

COVID-19 Lockdown Period: Perception of Doctors regarding Telemedicine Use for General Practice

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ABSTRACT

Introduction: During this COVID-19 lockdown period, telemedicine is widely being used by doctors for continuing clinical care of patients so that physical distancing can be maintained and the risk of contracting the virus can be avoided.

Aim: To assess perception of doctors regarding quality of healthcare by telemedicine as compared to traditional face to face consultation and, to assess the opinion of doctors on whether telemedicine could be an option for future practice after lockdown period.

Materials and Methods: A questionnaire based cross-sectional study was conducted in which perception of doctors regarding their telemedicine usage for general practice during this lockdown period has been evaluated. The study was done during April to June 2020 among doctors working in a medical college attached to a tertiary care hospital in Chennai and using telemedicine for their practice during COVID-19 lockdown period. After collection

of responses, data obtained were entered in excel sheet and analysed using SPSS version 23.0. Chi-square test was used to assess the association between different variables associated with perception regarding telemedicine usage for general practice. A p-value <0.05 was considered as statistically significant.

Results: Easy access to healthcare services can be done with telemedicine practice according to 73.7% of doctors. Nearly 60.6% of doctors like to continue telemedicine for their practice even after COVID lockdown period.

Conclusion: Telemedicine has helped doctors for continuing patient care during COVID-19 pandemic, but the quality of care delivered by telemedicine consultation was not good as compared to the quality of traditional healthcare. Telemedicine could be an option for future practice of doctors if awareness regarding proper usage of telemedicine is created among patients and if guidelines regarding legal concerns in telemedicine are properly framed.

Keywords: Coronavirus, Google form, Pandemic, Questionnaire, Virtual consultation

INTRODUCTION

The outbreak of COVID-19, corona virus disease is of serious health concern as it has caused pandemic situation. There is no an effective drug or vaccine till now for this pandemic disease. According to WHO, mode of human transmission of COVID-19 could be due to droplets or contact infection [1]. Nationwide lockdown period of 21 days was ordered in India on 24th March 2020 as a preventive measure to limit transmission of corona viral disease [2]. People in India were made to stay at home strictly during this lockdown period [3].

All outpatient departments in hospitals and clinics were closed and only emergency healthcare services were addressed as per government directives [4]. Virtual telemedicine consultation helps patient to get medical opinion without visiting doctors in person [4]. Telemedicine can help medical staff to continue their services without exposing them to viruses during this time of pandemic. Patient safety and health care providers' safety can be provided by telemedicine during times of serious disease outbreaks [5].

WHO has defined Telemedicine as "The delivery of health care services, where distance is a critical factor, by all health care 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 health care providers, all in the interests of advancing the health of individuals and their communities [6]."

Technology based patient consultation using telemedicine can be done via telephonic consultation (Mobile/landline); text, messaging, chat platforms like whatsapp/facebook messenger; telemedicine smartphone apps; websites; or through skype/e-mail/

fax. Telemedicine transforms the delivery of health services from hospitals and clinics into homes [7]. Telemedicine allows distant medical professionals to diagnose, treat and provide follow-up care to patients in developing countries [8].

It enables patients to seek treatment from remote areas and to adhere better to their prescribed treatment for their chronic diseases like diabetes and hypertension [8]. The gap between health system (doctors and patients) could be effectively filled by means of telemedicine care during such critical period. Health care providers who have been quarantined can continue to provide care and treatment by virtual modes [9].

Though these telemedicine practices have their benefits in healthcare, they do possess certain limitations like ethical concerns, cost, internet connectivity, lack of technical expertise in the usage of telemedicine for consultation [10]. In this study, perception of doctors regarding quality of healthcare by telemedicine was assessed as compared to traditional face to face consultation. Opinion of doctors on whether telemedicine could be an option for future practice after lockdown period was also assessed in this study.

MATERIALS AND METHODS

This questionnaire based cross-sectional study was done among doctors who were using telemedicine for their general practice during COVID-19 lockdown period and their perception regarding telemedicine usage was assessed. Google forms were used to collect responses for this questionnaire study. After getting Institutional Ethical Committee approval No.88/2020/IEC/ACSMCH DT 6-3-2020, Questionnaire was sent through whatsapp groups to doctors. Question regarding consent of doctors to participate

in the study has been included in the questionnaire. It has also been mentioned that submitted information will be used for study purpose.

This study was conducted during the period of April-June 2020 among doctors working in a medical college attached to a tertiary care hospital in Chennai, in the state of Tamil Nadu. Doctors willing to participate in the study submitted their responses using Google forms. Based on pre-published articles, this questionnaire was designed and modified which was then pre-tested and validated with Cronbachs alpha value of 0.79 [10,11]. Total of 13 questions pertaining to perception of doctors regarding telemedicine were included in the questionnaire. This study questionnaire was adopted in English language and sent as Google forms using whatsapp messenger to 200 doctors.

About 150 doctors submitted their responses.

Inclusion criteria: Practitioners using telemedicine for their general practice during COVID-19 lockdown period in Chennai belonging to various speciality fields like General Medicine, Surgery, Pharmacology, Microbiology, Emergency medicine, Gynaecology, ENT, Ophthalmology, Community medicine, Paediatrics were included in the study.

Exclusion criteria: Doctors not using telemedicine for their general practice during COVID-19 lockdown period in Chennai, doctors practising alternative medicine were excluded in the study.

Questionnaire include the age, years of experience of doctors, perception of doctors regarding the quality of telemedicine care compared to traditional care, mode of consultation, patient awareness about telemedicine usage, opinion about consultation for future practice with telemedicine and limitations in telemedicine usage.

STATISTICAL ANALYSIS

After collection of responses, data were entered in excel sheet and analysed using SPSS version 23.0. Descriptive statistics were used to summarise the data received from responses. Chi-square test was used to assess the association between different variables associated with perception regarding telemedicine usage for general practice. A p-value <0.05 was considered as statistically significant.

RESULTS

Number and percentage of responses of each question in questionnaire regarding perception of doctors regarding telemedicine usage for their general practice during COVID-19 lockdown period is depicted in [Table/Fig-1].

Questions	Number	Percentage (%)
Dear doctors are you willing to submit your response in this questionnaire. The submitted responses will be used solely for study purpose. Yes/No		
Age (year)		
30-40	58	38.7%
40-50	48	32%
>50	44	29.3%
Gender		
Male	80	53.3%
Female	70	46.7%
Years of experience of doctors (year)		
2-5	85	56.7%
5-10	50	33.3%
>10	15	10%
1. Mode of telemedicine consultation for your practice		
a. WhatsApp (audio/video call)	77	51.3%
b. Telemedicine smartphone app	55	36.7%

c. Telephonic consultation	14	9.3%
d. Others (Email/fax/facebook messenger)	4	2.7%
2. Whether patients are well aware of using telemedicine for their consultation		
Yes	51	34%
No	99	66%
3. Whether it is possible to get all previous records of patients during your telemedicine practice		
Yes	47	31.3%
No	103	68.7%
4. Follow-up of patients is satisfactory during telemedicine consultation		
Yes	51	34%
No	99	66%
5. Quality of care delivered by telemedicine service when compared to the quality of traditional care		
a. Better	6	4%
b. About the same	14	9.3%
c. Not as good	120	80%
d. Not sure	10	6.7%
6. Whether consultation fees properly paid by patients during telemedicine practice		
Yes	59	39.3%
No	91	60.7%
7. Mode of payment of consultation fees, if paid		
a. Google pay	77	51.3%
b. Paytm/Amazon pay	47	31.4%
c. Other mode of payment	26	17.3%
8. Which one of these limitation you faced more using telemedicine practice		
a. Internet connectivity	12	8%
b. Lack of proper examination of patients	43	28.7%
c. Difficulty in making a diagnosis	77	51.3%
d. Legal issues	18	12%
9. Number of consultation (patients flow) by using telemedicine practice has		
Increased	81	54%
Decreased	20	13.3%
Remains the same	49	32.7%
10. Will you continue telemedicine consultation after COVID-19 lockdown period also		
Yes	91	60.7%
No	59	39.3%
11. According to you whether telemedicine consultation can be an option for future practice opinion		
Yes	80	53.3%
No	70	46.7%
12. Have you undergone any training for telemedicine application		
Yes	30	20%
No	120	80%

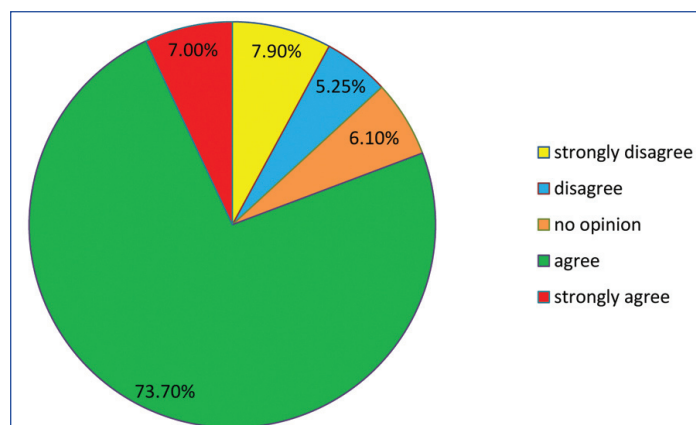
[Table/Fig-1]: Showing number and percentage of responses received for each question in questionnaire.
Other mode of payment in question no. 7: Paypal, Phonepe

Specialities of doctors involved in this questionnaire based study: Paediatrics-36 (24%), General Medicine-30 (20%), Emergency medicine-8 (5%), Obstetrics and gynaecology-8 (5%), ENT-6 (4%), Ophthalmology- 6 (4%), General surgery-12 (8%), MBBS-23 (15%), others-21 (14%). About 56.7% of doctors participated in this questionnaire had 2-5 years of clinical experience. Among the mode of consultation in telemedicine practice 51.3% used (whatsapp), 36.7% (telephonic consultation), 9.3% (telemedicine smartphone app) and other modes (2.7%).

Quality of care delivered by the telemedicine service was not as good as compared to the quality of traditional care according to 80% of doctors which has been shown in [Table/Fig-1]. Follow-up of

patients is not satisfactory (66%) during telemedicine consultation. Consultation fees not properly paid by patients (60.7%) during telemedicine practice.

According to 54% of doctors, number of consultation by telemedicine practice has increased as shown in [Table/Fig-1]. Easy access of healthcare services for patients can be done with telemedicine practice according to 73.7% of doctors in this study as shown in [Table/Fig-2].



[Table/Fig-2]: Easy access of healthcare services for patients with telemedicine.

Age, gender and years of experience of doctors and their perception regarding telemedicine option for future practice opinion has been statistically evaluated using chi-square test with significant value of $p < 0.05$ as shown in [Table/Fig-3].

Variables	Category	Telemedicine for future practice opinion N (%)		Chi-square analysis value	p-value
		Yes N (%)	No N (%)		
Age (year)	30-40	40 (68.9%)	18 (31%)	14.08	0.01*
	40-50	26 (54.1%)	22 (45.8%)		
	>50	12 (27.2%)	32 (72.7%)		
Gender	Male	35 (43.8%)	45 (56.3%)	6.32	0.012*
	Female	45 (64.3%)	25 (35.7%)		
Years of experience of doctors (year)	2-5	60 (70.6%)	25 (29.4%)	23.51	<0.001*
	5-10	15 (30%)	35 (70%)		
	>10	5 (33.3%)	10 (66.7%)		

[Table/Fig-3]: Comparison between age, gender and years of experience of doctors and their perception regarding telemedicine usage for their future practice. Chi-square test; *statistically significant values $p < 0.05$

DISCUSSION

During COVID-19 lockdown period, telemedicine has helped patients with limited access to healthcare particularly those who are in remote areas. Patients with chronic disease condition (like diabetes, hypertension) can be given follow-up care in their home using telemedicine, so that these high risk patients can avoid corona virus exposure.

In the present study, patients were not well aware of using telemedicine for their consultation according to 66% of doctors. So, user friendly telemedicine application could be devised to improve usage by patients and the apps in smartphone could be made in local language for patients for their virtual consultation. Awareness regarding telemedicine home kits can be introduced to patients as in western countries, so that it will be beneficial for patients during such pandemic.

According to 73.7% of doctors, easy access of healthcare services for patients can be done with telemedicine which is in accordance with similar study done by Nasser HA in which 64% of doctors considered the same regarding telemedicine practice [10]. Number of consultation (patient's inflow) by using telemedicine practice has increased according to 54% of doctors. Similarly in a study done by Acharya RV and Rai JJ 61% of the doctors found an increase in patient's inflow by using telemedicine consultation [11].

Doctors with age group between 30-40 years (68.9%) and 40-50 years (54.1%) had opinion that telemedicine could be an option for future practice than in age group >50 years. Doctors with 2-5 years of experience prefer telemedicine for future consultation after lockdown period $p < 0.001$. Females preferred telemedicine consultation than males in our study as they have an option to work from home and spend more time for their household activities.

According to this study, 80% of doctors have not undergone any training for telemedicine for their practice. So, training for doctors regarding usage of telemedicine and legal guidelines should be provided in their working hospitals for better usage.

Among the limitations of telemedicine practice listed like internet connectivity, lack of proper examination of patients, difficulty in making a diagnosis and legal issues, 51.3% of doctors chose difficulty in making a diagnosis as a major limitation. Legal issues in telemedicine practice were considered as a limitation according to 12% of doctors. Similarly, in a study done by Helou S et al., the absence of medicolegal framework is a major barrier for the adoption of telemedicine by doctors [12]. In a study done by Indria D et al., poor internet connectivity (47%) was a significant limitation in using telemedicine for practice [13].

Perception about telemedicine usage even after lockdown period was assessed in our study. Comparison of variables like age, gender and years of experience of doctors with their perception for future practice with telemedicine was also statistically analysed in our study.

Limitation(s)

This study was done among doctors working in a tertiary care teaching hospital in Chennai. Further studies can be done in larger proportion of doctors working in multiple urban centres and in rural areas so that perception of doctors regarding telemedicine may be generalised in a better way for entire professional population. Knowledge of doctors regarding telemedicine guidelines was not included in our study.

CONCLUSION(S)

Telemedicine has helped doctors for continuing patient care during COVID-19 pandemic, but the quality of care delivered by telemedicine consultation was not good as compared to the quality of traditional healthcare. Telemedicine could be an option for future practice of doctors if awareness regarding proper usage of telemedicine is created among patients and if guidelines regarding legal concerns in telemedicine are properly framed.

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REFERENCES

- [1] Lai THT, Tang EWH, Chau SKY, Fung KSC, Li KKW. Stepping up infection control measures in ophthalmology during the novel coronavirus outbreak: An experience from Hong Kong. *Graefes Arch Clin Exp Ophthalmol*. 2020;258(5):1049-55.
- [2] UN NEWS. COVID-19: Lockdown across India, in line with WHO guidance [Internet]. 2020 Mar 24 [cited 2020 Aug 5]. Available from: <https://news.un.org/en/story/2020/03/1060132>.
- [3] Nair AG, Gandhi RA, Natarajan S. Effect of COVID-19 related lockdown on ophthalmic practice and patient care in India: Results of a survey. *Indian J Ophthalmol*. 2020;68(5):725-30.
- [4] Pandey SK, Sharma V. Toolkit for survival: How to run and manage ophthalmic practices during corona viral disease. *Indian J Ophthalmol*. 2020;68:944-47.
- [5] Telemedicine Practice Guidelines [Internet]. 2020 Mar 25 [cited 2020 Aug 10]. Available from: <https://www.mohfw.gov.in/pdf/Telemedicine.pdf>.
- [6] Dasgupta A, Deb S. Telemedicine: A new horizon in public health in India. *Indian J Community Med*. 2008;33(1):03-08. doi:10.4103/0970-0218.39234.
- [7] Heinzlmann PJ, Lugn NE, Kvedar JC. Telemedicine in the future. *Journal of Telemedicine and Telecare*. 2005;11(8):384-90.
- [8] Telemedicine: Opportunities and developments in member states. *Global observatory for ehealth series, 2*. [Internet]. World health organization (WHO);2009 [Updated 2010; cited 2020 Sep 5]. Available from: https://www.who.int/goe/publications/goe_telemedicine_2010.pdf.

- [9] Bill Siwicki. Telemedicine during COVID-19: Benefits, limitations, burdens, adaptation. Available from: URL: <https://www.healthcareitnews.com/news/telemedicine-during-covid-19-benefits-limitations-burdens-adaptation>.
- [10] Nasser HA. Assessment of telemedicine by physicians at Prince Sultan Military Medical City. *Journal of Nutrition and Human Health*. 2017;1(1):01-10.
- [11] Acharya RV, Rai JJ. Evaluation of patient and doctor perception toward the use of telemedicine in Apollo Tele Health Services, India. *J Family Med Prim Care*. 2016;5:798-803.
- [12] Helou S, Helou EE, Khalil VA, Wakim J, El Helou J, Daher A, et al. The effect of the COVID-19 pandemic on physicians' use and perception of telehealth: The case of Lebanon. *Int J Environ Res Public Health*. 2020;7(13):4866.
- [13] Indira D, Alajlani M, Fraser M. Clinicians perceptions of a telemedicine system: A mixed method study of Makassar city, Indonesia. *BMC Medical Informatics and Decision Making*. 2020;20(233):01-08.

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