



COVID-19 and the Advancement of Telehealth

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In December 2019, a cluster of pneumonia cases in Wuhan, Hubei, China marked the beginning of a global crisis.^[1] The coronavirus disease 2019 (COVID-19), which is caused by a SARS-CoV-2 viral infection, has been declared a global pandemic in March 2020 by the World Health Organization (WHO).^[1] A year later, as of April 28th, 2021, there are over 149 million cases and 3 million deaths around the world due to COVID-19.^[2] The unprecedented social and economic stress bring extra significance to controlling the infection rate to alleviate the burden posed on public health systems.^[3]

To combat challenges brought by the infectious nature of the disease, patients and providers rapidly shift to telehealth, which refers to the “delivery of health care services, where patients and providers are separated by distance.”^[4,5] More specifically, it involves not only patient-to-physician interactions but also communication among healthcare professionals that occur through phone, email, video calling platforms, Internet, and remote devices.^[4] Telehealth is not a new concept; before this pandemic, global interest for use of telehealth to improve patient care was already on the rise.^[4] As of 2015, the WHO’s Global Health Observatory reports that 57% of responding member states either include or make reference to telehealth in their national health policy.^[5] Telehealth is predominantly adopted by high-income countries and is used more often in certain medical specialties such as psychiatry, pathology, radiology, and dermatology.^[4,5] In addition, it is especially valuable for patients in remote or other underserved areas, where access to quality care could be provided efficiently and cost-effectively.^[6]

While it appears to be a promising route of health care delivery, telehealth still has many barriers and limitations compared to routine care.^[6,7] First, the prerequisite of digital devices and sufficient Internet bandwidth speed establishes a “digital divide” in access to virtual care on the basis of socioeconomic factors.^[7] Similarly, for patients who have language or digital literacy barriers, attendance for virtual check-ups is made exceptionally difficult.^[7] In geriatric care, the challenges of hearing, vision, or cognitive impairment further make certain technologies less appropriate for communication with healthcare providers.^[6,7] From the perspective of care providers, telehealth is unable to perform all required physical examinations and may not help to establish a therapeutic bond due to a lack of face-to-face interactions.^[4] Furthermore, telehealth requires officials to implement legal regulations to prevent security breaches and establish medical liability.^[4,6] The pursuing changes to guidelines, restrictions, and insurance coverage bring additional hurdles to an already complicated physician-patient relationship.^[4,6] Despite advancements in telehealth, in order to ensure health equity, the heterogeneity in the general population necessitates the availability of both in-person visits to clinics and different modalities of telehealth.^[7]

Although limitations and barriers to telehealth continue to exist, its ability to overcome physical barriers to medical care and education is undeniably an advantage during an epidemic.^[8] Minimizing physical contact between healthy and infected individuals is crucial for not only COVID-19 but also other infectious disease outbreaks in the past such as Ebola, influenza, or severe acute respiratory syndrome (SARS).^[3] The use of telehealth can accomplish this goal when implemented in various healthcare settings.^[8] First, when lockdowns or stay-at-home orders are in effect, the general population can use telehealth services to maintain access to medical care while reducing the risk of community spread.^[8] In essence, this limits in-person clinical visits to those who require detailed physical examinations or cannot attend virtual visits.^[8] It also permits contact tracing and data compilation of infected individuals, which is beneficial for both storage and information transmission in comparison to keeping data on paper with a risk of losing them.^[3] With a

reduced number of in-person patients and increased opportunities to screen or monitor patients at a distance, more staff will be able to work from home or office to further reduce opportunities for community spread.^[8] This is also advantageous as it allows staff who are in quarantine, immunocompromised groups, or caregiving positions to safely resume their professional roles, therefore reducing the burden from case surges.^[8] Similarly, students or trainees can utilize telehealth technologies to assist or observe patient care processes.^[8] Lastly, family or community members can provide mental health support to vulnerable or sick individuals through telecommunication technologies, thereby combating social isolation from imposed visitor restrictions.^[8] It is evident that telehealth can be a support in all stages of healthcare delivery in the ongoing pandemic.^[8]

In summary, advancements in telehealth lead to both advantages and limitations for patients, healthcare providers, and the general population in the current COVID-19 global pandemic.^[8] Regardless of the post-pandemic effect on society, the use of telehealth will continue to play important roles in various healthcare settings.^[6,8] As such, when the crisis surges slow down, telehealth systems that were permitted for emergency applications should be re-evaluated and modified to suit specific user needs.^[8] Furthermore, government officials must review and implement policies to ensure patient and physician confidentiality, liability, and security in telehealth models.^[6,8] An emphasis should also be placed to overcome socioeconomic and knowledge barriers in accessing virtual care, such as by establishing greater insurance coverage of telehealth technologies and staff roles to assist those who lack digital literacy.^[3,6,8]

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