

Telemedicine in the Era of COVID-19 and Beyond

A new horizon

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التطبيب عن بعد في عصر كوفيد-19 وما بعده
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TELEMEDICINE IS THE DELIVERY OF REAL-TIME healthcare services via digital communication technologies remotely rather than face-to-face encounters between a patient and a provider.¹ Compared to initial forms of telephone consultation, telemedicine recently underwent a major transformation, namely the utilisation of video conferencing through the latest technologies. Telehealth covers a broader spectrum than telemedicine with more diverse uses such as disease screening, disaster management and healthcare delivery. In addition, telehealth serves educational and administrative purposes (e.g. remote teaching, teleconferencing and teleproctoring).² The purpose of telemedicine is to ensure the provision of cost-effective, timely and equitable services to all with safe communication between patients and doctors during pandemics.³

The use of telemedicine as a modality to deliver healthcare services remotely has been practiced for decades; however, data remains scarce with regard to the extent of its use in various countries around the world. A study in the USA examined telemedicine use among Medicaid enrollees and found only 0.1% were telemedicine users out of 45,233,602 enrollees from 22 states.⁴ Another study, found that although routine telemedicine has been implemented in all regions of Norway and in 68% of hospitals, its actual utilisation remains low compared to in-person visits.⁵ The poor use of telemedicine in clinical practice indicates that challenges still prevent its widespread use. Since the 2019 start of the novel coronavirus disease (COVID-19) pandemic, the utilisation of telemedicine in various healthcare services has rapidly increased.⁶ In fact, the pandemic stimulated many health institutions and academic hospitals to implement telemedicine in healthcare promptly and appropriately. A study on the current use of telehealth in American academic orthopaedic departments found that 83% of the

106 institutions presently offering telehealth visits only recently implemented such services in direct response to the COVID-19 pandemic.⁷ The overall disruption of healthcare services caused by this highly contagious disease resulted in a noticeable reduction of outpatient service activities – locally and internationally.^{8–10} Avoiding exposure to COVID-19 is the best prevention method thus far; therefore, many outpatient clinic appointments have been cancelled and elective operations rescheduled to minimise the risk of transmission – limiting the outbreak and enabling healthcare providers to deal with the acute influx of COVID-19 cases.

Continuous medical support is a crucial feature of modern medicine to ensure high quality of life and fewer complications from chronic diseases. It also minimises unwanted hospital admissions. As outpatient services form the backbone of a good healthcare system, a sudden interruption of such services and the cancellation of clinic appointments may result in short- and long-term consequences. Missed clinic appointments may result in stress and anxiety disorders adversely affecting the quality of life and may even extend to the worsening of an illness and development of complications.¹¹ This may require urgent interventions that could further overwhelm an already exhausted healthcare system.

Natural disasters are known for their distressing effects on healthcare infrastructure.¹² The longer the service disruption, the longer the duration required for efficient reimplementation. For example, it took almost two years to improve primary care access for Medicaid beneficiaries aged 18 to 64 years old, after the 2005 chlorine spill in South Carolina, USA as declaration of the disaster initially was denied.¹³ Access to secondary and tertiary care may take even longer to recover. Previous studies from developed countries reported exacerbated illnesses, complications or even

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death as a result of the interruption of medical services during natural disasters; hence, the active pursuit of a strategy to manage non-communicable diseases during exceptional situations.¹⁴

The importance of telemedicine became more evident during the COVID-19 pandemic, as healthcare professionals across the globe tried different creative ways to communicate efficiently with their patients using virtual clinics (i.e. phone calls, emails and video-based conferencing).^{15,16} The profound impact of the COVID-19 pandemic on healthcare services has accelerated the utilisation of telemedicine to fulfil various needs of acute and chronic patients. One of its first functions was prescription refills, where healthcare institutes from different countries considered different ways to ensure safe prescription refills that would not increase the risk of COVID-19 transmission.¹⁷ As, in general, lockdowns lengthened and the pandemic continued to threaten healthcare delivery and continuity, virtual clinics became a necessity.¹⁸ In the era of COVID-19, with all its unique challenges, adopting telemedicine is a strong alternative to “face-to-face” consultations but not a replacement. Telemedicine is beneficial in protecting healthcare staff as well as monitoring and managing patients.¹⁹

The Department of Child Health at Sultan Qaboos University Hospital, Muscat, Oman, initiated virtual clinic services in order to maintain the care given to children in outpatient clinics when the country went into lockdown on March 16th 2020. The service began approximately one month later when logistics, coding and security for privacy concerns had been addressed so that the project could start safely and effectively. Virtual clinics varied from telephone consultations to video-based clinics. Different platforms were available for video-based consultations. However, according to the availability, technical support, ease of use and healthcare staff's technical skills, Zoom (Zoom Video Communications, Inc., San Jose, California, USA) and Google Meet (Google, LLC, Mountain View, California, USA). were selected. These platforms have been endorsed by other healthcare systems internationally.^{20–22} There was initially a fear that virtual clinic appointments might not be accepted culturally by our patients. However, surprisingly, patients were not intimidated by the change to virtual clinic appointments and even requested the continued use of this system even after the pandemic is over, as they feel comfortable using videoconferencing especially when they have the ability to book their own appointments. In the duration of one month, neurology, endocrine and developmental paediatric speciality had appointments with 280 patients through virtual clinics. The consult-

ations were mostly for follow-up patients (n = 180) and there were 100 new patients. Some technical issues included audio connections (sometimes the personal settings of devices would prohibit new applications from accessing the microphone) and poor internet connectivity. Patients cancelling their appointments at the last minute and rescheduling their appointments multiple times during a week also posed a problem. This observation is however limited by the small number of patients.

We recommend that virtual clinics be implemented during the COVID-19 pandemic in all of Oman's healthcare facilities, as well as throughout the Middle East where appropriate, to maintain the service provision when patients are in lockdown/isolation. In addition to reducing exposure and controlling the outbreak, it reduces the burden on the healthcare system by lowering the demand for personal protective equipment. This method of communication would be even more beneficial if it were integrated with the existing electronic medical record system. Given the major advantages gained from virtual consultations, we anticipate that the use of telemedicine will continue to increase and become an integral part of clinical practice in many countries. In the coming decade, telemedicine is projected to mature thanks to the high volume of interconnected consumer healthcare devices and improved connectivity from high-speed 5G data.²³ As technology continues to advance at lower costs, telemedicine will enrich education and research and improve access to care, emergency responses and the delivery of general and specialty care in diverse clinical settings.

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