

Current and Future Growing demand of Digital Health Technologies to care Dementia and Elderly during PandemicKrishna Prasad Pathak,¹ Luiz Robberto Ramos²¹Nepal Open University, Nepal. Alzheimer Related Dementia Society Nepal, Department of Preventive Medicine, EPM / UNIFESP²Department of Preventive Medicine, EPM / UNIFESP**ABSTRACT**

COVID-19 has created huge challenges for health systems worldwide for health career sources and health care providers in health institutions. An immense range of digital health technologies can be considerable health strategies in recent years. We searched electronically published relevant articles in English language using these “COVID-19”, “coronavirus”, “technologies”, “severe acute respiratory syndrome”, “dementia”, “digital-health”, and “older adult care”. It helps to collect the digital information, collect data, transfer, store, frontline protection, to reduce the risk of rapid contamination, analysis and proper monitor information system, holistic control, manage, care and prevention, decrease the patients overload to the health care professionals’ in the institutions, prevent from contamination for health care providers, general peoples and patients. Still, lacking in many countries as alternative ways to adapt for digital health technologies in health care practices. Thus, it is necessary to adapt digital health technologies although there are few studies on the use of digital health technologies focusing on COVID-19. It is not only for COVID-19 issues but also should be implement to make our daily life easiest than before to fight with communicable disease.

Keywords: COVID-19, Dementia, Digital health, Older adults, Pandemic

INTRODUCTION

COVID-19 impacted globally though COVID-19 death rates was lower than excepted^{1,2} in South Asia³ in comparisons with other regions which is a severe infectious disease. This pandemic has impact on almost all the countries around the globe. Among of them the USA has one of the highest number of new cases. Many parts of the world are recommending adhering dock down, social distancing, and closed the transportations to fight against transmission of disease. Every aspect is affected by this pandemic even though; the older adults and dementia patients are most at-risk COVID-19 because of their old age and frequent medical comorbidities. It is greatly stressing the healthcare systems worldwide to manage the outpatient clinics/visits.⁴

In addition, people with dementia have the limited access of information on COVID-19 and between dementia patients that can have trouble to apply safety strategies (social isolation, self -quarantine measures, wearing masks and personal hygiene) those all behavioral activities and protecting measure could help them less chance of infections. Most of the countries older people tend to live separate, or in nursing homes or with their homes. People with dementia who are more dependent with the caregiver⁵ or care assist in-person might feel more isolation⁵ due to disease infection guidelines. More and more businesses/ services are initiating by using digital health technologies thus people with dementia may not have clear understating

of panic situations that creates psychological stress to them banning visitors to nursing homes, face-to-face visit at home, and long-term care facilities in health institutions and group activities in the care homes.⁶ Consequently, older adults became completely isolated from their loved ones.⁷ On the other hands, the stress or fear of COVID-19 contamination, among the staff of nursing homes, careers increased anxiety, burnout during full lockdown periods.

The aging population rate is globally increasing. As age with elderly population, the cognitive impairment is common and eventually that issue goes to as neurological disorder that is associated with the stage of dementia. Then after the patients require frequent visits of memory clinics, which tend to be increasingly overcrowded due to diagnostic processes of early stage Cognitive Impairment patients. They need closer screening procedure for more measurement and long-term care management⁸. Furthermore, older adults with dementia patients require care services like; care delivery, medication management, caregiver education and training, cognitive interventions, leisure activities and to maintain independence but extremely limited of community services to support people was on impact on people with dementia and their

Correspondence: Krishna Prasad Pathak, Nepal Open University, Nepal. Alzheimer Related Dementia Society Nepal, Department of Preventive Medicine, EPM / UNIFESP, Email: krishnapathak32@gmail.com

families.⁹

A couple of studies have shown that intervention programme for people with dementia using in-home video telehealth was feasible to deliver the cognitive impairment rehabilitation, mild cognitive impairment or Alzheimer's disease patients¹⁰ improved cognitive performance¹¹ and found positive treatment effects using tele-rehabilitation-based platform to the Aphasia patients¹². Similarly, internet-based speech-language therapy was a feasible model to deliver the care for patients.¹³ For appropriate care, the technology-based intervention for older adults looks accessible, affordable,¹⁴ stability and reliability. This COVID-19 has opened stakeholders' eye as fast track to adopt technology in dementia as holistic form of prevention, early detection, care, management and diagnosis.¹⁵ All these applications in dementia would worthy explore in the future especially, who lives in rural areas with no transport or have impaired mobility. Moreover, also benefit migrant people who might have culturally and linguistically diverse people with dementia from different geographic location using digital health technologies. COVID-19 crisis has given opportunities for people to embrace technology, which maintained their connection with the outside world during self-isolation. Health policy makers, service providers and clinicians should take hold of these innovative opportunities and support the technological transformation of dementia practice in the coming years.¹⁶

Such outbreaks may come repeatedly in future, gerontologist, neurologist, pathologist and memory clinicians are urgent to adopt digital health technologies to offer minimal care in the hospitals, protect and management from contaminations, significant number of studies have suggested.¹⁷ Considering a significant contribution of digital technologies, the American Academy of Neurology has developed guidelines to implement telemedicine services to the clinicians to examine with some limitations, particularly in the follow-up.¹⁸ However, it is in practice, yet.

The first telemedicine concept in 1948 was use as first radiological images, which sent via Telephone between the distances of 24 miles.¹⁹ Then after it was, develop gradually up to today. Although, since two decades, it is being an alternative way to adopt by policy and practice¹⁵ to the people with dementia people that could be a way to bridge this gap. In 1961, U.S. conducted Space Program to test animal of flights via computer network, and meanwhile, healthcare professionals could send and share information with just a few snap. This helped to put down the base of

modern healthcare system. The use of digital technologies for health has become a heraldry field to address health needs in this contemporary era. The use of e-Health was for information and communications means to support of health-related fields by using mobile and other wireless technologies. Thus, it includes more areas, such as computing sciences to keep data, genomics and artificial intelligence ECG, MRI, other screening kits which are more scientific today since the continuously developing 4G and 5G.²⁰

Since the coronavirus pushed to all the nations toward the consideration of digital access, probably majority nations were applied online shopping and Robot Deliveries (Robots can deliver food and goods without any human contact), Digital and Contactless Payment because the cash may carry virus. Of course, digital health (telehealth and e-health) can contribute for the management of communicable diseases during the pandemic and disaster. This may a means in slowing the mediation of communicable disease by making social distancing.²¹ Evidence has shown that in healthcare system, digital health not only provides and improve the patients' quality health, expenses and care facility²² but also it can contribute to decrease the patients overload to the health care professionals' in the institutions. On the other side, positioning technologies, Satellite monitoring, health sensors and apps, Drones (drones were applied in carrying medicine) and spraying disinfectants and 3D printing which was deployed to mitigate shocks to the supply chain and export bans on personal protective equipment. The another advance types of apps like; zoom app, Big Data and facial recognition, Artificial Intelligence (AI), Autonomous vehicles, Mobile tracking/mass surveillance, Ways in which GIS can be used in an epidemic, Epidemic thematic service map, Epidemic situation awareness map, Dynamic map system of epidemic prevention and control, Epidemic correlation research and judgment map (It is used to find out the train, bus, subway and plane information of diagnosis connected to the network based on Big Data analysis and geographic visualization through the real-time comparison of the coordinated traffic ticket information and epidemic observers, mobile epidemic map are significantly contributed to stop the spreading the virus from the mass level connection in the day to day life.

In addition, telehealth can assist (or manage the burden) with remote screening and the facilities of care during such pandemic situation.²³ People with asymptomatic and risky population (pregnancy, child and elderly,) will be most significantly benefit without the risk of exposure in a congested hospital or out patients' clinician waiting

rooms where the containment and mitigation possibilities are more. WHO says telemedicine strategy in the delivery of health care services is playing a crucial factor where the distance is barriers. It is useful where modern technologies are in lacking for valid diagnosis, treatment, prevention and continuous education for health professionals and communities as well.²⁴

Such emerging technologies are changing our daily lives under lockdown. The COVID-19 crisis has shown a further way that emerging technologies like the internet of things and artificial intelligence are not just tools, they are essential to the functioning of our society and economy in this 21st century. Testing in clinical trials and drug development for COVID-19 as well. Particularly in this pandemic time, need to think of critical infrastructure to address the panic situation. Thus, such digital tools must adapt as essential developmental procedure as the time progress. It is not only for COVID-19 issues but also should be implemented to make our daily life easiest than before to fight with communicable disease. Digital technology enables both education and remote work²⁵ for health workers and populations in specific time with limited resources and accurately. For example; the Chatbots provide life-saving information and relieve overwhelmed health systems, location, map and the spread of the virus for health workers with in short time. That can save time, money and to all the sectors and will be cost effective.²⁶

CONCLUSION

There is still a gap in the research regarding how digital health (DH) in medical interventions and implementation can be effective. Nevertheless, the reality is still we are seeking more reliable proof to apply and implement the full potential of this growing area in health science. Therefore, supporting older adults with dementia and maintaining their well-being during COVID-19 has become an urgent to apply digital health technology.

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