



## Role of Teledentistry during Covid- 19 Pandemic

Dr Himanshu Aeran. *Director and Principal. Seema Dental College & Hospital*

Dr. Avnish Singh. *Professor and Head of the Department. Department of Public Health Dentistry. Seema Dental College & Hospital.*

Dr. Vivek Singh. *Senior Lecturer. Department of Public Health Dentistry. Seema Dental College & Hospital.*

Dr. Harshita. *Seema Dental College & Hospital. Dehradun*

Dr. Tanya Sharma *Seema Dental College & Hospital. Dehradun*

Dr. Atul Ranjan Malik *Seema Dental College & Hospital. Dehradun*

---

### ABSTRACT

Tele dentistry is an efficient method to meet the patient's demands, with an improved access in an efficient manner and with cost efficiency with the comfort of home. Tele dentistry allows the dentist to serve different dental needs of the patient, while keeping up with physical separating from the patient which is mandatory during this COVID-19 pandemic. Various domains of it are teleconsultation and tele screening, telediagnosis, tele triage, and telemonitoring. It can be considered as the safest method of practice during this time of pandemic, and otherwise. Teledentistry provides an extended care to the extra patient population and targets the shortage of dental specialists upto a great extent. This is of great importance especially in the rural areas where there's huge difference in the dentist- population ratio.

**KEYWORDS:-** COVID-19, Teledentistry, Pandemic, Teleconsultation, Telescreening, Triage, Telediagnosis, Social Distancing , Oral Health Care

*Received 14 Apr, 2022; Revised 28 Apr, 2022; Accepted 30 Apr, 2022 © The author(s) 2022.*

*Published with open access at [www.questjournals.org](http://www.questjournals.org)*

### I. INTRODUCTION

Coronavirus is a possibly extreme intense respiratory contamination brought about by Severe Acute Respiratory Coronavirus 2 (SARS COVID-19 CoV-2) which is a single stranded RNA virus Coronaviridae. WHO declared it as a public health emergency of international concern on 30 January, 2020. The disease was declared a pandemic by the WHO on March 11, 2020.<sup>1</sup>

Dentistry involves close interaction with the patient, which is to be avoided during this serious time of pandemic. This pandemic has caused eccentric provocation within the healthcare system across the world. The route of transmission is the main concern and has had a great impact on the routine dental practices.<sup>2</sup>

Chances of nosocomial infection are high as it spreads via the respiratory route, primarily by the aerosols and droplets from infected patients, and can be easily detected in saliva, blood, sputum, serum, faeces.<sup>3</sup>

As a result of this pandemic, the vast majority of the dental procedures have been suspended, and only the emergency procedures are being carried out. The aerosols and droplets produced can be source of infection.<sup>4</sup> Dental treatment involves close examination, and many- a- times intervention into naso- pharynx posing a great threat. There is a higher risk to the practitioners from the patients who may be asymptomatic carriers as the incubation period is 0-7 days. Though the chances of a patient getting positive infection after visiting a dental clinic are rare. Still there are tremendous chances of infection to the doctor as well as the patient.<sup>5</sup>

Teledentistry incorporates the reasoning utilization of correspondence and data innovations that give remote consideration.<sup>6</sup> It can give an inventive answer to proceed with the dental work on during this pandemic times. Teledentistry is a combination of telecommunication and dentistry and involves online consultation and

treatment planning for invariable problems of the patient with the comfort of social distancing. Exchange of clinical information and images of the report takes place to prepare an efficient treatment plan. <sup>7</sup> During the pandemic time, this has proven to be a boon as screening and relevant questioning like symptoms, travel history, or contact with COVID-19 patient can be done online.<sup>8</sup>

The underlying idea of teledentistry was created as a part of blueprint of dental informatics drafted at 1989 meeting financed by the Westinghouse Electronics Systems Group in Baltimore, Maryland, USA.<sup>9</sup>

In 1999, the Department of Information Technology, the Ministry of Communications and Information Technology(Government of India) sent off a pilot project named "Advancement Of Telemedicine Technology" with the goal of supporting the public medical care conveyance system.<sup>10</sup>

Teledentistry is not a new concept, but has recently gained a lot of popularity owing to its benefits.

### **Why Teledentistry is a boon ?**

- Communicating the doctor from hometown or other remote locations is a major time saver for many patients
- Lower health care costs for the patients- virtual dental visits are cheaper than visiting clinics and as most serious problems are preventable, this provides regular check- up to the patients from home.
- Provides a high quality care to the patients
- Patients have a broader range of access to online dental professionals
- Patients have easier access to emergency services
- Specialist referral services
- Eliminate disparities in oral health care system between the urban and the rural areas
- Boon for the paediatric patients, pregnant ladies, or those with special care needs to get diagnosed from home reducing the number of visits and chances of exposure.
- It provides an aid to the health care professionals working in the emergency department to provide consultation with comfort without actual visit of the patient and getting exposed.
- Enhance early diagnosis
- Also, helpful in providing dental health education online. <sup>11-15</sup> Teledentistry is beneficial in creating a safe and stressful environment.

### **Various Arena of Teledentistry:-**

#### **1. Teleconsultation and Telescreening:**

In COVID- 19 times, telephonic screening acts as the first point of contact while maintaining physical distancing. Video calls can be even more beneficial in this case as the doctor can actually visualise the lesion and advice efficient treatment plan. XPA3 online system has been launched for this. <sup>16</sup>

#### **2. Teliagnosis:**

Teliagnosis refers to the use of technology for the exchange of patient information, special use in diagnosis of oral lesions. A number of platforms and softwares are use for this like Estomato Net, telectology, Mobile Mouth Screening Anywhere (MeMoSA®), tablet based mobile microscope (CellScope device), etc. These platforms help in detection of potentially malignant lesions without the physical presence of the patient. These days a number of mobile applications are being used for the early detection of dental caries and a number of other oral lesions.<sup>17</sup>

#### **3. Teliriage**

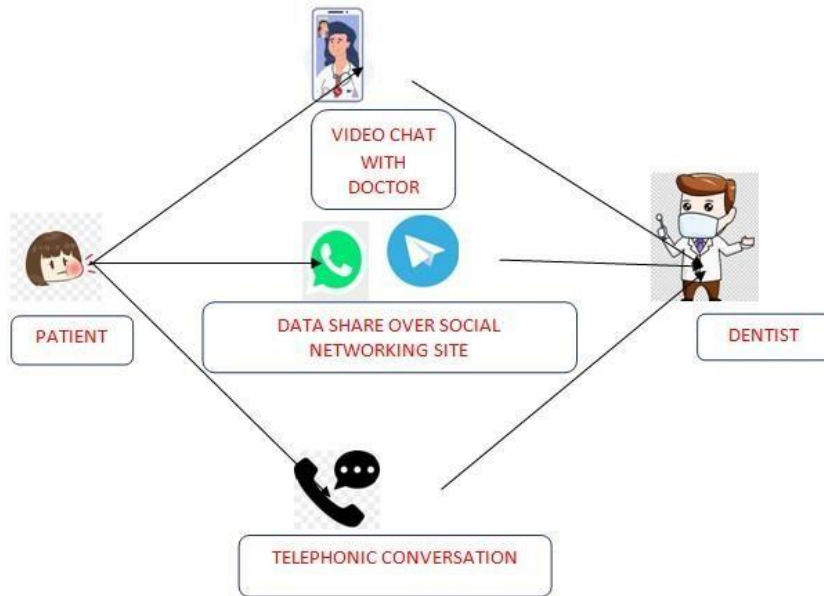
Teliriage involves planning the dental treatment in accordance with the dental history and the urgency of the desired treatment and risk and benefits linked with the treatment procedures. Patients should be well informed for fixing a prior appointment before visiting clinics. Several times Teliriage is also done by web based systems and recently apps like Oral health (mobile based oral health) screening systems are also being used.<sup>18-19</sup>

#### **4. TeliMonitoring**

Continuous monitoring is mandatory during and post- treatment. During the pandemic, teliMonitoring becomes an important tool in providing quality treatment by keeping a check on the spread of infection if any.<sup>20</sup>

### **Types of Teledentistry Services:- 2 types**

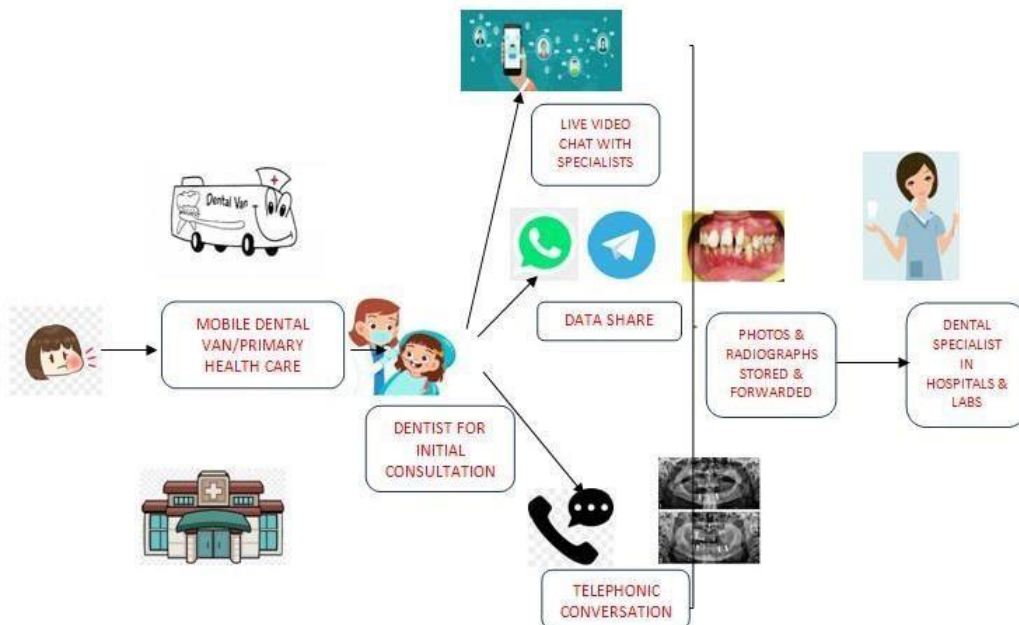
1. **Real- Time (Synchronous)-** use real time communication between dentists and patients including video chats to encourage a two- way conversation with the dentist in real- time.



**SYNCHRONOUS- REAL TIME TWO WAY COMMUNICATION**

2. **Store & Forward (Asynchronous)**- communication takes place behind the scene and doesn't require the patients presence.

Eg. Forwarding reports, photographs and radiographs to a new dentist for a second opinion <sup>22</sup>



**ASYNCHRONOUS**

**Popular Teledentistry Services For The Patients:-**

1. **Oral Examinations & Medicine-** A video communication can be done making the dentist examine you real time helping in making a proper diagnosis. Medicines can also be prescribed virtually for common problems like pain and infection.
2. **Pre- Surgical Screening-** Examination and judgements can be made about the need for surgery without the patient actually visiting the dental office.
3. **Second Opinions-** Breaking all the geographical and lingual barriers, patients can consult the dentists around the world.
4. **Pediatric & Preventive Care-** Virtual appointments are a boon for children and for those with special needs as they are at a deemed risk of infection.
5. **Emergency Services and Consultations-** In stressful conditions, instant access to a dental professional can make the circumstances easier to handle.
6. **At- Home Orthodontics & Monitoring-** Examinations, pre- and post- orthodontic check- ups can be done virtually. Several companies offer teeth- straightening services, most of which are shipped right to your door.<sup>17,19</sup>

**Hurdles and Solutions :- A. Hurdles Related to Acceptance of Teledentistry by Dentists**

With every boon, there is a bane associated. Some professionals may find it difficult to adapt to the new culture, learn new skill, and fear making mistakes while diagnosing doing harm more than good to the society.

While some tech savvy people have already adapted to the new culture, some prefer to just stay away and keep their practices shut for some time hoping the situation bounces to normal which unfortunately does not seem to happen anytime soon, especially in India.

Sometimes the pictures of the lesion received from the patient may not be accurate or clarity may not be there while video calling which may mislead the diagnosis.

Also receiving payment from the patients can be a bit problematic as many patients may not be able to use the online method.<sup>21-23</sup>

So to increase the acceptance of this modern technology among the dental manpower, they must be trained efficiently. This should be made a part of the undergraduate and the postgraduate curriculum making the future dentists already well- versed with use of this technology. The apps made for this should also be user friendly.

**B. Hurdles Related to Acceptance of Teledentistry by Patients**

Any procedure other than the conventional is not easily accepted by the patients. They fear and just cannot settle down to an agreement with the treatment provided by the dentist who has not physically examined them. Even if they do so, this happens after a lot of negotiation.<sup>23-25</sup>

**C. In India, lack of medical knowledge and awareness, educationally and financially compromised population pose a major challenge**

**D. Arrangement of infrastructure, and proper network facilities by the telecom companies.**



This picture is taken from *North Carolina Oral Health Collaborative* website.

## II. CONCLUSION:-

Dentistry is a constitutive part of our healthcare system but has been grievously affected during the pandemic. Teledentistry is an old concept but is yet to become mainstream, which cannot happen unless the people accept it whole heartedly. Along with the professionals the people also need to raise their voice in favour of it. Rather than fully replacing the conventional method of practise, teledentistry can at least complement the current health care system. Much appreciated that some telemedicine and teledentistry drives have been recently started by a number of government and private institutions like the telemedicine project by AIIMS Rishikesh<sup>[23]</sup>, any many more. Consultation over Whatsapp and Telegram has become quite familiar with the masses in the recent times. A number of apps have been launched not very long back, specifically for this purpose like Practo, Lybrate, Portea, Docttocare, MFine, Tata Health, 1mg app, Pharmeasy, only to name a few. A few hindrances actually exist for teledentistry practise, including legal, educational and insurance issues. But with in-depth preparations, teledentistry has a bright future, and the sooner we adapt to it the better it is !

## ACKNOWLEDGEMENT:-

- Author has no conflict of interest
- Author has not received any funding

## REFERENCES:-

- [1]. Grover S., Pahuja M., Pradhan S., Akif M., Shukla K. Rural Oral Health: Challenges and Pit Falls: Time to Recover And Rebuild the Pathway: A ERview Article. Indian Journal Of Public Health Research & Development, June 2020. Vol. 11, No. 6
- [2]. Mishra G., Gupta V. , Kumar S., Malhotra S. Role Of Teledentistry during COVID- 19 Pandemic: A Review IDAUPSDJ 2020 ISSUE 1 and 2
- [3]. 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;12:9. <https://doi.org/10.1038/s41368-020-0075-9>.
- [4]. BBC News. Coronavirus may never go away, WHO warns. BBC News; 2020.
- [5]. Suhani Ghai. Teledentistry during COVID19 pandemic. Diabetes & Metabolic Syndrome: Clinical Research & Reviews 14 (2020) 933e935
- [6]. Chen JW, Hobdell MH, Dunn K, Johnson KA, Zhang J. Teledentistry and Its Use in Dental Education. J Am Dent Assoc. 2003;134:342–6. [PubMed: 12699048]
- [7]. Yoshinaga L. The Use of Teledentistry for Remote Learning Applications. PractProcedAesthet Dent. 2001;13:327–8. [PubMed: 11402774]
- [8]. Younai FS, Messadi DV. E-mail-based oral medicine consultation. J Calif Dent Assoc. 2000;28:144–51. [PubMed: 11323840] [9]. Guidelines for Dental Professionals in Covid-19 pandemic situation.19/05/2020.MoHFW Dental advisory.
- [10]. Jampani N D, Nutalapati R, Dontula B, Boyapati R. Applications of teledentistry: A literature review and update. J Int Soc Prevent Communit Dent 2011;1:37-44.
- [11]. Dejan Dubovina, BrankoMihailović, Biljana Vujičić, SašaTabaković, Vladimir Matvijenko.. Teleconsultation in Dentistry Using the XPA3 Online System: Case Report.
- [12]. Kaliyadan F, Ramsey ML. Teledermatology. StatPearls, Treasure Island (FL). StatPearls Publishing 11.Machado RA, de Souza NL, Oliveira RM, Martelli Júnior H, Bonan PRF. Social media and telemedicine for oral diagnosis and counselling in the COVID-19 era. Oral Oncol 2020;105:104685. <https://doi.org/10.1016/j.oraloncology.2020.10.4685>; 2020.
- [13]. Estai M, Kanagasingam Y, Mehdizadeh M, Vignarajan J, Norman R, Huang B, et al. Teledentistry as a novel pathway to improve dental health in school children: a research protocol for a randomised controlled trial. BMC Oral Health 2020;20:11. <https://doi.org/10.1186/s12903-019-0992-1>.
- [14]. Wakhloo T, Reddy GS, Chug A, Dhar M. Relevance of teledentistry during the COVID-19 pandemic. J Family Med Prim Care 2020;9:4494-5
- [15]. 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;12:9.
- [16]. Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus disease 19 (COVID-19): Implications for clinical dental care. J Endod 2020;46:584-95.
- [17]. Sabino-Silva R, Jardim AC, Siqueira WL. Coronavirus COVID-19 impacts to dentistry and potential salivary diagnosis. Clin Oral Investig 2020:1-3.
- [18]. Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): Emerging and future challenges for dental and oral medicine. J Dent Res 2020;99:481-7.
- [19]. Jampani ND, Nutalapati R, Dontula BS, Boyapati R. Applications of teledentistry: A literature review and update. J Int Soc Prev Community Dent 2011;1:37-44. 6
- [20]. Dave M, Seoudi N, Coulthard P. Urgent dental care for patients during the COVID-19 pandemic. Lancet 2020;395:1257
- [21]. Chhabra N., Chhabra A., Jain RL, Kaur H., Bansal S. Role of Teledentistry in Dental Education: Need of The Era. JCDR 2011 November 5- 7- 1486 <https://oralhealthnc.org>
- [22]. [https://aaiimsrishikesh.edu.in/a1\\_1/?page\\_id=270](https://aaiimsrishikesh.edu.in/a1_1/?page_id=270)
- [23]. Stephens CD, Cook J, Mullings C. Orthodontics Orthodontic References via Teledent Southwest. Dent Clin North Am. 2002; 46: 507- 20[PubMed][Google Scholar]
- [24]. The Hindu News. More Doctors need to work in rural areas. The Hindu News 2019