

# Learning from previous epidemics; overcoming COVID-19 using e-health

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## ABSTRACT

Considering the worldwide spread of the COVID-19 pandemic, it is critical to use electronic health (e-health) to prevent, diagnose, and treat this disease. According to reports on the use of e-health technology in past and present crises, this technology can have the potential to improve the quality and the quantity of provided services and control and manage diseases in epidemic conditions. The important issue is how to implement this technology fairly and facilitate the use of this technology by health care providers and the general public. Moreover, the concerns about the physician-patient relationship, patient privacy and health costs should be addressed. Therefore, it is necessary for health policymakers and planners to develop laws and guidelines to address legal and ethical barriers to the use of this technology, focusing on vulnerable populations, to manage the crisis and also determine the role of insurers in this area.

### Keywords:

COVID-19

e-Health

Electronic Health

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## INTRODUCTION

Electronic health (e-health) is an essential prevention, diagnosis and treatment technique in response to emerging outbreaks like the coronavirus disease 2019 (COVID-19). To perform the missions related to disease control and prevention, it is helpful to use mobile health technology and make use of the capacities of mobile phones and SMS to track the transmission and reduce contact of people and provide remote health services. These technologies can be used in patient triage to reduce the number of people referring to hospitals and decrease the workloads of health care providers and control people contact.

Considering the effectiveness of mobile health interventions in low- and middle-income countries [1] and also improve service delivery and increase patients' knowledge by accessing information and better patient-physician communication, these applications have the potential to be used in crisis situations and help make more effective decisions in all stages of crisis management [2].

Digital technology has well-shown its potentials when used in dealing with Ebola by providing rapid diagnoses, accurate predictions and estimations, and situational awareness through electronic health platforms and social networks [3]. For example, a study in Nigeria on the use of mobile health education programs during the Ebola outbreak to train staff has reported the effectiveness of these training programs in terms of knowledge and attitude change [4].

When dealing with infectious diseases that are highly contagious like Ebola which can easily spread through physical contact, mobile technology and GPS can be used to track the population movement and minimize contact among infected and uninfected individuals

Telemedicine is another method that has the potential to be used to manage and combat diseases when dealing with pandemics. This technology helps to improve epidemic research, control the disease and manage clinical cases. Ohannessian in his study showed that tele-medicine can be used in five clinical

epidemic situations as follows: First, providing remote consultations to those individuals who are asymptomatic and are mostly at home /, but live in an area which is dealing with the pandemic. This consultation is designed to provide services at times of emergencies or when individuals show suspected symptoms of the disease. Second is remote monitoring and follow-up which is to be provided to those individuals who have been in contact with an infected person, but do not show any symptoms. The third situation is providing services to individuals who have symptoms and are isolated. Fourth, providing services to individuals who require professional services from referral centers but the services are not accessible in their local health centers. Finally, the fifth situation is used when a healthcare center is quarantined and its patients has no access to medical services and the center cannot take care of its patients [5].

Also, a variety of online psychological health services have been provided at a wide scale during the spread of COVID-19 in China which improved the quality of public urgent intervention services in this country. These services include online psychological health questionnaires by use of mobile applications, whose findings are critical in designating healthcare resources and proper treatment to those who especially require it. China has also used online communication programs and free e-books to help educate the public and the medical staff to take care of their psychological health and avoid psychological illnesses. Finally, China has also provided free online psychological consultations which have been given during 24hours in all seven days per week by psychological health professionals [6].

In response to COVID-19, Canada has developed and implemented a platform for crisis management based on e-health. It is a web-based digital platform that has modules for the screening and triage process. It determines the level of risk in individuals and provides required health services accordingly. This platform offers a module for individuals to perform self-assessment when they need to visit a doctor or should self-quarantine. It also follow-up patient with remote monitoring capability that allows healthcare providers to help most patients in their own homes. In this platform, there is a module for virtual visits that this application is integrated with the website. Finally, there is a module for integrated information analysis that receives information from other modules and provides assessing integrated information that helps managers to make better decisions [7].

According to reports on the use of e-health technology in past and present crises, this technology can have the potential to improve the quality and the quantity of provided services and control and manage diseases in epidemic conditions. This

technology can be of great help in treating patients who need treatment. In many countries, e-health technology is used to more quickly diagnose, predict, and more accurately assess risk. This technology has also been used to increase knowledge transfer and increase people's awareness as one of the common health care services. But in many developing countries, despite the significant growth of technology and the increasing penetration of smartphones and the Internet, the benefits of this technology have been less used. However, in these countries, the use of e-health can play an effective role in screening people for the COVID-19 epidemic, prevention and management of this disease. As health care systems become increasingly virtual, the gap between the general population and the suburban population, who have limited access to the resources and can make effective use of e-health technology, is increasing day by day. Therefore, the important issue is how to implement this technology fairly and facilitate the use of this technology by health care providers and the general public. Moreover, the concerns about the physician-patient relationship, patient privacy and health costs should be addressed.

Therefore, we suggest that health policymakers and planners in developing countries, after identifying the benefits of e-health services during the epidemic of diseases such as COVID-19 and removing barriers to its implementation, plan for education of people to be able to use this technology and try to improve the people culture regarding this technology. Moreover, they should finance its implementation, and use the capacity of this technology on a large scale to manage and control the disease. This can prevent further damages that may affect many aspects of the social services and human life in the world.

## CONCLUSION

It is also necessary for health policymakers and planners to develop laws and guidelines to address legal and ethical barriers to the use of this technology, focusing on vulnerable populations, to manage the crisis and also determine the role of insurers in this area. In order to successfully use e-health technology, equitable access to this technology needs to be monitored. Therefore, according to the current and previous experience of using e-health, it is necessary to identify the best applications of e-health technology in screening, diagnosis, treatment, monitoring, rehabilitation and follow-up of diseases in order to be most productive due to limited resources.

## AUTHOR'S CONTRIBUTION

All authors contributed to the literature review, design, data collection and analysis, drafting the manuscript, read and approved the final manuscript.

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this study.

## FINANCIAL DISCLOSURE

No financial interests related to the material of this manuscript have been declared.

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