Role of telemedicine in healthcare during COVID-19 pandemic in developing countries

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Abstract: COVID-19 is a public health emergency of international concern. Ensuring primary healthcare during this pandemic appeared to be a great challenge. Primary healthcare services are being disrupted due to lockdown, lack of protective gears and hospital facilities, risk of infection spread to non-COVID patients and health professionals. People with acute and chronic ailments including diabetes, pregnancy, obesity, chronic respiratory diseases, cardiovascular disease, cancer, mental health conditions are in trouble. In this article, the challenges in primary healthcare in developing countries during COVID-19 pandemic have been analyzed and the role of telemedicine in addressing these challenges has been discussed. Telemedicine can play an important role in this pandemic by minimizing virus spread, utilizing the time of healthcare professionals effectively and in alleviating mental health issues.

Keywords: Telemedicine, Telehealth, COVID-19, Coronavirus, Public health, e-Health

Introduction:

Coronavirus disease caused by *SARS-CoV-2* (COVID-19) is a highly infectious disease, declared as pandemic by World Health Organization (WHO). Around 2.5 million people have been infected by this virus causing more than 175 thousand deaths worldwide [1]. The number of infected people as well as the death toll is increasing in an alarming rate. Social distancing has been considered to be effective in reducing the rate of human-to-human transmission and minimizing morbidity and mortality [2-4]. However, densely populated developing countries with people barely conscious about social distancing are at high risk of COVID-19 outbreak. Hospitals in developing countries are not well equipped to handle such a pandemic. There is a scarcity of personal protective equipment (PPE) for health workers. Healthcare professionals are being infected. In this scenario, many hospitals and clinics are reluctant to provide healthcare services in fear of getting coronavirus exposure [5]. As a result, general people are being deprived of primary healthcare services even with non-COVID illness. However, many acute and chronic ailments including diabetes, pregnancy, obesity, malnutrition, chronic respiratory diseases, cardiovascular disease, cancer, mental health conditions need regular medical advice from doctors. Ensuring primary healthcare during this pandemic appeared to be a great challenge. In this reality, telemedicine can play a vital role to ensure primary

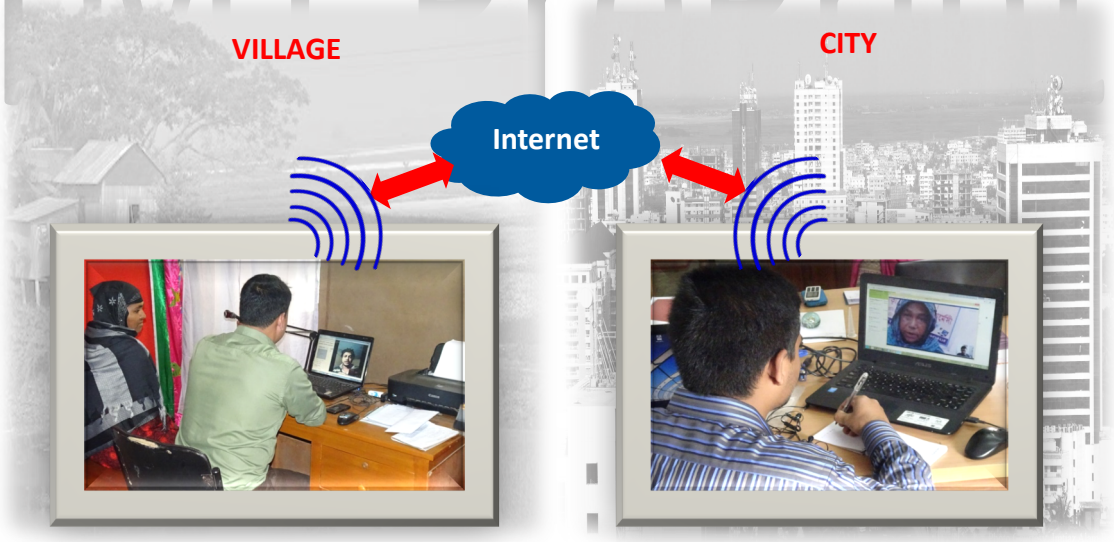

Figure 1 Telehealth consultation using internet while the doctor and the patient are at different geographic location.

healthcare needs in developing countries. Telemedicine is the technology of providing health consultation from a distant place [6]. In telemedicine, a two-way communication is established between a patient and a doctor utilizing the benefit of information and communication technology (ICT).

The doctor, who is in a different geographic location from the patient (Fig.1), provides health advice and prescription based on the conversation with the patient. In this article, the challenges in primary healthcare in developing countries during COVID-19 pandemic have been analyzed and the role of telemedicine in addressing these challenges has been discussed.

Lockdown limiting physical visit to doctors:

Human mobility restrictions can significantly reduce the spread of novel coronavirus infection [7, 8]. The World Health Organization has called on "all countries to continue efforts that have been effective in limiting the number of cases and slowing the spread of the virus". Countries have been locked down and restricted human mobility to slow down the spread of the virus. Around 4 billion people, or half of the global population, have been asked to stay at home by their governments to prevent the spread of the deadly COVID-19 virus. Therefore, people suffering from various acute and chronic ailments cannot easily visit doctors or hospitals physically. Not having health advices can increase their health risk. Consultation through telemedicine can be of great help in this troubling time for those people in maintaining a healthy life.

Risk of infection for non-COVID patients:

In this time of COVID-19 outbreaks, visiting hospitals and clinics increases the risk of infection for patients with non-coronavirus diseases. Testing for COVID-19 is very limited in the developing countries due to the lack of kits, keeping many corona positive patients untested. Many of them are asymptomatic, presymptomatic or very mildly symptomatic [9]. Even some doctors might be corona positive but untested with no symptoms. It has been reported that doctors are a major source of infection spread. This poses a high risk of infection to the people who visit hospitals or healthcare facilities for non-coronavirus health problems. Therefore, treating non-coronavirus diseases through telemedicine systems can significantly reduce the risk of infection spread to both patient and healthcare professional. Moreover, majority of the corona positive patients do not need be admitted to hospitals as the symptoms are very mild. Health consultation through telemedicine can be more effective for these corona positive patients as this will reduce spread of infection. More importantly, telemedicine can reduce the use of PPEs making these available for healthcare professionals working with severe coronavirus patients in hospitals.

Effective use of doctor's time:

Many healthcare professionals are being infected by COVID-19 over the course of their duties on hospitals and clinics, as they are highly exposed to hazards. The infected professionals are required to stay isolated or home quarantined. So the valuable time of these doctors are of no use in a situation when it is highly needed. These home quarantined doctors can utilize their time effectively by providing healthcare consultation to patients through telemedicine.

Relieving mental stress:

Worries and anxiety about COVID-19 and its impact is very stressful. Many people are at risk of mental health problems including depression. Social distancing makes it even more challenging. Psychiatric consultation though telemedicine while staying at home can be very effective in fighting against mental health conditions during this pandemic[10].

Conclusion:

COVID-19 is a public health emergency of international concern. Telemedicine can play an important role in this pandemic by minimizing virus spread, utilizing the time of healthcare professionals effectively and in alleviating mental health issues. Many areas in developing countries are under the coverage of mobile network and internet. Although limited, some countries are utilizing the internet and cellular connectivity to provide virtual healthcare services [11,12]. However, general people in the developing countries are not very conscious about telemedicine and its practical benefits. Developing countries need to implement telemedicine services in a large scale and make people aware of its benefits in order to deliver modern healthcare services to the doorsteps of the people. It is high time to consider telemedicine as an effective medium of healthcare to minimize the fear of dying without treatment and to make healthcare services easily available to general public during this global crisis.

Conflict of interest: The author declares no conflict of interest.

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