Editorial

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Teledentistry: Limitations and Challenges

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ABSTRACT:

Dentistry is the top listed most risky jobs in this pandemic Covid 19 situation, as dentist contain close face-to-face contact with the patients which increase the potential transmission of the (SARS)-CoV-2 virus from human to human through direct contact via oro-pharyngeal droplets and indirect contacts with fomites where dental professionals are highly vulnerable to get infected from the coronavirus. Thus, dental practice has mostly been suspended during this period. Teledentistry introduces a novel solution to resume dental practice by providing dental treatment, guidance, and education through teleconsultation, telediagnosis and telemonitoring through Information Technology (IT) instead of direct contact with patients. But there are some major challenges like lack of government initiatives, compensation strategy, legal issues, technical base, co-ordination among doctors, along with patients' co-operation and limitations in telediagnosis. This technical note highlighted these limitations and challenges to make a concern to the dentist as at least teledentistry can accompaniment the existing threaten dental system during this living pandemic.

KEY WORDS: teledentistry, dentistry in covid 19, mental Health, telemedicine

OVERVIEW:

Teledentistry refers to a wide diversity of technologies and tactics that provide dental care delivery, diagnosis, consultation, treatment as well as forward dental information and education by the utilization of electronic data, imaging, and communication technologies through interactive audio, video, and storage and transfer computerizations [1]. The easy accessibility of the internet and the development of robust, as well as multiskilled personal devices like smartphones, tablets, and laptops are the foundation of modern teledentistry.

The coronavirus disease (COVID-19) pandemic has challenged the existing medical management systems across the globe. As it spreads by droplet, fomite, and contact transmission, face-to-face interaction, regular dental procedures have been suspended all over the world, and only emergency non-deferrable dental procedures are being performed [2]. Thus, teledentistry has become fundamental to complement the existing compromised dental system during this pandemic. As teledentistry is a familiar term in developed countries, it's new to Bangladesh. A study says, the young dental professionals who are practicing general dentistry are more aware and a bit familiar with teledentistry than final year dental students and postgraduate dental professionals [12]. Teledentistry has limitations to the specialized care, for example, in orthodontics, maxillofacial surgery, endodontics or pediatric dentistry [10].

LIMITATIONS AND CHALLENGES:

Although telehealth service can provide contemporary management to pursue dental practice during the pandemic, we cannot neglect the challenges and limitations that it brings along in order for it to be accepted as an alternative to regular dental practice. The lack of acceptance of teledentistry by the dentists can be attributed broadly to the following four reasons [10]:

1. To the fact that they may find restrained infrastructures like slow internet connection, especially in a remote region,
2. The inadequacy of hardware and software
3. lack of appropriate training as well as
4. lack of technical support and monitoring.

The limitations and challenges of teledentistry are explained through the teleconsultation and telediagnosis section below.

Teleconsultation:

In this digital and fourth industrial revolution, especially in the time of pandemic, teleconsultation played a vital role in the healthcare sector. The key limitations here are digital literacy among both physician and patient. In a recent study found, the lack of Information Technology (IT) knowledge, resistance to learning new technological skills, concern about data privacy and security to unauthorized access to health records were identified as major concerns for teleconsultation [11].

Administrative incompatibility of teledentistry, including insufficient financial reimbursement, substandard guidelines, disharmonization between remote and center region, and high cost of setup are the obstacles concomitant to its acceptance by dental professionals [4]. Developing countries are tightening with the availability of smart devices and uninterrupted internet connection. The technical framework, proper tutor equipment price are remarkably restricted in setting up telehealth projects in those countries. Network interruption, lousy quality images is a frequently faced drawback that can occur if either one of the receivers does not have a high-speed internet connection which possesses an inaccurate diagnosis [5]. Not to exclude, the increased workload and consultation time, increased costs and practice expenses for tech operation also contribute to this [11].

So, "what is preventing the use of telemedicine now?. To answer this question, a study was conducted in Russia and it was found that more than two third of the respondents (74%) primarily focused on the lack of technical facilitations. More than half of respondents (58%) mentioned that the reason was the lack of time to access the Internet for teleconsultation [10] [15]. Half of the respondents said, low knowledge and skills in working with computers is another reason [10] [16].

The success of teledentistry relies on patients' acceptance. Inappropriate referrals, absences face-to-face contact, causing dissatisfaction to the patients as the inability of proper disclosure of their symptoms to their dentist, additionally patients also concern about confidentiality regarding send and records information of medical histories, as general security matters of electronic data stored in electronic devices.

TELEDIAGNOSIS:

Diagnostic examination is a key element for evaluating a patient's risk of developing oral health problems and along with head neck region. The examination includes clinical, physical and radiographic methods to identify the discomfort. In Telediagnosis, is one of the challenges which might lead to mishaps. Palpation, percussion which may move to the failure of a precise diagnosis [3] [10].

Quality of intra-oral dental imaging is another challenge in Telediagnosis. As clinical examination is the best method for the diagnosis but due to the pandemic, a proper photographic visualization of a tooth with caries will help specialists to diagnose and give the treatment. But incase of deep caries or interproximal caries, the only method of to diagnos is radiograph [14].

DISCUSSION:

Nevertheless, telehealth service has shown a remarkable improvement of oral health status in the different fields has been well documented. Studies have demonstrated its effectiveness in decay reduction, cost-saving, unnecessary referrals, and travels.

A randomized controlled trial conducted on school children resulted in significantly improved oral health conditions and cost-savings [6]. In recent studies, among 286 dental professionals, 70% of them agreed Teledentry would improve and give the new dymantion in dental practice [13].

Another study conducted in the current pandemic COVID-19 condition at the Oral Surgery and Pathology department of Magna Graecia University of Catanzaro, Italy, with two group patients. One-group received urgent surgical treatment for dental abscesses, fractures, neoplastic lesions and then post-operative follow up conducted by teledentistry and another group had followed up cases utilizing teledentistry with chronic pathological conditions like precancerous lesions, auto-immune pathology, medication-related osteonecrosis of the jaw (MRONJ) and previous surgical patients to assess for any clinical changes, recurrence, pain, and functional anomalies. The study resulted that this service provides encouraging tools in the distance management of interventional and non-interventional patients, reducing costs and times, and reduce the danger of COVID-19 transmission. The study also reported that teledentistry provide a crucial part in infectious disease prevention and follow-up cases in oral medicine patient during COVID-19 situation and this service offers effective management of elderly patients having oral mucosal disease [7].

In orthodontics specialty, several studies investigated telehealth service and resulted in its reliability in an orthodontic consultant, diagnosis, and follow-up cases and also provide benefit to the reduction in the number of 'inappropriate referrals' and orthodontic waiting lists [8].

The challenges regarding teledentistry appear due to the absence of well-controlled standards. Presently, there is no protocol to ensure quality, security, efficiency, or effectiveness of information. Moreover, medico-legal and copyright matters also must be furnished.

Dental photography can be digitally archived, which may help

assess the severity of dental diseases and increase research opportunities later on with machine learning and artificial intelligence integrated image processing. With proper guidelines for the security and privacy of dentists as well as the patients, teledentistry will open a new horizon in global healthcare management [6].

In the current global COVID-19 scenario, several countries in the world are using mobile phone app-based surveillance system to control the pandemic [9], similar apps can be integrated with the telehealth service and reach to the broader user community.

CONCLUSION:

Bangladesh is a largest populated country and compared to the patient number, dentists are insufficient. To serve this population, teleconsultation may play an effective role in the oral health care sector. In this writing, we found no articles and research regarding teledentistry in Bangladesh. The study related to teledentistry may help to give oral health care a new dimension in Bangladesh.

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Conceptualization NSS and EHA. Writing–original draft preparation NSS, SSI, SSJ and EHA. Review and editing MTHA and SSJ. Review, editing, and reference linking- Dr. Osama Bin Noor. All authors have read and agreed to the published version of the manuscript.

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