

Digital Innovations: A boon to dental practitioners during Covid 19 pandemic

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Abstract

Since the beginning of the year 2020, there has been a synchronous maturation of numerous key digital innovations in information and communications technology, which have advanced at an unparalleled rate this novel century. Every single sector and industry, including healthcare, has been impacted by this digital transformation. Digital innovations with the further alliance of tele-health, the growth of 5th generation wireless networks (5G), artificial intelligence (AI) approaches such as machine learning (ML) and deep learning (DL), and the Internet of Things (IoT), along with digital security capabilities such as blockchain, have shaped an extraordinary ecosystem for innovative opportunities in healthcare and other industries.

Globalization, popularity of social and digital media, health care-related scientific and treatment advances, health information systems and technologies, and remote/ virtual work settings have made an immense impact in the way we are tackling the challenges we face in the Dental care system during the pandemic.

Keywords: Digital innovations, COVID 19, Dental practitioners

Introduction

The spread of coronavirus (COVID-19) has posed significant challenges for dentistry and medicine, and dental and medical schools, in all affected countries. The rapidity of reaction and kind of response to this disease around the globe have been very inconstant according to

divergent healthcare systems, economies and political ideologies.[1]

The pandemic has also dramatically changed the routines in all aspects of life including the Dental Care system. Initially, the Dental clinics were suspected to be a hotspot for nosocomial transmission of COVID-19, but now the various regulatory authorities from all over the world like American Dental Association (ADA), World Health Organisation (WHO), Centre for Disease Control (CDC) and others have formulated and implemented significant number of newer guidelines and recommendations to comply with public health policies, ensuring the safety of dental care professionals, staff and patients during the pandemic.

In 2019, WHO initiated a framework for the acceptance of digital innovations and technology in the healthcare field. The WHO commendations on digital interventions in healthcare emboldens assessment on the basis of 'benefits, harms, acceptability, feasibility, resource use and equity considerations', and sights these tools as still very much that – tools – in the journey to accomplishing universal health coverage and sustainability (World Health Organisation, 2019).[2,10]

When recommencing clinical practice of dentistry post COVID-19, it is anticipated that the inflow of patients will surge. The task here is to streamline the flow of the patients and prioritize care to confirm social distancing measures are followed. Concurrently, it is imperative to lessen patient's distress and potential complications from extended waiting times. This comprises sufficient social distancing, abridged gatherings in buildings, adoption of modern technology in clinical and educational settings.[3]

This report highlights the importance of embracing various digital innovations and modern technology in the

field of dentistry in the current scenario of COVID-19 Pandemic.

Report

The coronavirus 2019 (COVID-19) pandemic has intensely changed the routines in all facets of life. In the setting of clinical dental care, where preventive measures to avoid cross contamination were previously in place, a substantial number of new recommendations have been employed to follow public health policies, ensuring the safety of dental care professionals, staff, and patients and, thus, stopping further spread of the virus.[4]

Tele-Health & Tele Dentistry

At the beginning of the pandemic as state and local governments throughout the country dispensed social distancing guidelines and stay-at-home orders to alleviate the spread of the coronavirus, telehealth became a lifeline for patient care even in the field of dentistry. In reply to the rapid demand in access, platforms such as FaceTime and Zoom for virtual visits enclosed a wide range of conditions, from urgent care, primary care check-ups, medication follow up and COVID-19 screenings.

Teledentistry enable clinicians to evaluate their patients remotely. This can be desirable for several reasons. First, teledentistry can facilitate more efficient and equitable distribution of limited healthcare resources. This allows delivery of care to distant areas where there is a shortage of dentists and other professionals, reduces travel and the associated carbon footprints, and connects patients with rare diseases to speciality care and address the transport challenges some patients face. Waiting times could be reduced through increased capacity and access to care for both chronic and acute disease patient. In the acute setting, patients could receive immediate specialist input even if one is not available locally.

Second, amid the COVID-19 pandemic and in mitigating infection risk in the healthcare setting, real-time telemedicine has been rapidly incorporated into routine care delivery. The patient population telemedicine aims to serve is no-longer focused on targeting remote regions. Instead it is rapidly becoming a new standard of care. It enables triaging prior to patients' arrival into hospital to avoid unnecessary visits and exposure risks and has been adopted by multiple centres across the world.[5-9]

Electronic Forms For Patients

Using digital forms is one of the simplest ways of streamlining the time-intensive processes in a dental practice. They are especially useful for new patient registrations and also "TRIAGE".

It has many benefits:

- ✓ It reduces unnecessary crowds at the reception desk thereby reducing the risks of cross contamination and spread of viruses
- ✓ It eliminates transcription errors due to illegible handwriting.
- ✓ It saves your staff time, as they do not have to input the data.
- ✓ Capturing the data in one place enables it to be used across various dental departments.

Digital Front Door

During the eon of social distancing, the way consumers interact with companies is shifting and they are assigning more value on the digital experience. The same is accurate for hospitals, clinics and health systems; many now perceive their "digital front door" as the first impression potential patients have of their health system and their online experience can be ruined.[5,6]

Artificial Intelligence Chat Bots (Ai Chat Bots)

The public all around the world have experienced an amplified need for reliable healthcare information and

direction during the pandemic, and clinical experts' time is more valuable than ever. The usage of artificial intelligence chatbots, which deliver patients with vital communication, has developed amidst the pandemic. By engaging machine processing to teach and assist patients during this time of unlimited information demand, healthcare providers have been able to more proficiently reach patients and also to triage their needs.[5,7]

Robotics

The pandemic has enforced healthcare providers to lessen in-person contact with patients as much as possible to alleviate the spread of COVID-19. As a result of this, many health systems including the field of dentistry are engaging robotic technology to treat patients without a clinical staff member having to come into their contact.

During the current coronavirus pandemic, one of the riskiest parts of a health care worker's job is assessing people who have symptoms of Covid-19. Robot takes contact-free measurements of patients' vital signs and definitely could reduce health care workers' exposure to Covid-19 virus.[5,6]

The researchers have shown that they can measure skin temperature, breathing rate, pulse rate, and blood oxygen saturation in patients, from a distance of 2 meters. The robots, which are controlled by a handheld device, can also carry a tablet that allows doctors to ask patients about their symptoms without being in the same room.[6]

Robots are also portraying an important role in patient care at some hospitals and dental clinics. The robotic technology can execute artless tasks in the patient's room to reserve health care professionals and Personal Protective Equipments (PPE) during the pandemic. In some cases, the robot can comprise a screen with a staff

nurse or healthcare workers face or voice to connect with the patients on a human level while in isolation. [7,8]

The Internet of Things (IOT)

Over the last decade the number of mobile devices has surpassed the global population figure. Thus, there is simultaneously increasing interconnection between devices and machines, maintaining connections without deliberate human intervention. This network is referred to as the Internet of Things, to differentiate it from the traditional internet which connects people. It is the network of physical objects embedded with sensors and the ability to transmit and process data, communicating with other machines or humans, frequently in an automated fashion.[2,6]

QR Codes

QR codes can be generated for Consultation forms, Consent form and Payments. The QR codes should be made easily visible and available to patients both in the Dental practice website and at the Front desk, so that contactless handling of recording patient information and data and also contactless payments can be made conveniently.

Incorporation of the Digital payment portals to the Dental practice website and the payment links will facilitate the patients to make the digital payments and thereby avoiding the surface contamination and spread of virus.[9]

Conclusion

Globalization, popularity of social and digital media, health care-related scientific and treatment advances, health information systems and technologies, and remote/ virtual work settings have made an immense impact in the way we are tackling the challenges we face in the Dental care system during the pandemic. Even though the world endures to embrace some standard public health measures to manage the COVID-19

pandemic, there are now several emerging technologies that can be used to ease the application of Teledentistry to enhance and develop the outmoded public health strategies.

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