BRAZILIAN JOURNAL OF DENTAL EDUCATION
ASSOCIAÇÃO BRASILEIRA DE ENSINO ODONTOLÓGICO

Telehealth in Dentistry: training and care in the context of Primary Care

Paula Alana Holz Fenner[1]
0000-0002-5043-0696

Ramona Fernanda Ceriotti Toassi[2]
0000-0003-4653-5732

[1]Prefeitura Municipal de Novo Xingu, Novo Xingu, Rio Grande do Sul, Brasil.
[2]Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, Rio Grande do Sul, Brasil.

Correspondence:
Ramona Fernanda Ceriotti Toassi
E-mail: ramona.fernanda@ufrgs.br

Received: Sept 6, 2024
Approved: Dec 18, 2025
Last revision: Dec 23, 2025

Abstract This cross-sectional study aimed to analyze the use of telehealth in Dentistry in training and care in Primary Health Care (PHC). Dentists working in PHC and representing the oral health field in the 26 municipalities of a Regional Health Department in Rio Grande do Sul responded to a pre-tested, semi-structured online instrument. Data were analyzed using descriptive statistics and thematic content analysis. 65.4% of those professionals reported not knowing/not having read the Federal Council of Dentistry Resolution on the remote practice of the profession. In training, online courses were attended by dentists (34.7% pre-pandemic; 38.5% after). In dental care, telehealth was used/recorded in PHC in patient guidance and/or monitoring actions (26.9% pre-pandemic; 38.5% post-pandemic). Professionals had the structure to attend/participate in telehealth activities at work (96.2%) and at home (100%), and showed interest in doing online courses on the topic (80.8%), considering that telehealth enhances their training (84.6%) and work in PHC (88.2%), while increasing access to oral health care (92.3%). Challenges in tele-education were related to difficulties with technology, time management, the need for a private environment, and misinformation, as these courses were considered tiring/lacking interaction/lacking practical experience, in addition to a preference for in-person courses. Despite the recognition and interest shown by dentists, the use of telehealth is still limited in the studied municipalities, with a slight increase since the pandemic. The need for training in digital health for oral health teams and for state/national studies on the use of telehealth in PHC is emphasized.
Descriptors: Teledentistry. Primary Health Care. Unified Health System. Dentistry.

Telesalud en Odontología: formación y atención en el contexto de la Atención Primaria
Resumen El presente estudio transversal se propuso analizar el uso de la telesalud en Odontología en la formación y la atención en la Atención Primaria de Salud (APS). Cirujanos dentistas que trabajaban en la APS y representaban al área de salud bucodental en los 26 municipios de una Región Sanitaria de Rio Grande do Sul respondieron a un instrumento semiestructurado, previamente probado, en línea. Los datos se analizaron mediante estadística descriptiva y análisis temática de contenido. 65,4% de esos profesionales informaron no conocer/no haber leído la Resolución del Consejo Federal de Odontología sobre el ejercicio de la profesión a distancia. En cuanto a la formación, los cirujanos dentistas realizaron cursos en línea (34,7% antes de la pandemia; 38,5% después). En la atención odontológica, la telesalud se utilizó/registró en la APS en acciones de orientación y/o seguimiento de pacientes (26,9% antes de la pandemia; 38,5% después). Los profesionales contaban con la estructura necesaria para asistir/participar en actividades de telesalud en el trabajo (96,2%) y en casa (100%), y mostraron interés en realizar cursos en línea sobre el tema (80,8%), considerando que la telesalud califica su formación (84,6%) y el trabajo en la APS (88,2%) y aumenta el acceso a la salud bucodental (92,3%). Los retos de la teleeducación se relacionaron con dificultades con las tecnologías, la organización del tiempo, la necesidad de un entorno privado, y la desinformación, ya que consideraban esos cursos agotadores/sin interacción/sin prácticas, además de la preferencia por los cursos presenciales. A pesar del reconocimiento y el interés de los cirujanos dentistas, el uso de la telesalud sigue siendo restringido en los municipios estudiados, con un ligero aumento a partir de la pandemia. Cabe destacar la necesidad de formación en salud digital de los equipos de salud bucodental y de estudios de alcance estatal/nacional sobre el uso de la telesalud en la APS.
Descriptores: Teleodontología. Atención Primaria de Salud. Sistema Único de Salud. Odontología.

Telessaúde em Odontologia: formação e cuidado no contexto da Atenção Primária

Resumo O presente estudo transversal objetivou analisar o uso da telessaúde em Odontologia na formação e no cuidado na Atenção Primária à Saúde (APS). Cirurgiões-dentistas que atuavam na APS e ocupavam a representação pela área da saúde bucal nos 26 municípios de uma Regional de Saúde do Rio Grande do Sul responderam a um instrumento semiestruturado e pré-testado on-line. Dados foram analisados pela estatística descritiva e análise temática de conteúdo. 65,4% desses profissionais relataram não conhecerem/não terem lido a Resolução do Conselho Federal de Odontologia sobre o exercício da profissão à distância. Na formação, cursos on-line foram realizados pelos cirurgiões-dentistas (34,7% pré-pandemia; 38,5% após). No cuidado odontológico, a telessaúde foi utilizada/registrada na APS em ações de orientação e/ou monitoramento de pacientes (26,9% pré-pandemia; 38,5% após). Os profissionais dispunham de estrutura para assistir/participar de atividades de telessaúde no trabalho (96,2%) e em casa (100%), e demonstraram interesse em realizar cursos on-line sobre o tema (80,8%), considerando que a telessaúde qualifica sua formação (84,6%) e o trabalho na APS (88,2%), e aumenta o acesso à saúde bucal (92,3%). Desafios na tele-educação relacionaram-se a dificuldades com tecnologias, organização do tempo, necessidade de ambiente privado, e desinformação, por considerarem esses cursos cansativos/sem interação/sem práticas, além da preferência por cursos presenciais. Apesar do reconhecimento e interesse dos cirurgiões-dentistas, a utilização da telessaúde ainda é restrita nos municípios estudados, tendo tido um aumento discreto a partir da pandemia. Ressalta-se a necessidade de formação em saúde digital das equipes de saúde bucal e de estudos de abrangência estadual/nacional sobre a utilização da telessaúde na APS.
Descritores: Teleodontologia. Atenção Primária à Saúde. Sistema Único de Saúde. Odontologia.

INTRODUCTION

Digital health refers to the field of knowledge and practice associated with the development and use of digital technologies to improve health.[1] In addition to telehealth and medical information technology, digital health brings emerging concepts and sociotechnical advances such as Artificial Intelligence (AI) in health systems, social media applications, and the collective network of the Internet of Things (IoT).[2-4]

Included in the Brazilian National Digital Health Strategy,[4,5] telehealth is defined as the use of electronic and telecommunication technologies in healthcare that supports and promotes the education of professionals and the remote clinical care for patients undergoing diagnosis and treatment. It is recognized as a tool that enables better access to health services and healthcare, operating in public health and administration.[6]

In Dentistry, telehealth is characterized by the use of Digital Information and Communication Technologies (ICTs). In addition to teledentistry, which involves a remote, real-time relationship between professional and patient,[7] telehealth in Dentistry involves the remote exchange of clinical information and images between an oral health professional and the patient or between two dentists for dental consultations, diagnosis, and treatment planning,[8,9] ranging from tele-education (teleguidance of patients and training courses/lectures for health professionals) to telemonitoring and teleconsulting, which can be synchronous (real-time) or asynchronous,[10-13] with the potential to eliminate disparities in oral health care between rural and urban communities.[8,11]

Experiences with the use of telehealth in Dentistry in Brazil and worldwide have been reported and associated with increased access to oral health care,[14-16] effective diagnosis,[17,18] tele-education,[19,20] and a decrease in the number of patients referred from Primary Health Care (PHC) to other levels of care.[21-23]

With the emergence of the COVID-19 (Coronavirus disease) pandemic, there has been an expansion in the use of telehealth in Dentistry, affecting both education and dental practice.[24-28] In Brazil, given the high risk of contamination, the Ministry of Health advised the suspension of regular oral health care in the Unified Health System (*Sistema Único de Saúde*, SUS), limiting it to urgent and emergency cases throughout the country from March to November 2020.[29,30]

The social isolation imposed by the pandemic, combined with the need for contact between dentists and patients, has boosted the regulation of remote Dentistry in Brazil, mediated by technology. On June 4, 2020, Resolution No. 226[31] of the Federal Council of Dentistry (FCD) was published, allowing for the remote guidance and monitoring of patients. On June 16, 2020, Resolution No. 228[32] of the FCD allowed remote Dentistry to be performed within the scope of the SUS for as long as the state of public calamity decreed by the Federal Government lasted.

The mapping of dental practices in the SUS mediated by digital technologies, understanding their challenges and benefits, motivated this study. The objective was to analyze the use of telehealth in Dentistry in training and care in the context of Primary Health Care (PHC) in municipalities of a Health Region in Rio Grande do Sul.

METHOD

This was a cross-sectional observational study approved by the Research Ethics Committee (CAAE 52804521.4.0000.5347, Opinion No. 5.103.757), conducted in the 26 municipalities that make up one of the Health Regions of the state of Rio Grande do Sul. The Region consists of 66.1% urban and 38.9% rural population. Most municipalities (61.5%) have up to 5 thousand inhabitants; 23.1% have between 5 and 10 thousand inhabitants; and 15.4% have more than 10 thousand inhabitants. The macro-region stands out for having agriculture and livestock as its main source of income, being among the regions with the highest percentage of illiteracy (8.9%); low income (30% of the population with an income of less than ½ minimum salary); the highest average volume of pesticides; water supply through alternative solutions (29.9%); and no sewage system (89.5%).[33]

All municipalities in the studied Regional Health Coordination have Family Health Strategy (FHS) teams with Oral Health teams in PHC, but do not have a referral system to the Dental Specialty Center. One of the municipalities has an outpatient clinic with a specialist in oral and maxillofacial surgery, which is a reference for the region. In eight municipalities, total, partial, or adhesive prostheses are offered in PHC, with the support of the Regional Dental Prosthesis Laboratory (Laboratório Regional de Prótese Dentária - LRPD).[33]

The sample was intentional. All dentists working in PHC and who, at the time of the study, represented the oral health field in each of the 26 studied municipalities (No.=26) were invited to participate in the study. This choice was justified by the small population size of most of the studied municipalities, which had an Oral Health team (OHt) in PHC. Each professional, in addition to representing the oral health field, also worked in the municipality's PHC and, therefore, was aware of the oral health actions performed by the dentists of the OHt, including telehealth. It should be noted that, at the time of this study, the Regional Office had no record of partnership with Telessaúde Brasil Redes (Brazilian Telehealth Networks) nor any telehealth center in the region. Training and care initiatives, when they exist, are isolated and do not belong to the context of the OHt work process.

Data collection was carried out by completing a semi-structured, self-administered, and pre-tested online research instrument between 2021 and 2022.

The invitation for dentists to participate in the study was sent via email. The link to access the Informed Consent Form (ICF) and the online research instrument on Google Forms was included in the email inviting participation in the study. The research instrument was available for response for an initial period of 15 days, and the email message with the invitation to participate in the study was resent 30 and 45 days after the first invitation.

The research instrument comprised 45 questions, 35 of which were objective (with dichotomous, single-answer, and multiple-choice alternatives answers) and 10 of which were open-ended, allowing participants to provide descriptive accounts (Figure 1). It was designed based on a review of the literature on Telehealth in Dentistry in the period prior to and during the COVID-19 pandemic, as well as on the Brazilian regulations (resolutions and manuals) in force on the subject at the time.

The research instrument was pre-tested for content/relevance analysis of the questions presented by eight volunteer dentists who did not work in PHC in the municipalities included in the study, but who had consolidated work experience (more than five years) in PHC in other municipalities.

DIMENSION	CONSTITUTIVE DESCRIPTION
Dimension 1 – Training and work profile of dentists	It considers the participant's age, year and institution of graduation; completion of postgraduate courses (completed/in progress); employment contract; length of time working in Public Health; incentives for on-the-job training (specific career plan for Dentistry with recognition for additional training).
Dimension 2 – Knowledge and structure for the use of telehealth in Dentistry	Describes the knowledge of dentists working in PHC about telehealth and its applications; identifies whether professionals have ICT infrastructure for telehealth activities at work and at home.
Dimension 3 – Use of telehealth in the training of dentists	Identifies whether dentists have undertaken training/education activities via digital means.
Dimension 4 – Use of telehealth in the oral health care process	It characterizes the use of teleguidance and telemonitoring before and during the pandemic period by dentists, as well as the prospects for the use of telehealth in Dentistry in the services in which they operate.

Figure 1. Structural dimensions of the research instrument

A database was created in IBM® SPSS® Statistics statistical software to analyze the objective (closed) questions in the research instrument, which was performed by descriptive statistics. The responses to the open questions were interpreted by thematic content analysis[34] with the support of the Visual Qualitative Data Analysis software (ATLAS.ti).

The average response time was 20 to 30 minutes. Each research instrument was identified by the acronym DS followed by a sequential number (DS1 to DS26).

RESULTS

Twenty-six dentists representing each of the municipalities that make up the study's Health Region participated in the study.

The results are presented based on the dimensions that were included in the research instrument.

Dimension 1 – Training and work profile of dentists

Most of the sample consisted of women (65.4%), aged between 25 and 44 years (65.4%), who had completed their undergraduate degrees between 2011 and 2020 (42.3%) at private educational institutions (73.1%). 61.5% of these professionals had completed postgraduate courses, with specialization being the most frequent (61.5%) in the areas of Public Health (23.1%), Endodontics (23.1%), and Orthodontics (11.5%), having completed it between 2011 and 2020 (46.2%). The most common employment contract with the SUS was that of statutory worker (53.8%.) The length of service in the public sector was 10 to 20 years for 23.1% of dentists and more than 20 years for 23.1%. 69.2% stated that they do not receive financial incentives from the municipality for professional development activities (Table 1).

Dimension 2 – Knowledge and structure for the use of telehealth in Dentistry

Most dentists (65.4%) reported not knowing or not having read FCD Resolution No. 226 of June 4, 2020,[30] which deals with the practice of remote Dentistry. Among those who knew about it or had read it, 65,4% were unaware of what was permitted or prohibited at the time. 30.7% considered the Resolution appropriate at the time to meet the needs of individuals-families-community, and no participants made suggestions regarding the text of the Resolution.

Regarding the ICT infrastructure for accessing/participating in telehealth activities in Dentistry (training and healthcare), only one participant reported not having the necessary ICT conditions at work; the other 25 (96.2%) confirmed that they did. At home, all 26 dentists reported having the necessary conditions for such participation (computer/laptop/cell phone/tablet with camera and microphone, internet plan, private environment).

Table 1. Educational background and work profile of the dentists participating in the study (No.=26)

Variables	n	%
Sex		
Female	17	65.4
Male	9	34.6
Age (years)		
22 to 24	4	15.4
25 to 34	8	30.8
35 to 44	9	34.6
45 to 54	4	15.4
67	1	3.8
Year of training in the Dentistry course		
From 1978 to 2000	5	19.2
From 2001 to 2010	8	30.8
From 2011 to 2020	11	42.3
From 2021 onwards	2	7.7
Undergraduate education institution		
Public	6	23.1
Private	19	73.1
Community	1	3.8
Pursuing or has completed postgraduate studies		
Already done and finished	16	61.5
Already finished and doing	6	23.2
Currently doing	3	11.5
Never done	1	3.8
Type of postgraduate program		
Specialization	16	61.5
Specialization and further update	3	11.6
Further update	3	11.6
Specialization, further update, and professional master's degree	1	3.9
Specialization and residency	1	3.8
Professional master's degree	1	3.8
Did not take any postgraduate courses	1	3.8
Postgraduate study area		
Public Health	4	15.4
Orthodontics	3	11.5
Periodontics	2	7.8
Dentistry	2	7.8
Endodontics and Implantology	2	7.8
Endodontics	2	7.8
Dental clinic, Endodontics, Dentistry, Prosthetics, Oral and maxillofacial surgery, Patients with special needs	1	3.8
Dental clinic, Pediatrics, and Public Health	1	3.8
Dentistry and Public Health	1	3.8
Endodontics, Prosthodontics, Orthodontics, and Implant Dentistry	1	3.8
Implant Dentistry	1	3.8
Pediatrics and Oral and maxillofacial surgery	1	3.8
Prosthodontics	1	3.8
Prosthodontics and Orthodontics	1	3.8
Prosthodontics and Radiology	1	3.8
Not reported	2	7.7

continues

continuation

Variables	n	%
Year of completion of the last postgraduate degree		
Until the year 2000	5	19.2
From 2001 to 2010	5	19.2
From 2011 to 2020	12	46.2
From 2021 onwards	4	15.4
Type of employment contract		
Statutory	14	53.8
Selection process, emergency contract	8	30.9
Service providers	2	7.7
Position of trust	1	3.8
Not reported	1	3.8
Length of practice in the SUS		
Less than 6 months	3	11.5
From 6 months to 1 year	3	11.5
From 2 to 5 years	4	15.4
From 5 to 10 years	4	15.4
From 10 to 20 years	6	23.1
More than 20 years	6	23.1
Receives financial incentives for on-the-job training		
Yes	5	19.2
No	18	69.2
Does not know	3	11.6

Dimension 3 – Use of telehealth in the training of dentists

Online courses were taken by 34.7% (No.=9) of the dental surgeons participating in this study in the pre-pandemic period, and 38.5% (No.=10) since the pandemic began. Just over half (57.7% [No.=15]) took the mandatory online course on COVID-19 provided by the Ministry of Health. For 84.6% (No.=22) of the dentists working in the 26 studied municipalities, these courses, lectures, or educational activities conducted digitally qualified their training for work in PHC.

When asked about remote courses, lectures, or educational activities, dentists expressed different perceptions. They pointed out potentialities, perceiving telehealth in Dentistry as an "important tool for updating/keeping professionals up to date" (DS2, DS11) and "very necessary in specific cases" (DS17), which "facilitates and provides greater practicality in learning" (DS19). They agreed that "it should become more commonplace in post-pandemic daily life, as it is a valid and practical tool" (DS21, DS16) and that "updating in any area has become much easier and more accessible" (DS20).

On the other hand, there were reports of dentists who expressed a preference for "face-to-face" educational activities (DS1, DS4, DS10, DS15), understanding that in the health field, activities carried out through remote interaction would not be "advantageous" (DS3) due to the practical aspect of the profession. For the dentists participating in this study, remote activities are "more tiring" (DS7) and generate "distractions" (DS16), making interaction "between colleagues and course teachers" impossible (DS22). They also highlighted "difficulties with information technology" (DS20) and the need for "a private environment and good internet access", in addition to the availability of "time" to attend such courses (DS18).

Dimension 4 – Use of telehealth in the oral health care process

Telehealth in the oral health care process was used in PHC by 26.9% of dentists in the period prior to the pandemic. With the pandemic, this number increased to 38,5%, expanding from 7 to 10 of the 26 studied municipalities. The recording of these actions was reported by 100% of the dentists participating in the study who used telehealth. 80.8% (No.=21) considered that teleguidance and telemonitoring actions are important in PHC.

These actions involved guidance (prevention and health promotion) and/or monitoring (follow-up between sessions) of

patients by using ICTs (phone calls, messages, email). In monitoring, the actions took place during "contact with the patient to find out how they are doing after a procedure" (DS6); at the time of the pre-consultation to determine the best time for face-to-face care, such as "in patients in isolation due to COVID-19 who experienced episodes of toothache" (DS25) or when "the patient sends a message or calls, and I try to understand the situation to either solve the problem remotely or schedule an appointment for a face-to-face evaluation" (DS1).

Virtual communication with patients took place via telephone calls, WhatsApp, and social media. These actions were recorded in the workplace in physical medical records, the Citizen's Electronic Health Record (CEHR), and Simplified Data Collection (SDC) forms. The main difficulty reported in completing these records was the lack of knowledge among dentists: "we did not receive guidance on how it should be done" (DS24).

Regarding the use of ICTs to access dental services, it was found that, in the period prior to the pandemic, the most frequent form of access in the studied settings was face-to-face scheduling (53.8% [No.=14]). With the pandemic, tele-scheduling increased from 50% (No=13) in the pre-pandemic period to 69.2% (No.=18). For 92.3% (No.=24) of the dentists participating in the study, tele-scheduling allowed for increased access to oral health services in the SUS.

Most participants (92.3%, No.=24) expressed interest in receiving notifications about courses related to their professional training/practice through the *TelessaúdeRS* and UNA-SUS platforms, as well as guidance on how to use them for teleconsulting and telediagnosis, preferably by email (57.7%). 80.8% stated that they would participate in digital courses on the topic of telehealth in PHC.

DISCUSSION

This research contributes to the understanding of the use of telehealth in Dentistry in PHC in municipalities in a Health Region in southern Brazil, pointing out potentialities, challenges, and the interest of dentists in the topic.

The results express contextual data (training and work) of dentists working in PHC as concrete human beings living in specific times and places, reflecting the subjects and knowledge of each individual's experience.[35]

There was a predominance of women, which confirms findings in the literature on the feminization of Dentistry in Brazil.[36] Most of these professionals work in small municipalities, with an oral health team consisting of dentists and dental assistants. Although different types of employment contracts with the SUS were reported, reflecting the variability in the forms of hiring dental professionals in the SUS,[37] more than half of the dentists are statutory employees. The professionals have postgraduate degrees, especially in specialization courses, with the area of Family Health not being predominant. They do not receive financial incentives from the municipalities for professional development activities, which shows the need for policies that encourage professional qualification in order to retain professionals in the SUS.[38]

Regarding the practice of remote Dentistry, more than 60% of participating dentists stated that they were unaware of or had not read FCD Resolution No. 226,[31] demonstrating a lack of knowledge about what they were and were not allowed to do at the time. Other studies have also reported a lack of knowledge among dentists about the legal issues involved,[39,40] although the pandemic context has expanded this knowledge.[25,41]

The COVID-19 pandemic has led to an increase in the use of telehealth tools in Dentistry in different contexts,[24-28,42,43] which was confirmed in this study both in the training of dentists in PHC and in the provision of care. This increase, specially in patient care, even though modest, was seen in screening/pre-consultation, telemonitoring, teleguidance, and oral health promotion/prevention, reinforcing what the literature says about the possibilities of using telehealth in Dentistry.[44-49] *WhatsApp*, phone calls, and social networks have established themselves as the most frequent forms of such care actions.[45,49,50] It is worth reflecting, however, on the sharing of sensitive personal data through unsecure means, such as these digital platforms, in contrast to the General Data Protection Regulation (GDPR), and the problems this may cause for health professionals.[51]

These professionals recognize the expansion of access to services through the use of ICTs,[14-16,40] and acknowledge that such actions enhance the effectiveness/comprehensiveness of care and strengthen PHC,[12,15,21,23,41,52] improving the provision of dental services.[50]

Regarding training, more than 80% of the dentists in the study believe that courses, lectures, or educational activities conducted digitally enhance their training and work process, serving as a useful tool that facilitates professional development.[15,19,20,22,23] Despite this understanding and the fact that the pandemic context has brought restrictions on face-to-face activities, this study did not observe a significant increase in the use of telehealth in training when comparing the periods before and during the pandemic (from 34.7% to 38.5%). Even the course offered by the Ministry of Health during the pandemic, considered mandatory, was taken by just over half of the professionals. At this point, we can question the role of dissemination and supervision by the agencies responsible for professional practice in the Region surveyed.

The challenges identified by dentists for the use of telehealth in PHC deserve attention. During training, the following were mentioned: I - difficulties with the use of ICTs; II - time management, the need for a private environment; III - misinformation about the existence of specific courses/webinars/lectures on the subject; IV - the fact that professionals consider tele-education activities more tiring when compared to the face-to-face model; V - that they do not allow for interaction and practice; and VI - individual learning issues, such as a preference for face-to-face courses.

The training and education of the digital health workforce is one of the priorities of the Brazilian National Digital Health Strategy (*Estratégia de Saúde Digital para o Brasil* - ESD-28),[5] and deserves to be highlighted among the continuing and permanent education activities of the OHt, whether through courses, webinars, or lectures. The Digital Health Education GIS is an example of telehealth applied to the context of dental surgeon training.[53]

With regard to oral health care, as soon as elective clinical care was reestablished, these professionals experienced an increase in work demand combined with an expansion of the activities performed by dentists in their work process in PHC – such as SWAB testing,[54] participation in COVID-19 vaccination teams and subsequent registration in information systems, new workflows and protocols. Furthermore, the stress related to the pandemic can be considered, with the combination of factors potentially impacting the availability to carry out tele-education activities.[55]

In oral health care, no participant expressed uncertainty about the benefits of using telehealth. However, there were difficulties in recording the actions performed virtually by dentists in the workplace due to a lack of knowledge, which reinforces the need for specific training,[56] especially in small municipalities that have fewer resources for training professionals.[57]

It is worth noting that this study has the limitation of presenting data from a post-pandemic context in mostly small municipalities in a state in the southern region of the country, with the sample comprising a limited number of participating professionals. This context makes it impossible to generalize the results to larger urban areas or other regions. Despite the potential for growth and expansion in the SUS, the potentialities and challenges of using telehealth in Dentistry must be evaluated based on the reality of each municipality/territory and PHC team.[58] Moreover, the use of a semi-structured online research instrument may introduce self-reporting biases. The results should be complemented by nationwide studies and/or other regional studies that include OHt, as well as qualitative research that can contribute to the understanding of the use of this complementary tool for training and healthcare.

Finally, it is worth considering how much the Councils system contributed to the effective dissemination of the FCD Resolution dealing with the remote practice of the profession mediated by technologies,[31] which was invalidated in 2022 with the publication of Law 14.510,[59] which regulated the practice of telehealth in Brazil, authorizing and regulating the activity. In 2025, the FCD published Resolution No. 278,[60] thus establishing guidelines for the practice of Teledentistry in the country.

CONCLUSION

In this study, the results have shown that although dentists working in PHC in municipalities in a Health Region in Rio

Grande do Sul recognize the importance of telehealth for their professional qualification and oral health care practices, most of these professionals reported not knowing/not having read the FCD Resolution dealing with the remote practice of the profession, which may have led to reduced use of this tool.

A slight increase was observed in the use of telehealth in Dentistry as from the pandemic. In training, online courses were taken by dentists (34.7% pre-pandemic and 38.5% after the pandemic), in addition to the mandatory course on COVID-19 from the Ministry of Health (57.7% took it). In the oral health care process, the use of telehealth in PHC was observed in 10 out of the 26 municipalities studied, with a slight increase from the pandemic onwards (from 26.9% to 38.5%).

The challenges in health training and care focused on barriers related to the appropriation of technology use and access to information. The need for training and education of the digital health workforce is emphasized, which is one of the priorities of the Brazilian National Digital Health Strategy.

The findings of this study are representative of the Health Region studied and strategic for the discussion on telehealth in Dentistry in municipalities and in the state, being relevant for decision-making/planning at the municipality/regional level.

REFERENCES

1. World Health Organization. Digital health: overview [Internet]. Geneva: WHO; 2024. [cited Dec 20, 2024]. Available from: https://www.who.int/europe/health-topics/digital-health#tab=tab_1
2. World Health Organization. Global Observatory for Ehealth. Global diffusion of eHealth: making universal health coverage achievable: report of the third global survey on eHealth [Internet]. Geneva: WHO; 2016. [cited Dec 20, 2024]. Available from: https://apps.who.int/iris/handle/10665/252529
3. Haddad AE, Lima NT. Saúde Digital no Sistema Único de Saúde (SUS). Interface - Comunic Saude Educ [Internet]. 2024;28:e230597. doi: https://doi.org/10.1590/interface.230597
4. Ribeiro-Rotta RF, Meurer MI, Zara ALSA, Lucena FN, Zinader JPS, Braga RD, Amaral RG, et al. Telessaúde (Ebook). 2ª ed. Goiânia: Cegraf UFG; 2023. [cited Dec 20, 2024]. Available from: https://repositorio.bc.ufg.br/bitstreams/3a08e5c3-4603-44b3-822f-c8686ade14a0/download
5. Brasil. Ministério da Saúde. Estratégia de Saúde Digital para o Brasil (ESD-28). Brasília: Ministério da Saúde; 2018 [citado em 27 de dezembro de 2024]. Available from: https://www.gov.br /saude/pt-br
6. Chaet D, Clearfield, R, Sabin JE, Skimming K. Ethical practice in Telehealth and Telemedicine. J Gen Intern Med [Internet]. 2017;32:1136-40. doi: https://doi.org/10.1007/s11606-017-4082-2
7. Van Dyk L. A review of telehealth service implementation frameworks. Int J Environ Res Public Health [Internet]. 2014;11(2):1279-78. doi: https://doi.org/10.3390/ijerph110201279
8. Jampani ND, Nutalapati R, Dontula BS, Boyapati R. Applications of teledentistry: A literature review and update. J Int Soc Prev Community Dent [Intetnet]. 2011;1(2):37-44. doi: https://doi.org/10.4103/2231-0762.97695
9. World Health Organization and International Telecommunication Union. Mobile technologies for oral health: na implementation guide [Internet]. Geneva: World Health Organization and International Telecommunication Union; 2021 [cited Sept 3, 2024]. Available from: https://iris.who.int/bitstream/handle/10665/345255/9789240035225-eng.pdf?sequence=1&isAllowed=y
10. Németh O, Uhrin E, Girasek E, Boros J, Győrffy Z. The impact of digital healthcare and teledentistry on dentistry in the 21st Century: a survey of Hungarian dentists. BMC Oral Health [Internet]. 2023;23:1025. doi: https://doi.org/10.1186/s12903-023-03770-w
11. Goffin G, Carter N, Sari Widyarman A, Erri Astoeti T, Kabir Bulbul H, Puplampu P, et al. Role of teledentistry in enabling improved oral care outcomes. Br Dent J [Internet]. 2024;236(3):162-8. doi: https://doi.org/10.1038/s41415-024-7055-y
12. Bradley M, Black P, Noble S, Thompson R, Lamey PJ. Application of de teledentistry in oral medicine in community dental service, N. Ireland. Br Dent J [Internet]. 2010;209:399-4. doi: https://doi.org/10.1038/sj.bdj.2010.928
13. Haddad AE, Garrido D. Teleodontologia. Familiarize-se com as nomenclaturas e com o conceito antes da regulamentação no Brasil. White paper para Dentistas [Internet]. 2020; 1 [cited Dec 20, 2024]. Available from: https://colgatebrasil.com.br/ebooks/Whitepaper-Teleodontologia.pdf

14. Fortich-Mesa N, Hoyos-Hoyos V. Applications of teledentistry in dental practice: a systematic review. Rev Fac Odontol Univ Antioquia [Internet]. 2020;32(1):77-88 [cited Dec 27, 2024]. Available from: https://doi.org/10.17533/udea.rfo.v32n1a8
15. Costa CB, Peralta FDS, Mello ALSF. How has teledentistry been applied in public dental health services? An integrative review. Telemed J E Health [Internet]. 2020;26(7):945-54. doi: https://doi.org/10.1089/tmj.2019.0122
16. Tiwari T, Diep V, Tranby E, Thakkar-Samtani M, Frantsve-Hawley J. Dentist perceptions about the value of teledentistry. BMC Oral Health [Internet]. 2022;176:22 [cited Dec 20, 2024]. Available from: https://pubmed.ncbi.nlm.nih.gov/38332075/
17. Estai M, Bunt S, Kanagasingam Y, Kruger E, Tennant M. Diagnostic accuracy of teledentistry in the detection of dental caries: a systematic review. J Evid Based Dent Pract [Internet]. 2016;16(3):161-72. doi: https://doi.org/10.1016/j.jebdp.2016.08.003
18. Flores APDC, Lazaro SA, Molina-Bastos CG, Guattini VLDO, Umpierre RN, Gonçalves MR, et al. Teledentistry in the diagnosis of oral lesions: a systematic review of the literature. J Am Med Inform Assoc [Internet]. 2020;27(7):1166-72. doi: https://doi.org/10.1093/jamia/ocaa069
19. Caldarelli PG, Haddad AE. Teleodontologia em consonância com as Diretrizes Curriculares Nacionais no desenvolvimento de competências profissionais. Rev ABENO [Internet]. 2016; 16 (2): 25-32. doi: https://doi.org/10.30979/rev.abeno.v16i2.264
20. Braun LW, Martins MA, Romanini J, Rados PV, Martins MD, Carrard VC. Continuing education activities improve dentists' self-efficacy to manage oral mucosal lesions and oral cancer. Eur J Dent Educ [Internet]. 2021; 25 (1): 28-34. doi: https://doi.org/10.1111/eje.12574
21. Peixoto RTRC, Lucas SD. Programa de Teleodontologia da UFMG. Rev ABENO [Internet]. 2011; 11 (1): 71-5. doi: https://doi.org/10.30979/rev.abeno.v11i1.43
22. Correia ADDMS, Dobashi BF, Gonçalves CCM, Monreal VRFD, Nunes EA, Haddad PO, et al. Teleodontologia no programa nacional telessaúde Brasil redes: relato da experiência em Mato Grosso do Sul. Rev ABENO [Internet]. 2014;14 (1): 17-9. doi: https://doi.org/10.30979/rev.abeno.v14i1.96
23. Bavaresco CS, Hauser L, Haddad AE, Harzheim E. Impact of teleconsultations on the conduct of oral health teams in the Telehealth Brazil Networks Programme. Braz Oral Res [Internet]. 2020; 34: e011. doi: https://doi.org/10.1590/1807-3107bor-2020.vol34.0011
24. Meng L, Hua F, Bian Z. Coronavirus Disease 2019 (COVID-19): emerging and future challenges for dental and oral medicine. J Dent Res [Internet]. 2020; 99(5):481-7. doi: https://doi.org/10.1177/0022034520914246
25. Plaza-Ruíz SP, Barbosa-Liz DM, Agudelo-Suárez AA. Impact of COVID-19 on the knowledge and attitudes of dentists toward teledentistry. JDR Clin Trans Res [Internet]. 2021; 6 (3): 268-78. doi: https://doi.org/10.1177/2380084421998632
26. El Tantawi M, Lam WYH, Giraudeau N, Virtanen JI, Matanhire C, Chifamba T, et al. Teledentistry from research to practice: a tale of nineteen countries. Front Oral Health [Internet]. 2023 Jun 16;4:1188557. doi: https://doi.org/10.3389/froh.2023.1188557
27. Suter N. Teledentistry applications for mitigating risk and balancing the clinical schedule. J Public Health Dent [Internet]. 2020;80(Suppl 2):S126-S131. doi: https://doi.org/10.1111/jphd.12421
28. Spanemberg JC, Simões CC, Cardoso JA. The impacts of the COVID-19 pandemic on the teaching of dentistry in Brazil. J Dent Educ [Internet]. 2020;84(11):1185-87. doi: https://doi.org/10.1002/jdd.12364
29. Brasil. Ministério da Saúde. Secretária de Atenção Primária à Saúde. Nota técnica nº 9. COVID-19 e atendimento odontológico no SUS; 2020 [cited Dec 20, 2024]. Available from: https://website.cfo.org.br/wp-content/uploads/2020/03/COVID-19_ATENDIMENTO-ODONTOLOGICO-NO-SUS.pdf
30. Brasil. Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Departamento de Saúde da Família. Coordenação-Geral de Saúde Bucal. Nota Técnica nº 16/2020-CGSB/DESF/SAPS/MS; 2020 [cited Dec 20, 2024]. Available from: http://www.crosp.org.br/uploads/arquivo/295c9c1 4409db20cb63c862bb07ce0e4.pdf
31. Conselho Federal de Odontologia. Resolução CFO-226 de 04 de junho de 2020 [Internet]; 2020 [citado em 20 de agosto de 2024]. Available from: https://sistemas.cfo.org.br/visualizar/atos/RESOLU%C3%87%C3%83O/SEC/2020/226
32. Conselho Federal de Odontologia. Resolução CFO-228 de 16 de julho de 2020 [Internet]. 2020 [cited Dec 20, 2024]. Available from: https://sistemas.cfo.org.br/visualizar/atos/RESOLU%c3%87%c3%83O/SEC/2020/228

33. Rio Grande do Sul. Secretaria Estadual de Saúde. Plano estadual de Saúde 2016-2019. Porto Alegre; 2016 [cited Spt 5, 2024]. Available from: https://saude.rs.gov.br/upload/arquivos/201701/05153251-pes-2016-2019-sesrs.pdf
34. Bardin, L. Análise de conteúdo. 1ª ed. Edições 70; 2011.
35. Larrosa, JB. Notas sobre a experiência e o saber da experiência. Rev Bras Educ [Internet]. 2002;19(1):20-8. doi: https://doi.org/10.1590/S1413-24782002000100003
36. Matos IB, Toassi RFC, Oliveira MC. Profissões e ocupações de saúde e o processo de feminização: tendências e implicações. Athenea [Internet]. 2013;13(2):239-44. doi: https://doi.org/10.5565/rev/athenead/v13n2.1119
37. Cayetano MH, Gabriel M, Araújo MED, Bustamante DIO, Carrer FCDA. Human Resources in Dentistry in the Unified Health System. Res Soc Dev [Internet]. 2022;11(5):e39911528471. doi: https://doi.org/10.33448/rsd-v11i5.28471
38. Rosa L, Ribeiro AE, Junior MFS, Pinto MHB. Desigualdades regionais nas relações de trabalho e qualificação profissional de cirurgiões-dentistas atuantes na Atenção Básica. Rev ABENO [Internet]. 2021;21(1):1-13. doi: https://doi.org/10.30979/revabeno.v21i1.1130
39. Chen JW, Hobdell MH, Dunn K, Johnson KA, Zhang J. Teledentistry and its use in dental education. J Am Dent Assoc [Internet]. 2003;134(3):342-6 [cited Dec 20, 2024]. Available from: https://www.sciencedirect.com/science/article/abs/pii/S0002817714640873
40. Mathivanan A, Gopalakrishnan JR, Dhayanithi A, Narmatha M, Bharathan K, Saranya KKN. Teledentistry: is it the future of rural dental practice? A cross-sectional study. J Pharm Bioallied Sci [Internet]. 2020;12(1):S304-S07. doi: https://doi.org/10.4103/jpbs.JPBS_91_20
41. Abbas B, Wajahat M, Saleem Z, Imran E, Sajjad M, Khurshid Z. Role of teledentistry in COVID-19 pandemic: a nationwide comparative analysis among dental professionals. Eur J Dent [Internet]. 2020;14(1):S116-S22. doi: https://doi.org/10.1055/s-0040-1722107
42. Silva RSD, Schmtiz CAA, Harzheim E, Molina-Bastos CG, Oliveira EBD, Roman R, et al. O papel da telessaúde na pandemia COVID-19: uma experiência brasileira. Ciênc Saúde Colet [Internet]. 2021; 26 (6):2149-57. doi: https://doi.org/10.1590/1413-81232021266.39662020
43. Caetano R, Silva AB, Guedes ACCM, Paiva CCND, Ribeiro GDR, Santos DL, Silva RMD. Desafios e oportunidades para telessaúde em tempos da pandemia pela COVID-19: uma reflexão sobre os espaços e iniciativas no contexto brasileiro. Cad Saúde Pública [Internet]. 2020;36(5):1-16. doi: https://doi.org/10.1590/0102-311x00088920
44. Gasparoni A, Kanellis MJ. COVID-19 and dental emergencies: reflections on teledentistry. Braz Dent Sci [Internet]. 2020;23(2):1-4. doi: https://doi.org/10.14295/bds.2020.v23i2.2270
45. Machado FC, Oliveira LC, Silva DLM, de Amorim Carvalho T, Novais VR, de Sousa Menezes M. Teleorientação com o uso de ferramentas digitais no auxílio ao atendimento odontológico em época de pandemia da COVID-19: revisão integrativa da literatura. Res Soc Dev [Internet]. 2021;10(6):1-9. doi: https://doi.org/10.33448/rsd-v10i6.15663
46. Caceres-Matta SV, Carmona-Arango LE. Teleodontología para la atención de pacientes durante la pandemia de la COVID-19. Revisión de literatura. Acta Odontol Colomb [Internet]. 2021;11(1):71-82. doi: https://doi.org/10.15446/aoc.v11n1.89529
47. Carrer FCDA, Matuck BF, Lucena EHGD, Martins FC, Pucca Junior GA, Galante ML, et al. Teleodontologia e SUS: uma importante ferramenta para a retomada da Atenção Primária à Saúde no contexto da pandemia de COVID-19. Pesqui Bras Odontopediatria Clín Integr [Internet]. 2020; Scielo Preprints, 2020. doi: https://doi.org/10.1590/SciELOPreprints.837
48. Giudice A, Barone S, Muraca D, Averta F, Diodati F, Antonelli A, et al. Can teledentistry improve the monitoring of patients during the Covid-19 dissemination? A descriptive pilot study. Int J Environ Res Public Health [Internet]. 2020;17(19):3399. doi: https://doi.org/10.3390/ijerph17103399
49. Garbin AJI, Pacheco Filho AC, dos Santos Pacheco KT, Garbin CAS. O uso de whatsapp® na relação dentista-paciente: uma revisão de literatura. Revista Brasileira de Odontologia Legal [Internet]. 2019;6(3):73-81. doi: https://doi.org/10.21117/rbol.v6i3.279
50. Mahdavi A, Atlasi R, Naemi R. Teleodontologia durante a pandemia de COVID-19: abordagem cienciométrica e de análise de conteúdo. BMC Health Serv Res [Internet]. 2022;22:1111. doi: https://doi.org/10.1186/s12913-022
51. Meurer MI. Computing systems, telehealth, and personal data: what is up? Clinics [Internet]. 2020:e2240. doi: https://doi.org/10.6061/clinics/2020/e2240

52. Gurgel-Juarez N, Torres-Pereira C, Haddad AE, Sheehy L, Finestone H, Mallet K, et al. Accuracy and effectiveness of teledentistry: a systematic review of systematic reviews. Evid Based Dent [Internet]. 2022;1-8 [cited June 14, 2024]. Available from: https://www.nature.com/articles/s41432-022-0257-8.pdf
53. Rede Universitária de Telemedicina (RUTE). SIG Educação em Saúde Digital; 2023 [cited Dec 20, 2024]. Available from: https://eduplay.rnp.br/portal/playlist/74275
54. Brasil. Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Departamento de Saúde da Família. Coordenação-Geral de Saúde Bucal. Nota Informativa nº 1/2020-CGSB/DESF/SAPS/MS. Brasília; 2020 [cited Dec 20, 2024]. Available from: https://www.gov.br/saude/pt-br/coronavirus/publicacoes-tecnicas/notas-tecnicas/nota-informativa-coleta-de-swab-por-cirurgioes-dentistas-no-sus.pdf/view
55. Medina MG, Giovanella L, Bousquat A, Mendonça MHMD, Aquino R. Atenção primária à saúde em tempos de COVID-19: o que fazer? Cad Saúde Pública [Internet]. 2020;36(8):1-5. doi: https://doi.org/10.1590/0102-311X00149720
56. Moraes IM, Vieira PA, Pedreira JDBG, Pedreira EM. Teleodontology and oral health: challenges and perspectives. Health Soc [Internet]. 2022;2(1):1-12. doi: https://doi.org/10.51249/hs.v2i01.673
57. Lucas SD, Ferreira LAQ, Silva VMP, Senna MIB, Pinto RS, Peixoto RTRC. Teleodontologia em Minas Gerais: situação atual e desafios. J Bras Tele [Internet]. 2018;5(2):328-1 [cited Sept 5, 2024]. Available from: https://www.odonto.ufmg.br/teleodonto/wp-content/uploads/sites/24/2022/01/Artigo-Teleodontologia-em-MG-situacao-atual-e-desafios.pdf
58. Strey JR, Toassi RFC. Teleodontologia na educação de profissionais e no cuidado no contexto da Atenção Básica à Saúde no Brasil. Saberes Plur [Internet]. 2024;8(1):e135603. doi: https://doi.org/10.54909/sp.v8i1.135603
59. Brasil. Presidência da República. Secretaria-Geral. Subchefia para Assuntos Jurídicos. Lei nº 14.510, de 27 de dezembro de 2022. Altera a Lei nº 8.080, de 19 de setembro de 1990, para autorizar e disciplinar a prática da telessaúde em todo o território nacional, e a Lei nº 13.146, de 6 de julho de 2015; e revoga a Lei nº 13.989, de 15 de abril de 2020. Brasília, DF; 2022 [cited Dec 28, 2024]. Available from: https://www.planalto.gov.br/ccivil_03/_ato2019-2022/2022/lei/L14510.htm
60. Conselho Federal de Odontologia. Resolução CFO-SEC-278 de 25 de novembro de 2025 [Internet]; 2025 [cited Dec 28, 2025]. Available from: https://transparencia.cfo.org.br/ato-normativo/?id=4626

Conflict of interest: The authors declare that there is no conflict of interest.

Funding: No funding to declare.

Authors' contributions: Study design and planning: PAHF, RFCT. Data collection, analysis, and interpretation: PAHF, RFCT. Preparation or revision of the manuscript: PAHF, RFCT. Approval of the final version: PAHF, RFCT. Public responsibility for the content of the article: PAHF, RFCT.