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Teledentist and Remote Monitoring

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Summary

Teledentistry, also called teledentist or teledentistry, is a modality
telehealth applied to dentistry that uses information technologies and
Communication to offer remote services. Among its applications are consultations.
virtual, evaluation of images sent by the patient, educational guidance and
Treatment follow-up outside of a face-to-face setting. Remote monitoring.
This directly integrates the practice of teledentistry. In this strategy, the patient registers
Information such as photographs or videos of the oral cavity is sent to the professional.
to analyze the evolution of the treatment. Among the main benefits of teledentistry and...
Remote monitoring is expanding access to care and reducing...
Unnecessary travel, greater patient convenience, and optimization of...
professional agenda. The model also favors the inclusion of populations living in
remote areas or areas with difficult access to specialized services. Despite the
Despite advancements, there are significant challenges to the full implementation of this practice. Among them
They face technological limitations, such as unstable internet access or lack of...
familiarity with digital devices, in addition to regulatory barriers and issues
related to the privacy and security of patient information. In the context
Brazilian guidelines and manuals have been guiding the use of teledentistry in the system.
public health services, reinforcing practices such as teleconsultation, telemonitoring and
remote guidance.

Keywords: Teledentistry, teledentist, remote monitoring.

Abstract

Teledentistry is a branch of telehealth applied to dental care that uses information and
communication technologies to provide services remotely. Its applications include virtual

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consultations, image-based assessment, patient education, and follow-up treatment outside the dental office. Remote monitoring is a central component of teledentistry. In this model, patients send photographs or videos that enable professionals to track treatment progress without frequent in-office visits. This approach has been especially relevant in orthodontic treatments, where digital platforms, sometimes supported by artificial intelligence, can identify intraoral changes and guide clinical decisions. The adoption of teledentistry offers several advantages, such as improved access to care for individuals in remote areas, greater convenience, and optimization of clinical workflows. It also supports initial screening and triage, prioritizing cases requiring direct care. In Brazil and other countries, guidelines and institutional protocols have been developed to standardize the use of teledentistry within public health systems, reinforcing the potential of remote monitoring, teleconsultation, and teleorientation as tools to enhance continuity of care. As digital health evolves and professional adoption increases, Teledentistry is expected to become increasingly integrated into routine dental practice. In conclusion, teledentistry combined with remote monitoring represents a transformative model in dental care delivery.

Keywords: teledentistry; remote monitoring; oral health; artificial intelligence.

Introduction

The incorporation of digital technologies in healthcare is transforming the models.
Traditional approaches to care in different specialties have been evolving, and dentistry has been keeping pace.
This movement is driven by the development of teledentistry. This concept refers to...
to the use of communication and information tools to perform dental services
remotely, including guidance, initial assessment, treatment follow-up and
educational support. Although the practice emerged more than two decades ago in
While its growth has become more significant in recent years, stemming from isolated initiatives, its growth has become more pronounced.
of the global expansion of telehealth and the demands imposed by contexts of restriction of
in-person access, as observed during the COVID-19 pandemic. This scenario
reinforced the need for safe and effective alternatives to maintain business continuity.
dental care, driving the adoption of digital platforms and new forms of
Interaction between professionals and patients.

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Teledentistry is not limited to replacing in-person consultations, but represents...
an expansion of care capacity, by enabling synchronous communication or
Asynchronous methods include sharing intraoral images and conducting initial screenings.
In this way, it allows urgent cases to be identified more quickly and that
Patients should be properly guided until in-person care is available.
makes it necessary. Furthermore, the practice aids in oral health education, promoting
preventive habits and reducing the need for services only in situations of pain or
The urgency, which overburdens health services.

In this context, remote monitoring emerges as one of the most effective strategies.
Innovative approaches associated with teledentistry. This modality consists of monitoring...
continuous monitoring of the patient outside the office, through the periodic sending of photographs,
videos or other digital records that allow the professional to assess the evolution of
treatment. This model has become prominent in orthodontics due to the need for
Regular supervision for adjustments and monitoring of tooth movement. With the
Remote monitoring means that follow-up is no longer based on consultations.
Scheduled services are no longer provided, but rather based on the patient's actual needs, promoting greater [care/service/etc.].
precision and timely interventions (Gaeta; Sousa, 2025).

The advancement of digital technologies, such as mobile applications, high-resolution cameras and
Automated analysis systems have increased the viability of this process (Daniel; Kumar,
(2020). Specific platforms are able to detect intraoral changes and generate alerts.
to the professional, which contributes to the safety of the treatment and reduces visits.
unnecessary. This type of follow-up also promotes patient adherence.
which becomes more active in their own therapeutic process, recording information and
receiving personalized guidance. Thus, remote monitoring strengthens a
patient-centered approach, aligned with contemporary healthcare trends
digital.

However, the full implementation of teledentistry and remote monitoring
It depends on a number of structural and regulatory factors. Among them are...
availability of adequate connectivity, access to electronic devices,
training of professionals and the existence of clear rules on privacy and
information security. Furthermore, it's important to recognize that not all...
Dental procedures can be performed or evaluated remotely.

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Diagnoses that depend on palpation, radiographs, or clinical interventions require...
The continued importance of in-person care as an essential component of care.
In this way, the hybrid model, which integrates the two formats, has been identified as the
The most suitable way to ensure effectiveness and safety.
The expansion of teledentistry also has important social implications. In regions
located far from urban centers or with low availability of professionals.
For specialists, the use of communication technologies represents an opportunity to
Expand healthcare coverage and reduce historical inequalities in access to health.
Oral health. Public and academic programs have demonstrated that telehealth can...
assist in triaging complex cases, proper referral, and follow-up.
long-term patients. In addition, health institutions and public systems have been
adopting guidelines and protocols to standardize the use of these tools,
consolidating teledentistry as an integral part of health policies (Santos et
al., 2024).
Another relevant aspect concerns user acceptance. Studies indicate that
Many patients express satisfaction with remote care, due to the reduction in...
Travel time, saving time, and increasing comfort. From the professionals' point of view,
The integration of digital technologies has been perceived as an opportunity to...
to optimize clinical routines, organize demands, and improve communication with patients.
patients. However, there are still needs for training and adaptation of workflows.
work is needed to establish this practice sustainably, without compromising
the quality of care (Alabdullah; Daniel, 2024).
In light of these transformations, teledentistry and remote monitoring are shaping up to be important.
not just a temporary response to emergencies, but a structural advancement.
in the way dental care is organized. The trend is that these tools will...
becoming increasingly present in clinical practice, accompanied by innovations such as
artificial intelligence, integration of electronic health records and automated devices
image capture. Understanding these processes is fundamental to
professionals, managers, and institutions can use technology in an ethical and safe manner.
effective.

Thus, the introduction of the topic highlights that teledentistry and remote monitoring
They represent a significant evolution in oral health care models. Their

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Applications broaden the reach of services, promote greater continuity of care, and...
They allow for more personalized practices. At the same time, they require reflection on
limits, responsibilities and conditions necessary for its implementation, pointing out
For a future in which dental care will be increasingly integrated and digital.
and geared towards the real needs of patients.

Theoretical Framework

The advancement of digital technologies and communication tools has transformed...
health systems in recent decades, creating new possibilities for interaction between
professionals and patients. In this scenario, teledentistry emerged as a derivative.
natural to telehealth, following a global trend of modernization of
care services. Countries with large territorial extensions or with distribution
The unequal distribution of healthcare professionals led them to investigate alternatives that would allow them to...
To expand the reach of services without relying on in-person assistance. Thus, the
Teledentistry has begun to be applied in screening, health education, and other actions.
support for teams working in remote areas, evolving towards more...
structured clinical follow-up (Gaeta; Sousa, 2025).
The development of teledentistry is also related to the growth of
Digital connectivity and the popularization of mobile devices. The use of smartphones.
High-resolution cameras enabled the collection of intraoral images in a way that...
simple, allowing patients to record clinical situations and share them.
with remote professionals. In addition, video conferencing platforms have become
to offer minimum conditions for conducting synchronous services, allowing
Initial assessment, guidance, and decision-making regarding the need for consultation.
in-person. This set of factors contributed to the emergence of teledentistry.
consolidated itself as a viable and incorporated practice in different care contexts.
dental (Coelho; Paz, 2023).
Remote monitoring emerged from this process as one of the most effective strategies.
representative of the integration between technology and continuing care. Unlike
In addition to regular in-person consultations, remote monitoring allows you to follow the process.
patient care in a more frequent and dynamic way, based on the sending of digital records and
in the analysis of information over time. This approach has modified the field of

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Orthodontics, in which monitoring tooth movement depends on visits.
monthly. With digital monitoring, the professional can assess the progress of
treatment according to actual need, reducing travel and increasing
Precision of interventions. The introduction of algorithms and artificial intelligence systems.
This further expanded that potential, allowing for the rapid identification of changes and the issuing of new ones.
Automatic alerts for the dentist.

In the context of public health, teledentistry has acquired additional relevance to
to promote increased access to underserved regions. In Brazil, for example,
rural municipalities and indigenous communities face structural limitations that
make it difficult to ensure the continuous presence of specialized professionals. The availability of
Remote guidance, teletriage, and remote monitoring contribute to reducing barriers.
geographical and to strengthen care networks, allowing complex cases to be
Referrals should be made and urgent situations identified. Institutional programs
Academic initiatives have demonstrated that teledentistry can function as
Complementary support to local teams, without replacing in-person service, but
expanding its problem-solving capacity.

From a regulatory standpoint, the use of teledentistry has undergone recent adaptations.
in several countries during the COVID-19 pandemic. The need to reduce contact
The physicist accelerated the creation of specific and temporary rules that allowed the
Larger-scale remote care. After this period, many health systems
They initiated processes of ongoing review and institutionalization of these practices.
recognizing its usefulness beyond emergency situations (Daniel; Kumar, 2020).

However, challenges related to the standardization of protocols still exist.
professional responsibility, security and confidentiality of data
shared. These factors indicate that the expansion of teledentistry does not depend on shared resources.
not only technological solutions, but also clear regulatory frameworks and
well-defined ethical processes.

Another fundamental element of the context is the need for professional training.
Traditional dental practice is based on in-person clinical skills, and
The transition to digital models requires new skills. Dentists need them.
develop familiarity with technological platforms, understand workflows
remote support, securely recording information, and communicating with...

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patients through digital devices. At the same time, patients also
They need guidance on how to use applications and create quality records.
Understanding the limitations of remote service. The effective adoption of
Remote monitoring, therefore, involves cultural and educational transformation, both
between professionals as well as between users (Santos et al., 2024).
Beyond the technical and regulatory issues, there are social and organizational impacts that...
These factors shape the context of teledentistry. The growing demand for more comprehensive healthcare services
Accessible and customizable features contributed to the interest in hybrid models.
Combining in-person and digital services. This movement is aligned with
broader trends in digital health, which include integrated electronic health records,
Use of artificial intelligence to support diagnosis and process automation.
administrative. Teledentistry, within this scenario, functions as an extension
from traditional clinical practice, allowing for greater continuity of care and
closer monitoring of the patient's progress over time (Alabdullah;
Daniel, 2024).
Finally, the current context indicates that teledentistry and remote monitoring are not...
They represent not just a technological innovation, but a structural transformation in
A way of organizing dental services. The combination of expanded access,
Digital communication and continuous monitoring tend to modify expectations and
care patterns. Although challenges persist, such as the digital divide,
Limited infrastructure and the need for consistent regulation, the pace of
This expansion demonstrates that these practices have the potential to become a permanent part of the system.
of attention to oral health (Gaeta; Sousa, 2025).
In this scenario, understanding the context surrounding its implementation is fundamental.
to guide public policies, clinical practices, and professional training strategies.
that ensure its use in a safe, efficient and equitable manner.

Methodology

This study was developed through a narrative literature review, with the objective
to describe the main applications, benefits, challenges, and implications of using
Teledentistry and remote monitoring in contemporary dental practice. A
The methodological construction followed sequential steps, beginning with the definition of the theme and

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by defining the scope, focused on clinical, technological and...
organizational aspects related to remote dental care.
The search for information was carried out between September and November, using databases of scientific data and recognized institutional sources, such as PubMed, SciELO, Library Virtual Health and official documents from health agencies. Articles were included, reviews, guidelines, technical reports, and government publications that addressed teledentistry, remote monitoring, telehealth applied to dentistry and the use of Digital technologies in clinical monitoring. The descriptors used included teledentistry, remote monitoring, digital health, and digital orthodontics. combined with Boolean operators to broaden the scope of the search.
The inclusion criteria considered materials published in the last ten years. available in Portuguese, English, or Spanish, and that had a direct relationship with the Topic: Documents that dealt with telemedicine in other areas of healthcare, without interface. materials with dental or duplicate materials were excluded. After the initial selection, the The content was analyzed qualitatively, seeking to identify convergences. Usage trends, limitations, and recommendations found in the literature.
The information was organized through thematic grouping, covering four main axes: concepts and fundamentals of teledentistry, characteristics of Remote monitoring, evidence on applicability and clinical benefits, and challenges. for implementation. This procedure allowed for the synthesis of heterogeneous data and Structure the content in a coherent way, ensuring the construction of an overview. updated on the topic.

Since this is a narrative review, risk assessment techniques were not applied. without bias or statistical criteria. The central objective was to describe the current state of To gain knowledge and contextualize the use of these tools, without intending to measure them. quantitative effects. The methodology adopted makes it possible to offer a broad view and Interpretative, suitable for providing a basis for discussions, guiding future research and to support decisions related to the integration of teledentistry and monitoring. Remote use in dental practice.

Results

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The analysis of the selected literature allowed us to identify consistent trends regarding the
The application of teledentistry and remote monitoring in clinical practice. The studies
Reviews have shown that teledentistry has been used in three areas:
screening and initial assessment, educational guidance and follow-up of treatments in
ongoing progress. In different contexts, it has been observed that teletriage has contributed to the
Reducing unnecessary travel and enabling early identification of situations.
urgent matters, allowing for more appropriate referral of patients to services.
in-person (Coelho; Paz, 2023).

Regarding remote monitoring, the results indicated a higher concentration of
Evidence exists in the field of orthodontics, in treatments with clear aligners.
Research has indicated that digital monitoring has enabled a reduction in frequency.
of in-person consultations without compromising clinical outcomes. It was also observed that
Patients monitored remotely showed greater adherence to guidelines and
greater regularity in the use of orthodontic devices, favoring the progress of
treatment. In some studies, an increase in the speed of identification of
unforeseen events, allowing for early intervention by the professional.

Another relevant finding relates to the impact on patient experience. Most of the
Studies have reported high levels of satisfaction, associated with time savings, and...
reduced travel costs and an increased sense of security during
periods of sanitary restrictions. Positive perceptions were also mentioned.
Regarding more continuous communication with the professional, reinforcing the therapeutic relationship.
even at a distance. However, some users reported technical difficulties, such as
problems with image quality or limitations in internet access, indicating
what structural factors still influence the effectiveness of the process (Daniel; Kumar,
2020).

From a professional standpoint, the literature results highlighted benefits such as
Optimizing scheduling, reducing overcrowding in doctor's offices, and the possibility of...
Simultaneous monitoring of a larger number of patients. Some authors have highlighted this.
Remote monitoring has contributed to more accurate decision-making, by
to allow for evaluation based on serial records, and not just on isolated visits.
However, concerns were identified regarding legal liability,

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the need for training for the correct use of the platforms and the variability of
quality of information submitted by patients.
Finally, the results showed that, although teledentistry presents potential
significant for expanding access and improving continuity of care, its
Full implementation depends on overcoming technological, regulatory and
educational. The literature indicates that the hybrid model, combining remote learning, is a viable option.
In-person care is the most suitable method to ensure clinical safety and quality of care.
in procedures that require a detailed physical examination. The findings reinforce that the
Teledentistry and remote monitoring represent effective tools when
used in a complementary and integrated way with traditional care.

Discussion

The results found in the literature indicate that teledentistry and
Remote monitoring represents significant advances in the organization of care.
While dental, its definitive incorporation depends on a balanced analysis.
between potential and limitations. The reduction in in-person consultations, observed in
Orthodontic treatments show that the use of digital technologies can optimize workflows.
clinical outcomes without compromising the quality of outcomes. However, this reduction should not
to be interpreted not as a complete replacement of in-person service, but as a
A more rational redistribution of contact between professional and patient. Thus, the model
Hybrid emerges as the most suitable approach, ensuring that digital assessments
supplemented by a physical examination when necessary (Santos et al., 2024).
Another point of discussion involves the patient experience. The literature reveals a high degree
satisfaction is associated with convenience, but it also highlights inequalities in access.
which may limit the benefits offered by digital tools. Patients with
poor connectivity, lack of familiarity with devices, or socioeconomic constraints.
They may have reduced participation, widening existing disparities in oral health.
Therefore, the expansion of teledentistry requires not only technological advancement, but also...
digital inclusion policies and educational strategies that guide the correct use of
tools (Alabdullah; Daniel, 2024).
For professionals, remote monitoring offers advantages such as better
Organizing the agenda and making decisions based on serial data. However, still

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There are challenges related to ethical and legal responsibility regarding confidentiality.
Information, definition of operational limits, and standardization of conduct. The absence of
Uniform regulations in some contexts can create uncertainty and hinder adoption.
A broader range of technologies. Therefore, clear regulations and continuous training are essential.
Institutional protocols are fundamental elements for ensuring safe practice.
Furthermore, the discussion highlights that the effectiveness of remote monitoring depends on...
Quality of records submitted by patients. Inadequate images, lighting.
Insufficient or inconsistent information provided may compromise the evaluation.
professional and reduce the reliability of the process. This demonstrates that technology, by
That alone does not guarantee good results; investment in guidance is necessary.
training and tools that facilitate standardized data capture (Gaeta; Sousa,
2025).
In summary, teledentistry and remote monitoring offer significant contributions.
significant for expanding access, improving continuity of care, and strengthening the
communication between patient and professional. However, its implementation must be
planned gradually, taking into account structural limitations and regulatory requirements.
and ethical aspects. The consolidation of these practices depends on the integration between technology,
infrastructure and training, reaffirming that innovation in healthcare needs to keep pace.
principles of equity, safety and quality of care.

Conclusion

The incorporation of teledentistry and remote monitoring represents progress.
significant in oral health care, in a scenario marked by inequalities
territorial limitations, access constraints, and the need for quick and reliable responses. The analysis
The evidence suggests that these tools are not a substitute for practice.
in person, but as strategic complements capable of expanding the reach of
In dentistry, strengthen continuity of care and promote a more...
preventive and patient-centered. By integrating remote communication resources with
Digital technologies for clinical monitoring make it possible to reduce barriers.
Geographically, optimize service flows, and offer qualified support in a timely manner.
timely, minimizing complications and unnecessary referrals.

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The observed results reveal that patients monitored remotely
They demonstrate greater adherence to oral hygiene guidelines and continuity in treatment.
and a positive perception of the service experience. For professionals, the teledentist
It provides support in screening, post-operative monitoring, and health education.
contributing to more assertive decision-making. In remote regions or with
Given the shortage of specialists, this modality presents itself as a viable alternative for
to reduce pent-up demand and support local services, without replacing the need for
Direct intervention when indicated. At the same time, the importance of is reinforced.
well-defined criteria for referral, scope of practice, and integration with consultations.
In-person care ensures safety and quality of service.
However, despite the identified benefits, challenges persist and need to be addressed.
challenges faced in consolidating the adoption of these practices. Barriers such as connectivity
limited, unequal access to digital devices, professional resistance, gaps
Regulatory issues and the need for ongoing training still impact the expansion of
Teledentistry. Furthermore, issues related to data protection,
Confidentiality of information and standardization of clinical protocols require attention.
continuous, in the face of the rapid evolution of monitoring and intelligence technologies.
Artificial intelligence applied to healthcare. The sustainability of these models also depends on
consistent public policies, adequate funding, and integration with networks of
Pay attention, avoiding the creation of fragmented services or services restricted to specific groups.
population-related.
In general, teledentistry and remote monitoring demonstrate potential for
transform dental practice by favoring earlier interventions,
Continuous monitoring and greater patient autonomy in self-care.
Consolidating these tools requires a multidimensional approach that involves
Clear regulations, adequate technological infrastructure, professional training, and digital
inclusion of users. As technological advances become more...
Accessible, these modalities are expected to expand their application not only in
emergency situations or restrictive contexts, but as a structuring part of
oral health systems.

It is concluded that the integrated use of teledentistry and remote monitoring can...
to contribute significantly to improving oral health indicators, reducing

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of inequities and strengthening of care models focused on prevention and

Continuity of care. The future of dentistry tends to combine in-person practices.

and digital tools in a complementary way, ensuring that the patient remains at the center of care.

decisions and that technology be used as a means and not as an end. Sustainable progress

The success of these strategies will depend on the connection between research, clinical practice, and policies.

public initiatives, ensuring that the observed benefits can be expanded and

consolidated across different realities and levels of care.

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