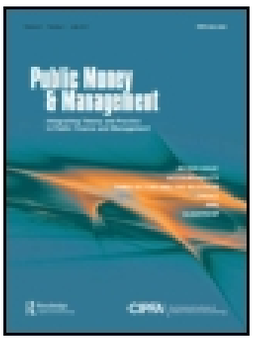

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New development: 'Healing at a distance'—telemedicine and COVID-19

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ABSTRACT

In extreme circumstances such as pandemics, the presence of patients in hospital emergency departments becomes untenable. Healthcare professionals and organizations worldwide are leaning on technology as a crucial ally to deal with the COVID-19 outbreak. This article focuses on the positive impact of telemedicine for helping service provision, from enabling virtual triage to mitigating the negative psychological effects of social isolation**.** The authors discuss the challenges and opportunities to telemedicine practices.

IMPACT

This article explains how telemedicine and other e-healthcare technologies can benefit people, medical staff and healthcare systems. One of the main challenges for telemedicine in many countries is the lack of regulations. The authors call on policy-makers to facilitate wider implementation of e-healthcare technologies, while considering issues of inclusiveness, privacy and data protection. The article informs managers about the use of new technologies. Examples are provided of e-healthcare technologies implemented during the COVID-19 pandemic, for example in terms of healthcare capacity and providing support to people affected by quarantine.

KEYWORDS

Apps; COVID-19; e-healthcare; healthcare system; legislation; technology; telehealth; telemedicine

Introduction

Bubonic plague (1347–1351), yellow fever (1800s), the Spanish flu (1918–1919), and now COVID-19 have been collectively responsible for fatalities across the globe. Unlike historical pandemics, healthcare management of the COVID-19 pandemic can draw on new technologies for prevention, initial symptoms triage, self-isolation, quarantine and, ultimately, the return to social interaction. The article presents the challenges and opportunities of healing at a distance using telemedicine practices for e-healthcare.

Pandemics provoke panic, fear, and motivate people to seek help across public healthcare systems creating service waves that can trigger further problems for the service ecosystem, such as overcrowded emergency departments in hospitals, which struggle to handle high demand and constrained capacity. This becomes a vicious cycle, as according to Gainer (2020), the excessive presence of patients in emergency departments creates even greater contamination in populations. While face-to-face interactions undoubtedly play a central role in the physician–patient relationship (Duffy & Lee, 2018), this is untenable in managing pandemics. This raises a key dilemma for healthcare professionals and organizations: how to provide healthcare without physical interactions with patients. In response, in this article we discuss how health professionals and the wider healthcare system can adopt telemedicine in the collective fight against COVID-19.

Telemedicine: healing at a distance

Technology can be adopted to mitigate extreme exogeneous shocks, such as natural disasters and diseases (Hollander & Carr, 2020; Lurie & Carr, 2018). Telemedicine represents the use of technology in healthcare to enable 'healing at a distance' (Strehle & Shabde, 2006). In e-healthcare, telemedicine provides a new means to support and promote long-distance clinical care, education, and healthcare, from first response to recovery with low cost and extensive coverage. Public administrations around the world, such as Australia, the USA and the UK, are investing in telemedicine to manage COVID-19, with the specific aim to reduce the volume of patients interacting with emergency departments and, in turn, halt the spread of the virus.

As an illustration, the Australian Department of Health (2020) are enabling medical staff to deliver services via telemedicine, encouraging citizens to access health services remotely to reduce the risk of exposure to COVID-19. Similarly, the NHS in the UK is providing online consultation in designated areas to avoid patient visits to general practitioners (NHS, 2020). These initiatives align with recommendations to implement triage via telemedicine before people enter healthcare facilities, to limit unnecessary healthcare visits (CDC, 2019). These illustrations are examples of how telemedicine might engender the safety of patients and physicians, while simultaneously providing an effective frontline service to the citizenry (Gavidia, 2020).

Other telemedicine approaches to identify and track infected sub-populations and areas, as well as provide self-assessment capabilities, are telemedicine apps. An illustration from the Brazilian government is the 'Coronavírus SUS' app. If the app-facilitated diagnosis indicates likely infection, patients are referred to the nearest emergency department or healthcare facility for testing, improving the efficiency and effectiveness of the traditional healthcare setting. The Brazilian app also serves to provide evidence-based insights as to the spread of a pandemic, reducing the prevalence of fake news and, consequently, helping to reduce panic (Ministry of Healthcare, 2020). The combination of prevention, triage and information in one app has become a telemedicine tool, reducing demands on the public healthcare system in Brazil and, in turn, helping to avoid the collapse of the healthcare system; a similar initiative is being explored in the USA (Guardian, 2020a). Similarly, in the UK, King's College London, together with Guy's and St Thomas' hospitals, have developed an app (C-19 COVID Symptom Tracker, 2020) that takes citizens one minute per day to self-report their health condition. Citizens are asked to provide information such as their location, age, gender and any existing medical conditions. They then can report daily whether they feel healthy and, if not, can answer questions covering a wide range of symptoms, including the classic COVID-19 symptoms such as coughs and fever, but also non-traditional symptoms such as fatigue, diarrhoea, chest pain, lack of taste and confusion. New symptoms will be added to the list of symptoms if the app reveals that citizens report them in clusters across the country (*Guardian*, 2020*b*). Data from the app means that it is possible to identify how fast the virus is spreading in an area; where the high-risk 'hotspot' areas are; and who is most at risk, by gaining more accurate understanding of how symptoms are linked to underlying health conditions (C-19 COVID Symptom Tracker, 2020).

The key use of telemedicine in these illustrations is to have a thorough understanding of the current healthcare situation in the country and also provide healthcare from a distance, without diminishing the quality of care, to enable more successful prevention without face-to-face interaction and the inherent dangers of traditional service provision.

Further preventative measures to protect people from contamination, and to flatten the COVID-19 'curve', include limited social interactions or minimal physical interaction during quarantine and self-isolation (CDC, 2020; Phend, 2020). However, the quarantine or self-isolation period has the potential to create loneliness and overwhelm vulnerable groups in the community. Individuals who have experienced periods of social isolation have reported problems such as anxiety, fear and depression and, in some cases, have developed symptoms of post-traumatic stress disorder (American Psychological Society, 2020; WHO, 2020).

These negative psychological effects, and the further strain on healthcare systems that they may create, can be mitigated with the use of digital platforms such as video-chats to enable social interactions (Bowers, 2020). By extension, such platforms enable further telemedicine opportunities in the form of psychotherapy sessions via video, for example. The Australian government is providing mental health professional support through telemedicine during the COVID-19 pandemic, which again serves to ensure delivery of core services to those in need while significantly reducing (and in some case complete removal) of face-to-face treatment in hospitals (Australian Department of Health, 2020).

Telemedicine: challenges and opportunities

Telemedicine provides a new approach for wider e-healthcare to help combat the COVID-19 pandemic (Smith et al., 2020); however, there are a number of challenges to its implementation. In Brazil, for instance, the Federal Medical Council has deemed the practice of telemedicine (between patient and physician) as not legal (CFM, 2019). Similarly, in most states in the USA the use of telemedicine is severely constrained by regulatory bodies. Such barriers are in contradiction to recent actions taken by governments to halt the spread of COVID-19, which have focused on telemedicine implementation and usage. In the USA, for example, some federal rules have been waived to make it easier for physicians to provide care remotely, i.e. to adopt telemedicine (Archambault, 2020; Fung & Luhby, 2020).

Technologies for e-healthcare support require adequate bandwidth to support the transmission of data, images and sound. Consequently, access to broadband is essential for telemedicine in e-healthcare. This factor raises challenges for people living in rural areas, those without access to the internet, or vulnerable groups who cannot afford this service (Correa & Pavez, 2016; Smith et al., 2020). Moreover, engagement with telemedicine initiatives might be challenging for some citizens and they will need training in the use of new technologies and software connected to the internet (Ahlqvist, 2015). Data privacy and protection is also a critical issue to the success of telemedicine and e-healthcare. The privacy and protection of a patient's data must be paramount, and this issue has been raised as a core challenge by scholars and practitioners in the telemedicine field (Hit Consultant, 2020; Spencer & Patel, 2019). Finally, there are several telemedicine opportunities emerging for e-healthcare, including wearables, artificial intelligence, machine learning, 5G optimization, and Big Data, which have the potential to benefit patients, medical staff and healthcare organizations (*American Journal of Managed Care*, 2020; Chiaraviglio et al., 2017). Such technologies

provide not just the opportunity to help ease the impact of critical events, such as pandemics or natural disasters, but provide a platform to rethink traditional healthcare practices and facilitate a transition to e-healthcare as the norm.

Concluding remarks

This article has outlined how healthcare professionals and organizations are adopting telemedicine practices to 'flatten the infection curve' of COVID-19. We do not suggest that the technology of telemedicine itself is the panacea to improve healthcare, as the challenges in this sector are many. Nevertheless, embedding telemedicine into healthcare practices during the COVID-19 pandemic is proving beneficial to citizens, patients, medical professionals and healthcare organizations alike. We urge policy-makers worldwide to take advantage of the telemedicine experiences reported during this outbreak to allow the practices of e-healthcare under laws of privacy and data protection. Finally, we hope that this article motivates future work and prompts a significant reflection on telemedicine and healing at a distance.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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