Review Article

Role of Teledentistry during Covid-19 pandemic: A review

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ABSTRACT

Background: Teledentistry can provide an innovative solution to continue dental practice during the current pandemic. It involves rationale use of information and communication technologies that provides care remotely.

Method: Articles on teledentistry, pertinent to this review, were searched and consulted from Cochrane database PubMed & Google Scholar.

Results: Teledentistryenables dentists to cater various kinds of dental care needs, while maintaining physical distancing with patients. Various domains of teledentistry include teleconsultation &telescreening, telediagnosis, teletriage and telemonitoring. Telediagnosis platforms are used worldwide to reduce the need of close clinical oral examinations. The current pandemic has shown that the dental practice using teledentistry can be considered as safest method of patient care.

Conclusion: Teledentistry is a feasible option for both dentist and patients during the Covid-19 pandemic because this can complement the existing compromised dental system by extending care to additional patient population at a reasonable cost and it can also target the problem of shortage of dental specialists up to a great extent.

Keywords: COVID-19 - Teledentistry– pandemic

Introduction:

The Covid-19 pandemic has created unique challenges in existing healthcare systems across the globe. The route of transmission of this Coronavirus has a significant involvement on dental practice. Almost all the dental procedures produce aerosols and droplets which can be contaminated by microorganisms thereby causing easier spread of infections. Dental treatment invariably involves close inspection, examination, diagnostic and therapeutic interventions of the naso-oro-pharyngeal region that is why dental professionals are most prone to get infected with Covid-19 disease[1].

As a result, during the current pandemic, most routine dental procedures all around the world have been suspended and only emergency dental procedures and surgeries are being performed. However, looking at the current increasing trend of COVID-19 cases, it does not appear that this pandemic will end anytime soon. In fact, even the WHO also had quoted recently that this Covid -19 virus in coming time, may become merely an endemic virus in our communities and chances are that it would never go away[2].

In these circumstances teledentistry can provide an innovative solution to continue dental practice during the current pandemic, as well as beyond[3]. The initial concept of teledentistry was developed as part of the blueprint for dental informatics, which was drafted at a 1989 conference funded by the Westinghouse Electronics Systems Group in Baltimore[4]. Later it developed as a combination of telecommunications and dentistry, involving the exchange of clinical information and images over remote distances for dental consultation and treatment planning.[5]

So, During COVID-19 pandemic, dentists should use teledentistry for distant assessment of patients, triage, and provision of dental care. Teledentistry is 'not' a new specialty. It is just an alternative method to deliver the existing dental services.[6] Fundamentally, teledentistry involves rationale use of information and communication technologies that provides care remotely and it also enables dentists to cater various kinds of dental care needs, while maintaining physical distancing with patients. It reduces hospital visits and enables patients to safely consult their dental problems or concerns from their homes.

Various domains of Teledentistry:

1. Teleconsultation &Telescreening

In Covid-19 times telephone screening should be encouraged as a first point of contact between the patient and the dentists, all the information in context to the patients' chief complaints should first be discussed over telephone.[7] Another method is video conferencing in which dental professionals and their patients may listen, visualize and communicate with one another from distant places. It is also helpful for handicapped patients. Long time video conferencing or real-time discussion is not always feasible as it depends upon good internet connections, therefore yet another method involves transfer of all case related documents including clinical information, still images of the condition to dentists through forwarded emails for treatment planning and consultation[8]. In this way teleconsultation reduces the number of visits and referrals. The use of telemedicine consultation via the XPA3 Online system is also a valuable tool in the management of dental patients used in some countries. In the current scenario of COVID-19 pandemic & it can contribute in minimizing the spread of disease[9].

2. Telediagnosis

Telediagnosis makes use of technology to exchange images and data for making diagnosis of oral lesions[10]. Various kinds of telediagnosis programs and platforms are

used worldwide to reduce the need of close clinical oral examinations like, Estomato Net, telecytology, Mobile Mouth Screening Anywhere (MeMoSA®), tablet-based mobile microscope (CellScope device) etc. These platforms help a clinician in early detection of oral potentially malignant lesions and oral cancers even without the physical presence of patients. These days, smartphones are also being used for detection of dental caries. During the current COVID-19 pandemic, few studies recently illustrated the use of WhatsApp and teledentistry in making a differential diagnosis of oral lesions[11].

3. Teletriage

Teletriage involves screening about dental history and comprehending dental treatment according to urgency of the desired treatment and risk and benefits linked with treatment procedures via smartphone by specialists. While triaging it should also be mentioned to patient that prior appointment is mandatory for getting treatment at clinic[7]. It has also been used for assessment of school children located remotely and prioritize them for dental care and treatments.[12,13] Several times Teletriaging is also done by web based systems and recently apps like m Oral health (mobile phone based oral health) screening systems are also being used.[7]

4. Telemonitoring

Monitoring is an important aspect during and after dental care, which involves regular visits of patients to their dentists. As during covid-19 times, face to face interaction is being avoided, telemonitoring becomes a vital tool for dentistry thereby reducing the chances of infection. Telemonitoring reduces the time taken by dentists for monitoring their patients and at the same time it also reduces cost of physically visiting and waiting time of the patients.[14]

Barriers and suggested solutions:

A. **Barriers related to acceptance of teledentistry by dentists**

Every problem comes with a solution, and so is the dentistry in covid-19 times. Yet Teledentistry is a feasible option for both dentist and patients, it also has various roadblocks in its way. Learning a new skill that too after a certain age can be a hesitating process and so can be the teledentistry, because of fear of inaccurately diagnosing a condition using this technology. Many dental practitioners may find it difficult to opt this new method, whereas others may find it easier if they are tech savvy but for that they require trained technical support staff. Many practitioners face problems of poor internet access, hardware problems etc.

A major roadblock is lack of financial reimbursement of the services rendered via teledentistry. To overcome this, a pp/web based programs are being designed targeting these problems.[15]

So, to increase the acceptance of teledentistry, dentist must be well trained about this technique, therefore it should be incorporated in undergraduate and postgraduate curriculum also, so that, future dentists become well-versed with teledentistry use. The current pandemic has shown that the dental practice using teledentistry can be considered as safest method of patient care.[16]

B. **Barriers related to acceptance of teledentistry by patients**

Any technique cannot be considered successful unless it is widely accepted and easily used by its end users. Teledentistry being a new method of dental consultation will take time to become a familiar method for patients. To make this technique acceptable to the patients, they should be thoroughly explained about the potential risk of visiting dentist unnecessarily and benefits of teledentistry. It can be assumed that as the use of telemedicine among patients popularizes, teledentistry technique also will gain momentum. Generally in India there is a conventional mindset among patients that, until they do not see their Practitioner, the trust does not build up. This mindset can only be changed via education and promotion regarding teledentistry in patients by various means, so that we can be ready for future pandemics if occurs unfortunately.[17,18]

Conclusion:

Dentistry is an integral part of our healthcare system, which has been severely compromised during the current pandemic of COVID-19, but teledentistry has not yet become the integral part of mainstream oral health care system. The main reasons are lack of technological support, education among dentists and patients regarding use of teledentistry. A variety of technology driven web/application based programs and platforms are available for teledentistry and are being used in developed countries. India also needs to be 'Vocal for Local' in development of such technological support this direction, and then only in India teledentistry can be incorporated into routine dental practice. Teledentistry, apart from being beneficial for individual dental practice, can play a major role in providing services to distant population in outreach locations in context of public health programs during covid-19 pandemic. If not fully replace, at least teledentistry can complement the existing compromised dental system during the current pandemic by extending care to additional patient population at a reasonable cost and it can also target the problem of shortage of dental specialists up to a great extent. Teledentistry should be incorporated in undergraduate and postgraduate curriculum also, so that, future dentists become well-versed with teledentistry use.

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