

Telemedicine and M-Health in Developing Nations - At Present and in the Future

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Received: June 24, 2021; **Published:** July 20, 2021

Abstract

Telemedicine is the practice of medical consultation performed over a distance, overcoming the geographical barriers, by utilizing the tools of the information and communication technologies. According to some research so far, it is expected to cut down unnecessary patients' visits to the healthcare providers such as general practitioners or healthcare units such as clinics. Therefore, it is assumed that telemedicine can reduce the healthcare workload that can be incurred upon the healthcare workers in a nationwide healthcare system. With the power of telemedicine, patients with limited access to a physical healthcare unit (as in the case of those residing in the remote areas of a developing nation) can reach for the immediate consultation with a healthcare provider in case of emergency or in any situation that needs a quick and correct medical advice from a qualified healthcare professional. Therefore, telemedicine can positively impact and assist in the healthcare services as an auxiliary mode of consultation, although it cannot fully substitute a standard medical consultation that is naturally performed at a physical healthcare unit such as a clinic. In the future, telemedicine will be a booming mode of remote medical consultation between the patients and their doctors. It can also be a good channel of communication for comprehensive health education to the public, consultation for more privacy concern cases and long-term monitoring of chronic diseases.

Keywords: *Telemedicine; M-health; Information and Communication Technologies; Remote Medical Consultation*

In this third decade of 21st century, we are quite sure that almost every patient around the world has already been familiar with the word "telemedicine", especially those living in developed countries which have high Information and Communication Technologies (ICT) advancement.

The prefix 'tele' was derived from a Greek word meaning "reaching over a distance" [1]. In other words, it tries to mean - when combined with a root word in English -something is performed or executed over a distance. The examples will include the words like television, telescope, telecommunication, etc.

In medical discipline, when the word 'medicine' is prefixed with the word 'tele', it comes to mean that the practice of medicine is performed over a distance. In the deeper sense, telemedicine refers to medical consultation provided by the doctor for his/her patient over a distance (bypassing the geographical location), when both parties cannot meet in person. The World Health Organization (WHO) defined telemedicine as the delivery of health care services, where distance is a critical factor, by all health care professionals using information

and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities [2].

Is telemedicine beneficial in the medical practice?

To some extent, we could say “Yes”. It also depends on a case-by-case basis and the options the patients can have, with regards to the mode of consultation.

Although in-person face-to-face consultations are widely possible across developed countries, the same thing is not true for developing countries, especially in their rural areas which have healthcare resource limitation. For instance, the majority of the population in Myanmar are living in rural areas (approximately 70% of total population) and most of the residents in the rural areas of Myanmar have limited access to adequate healthcare services [3]. In those situations, telemedicine can bypass the geographical barriers. It can significantly reduce time, energy and cost from the individual to the national level.

Telemedicine has been proven by some previous studies as an effective way in cutting down unnecessary patients’ visits to the General Practitioners (GPs) [4-6]. Several research groups already suggested that telemedicine could significantly reduce the healthcare workload incurred upon the healthcare workers in a nationwide healthcare system, because it could triage the patients, thereby preventing their unnecessary visits to the healthcare units in person.

Between 2009 and 2010, National Health Services (NHS) Direct which was a free 24-hour nurse-led help line in the UK, prevented 2.4 million primary care appointments and 1.6 million emergency visits by ambulance. It cost £ 90 million annually [7], but saved approximately £ 213 million [8]. Thus, it was effective in decreasing the workload of NHS and General Practitioners (GPs) [5]. Another previous study also highlighted that telephone consultation, which was a form of telemedicine, could reduce the necessity of the home visits by the doctors to the patients [9].

Can telemedicine be a practical reality in developing countries?

We can say “Yes”, although the form of telemedicine in the developing countries might be different from that widely used in developed countries. For example, telemedicine in developed countries might involve laptops and high-resolution webcams (due to their more affordability there) with well-systemized booking systems between the patients and the specialist doctors - based on the referral by their GPs. However, telemedicine in developing countries such as Myanmar or a poor African nation might be through mobile devices such as mobile phones and - if some patients afford better - tablets.

The delivery of healthcare service through mobile devices is denoted as M-Health. M-health is defined as mobile ICT for healthcare which signifies the evolution of emerging wireless e-health systems via 3rd and 4th Generation (3G and 4G) mobile networks [10].

M-Health in a developing nation might be through different modes of ICT. Some M-Health services can involve full telemedicine consultation features that will include both the visual and voice communications, whereas some services can provide only the voice communication features such as telephone consultation. Moreover, some services will need prior booking appointments with the doctors, whereas other services can let the patients communicate with the doctors straightway - without bookings. The M-Health or telemedicine services that can provide instant consultation services include healthcare hotlines some of which operate 24/7. The examples will include NHS Direct in the UK and the 7887 Healthcare Call Center in Myanmar, etc.

The core benefit of presence of a healthcare hotline for the patients in the regions that have limited access to a physical healthcare unit is that the patients can reach for the immediate consultation with a healthcare provider such as a general practitioner in case of

emergency or in a situation of any form of sickness that needs a quick and correct medical advice from a qualified healthcare professional. According to the WHO, telemedicine could be even more beneficial for underserved and developing countries where access to basic care is of primary concern, because one of its biggest benefits is increased access to health care [11].

Is telemedicine widely accepted by the healthcare professional community?

Yes, in these days. The significantly important and positive role of telemedicine has become much more prominent and visible since the COVID-19 pandemic era in 2020. During our mandatory stay-at-home days during the COVID-19 pandemic in order to prevent ourselves from the disease transmission, telemedicine served as a bridging connection between the patients and their doctors. Telemedicine is likely to address many of the key challenges in providing health services during the COVID-19 pandemic period [12]. It can also help us avoid unnecessary direct physical contact between the patients and their doctors, and thus minimize the risk of COVID-19 transmission, while, on the other hand, providing continuous healthcare consultation service to the community [12]. With the power of telemedicine, providing populations in the underserved countries with the means to access health care can help meet previously unmet needs [13] and thus positively impact health services [14].

'Digital divide' along socio-economic status (SES) is said to be less-pronounced in mobiles than in other ICT [15]. Affordable mobiles become ideal communication tools for developing-world populations, who constitute 64% of global mobile phone users, compared to scarce computers and hospital beds [16].

Can telemedicine substitute a real face-to-face consultation at a physical healthcare unit?

Not really. Telemedicine is still a virtual or remote consultation, compared to a face-to-face consultation naturally performed at a physical healthcare unit. According to our standard medical practice, a complete medical consultation should include not only history-taking, but also physical examination of the patient, in order to reach a correct diagnosis followed by a correct treatment. And a complete physical examination should also include inspection with the examiner's eyes, palpation and percussion with the hands, and auscultation with a stethoscope.

Although some telemedicine consultations like video consultations can include inspection of the patients' clinical features by their attending doctors, the physical examination is still not complete yet, and thus doctors can be at risk of reaching a biased or wrong diagnosis followed by the wrong or incomplete treatment.

Therefore, in my opinion, telemedicine cannot fully substitute natural face-to-face consultation performed at a physical healthcare unit. It should just be utilized as an auxiliary mode of medical consultation in cases when there is no access to physical healthcare unit [6].

Conclusion and Telemedicine in the Future

In conclusion, as a healthcare professional from the telemedicine industry - especially in a developing nation, I would like to add the following points as my perspective:

- With the ever-booming ICT in the future, telemedicine will become playing a much bigger role in paving a way for the medical consultations between patients and their doctors, irrespective of their geographical locations. There will also be more number of digital literates in the world who can and will utilize telemedicine in the very future.
- Some primary healthcare cases can probably be triaged by telemedicine - at least to some extent, thereby preventing unnecessary patients' concerns and their subsequent visits to physical healthcare units.

- Telemedicine might support and strengthen the primary healthcare system in a country, although it cannot substitute it.
- Telemedicine might be an effective portal of comprehensive health education to the general public, especially in the resource-limited countries.
- Some cases of privacy concern such as sexual and reproductive health cases can be dealt with by telemedicine more comfortably, privately and effectively, especially by voice-only communication, because many patients from the rural areas of the developing countries are too shy to discuss about those topics face-to-face.
- Telemedicine will be a very useful communicative tool in long-term remote monitoring of the chronic diseases such as diabetes and hypertension, especially for their regular follow-ups.

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Volume 5 Issue 8 August 2021

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