

Queries and Satisfaction in Telemedicine Counselling for COVID-19 in West Bengal, India

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ABSTRACT

Introduction: Telemedicine counselling service for Coronavirus Disease 2019 (COVID-19) has an immense importance in India. Hard to reach rural areas have more skewed ratio and due to mandatory quarantine during COVID-19, availing physical consultation from doctors has become more difficult.

Aim: To find out the queries of the callers in COVID-19 support cell and their satisfaction of this service.

Materials and Methods: This cross-sectional study was conducted at Institute of Post Graduate Medical Education and Research (IPGMER), Kolkata in May 2021. Total 152 participants were included in the study. Data were collected by telephonic interview using a pre designed pretested interview guide. Queries of the callers to the telemedicine centre were recorded along with their demographics. Satisfaction was measured on a scale of 0-10.

Results: Mean age of the patients were 44.5 ± 17.05 years; 114 (75%) callers were male and 93 (61.2%) were from rural areas of West Bengal. There were 78 (51.3%) callers who were repeat callers. The most common query {90 (59.21%)} was “when positive patients would undertake next Rapid Antigen Test (RAT)/Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) test to find out whether they were negative.” The mean satisfaction score was 6.29.

Conclusion: Telemedicine services were availed by many callers from rural area. The support cell responded to queries like what drugs to be taken and home isolation duration. Majority of the callers felt satisfied after consultation, thus, indicating effective role of teleconsultation.

Keywords: Acceptance, Home care, Pandemic, Telehealth, Telephone consultation

INTRODUCTION

Telemedicine is the use of electronic, digital, internet-based, or telephone-based communication for direct patient care [1]. The first use of telemedicine was in 1970 [2]. Healthcare service is traditionally provided by method of face-to-face interaction between medical professionals and patients. Information systems and communication technologies have great potential to address some of the challenges faced by both developed and developing countries in providing accessible, cost-effective, high-quality healthcare services. Telemedicine usage overcomes geographical barriers, and it is particularly beneficial for rural and underserved communities in developing countries like India where doctor patient ratio is 1:1456 [3].

There have been many studies on the benefits of telemedicine in preventative care [4], management of osteoarthritis [5,6], chronic disease management [7] like cardiac rehabilitation, diabetes care. The lack of specific treatments and vaccines for COVID-19 has forced management to focus on preventive strategies that could reduce viral transmission. COVID-19 pandemic has posed some unprecedented challenges for health services, like lack of access to healthcare system due to huge case load and mandatory quarantine for patients and contacts [8]. So medical care had to migrate from hospitals to the homes of patients by strengthening the home care and implementation of telemedicine [9].

Before 2020, telemedicine in India was governed by the IT Act, 2000, with gaps in clarity on privacy, security, and patient confidentiality, putting both patients and clinicians at risk [10]. The Indian government issued new guidelines for telemedicine practice in March 2020 [10]. Previously, a National Telemedicine Task Force was set up by the Ministry of Health (MOH) in 2005. A policy action toward digitizing healthcare was initiated by the Ministry of Health and Family Welfare of India (MoHFW) in India. Later, in 2017, the National Health Policy (NHP) set forth goals to create an integrated

health information system for all stakeholders in the health system, to improve efficiency, transparency, and citizen experience [11]. The National Digital Health Blueprint (NDHB), released in January 2020, presents a detailed architectural framework of a “Federated National Health Information System.” It proposes to link systems within private- and public-health provider organisations across primary-, secondary-, and tertiary-care value chains [12].

In West Bengal, before the pandemic, telemedicine was gradually being implemented but its growth was slow due to limited economic investment in technological resources for hospitals. COVID-19 pandemic has hastened the telemedicine implementation due to need of medical consultation during the period of home isolation for COVID-19. Each district of West Bengal has established at least one telemedicine support cell. In Kolkata, the telemedicine support cell was built up in the Academic Building of the IPGMER Hospital's Library Room. There were 35 computers placed at six feet distance of each other. One central computer monitors all other computers. One nodal officer operates the central computer and technicians assisted him/her to operate the computers. To run the telemedicine centre, faculties of different medical colleges were posted in this centre according to a roster. The nodal officer allots the faculties to their respective devices and the technicians provided them the user id and password for signing in. After signing in the software, the faculties attended the call from all over West Bengal and give medical consultation regarding any query on COVID-19. In the telemedicine centre of IPGMER hospital only diseases related medical queries are solved. For requirement of oxygen cylinders, hospital admission related enquiries, ambulance requirement, safe house related enquires etc. there is a separate helpline.

The present study aimed at finding out the queries of the callers to the COVID-19 support cell and their satisfaction after availing consultation from telemedicine support cell.

MATERIALS AND METHODS

This cross-sectional study was conducted on telemedicine centre of West Bengal which is situated in IPGMER Hospital. For convenience and clarity, "telemedicine" is used as an inclusive term throughout this report to refer to the delivery of healthcare via information and communication technology. The study was conducted from 1st May to 31st May, 2021 during COVID-19 pandemic. Approval from the ethics committee of Medical College, Kolkata was obtained for the study (MC/KOL/IEC/NON-SPON/1905/06.2021 dated 08.06.2021).

During study period, one investigator was posted in the telemedicine support cell according to duty roster. This duty roster was made by the State Health Advisory Board. The tenure of this posting was 1 month. Duty roster consisted of three shifts, 'Morning Shift' which was 9.00 am to 3.00pm, 'Evening Shift' which was 3.00 pm to 9.00 pm and 'Night Shift' which was 9.00 pm to 9.00 am. All faculties had to perform only one shift per day. During data collection period of three weeks, the investigator got total of 15 sets of duty in which six sets were morning shifts and evening shifts and three night shifts. In three weeks, the investigator had 108 hours of duty in total.

A predesigned pretested interview guide was used to conduct the study. Pretesting was done on the same centre before the study began and face validity was achieved with the help of experts from public health and communication. After receiving the call, the investigator first assessed the problems of the callers and then tried to solve their problems. Then the investigator took permission from the callers to ask the set questions.

The interview guide consists of 'Is it your first time call to the telemedicine centre', 'If no, how many times you called before', 'relationship of the caller', 'Age of the caller', 'RT-PCR positive-Yes/No', 'Date of sample collection', 'Date of first appearance of first symptom', 'What is your first symptom', 'What is your query'. Satisfaction was measured on a scale of 0-10. Based on quartile values '0-2' was categorised as unsatisfied, '3-5' as undecided, '6-8' satisfied and '9-10' as very satisfied.

STATISTICAL ANALYSIS

Data were compiled in MS-excel and analysed to find out frequency, percentage, mean and standard deviation. To find out intergroup association Chi-square test was performed. Type I error for significance testing was taken as 5% for Chi-square test. To find out difference in satisfaction score among groups of callers Mann-Whitney U test was done in Statistical Package for the Social Sciences (SPSS) version 16.0.

RESULTS

During this study period of three weeks, the investigator attended a total of 215 calls. Among the 215 calls, 33 calls were not relevant to this centre, 18 calls were for vaccine availability and 12 calls were for hospital admission. Excluding these, total 152 calls were ultimately considered for analysis.

A total of 93 (61.2%) callers were from rural areas of West Bengal. A total of 114 (75%) callers were male and mean age of callers was 37.25 years. No patient called the telemedicine centre him/herself. Mostly the callers were fathers of the patients (64). Seventy eight (51.3%) callers were repeat callers. Maximum number of repeat call was 12 times, made by one caller [Table/Fig-1].

A total of 140 (92.1%) of the 152 patients had already been tested positive for COVID-19 before the call was made to the telemedicine centre. Seventy six (50%) of them went for RT-PCR test for COVID-19 and 64 (42.1%) had rapid antigen test done for COVID-19. When enquired about the first symptoms that appeared in these 140 COVID-19 positive patients, most of the patients said they had fever (114) followed by dry cough (34) [Table/Fig-2].

Variable	Frequency (%)
Mean age of patients (years)	44.5±17.05
Mean age of callers (years)	37.25±13.71
Gender of the callers	
Female	38 (25.0)
Male	114 (75.0)
Residence of callers	
Rural area	93 (61.2)
Urban area	59 (38.8)
Relationship of callers to the patient	
Father	64 (42.10)
Wife	32 (21.05)
Husband	27 (17.77)
Son	18 (11.84)
Daughter	6 (3.95)
Others	5 (3.29)
Characteristic of callers	
1 st time callers	74 (48.7)
Repeat callers	78 (51.3)
COVID-19 positivity status of patients	
RT-PCR positive	76 (50.0)
RAT positive	64 (42.1)
Test not yet done	12 (7.9)

[Table/Fig-1]: Sociodemographic variables of the callers to the telemedicine support cell (n=152).

Symptom	Number	Percentage
Fever	114	81.43
Dry cough	34	24.29
Running nose	12	8.57
Sore throat	6	4.29
Headache, heaviness of head	12	8.57
Bodyache	10	7.14
Loose motion	6	4.29
Loss of smell	8	5.71
Loss of taste	2	1.43
Weakness	4	2.86
Breathlessness	2	1.43
Other symptoms	10	7.14
Asymptomatic	8	5.71

[Table/Fig-2]: Symptoms of the patients for whom call was made the telemedicine support cell. (n=140)*.

*Multiple response

Seventy four (48.68%) callers wanted to know which drugs needed to be taken after being tested positive. Ninety (59.21%) callers wanted to know after how many days of being positive, they should go for next RAT/RT-PCR. Fifty six (36.84%) callers wanted to know for how long medicines for COVID-19 should be continued [Table/Fig-3].

Mean satisfaction score was 6.29. Mann-Whitney U test suggested no significant difference of satisfaction score between male and female (p=0.15), and between first time caller and repeat caller (p=0.85).

Satisfaction score was then categorised into a dichotomous variable as very/satisfied and unsatisfied/undecided. Number of unsatisfied callers were 22 (14.5%), undecided were 30 (19.7%), satisfied were 54 (35.5%) and 46 (30.3%) callers were very satisfied. Chi-square test suggested no significant association of satisfaction with repeat calling. Significant association of satisfaction was found with gender, female gender being less satisfied. Significant association of satisfaction was also found with area of residence, where callers of rural area were more satisfied [Table/Fig-4].

Queries	Number	Percentage (%)
After how many days a repeat test should be done?	90	59.21
What drugs should be taken?	74	48.68
Which medicines to continue after home isolation and how long?	56	36.84
How many days after recovery vaccine can be taken?	36	23.68
What type of foods should be taken?	32	21.05
What to do if oxygen saturation falls?	28	18.42
Hygiene practices to follow during home isolation	26	17.11
Unavailability of drugs in shop	24	15.79
Duration of home isolation	24	15.79
Can asymptomatic patients take Doxycycline and Ivermectin for prophylaxis	16	10.53
Drugs to be taken to reduce weakness after COVID-19	14	4.60
Others	34	11.19

[Table/Fig-3]: Queries of the callers to the telemedicine support cell (n=152)*.

*Multiple response

Variable	Finding	
Satisfaction score (mean and SD)	6.29±2.93	
Status of satisfaction N (%)		
Very satisfied	46 (30.3)	
Satisfied	54 (35.5)	
Undecided	30 (19.7)	
Unsatisfied	22 (14.5)	
Association of satisfaction with socio-demographic variables	(OR, 95%CI)	p-value (Chi-square test)
Residence of callers		
Urban area (Reference)	1	0.013
Rural area	3.16 (1.22-8.2)	
Characteristic of callers		
1 st time callers (Reference)	1	0.54
Repeat callers	1.47(0.75-2.9)	
Gender of callers		
Male (Reference)	1	0.04
Female	0.65(0.46-0.93)	

[Table/Fig-4]: Satisfaction of callers to the telemedicine support cell and its correlates (n=152).

DISCUSSION

Telemedicine was not well established in India before COVID-19 pandemic. A systematic review that considered studies related to use of telemedicine till June 2020, found only one Indian article among total 43 articles from worldwide [13]. That Indian study was on use of telemedicine on chronic pain management and they also mentioned different hindrances in implementation of telemedicine in India including legal problems [14]. Articles on the use of telehealth on management of COVID-19 is not very common as pointed out by a systematic review which started with 142 telemedicine related articles and finally found only eight articles on management of COVID-19 [15].

Telemedicine was shown to be helpful in previous outbreaks, including former coronavirus outbreaks such as Severe Acute Respiratory Syndrome–Associated Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) [16]. One of the most important strategies to reduce and mitigate the advance of the respiratory epidemic is social distance measures; this is where telemedicine can help and provide support to the healthcare systems. After the rapid rise of cases in India during 2nd wave in April-May 2021 health workforce was swamped with COVID-19 cases. To reduce the burden of minor cases and to protect healthy family members of the patients from exposure to

the disease in hospital settings telehealth services for COVID-19 was initiated in West Bengal. In many parts of the World telehealth services served more or less similar objectives in context to COVID-19. A systematic review on eight studies conducted on telemedicine services specifically for COVID-19 concluded that the impact of telehealth was significant in prevention of morbidity by decreasing presence of the public in high-risk areas such as hospital premises [15]. Other studies also pointed out towards minimisation of unwanted exposure to both patients and healthcare workers by use of telemedicine in the USA [17] and China [18].

Telemedicine is especially effective in those areas where the healthcare facilities are not established properly or hard to reach. From present study, it was observed that the 61.2% callers were from the rural areas. From here, it can be inferred that the establishment of telemedicine centre served its purpose in reaching out to the people of remote areas.

Inaccessibility of healthcare services was found to be key motivation for acceptance of telemedicine services in other parts of World also. A study done in Australia concluded that telehealth services are born of necessity-arising from rural remoteness and island locations [19]. Another study which compared implementation of telemedicine services in Australia, UK, and The USA also reported that in spite of cultural differences and implementation plans of three Governments, two things were consistently related to acceptance of telemedicine; older age group and harsh geography [20].

It was found that the repeat callers were more than 50%. From this, it can be inferred that the callers trust this new set-up that's why they are seeking assistance again.

The callers consulted with the telemedicine support cell regarding which drugs to be taken for how many days, home isolation duration, repeat RAT/RT-PCR test, what type of food should they take etc., State government promoted home isolation during this pandemic time and this telemedicine centre provided all the information necessary for home isolation. Similar pictures were found all over the World. A study in China showed that teleconsultation is helpful in gaining knowledge regarding the prevention control of COVID-19, about best practices during home quarantine [21]. With proper guidance regarding disease as many as 69% of patients who had a telehealth encounter during the early pandemic period in 2020 were managed at home in The USA [11]. Another one mentioned that telemedicine communicated accurate and clear information, at a time when older adults and their family were bombarded with contradictory and confusing message, thus facilitating proper home care and prevention [23]. A Chinese telemedicine centre helped callers to get access on prevention and treatment guidelines, and guidance on drug use and management of coronavirus patients [24]. Many studies also pointed out that use of telemedicine helped in early diagnosis of COVID-19 thus avoiding hospitalisation [17, 18]. With the help of telemedicine a person can continue to self-monitor symptoms at home while recovering. It can also be applied for regular check-ins such as respiratory, blood pressure and oxygen level rate needed in home isolation. So, it can be concluded that telemedicine had a big role for promotion of home isolation.

From the present study, it was found that fever (81.43%) was the commonest symptom followed by dry cough (24.29%) and 90% patients were already tested positive. From this it can be infer that those who contacted telemedicine centre were aware about the symptoms of the COVID-19 and COVID testing. In a study, in China it is seen that 60.4% callers to telemedicine centre consulted on respiratory symptoms such as cough, sputum, and fever [22].

A 65.8% of the callers were satisfied or very satisfied after consultation with telemedicine centre. It can be the proxy indicator in success of telemedicine service. Data analysis also shows that, respondent of rural areas are significantly more satisfied than urban area. It indicates that the telemedicine setup is more successful for

those people, where access to healthcare facilities are limited. In USA also, a rapid rise of use of telemedicine services was seen after the pandemic. A study done in Ohio, USA mentioned that in a few weeks, telehealth went from under 5% of patient visits to almost 93%, while maintaining high levels of patient satisfaction [25]. Another study reported that, though already well accepted, telemedicine use increased by 154% in March 2020, compared to March 2019 [22]. Finally, it can be said that COVID-19 has provided impetus for usage and acceptance of telemedicine which is increasing sharply worldwide including India.

Limitation(s)

The study was conducted on the callers to telemedicine centre for the time period of second wave of COVID-19 pandemic in India, when hospital beds, oxygens, Intensive Care Unit (ICU) beds all became inadequate in supply compared to huge demand. Callers trying to access help from telemedicine centre were probably desperate to seek medical advice for home isolation which might have increased their acceptance for telemedicine. A study conducted in relatively less emergency time may give clearer picture regarding people's acceptance towards new treatment modality. The satisfaction of the callers was assessed by the executives of telemedicine centre, which may lead to tendency of callers towards positive feedback. A third-party evaluation of satisfaction level may have given more unbiased opinion.

CONCLUSION(S)

The COVID-19 pandemic will probably be a landmark for telemedicine history. Present study shows that this pandemic has transformed the provision of medical services, with applications for telemedicine in various fields of medical practice. Health systems are faced with an unprecedented opportunity to learn from the current situation and draw lessons for the future. To enable low and medium income countries to widely rely on this tool, more information is needed regarding costs and necessary resources to ensure effective implementation.

REFERENCES

- [1] Blue R, Yang AI, Zhou C, De Ravin E, Teng CW, Arguelles GR, et al. Telemedicine in the era of Coronavirus Disease 2019 (COVID-19): A neurosurgical perspective. *World Neurosurg.* 2020;139:549-57.
- [2] Glazer E, Marshall C, Cunningham N. Remote pediatric consultation in the inner city: Television or telephone? *Am J Public Health.* 1978;68(11):1133-35.
- [3] Sabha L, Ajmal SMB, Kher SK. Government of India ministry of health and family welfare department of health and family welfare:2. <http://164.100.24.220/loksabhaquestions/annex/172/AU1875.pdf> [last access on 07 July 2021].
- [4] Lakshin G, Banek S, Keese D, Rolle U, Schmedding A. Telemedicine in the pediatric surgery in Germany during the COVID-19 pandemic. *Pediatr Surg Int.* 2021;37(3):389-95.
- [5] Mehta B, Jannat-Khah D, Fontana MA, Moezinia CJ, Mancuso CA, Bass AR, et al. Impact of COVID-19 on vulnerable patients with rheumatic disease: Results of a worldwide survey. *RMD Open.* 2020; 6(3): e001378. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7722380/>.
- [6] Perez J, Niburski K, Stoopler M, Ingelmo P. Telehealth and chronic pain management from rapid adaptation to long-term implementation in pain medicine: A narrative review. *Pain Rep.* 2021;6(1):e912. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8108593/>.
- [7] Bashshur RL, Shannon GW, Smith BR, Alverson DC, Antoniotti N, Barsan WG, et al. The empirical foundations of telemedicine interventions for chronic disease management. *Telemed J E Health.* 2014;20(9):769-800.
- [8] Smith AC, Thomas E, Snoswell CL, Haydon H, Mehrotra A, Clemensen J, et al. Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19). *J Telemed Telecare.* 2020 Mar 20: 1357633X20916567. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7140977/>.
- [9] Dorsey ER, Topol EJ. Telemedicine 2020 and the next decade. *Lancet.* 2020;395(10227):859.
- [10] Telemedicine.pdf [Internet]. [cited 2021 Jul 7]. Available from: <https://www.mohfw.gov.in/pdf/Telemedicine.pdf>.
- [11] National_health_policy_2017.pdf [Internet]. [cited 2021 Jul 7]. Available from: https://www.nhp.gov.in/nhpfiles/national_health_policy_2017.pdf.
- [12] National Digital Health Blueprint Report for Public Comments | Ministry of Health and Family Welfare | GOI [Internet]. [cited 2021 Jul 7]. Available from: <https://main.mohfw.gov.in/newshighlights/national-digital-health-blueprint-report-public-comments>.
- [13] Shanbehzadeh M, Kazemi-Arpanahi H, Kalkhajeh SG, Basati G. Systematic review on telemedicine platforms in lockdown periods: Lessons learned from the COVID-19 pandemic. *J Educ Health Promot.* 2021;10:211.
- [14] Ghai B, Malhotra N, Bajwa SJS. Telemedicine for chronic pain management during COVID-19 pandemic. *Indian J Anaesth.* 2020;64(6):456-62.
- [15] Monaghesh E, Hajizadeh A. The role of telehealth during COVID-19 outbreak: A systematic review based on current evidence. *BMC Public Health.* 2020;20:1193.
- [16] Ohannessian R, Duong TA, Odone A. Global telemedicine implementation and integration within health systems to fight the COVID-19 pandemic: A call to action. *JMIR Public Health Surveill.* 2020;6(2):e18810.
- [17] Shaker MS, Oppenheimer J, Grayson M, Stukus D, Hartog N, Hsieh EWY, et al. COVID-19: Pandemic contingency planning for the allergy and immunology clinic. *J Allergy Clin Immunol Pract.* 2020;8(5):1477-88.e5.
- [18] Yang Y, Zhou Y, Liu X, Tan J. Health services provision of 48 public tertiary dental hospitals during the COVID-19 epidemic in China. *Clin Oral Investig.* 2020;24(5):1861-64.
- [19] Bradford NK, Caffery LJ, Smith AC. Telehealth services in rural and remote Australia: A systematic review of models of care and factors influencing success and sustainability. *Rural Remote Health.* 2016;16(4):3808.
- [20] Fisk M, Livingstone A, Pit SW. Telehealth in the context of COVID-19: Changing perspectives in Australia, the United Kingdom, and the United States. *J Med Internet Res.* 2020;22(6):e19264.
- [21] Li L, Liu G, Xu W, Zhang Y, He M. Effects of internet hospital consultations on psychological burdens and disease knowledge during the early outbreak of COVID-19 in China: Cross-sectional survey study. *J Med Internet Res.* 2020;22(8):e19551.
- [22] Koonin LM, Hoots B, Tsang CA, Leroy Z, Farris K, Jolly T, et al. Trends in the use of telehealth during the emergence of the COVID-19 Pandemic- United States, 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(43):1595-99.
- [23] Nicol GE, Piccirillo JF, Mulsant BH, Lenze EJ. Action at a distance: Geriatric research during a pandemic. *J Am Geriatr Soc.* 2020;68(5):922-25.
- [24] Zhai Y, Wang Y, Zhang M, Gittell JH, Jiang S, Chen B, et al. From isolation to coordination: how can telemedicine help combat the COVID-19 outbreak? [Internet]. 2020 Feb [cited 2021 Aug 26] p. 2020.02.20.20025957. Available from: <https://www.medrxiv.org/content/10.1101/2020.02.20.20025957v1>.
- [25] Olayiwola JN, Magaña C, Harmon A, Nair S, Esposito E, Harsh C, et al. Telehealth as a bright spot of the COVID-19 pandemic: Recommendations from the virtual frontlines ('Frontweb'). *JMIR Public Health Surveill.* 2020;6(2):e19045.

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