Scholars Journal of Dental Sciences

Abbreviated Key Title: Sch J Dent Sci ISSN 2394-4951 (Print) | ISSN 2394-496X (Online) Journal homepage: <u>https://saspublishers.com</u>

Review Article

Teledentistry: A Comprehensive Review of Methods, Applications, and Future Directions

Dr. Krutika Sangani¹, Dr. Amrit Kaur Gill^{2*}, Dr. Manjiri Chakor³, Dr. Hoorieh Sadat Alamolhoda⁴, Dr. Kiranprasad Chileveru⁵, Dr. Ridhi Bhola⁶, Dr. Sandeep Singh⁶

¹BDS, Pacific Dental College and Hospital, Debari, Rajasthan, India

²BDS, Adesh Institute of Dental Sciences and Research, Bathinda, India

³MDS, R D Dental College and Research Centre, Nagpur, Maharashtra, India.

⁴DMD, Kashan University of Medical Science and Health Services, Kashan, Isfahan, Iran

⁵BDS, MS, Meghna Institute of Dental Sciences, Verni Road, Mallaram, Nizamabad, TG, India

⁶MDS, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India

DOI: https://doi.org/10.36347/sjds.2025.v12i05.002

| Received: 12.05.2025 | Accepted: 16.06.2025 | Published: 20.06.2025

*Corresponding author: Dr. Amrit Kaur Gill

BDS, Adesh Institute of Dental Sciences and Research, Bathinda, India

Abstract

Teledentistry employs advanced telecommunications to facilitate the remote exchange of clinical data and diagnostic imaging, enabling effective dental consultation, diagnosis, and treatment planning across distances. This modality enhances accessibility to oral healthcare, optimizes service delivery, and reduces overall costs, thereby mitigating healthcare disparities in underserved regions. The accelerated integration of digital technologies, particularly catalyzed by the COVID-19 pandemic, has expanded teledentistry's clinical and educational applications. However, challenges persist in regulatory compliance, practical implementation, provider training, and standardization of protocols. This review comprehensively examines the methods, benefits, limitations, awareness among dental professionals, and future perspectives of teledentistry.

Keywords: COVID-19, Digital Dentistry, Public Health Dentistry, Teledentistry.

Copyright © 2025 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

1. INTRODUCTION

Telemedicine refers to the use of informationbased technologies and communication systems to deliver healthcare services across geographical boundaries. By utilizing electronic platforms it enables healthcare professionals to provide consultation, diagnosis, and treatment remotely, particularly when patients and providers are separated by distance. More than a standalone practice, telemedicine is an integral part of the broader healthcare continuum, enhancing the quality, accessibility, and efficiency of medical services. Today, it is widely implemented in academic medical centres, rural clinics, community hospitals, managed care organizations, and even across international borders, connecting providers in underserved regions with specialists in advanced medical institutions [1-3].

The term "*teledentistry*" was first introduced in 1997 by Cook, who defined it as "the use of video conferencing technologies for remote diagnosis and treatment guidance." Since its inception, teledentistry has evolved to represent a broader application of telemedicine within the field of dentistry. It encompasses a wide range of digital practices, including comprehensive networking, electronic sharing of clinical data and images, virtual consultations, remote evaluations, and diagnostic support. This innovative model has significantly transformed the traditional approach to dental care, enabling practitioners to overcome geographic barriers, improve communication, and extend oral healthcare services to underserved populations. By fostering greater accessibility and interprofessional collaboration, teledentistry continues to reshape the landscape of dental service delivery [4, 5].

During the coronavirus disease 2019 (COVID-19) pandemic, dentistry emerged as one of the most significantly affected healthcare disciplines. Elective dental procedures were largely postponed in line with public health recommendations, and even emergency treatments were approached with caution due to the high risk of aerosol generation during many dental interventions. These challenges highlighted the urgent need for alternative methods of delivering dental care. In

Citation: Krutika Sangani, Amrit Kaur Gill, Manjiri Chakor, Hoorieh Sadat Alamolhoda, Kiranprasad Chileveru, Ridhi Bhola, Sandeep Singh. Teledentistry: A Comprehensive Review of Methods, Applications, and Future Directions. Sch J Dent Sci, 2025 Jun 12(5): 74-80.

this context, telemedicine and specifically teledentistry proved to be a valuable approach for maintaining continuity of care while minimising infection risk. It enabled dental professionals to triage patients, provide consultations, and offer follow-up care remotely, helping to lessen the burden on overwhelmed healthcare systems and limit unnecessary in-person interactions [6, 7].

2. METHODS OF TELEDENTISTRY

Teledentistry can be conducted through three primary modalities: real-time (synchronous) consultations, the store-and-forward (asynchronous) method, and remote patient monitoring (Figure 1).

Real-Time Consultations

Real-time consultations involve live video conferencing between a dentist and a patient, allowing them to see, hear, and interact with each other instantly from different locations. This method enables the immediate exchange of medical history, clinical data, and diagnostic images. With two-way communication technology and high-speed internet, dental professionals can offer timely advice, discuss symptoms, and plan treatments without requiring the patient to visit in person. It also allows dentists to consult with specialists remotely, ensuring better-informed decisions for complex cases. For example, a general dentist can Krutika Sangani et al, Sch J Dent Sci, Jun, 2025; 12(5): 74-80

connect with an oral surgeon or prosthodontist to discuss a treatment plan in real time [8].

Store-and-Forward Method

The store-and-forward method involves collecting and saving clinical information, such as patient records, radiographs, photographs, periodontal charts, lab results, and other diagnostic materials, which is then sent to another dental professional for evaluation and treatment planning. Unlike real-time consultations, the patient is not present during this interaction. Dentists gather relevant data and forward it to specialists or consultants, often located in different cities or countries, enabling them to review the case at their convenience. This method is particularly valuable when expert input is needed or when scheduling a live consultation is difficult. The secure storage and transfer of information ensure a well-documented and coordinated dental care process. It also supports accurate diagnosis and treatment, especially in specialties like pedodontics, where timely and detailed assessment is essential [9].

Remote Monitoring Method

The remote monitoring method is a technique in which patients are regularly observed either from their homes or within a hospital setting. For clinical and administrative purposes, health-related data and medical information are electronically transmitted between different locations to support ongoing care [10].



Figure 1: Steps in Teledentistry

3. BENEFITS OF TELEDENTISTRY [11, 12]

- Cost-Effective and Quality Care: Teledentistry can reduce overall treatment costs while maintaining or even enhancing the quality of care delivered to patients.
- Enhanced Specialist Access and Peer Support: It minimizes professional isolation among general dentists by providing easier access to specialists and continuous learning opportunities through remote consultation and collaboration.
- Remote Diagnosis and Treatment Planning: Dentists can share comprehensive digital patient records, including images and

diagnostic data, with specialists, who can then assess the case and suggest treatment plans without requiring the patient to be physically present.

- Improved Diagnostic Accuracy: With advanced imaging and data-sharing capabilities, diagnostic precision can be enhanced, especially in complex or rare cases.
- Better Integration into Broader Healthcare Systems: Teledentistry facilitates seamless coordination with general healthcare services, contributing to more holistic patient management.

- Streamlined Insurance Communication: It simplifies interactions with insurance companies regarding documentation, approvals, and compliance with coverage requirements.
- Efficient Collaboration with Dental Laboratories: Dentists can easily share digital impressions, treatment specifications, and case progress updates with labs, reducing turnaround time and improving outcomes.

4. LIMITATIONS OF TELEDENTISTRY [11, 12]

- **Technological Barriers**: Reliable internet connectivity and compatible hardware are essential for successful teleconsultations. Technical failures can disrupt services, and dedicated support systems are necessary.
- Variability in Clinical Judgment: Differences in skill levels and experience among practitioners can affect the quality of remote diagnoses and treatment suggestions. Relying on online platforms or informal discussions may pose risks due to a lack of standardized evaluation.
- Challenges in Billing and Reimbursement: Payment models for teledentistry services are not yet well established. Limited insurance reimbursement can hinder the financial sustainability of these services.
- Legal and Regulatory Concerns: Legal frameworks for teledentistry vary widely across regions. Issues like licensure, accountability, jurisdiction, liability, patient consent, privacy, and malpractice must be carefully addressed before setting up a compliant and secure teledentistry system.
- Learning Curve and Productivity: Adopting teledentistry may initially reduce productivity as dental professionals familiarize themselves with new tools, platforms, and workflows.

5. CURRENT EVIDENCE IN TELEDENTISTRY Role in Oral Medicine

Teledentistry, combined with the P4 medicine approach predictive, preventive, personalised, and participatory, shifts oral care from reactive treatment to proactive management. By using digital tools and mhealth technologies, clinicians can remotely monitor, diagnose, and tailor interventions based on individual risk profiles. This approach enhances early detection, improves access for underserved populations, and supports efficient, patient-centred care [13]. A recent systematic review and diagnostic meta-analysis by Uhrin et al., (2023) evaluated the potential of teledentistry in diagnosing oral potentially malignant disorders (OPMDs), conditions that often pose diagnostic challenges. The study included 13 qualitative and 9 quantitative analyses comparing telediagnosis with conventional oral examination (COE) by experts. The

findings demonstrated high pooled sensitivity (0.93) and specificity (0.92) in detecting oral lesions through teledentistry tools. In the differential diagnosis of lesions, both sensitivity (0.942) and specificity (0.982) remained consistently high. These results highlight teledentistry's promising role in enabling early detection, reducing unnecessary referrals, and supporting timely intervention for oral lesions, particularly in underserved or remote populations [14].

Role in Endodontics

Teledentistry has emerged as a valuable tool in endodontic diagnosis and consultation, significantly enhancing access to specialized care, especially in remote or underserved regions. By utilizing high-quality imaging and secure telecommunication digital technologies, dental practitioners can transmit endodontic case data, including radiographs and intraoral photographs, to specialists for remote assessment and treatment planning. It allows dentists to remotely assess endodontic cases by reviewing digital images of teeth. Studies have shown that root canal openings and periapical lesions can be accurately identified from these images, with diagnostic reliability comparable to inperson evaluations. This helps reduce unnecessary travel. speeds up urgent care, and lowers overall treatment costs [15].

Role in Orthodontics

Teledentistry is increasingly being integrated into orthodontic practice, primarily to support initial assessments and follow-up consultations. A focused review by Al-Shammery et al., evaluated the utility and challenges of teledentistry in orthodontic care by analyzing four clinical studies selected after screening multiple databases. Most of these studies concluded that teledentistry can aid in orthodontic diagnostics and monitoring, providing significant convenience to both practitioners and patients, especially those in remote or underserved regions. However, the review also revealed certain limitations. While three of the included studies acknowledged the potential benefits of teledentistry, one failed to reach a definitive conclusion. Moreover, ethical and legal concerns were apparent. Two studies did not obtain approval from institutional review boards, and several lacked measures to ensure the secure transmission of sensitive patient data. As a result, the review emphasized that although teledentistry shows promise for preliminary evaluations, it cannot replace inperson orthodontic care due to limitations in diagnostic precision and the necessity for direct clinical intervention [16].

The growing adoption of virtual orthodontic care has been driven by advancements in digital technologies, shifting patient expectations, and the pressures of recent public health crises. While numerous digital platforms are now available to facilitate remote consultations, their capabilities and compliance standards vary widely. General video conferencing tools such as Zoom and Skype can be made HIPAA-compliant through appropriate configurations, but they are not designed specifically for dental use. Basic teledentistry applications like Dentulu and Toothpic provide limited functionality and are generally inadequate for ongoing orthodontic supervision. Some platforms, like Smile Snap and Rhinogram, improve virtual interaction but do not offer integrated treatment management. In contrast, specialized tools such as TeleDent and Dental Monitoring are designed for comprehensive orthodontic care. Dental Monitoring, for instance, uses artificial intelligence to track treatment progress and provide realtime feedback to clinicians. Nonetheless, ensuring HIPAA compliance and establishing a Business Associate Agreement (BAA) remain critical requirements for secure and legally sound teledentistry practice [17].

Oral and Maxillofacial Surgery

Miranda-Hoover et al., conducted retrospective study evaluating the use of telehealth in oral medicine (OM) and oral and maxillofacial surgery OMFS during the first two years of the COVID-19 pandemic. The study revealed that telehealth was primarily utilized for return patient visits, 12% in OMFS and 8% in OM, while new patient teleconsultations significantly declined and nearly returned to prepandemic levels by August 2022. Despite this decline, providers rated telehealth favorably, scoring 4.2/5 on a Likert scale, and acknowledged its value as a complementary modality to in-person care. The findings emphasize that while initial evaluations may still require clinical visits, telehealth has established itself as a sustainable option for follow-up care. The continued reliance on remote consultations underlines the importance of developing standardized protocols, enhancing remote diagnostic capabilities, and ensuring integration of telehealth into routine practice to optimize care delivery and expand access to specialized services [18].

In a study by Torul *et al.*, the effectiveness of teledentistry for follow-up in maxillofacial surgery was evaluated across four diagnostic groups, dental implants, minor surgeries, MRONJ, and TMD. Patients underwent both video calls and in-person examinations. Results showed high patient satisfaction, with 71% preferring video calls initially, increasing to 95% post in-person consultation. Clinician assessments showed no significant difference in video call quality or diagnostic accuracy across groups. The study concludes that teledentistry is a reliable and patient-preferred tool for follow-up in selected maxillofacial cases, potentially reducing the need for in-person visits [19].

Role in Prosthodontics

In prosthodontics, teledentistry facilitates the remote evaluation of edentulous ridges, supporting tissues, and abutment teeth through diagnostic casts, clinical photographs, and radiographs. With this information, specialists can guide the on-site general dentist and dental technologist in designing and fabricating appropriate prostheses, enhancing access to expert care without requiring the patient to travel [20]. A recent study by Lakshmikantha et al., explored the teledentistrv implementation of to improve prosthodontic care access in remote regions of Fiji. Through semi-structured interviews with dentists and a pilot teledentistry platform that included video consultations, digital impression-taking, and remote monitoring, the study identified both challenges and opportunities in delivering care. While infrastructure limitations and internet connectivity posed notable hurdles, the platform was well-received by users and facilitated better communication and treatment planning. These findings suggest that with adequate support and collaborative efforts, teledentistry can significantly enhance prosthodontic service delivery in underserved and geographically isolated settings [21].

Role in Pediatrics

Mola et al., compared teledentistry and inperson clinical examinations in 200 children aged 3-13 years to evaluate diagnostic accuracy during the COVID-19 pandemic. They assessed caries indices (DMFT/dmft. DMFS/dmfs) and dental conditions such as MIH, periodontal disease, trauma, and orthodontic anomalies. The study found no significant differences between the methods, with teledentistry demonstrating two comparable accuracy to clinical diagnosis. These findings support teledentistry as an effective alternative for pediatric dental consultation and treatment planning, especially when direct clinical access is limited [22]. Huang and Chen evaluated the effectiveness of teledentistry in managing pediatric dental emergencies among 85 general dentists and 60 dental students. Using simulated emergency scenarios. both groups demonstrated good quality in diagnosis (74.5%) and recommendations (77.2%). treatment However, experienced general dentists outperformed dental students significantly in diagnosis quality, treatment quality, and confidence levels. The study concludes that while teledentistry is effective for pediatric emergencies, supervision is recommended for novice users, like dental students, to ensure optimal care [23].

Role in Public Health Dentistry

Teledentistry offers a distinctive approach to provide remote clinical training, continuing education, and practical instruction to dentists and dental hygienists working in distant clinics. It also supports educating patients on self-care practices. By enabling preventive and diagnostic care remotely, it helps reduce the need for additional patient visits, saving both time and expenses. The technology requires minimal equipment, allowing real-time face-to-face communication between users. This method is also valuable for increasing dental hygiene students' understanding of public and community health concerns. Costa *et al.*, studied the implementation of a teledentistry system in public dental health services in a South Brazilian city, focusing on teleconsultations in periodontics. Over seven months, 22% of general dentists conducted 68 teleconsultations prior to specialist referrals, which improved treatment decisions and referral prioritization. Key factors influencing implementation included political and administrative support, resource availability, system integration, and internet reliability. The study highlights that addressing these barriers is essential to optimize teledentistry adoption and enhance dental care delivery in public health systems [24].

6. AWARENESS OF TELEDENTISTRY AMONG DENTAL PROFESSIONALS

The rapid digital transformation in healthcare during the COVID-19 pandemic catalyzed interest in teledentistry, prompting researchers to assess dental professionals' preparedness and perceptions regarding its use. Lin et al., conducted a systematic review and meta-analysis encompassing six cross-sectional studies to evaluate dental practitioners' awareness, knowledge, attitude, and practice related to teledentistry during the pandemic period. The analysis revealed a high level of awareness (70.4%) and a generally positive attitude (72.5%) toward teledentistry. However, the level of actual knowledge was moderate (57.9%), and the implementation in clinical practice was markedly low (35.8%). These findings suggest that although dental practitioners acknowledge the potential of teledentistry, gaps remain in their knowledge and practical application, necessitating targeted interventions to bridge these deficiencies [25].

Complementing these findings, Raucci-Neto, W et al., investigated the knowledge, perception, and experience of teledentistry among Brazilian dentists through a nationwide survey involving 575 participants. The majority of respondents were specialists practicing in the Southeast region of Brazil. The study identified a superficial understanding of regulatory frameworks surrounding teledentistry, with more experienced dentists and specialists demonstrating significantly better knowledge and confidence compared to general practitioners. Notably, over 60% of all participants lacked knowledge about electronic prescriptions through teledentistry, and most had no prior experience using teledentistry in practice. These results underscore the need for regulatory clarity, continuing education, and practical training to facilitate broader adoption of teledentistry [26].

Aktas, N. *et al.*, assessed the knowledge, attitudes, and practice of postgraduate pediatric dental students toward teledentistry. Prior to the COVID-19 pandemic, only 8.2% of students were familiar with teledentistry, a figure that rose to 45% post-pandemic. Awareness was influenced by the extent of clinical experience. Students recognized teledentistry's value in medication guidance, follow-up consultations, and soft tissue evaluations. The study concluded that integrating

teledentistry modules into dental education could significantly increase student awareness and encourage future application of this technology, especially in pediatric care [27].

Collectively, these studies indicate that while awareness of teledentistry has grown during the pandemic, significant gaps remain in knowledge and clinical implementation across different levels of dental professionals. Structured training programs, policy integration, and practical exposure during education and practice are essential to improve the adoption and effectiveness of teledentistry in mainstream dental care.

7. FUTURE OF TELEDENTISTRY

Lin *et al.*, reported that dental practitioners during COVID-19 had high awareness and positive attitudes toward teledentistry but only moderate knowledge and low practical use, highlighting the need for enhanced training and adoption strategies [25].

Looking ahead, advances in telecommunication promise significant transformations in dental care through teledentistry. However, challenges remain, including jurisdictional issues, interstate licensure, malpractice concerns, and technological, security, and ethical considerations. Successful implementation will require well-trained instructors with computer proficiency, licensure compliance across practising states, and robust security measures such as password protection, access logs, and data encryption [28].

Despite these hurdles, teledentistry holds great potential to expand access, improve care delivery, and enhance patient outcomes. A nationwide training initiative and integration of teledentistry into dental curricula, alongside clear licensure protocols and strong data security, will be critical steps toward its widespread, effective adoption.

8. DISCUSSION

Teledentistry, since its inception in 1994, has transformed the landscape of dental care delivery by enabling long-distance communication and collaboration among dental professionals. Through platforms that support real-time videoconferencing and store-andforward technologies, practitioners can consult, diagnose, and plan treatment collaboratively, regardless of geographic constraints. This has proven particularly beneficial in extending dental services to rural and underserved populations, helping to reduce both the time and cost associated with accessing specialist care [29].

Despite growing global awareness of the critical link between oral and systemic health, as recognized by the World Health Organization, the burden of oral diseases remains high. In this context, teledentistry has emerged as a valuable adjunct to traditional dental care. It addresses core challenges such as limited access to

Krutika Sangani et al, Sch J Dent Sci, Jun, 2025; 12(5): 74-80

specialists, logistical barriers, and lack of preventive guidance in remote or resource-limited settings.

Goffin et al., underscored teledentistry's capacity to bridge gaps in care delivery, particularly for marginalized groups, including rural communities, individuals with disabilities, and low-income populations. Drawing from international expert panel discussions and literature review, the study demonstrated that teledentistry can enhance early diagnosis, facilitate referrals, support treatment planning, and improve patient compliance. Moreover, the authors advocated for integrating teledentistry training into dental curricula and continuing education, while emphasizing the need for large-scale, standardized studies to fully evaluate its long-term efficacy [30].

Similarly, a prospective observational study by Chatterjee *et al.*, evaluated the clinical effectiveness and patient perceptions of teledentistry. Involving 242 participants who chose between remote and in-person consultations, the study found comparable clinical outcomes over a 12-month period. However, diagnostic satisfaction was significantly lower among teledentistry users (p < 0.001), suggesting the need to enhance the quality and clarity of virtual diagnostic interactions. Importantly, 80% of teledentistry users reported reduced expenses, reinforcing the model's cost-efficiency. These findings indicate that while teledentistry is a viable alternative to traditional visits, improving the patient experience is essential for broader adoption [31].

In addition to its clinical applications, teledentistry also holds significant promise in dental education. Chen et al., discussed its dual utility in expanding access to care and enhancing learning. Educational applications were categorized into selfpaced modules and interactive videoconferencing, with the latter proving more effective due to the advantage of real-time feedback. The study emphasized that a reliable network infrastructure is critical for effective implementation. Overall, teledentistry can serve as a supplementary tool in dental education, especially in geographically isolated or underserved areas, offering cost-effective, scalable, and flexible training opportunities [32].

In summary, teledentistry is poised to play an increasingly integral role in modern dental practice and education. Its ability to improve access, reduce costs, support preventive care, and enhance learning underscores its relevance in addressing both current and future challenges in oral healthcare. However, to realize its full potential, efforts must focus on improving user experience, standardizing delivery protocols, and embedding teledentistry into professional training frameworks.

9. CONCLUSION

Teledentistry has emerged as an effective and patient-preferred approach to improve access to dental care, especially highlighted during the COVID-19 pandemic. While awareness and positive attitudes toward its use have increased, significant gaps in practical knowledge, implementation, and regulatory clarity still exist. Overcoming these challenges through targeted education, clear policies, and standardized protocols is essential. With continued technological advancements and integration into dental practice and education, teledentistry holds great potential to enhance care delivery, reduce costs, and expand access to underserved populations worldwide.

10. Source of Support: Self

11. Conflict of Interest: Nil

REFERENCES

- 1. Jampani ND, Nutalapati R, Dontula B, Boyapati R. Applications of teledentistry: A literature review and update. J Int Soc Prev Community Dent. 2011;1(2):37–44.
- Roine R, Ohinmaa A, Hailey D. Assessing telemedicine: A systematic review of the literature. CMAJ. 2001;165(6):765–71.
- Dils ES, Lefebvre C, Abeyta K. Teledentistry in the United States: A new horizon of dental care. Int J Dent Hyg. 2004;2(4):161–4.
- 4. Kanani H, Khubchandani M, Dangore-Khasbage S, et al. Teledentistry: A comprehensive review and its application in pediatric dental care. Cureus. 2024;16(1):e52685.
- Cook J. ISDN in dentistry: Using videoconferencing and dataconferencing for remote diagnoses and tutorials in orthodontics. Health Inform J. 1997;3:106–7.
- Tonkaboni A, Ziaei H, Rezaei N. Teledentistry during COVID-19. Int J Clin Pract. 2021;75(12):e15013.
- Ghai S. Teledentistry during COVID-19 pandemic. Diabetes Metab Syndr. 2020;14(5):933–5.
- Bhambal A, Saxena S, Balsaraf SV. Teledentistry: Potentials unexplored. J Int Oral Health. 2010;2(3):1–6.
- 9. Daniel SJ, Kumar S. Teledentistry: A key component in access to care. J Evid Based Dent Pract. 2014;14 Suppl:201–8.
- Weerasinghe JU. Clinical trials on computer-based telemedicine: A systematic review. Sri Lanka J Biomed Inform. 2010;1(1):12–20.
- 11. Agarwal A, et al. Teledentistry: A review on its present status and future perspectives. Acta Sci Dent Sci. 2019;3(5):134–8.
- 12. Islam MRR, Islam R, Ferdous S, et al. Teledentistry as an effective tool for the communication improvement between dentists and patients: An overview. Healthcare (Basel). 2022;10(8):1586.

Krutika Sangani et al, Sch J Dent Sci, Jun, 2025; 12(5): 74-80

- 13. Di Spirito F. Integrating P4 medicine in teledentistry and m-health in oral, dental, and periodontal care. J Pers Med. 2023;13(1):111.
- Uhrin E, Domokos Z, Czumbel LM, et al. Teledentistry: A future solution in the diagnosis of oral lesions—Diagnostic meta-analysis and systematic review. Telemed J E Health. 2023;29(11):1591–600.
- 15. Baker WP 3rd, Loushine RJ, West LA, et al. Interpretation of artificial and in vivo periapical bone lesions comparing conventional viewing versus a video conferencing system. J Endod. 2000;26(1):39–41.
- Al-Shammery D, Alqhtani N, Alotaibi AN, et al. Contributions and concerns about the use of teledentistry in clinical orthodontics. Oral Health Prev Dent. 2021;19:465–9.
- 17. Park JH, Rogowski L, Kim JH, et al. Teledentistry platforms for orthodontics. J Clin Pediatr Dent. 2021;45(1):48–53.
- Miranda-Hoover A, He P, Chau T, et al. Telehealth utilization in oral medicine and oral and maxillofacial surgery. Telemed J E Health. 2024;30(3):780–7.
- 19. Torul D, Kahveci K, Kahveci C. Is teledentistry an effective approach for patient follow-up in maxillofacial surgery? J Maxillofac Oral Surg. 2021;22(3):1–7.
- Tella AJ, Olanloye OM, Ibiyemi O. Potential of teledentistry in the delivery of oral health services in developing countries. Ann Ib Postgrad Med. 2019;17(2):115–23.
- Lakshmikantha HT, Harkishan V, Nambiar V. Teledentistry empowerment: Prosthodontic care advancement in remote Fiji. Int Dent J. 2024;74(Suppl 1):S8.
- 22. Mola ME, Çoğulu D, Eden E, Topaloğlu A. Is teledentistry as effective as clinical dental diagnosis

in pediatric patients? Int J Paediatr Dent. 2024. doi:10.1111/ipd.13290

- 23. Huang CC, Chen JW. Teledentistry for pediatric dental emergency: Comparison between experienced and novice users. Bioengineering (Basel). 2024;11(11):1054.
- Böhm da Costa C, da Silva Peralta F, Maeyama MA, et al. Teledentistry system in dental health public services: A mixed-methods intervention study. Int J Med Inform. 2021;153:104533.
- 25. Lin GSS, Koh SH, Ter KZ, et al. Awareness, knowledge, attitude, and practice of teledentistry among dental practitioners during COVID-19: A systematic review and meta-analysis. Medicina (Kaunas). 2022;58(1):130.
- Raucci-Neto W, de Souza Pereira M, Cerqueira NM, et al. Knowledge, perception, and experience of dentists about teledentistry. Int Dent J. 2022;72(4):456–62.
- 27. Aktas N, Palaz ZH, Akal N. Teledentistry in pediatric dentistry: Postgraduate dental students' knowledge, practice, and attitudes. Digit Health. 2023;9:20552076231205285.
- Birnbach JM. The future of teledentistry. J Calif Dent Assoc. 2000;28(2):141–3.
- 29. Sanchez Dils E, Lefebvre C, Abeyta K. Teledentistry in the United States: A new horizon of dental care. Int J Dent Hyg. 2004;2(4):161–4.
- Goffin G, Carter N, Widyarman AS, et al. Role of teledentistry in enabling improved oral care outcomes. Br Dent J. 2024;236(3):162–8.
- Chatterjee S, Lakshmi GK, Khan AM, et al. Evaluating the impact of teledentistry on patient outcomes, diagnostic accuracy, and satisfaction in a prospective observational analysis. Cureus. 2024;16(2):e54424.
- Chen JW, Hobdell MH, Dunn K, Johnson KA, Zhang J. Teledentistry and its use in dental education. J Am Dent Assoc. 2003;134(3):342–6.