who availed telemedicine services

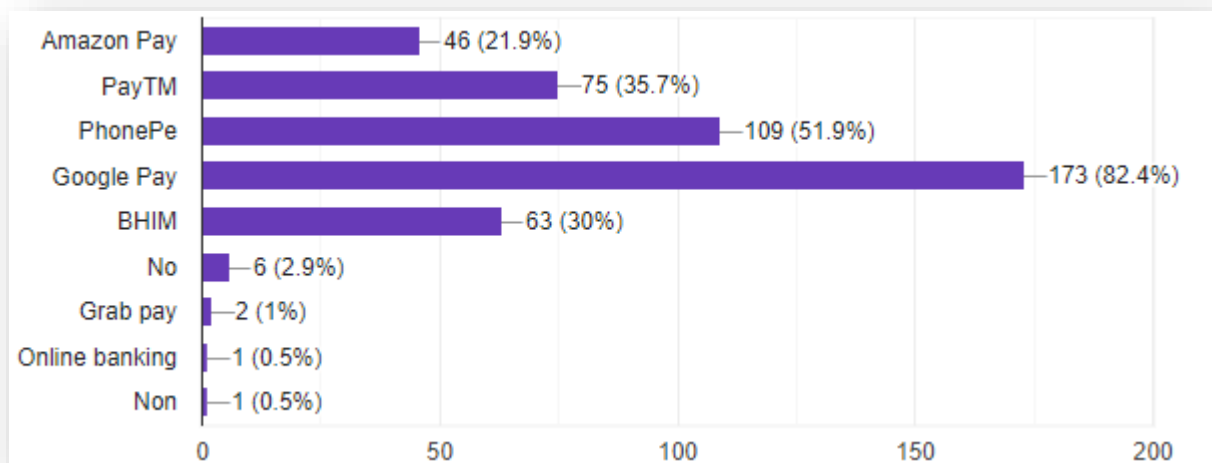
- Majority of the respondents (94 %) marked that their scheduled appointment was appropriate. This is really a benchmark for the further growth of the telemedicine services.
- More than half of the participants (66) availed the telemedicine for one time, while some of them (41) availed the services for multiple times. This shows the acceptance of the respondents with the telemedicine services.
- Almost 52 respondents availed telemedicine services before the Covid pandemic onset and the services were available before the pandemic time. This shows that the telemedicine services were common in some healthcare delivery services.
- The consultant didn't take the history of few of the participants (7). It's a mandatory step in either physical or virtual consultation to take the history of the patient by the consultant before the consultation and treatment procedure.

Figure 8.1: Use of different social media platforms by the respondents



- Majority of the respondents have account in social media platforms like facebook (185), Youtube (125) and LinkedIn (110). This shows their technical knowledge of different platforms.

Figure 8.2: Use of online transaction platforms/ Wallets by the respondents Use of different social media platforms by the respondents

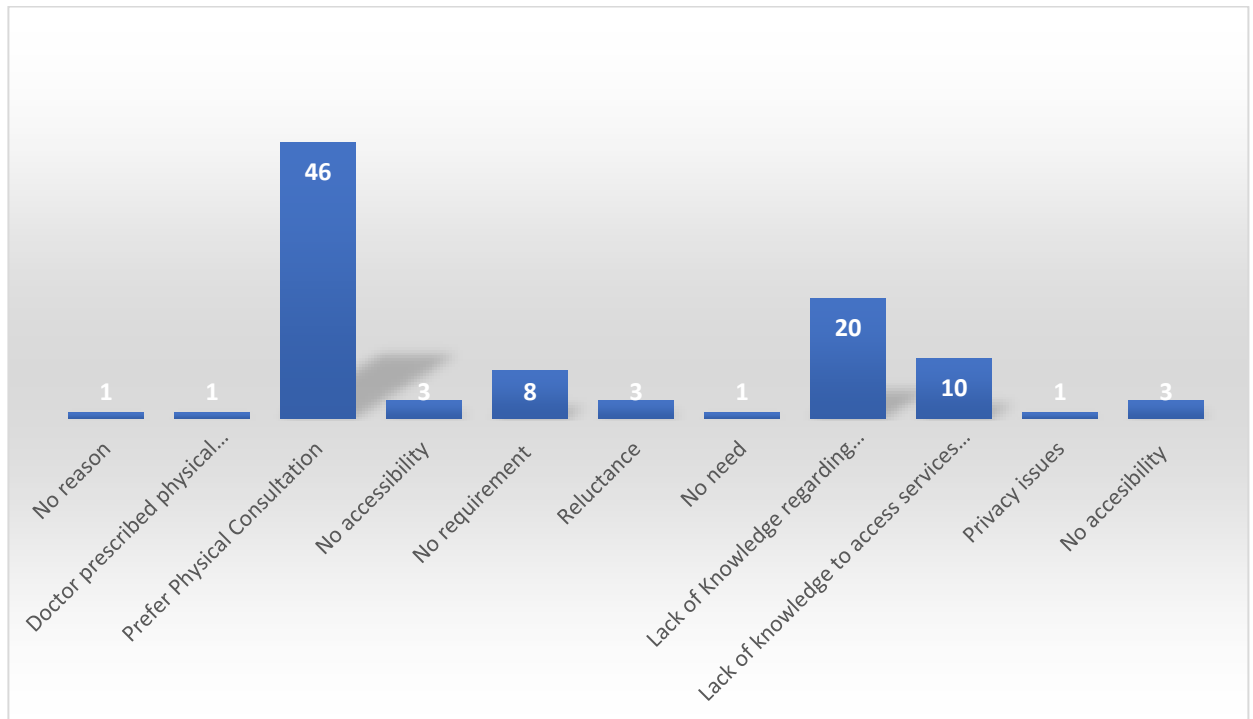


- Most of half of the respondents use the e wallet applications like Google pay, Phonepay and Paytm. 173 respondents use the wallet Google pay.

This shows that majority of the respondents could do online transactions for availing any type of telemedicine services.

Participants with the response -NO

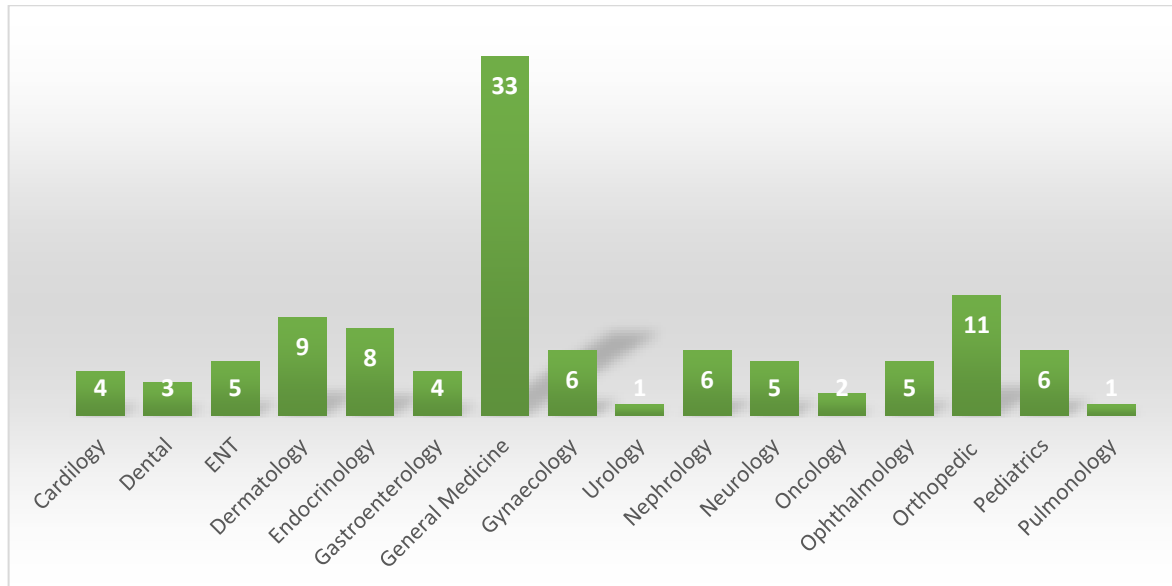
Figure 8.3: The main reason for not being availed any type of telemedicine services



- The major reason for not availing any type of telemedicine services is that the respondents prefer physical consultation rather than telemedicine services. Some respondents (15) mentioned that they lack of knowledge regarding telemedicine services. It is also important that the respondent's information and knowledge regarding telemedicine services must be improved

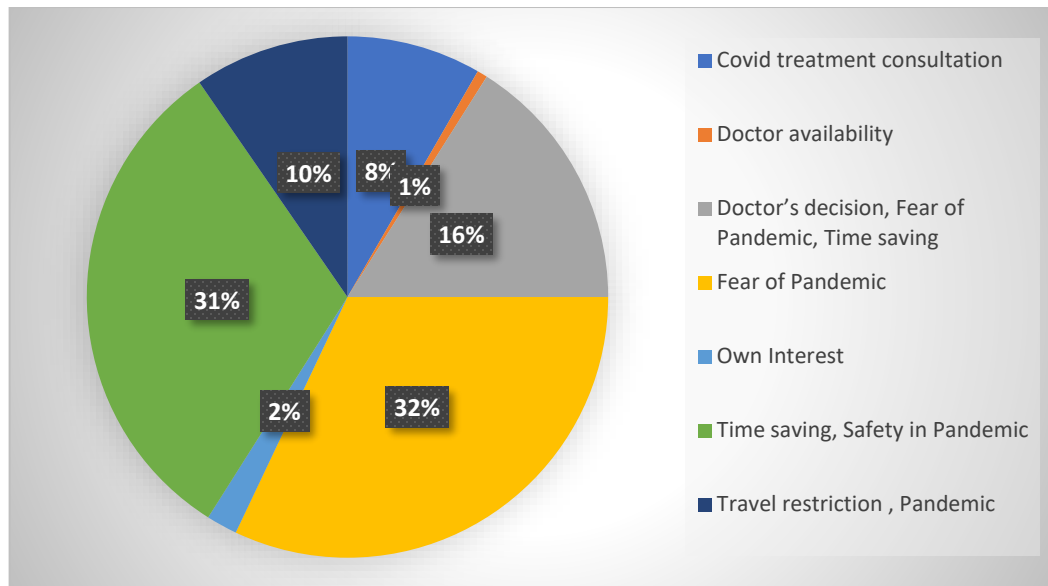
Participants with the response- Yes

Figure 8.4: The medical specialist the respondents consulted through telemedicine services.



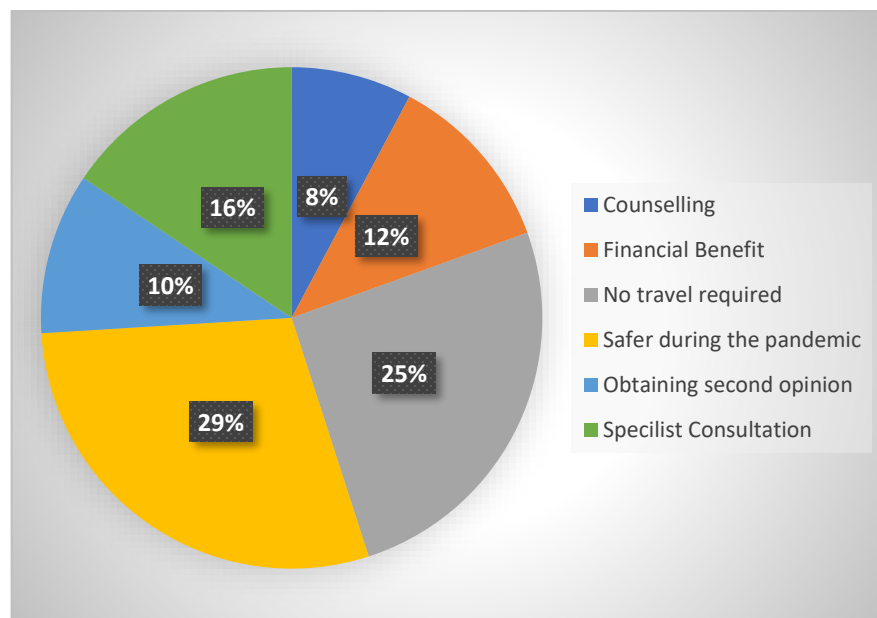
- The respondents consulted different consultants. Among that, 33 participants consulted General Medicine (31%), 11 participants consulted Orthopedics (10 %), 9 participants consulted Dermatologists, 8 Participants consulted Endocrinologist. Other departments including Cardiology, Gastroenterology, Gynecology, Nephrology, Ophthalmology, Pediatrics were also consulted. Majority of the participants availed the General Medicine services and many of the participants availed super specialty services also. The telemedicine system is not showing any constraints in the department

- **Figure 8.5:** The main reasons for adopting Telemedicine services



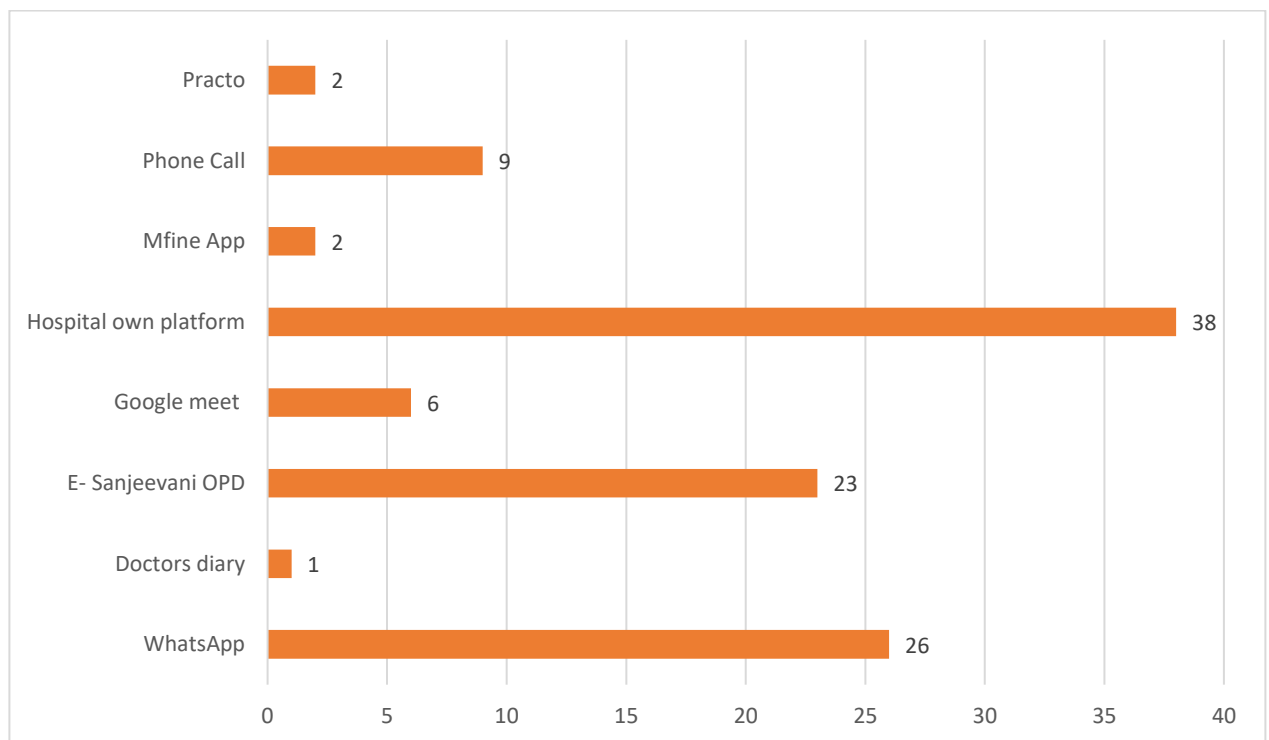
- Fear of pandemic and time saving were the major reason among the participants for availing telemedicine services. Almost half of the participants listed the reasons fear of pandemic (50), time saving (49). Other listed reasons were for Covid treatment, Doctor's decision and travel restrictions. Telemedicine is really an important step for treating Covid patients who don't need any hospital assistance.

Figure 8.6: The benefits of using Telemedicine among the respondents



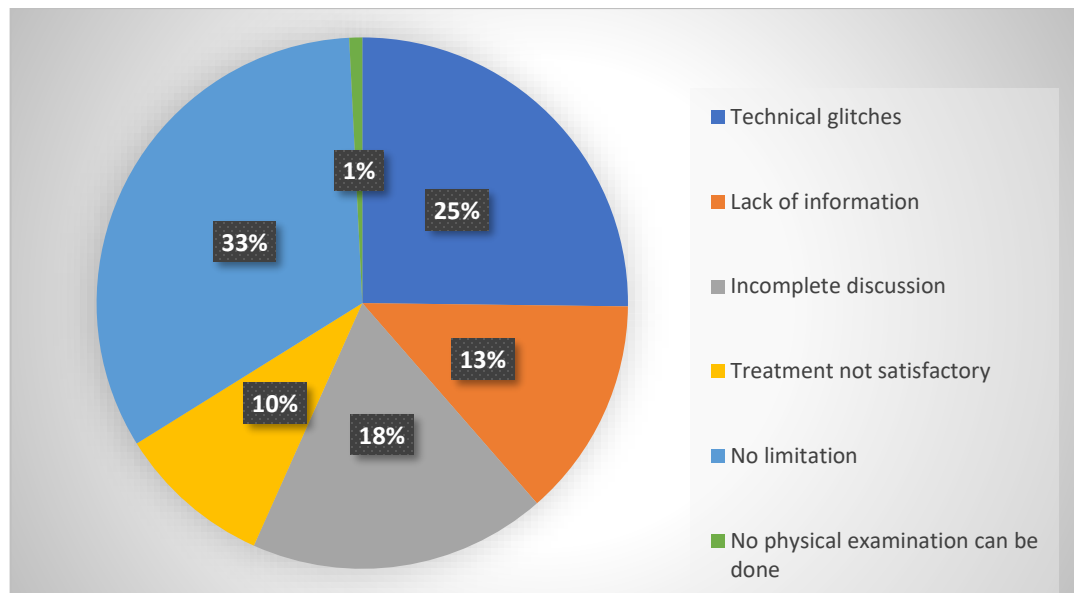
- The major benefit of the telemedicine services was listed as Safety during the pandemic (67), No travel required (59), Specialist consultation (36), Financial benefit (27), Obtaining second opinion (24), Counselling (18). The participants were really conscious about the safety of their lives and the advantage of getting the services without travelling during the pandemic time paved to avail the telemedicine services.

Figure 8.7: The platform which was used for availing the telemedicine services



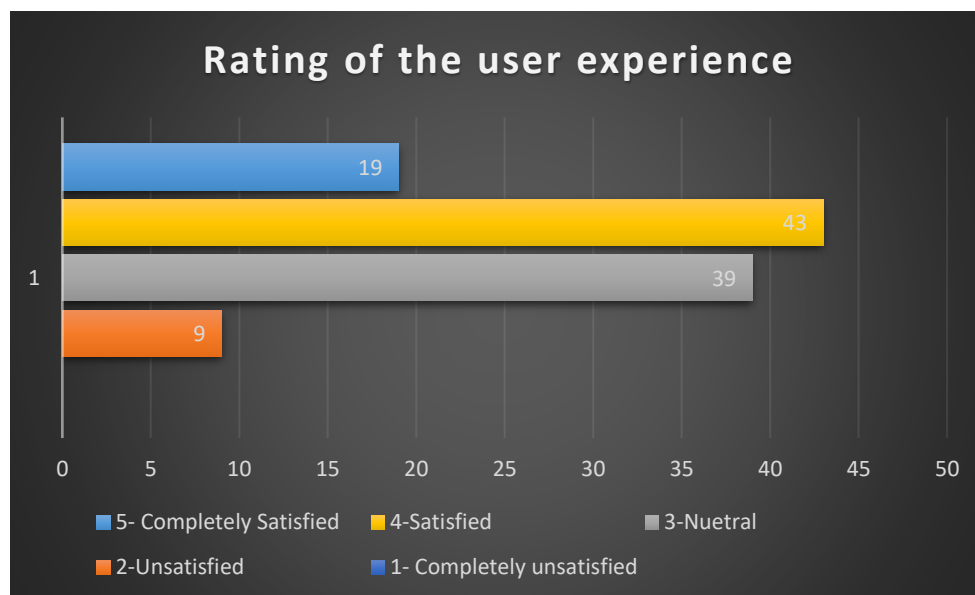
- Majority of the participants availed the services using the platform of hospital own (38), followed by WhatsApp (26), e-Sanjeevani (23), and Phone call (9). The private hospitals started developing its own application for the telemedicine services is an advancement.
- The free telemedicine platform e-Sanjeevani developed by the Union government also started reaching to the community. The use of WhatsApp for telemedicine service is the most convenient way as the number of WhatsApp users have increased including the community from different sections.

Figure 8.8: The limitations experienced by the respondents during the telemedicine consultation



- There were some limitations which were faced by the respondents. Majority of the participants (42) didn't find any limitations with the telemedicine services they availed. While the limitations they faced were technical glitches (32), Incomplete discussion (23), lack of information (17), Treatment unsatisfaction (12). The technical glitches pose the main threat for the proper delivery of telemedicine services in our country. It's the duty of the consultant to make the consultation complete and ensure that with the patient. These limitations would definitely pave way for respondents to stop availing telemedicine services. From the responses it is completely evident that the respondents faced some issues and the consultation experience didn't reach up to the level of physical consultation.

Figure 8.9: The user satisfaction after using telemedicine services, on scale of 1-5, (1 being the least and 5 being the maximum)



- The satisfaction level of the respondents was recorded using a Likert scale. Majority of the respondents (43) have marked Satisfied as their level, 39 respondents marked neutral and 19 respondents marked the highest satisfaction level- completely satisfied. Only few respondents (09) marked unsatisfied and nobody marked lowest level- completely unsatisfied.

This shows that the people acceptance is really good, and most of the telemedicine services they availed gave better outcome, and in few cases the telemedicine services didn't reach to the best outcome. The people accepted in a better way and the satisfaction level can be increased by making the service better.

- The proportion of respondents who availed the e-Sanjeevani OPD services were more from rural area as compared to the urban are. This actually shows a positive approach of people availing services from the public health services. Thus, can lead to the decrease of out-of-pocket expenditure of medical services.

9.DISCUSSION

A cross sectional study conducted from the patients of neurosurgery OP services in AIIMS, found that majority of the respondents agreed that the teleconsultation helped them during the lockdown. The respondents felt that telemedicine is beneficial for them due to the perceived reasons that less exposure to Covid-19, reduction of travel expenditure and effective utilization of time and resources. This is almost similar to the current study result. (15). Another cross-sectional study conducted among health professionals working at the government health facility in resource limiting setting, Ethiopia. From this study the factors that inhibits telemedicine system implementation in the health facility were mentioned as lack of awareness, lack of professionals and technological problem. Thus, aligning with the present study results that the limitations of the telemedicine showed technical glitches and the lack of awareness was listed as one of the major reasons for not availing telemedicine services. (19)

A study conducted at Telemedicine in times of coronavirus at a tertiary care government hospital in the state of Uttar Pradesh. The maximum consultation using telemedicine service was happened in the department obstetrics and gynecology. The study results show an upward trend of availing specialty services using telemedicine services. The participants of the current study also availed most of the specialty services. (20) An observational study to evaluate the feasibility and assess the utility of TM services in a subset a tertiary care Centre in Uttarakhand. Male patients utilized the telemedicine service almost twice more than females. Most patients sought consultation related to gastrointestinal problems. This study showed a considerable variability in the gender of patients. The study also showed the consultation of super specialty services through telemedicine services. The current study also showed the results of availing consultation in super specialty departments (21)

10.CONCLUSION

Conclusion pertaining to the telemedicine services that can be drawn from the analysis of the results are:

- Telemedicine services have become popular among the community irrespective of their area of residence, education, gender, occupation and other sociodemographic background.
- Respondents from all the section have availed telemedicine services. Among the geographical disparity, respondents from rural areas availed telemedicine more.
- Respondents who got infected with Covid-19 also used telemedicine services, which actually shows the importance of treatment availability and helped to provide adequate healthcare support virtually.
- Telemedicine is a feasible model of healthcare delivery in considering that the comprehensive, compassionate and professionals health can be delivered to the community.
- The telemedicine can be included for all the specialties and super specialty consultants without any constrains.
- The available technology on web and mobile phone based platforms can be used to spread proper information
- Telemedicine services must come with more options of comprehensive mix of services that can provide the best outcome to the community.
- The consent must be taken from the patient before the consultation as it is a standard procedure by law.
- The patient privacy must be protected when they are availing the telemedicine services using different platforms.
- The treatment history of each and every patient must be taken before the treatment and medication, it is a mandate step in both physical and virtual consultation.
- The technical glitches must be considered and the platform must be designed in a way to work without much issues during the time of interaction.
- Proper information regarding the importance and benefits of telemedicine services must be imparted to the community so that the preference for physical consultation will change and start adapting telemedicine services. The incomplete discussion was

faced by some respondents and it's actually the duty of the consultant to make sure about the treatment information delivery to the patients.

- Telemedicine served to reduce the inequalities of healthcare accessibility and availability during the period and provided services remotely through various sources. The community actually utilized the telemedicine services and only some people are not aware about the telemedicine services. The community is still ready to avail the services if they get the services.
- The pandemic fear has curtailed the people to stay inside their home and insisted the people to avail the telemedicine services. But the people have accepted the services and there is a large scope for telemedicine services to grow and increase the benefit to the people.

11.RECOMMENDATIONS

Some recommendations for strengthening the growth of telemedicine services are:

- Addressing the drawbacks and making changes to ensure the proper treatment delivery is the need of the hour.
- The importance of telemedicine must be educated to the community and the healthcare workers.
- Government can come up with more and advanced services in e-Sanjeevini OPD services, it can actually reduce the cost of healthcare and out of pocket hospital expenditure of the common community in private healthcare facilities.
- The consultants must strictly follow to take the consent and treatment history from the patient.
- The follow up consultation can be promoted using telemedicine services as it can ensure the unnecessary travel of the patient.
- Telemedicine services must be made accessible, available and affordable to each and everyone in the country.
- Patient consent is mandatory. Consent can be taken through an email, text or audio/video message. The patient's medical history and the conditions must be taken mandatory.

12.LIMITATIONS

The questionnaire was shared to the respondents who use WhatsApp and they have enough knowledge in the technology. There is a possibility that the response offered by the respondents were biased.

13.ANNEXURE

CONSENT

Hello, my name is Ajil. R, a management trainee pursuing my postgraduation from IIHMR University, Jaipur. I am conducting a study titled Study on the scope of Telemedicine services during the pandemic as part of my final year dissertation thesis. You are being chosen as the one of the respondents in the sample. This study would be done to find out the importance of telemedicine services and the findings will likely to be the insights for the future uses of telemedicine services. The findings will help to recommend further for the better application of the telemedicine services.

All your data will be confidential and only be used for the research purposes. No personal details will be taken from you.

You Email ID will not be shared and your IP address will not be tracked in anyway during the online communications related to this research.

Are you ready to participate?

Yes

No

QUESTIONNAIRE

PART-1

Sociodemographic data

1.What is your age (years)?

2. What is your Gender?

- Male
- Female

3. Please enter the name of your location

4.. Your area of residence is

- Rural
- Urban

5.What is your level of education?

- Illiterate
- Up to Primary
- Up to Middle School
- High School
- Higher Secondary
- Graduation
- Post- Graduation

5.What is your occupation?

- 1.Farmer
- 2.Skilled worker
- 3.Unskilled worker
- 4.Shop owner
- 5.Private Jon
- 6.Govt Job
- 7.Business with employees
- 8.Unemployed
- 9.Student
- 10.Others (Specify) _____

6. Do you have an account on these social media platforms (multiple options possible)

- Facebook

- Twitter
- LinkedIn
- Instagram
- Google Plus
- Pinterest
- YouTube
- Others (Specify)_____

7.Do you use any of these online transaction platforms/ Wallets (multiple options possible)

- Amazonpay
- PayTM
- PhonePe
- Mobikwik
- Freecharge
- BHIM
- Google Pay
- FreeCharge
- Others (Specify) _____

8.Do you have an active WhatsApp account?

- Yes
- No

PART-II

1. Are you aware about Telemedicine Services?

- Yes
- No

2.Have you availed any type of telemedicine services within the last 1 year?

- Yes
- No

If No, please fill question 3 and 4. If Yes, go to the question no 5.

3.what was the main reason for not being availed any type of telemedicine services?

- Lack of Knowledge regarding telemedicine services
- Lack of knowledge to access services online
- Doctor prefers Physical Consultation
- I prefer physical consultation
- No accessibility
- Reluctance

- Privacy Issues
- Others (Specify): _____

4. Are you interested to avail telemedicine services?

- Yes
- No

5. Was the scheduling of appointment appropriate?

- Yes
- No

6. Which medical specialist did you consulted through telemedicine?

7. How many times you availed the services?

- Single
- Multiple

8. What was the main reason for adopting Telemedicine services?

- Doctor's decision
- Fear of Pandemic
- Financial Benefit
- Time saving
- Other reasons
- Covid treatment consultation
- Any other- _____

9. Have you used any type of Telemedicine services before the Pandemic onset?

- Yes
- No

10. What is the benefit of using Telemedicine for you?

- Specialist Consultation
- Counselling
- Obtaining second opinion
- No travel required
- Safety in Pandemic times
- Others (Specify) _____

11. Did the consultant ask your medical history?

- Yes
- No

12. Which platform was used for the telemedicine services?

- WhatsApp
- Hospital own platform
- E- Sanjeevani OPD
- Others_____

13. What were the limitations experienced by you during the telemedicine consultation?
(Multiple options possible)

- Technical Glitches (Video/ Audio/ Net connectivity)
- Lack of Information
- Incomplete discussion
- Treatment not satisfactory
- Others- _____

14. On scale of 1-5, (1 being the least and 5 being the maximum) how will you rate your satisfaction after using telemedicine services?

- 1 (Highly Unsatisfactory)
- 2 (Unsatisfactory)
- 3 (Satisfactory)
- 4 (Somewhat Satisfactory)
- 5 (Highly Satisfactory)

14.REFERENCES

1. Census of India. GOI. 2012. [Last accessed on 2020 May 06]. Available from: <http://censusindiagovin>
2. WHO. Telemedicine-Opportunities and Developments in Member States. 2nd ed. Geneva, Switzerland: WHO Press; 2010
3. Home-ATA Main [Internet]. Americantelemed.org. [cited 2019 Feb 01]. Available from: <http://www.americantelemed.org/home> . [Ref list]
4. Telemedicine-Opportunities and developments in member states [Internet] 2nd ed. Geneva, Switzerland: WHO press; 2010. [cited 2019 Feb 1]. Available from: https://www.who.int/goe/publications/goe_telemedicine_2010.pdf . [Google Scholar] [Ref list]
5. Wilson LS, Maeder AJ. Recent directions in telemedicine: Review of trends in research and practice. *Healthc Inform Res*. 2015;21:213–22
6. Doctor Patient Ratio in India.
7. Dasgupta A, Deb S. Telemedicine: A new horizon in public health in India. *Indian J Community*
8. Mishra V. A Phased Approach for the Adaptation of Telemedicine in Diabetes Management. *Health Policy and Technology*. 2020 Mar 1;9(1):7-12.
9. Bhaskar S, Bradley S, Chattu VK, Adisesh A, Nurtazina A, Kyrykbayeva S, Sakhamuri S, Yaya S, Sunil T, Thomas P, Mucci V. Telemedicine across the globe-position paper from the COVID-19 pandemic health system resilience PROGRAM (REPROGRAM) international consortium (Part 1). *Frontiers in public health*. 2020;8.
10. Pooni R, Pageler NM, Sandborg C, Lee T. Pediatric subspecialty telemedicine use from the patient and provider perspective. *Pediatric research*. 2021 Mar 22:1-6.
11. Acharya RV, Rai JJ. Evaluation of patient and doctor perception toward the use of telemedicine in Apollo Tele Health Services, India. *Journal of family medicine and primary care*. 2016 Oct;5(4):798.
12. Khan MA. Implementation of telemedicine system to improve and expand Covid-19 screening and evaluation: a reflection on action research approach and the management of the possible spread of the pandemic. *American Journal of Health, Medicine and Nursing Practice*. 2020 Apr 13;5(1):12-24.

13. Ganesan B, Fong KN, Meena SK, Prasad P, Tong RK. Impact of COVID-19 pandemic lockdown on occupational therapy practice and use of telerehabilitation—A cross sectional study. *European Review for Medical and Pharmacological Sciences*. 2021 May 1;25(9):3614-22.
14. Singh A, Tyagi N, Purwar N, Nagesh S. A Cross Sectional Study to Assess the Impact of Telemedicine on Health Care Services in Primary Health Centre, North India. *Asian Journal of Medical Principles and Clinical Practice*. 2020 Jan 9:1-8.
15. Raheja A, Manjunath N, Garg K, Tandon V, Gupta V, Mishra S, Ather S, Suri A, Chandra PS, Singh M, Shariff A. Turning a new chapter in neurosurgery outpatient services: Telemedicine a “savior” in this pandemic. *Neurology India*. 2021 Mar 1;69(2):344.
16. Shroff S, Puhan B, Dorairaj L, Agarwal M, Rajendran M, Modali R, Mankar S, Ramkumar PS, Patil S. Education and Training for Ethical Practice of Telemedicine for Registered Medical Practitioners in India. *Telehealth and Medicine Today*. 2021 Apr 23.
17. Hoffer-Hawlik MA, Moran AE, Burka D, Kaur P, Cai J, Frieden TR, Gupta R. Leveraging Telemedicine for Chronic Disease Management in Low-and Middle-Income Countries During Covid-19. *Global heart*. 2020;15(1).
18. <https://www.mohfw.gov.in/pdf/Telemedicine.pdf>
19. Assaye BT, Manaye T, Regasa Z, Hayiley G, Biruk K, Mesert M, Alamneh BE. Perception and Associated Factors for the Implementation of Telemedicine During COVID-19 Pandemic Among Health Professionals Working at the Government Health Facility in Resource Limiting Setting, Ethiopia, 2021: A Cross-section study.
20. PRIYA A, VAIBHAV K, SRIVASTAVA SK, KUMAR V. TELEMEDICINE IN TIMES OF CORONAVIRUS DISEASE-19 AT A TERTIARY CARE GOVERNMENT HOSPITAL IN UTTAR PRADESH, INDIA. *Asian Journal of Pharmaceutical and Clinical Research*. 2020 Dec 7:190-3.
21. Puliyath N, Huda F, Rai A, Munnamgi S, David LE, Kumar P, Saxena V, Basu S. THE UTILITY OF TELEMEDICINE IN GENERAL SURGERY DURING COVID-19 PANDEMIC AND BEYOND: OUR EXPERIENCE. *Nature*. 2020 Oct;1:0-5.