



## Review of Literature on Teledentistry's Effectiveness During the COVID-19 Pandemic

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## **Abstract**

**Background:** Dentistry calls for one-on-one patient contact, however this has largely been impossible due to the worldwide outbreak of COVID-19. An innovative way to carry on oral health care during this pandemic is through teledentistry. An overview of Telecommunications dentistry implementations is given in this study.

**Methods:** Google Scholar, PubMed, and the Cochrane database were searched for articles on teledentistry that were pertinent to this study.

**Results:** Streamlining Instead of having direct contact with patients, teledentistry uses information technology to assist in dental care, supervision, and instruction. Teledentistry subunits with significant responsibilities in dental practice include teleconsultation, tediagnosis, teletriage, and telemonitoring. Multiple challenges may occur with patients' and practitioners' to embrace teledentistry must be resolved right away.

**Conclusion:** Teledentistry may supplement, if not entirely supplant, the pandemic's currently weakened dental care. As a result, teledentistry should be incorporated into standard dental procedures as a cutting-edge method to continue providing dental care despite the present pandemic.

**Keywords:** Covid-19, Teledentistry, Tediagnosis, Telecommunication, Teletriage

## **Introduction**

The global COVID-19 epidemic has put the world's current healthcare institutions under strain. The patient is a potential source of infection through contact, droplet, and fomite exchange, as well as through direct exposure to medical staff. Dental hygiene workers are most vulnerable to coronavirus infection because dental care involves close inspection, examination, diagnostic, and treatment procedures of the naso-oro-pharyngeal region. [1] Furthermore, during the current pandemic, only urgent dental treatments and surgeries are carried out; the majority of standard dental procedures have been put off globally. According to the COVID-19 case scenario at this moment, the pandemic is not expected to end anytime soon. According to recent statements made by the WHO, this virus may persist indefinitely and could eventually join other endemic viruses in our societies. [2]

During the COVID-19 epidemic, teledentistry was useful. In contrast to having direct face-to-face interactions with patients, teledentistry is the practice of providing dental care, direction, teaching, or treatment remotely using information technology. It is a subset of telehealth along with telemedicine (Figure 1). [3] The concept of teledentistry has existed for some time, and one of the first teledentistry initiatives was launched by the United States armed forces in 1994 to assist American troops serving around the globe. [4] Teledentistry has gained popularity over the years as a useful tool for diagnosing oral issues remotely, conducting consultations, and suggesting treatment plans. It is contrasted with real-time consultations with children, in long-term healthcare facilities, and in locations with limited access to facilities. [5,6]

In the present COVID-19 pandemic situation, preventing person-to-person contact is the main objective because the possibility of it becoming endemic is growing. Teledentistry fulfills the need for social distance that has been recommended by health officials around the world to stop the spreading of SARS-COV-2 infection because the word "tele" implies "distant."

Telecommunications can be included into everyday dental practitioners as it provides a broad array of services such as distant triaging of the speculated COVID-19 patients for dental therapy and reducing the preventable interaction of healthy patients by reducing their visits to loaded dental and medical centers. [6]

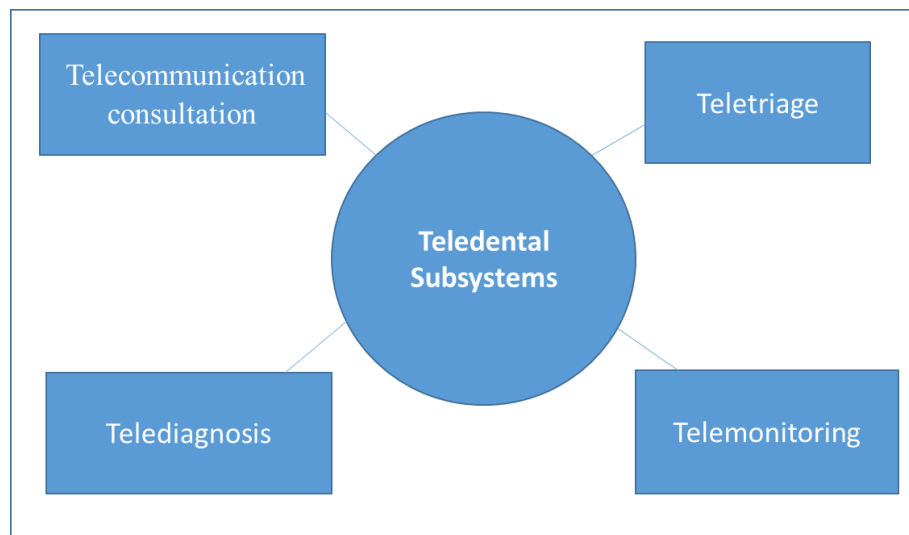


Figure 1. Subunits of Teledentistry

### **Teledental subsystems**

#### Telecommunication consultation

Teleconsultation, the most popular type of teledentistry, entails dental professionals to be contacted over the phone by patients or a nearby healthcare provider for consultation. [7] Patients with cerebral and physical disabilities, as well as those from nursing homes and prisons, have found it useful. [7-9] It has been demonstrated that fewer patients are referred from basic health centers to higher centers by >45% when teleconsultation is used. [10] During quarantine and confinement it might benefit the patients in the current pandemic to patients carry on with their treatment.

#### Telediagnosis

To diagnose an oral lesion, telediagnosis uses technology to transmit pictures and data. [11] Patients were referred to experts less frequently—from 96.9% to 35.1%—when EstomatoNet, a telediagnosis program, was used. [12] Smartphones are frequently recommended for use in the detection of dental caries. [13,14] but they have also proven to be a dependable supplemental tool in the detection of oral lesions that may be malignant. [15] Telecytology, a method for early identification of oral lesions that could be cancerous or are already cancerous, is an addition to telediagnosis. [16] Mobile Mouth Screening Anywhere (MeMoSA®), a tool to promote initial stage oral cancer identification, was created by Haron et al was helpful for patients who had trouble accessing experts. [17]

A tablet-based transportable microscope (the CellScope gadget) was examined by Skandarajah et al. as an additional tool for the detection of oral cancer. [18] Brazilian researchers recently provided an example of how WhatsApp and telehealth can be used to differentiate between oral lesions throughout the ongoing COVID-19 pandemic. [19] Dental photography is generally used in telediagnose because the majority of oral lesions are frequently immediately visible, negating the necessity of an in-depth clinical examination. [20]

### Teletriage

Teletriage is the secure, suitable, and prompt treatment of symptoms in patients by experts using smartphone technology. In numerous places, it has been utilized to give preference to schoolchildren who need dental treatment over those who don't, irrespective of socioeconomic or topographical challenges. [21,22] Prioritizing patients with maxillofacial trauma for transfer to their main trauma center from distant centers, Brucoli et al. recommended using teleradiology. [23]

### Telemonitoring

Patients must consult their oral healthcare provider frequently to have their dental care monitored in order to track the course of their treatment. For routine tracking of treatment results and disease progression, telecommunications monitoring may be used in instead of frequent in-person visits. [9] Telemonitoring appeared to be a useful device for the distant monitoring - surgical and non-surgical dental patients in a recent pilot study carried out during this pandemic, especially in reducing costs and waiting times. [24]

## **Problems with using teledentistry and potential answers**

### Obstacles to dentists' adoption of teledentistry

Dentists may find teledentistry challenging and possibly tough to learning new skills can be assigned to their lack of willingness to embrace the practice. [25,26] They might lack technological expertise, be wary of giving the wrong diagnosis, and worried about rising prices and expenses. Infrastructure-related limitations might include inadequate connectivity to the internet, a lack of hardware, training, technical assistance and expertise. The health care sectors organizational incompatibility, low financial compensation, inadequate guidelines, the absence of coordination between the distant and central locations, and high setup costs are additional barriers to dentists using teledentistry. [26] Other restrictions include the inability to conduct tests - palpation, auscultation, and two-dimensional depiction of lesions. [2]

The general acceptance of teledentistry will rise as a result of dentists receiving sufficient training and education in this technology to address these issues. The dental education system needs to be revised in regard to the current pandemic in terms of infection control procedures but it also needs to include regular instruction on teledentistry as a means of preventing the

spread of infections. Furthermore, the healthcare networks will need to provide sufficient funding, payment, and authentication for teledentistry. [27]

#### Obstacles to patients' approval of teledentistry

Any module must have patient approval in order to succeed. Lack of direct communication may cause patients to fear they are not adequately communicating their issues to their dentists. It will require time to surmount these obstacles. Patients' acceptance of teledentistry will rise in lockstep with the public acceptance of telemedicine, which is rising daily. Numerous studies have revealed that teledentistry is steadily gaining favor with both patients and medical professionals. [28,29]

#### **Conclusion**

Teledentistry is useful for dental recommendations, scheduling treatments, and evaluation, according to the most recent research. Teledentistry makes it simpler to interact, and the use of smartphones for image capture is appropriate and workable. With virtual access to dental professionals for follow-up care, hospitals and rural centers will be more approachable and provide better treatment in a variety of healthcare settings. The most common uses of telehealth apps are in pediatrics and oral medicine. Teledentistry is useful primarily in situations where face-to-face contact is constrained.

#### **Abbreviations**

COVID-19: Coronavirus Disease 2019

WHO: World Health Organisation

SARS-COV-2: Severe acute respiratory syndrome

**Acknowledgements:** Nil

**Authors' contributions:** SH designed and processed the data, and wrote it. RM edited the manuscript and reviewed the literature. The author(s) read and approved the final manuscript.

**Funding:** No external funding sources were utilized for this study.

**Availability of data and materials:** The data is available on reasonable request.

#### **Declarations**

**Ethics approval and consent to participate:** The review did not involve human participants. All data provided were anonymous without any personal identifiable information. Ethical approval and informed consent were not required.

**Consent for publication:** Not applicable.

**Competing interests:** The authors declare no competing interests.

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