Volume 03, Issue 05 (November-December 2020), PP 13-15 **www.ijmsdr.org**
ISSN: 2581-902X

International Journal of Medical Science and Dental Research

The Vital Roles of Tele dentistry during the Current Situation of COVID-19 Pandemic

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Abstract: *Dentistry involves routine close face-to-face interaction with patients, and during the COVID-19 pandemic, it has mostly been suspended. Teledentistry can offer an innovative solution to resume dental practics during this pandemic. In this review, we provide a brief overview of applications of teledentistry. Articles on teledentistry, relevant to this review, were searched and consulted from PubMed, Google Scholar, and Cochrane database. Teledentistry is the remote facilitating of dental treatment, guidance, and education via the use of information technology instead of direct face-to-face contact with patients. Teleconsultation, telediagnosis, teletriage, and telemonitoring are subunits of teledentistry that have important functions relevant to dental practice. There are many challenges for acceptance of teledentistry by the dentists as well as patients, which need to be addressed urgently. This review concludes that teledentistry can make it easier to connect dental practices with outreach programs; this allows dental practice to engage in social responsibility and community services. In addition to outreach, dental professionals can improve their practice by enhancing relationships with specialists and consultants as they engage with them more efficiently, and may connect them to the patients when necessary.*

Keywords - *Teledentistry, Telehealth, Telemedicine, COVID-19, Coronavirus*

I. INTRODUCTION

Dental practices are among the highest affected health services by the outbreak of the severe acute respiratory syndrome coronavirus infection, better known as coronavirus disease (COVID-19), which brought a new, unanticipated challenge to dental professionals across the globe [1]. The potential to transmit the virus via routine dental procedures significantly increased as it spreads by droplet, fomite and contact transmission, face-to-face interaction of dental professional with the patient carries a risk of its transmission. Moreover the dental treatment consistently involves close inspection, examination, diagnostic and therapeutic interventions which make the dental professionals most susceptible to get infected with coronavirus [2]. As a result, during the current pandemic, most routine dental procedures have been postponed, and only emergency dental procedures are being barely performed. The emergence of such unexpectedly and critical situation, and the growing fear of COVID-19 infection transmission has mandated the development of new practices, and called the global health systems to find innovative measures able to face the higher levels for patient needs and community pressures on the healthcare delivery services, more specifically the dental services.

The concept of "teledentistry" has received considerable attention from dental professionals and organizations around the world. It can provide an innovative solution to continue dental practice during the pandemic periods, it means the remote facilitating of dental care, guidance, education or treatment via the use of information

technology rather than through direct face-to-face contact with any patient [3].Teledentistry is not a new concept, over the years it has proved to be beneficial for remote dental screening, diagnosis, providing consultation, and proposing treatment plan. It is equivalent to real consultations in areas with limited access to facilities, in school children, and in long-term healthcare facilities [4].

II. TELEDENTISTRY ROLES

The teledentistry concept is stemmed from telehealth, which is a broad concept within healthcare. Basically, it aims to provide a range of solutions for the patients that they can receive from a distance location. For example, providing health services remotely through telephones, video conference calls, tablets, and so on. It allows for the collecting and exchange of useful data with a dental professional, this data can be used to support the delivery of appropriate dental care, diagnoses, treatment and consultations. A teledentistry implementation can take place from anywhere, it could be in the form of a video conference between a dentist and patients to discuss an urgent complain. It is also helpful to avoid unnecessary hospital and dental practices visits.

Utilizing telehealth solutions have made various amount of benefits to the healthcare delivery system, and the teledentistry as well has played many roles in supporting the dental practice in an innovative ways, especially during crisis circumstances such as in corona era, namely the teledentistry services may include but not limited to tele-consultation, tele-triage, tele-monitoring, and tele-diagnosis.

In tele-consultation the patients or local healthcare provider seeks consultation from dental specialists using telecommunication systems [5]. It is more valued for consultation of patients who are physically and intellectually challenged, and patients from aged care facilities and prisons [6]. Tele-consultation has been shown to reduce the number of referrals from primary health centers to higher centers by more than 45% [7]. During the quarantine and lockdown period due to the current COVID-19 pandemic it may aid the patients in continuing their therapy in stay in contact with the dental professional.

Tele-triage involves the safe, appropriate and timely disposition of patient symptoms via smartphone by specialists. It has been used for remote assessment of school children and prioritize those requiring dental care without unnecessary travel regardless of socio-economic and geographical difficulties in many places [7, 9]. A study suggested the use of tele-radiology as a useful tool in triaging of maxillofacial trauma patients from peripheral centers to their main trauma center [10]. On the other hand the utilization of tele-monitoring can replace the frequent physical visits by virtual visits for regular monitoring of treatment outcomes and disease progression [5]. In a recent descriptive pilot study, tele-monitoring approved to improve the monitoring of patients during the covid-19 dissemination, and appeared to be a promising tool in the remote monitoring of surgical and non-surgical dental patients, especially reducing costs and waiting times [8].

Furthermore, with the use of tele-diagnosis programs, patient referral to specialized dental services will be reduced, while the use of smartphones for detection of dental caries is well supported [10]. During the current COVID-19 pandemic investigators recently illustrated the use of WhatsApp application and telemedicine in making a differential diagnosis of oral lesions [11] in general tele-diagnosis can use the technological solutions to exchange information, diagnostic reports and images to make a proper diagnosis of an oral health problem [7, 9]. The fundamental impact for all of these teledentistry roles will lead the dental professionals to make the right decision regarding the patient care taking into consideration the quality of care and evidence based practice.

III. TELEDENTISTRY DURING COVID-19

In the current situation of COVID-19 pandemic, with increasing possibility of become an endemic, the main preventative measure is to avoid person-to-person contact and apply the social distancing. Therefore tele-dentistry satisfies the precautions that have been promoted by the health authorities to contain the spread of the virus. Teledentistry can be incorporated into routine dental practice as it offers a wide range of applications such as remote triaging of the suspected COVID-19 patients for dental treatment and decreasing the unnecessary exposure of healthy or uninfected patients by decreasing their visits to already burdened dental offices and hospitals [4]. In emergency cases, a patient can connect with a dentist or dental professional remotely, through

this connection they allowed to assess the patient's complain, suggest medicine, and save the patients time, money, and a stressful trip to a hospital or dental clinic especially within the current COVID 19 situation. Patients can get second opinions through teledentistry and so can dentists or dental professional easily consult with another digitally. In the public health sector, teledentistry can help dental professionals connect to multiple communities, for example using mobile hygiene programs at schools and clinics become easier and more effective. In teledentistry, the dentists can assess snapshots taken to identify any problems in a more efficient manner. Teledentistry makes it easier to connect dental practices with outreach programs; this allows dental practice to engage in social responsibility and community services. In addition to outreach, dental professionals can improve their practice by enhancing relationships with specialists and consultants as they engage with them more efficiently, and may connect them to the patients when necessary.

IV. CONCLUSION

Dental services shape an important part of any healthcare delivery system, which has become severely compromised during the current pandemic of COVID-19. The importance of innovative solutions provided by teledentistry becomes the safe land for both patients and dental professional in this situation. The new challenge for the global healthcare systems is how to incorporate teledentistry into routine dental practice during the current pandemic. There are many benefits for this paradigm shift in providing essential dental care remotely including but not limited to tele-consultation, tele-triage, tele-monitoring, and tele-diagnosis for all dental procedures and services. In conclusion, we assume that the main driver for expanding the value to the patients and the overall healthcare system during COVID-19 crisis will be through the use of teledentistry platforms.

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