Digital health: A panacea in COVID-19 crisis

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ABSTRACT

The whole world is in the grip of the coronavirus disease (COVID-19) outbreak. This pandemic brought visible changes in the life of humans around the globe. Likewise, the medical health sector is forced to use digital technology to continue to provide medical health services by preventing themselves. COVID-19 pandemic highlighted the significance of digitalization in every sphere of life. By focusing on virtual care at a large scale, health care delivery becomes possible and convenient even for remote places. The use of artificial intelligence concepts in this pandemic, like robots replaced human movements and function automatically to guide the patients in the reception area and found helpful to prevent and manage the crowd in a few countries. Similarly, the use of e-earning platform has emerged as a digital solution to impart medical education to medical students in this corona outbreak.

Keywords: COVID-19, digital health, education, E-learning, medical, patient

Introduction

The coronavirus first case was detected in Wuhan, China, spread rapidly worldwide and declared a pandemic by WHO on 12 March 2020.[1] The pandemic wreaked havoc worldwide and jeopardized everything, including health care services across the world. The infected cases are ceaselessly augmenting and created a terrifying situation. The disease is experienced with a range of symptoms from asymptomatic infection to critical conditions of respiratory failure or death.[2] A million cases are reported until today, and more accelerated transmission speed is expected with increased mortality in India.[3] Rising numbers of infected cases, mortality, and scarcity of health care facilities shaken the world to shift conventional medical care services to robust digital technology to prevent further infection and save the earth.[4] Social distancing as an only preventive solution compelled the government to decide on countrywide lockdown.[5] However, a long-term lockdown resulted in a grave threat to the economy

and society and became a sin for patients who need medical assistance. This has further enforced the human being to think about other novel approaches for consultation, prescription, and investigation in the hibernation period of lockdown.[6]

The sub-Himalayan continent has difficult and adverse geographical conditions that further necessitate the health sector's innovation to deliver safe health services to all individuals seeking health services from remote Himalayan–subcontinent.[7] Likewise, frontline healthcare warriors and patients' safety is another vital concern to think on advanced digitalization in the health care sector.

Patient Management

COVID crisis has changed the normal living and working pattern drastically and has no hope of rays to return to a normal phase of life. A new way of living and working in pandemic became a necessity. The digital transformation of the health care sector introduced a range of solutions in each domain of patient assessment, treatment, and management. These digital innovations have arisen out of the need to maintain social distance and protecting health care workers. The digital transformation of health care technology enables us to handle

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the traditional way of attending patient and consultation safely. The health care industry revolutionized in each area to deal with the contact transmission and prevention of the spread of the novel virus.[8]

Telemedicine

The concept of telemedicine is not new in medical health. It's in existence since the inception of medicine; however, lack of necessity kept it in the rudimentary stage. Considering the COVID-19 scenario, the telemedicine became an ideal option to safeguard the health care workers and patients from the attack of the coronavirus. Therefore, the health care system needs are revolutionized to adapt technology-based health services by considering the current outbreak and serious crisis. India is in the middle of a pandemic and facing a serious shortage of health care workers and health care infrastructure and closed many routine hospital facilities to stop the further transmission of the deadly virus.[9]

Consequently, vulnerable populations such as patients with multiple comorbidities or immunosuppression, felt wretched and helpless to get access to health care services making life more miserable and challenging. To overcome the challenges of meeting the health care needs of susceptible population, government and health care experts start using telemedicine services and App-based solutions to meet the unmet medical needs of the patients with acute and chronically ill conditions.[10] The use of telemedicine reported the following advantages over a conventional medical practice in the COVID-19 outbreak:[11]

- Overcome the geographical barriers to access care.
- Use of telemedicine is a cost-effective and convenient way to meet health care needs.
- Face-to-face communication will enable the patient to clarify his doubts or quarries more confidently.
- Helps to schedule appointments, follow-ups, check-ups, and health education to patients and family members.
- Enhance patient engagement and satisfaction.
- Prevent the spread oftransmission and safe health care practice.

However, the use of telemedicine is not free of many disadvantages as well. These are summarised here:
- Malpractice: Telemedicine use poses a serious issue to medical malpractice and complicates traditional medical practices in terms of procedure, jurisdiction, and duty of care.
- Technological issues: Poor internet connectively, electricity issue, and unfamiliarity with complicated technical gadgets also make things more cumbersome.
- Maintaining privacy and confidentiality of records is a challenge with telemedicine and technology use.
- Misdiagnosis: Relying entirely on the patient's information for diagnosis may intent to make misdiagnosis in some cases.[12]

Safe Hallway and Safe Patient Reception

The health care system feels the need to shift to a new platform to adopt digital technology to protect humankind without disturbing the flow of health services. In this direction, many innovative and global safe medical practice methods have been practised around the globe. Robots, in delivering medical health services are tremendous. Robots found helpful to replace humans in a few areas of medical care, namely, thermal screening, sample collection, control on the use of personal protective equipment (PPEs), entertaining patients at reception areas, crowd management, and distribution of drugs are few crucial areas. These device works on the principle of artificial intelligence to take over the function of the human being.[13] The use of glass door as a barrier in outpatient regions to protect the patients and health care professionals and e-file system is another innovation tried and found helpful to prevent further transmission of the deadly virus.

Safe and Smart OPD Cabinet

Change in OPD design and infrastructure is the need of the hour in the outbreak to control the transmission of the infection. The use of glass sheath or transparent sheets can be used as a barrier device to continue OPD services. A well-equipped cabin with all essentials instruments and supplies, namely, digital stethoscope, electronic otoscope, pulse oximeter, digital thermometer, and electronic blood pressure monitoring, may help a physician to make an accurate diagnosis.[14] The use of electronic prescriptions will be another initiative to prescribe drugs to prevent the patient and health-care professionals from getting away infection. This development will further help to protect the pharmacy department from dispensing the drugs. Frequent disinfecting of the offices and the patient's receiving area will help to prevent the infection. The use of glass-made transparent cabin with a one-side opening window and long plastic sleeves and using personal protective equipment is another novel way to prevent the spread of the infection.[15]

Beyond Bell and Diaphragm

A stethoscope is one of the standard and most indispensable medical devices used by a physician in a clinical setting.[16] However, to perform a physical assessment, the physician must protect himself from a more susceptible and highly contagious infection. COVID pandemic pushes the health care organization by adding digitalization in almost all areas of the hospital. The invention of a digital stethoscope is a precursor of reformed digital technology in this severe outbreak. This equipment helps a physician listen to lung or heart sounds with a distance of 6 feet or more to protect oneself and the patient from the deadly infection. In extreme cases, this equipment can also be used to can auscultate patients from their homes and get a record of clinical findings for interpretation by using mobile applications. The digital stethoscope is a smaller, portable and lightweight device than the diaphragm of an acoustic stethoscope.[17]

E-learning

The sudden outbreak of corona shifted medical education and practice into a different platform. The COVID-19 resulted shutdown of medical schools worldwide and dramatically changed medical education with the distinct rise of digital learning and other online platforms. Use of many online platforms Zoom, G-suite, Google meet, WebEx Meet are few online platforms frequently used by medical teachers and students to impart medical education.[18] The use of telemedicine gained popularity in the COVID-19 outbreak and emerge as a popular concept in this era to meet the health care needs of the patients in the hospital. Telemedicine has been used for consultation, diagnosis, treatment prescription, and test for the patients. However, many biomedical digital repositories of e-learning materials are also tried by teachers and students around the globe. Now, it became a trend and need of the hour to depend on these platforms. However, sudden shift over the medical education to e-learning pose an enormous number of challenges before medical students and practitioner. Unfamiliarity with the application, lack of resources, electricity problem, and time zone related problems are a few common issues with the use of e-learning.

Primary care physicians provide the first contact to patients with undiagnosed medical conditions, screenings and assistance on preventive care by routine check-ups. Moreover, they face greater demand to manage all chronic patients with lifestyles diseases like hypertension, diabetes mellitus and asthma, and assist in continuing care of speckled medical conditions. Primary care physicians have experienced significant advantage after adopting digital health to enhance their ability to care for their patients. With the significant rise in digital health tools and mobile apps, primary care physicians able to manage and monitor their patients from remote places and can take appropriate clinical decisions to guide them to adjust with the progression of disease conditions. However, increased patients safety and improved clinical efficiency are the main motivational force for primary care physicians to use digital health tools. Furthermore, primary care physicians reported digital health tools significantly enabled them to care for their patients as compared to specialists, it can be justified by their more risk and uncertainty tolerant job.[19]

Conclusion

'Necessity is the mother of invention' is found valid and factful in the corona outbreak. The whole world is crying for the untimely loss of lives and shrinkage of the economy. Medical health practitioners are working around the day and night to impart the best possible care and education around the globe. The use of digital technology and artificial intelligence is on its best use in the pandemic to sustain health care. However, the fact cannot be denied that nature has educated us to learn a new way of living life without being stopped and bend down.

In the digital era of 21st century, job of a health care professional has become extremly demanding in the lieu of patients' awareness for their disease and treatment. Furthermore, patients like to have active participation in their treatment. With varying patients' and community expectations, it has become necessary to inculcate digitalization in medical industry. There is need to transform old traditional concepts of people about physicians, considering them demigod, to know everything and treat each health condition. With the emergence of a new concept of 'e-physician' makes them more empowered with digital literacy, enable them to follow all new evidence and guidelines of treatment, engaged with patients to understand their feelings and concerns, and made them more curious and creative. Thus, digital health will help to reward the physicians' contribution in the patient management in today's era.

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Conflicts of interest

There are no conflicts of interest.

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