EVALUASI DAMPAK TELEDENTISTRY TERHADAP TINGKAT KEPUASAN PASIEN PASCA PANDEMI COVID-19

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ABSTRAK

Teledentistry merupakan sistem komunikasi berupa video dan audio untuk mendapatkan informasi kesehatan gigi dari pasien. Layanan ini mulai berkembang pesat selama pandemi COVID-19. Pada saat ini, setelah pandemi berakhir dan masyarakat kembali beraktivitas normal, teledentistry diharapkan tetap menjadi solusi yang relevan dalam pelayanan kesehatan gigi di era pasca pandemi. Penelitian ini bertujuan untuk mengetahui apakah teledentistry dapat menjadi alternatif dari layanan gigi konvensional di masa asetelah pandemi COVID-19 dengan fokus pada tingkat kepuasan pasien terhadap laynan tersebut. Tinjauan pustaka dilakukan dengan menelusuri berbagai basis data seperti Google Scholar, Springer Nature dan PubMed untuk mendapatkan publikasi yang membahas penerapan teledentistry setelah pandemi. Hasil tinjauan menunjukkan bahwa mayoritas pasien merasa puas dengan layanan teledentistry. Hal ini disebabkan oleh kemudahan akses, komunikasi yang lebih cepat dengan dokter gigi dan berkurangnya kebutuhan untuk kunjungan langsung. Teledentistry terbukti mampu menjaga akses terhadap perawatan gigi selama masa pandemi dan tetap memberikan manfaaat di masa mendatang. Namun demikian, masih terdapat tantangan seperti keterbatasan pemeriksaan fisik, kendala teknis serta ketimpangan akses di wilayah pedesaan. Teledentistry memiliki potensi untuk mendukung dan melengkapi layanan kesehatan gigi secara konvensional. Tenaga kesehatan gigi juga perlu meningkatkan perluasan jangkauan layanan serta pelatihan untuk meningkatkan manfaat teledentistry agar layanan tetap berkualitas dan mudah diakses oleh seluruh lapisan masyarakat.

Kata kunci : kepuasan, pandemi COVID-19, teledentistry

ABSTRACT

Teledentistry is a communication system that utilizes video and audio feedback to collect dental health information from patients. It became widely used during the COVID-19 pandemic. As the pandemic subsided and people returned to normal activities, teledentistry was expected to remain a relevant for delivering dental health services in the post-COVID-19 era. This study aimed to determine whether teledentistry could serve as an alternative to conventional dental services in the field of dentistry after the COVID-19 pandemic by examining the satisfaction of teledentistry users. A literature review was conducted by searching databases related to teledentistry after the pandemic, including Scholar, Springer Nature, and PubMed databases. The review showed that most patients were satisfied with teledentistry services because they are practical, make communication with dentist easier, and reduce the need for in-person visits. Teledentistry helped maintain access to dental care during the COVID-19 pandemic and continues to be useful afterward. However, there are still some challenges, such as limited physical examinations, technical issues, and uneven interest access in rural areas. Overall, teledentistry has the potential to support and complement traditional dental services in the future. Teledentistry plays a key role in post-pandemic dental care. Expanding its reach, improving technology, and enhancing professional training are essential to ensure accessibility and maintain patient satisfaction.

Keywords *: pandemic COVID-19, satisfaction, teledentistry*

INTRODUCTION

The COVID-19 pandemic has had a significant impact on health, disrupting healthcare systems and access to routine services (Warmling et al., 2023; Mccain et al., 2022) The transmission of the corona virus is facilitated by direct contact, such as coughing, sneezing,

and inhaling droplets. The changes that have occurred as a result of the pandemic have resulted in restrictions on individuals meeting other people and avoiding crowds to prevent the spread of COVID-19. These measures have increased the reliance on telehealth services, including teledentistry, as a way to continue delivering essential care while minimizing the risk of virus transmission (Peng et al., 2020) Teledentistry involves the remote delivery of dental healthcare using telecommunications technology. It was introduced in 1989 by Westinghouse Electronics Systems Group in Baltimore (Jain, 2016). The primary goals of teledentistry are to enhance access to dental services, improve the quality of patient care, and reduce oral healthcare costs. However, teledentistry is limited to diagnostic and preventive treatments, necessitating patients to visit clinics for procedures such as restorations, endodontic treatments, and extractions. In-person diagnosis primarily relies on clinical photography, which can vary from assessments performed using intraoral photographs or videos. Moreover, this diagnostic method may not accurately represent the actual conditions. Additionally, other diagnostic methods, such as percussion and palpation, cannot be used (Jampani et al., 2011).

The corona virus disease 2019 (COVID-19) pandemic has significantly affected global populations and healthcare systems. The high risk of infection in the dental environment necessitates the restriction or suspension of dental services to protect the patient's health. This has raised concerns among patients regarding the effective communication of their dental needs. Moreover, as a relatively new tool, uncertainties exist regarding the security and confidentiality of teledentistry records, leading to medicolegal issues for both dentists and patients. Along with advancements in information and communication technology, teledentistry offers innovative solutions for providing effective and efficient dental and oral health care (Jha et al., 2021). According to a study conducted by Gurgel-Juarez et al (2022), preferences for the use of teledentistry may remain relevant long-term. In the post-pandemic era, when physical restrictions are increasingly controlled, people can continue to benefit from dental and oral health services, because they can also be performed remotely via teledentistry. This study aimed to determine the effectiveness of teledentistry in providing dental and oral health services during the COVID-19 pandemic. Based on this introdusction this study aimed to determine whether teledentistry could serve as an alternative to conventional dental services in the field of dentistry after the COVID-19 pandemic by examining the satisfaction of teledentistry users.

METHODS

This study conducted a literature review and analysis of primary and secondary literature related to the impact of teledentistry on patient satisfaction. The criterion for inclusion in the literature reviewed for this study was patient satisfaction with teledentistry, which has an impact on the long-term use of teledentistry from 2019 to 2023. The exclusion criterion in this review was the measurement of satisfaction among teledentistry dental health workers. Data were collected by searching for articles sourced from the Scholar, Springer, and PubMed databases. The data sources included keywords such, as teledentistry, effectiveness, oral services, and the COVID-19 pandemic.

Table 1. Summary Of Studies Included in The Review

	Inclusion	**Exclusion**
Sources	Scholar, Springer, and PubMed databases	Other databases
Publication year	2019 – 2023	< 2019
Language	English	Other language
Publication type	Article/Journal	Other publication types
Population	Patients using teledentistry	Health worker satisfaction in using teledentistry

RESULT

Patient Satisfaction of Teledentistry Users

The following is a review of patient satisfaction regarding the use of teledentistry, analyzed based on three main aspects: patient satisfaction, benefit and limitation. The data is presented in a table format and is derived from various relevant literature sources.

Table 2. Summary Of Studies Included in The Review

Category	Details	Source
Patient Satisfaction	Positive response toward innovation in teledentistry applications during COVID-19.	Pertiwisari et al (2023)
	Mixed responses regarding the shift to teledentistry due to the COVID-19 pandemic. Some patients appreciated the continued access to dental consultations. Others were dissatisfied due to the lack of physical interaction and direct treatment.	Goriuc et al (2022)
	High satisfaction level with teledentistry for oral medicine during COVID-19.	Amtha et al (2021)
	Generally positive feedback from parents regarding the teledentistry approach for their children.	Nuvvula and Mallineni (2021)
	Positive feedback due to convenience and reduced need for physical visits, leading to higher satisfaction levels.	Ganjali et al (2022)
	Patients find it easier to obtain dental consultations. Patients appreciate clear and prompt explanations from dentists.	Islam et al (2022)
	Patients appreciate the flexibility in scheduling appointments. Positive feedback on the simplicity and user-friendliness of the technology.	Fornaini et al (2022)
Benefit	Enhanced remote dental consultations and care. Improved accessibility and convenience.	Pertiwisari et al (2023)
	Enabled continuity of dental consultations and care during the pandemic. Reduced the risk of COVID-19 transmission by minimizing in-person visits. Increased accessibility for patients in remote or underserved areas.	Goriuc et al (2022)
	Continued access to oral medicine consultations. Reduced risk of COVID-19 exposure.	Amtha et al (2021)
	Effective management of dental problems in children remotely. Reduced risk of COVID-19 transmission. Convenience for parents and children.	Nuvvula and Mallineni (2021)
	Convenience and Accessibility**:** Easier access to care from home. Continuity of Care**:** Maintained treatment despite restrictions. Reduced Risk of Infection**:** Minimized exposure to COVID-19.	Ganjali et al (2022)
	Reduces travel time and clinic visits for both patients and dentists. Provides a safe alternative during health emergencies.	Islam et al (2022)
	Reduces the need for travel and allows for quicker consultations. Supports ongoing management of dental conditions between in-person visits	Fornaini et al (2022)
Limitation	Challenges in ensuring accurate and reliable remote diagnoses. Limited to non-invasive treatments.	Pertiwisari et al (2023)
	Limited scope of treatments that can be effectively delivered via teledentistry. Challenges in performing accurate diagnoses without physical examinations.	Goriuc et al (2022)
	Technical issues and connectivity problems. Difficulty in conducting thorough examinations remotely.	Amtha et al (2021)
	Limited ability to perform physical examinations. Dependence on the quality of video and images shared by parents.	Nuvvula and Mallineni (2021)

	Technical Issues**:** Connectivity problems and lack of digital familiarity. Limited Physical Examination**:** Impact on diagnosis accuracy. Privacy and Security Concerns**:** Challenges in ensuring data protection.	Ganjali et al (2022)
	Some patients may feel uncomfortable with or be unfamiliar with online consultations	Islam et al (2022)
	Some patients may prefer traditional face-to-face interactions.	Fornaini et al (2022)

Remote Area Access

This section aims to provide an overview of how teledentistry contributes to improving access in remote area. By examining the supporting technologies, the quality and effectiveness of services delivered, as well as the challenges encountered in such settings, this review highlights the critical components that influence the successful implementation of teledentistry in underserved regions.

Table 3. Summary Of Studies Included in The Review

Category	Explanation	Source
Technology Sources	The use of devices such as tablets and computers to support teledentistry in remote areas.	Sahal Battah Almutiri et al (2023)
	The telecommunications infrastructure in remote areas remains a significant obstacle to the implementation of teledentistry.	Estai et al. (2020)
Service Quality and Effectiveness	Teledentistry has been proven effective in providing accurate and timely diagnoses, particularly in emergency cases.	Irving et al (2020)
	Patients in remote areas generally report satisfaction with teledentistry services, as it reduces the need for long-distance travel to clinics.	Smith et al. (2020)
	Teledentistry enhances patient access to dental health services, especially for those in remote or underserved areas.	Hidayat (2024)
Challenges in Teledentistry	Technical challenges such as poor internet signal quality and limited technological device capabilities are significant obstacles to the implementation of teledentistry.	Niknam et al (2024)
	Inadequate policies in various countries hinder the broader development and adoption of teledentistry.	El Tantawi (2023)

DISCUSSION

Patient Satisfaction of Teledentistry Users

According to a review of related research, teledentistry plays an important role in dental health services. Based on patient knowledge, it provides good results in improving dental health. Teledentistry can also save on money. Consultations, between dental health workers and patients are considered effective, and patients can obtain online appointment schedules for consultation with dental health workers. Teledentistry has played an important role since the COVID-19 owing to its effectiveness. Innovations in teledentistry application can be used after the pandemic as an initial treatment in dentistry (Pertiwisari et al., 2023). Teledentistry has an important role and benefits that are not only limited to the COVID-19 pandemic, but will also remain relevant and effective in providing dental health services in the post-COVID 19 era. Overcoming the challenges of adopting teledentistry by improving patient and management tools through new technologies coupled with innovations in dental engineering and equipment to minimize aerosol-transmitted pathogens will-undoubtedly make the dentistry world better prepared to withstand the negative impacts of a potential future pandemic. Although the use of teledentistry has increased during the pandemic in response to physical restrictions and the need for remote care, its broader benefits may continue to be felt because of its effectiveness

and efficiency. Teledentistry has become a medium for long-distance dental practice conducted by dental and oral health workers through the use of information and communication technology, according to their competence (Goriuc et al., 2022).

Based on a study of patients with oral disease and their satisfaction with teledentistry services during the COVID-19 pandemic, it was found that all participants reported being satisfied or very satisfied. The analysis identified two key factors that contribute to patient satisfaction: comfort, convenience, and communication between patients and doctors (Amtha et al., 2021). Additionally, the study emphasized that comfort and convenience are critical as teledentistry allows patients to receive consultations and follow-ups from the comfort of their homes, reducing the need for travel and waiting times. This aspect was particularly valuable during the COVID-19 pandemic when movement restrictions and safety concerns were at their peak (Alkadhi et al., 2024). The use of smartphones in teledentistry has become an interesting innovation, owing to the increasing availability of technology, capabilities of digital cameras, and data processing on smartphones. The camera on the smartphone can be used to photograph the condition of the patient's teeth, record the condition of the mouth before treatment, and assist in the diagnosis and appropriate treatment planning. As smartphones are easy to carry and use at any time, they are useful tools for improving patient-focused dental care by assisting in the screening process, data collection, and primary prevention (Nuvvula, 2021; Väyrynen et al., 2023).

Most patients find virtual clinics an effective form of communication. They felt comfortable because they could communicate with dentists without leaving their homes. In addition, research conducted by Rahman et al. (2020) stated that all patients were satisfied because they could access the system without having to pay for transportation to the hospital. These findings indicate that virtual clinics provide patients satisfaction and comfort (Rahman et al., 2020). This study suggests that telemedicine could be a valuable option during health emergencies, providing a convenient, safe, scalable, effective, and environmentally friendly method for delivering clinical care (Bokolo, 2021). The use of telemedicine in pandemics enhances the medical care delivery system, especially for outpatient and emergency services. It has the potential to improve outcomes for patients, providers, and the healthcare system as a whole. However, further research is needed to define the requirements for telemedicine systems in pandemics, identify the characteristics of successful implementations, and establish appropriate measures for evaluating the quality of clinical care provided (Ganjali et al., 2022).

Teledentistry, built on the internet and advancements in information technology, can serve as a complement to traditional face-to-face methods of pediatric dental care, ultimately improving patient management. Pediatric dentists can utilize this technology for patient and parent education, monitoring preventive care and post-treatment follow-up, assessing dental development, diagnosing dental diseases, planning treatments, and providing pre-appointment behavior guidance to help reduce anxiety in child patients (Sharma et al., 2021). This technological advancement in dentistry can significantly address the shortage of pediatric dental specialists in areas with limited oral healthcare facilities. During the pandemic, teledentistry has demonstrated its potential to minimize the spread of the virus. However, further research is needed to ensure the safe, effective, and evidence-based implementation of teledentistry in pediatric dentistry. Despite its limitations, teledentistry offers a valuable tool for providing long-term oral healthcare to the pediatric population and overcoming disparities in access to specialist care, requiring collaborative efforts from health authorities and pediatric dentists (Sharma et al., 2021).

Teledentistry has emerged as a valuable tool for improving communication between dentists and patients. It facilitates remote consultations, treatment monitoring, and early diagnosis without the need for physical visits to a clinic. By leveraging digital technology, teledentistry can enhance access to dental care, especially in underserved areas, while reducing

the costs and time associated with travel and improving patient convenience. However, its implementation is not without challenges, including the need for adequate training for healthcare professionals, concerns about data privacy, and limited access to technology in certain regions. By addressing these issues, teledentistry has the potential to significantly enhance communication and the quality of dental care services (Islam et al., 2022).

Teledentistry has become increasingly important following the COVID-19 pandemic, which highlighted the need for remote healthcare services. This approach improves patient access to dental care, reduces costs, and enhances overall efficiency. In the future, technological advancements and greater acceptance by both healthcare providers and patients are expected to accelerate the integration of teledentistry into standard dental practice (Fornaini and Rocca, 2022). This progression may also lead to the development of more user-friendly platforms and applications, enabling seamless interaction between patients and dental professionals (Kharchenko,)

Remote Area Access

Technological advancements have consistently affected the field of medicine. The increased use of smartphones and related applications has ushered in a new era of clinical data exchanges between patients and clinicians. Teledentistry, which combines telecommunications with dentistry, allows remote exchange of clinical information and images for dental consultations and treatment planning. It has the potential to address issues related to access, cost- efficiency, and the quality of dental care (Daniel and Kumar, 2024). Through teleconsultations with specialists in larger communities, dentists in nearby areas can easily provide patients with access to specialized care. Teledentistry also offers a cost-effective method of extending dental services to underserved populations, including those living in rural areas. This review highlights the importance of teledentistry across different dental specialties and its role in improving access to dental care in underserved populations (Arora et al., 2019)

Teledentistry is an alternative approach in areas that require dental and oral health services. Its use is becoming increasingly widespread as it can reduce costs and improve access to care, particularly for populations and communities in rural and remote areas. The implementation of teledentistry aims to improve service quality and improve efficiency. Implementing this access is important, especially in areas that require internet access. Teledentistry is an important public health tool because of its significant potential to change. Therefore, public trust must be built even more massively by conducting outreach in the region so that it becomes a special concern for the public to efficiently improve dental and oral health and increase public trust in teledentistry (Samad et al., 2023; da Costa et al., 2020).

The study found that case severity and treatment compliance were predictors of oral-health service use in general dentistry clinics. Additionally, case-management interventions were key in facilitating access to specialty care. This is especially relevant in remote villages, where geographic and economic barriers limit access to dental services. Improving case management in these areas, combined with solutions like tele-dentistry or mobile clinics, could enhance access to care for individuals with more complex needs (Surdu et al., 2023; Paurobally et al., 2022). Teledentistry (TD) improves access to dental care for people in remote areas by enabling efficient communication between healthcare providers and patients. It allows for continuous monitoring and eliminates the need to travel to urban centers for specialist consultations, benefiting underserved rural populations. However, the lack of high-speed internet may hinder its reach in some areas. Over the past few months, various software applications have been proposed, some requiring advanced tools for communication, while others only need a smartphone. Despite its limitations, TD holds promise as a valuable tool for providing long-term oral healthcare and increasing access to specialized treatment for all age groups (Chatterjee et al., 2022; Al-Buhaisi et al., 2024).

Emami et al. (2017) suggested that patient satisfaction could be associated with several modalities of e-oral health care. E-oral health is a feasible option for providers who wish to contribute to oral care services in both rural and remote areas. Patient satisfaction also depends on Internet access. The need to overcome barriers to Internet coverage in rural areas, where Internet access is limited, cannot be overstated. Efforts are necessary to provide and expand Internet access in these areas to improve consultation experience. However, only speculative conclusions could be drawn based on the quality of the included studies, implying that long-term robust cohort studies, clinical trials, and cost assessments of oral health in rural settings are indispensable. As telehealth continues to develop, special care should be taken to incorporate features that enhance patient's satisfaction and acceptance. However, as more patients use telehealth, additional training of dentists is important to ensure better positive patient outcome (Philip and William, 2019).

CONCLUSION

In summary, teledentistry is an important medium not only during the COVID-19 pandemic, but will also continue to be relevant in providing dental health services in the post COVID-19 era. The development of teledentistry ensures that patients are satisfied with the services provided. Although some medical fields, including dentistry, require direct examination by a doctor, teledentistry can provide effective support for the diagnostic process. Additionally, it is crucial to make concerted efforts toward the provision, expansion, and enhancement of teledentistry applications to ensure accessibility at all societal levels. Patient satisfaction can be maintained by continuing to improve teledentistry technology, and increasing the training and education of dental health professionals.

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