Teledentistry as a Dental Care Solution during the COVID-19 Pandemic in Saudi Arabia: A Review

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ABSTRACT

The ongoing COVID-19 epidemic is a major worldwide issue. This epidemic brings to mind the Middle East respiratory syndrome coronavirus (MERS-CoV), which spread quickly throughout the Middle East in 2012 and killed 871 people, or 39% of the total. The 2019 coronavirus illness is also known as SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) or COVID-19. The World Health Organization (WHO) designated the current COVID-19 as a public health emergency of international concern (PHEIC) on January 30, 2020. The dental community and all patients in need of dental care in the modern day benefit greatly from teledentistry. Emergency dental treatment and patient triage may be accomplished efficiently through teledentistry. As a result, it lowers the possibility of the virus spreading nosocomially and communicatively through interpersonal contact in dental clinics. A summary of teledentistry's applications, scope, and significance in the present COVID-19 crisis is provided in this article.

Keywords: COVID-19, MERS CoV, Teledentistry, Saudi Arabia

Introduction

The coronavirus family causes the Middle East respiratory syndrome (MERS), which was initially discovered in Saudi Arabia in 2012 and was given the name MERS-CoV. Numerous nations have seen epidemics related to healthcare, with the UAE, KSA, and the Republic of Korea seeing the biggest outbreaks. This virus originated from dromedary camels who were infected. With or without pneumonia, this virus spreads from animals to people and subsequently from people to people [1].

A different virus from the coronavirus category was just identified in Wuhan, China's Hubei Province, in December 2019 [2]. It was associated with a wet seafood market; bats were the source of the virus, making it zoonotic [3]. On January 30, 2020, WHO designated the SARS-CoV-2 epidemic as a Public Health Emergency of International Concern (PHEIC) [4]. This new coronavirus was identified as SARS-CoV-2 by the International Committee on Taxonomy of Viruses. On February 11, 2020, however, the WHO designated it as Corona Virus 2019 or COVID-19 [5]. The WHO proclaimed a worldwide epidemic on March 11, 2020, after this virus began spreading alarmingly to over 100 nations worldwide through transmission from person to person [6]. According to reports, COVID-19 is spread by direct touch and droplets from sneezing, coughing, and talking to others nearby. Fever, coughing, and acute respiratory illness are all symptoms of a COVID-19 infection, which can cause serious illnesses including pneumonia, renal failure, and even death. A small number of cases with asymptomatic infection were also documented [7, 8].

Similar to telemedicine and telehealth, teledentistry is the use of information technology and telecommunications for dental treatment, education, consultation, and public awareness. For patients of all types who are located in remote areas, it improves communication, the sharing of health data, and accessibility to dental treatment [9].

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Dentists can spread the virus to other patients and dental staff at dental clinics when they perform dental treatments on patients who are infected. Thus, the prevention of the nosocomial spread of the virus through dental offices—which is made feasible by the use of teledentistry—must be linked to the safety and protection of patients as well as healthcare professionals. An overview of teledentistry's uses, reach, and importance of the COVID-19 epidemic in Saudi Arabia is given in this paper.

Materials and Methods

Synchronous Teledentistry or "Real-Time Consultation" is the delivery of patient care and education, using live video conferencing; it is a two-way interaction between the patient at one place and the dental provider or dentist at another place using audio-visual telecommunications technology [10].

International health agencies such as the World Health Organization (WHO), National Centers for Disease Control, and health departments have been disseminating real-time information about COVID-19 through websites and social media outlets. These organizations can play a vital role in increasing awareness of Teledentistry and validating the effectiveness of Teledentistry in the healthcare sector [11, 12].

Asynchronous Teledentistry, also known as "store-and-forward", is the transmission of recorded health information (e.g., photomicrographs, digital impressions, video, photographs, and radiographs of patients) through a secure electronic communications system to a dentist who uses the information to evaluate a patient's condition or render a service without live video conferencing with the patient [13].

Results and Discussion

Need for teledentistry
Around the world, medical professionals have been treating patients sick with viruses day and night; sadly, some of them have contracted the virus and passed away. An item titled "The workers who face the greatest coronavirus risk" appeared in the New York Times on March 15, 2020. According to this article, dentists were far more vulnerable to viral infections than general practitioners and nurses [14].

Exposure to a person or people exhibiting symptoms of a virus infection, such as fever, sneezing, or coughing, while seeking dental care can pose a risk to both the dentists and the healthy patients in the dental office. The virus can spread from infected patients to dentists and from dentists to other dental staff in the dental office. Thus, good use of teledentistry can reduce the chance of COVID-19 spreading through contact.

Scope of teledentistry in Saudi Arabia
There were limited publications on Teledentistry in Saudi Arabia [15, 16]. Ministry of Health Saudi Arabia is tremendously working hard leaving no stone unturned to prevent and control the spread of COVID-19.

As per the Saudi Center for Disease Control [SCDC], certain rules and regulations were made for social distancing and people should report to healthcare facilities (HCFs) or health electronic surveillance networks by calling the specific numbers given by the Ministry of Health so that the health team responds spontaneously and categorizes the household and community contacts as per the symptoms and test the people without charging and isolating them from the rest uninfected [17].

Web-based Teledentistry is widely used in Saudi Arabia. It is a self-instructional educational system, which contains information that was stored before the user accessed the program. Its advantage is, that the user can control the pace of learning and review the material as many times as he/she wishes. This helps the population to know the information related to COVID-19 [18].

Ministry of Health, Saudi Arabia introduced two apps in 2019, to combat the COVID-19 outbreak in Saudi Arabia. These apps are smartphone apps, which help in consultation and guidance and are free of charge for the people of Saudi Arabia. The Mawid app is for self-assessment tests for COVID-19 for the suspected cases and books their appointment in health care centers for further testing. The Saudi Ministry of Health introduced Tatamman App (meaning, rest, assured) to assist self-quarantined people. This app will help to monitor the conditions of people who are self-isolated or quarantined to access up-to-date advice and information about their health status and the virus. With the introduction of these E-services portals for the people, the Saudi government gave moral support and hope to the infected people who were paranoid about their health [19].

Applications of teledentistry during the COVID-19 crisis

Teledentistry plays a key role in the present challenging situation, with the help of Teledentistry, the contamination of patients to the patient and also patient to the dental practitioner can be avoided. Using teledentistry, the patient can consult the dentist through telephonic conversations or messages, WhatsApp, or video conferencing and be informed about their dental and general health status.

Teledentistry is a cost-effective service that can be provided to rural and urban people living in distant places without the patient being traveled to the dental clinics. Teledentistry increased specialist support for the diagnosis of disease, based on signs and symptoms through videoconferences. It is a great opportunity for general dentists, they can mail or WhatsApp the patient records and images of x-rays to dental specialists, to make a diagnosis and develop treatment plans without the presence of the patient itself.

Through Teledentistry, educational awareness about COVID-19 to dental patients is possible. Through Teledentistry, the communicable and nosocomial infectious spread of COVID-19 can be prevented or controlled to a large extent. Similarly, by utilizing Teledentistry, dental patients with positive symptoms of virus infection can be helped with remote assessment (triage) and guide healthcare facilities for further testing [20].

Limitations of teledentistry

It requires proper internet connections for teleconferencing, a backup communication system, and a technical support group. Legal issues including licensure, malpractice, reimbursement barriers, privacy, security, and ethics are involved. If technical errors occur during data transmission that cause a misdiagnosis or medical error, Malpractice needs to be considered and curbed. Privacy and security are important issues in cyberspace. If a patient's data is stolen or lost during the transmission process, the entire project may need to be stopped, particularly when the Health Insurance Portability and Accountability Act becomes law. The experience of the peer dentist and his knowledge are also varied. Discussion of problems on social networking sites is risky [21].

Recommendations

Ensure that the Teledentistry instructors are well-versed in computer science and that they have adequate teaching experience in the field. These issues include jurisdiction, inter-state licensure, malpractice, reimbursement barriers, as well as technological, cybersecurity, and ethical aspects that need to be solved. Accreditation of teledentistry health professionals should be approved. Provide funding that adequately covers the cost of setting up Teledentistry. Support all stakeholders with an effective communication and change management strategy. Apply Teledentistry services on a regular and outline basis as a health care provider.

Conclusion

When an infectious pandemic like COVID-19 strikes, these circumstances emphasize how crucial it is to provide uninfected individuals with dental care via teledentistry. Through the use of teledentistry, significant improvements in oral health treatment and public knowledge of oral health issues may be made. When pandemic outbreaks like COVID-19 occur, the Saudi Arabian government can start initiatives and assist in the efficient use of teledentistry throughout the Arab globe. In addition to helping those in need of dental care, teledentistry raises awareness of viral education. To stop the nosocomial and community transmission of the coronavirus 19 illness (COVID-19), teledentistry is essential.

References

1. Barry M, Al Amri M, Memish ZA. COVID-19 in the shadows of MERS-CoV in the Kingdom of Saudi Arabia. J Epidemiol Glob Health. 2020;10(1):1.

2.   Magomedova UG, Khadartseva ZA, Grechko VV, Polivanova MN, Mishvelov AE, Povetkin SN, et al. The role of Covid-19 in the acute respiratory pathology formation in children. Pharmacophore. 2020;11(5):61-5.

3.   Eltayeb LB. An update about Coronaviruses with emphasis on newly emerged COVID 19. J Biochem Tech. 2020;11(3):14-20.

4.   World Health Organization. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). 2005.

5.   Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. Int J Oral Sci. 2020;12(1):1-6.

6.   World Health Organization. WHO director-general's opening remarks at the media briefing on COVID-19-11 March 2020. Geneva, Switzerland; 2020.

7.   Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): emerging and future challenges for dental and oral medicine. J Dent res. 2020;99(5):481-7.

8.   Sabino-Silva R, Jardim ACG, Siqueira WL. Coronavirus COVID-19 impacts to dentistry and potential salivary diagnosis. Clin Oral Investig. 2020;24(4):1619-21.

9.   Jain A, Bhaskar DJ, Gupta D, Agali C, Gupta V, Karim B. Teledentistry: upcoming trend in Dentistry. J Adv Med Dent Scie. 2013;1(2):112-5.

10. Sanjeev M, Shushant G. Teledentistry a new trend in oral health. Int J Clin Cases Investig. 2011;2(6):49-53.

11. World Health Organization. Critical preparedness, readiness and response actions for COVID-19-7 March 2020. Published online 2020.

12. Control C for D, Prevention. Coronavirus disease 2019 (COVID-19) situation summary. Published online 2020.

13. Jampani ND, Nutalapati R, Dontula BSK, Boyapati R. Applications of teledentistry: a literature review and update. J Int Soc Prev Community Dent. 2011;1(2):37.

14. Spagnuolo G, De Vito D, Rengo S, Tatullo M. COVID-19 outbreak: an overview on dentistry. Int J Environ Res Public Health. 2020;17(6):2094.

15. Alawwad SM, Zakirulla M, Alasmari NM, MohammedAlamr M, Alshahrani RA. Perceptions of teledentistry among dental professionals in Saudi Arabia. Ann Trop Med Public Health. 2019;22:11-20.

16. AlShaya MS, Assery MK, Pani SC. Reliability of mobile phone teledentistry in dental diagnosis and treatment planning in mixed dentition. J Telemed Telecare. 2020;26(1-2):45-52.

17. Memish ZA. Call to action for improved case definition and contact tracing for MERS-CoV. J Travel Med. 2019;26(5):taz001.

18. Bhambal A, Saxena S, Balsaraf SV. Teledentistry: potentials unexplored. J Int Oral Health. 2010;2(3):1-6.

19. Kingdom of Saudi Arabia- Ministry of Health Portal. Accessed February 11, 2021. Available from: https://www.moh.gov.sa/en/Pages/default.aspx

20. Ghai S. Teledentistry during COVID-19 pandemic. Diabetes Metab Syndr: Clin Res Rev. 2020;14(5):933-5.

21. Bradley M, Black P, Noble S, Thompson R, Lamey PJ. Application of teledentistry in oral medicine in a community dental service, N. Ireland. Br Dent J. 2010;209(8):399-404.