

# DENTAL PAIN MANAGEMENT DURING PANDEMIC BY TELEDENTISTRY: ONLINE APPROACH FOR DENTAL PRACTICE

**Dr. Mohmed Isaqali Karobari**

Professor, Department of Dental Research, CGHR, Saveetha Medical College and Hospital,  
Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India.  
Email: [dr.isaq@gmail.com](mailto:dr.isaq@gmail.com)

DOI: [10.5281/zenodo.12204770](https://doi.org/10.5281/zenodo.12204770)

## Abstract

The COVID-19 pandemic necessitated a shift towards online consultations, allowing patients to seek professional opinions on dental problems during lockdowns. Dental clinics faced significant challenges due to increased COVID-19 cases, prompting changes in organization, structure, and functioning to mitigate cross-infection risks. Online consultations, or teledentistry, became crucial for identifying and triaging dental emergencies, including pain, swelling, and trauma, effectively controlling the spread of infections. Despite challenges such as technological barriers, limitations in clinical assessment, and regulatory concerns, teledentistry provided critical access to care, alleviated patient anxiety, and ensured continuity of treatments. Studies showed high patient satisfaction and cost-effectiveness, indicating teledentistry's value during the pandemic. Future integration of teledentistry with traditional practices, supported by advancements in technology and comprehensive regulatory frameworks, can enhance patient care and accessibility. Regulatory authorities must establish guidelines to ensure safe and ethical use of teledentistry, making it a resilient component of dental healthcare in the post-pandemic era. The COVID-19 pandemic has underscored the importance of teledentistry as a means of providing dental care during times of crisis. Despite its challenges, teledentistry has proven to be a valuable tool for managing dental pain and emergencies, ensuring continuity of care, and reducing the risk of COVID-19 transmission.

**Keywords:** COVID-19, Endodontics, Online Consultations, Pandemic, Pain.

## INTRODUCTION

The COVID-19 pandemic has brought about unprecedented changes in various sectors, including healthcare [1]. Dental practices, in particular, faced numerous challenges due to the need for stringent infection control measures [2]. This situation led to a significant rise in the adoption of teledentistry, a practice that, while not new, gained substantial prominence as a means to provide dental care remotely [3]. This paper aims to explore the role of teledentistry in managing dental pain during the pandemic, discussing its benefits, challenges, and prospects.

### 1. The Impact of COVID-19 on Dental Practices

#### 1.1 Changes in Dental Clinic Operations

- a) The onset of the COVID-19 pandemic led to substantial changes in the operation of dental clinics worldwide. These changes were driven by the need to reduce the risk of cross-infection between patients and dental healthcare providers [4]. Key adjustments included:
- b) Enhanced Infection Control Protocols: Dental clinics adopted rigorous infection control measures, including the use of personal protective equipment (PPE), enhanced sterilization protocols, and the implementation of social distancing within clinic premises [5].

- c) Restructuring of Clinic Layouts: To facilitate social distancing and minimize contact, many clinics restructured their layouts. Waiting areas were redesigned to ensure adequate spacing and physical barriers were installed where necessary [6].
- d) Appointment Management: Clinics implemented staggered appointment schedules to reduce the number of patients in the clinic at any given time. This also allowed for thorough disinfection between appointments [7].

## **1.2 Emergence of Teledentistry**

Teledentistry, the use of telecommunications technology to provide dental care, became a crucial tool during the pandemic [3]. While it had been used previously to reach patients in remote areas, its application expanded significantly during lockdowns. The ability to conduct remote consultations allowed dentists to continue providing care while minimizing the risk of COVID-19 transmission [8].

## **2. Benefits of Teledentistry During the Pandemic**

### **2.1 Access to Care**

One of the primary benefits of teledentistry during the pandemic was its ability to provide access to care despite lockdowns and movement restrictions [9]. Patients could seek professional advice without leaving their homes, reducing their risk of exposure to the virus [10]. This was particularly important for vulnerable populations, such as the elderly and those with underlying health conditions [11].

### **2.2 Triage and Emergency Management**

Teledentistry proved invaluable for triaging dental emergencies. Common issues reported during virtual consultations included pain, swelling, and trauma [12]. Dentists could assess the severity of these problems and determine whether in-person visits were necessary. This approach helped prioritize cases that required immediate attention and reduced the burden on dental clinics [13].

### **2.3 Alleviation of Patient Anxiety**

The uncertainty and fear surrounding the pandemic led to increased anxiety among patients regarding their dental health [14]. Teledentistry provides a platform for patients to discuss their concerns with professionals, receive reassurance, and obtain advice on managing their symptoms at home [15]. This support was crucial in alleviating anxiety and preventing unnecessary visits to dental clinics [16].

### **2.4 Continuity of Care**

For patients undergoing ongoing dental treatments, such as orthodontics or post-surgical care, teledentistry ensures continuity of care [17]. Dentists could monitor progress, provide guidance, and adjust treatment plans remotely. This continuity was essential in maintaining the effectiveness of long-term treatments [18].

## **3. Challenges of Teledentistry**

### **3.1 Technological Barriers**

Despite its benefits, teledentistry faced several challenges. Technological barriers were a significant issue, particularly for elderly patients or those in low-income communities who may not have access to the necessary devices or reliable internet

connections [19]. Ensuring that all patients could benefit from teledentistry required addressing these disparities [20].

### **3.2 Limitations in Clinical Assessment**

While teledentistry allowed for preliminary assessments and triaging, it could not fully replace in-person examinations [21]. Certain diagnostic procedures, such as radiographs, require physical presence in a dental clinic. Additionally, some treatments, like restorations or extractions, could not be performed remotely, necessitating eventual in-person visits [22].

### **3.3 Regulatory and Legal Considerations**

The rapid adoption of teledentistry during the pandemic highlighted the need for clear regulatory and legal frameworks [23]. Issues related to patient privacy, data security, and the scope of practice for remote consultations needed to be addressed. Regulatory bodies had to develop guidelines to ensure that teledentistry was conducted safely and ethically [24].

## **4. Case Studies and Research Findings**

### **4.1 Patient Outcomes**

Several studies conducted during the pandemic provided insights into the effectiveness of teledentistry. For example, a study by Torul, D., et al., [25] found that teledentistry consultations successfully identified and managed dental emergencies, reducing the need for in-person visits. Another study by Lee, J., [26] reported high patient satisfaction rates, with 85% of participants expressing confidence in the care received through virtual consultations.

### **4.2 Cost-Effectiveness**

Research also indicated that teledentistry was cost-effective for both patients and dental practices. By reducing the need for physical appointments, clinics saved on operational costs, while patients saved on travel expenses and time [27]. A study by Maqsood, A., et al., [28] found that teledentistry could reduce overall healthcare costs during the pandemic.

### **4.3 Implementation Strategies**

Successful implementation of teledentistry required adapting existing practices and workflows [29]. Training for dental professionals on using telecommunication tools and managing remote consultations was essential [30]. Additionally, integrating teledentistry platforms with electronic health records (EHRs) ensured seamless communication and continuity of care [31].

## **5. Future of Teledentistry Post-Pandemic**

### **5.1 Integration with Traditional Practice**

As the pandemic subsides, teledentistry is likely to remain a valuable component of dental practice [32]. Integrating virtual consultations by teledentistry with traditional in-person visits can enhance patient care and increase accessibility [13]. For example, routine check-ups and follow-up appointments could be conducted remotely, while more complex procedures are reserved for in-office visits [33].

## 5.2 Advancements in Technology

The future of teledentistry will be shaped by advancements in technology. Innovations such as artificial intelligence (AI) and machine learning can enhance diagnostic capabilities, while augmented reality (AR) could facilitate remote guidance during procedures [34]. These technologies have the potential to improve the accuracy and effectiveness of teledentistry.

## 5.3 Policy and Regulation

To support the continued growth of teledentistry, policymakers must establish comprehensive regulatory frameworks [35]. These frameworks should address issues such as licensure, reimbursement, and patient privacy [36]. Ensuring that teledentistry is accessible to all patients, regardless of socioeconomic status, is also crucial [37, 38].

## CONCLUSION

The COVID-19 pandemic has underscored the importance of teledentistry as a means of providing dental care during times of crisis. Despite its challenges, teledentistry has proven to be a valuable tool for managing dental pain and emergencies, ensuring continuity of care, and reducing the risk of COVID-19 transmission. As we move forward, integrating teledentistry with traditional dental practices and leveraging technological advancements will be key to enhancing patient care and accessibility. Regulatory authorities must also play a proactive role in establishing guidelines to ensure the safe and ethical use of teledentistry. The lessons learned during the pandemic can pave the way for a more resilient and adaptable dental healthcare system in the future.

## References

- 1) Liu, Z., et al., *Open innovation in times of crisis: An overview of the healthcare sector in response to the COVID-19 Pandemic*. Journal of Open Innovation: Technology, Market, and Complexity, 2022. **8**(1): p. 21.
- 2) Induri, S.N.R., et al. *Protective measures against COVID-19: Dental practice and infection control*. in *Healthcare*. 2021. MDPI.
- 3) Cheuk, R., et al., *Teledentistry use during the COVID-19 pandemic: perceptions and practices of Ontario dentists*. BMC Oral Health, 2023. **23**(1): p. 72.
- 4) Jiang, C.M., et al., *Changes in oral health policies and guidelines during the COVID-19 pandemic*. Frontiers in Oral Health, 2021. **2**: p. 668444.
- 5) Kajal, K. and M. Mohammadnezhad, *Organizational preventative strategies undertaken by dental clinics in Fiji during COVID-19 Pandemic: A qualitative study*. 2023.
- 6) Hogarty, S. *Effective social distancing office layouts*. 2020 15-06-2024]; Available from: <https://www.wework.com/en-GB/ideas/professional-development/effective-social-distancing-office-layouts>.
- 7) Subramaniam Kalianan, R., et al., *Appointment structure in Malaysian healthcare system during the COVID-19 pandemic: The public perspective*. BMC Health Services Research, 2022. **22**(1): p. 141.
- 8) Németh, O., et al., *The impact of digital healthcare and teledentistry on dentistry in the 21st Century: a survey of Hungarian dentists*. BMC Oral Health, 2023. **23**(1): p. 1025.
- 9) Kamel, A.H.M., et al., *Teledentistry's Evolution Post-COVID-19: Moving from Crisis Response to Long-Term Solutions*. Odovtos-International Journal of Dental Sciences, 2024: p. 22-33.

- 10) McLeod, C.D., et al., *Refining the process: Safety net dental professionals' experiences with teledentistry implementation during the first year of COVID-19*. Journal of Public Health Dentistry, 2023. **83**(2): p. 212-216.
- 11) Aquilanti, L., et al., *Dental care access and the elderly: what is the role of teledentistry? A systematic review*. International journal of environmental research and public health, 2020. **17**(23): p. 9053.
- 12) Zletni, A.A.A., *Exploring the role of teledentistry in providing dental care*. 2021, Boston University.
- 13) Hung, M., et al., *Teledentistry implementation during the COVID-19 pandemic: scoping review*. Interactive journal of medical research, 2022. **11**(2): p. e39955.
- 14) Peloso, R.M., et al., *How does the quarantine resulting from COVID-19 impact dental appointments and patient anxiety levels?* Brazilian oral research, 2020. **34**: p. e84.
- 15) Alotaibi, S. and A. Alshehri, *Teledentistry Approaches for Dental Assessments and Consultation During the COVID-19 Pandemic*. Smart Homecare Technology and TeleHealth, 2022: p. 11-25.
- 16) Chaudhary, F.A., et al., *Teledentistry awareness, its usefulness, and challenges among dental professionals in Pakistan and Saudi Arabia*. Digital Health, 2022. **8**: p. 20552076221089776.
- 17) Moon, S.J.H., *Impact of COVID-19 Induced Closure of Orthodontic Clinic on Clinical Outcomes*. 2023, University of Illinois at Chicago.
- 18) Chatterjee, S., et al., *Evaluating the impact of teledentistry on patient outcomes, diagnostic accuracy, and satisfaction in a prospective observational analysis*. Cureus, 2024. **16**(2).
- 19) Estai, M., et al., *Challenges in the uptake of telemedicine in dentistry*. Rural and remote health, 2016. **16**(4): p. 1-5.
- 20) Irving, M., et al., *Using teledentistry in clinical practice as an enabler to improve access to clinical care: A qualitative systematic review*. Journal of telemedicine and telecare, 2018. **24**(3): p. 129-146.
- 21) Kandari, A., *Pilot Concordance Study to Evaluate the Accuracy of Teledentistry Compared to Direct Clinical Assessment for Diagnosis of Non-Emergent Soft Tissue Oral Pathologic Conditions in the Oral Medicine Graduate Clinic at the University of Alberta*. 2023.
- 22) Kui, A., et al., *Is Teledentistry a Method for Optimizing Dental Practice, Even in the Post-Pandemic Period? An Integrative Review*. Int J Environ Res Public Health, 2022. **19**(13).
- 23) Talla, P.K., et al., *Barriers and enablers to implementing teledentistry from the perspective of dental health care professionals: protocol for a systematic quantitative, qualitative, and mixed studies review*. JMIR Research Protocols, 2023. **12**(1): p. e44218.
- 24) Mariño, R.J. and C. Zaror, *Legal issues in digital oral health: a scoping review*. BMC Health Serv Res, 2024. **24**(1): p. 6.
- 25) Torul, D., et al., *Is Tele-dentistry an effective approach for patient follow-up in maxillofacial surgery*. Journal of Maxillofacial and Oral Surgery, 2023. **22**(3): p. 620-626.
- 26) Lee, J., *Teledentistry in a Clinical Setting: Advantages and Barriers of Implementation*. 2023, Victoria University.
- 27) Daniel, S.J., et al., *Teledentistry: a systematic review of clinical outcomes, utilization and costs*. American Dental Hygienists' Association, 2013. **87**(6): p. 345-352.
- 28) Maqsood, A., et al., *The teledentistry, impact, current trends, and application in dentistry: a global study*. BioMed research international, 2021. **2021**(1): p. 5437237.
- 29) Kengne Talla, P., et al., *Virtual Oral Health across Canada: A Critical Comparative Analysis of Clinical Practice Guidances during the COVID-19 Pandemic*. International journal of environmental research and public health, 2023. **20**(5): p. 4671.
- 30) Abbas, B., et al., *Role of teledentistry in COVID-19 pandemic: a nationwide comparative analysis among dental professionals*. European Journal of Dentistry, 2020. **14**(S 01): p. S116-S122.

- 31) Zampacorta, K., *Envisioning Telehealth Beyond the Pandemic: A Federally Qualified Health Center's Inquiry Toward Sustainable Telehealth Programs*. 2022.
- 32) Patil, D.P., et al., *The use of teledentistry in pediatric dental practice amidst COVID-19 lockdown: A literature review*. International Journal of Pedodontic Rehabilitation, 2021. **6**(1): p. 6.
- 33) Catalan, B., *An Exploration of Oral Care Provided by Dental Hygienists Using Teledentistry*. 2023, Idaho State University.
- 34) Bharadwaj, R.S., et al., *Revolutionizing Dental Health Care: An In-Depth Exploration of Technological Advancements*. European Journal of General Dentistry, 2024.
- 35) El Tantawi, M., et al., *Teledentistry from research to practice: a tale of nineteen countries*. Frontiers in Oral Health, 2023. **4**: p. 1188557.
- 36) Mariño, R.J. and C. Zaror, *Legal issues in digital oral health: a scoping review*. BMC Health Services Research, 2024. **24**(1): p. 6.
- 37) Thakkar, R., et al., *Connecting Smiles: Bridging Gaps in Oral Health Access with Teledentistry*. 2024.
- 38) Ghai, S., *Teledentistry during COVID-19 pandemic*. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 2020. **14**(5): p. 933-935.