

# Implementation of a telemedicine service during COVID-19 pandemic in Pakistan

Muhammad Haneef Nagra<sup>1</sup>, Sumaira Ehsan<sup>1</sup>, Umair Ahmed<sup>1</sup>, Majid Ali<sup>2</sup>, Hafiz Amjad Hussain<sup>3</sup>, and Abu Bakar<sup>3</sup>

<sup>1</sup>Faisalabad Medical University

<sup>2</sup>Umm Al-Qura University

<sup>3</sup>District Headquarter Hospital

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## Abstract

**Aim:** In this feasibility study, we aimed to implement a pilot telemedicine service at our healthcare facility in Faisalabad, Pakistan, and describe our experience. **Methods:** Telemedicine service was established by Faisalabad Medical University at two of its affiliated locations: 1) A 24-hour COVID-19 Telephone Helpline was established at Director Emergency Office, Allied Hospital and District Headquarter (DHQ) Hospital. 2) A Telemedicine Clinic comprising consultants and postgraduate residents from different specialties was established at Chief Office, Allied Hospital. The data related to the number and categories of calls and advice provided was collected from 27th March 2020 till 31st July 2020. **Results:** A total of 4582 calls were received, at both locations, during the study period, out of which 2325 callers (51%) were male, and 2257 (49%) were females. At Allied Hospital, 172 patients were advised accordingly for their complaints, whereas, at DHQ Hospital, 320 patients were advised accordingly for their complaints. At the telemedicine clinic only, a total of 2436 calls were received during the study period, 1474 (60%) callers were male, and 962 (40%) were female. The majority of the calls were received by medicine (43%), dermatology (21%), and pediatrics (11%) specialties, respectively. **Conclusion:** Despite some limitations, the benefits of telemedicine in this COVID-19 era are enormous and it is feasible to implement telemedicine services in developing countries. The developing countries must invest in the internet and technology access to facilitate telemedicine and other e-health services for not only curbing this pandemic but also to promote a more efficient healthcare system after the pandemic.

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**Full names of the authors:**

Muhammad Haneef Nagra<sup>1</sup>, Sumaira Ehsan<sup>2</sup>, Umair Ahmad<sup>3,4</sup>, Majid Ali<sup>5,6</sup>, Hafiz Amjad Hussain<sup>7</sup>, Abu Bakar<sup>7</sup>

**Author's institutional affiliations:**

<sup>1</sup>Department of Medicine, Faisalabad Medical University, Faisalabad, Pakistan

<sup>2</sup>Department of Medical Education, Faisalabad Medical University, Faisalabad, Pakistan

<sup>3</sup>Medical Unit II, Faisalabad Medical University, Faisalabad, Pakistan

<sup>4</sup>Department of Medicine, Allied Hospital, Faisalabad, Pakistan

<sup>5</sup>College of Pharmacy, Umm Al-Qura University, Makkah, Saudi Arabia

<sup>6</sup>Faculty of Health and Medical Sciences, University of Adelaide, Adelaide, Australia

<sup>7</sup>Department of Medicine, District Headquarter Hospital, Faisalabad, Pakistan

### **Corresponding author:**

Majid Ali

College of Pharmacy, Umm Al-Qura University

Abdia Campus, Taif Road, Makkah, Saudi Arabia

Phone: 00966 544500676

Email: maaali@uqu.edu.sa; majid.ali@hotmail.com

### **Author contributions:**

MHN designed the project and supervised the study. All authors (except MA) were involved in data collection, analysis, and interpretation. MA contributed to the drafting of the manuscript. All authors approved the final draft of the manuscript.

### **Disclosure statement:**

The authors declare that they have no conflicts of interest.

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## **Implementation of a telemedicine service during COVID-19 pandemic in Pakistan**

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**Results:** A total of 4582 calls were received, at both locations, during the study period, out of which 2325 callers (51%) were male, and 2257 (49%) were females. At Allied Hospital, 172 patients were advised accordingly for their complaints, whereas, at DHQ Hospital, 320 patients were advised accordingly for their complaints. At the telemedicine clinic only, a total of 2436 calls were received during the study period, 1474 (60%) callers were male, and 962 (40%) were female. The majority of the calls were received by medicine (43%), dermatology (21%), and pediatrics (11%) specialties, respectively.

**Conclusion:** Despite some limitations, the benefits of telemedicine in this COVID-19 era are enormous and it is feasible to implement telemedicine services in developing countries. The developing countries must invest in the internet and technology access to facilitate telemedicine and other e-health services for not only curbing this pandemic but also to promote a more efficient healthcare system after the pandemic.

**Keywords:** Telemedicine; COVID-19; feasibility study; e-health; pandemic.

## **What is already known about this subject?**

Remote monitoring of vulnerable patients and distance consultations, as telemedicine, have been an integral part of the health services.

Telemedicine services have been introduced and proved to be effective and efficient in the pre-COVID-19 era.

## **What does this study contribute to the literature?**

Our study describes the successful implementation of a telemedicine service in Faisalabad, Pakistan, during the COVID-19 pandemic.

Our study adds to the growing evidence that, despite some limitations, telemedicine services can be implemented feasibly in developing countries during the COVID-19 pandemic.

## **1 INTRODUCTION**

The new coronavirus, responsible for causing COVID-19 infection, emerged in China in December 2019. Today, it is known to be one of the most contagious viruses. The pandemic caused by it has interrupted every aspect of daily human life. The rapidly spread pandemic allowed very little time for healthcare systems, public health experts, and scientists to grasp the situation. Several new guidelines and standard operating procedures have been developed thus far to introduce preventive measures for breaking the chain of infection spread.<sup>1</sup> The pandemic has pushed many vulnerable people into critical illness, costing many precious lives. With all the precautionary measures in place and fear of the contagious virus, we are living in a very challenging time. In this time, social distancing and wearing masks have been declared the most effective preventive measures by the World Health Organization (WHO).<sup>1</sup>

The countries which introduced early and appropriate lockdown, such as China, New Zealand, and Taiwan, showed some success in gaining control over the pandemic in a short time.<sup>2</sup> Pakistan has not been different. Following the detection of the first COVID-19 case on 26th February 2020, a smart lockdown was implemented across the country on 24th March 2020. Healthcare services were put on alert sustaining a balance between emergency, special care, and outpatient department services while keeping all the precautionary measures in place. Remote monitoring of vulnerable patients and distance consultations, as telemedicine, have been an integral part of the health services.<sup>3,4</sup> A study conducted in 2017 reported an effective delivery of healthcare to several underserved communities via telemedicine.<sup>5</sup> A similar study more recently has reported that telemedicine can play an important role in this pandemic by preventing the virus spread and utilizing the time of healthcare professionals effectively as well as alleviating mental health issues.<sup>6</sup> In this feasibility study, we aimed to implement a pilot telemedicine service at our healthcare facility in Faisalabad, Pakistan, and describe our experience.

## **2. METHODS**

Telemedicine service was established by Faisalabad Medical University at two of its affiliated locations: 1) A 24-hour COVID-19 Telephone Helpline was established at Director Emergency Office, Allied Hospital and District Headquarter (DHQ) Hospital. 2) A Telemedicine Clinic comprising consultants and postgraduate residents from different specialties was established at Chief Office, Allied Hospital.

### **2.1 24-hour COVID-19 Telephone Helpline:**

In order to facilitate the patients with respiratory tract complaints, dedicated COVID-19 desks, with specific landline numbers, were established at Allied Hospital (two landline numbers) and DHQ Hospital (three landline numbers) with the doctors specifically trained for telemedicine service. These landline numbers worked round the clock for 24 hours and seven days a week.

A specific performa was designed, as a call log sheet, to record the name, address, and mobile phone number of the caller as well as date and time of the call and advice given by the doctor providing the telemedicine service. The doctor's assessment and the corresponding advice were based on the scoring system shown in Table 1 and Table 2.

## 2.2 Telemedicine Clinic:

A Telemedicine Clinic was established at Allied Hospital only. This clinic comprised consultants and post-graduate residents of the two hospitals from the specialties: medicine, surgery, gynecology & obstetrics, pediatrics, dermatology, ophthalmology, cardiology, and ear/nose/throat (ENT) departments. Specific Skype IDs and WhatsApp numbers for different specialties were established and advertised in local print and electronic media as well as via posters and banners displayed in and outside the two hospitals at various places. The patients could contact these numbers from 8:00 am till 3:00 pm daily except Sundays.

The data related to the number and categories of calls and advice provided was collected from 27th March 2020 till 31st July 2020. The study received ethical approval from the Ethical Review Committee of Faisalabad Medical University.

## 3. RESULTS

A total of 4582 calls were received, at both locations, during the study period (Figure 1), out of which 2325 callers (51%) were male, and 2257 (49%) were females.

### 3.1 24-hour COVID-19 Telephone Helpline:

At Allied Hospital, 172 patients were advised accordingly for their complaints. Out of these, three patients were referred to the COVID-19 isolation facility, 24 patients were advised to isolate at home, 42 patients were referred to the emergency department at Allied Hospital, and 103 patients were recommended treatment for their complaints.

At DHQ Hospital, 320 patients were advised accordingly for their complaints. Out of these, 38 patients were referred to the COVID-19 isolation facility, 72 patients were advised to isolate at home, 94 patients were referred to the emergency department at DHQ hospital, and 116 patients were recommended treatment for their complaints.

### 3.2 Telemedicine Clinic

A total of 2436 calls were received at this clinic only during the study period, 1474 (60%) callers were male, and 962 (40%) were female. The majority of the calls were received by medicine specialty (1047, 43%), dermatology specialty (508, 21%), and pediatrics (263, 11%) specialty, respectively (Figure 2).

## 4. DISCUSSION

During this COVID-19 pandemic, especially during the lockdown period, telemedicine can play a crucial role in providing correct and appropriate medical advice to the patients in their homes, avoiding close contact and overcrowding of the outpatient clinics and thus preventing the further spread of COVID-19. Several healthcare facilities worldwide have established telemedicine clinics with good experience in providing support to healthcare workers and medical advice to the patients using technology.<sup>7</sup> Based on the emerging evidence regarding the effective and efficient use of telemedicine healthcare service, various countries are now approving the policies and procedures for the potential implementation of this service in different specialties.<sup>8</sup> In our study, we found that the majority of the calls were received during the lockdown period (data not presented). When the lockdown was eased, the number of calls received by our telemedicine service decreased as more people started visiting the outpatient facilities of the two hospitals. The majority of the calls were received by medicine and dermatology specialties. Several other studies across the world have also demonstrated that telemedicine services not only provide fast healthcare delivery to the people but are also cost-effective.<sup>9</sup> However, one of the major limitations of the implementation of telemedicine services, epically in developing

countries such as ours, is the limited access to the internet as well as the limited access to the technology in remote areas.

## 5. CONCLUSION

Telemedicine is an emerging field and can be a very useful tool for consultations for vulnerable people. Despite some limitations, the benefits of telemedicine in this COVID-19 era are enormous and it is feasible to implement telemedicine services in developing countries. The developing countries must invest in the internet and technology access to facilitate telemedicine and other e-health services for not only curbing this pandemic but also to promote a more efficient healthcare system after the pandemic.

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**TABLE 1** COVID-19 scoring chart

No.	Item	Score
1.	Travel history	2
2.	Flu	1
3.	Dry cough	1
4.	Fever	1
5.	Exposure to COVID-19 patient	3
6.	Friend/relative with a history of fever, dry cough, and flu	1
7.	Healthcare worker	1

Total score to be out of 10

**TABLE 2** Advice provided based on the score from Table 1

Total score	Pan/Advice
Less than 3	Observe and isolate at home
3-5	Suspected. Isolate at the hospital, confirmatory test recommended

<b>Total score</b>	<b>Pan/Advice</b>
More than 5	Confirmed COVID-19. Treatment should be started

**FIGURE 1** Total number of calls received by telemedicine service

**FIGURE 2** Number of calls received by telemedicine clinic per specialty

