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RESEARCH ARTICLE

TELEDENTISTRY DURING COVID 19

Dr. Palak Srivastava[1] and Dr. Pranjan Mitra[2]

1. Institutional affiliations- BDS, Institute of Dental Education and Advance Studies, Gwalior, Madhya Pradesh, India.
2. Institutional affiliations- Reader, Department of Public Health Dentistry, Luxmi Bai Institute of Dental Sciences, Patiala, Punjab, India.

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Abstract

The ongoing COVID19 pandemic has been a jarring blow to dental professionals as dental treatment requires close face-to-face encounters. To sustain the dental practice, Teledentistry is a cogent solution to continue providing dental care without adding to the risk of cross-infection via information technology. It is a necessary tool to obtain a balance between the safety of health care professionals still providing dental care to patients needing immediate intervention. The future of teledentistry is not limited to the pandemic; it's improvident to restrict the use of teledentistry when it has the potential to enhance the present dental health care delivery system.

Introduction:-

The first case of the novel corona virus disease 2019 (COVID-19) was reported in Wuhan China in December 2019[1]. It has been declared a pandemic by the WHO as it has affected almost 191 countries across the world [2]. It is similar to the severe acute respiratory syndrome corona virus (SARS-COV) and Middle-east respiratory syndrome [3]. The reported transmission of the COVID19 virus is from person to person, contact with surfaces contaminated with the virus, or its spread through respiratory droplets.

The majority of treatment procedures in dentistry produce aerosols which could lead to transmission of the virus from patients to the dental staff and contrariwise [4]. Accordingly, most of the dental regulatory bodies worldwide have recommended dentists to execute extreme caution while treating patients and provide emergency dental care only in this serious time of the COVID-19 outbreak [5].

What is teledentistry?

"Teledentistry is a combination of telecommunication and dentistry, involving the exchange of clinical information and images over remote distances for dental consultation and treatment planning"[6]. The word tele means distant, and thus teledentistry fulfils the need for social distancing as promoted by the health associations worldwide [7].

In 1997, the term "Teledentistry" was first used by Cook, he defined it as "The practice of using video-conferencing technologies to diagnose and provide advice about treatment over a distance."[8]. The genesis of teledentistry as a subspecialist field of telemedicine can be associated with 1994, a military project of the United States Army (U.S. Army's Total Dental Access Project), directing to improve patient care, dental education, and boost communication between dentists and dental laboratories [9].

Corresponding Author:- Dr. Palak Srivastava, BDS, Institute of Dental Education and Advance Studies, Gwalior, Madhya Pradesh, India.

Methodology of Teledentistry

Teleconsultation:

It is a common form of teledentistry; it was used for consultation of patients who are physically and intellectually challenged, like patients from aged care facilities and prisons. In the ongoing COVID-19 pandemic it may help the patients to get dental care during quarantine and lockdown through telecommunication.

Teleconsultation can occur in any one of the following ways: Real-time Teleconsultation and Store and forward Teleconsultation. Real-time Teleconsultation is where the patient connects through video conferencing with the dental professional. The Store-and-Forward Approach includes the sharing of clinical knowledge and photographs captured and processed by a dental practitioner for consultation and treatment by a dental specialist [10].

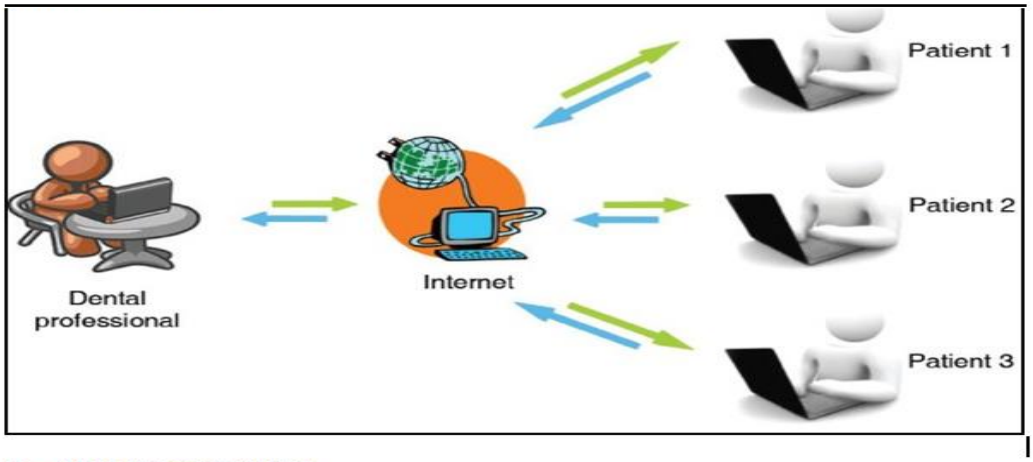


Figure 1 REAL-TIME CONSULTATION

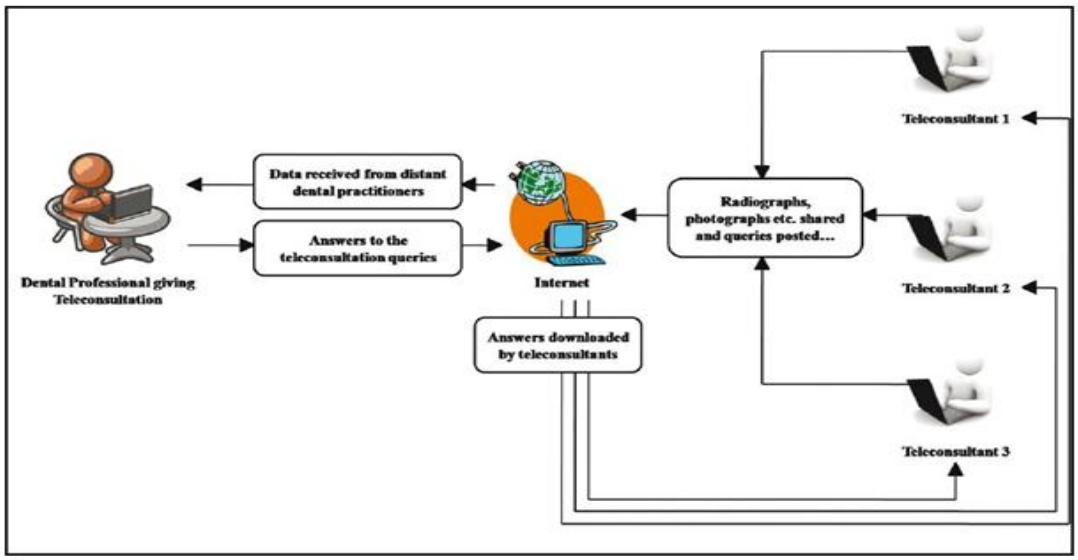


Figure 2: STORE AND FORWARD METHOD

Telediagnosis:
Telediagnosis enables to make a diagnosis of an oral lesion through images and data [11][12]. Evidence shows that a Telediagnosis program called EstomatoNet has reduced the referral of patients from 96.9% to 35.1%[13]. Smartphones are advocated for the early detection of caries [14] and they are also used as an adjunct for the screening and early detection of potentially malignant lesions [15]. Mobile mouth screening anywhere (MeMoSA) was developed by Haron et al for early detection of oral cancer for patients with limited access to specialists [16]. Skandarajah et al developed a tablet-based handheld microscope (Cellscope device) as a supplemental tool for timely identification of oral cancer [17].

During the COVID19 pandemic, Brazil has advocated the use of Whatsapp to aid patients to get medical and dental care thus reducing the need for frequent face-to-face interactions [18]. Similarly in Italy Telemedicine in dental practice is implemented and remote consultations using a messaging service (WhatsApp Messenger, WhatsApp Inc., Mountain View, etc.) are being advocated [19].

Teletriage:
It refers to the remote assessment of patients with symptoms via smart phones by specialists and helps to prioritize those requiring emergency dental care [20].

Telemonitoring:
Telemonitoring can be used to successfully replace the need for frequent in-person visits to the dentist for follow-up of treatment [21]. A recent pilot study demonstrated that telemonitoring is a useful tool for the remote monitoring of surgical and non-surgical dental patients by greatly reducing the cost and waiting time [19].

Procedure:
As promulgated by the Ministry of Health and Family Welfare (MoHFW)

1. The patient is advised to communicate their problem with a clinician through SMS, Whatsapp, or email; the clinician may decide whether or not AV inspection is needed.
2. The patient may be asked to sit with a torchlight, a spoon, and a family member who can facilitate the clinician's visual assessment.
3. After the confirmation of the patient's identity, their medical and dental history is taken and details of the present complaint are recorded.
4. Appropriate records of all teledentistry appointments must be kept.
5. The covid19 status is assessed via standard protocol to govern the management of the patient at a dental center.
6. Patients are advised to contact again in 48–72 h for a teledentistry consultation if their symptoms have not resolved.
7. Dental conditions that require urgent care should be attended at a dental centre with safety precautions and personal protective equipment [22].

Role of Teledentistry:

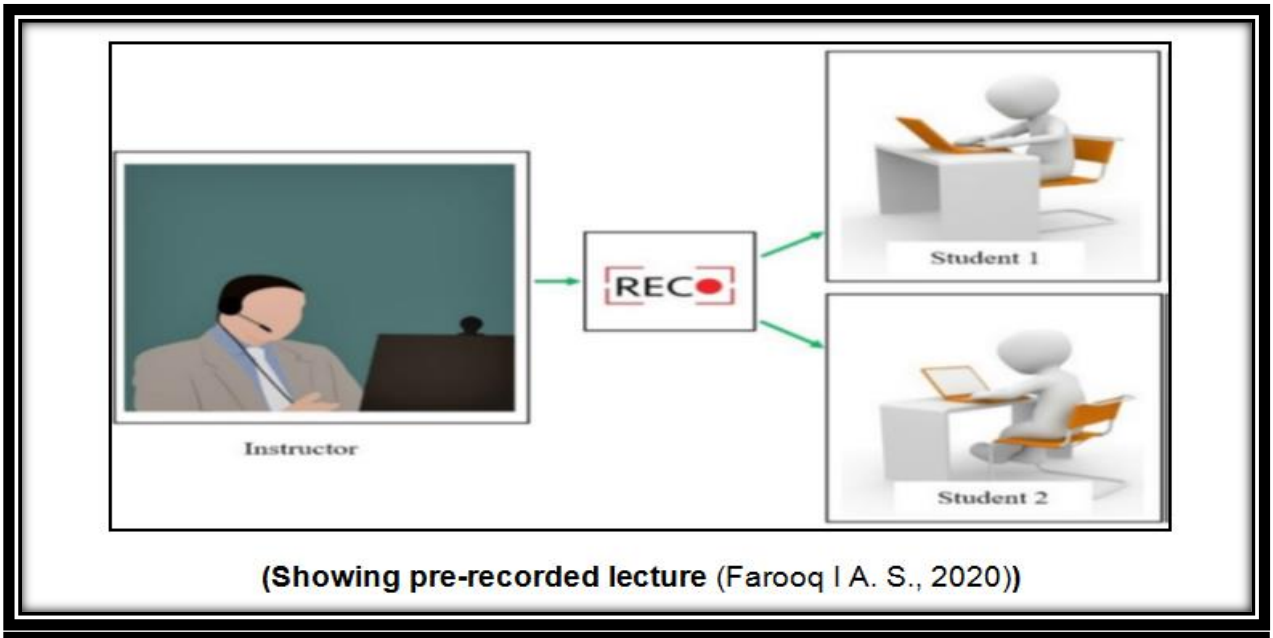
For patient care, teledentistry is all-inclusive for various dental problems. During the COVID-19 pandemic, teledentistry tools are used to triage patients before accepting them for emergency dental care in hospitals, clinics, and institutions [23]. Some several studies and researches corroborate the significance of the use of teledentistry in general practice. In Prosthodontics, Ignatius E et al demonstrated the use of video-conferencing for prosthodontic rehabilitation. The author reported dental care can be made available to areas with a meager population through teledentistry, avoiding the need for traveling and meetings [24]. In oral medicine, Torres Pereira et al. demonstrated that diagnosis of oral lesions can be done through images shared via emails [25]. In Oral and Maxillofacial surgery it has been reported that teledentistry tools were as good as a real-time clinical diagnosis for impacted third molar teeth [26]. In Endodontics, diagnosis of periapical lesions can be made for patients in distant areas [27]. In Pediatric Dentistry, diagnosis of dental caries in young children can be made through teledentistry [28]. Stephen et al reported that teledentistry made orthodontic consultations more available for the patients [29].

Role of teledentistry in providing pedagogical constituent of dental education, due to covid19 outbreak the educational institutes have been closed globally. Teledentistry plays a major role in this critical time of continuing dental education online. It can be used to take live interactive video lectures or pre-recorded lectures.

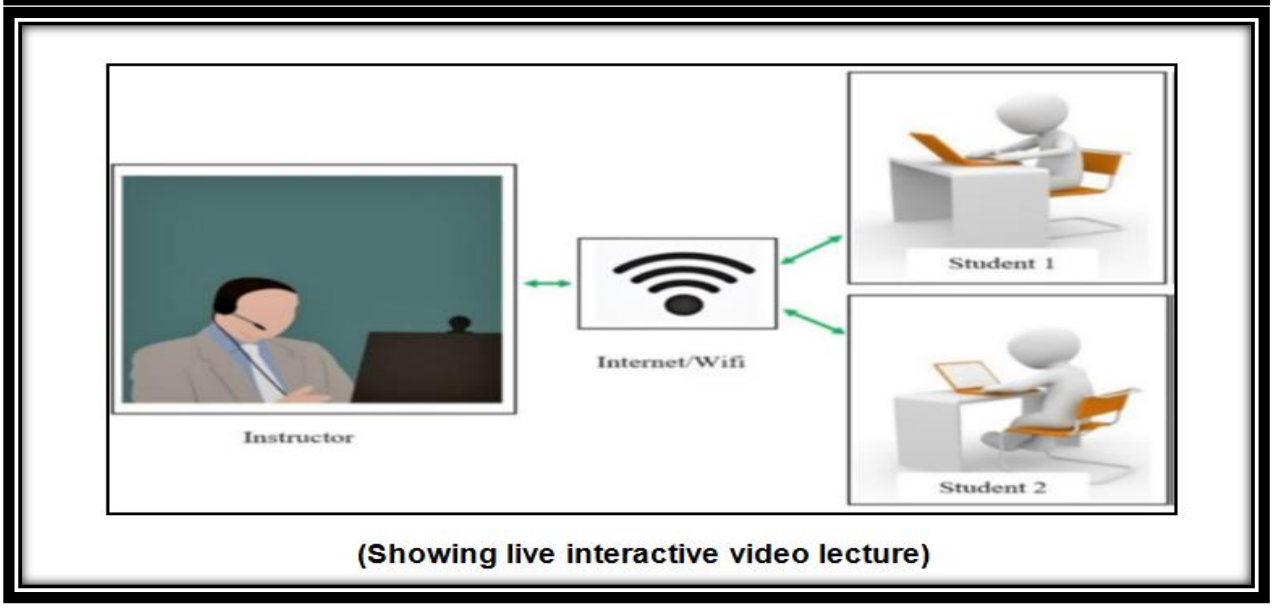
Dental education has three parts: The first is called Lectures or Problem Based Learning part. The transition to online mode for this part is easy through applications like ZOOM meeting, Google Classroom, Google meet, Skype, etc for online learning.

Simulation laboratory courses are the second part. In this, the students practice on simulation models after a demonstration by the teachers. During the pandemic, this part can be performed using modern digital or virtual reality (VR) techniques. However, the simulation laboratory courses require close association between teacher and student because the work of the students needs to be checked after each step by the teachers. Hence Simulation laboratory courses are suspended in most countries.

And the third part is Clinical skill training, which is the most important constituent of dental education. There will be close contact between the doctor, intern, and the patient as well as the teacher. This part is also one of the most difficult parts to deal with in dental education. . All the clinical training courses are suspended in most countries because most of the dental hospitals and clinics are closed during the pandemic [30]. Dental students can be involved in emergency treatment only if all the protective equipment are available in adequate quantity [31].



(Showing pre-recorded lecture (Farooq I A. S., 2020))



(Showing live interactive video lecture)

Is teledentistry the way forward after the pandemic?

The practice of dentistry in post-pandemic time largely depends on the availability of vaccines and drugs to manage COVID-19. Due to the profoundly liquid, dynamic, and advancing nature of the pandemic all dental workforces ought to continually stay informed concerning the developments and declarations on contamination control in dentistry issued by the health authorities [32]. The future of teledentistry is not solely limited to the pandemic; it's improvident to restrict the use of teledentistry when it has the potential to enhance the present dental health care delivery system. After the COVID19 crisis, dental practitioners may consider incorporating tele(oral)medicine into their routine clinical practice as it has several benefits for the patients and dentists. It is cost-effective so it is used for the treatment of poor patients living in remote areas. Patients who need to travel a great distance or those who are dependent on others for transportation. It enables ease of storing data, no piles of papers for patient's records. It allows better money and time management and better coordination with fellow dentists and dental laboratories. These resources can progressively help transform teledentistry. Community Health Center and Primary Health Center can be equipped with teledentistry and modern telehealth tools for the facilitation of better service and knowledge to the most required population with good care along with the availability of the doctors in rural set-up [33].

Conclusion:-

The situation of COVID19 has led us to adopt new ways to deliver oral health and teledentistry is one. To combat this pandemic situation or any future pandemics and make oral health care available to people without increasing the risk of cross-infection in lockdown and quarantine teledentistry is a very powerful asset. With the advancements in technology, we can use these adversities as opportunities to find optimal treatment modalities, comprehend issues of accessibility, availability, and affordability. Dentists aiming to use teledentistry must educate themselves thoroughly on the legal and ethical issues that are related to it to ensure safe practice.

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