

COVID-19: A boost for telemedicine

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ABSTRACT *With the continuously expanding pandemic of COVID-19 and the need for attending non-COVID patients in a lockdown state, most healthcare institutions in the Greater Male' area chose telemedicine as a route to consult patients. Being a necessity in the time of this crisis; this is the first time in the history of the Maldives that teleconsultations were conducted comprehensively. Although most healthcare institutions were not ready for such an endeavour, they were quick to use available social media tools to introduce teleconsultations. Aasandha; the National insurance scheme; gave this approach a boost when it accepted teleconsultations as a covered form of consultation. Medica Hospital, to find out the feasibility and resultant patient satisfaction of teleconsultations, conducted a patient satisfaction survey on patients accessing their services in May 2020. From the 706 consultations done among eight specialities, ninety patients were contacted for this survey. Sixty-three per cent were very satisfied with the service, and all participants were happy to continue utilising teleconsultations from Medica Hospital after the COVID-19 pandemic is over. It is apparent from this survey that patients accept telemedicine as a viable technology for responding to patient needs during emergencies, and is likely to remain acceptable as a way of consultation in the new norm as well.*

KEYWORDS *Telemedicine, Online consultation, Health, COVID-19*

Telehealth, or telemedicine, has been defined as “the use of medical information that is exchanged from one site to another through electronic communication to improve a patient’s health” (Tuckson et al., 2017, p.1). The term mobile health or mHealth describes “the use of mobile telecommunication and multimedia technologies” (Istepanian & Lacal, 2003, p.1), as it is integrated within increasingly mobile and wireless healthcare delivery systems. In the Maldives, the use of telemedicine has the potential to improve the ability of hospitals and clinics to provide timely medical care, especially for those patients living in remote islands. The Maldives’ government policy on telehealth was vividly demonstrated at the Maldives Partnership Forum 2019 when the Vice President Faisal Naseem reiterated that the government was pursuing digitisation of the healthcare sector through a unified healthcare system. In this, the government proposed a telemedicine component to help redress geographic gaps surrounding affordable and quality healthcare services (Naseem, 2019). The above decision appears to be sound as healthcare in the Maldives is presently provided to the people of the 280 widely scattered inhabited islands through 20 regional and atoll hospitals, as well as at health centres in smaller islands. The “Health Master Plan 2016-2025”

identifies telemedicine as a potential tool in developing mechanisms for remote diagnosis. This is in conjunction with effective sample transport, image transfer, and other telemedicine technologies (Ministry of Health, 2015). Additionally, apart from recommending telemedicine as one of the alternate models to boost clinical performance and support choices in the context of optimising service delivery, the World Health Organization (WHO) has recognised telemedicine as an essential step in strengthening Health System Response to COVID-19 (World Health Organization, 2020).

A recent survey by Chen et al. (2018), shows that as many as eighty per cent of internet users have used social media and other internet resources as a source of information and as an interactive platform between patients and providers. There was keen interest in telehealth support for patients with chronic conditions, especially the non-communicable diseases, across all age groups (Edwards et al., 2014). These participants showed considerable interest in telephone and internet-based interventions while demonstrating minimal interest in social media-based interventions (Edwards et al., 2014).

History of telemedicine in the Maldives

The first recorded Telemedicine project in the Maldives was launched in 2002. It was known as the Health Telematics Project and was funded by the World Health Organization. Nevertheless, the project did not materialise as planned due to several administrative and logistic difficulties at the time (Nazviya et al., 2011). A telemedicine initiative under the Integrated Human Development Project (HDP), two years later, also faced difficulties in the implementation stage (Sobir et al., 2014). In addition to the need for educating patients on telemedicine for them to perceive it as an acceptable form of consultation, other factors such as technical issues, failure to achieve project management deadlines, inefficient human resource and capacity building, and insufficient internet bandwidth in remote islands likely contributed to the failure of early attempts at establishing telemedicine in the Maldives (Nazviya et al., 2011).

The Medical Kiosk project, funded by the Khalifa Bin Zayed Al Nahyan Foundation was a better planned and well-organised project lead by the Ministry of Health that aimed to deliver telemedicine kiosk carts and additional equipment to 35 locations, including 32 remote islands through the AMD kiosks (Gillis, 2015). This project included the required healthcare human resource development such as the overseas training of local doctors, technicians, and biotechnology specialists in addition to the procurement of the Medical Kiosk hardware (Gillis, 2015). However, even though the project did manage to train the needed professionals and procure the Medical Kiosks and nursing laboratory equipment, it eventually came to a standstill due to political and administrative changes that occurred after implementation of the project.

As stated by Broens et al. (2007), despite the potential of telemedicine services to increase the usefulness and accessibility of healthcare, the success rate of telemedicine services have been disappointing. More than 75% of telemedicine initiatives fail during the operational phase (Berg, 1999). This was the experience in the Maldivian context as well. Starting from the Health Telematics Project, to the telemedicine component of the Intergrated Human Development Project,

and finally, to the Medical Kiosk project: all these served to expose the Maldivian society to the concept of teleconsultations. They failed mostly due to technical difficulties faced during implementation and due to poor patient education towards the advantages of telemedicine. However, the COVID-19 pandemic has revitalised the use of telemedicine, this time mostly using established social media video conferencing platforms that are easily accessible through smartphones, tablets, and desktop devices.

Evolving telemedicine during COVID-19

With the rapidly evolving COVID-19 crisis, many are growing increasingly worried about access to healthcare. Some are concerned that going to the emergency room, hospital OPDs and clinics could result in inadvertent exposure to the pathogen (Greenhalgh, 2020). Many are now turning to telemedicine, which is a perfect tool for situations like this coronavirus outbreak. As the threat of the virus raises in the Maldives, an increase in the volume of patients seeking teleconsultation increased. The lockdown announced in May 2020, has surged demand for teleconsultations for all healthcare providers. As such, most hospitals and clinics in the greater Male 'area have resorted to telemedicine as the only way of getting consultations for specialised doctors. As a response to this increased demand, Aasandha approved teleconsultations for reimbursements for thirty-seven healthcare institutions in the country (Shafeeq, M., personal communication, June 15, 2020).

The privately-run ADK Hospital unveiled an online flu clinic on March 14, 2020, before the first locally transmitted case of COVID-19 (Shaahunaz, 2020, March 15). The clinic offered online consultations for patients exhibiting flu-like symptoms via video calls and was accessible nationwide. This online flu clinic provided free online consultations and advised patients on how to proceed if they have suspected COVID-19 symptoms. Similar clinics were shortly established at other healthcare institutions in the Greater Male' area (Shaahunaz, 2020, March 15). This trend was also observed in other countries, including China, where the pandemic was first detected (Song, Liu, & Wang 2020). In these clinics, trained doctors conducted preliminary screenings of patients online and gave suggestions to continue to stay home or to go to the fever clinics (Song, Liu, & Wang 2020). After arrival at the fever clinic, clinicians determined whether patients were suspected for COVID-19, and take samples if needed (Song, Liu, & Wang 2020). Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS) in Lucknow, India treated patients admitted at its COVID-19 ward with telemedicine to limit contact time of doctors with patients (Dasgupta, 2020, May 21). Similarly, BLK Super Speciality Hospital in Delhi, used telemedicine in a more structured style depending on video calls to conduct OPDs (Dasgupta, 2020, May 21).

In the USA, private insurers increasingly provide reimbursement for telehealth as predicted by National Business Group on Health that virtually all extensive employers cover telehealth services for their employees by 2020 (Tuckson, et al., 2017). Most of the healthcare facilities around the globe are resorting to telemedicine during the COVID-19 pandemic to provide care while keeping patients in their homes (Bashshur et al., 2020). The massive conversion to telemedicine demonstrates its utility as a useful tool for the social distancing needed to prevent

the spread of the virus in clinical or other settings.

Bashshur et al. (2020) further observed that the implementation of telemedicine necessitated by the COVID-19 pandemic has made clear that most outpatient cases can be clinically managed effectively through telehealth without compromising the quality of services. Furthermore, the infrastructure for connectivity is widely available at both ends via smartphone technology, with already established hospital information systems and electronic health records which helps ensure continuity of care for their patients (Bashshur et al., 2020). At a time of a crisis like COVID-19, most of the patients accept telemedicine as a modality of care delivery since governments and health insurance companies have relaxed all restrictive regulations for telemedicine deployment, including reimbursement and coverage under insurance schemes.

Reimbursement is a crucial determinant in the use of clinical interventions. On April 2020 considering the epidemiological situation related to the spread of COVID-19, and respecting the advice from the Health Protection Agency for limiting the social contacts, Aasandha announced they would cover teleconsultations under the National Health Insurance Scheme. This was to enable beneficiaries to receive a broader range of healthcare services from health professionals without having to travel to a hospital, clinic, or healthcare facility. This is the first time that Aasandha has covered teleconsultation services that patients can receive from home. Owing to this telemedicine coverage expansion, which became effective on March 06 2020 allowed patients to receive Aasandha coverage for a wide range of health services including consultation services, mental health counselling and psychological evaluations. While regulatory authorities in other countries have issued guidelines including ethical considerations (American Medical Association, 2016; Indian Medical Council, 2020), the Maldives Medical and Dental Council (MMDC) is yet to have developed guidelines for telemedicine. However, in deference to the established guidelines, physicians using telehealth should inform patients about the pros and cons of online consultations, advise patients how to arrange for review if needed, and encourage patients to let their treating doctor know when they have used telemedicine services (Bakhai et al., 2020).

Medica telemedicine survey

Medica Hospital started the special consultations using telemedicine technology on April 15 2020. The Conceptual Model adopted by Medica Hospital for telemedicine during the COVID-19 pandemic is illustrated in Figure 1.

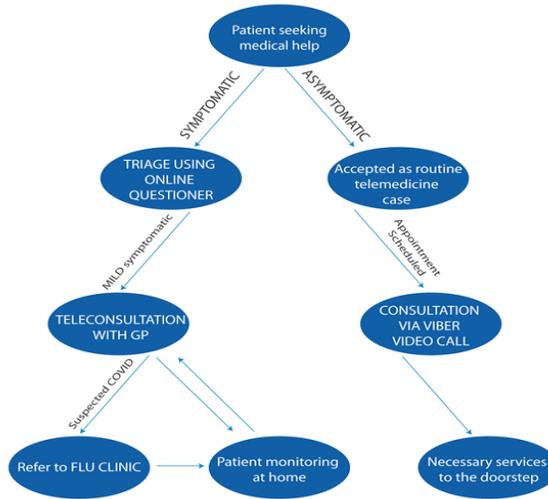


Figure 1. Conceptual Model Adopted by Medica for telemedicine during COVID-19 pandemic

With the approval of teleconsultation coverage by Aasandha, primary care doctors and specialists started doing their consultations using telemedicine. Doctors used social media tools as a replacement for clinic or hospital visits by the patients. The procedure adopted by Medica Hospital for online consultations is presented in Table: 1.

Table 1
Procedure adopted by medica Hospital for Telemedicine Consultations

No.	Procedure adopted by Medica Hospital for Telemedicine consultations
1	Viber consultations were performed after scheduling an appointment in advance on specified telephone numbers by sending a Viber message
2	During registering, payment is completed online, and the patient provides a Viber-connected phone number to which Medica returns a call
3	Patient receives a video call at the agreed time, and the consultatio takes the form of a two-way video call
4	Patients can use either a mobile phone or any other Desktop device connected to Viber via your telephone number for the consultation
5	Patients’ medical history and other available documentation were collected by Viber attachments before or during the online consultation
6	After the consultation, Medica deliver the medications issued by the specialist to the patient doorsteps

Due to the lockdown in the greater Male' area effective April 15 2020, Medica Hospital started online consultations in several specialties, including Internal Medicine, Cardiology, Pediatrics, General Surgery, ENT, Obstetrics and Gynecology, Dermatology and General Practice. Consultations were carried out using Viber video calls. To improve our telemedicine services, we conducted a patient satisfaction survey from the clients who received our services in May 2020.

Method

Literature was reviewed to identify validated tools for measuring patient satisfaction. Based on the construct validity, predictive validity, context, and feasibility, a survey reported by Hicks et al. (2003), was adopted. Some questions were added to obtain information about the teleconsultations including patients' view of telemedicine compared to a traditional face-to-face consultations, about the network quality of the telemedicine connection, whether the subject goes for telemedicine consultation, and whether they would consider teleconsultation after the lockdown is over. Lastly, we asked an open-ended question for comments and additional suggestions for improvement. The questionnaire was adapted for the Medica telephone survey, after which some minor adjustments were made.

Survey

We conducted a telephone survey on 100 patients who consulted via Telemedicine from Medica Hospital during the period from May 01, 2020, to May 31 2020. A random assignment of 100 patients were selected. Among these, 90 patients responded to the survey. A Medica staffer who received prior training on telephone surveys conducted the telephone interviews. The interviewer was responsible for undertaking the pilot test calls, making the final phone calls, and recording the data for analysis.

Results

During the study period: May 01, 2020, to May 31 2020, seven hundred and six teleconsultations were made to different specialties at Medica Hospital. Most of the consultants practising at Medica Hospital were doing online consultations in either a hospital-based or home-based manner. Among all telemedicine consultations done during the study period, most were for medical specialties with internal medicine consultations topping the list with 39.5 per cent of the consultations. From the surgical specialties most consulted for Obstetrics and Gynecology: 18 per cent of the total consultations. Figure 2 shows the numbers of consultations done by different specialties during the study period.

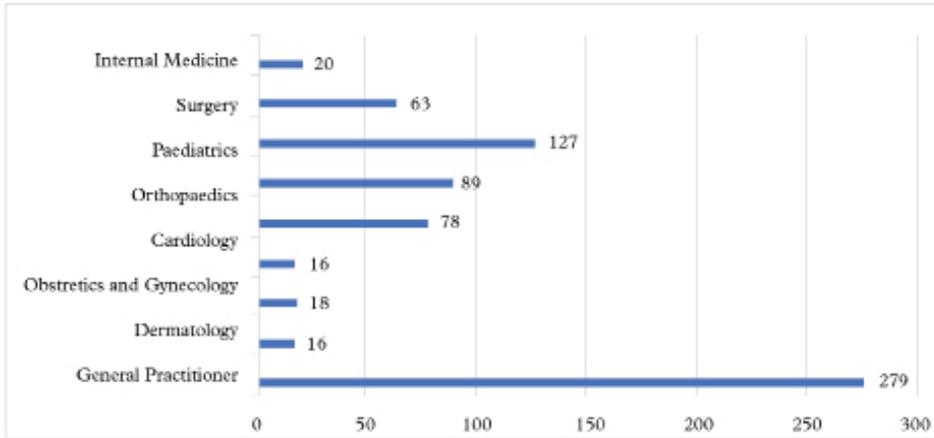


Figure 2. The number of consultations done by different specialties during the study period

From a random sample of 100, we were able to contact 90 patients for the survey. All patients approached consented to participate in the study. The answers to the eight questions of the questionnaire are summarised in Table 2. In general, most respondents rated the service with “very satisfied” or “satisfied”. Of the 90 respondents, 96.7 per cent were satisfied or very satisfied with the teleconsultation, and 100 per cent responded that they would use Medica Hospital’s telemedicine service even after the COVID-19 lockdown is over. A significant number (80%) of respondents were very satisfied or satisfied with the teleconsultations. Sixty-three per cent replied that they were happy to use telemedicine again. As for the doctor-patient relationship, most (49 per cent) of the patients claimed that it is easy to talk with the doctor in the telemedicine consultation and only 16 per cent of the responders said that they were tense during the consultation. Most of the patients chose Medica for the consultation due to ‘very good doctors available’ (42 per cent), while others consulted due to excellent service (19 per cent) and fast service (18 per cent), and 11 per cent due to the extra service of home delivery of medications.

Table 2
Results of the patient satisfaction survey

Overall, how satisfied were you with telemedicine consultation?	Very satisfied	Satisfied	Unsatisfied
	57	30	3
How easy was it to talk with the doctor?	Very Easy	Easy	Poor
	49	41	0

Did you feel relaxed or tense during the telemedicine session	Relaxed	Tensed		
	74	16		
Why did you opt for telemedicine consultation from Medica?	Excellent service	Very Good Doctors	Respond Fast	Deliver Medicines
	19	42	18	11
Do you think your telemedicine session was as good as a regular in-person visit?	Yes	No	Sometimes	
	61	26	3	
How well did the telemedicine connection work?	Excellent			
	Very Good	Good		
	Poor			
	48	30	9	3
Would you want to use telemedicine service of Medica Again?	Yes	No		
	90	0		
Will you consider telemedicine consultation even after the lockdown is over?	Yes			
	No			
	Sometimes			
	68	15	7	

Surprisingly, sixty-seven percent felt that teleconsultation were as good as a regular face-to-face consultation. A comparable study conducted by Polinski et al. (2016), shows that one-third (32 %) expressed a preference to consult via telehealth and a further 57 % rated a telehealth visit as just as good as a traditional visit. Lack of experience with ICT did not appear to be a significant barrier to telemedicine, and cognitive factors may be more critical in acceptability to patients and their satisfaction. Due to the interventions by the telecom companies during the COVID-19 pandemic, the internet connections were very satisfactory for a

telemedicine consultation. The above is corroborated by the fact that only 3.33 per cent of the responders declared that the telemedicine connection was poor. As Internet access and telemedicine services continue to spread, satisfaction rates may improve further (López et al., 2011).

Additionally, a recent survey of physicians and hospital systems showed that a 2-way video consultation was the most commonly used telemedicine technology (57.8%) and the type of technology in which physicians and healthcare facilities would most likely capitalise (67.1%) (Daniel, & Sulmasy, 2015). A similar study by Donelan et al. (2018), showed a reduced human connection between patient and provider, was not a primary concern to participants in the Virtual Video Visit program. The most important reason why patients resort to telemedicine was confidence in using the technology and perceived advantages of telemedicine (Daniel, & Sulmasy, 2015). Another exciting finding noted by Edwards et al. (2014), was that appreciation in using telehealth was not related to patient sociodemographic variables, after adjusting for modifiable factors such as access to and confidence in using the technology.

Limitations

In the present study, respondents received telemedicine consultations during the COVID-19 lockdown. It is crucial to assess the satisfaction of patients during normal times for a more extended period when face-to-face consultations are possible. It is also essential that a larger population of patients drawn from different healthcare facilities in the Maldives were studied. Additionally, a tool of known reliability and validity among the Maldivian population should be developed in the local context for a better valuation.

Recommendations

With the findings of the survey, the author would like to recommend the following to the concerned authorities to sustain the telemedicine services.

Discover a clear path toward responsible telemedicine by developing local guidelines approved by the Maldives Medical and Dental council. This should include institutional norms to be followed, protocols, and quality assurance mechanisms, including ways of reporting of adverse events, proper documentation, and follow-up.

Develop rules for monitoring and addressing unscrupulous behaviours among telemedicine users by the National insurance company, Aasandha and ways to implement it. As emphasised by Bashshur et al. (2020), we should come out of the current COVID-19 crisis with a clearer concept of how to carry out telemedicine. We can expand its use to achieve its values while at the same time preventing or reducing impending misappropriation by some.

Endure the decision agreed by the National Insurance Company, Aasandha during the COVID-19 epidemic for doctors and other healthcare workers to be ascribed with the comparable fee for that of in-person care, including all the facilities available under the Aasandha scheme. This enhances to retain the

telemedicine consultations for the benefit of the patients.

Embrace telemedicine as a part of routine practice by the healthcare institutions, whereby patients are seen in-person or through telemedicine, as decided by the policy adopted by the institution, and to broaden its use to in-patient clinical departments and units, including appointment booking, workflow management, and other executives functions.

Advocate policy recommendation by the Ministry of Health to accept telemedicine as an acceptable medical consultation method by adopting a triage system to identify patients and encourage appropriate use and discourage inappropriate use of service. Ideally, the triaging system would be implemented all over the country, as telemedicine has no borders.

Formulate patient education programmes by the Maldives Medical Association, to be adopted by the healthcare institutions, to make the patients aware of the pro and cons of online consultations and how to address their concerns when they arise.

Conclusions

Use of both emerging and existing technologies has especially increased during times of crisis. The risk of infection and increased demands on the healthcare system have made telemedicine a safe and necessary tool accepted by the patients during the COVID-19 pandemic. Doctors have long worried that their patients might not take or adapt to telemedicine. However, COVID-19 has proved this to be otherwise, as seen by the results of this small survey confirming that patients are more than willing to use telemedicine consultations for healthcare. It was observed that most of the patients who used telemedicine consultation at Medica Hospital were happy about continuing telemedicine consultations with their preferred doctor, even after the COVID-19 pandemic is over. However, Duffy & Lee (2018) resonated the fact that in-person consultations are likely to be valuable in all healthcare settings, and patients do wish to consult their physician in person. While telemedicine has been embraced as a necessary means to sustain the health system during the pandemic, policymakers at various levels have yet to appreciate fully how to capitalise on this potential in normal times. It is evident from the widespread use of telemedicine and its acceptance among the public that we have to recognise telemedicine as a necessary technology for responding to emergencies and that it is going to stay with us in the new norm.

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