

Knowledge and changes in clinical behavior of Maceio ESF dental surgeons facing COVID-19 pandemic

Conhecimento e mudanças nas condutas clínicas dos cirurgiões-dentistas da ESF de Maceió frente à pandemia de COVID-19

Mirela Godoi Nunes de Oliveira¹

Orcid: <https://orcid.org/0000-0003-2287-7930>

Aline Costa Cardoso²

Orcid: <https://orcid.org/0000-0001-5568-1243>

Isabelle Cristina de Oliveira Vieira³

Orcid: <https://orcid.org/0000-0002-1074-7330>

João Alfredo Tenório Lins Guimarães⁴

Orcid: <https://orcid.org/0000-0002-4035-401X>

Abstract

The adaptation process of dentists to biosafety measures and infection control facing the COVID-19 pandemic is relevant, once the oral healthcare team has its area of expertise in the orofacial region. The Family Health Strategy (ESF – *Estratégia de Saúde da Família*) plays a central role in such health emergencies. Therefore, the objective of the study is to identify the level of knowledge, changes in the clinical attitude and behavior of ESF dental surgeons in Maceió regarding dental care during the COVID-19 pandemic. This is a descriptive and cross-sectional study with a quantitative approach. Its data come from the application of a questionnaire to 20 dental surgeons from the oral health teams linked to the ESF. Twenty-five percent (25%) of the research volunteers tested positive for the disease. A considerable change after the pandemic was the use of facial-shields in the dental routines - 95% started wearing them. Approximately 68.42% of the dentists started only to attend to urgencies / emergencies. Chlorhexidine 0.12 – 0.2% was the most used pre-procedure mouthwash (68.42%) as a method of decreasing viral load. Seventy-five percent (75%) of professionals faced problems in obtaining personal protective equipment. The majority (55%) made a self-assessment considering their knowledge sufficient, but only 40% completed a course on the topic. Most of the ESF dental surgeons in Maceió have had a good performance in their clinical procedures concerning to the proposed guidelines. However, there is a lack of qualification and training to remedy some weaknesses in the learning process of signs / symptoms and the use of antimicrobial mouthwashes.

Keywords: comprehensive health care; COVID-19; public health dentistry; primary health care; containment of biohazards.

Resumo

O processo de adequação dos cirurgiões-dentistas às medidas de biossegurança e controle da infecção frente à pandemia de COVID-19 é relevante, visto que a equipe de saúde bucal tem na região orofacial sua área de atuação. A Estratégia de Saúde da Família (ESF) exerce um papel central em tais emergências sanitárias. Sendo assim, o objetivo do estudo é identificar o nível de conhecimento, as mudanças ocorridas nas condutas clínicas e no comportamento dos cirurgiões-dentistas da ESF de Maceió nos atendimentos odontológicos durante a pandemia de COVID-19. Trata-se de um estudo descritivo, de corte transversal e abordagem quantitativa,

¹ Cirurgiã-dentista Especialista em Saúde da Família – Universidade Estadual de Ciências da Saúde de Alagoas- UNCISAL, Brasil. E-mail: mirela.mgno@gmail.com

² Enfermeira Especialista em Saúde da Família – Universidade Estadual de Ciências da Saúde de Alagoas – UNCISAL, Brasil. E-mail: alinecardoso.c@outlook.com

³ Profa. Mestra, Cirurgiã-dentista Especialista em Vigilância em Saúde, – Universidade Federal de Alagoas – UFAL, Brasil. E-mail: vieirabelle@hotmail.com

⁴ Cirurgião-dentista, Prof. Mestre – Universidade Estadual de Ciências da Saúde de Alagoas - UNCISAL, Brasil. E-mail: joaolegista@globo.com

cujos dados são provenientes da aplicação de um questionário a 20 cirurgiões-dentistas das equipes de saúde bucal vinculadas a ESF. Vinte e cinco por cento (25%) dos voluntários da pesquisa testaram positivo para a doença. Uma mudança considerável pós-pandemia foi a adoção dos protetores faciais nas rotinas profissionais dos cirurgiões-dentistas – 95% passaram a usá-los. Aproximadamente, 68,42% passaram a atender apenas urgências/emergências. A clorexidina 0,12 – 0,2% foi o colutório pré-procedimento mais utilizado (68,42%) como método de diminuição da carga viral. Setenta e cinco por cento (75%) dos profissionais enfrentaram problemas na obtenção de equipamentos de proteção individual. A maioria (55%) fez uma autoavaliação considerando seu conhecimento suficiente, mas apenas 40% concluíram um curso a respeito do tema. A maior parte dos cirurgiões-dentistas da ESF de Maceió tem tido um bom desempenho em suas condutas clínicas frente às diretrizes propostas. Entretanto, observa-se a ausência de capacitações e treinamentos para sanar algumas fragilidades na aprendizagem de sinais/sintomas e utilização de colutórios antimicrobianos.

Palavras-chave: Assistência Integral à Saúde, COVID-19, Odontologia em Saúde Pública, Atenção Primária à Saúde, Contenção de Riscos Biológicos

Introdução

The COVID-19 disease caused by the SARS-CoV-2 virus, an RNA virus, also known as the new coronavirus, has caused cases of Severe Acute Respiratory Syndrome (SARS) presenting with symptoms such as dyspnea, prostration, fever, cough, diarrhea, anosmia and ageusia¹. Those cases were, initially, detected at the end of 2019, after an outbreak occurred in Wuhan, China, where the new viral form showed its rapid transmissibility².

A few months later, on March 11, 2020, the World Health Organization (WHO) declared the COVID-19 pandemic as the virus has spread across continents causing several deaths and confirming its contagious power and threat to humans. According to the WHO, 107,252,265 people were infected and 2,355,339 have already died from SARS-CoV-2 worldwide by February 11, 2021³.

The disease transmission occurs through droplets that remain in the air for some time, then people can aspirate them as others expel the droplets when speaking and during the act of breathing. Upon contact with the nasal, oral or ocular mucous membranes, these droplets containing viral particles are capable of contaminating healthy individuals⁴.

In addition, the virus can remain on some surfaces for a long period. Thus, the risk of infection increases by touching contaminated surfaces and bringing hands

to mucous membranes. Therefore, the ways to prevent transmission are: the correct hand hygiene with soap and water or with 70% alcohol gel, the use of masks by all individuals, the use of personal protective equipment (PPE) by healthcare service professionals and other essential services workers, frequent disinfection of surfaces with products regulated by the National Health Surveillance Agency (ANVISA) and the social distancing measures⁵.

Studies have shown that SARS-Cov-2 has an incubation period of, on average, 5 days and can reach 14 days, which has justified the adoption of a two-week quarantine period⁶. According to the Health Ministry⁷, COVID-19 infected more than 9 million and 200 thousand individuals in Brazil, with 225,099 deaths by February 2, 2021. Alagoas reached the position of 15th state with the highest number of confirmed cases during the peak of the pandemic⁸, with 51,534 cases and 1,374 deaths of residents in Maceió occurring only in the state capital, until February 23, 2021⁹.

According to a study in the field, 80% of the cases of the disease are mild¹⁰. Therefore, Primary Health Care (PHC), especially the Family Health Strategy (ESF – *Estratégia de Saúde da Família*), plays a central role in emergency health situations such as COVID-19. The ESF has the task of monitoring suspicious and mild cases, in addition to the very important function of providing support to families facing economic and social challenges arising

from the pandemic, as well as the worsening of chronic diseases, since the ESF has an expanded understanding of health determinants of the assisted population¹¹.

In addition to the adversities arising for the general population, COVID-19 brings an increased occupational risk for healthcare service workers due to its high risk of infection⁴. As an estimative, about 944,238 healthcare professionals presented cases of Flu-like Syndrome (FS) suspected of COVID-19 in Brazil. About 195,516 (20.7%) of those cases were confirmed for infection by SARS-CoV-2 during the peak of the pandemic, until July 2020¹². In the present year 18, 29,853 new suspected cases of COVID-19 were reported, among which 5,419 (18.1%) were confirmed for the infection, from the beginning of 2021, until January¹³.

Professionals who work in the oronasal area are at an even greater risk of contracting the disease because it is closely linked to the process of viral particles transmission. Among those, is the oral health team (eSB) composed of dental surgeons, dental health technicians and assistants, who are routinely exposed to close face-to-face contact and aerosols containing water, saliva, blood and other oral fluids produced by the equipment used in work practice⁴.

Workers of eSBs have to carry out the control of surfaces disinfection more frequently and manage the correct use of PPE in order to avoid contamination of the team. The recommended disinfecting agents for inanimate surfaces are 1% sodium hypochlorite; ammonium quaternary 7 - 9%; peracetic acid and 70% liquid alcohol. The team must perform such procedure before the start and after each dental appointment⁵.

In addition, it must be ensured that the eSB performs the dressing and de-dressing in an orderly manner and uses N95 or PFF2 respirators for procedures that generate aerosols, surgical clothes and scrubs, as well as surgical mask, scrub cap,

disposable gloves and aprons, protective goggles and face shields⁵.

According to data collected at the Oral Health Management of the Municipal Health Secretariat of Maceió (SMS), 35 eSBs work linked to the Family Health teams of the 08 Health Districts (DS) of Maceió. Following the guidelines of the MS and ANVISA, through Technical Notes N° 9/2020-CGSB / DESF / SAPS / MS14e N° 04/2020 GVIMS / GGTES / ANVISA¹⁵, the Management oriented to public servers, on April 2020, regarding to assistance of emergency and urgency care in dentistry, postponing consultations and elective procedures in order to reduce the risk to the professionals.

Thus, in view of the importance of PHC in the COVID-19 pandemic emergency situation and paying attention to the return of elective care, it is relevant to highlight how the process of adaptation of healthcare professionals, especially the eSB, has occurred regarding COVID-19 in biosafety measures taken to reduce cross-infection. In addition, it is important to emphasize the knowledge acquirement methods in various media, such as courses and lectures related to the theme, as well as technical training that corroborate for the occurrence of an efficient infection control.

Thus, the objective of this study is to identify the level of knowledge, the changes that occurred in the clinical conduct and behavior of dentists at the ESF in Maceió related to dental care during the COVID-19 pandemic.

Materiais e Métodos

Amostra e tipo de estudo

This is a descriptive, cross-sectional study with a quantitative approach, which data come from the application of a structured online questionnaire to dental surgeons of eSBs linked to the ESF in Maceió, with non-probabilistic sampling for convenience.

The total number of dentists who are part of the ESF in Maceió city is 35 professionals. We invited all dental

surgeons from the Maceió ESF to participate in the research, adding up 35 possible professionals participants. Of those, 20 accepted to participate voluntarily in the research, composing the study sample. One (01) of them replied by e-mail stating that he would not participate in the research due to the fact that he is in compliance with his leave, as he is part of the risk group for COVID-19. The others did not answer the questionnaire and did not respond on the lack of desire to volunteer as research participants.

We submitted this study to analysis by the Research Ethics Committee (CEP) of the State University of Health Sciences of Alagoas (UNCISAL) and CEP approved it with CAAE 36388920.8.0000.5011.

Delineamento da pesquisa

We carried out data collection exclusively online throughout the month of October 2020 by sending a structured questionnaire made available on the *Google Forms*® website sent by email. The data collection instrument was adapted from previously validated instruments and used in the studies of Duruk, Gümüşboğa and Çolak¹⁶ and Cagetti et al.¹⁷. We adapted the questionnaire to the local reality and to the moment experienced by the professionals. In the questions, we addressed topics about specialty, health status, occurrence of signs / symptoms, knowledge related to COVID-19 and protective measures adopted in the clinical routine after the declaration of the pandemic by WHO.

Crítérios de Inclusão e Exclusão

Participants were dental surgeons from eSBs linked to the Family Health Strategy in the city of Maceió. Research exclusion criteria were being on vacation or leave prior to the declaration of the pandemic status. It is important to note that it was not possible to determine the number of dentists on vacation or on leave because we requested this data twice via e-mail to the responsible technical area at the SMS,

unfortunately without success, as we obtained no response.

Procedimentos

We obtained a formal authorization, at first, from the SMS for data collection. After its authorization, we submitted the project to the Research Ethics Committee through the Brazil Platform. Thus, in possession of the authorization from the Ethics Committee, the researchers requested the contact details of the dental surgeons' e-mail to the technical area of the SMS. Then, the SMS made available a list of their e-mails to the researchers. Those responsible for the SMS informed the professionals via *Whatsapp*® about the research and that researchers would contact them via email.

The e-mails sent to the participants contained an explanation of the objectives and the importance of the study. Thus, upon reading the terms of the research and, in the case of acceptance, they checked a box in the virtual / digital environment where they claimed to have understood the purpose of the research and accepted the Free and Informed Consent Term.

After data collection, these were stored in an electronic spreadsheet (*Microsoft Excel 2010*®. Redmond, WA, USA). We tabulated results and we calculated the variable frequencies, and then displayed them in graphs and tables.

Resultados

The average age of the 20 participants was 44.2 ± 3.5 (38-50) years, and they were predominantly women (90%). Regarding the specialties, only one person replied that he did not have a specialty. One person did not report the specialty. Forty percent (40%) of the volunteers, had a specialty; and 35%, two.

When asked about whether or not they have chronic diseases with the use of regular medication, 15% answered "yes". Twenty-five percent (25%) tested positive for the disease at the time of the survey. Seventy-five percent (75%) of the

professionals stated that they did not present any signs or symptoms of COVID-19. The decryption of the main reported signs /

symptoms and the percentage of those infected with Sars-CoV-2 who presented the respective sign / symptom is in Table 1.

Table 1: Main signs and symptoms reported by participants who tested positive for COVID-19.

Sign / symptoms	n	%
Diarrhea	1,00	20,00
Fever	1,00	25,00
Cough	2,00	40,00
Nasal congestion	2,00	40,00
Runny nose	2,00	40,00
Headache	3,00	60,00
Fatigue	3,00	60,00
Sore throat	3,00	60,00
Body ache	3,00	60,00
Anosmia (loss of taste)	4,00	80,00
Ageusia (loss of smell)	4,00	80,00

Number of participants who tested positive for COVID-19: total = 05; n, number of participants who tested positive for COVID-19 infection for each reported sign / symptom; %, percentage of those infected with Sars-CoV-2 who presented the respective sign / symptom.

However, some of the participants who replied that they had no signs / symptoms of COVID-19, when asked: "Did you have one or more of these signs / symptoms?" - affirmed to have presented

some characteristic signs / symptoms of COVID-19. These data is in Table 2. These participants are equivalent to 60% of those who initially answered that they had no signs / symptoms.

Table 2: Signs / symptoms of participants who tested negative or who were not tested for COVID-19.

Sign / symptom	n	%
Diarrhea	3,00	20,00
Fever	1,00	6,67
Cough	1,00	6,67
Nasal Congestion	3,00	20,00
Runny nose	1,00	6,67
Headache	3,00	33,34
Fatigue	1,00	6,67
Sore throat	2,00	13,34
No sign / symptom	6,00	40,00

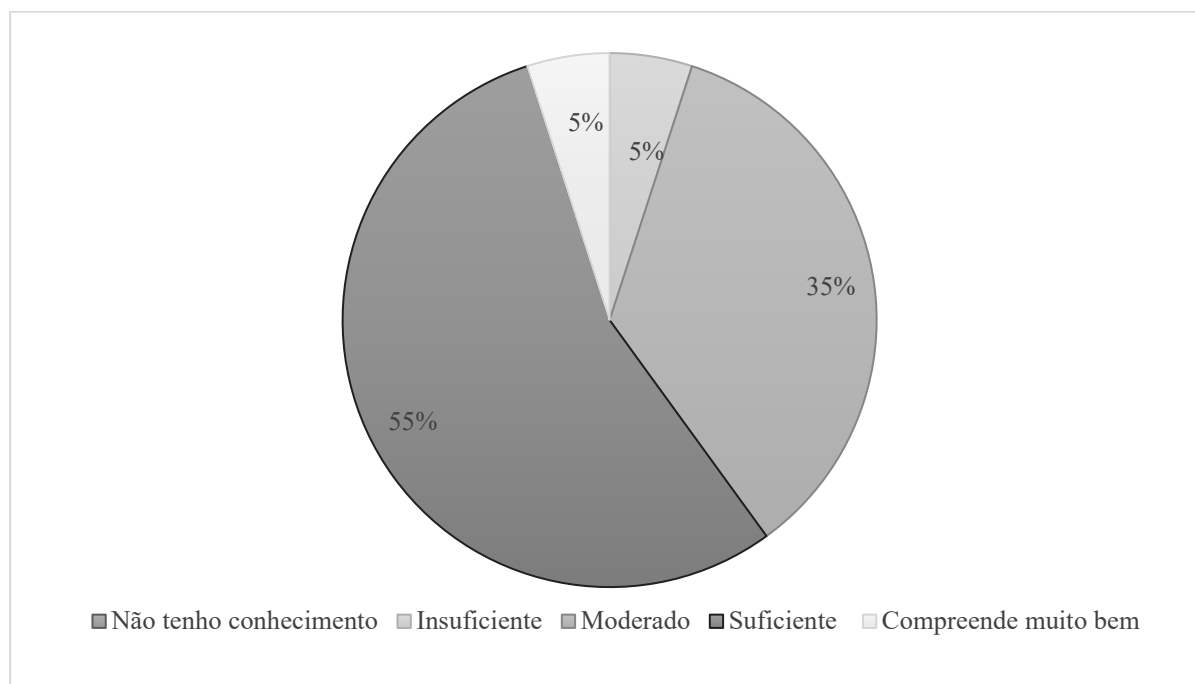
Number of participants with a negative test or without a test for COVID-19: total = 15; n, number of participants with a negative test or without a test for COVID-19 for each reported sign / symptom; %, percentage of participants with negative testing or without testing for Sars-CoV-2 who presented the respective sign / symptom.

Regarding the sources of information about COVID-19, 100% answered that they received information from websites / social media from official bodies such as the Ministry of Health, WHO and professional councils. Ninety (90%) of health professionals' websites / social media; 85% of communication groups, such as Whatsapp groups; 60% of the TV; 50% participated in events such as seminars,

lectures and scientific congresses (in-person or online) and only 40% of course (in-person or online).

Dentists' self-assessment of their knowledge of COVID-19 is in (Graph 1).

Graph 1: Dentists' self-assessment at the ESF in Maceió regarding knowledge about COVID-19. Dentists evaluated themselves through the 05 answers presented (I am not aware, insufficient, moderate, sufficient and I understand very well), which indicate different levels of knowledge regarding infection by the Sars-CoV-2 virus when submitted to the question: "The how much do you consider your knowledge of COVID-19 to be? ".



When asked if they made any changes against COVID-19 in their professional routine in relation to dental care in the Unified Health System (SUS), 40% of the total number of volunteer dentists (total = 20) reported a reduction in the number of visits, 65% declared to perform only urgent / emergency care, and 5%, which is equivalent to 01 participant, reported having stopped the care assistance altogether. As for the measures against

COVID-19 taken in the professional routine, 95% of the volunteers answered that they started using face shields; 80% N95 respirators; 75%, protective goggles; 95%, disposable aprons.

The precautionary measures adopted after COVID-19 and the biosafety rules previously performed in the dental routine of the 19 dentists who continued to provide care through SUS are in Table 3.

Table 3: Precautionary measures taken by the dentists of the FHS of Maceió who continued to work after the declaration of the pandemic by the World Health Organization.

Measure		n (%)
Before appointments (Planning)	Reduction of number of appointments	6,00 (31,58)
	Performance of appointments of urgency / emergency	13,00 (68,42)
	Postponement of elderly and systemic diseased patients' appointments	11,00 (57,89)
	Postponement of potentially infected patients' appointments for 14 days	14,00 (73,68)
In the waiting room (Pre-procedure)	Health condition assessment (if they show symptoms like cough and fever) before the dental appointment	15,00 (78,95)
	More spaced appointments to not fill the waiting room	16,00 (84,21)
	Patient hand washing request	4,00 (21,05)

	N95 Mask	16,00 (84,21)
	Disposable apron	19,00 (100,00)
	Frequent hand washing (before and after each appointment)	19,00 (100,00)
	Hand hygiene with alcohol gel 70%	19,00 (100,00)
	Disinfection of surfaces with 70% liquid alcohol	17,00 (89,47)
	Disinfection of surfaces with 0.5% sodium hypochlorite	8,00 (42,10)
	Use of rubber dam	0,00 (0,00)
In dental office (during appointment)	Mouthwash with 0.12 - 0.2% Chlorhexidine before starting procedures	13,00 (68,42)
	Mouthwash with 1% hydrogen peroxide	2,00 (10,52)
	Mouthwash with povidone-iodine 0.2 - 1%	0,00 (0,00)
	Use of high power suction system (vacuum pump)	0,00 (0,00)
	Use of rotary instrument with anti-retraction valve	0,00 (0,00)
	Avoid all procedures that can generate aerosols	15,00 (78,95)
	Removal of all disposable protective devices and disinfection of non-disposable devices after each service	16 (84,21)

Total of participating dentists who continued to attend during the pandemic = 19; n, number of participants who performed the mentioned measure; (%), percentage of participants who performed the mentioned measure.

Ten percent (10%) of the participants answered that the management where they work did not make any changes regarding the rules and / or guidelines for assistance due to COVID-19; five percent (5%) reported that management directed them to reduce the number of dental appointments; and eighty-five percent (85%) reported that they were instructed to attend urgent and emergency services.

Regarding the challenges faced at work during the COVID-19 pandemic, 75% percent said they had difficulties in obtaining personal protective equipment; 50% per cent considered that the level of knowledge of technicians and assistants on the subject is low; and 20% per cent reported not having encountered any problems during that period.

All study volunteers said they believed that SARS-CoV-2 infection was very likely to be a risk for the dentist. In the same way, all of them stated that they were concerned with transmitting the disease to someone in their home environment due to their profession being part of the risk group for COVID-19. The majority of participants, 95%, stated that, as a dental

surgeon, they inform their patients about COVID-19.

Discussão

Women participants in the study predominated (90%) in accordance with surveys carried out with Brazilian dentists, whose majorities were 68.58%¹⁸ and 72.92%¹⁹ of female volunteers. Studies carried out in Italy and Turkey have shown a predominance of male participants^{16,17}. A Polish study observed a similar pattern to the Brazilian one²⁰.

A COVID-19 lethality study, taking into account socioeconomic and demographic factors, revealed that “the chances of death of an illiterate black or brown patient (76%) are 3.8 times greater than that of a white patient with higher education (19 , 6%), confirming the huge disparities in access and quality of treatment in Brazil ”²¹. Another Brazilian study exposed the greater vulnerability of indigenous and poor people to COVID-19, with its prevalence among indigenous people 6.4%, more than four times higher than the prevalence in white people (1.4%)²². The high prevalence among indigenous peoples is due to housing conditions,

poverty and difficulties in accessing health²².

Therefore, it is important to highlight that only 25% of the participants in the present study tested positive for COVID-19, none of them was hospitalized or had complications resulting from the disease until the end of this research. These results can be directly linked to the socioeconomic conditions of the participants, since all of them have higher education and 40% have at least one specialization, which contributes to a better economic situation and access to health.

A study carried out in Pernambuco with 363 participants showed a lower percentage of dentists who tested positive for the disease, only 6.1%, which expresses a much lower proportion of infected people compared to the sample of this present study performed in Maceió. In the referred study, 22% of the participants did not have a postgraduate degree²³.

Patients with comorbidities are at an increased risk of infection with SARS-CoV-2. Critical situations can develop in individuals with hypertension, diabetes, COPD (chronic obstructive pulmonary disease), heart disease, malignancies and HIV (human immunodeficiency virus). COPD patients develop substantially severe symptoms and comparatively higher mortality rates²⁴. However, in the research executed, none of the volunteers who had the disease confirmed had any type of chronic systemic disease and / or had the severe form of the disease - SARG. The main signs and symptoms reported by the participants are compatible with those presented in the literature^{17, 18, 19, 24}.

Although most of dentists (55%) self-rated their knowledge as sufficient regarding SARS-CoV-2 infection, 75% of these answered that they had had no sign / symptom of COVID-19 and in the following question when asked: "Did you have one or more of these signs / symptoms?" - affirmed to have presented some signs / symptoms characteristic of the disease, contradicting their self-assessment

that they would have sufficient knowledge on the subject, since they did not recognize specific symptoms of the disease as an alert for possible screening and testing.

It is important to note that among these participants, there is a possibility that negative testing cases have occurred, but the risk of infection by SARS-CoV-2 should not be ruled out without proper testing, with professionals possibly carrying out their work activities showing signs / characteristic symptoms. That could mean a high risk of infection for their co-workers and for the community assisted by the healthcare service.

A considerable change after the pandemic was the adoption of face shields in the dental surgeons professional routines - 95% started using them. ANVISA has recommended them as a protection measure¹⁵, which has been used both by the research participants and in several healthcare services reported in the literature^{16, 19, 20}. The change is quite significant because that PPE represents a reduction in the risk of exposure to biological materials, which occurs from the aerosols generation during dental procedures¹⁵.

ANVISA has made it mandatory for the healthcare professionals to use N95 / PFF2 respirators during dental procedures to reduce the risk of contamination. The re-use of those PPE is allowed since they are used for the same person and with the use of face shield (in order to decrease the respirator contamination by droplets), following the NOTA TÉCNICA GVIMS/GGTES/ANVISA N° 04/2020 and protocol defined by the health service¹⁵. Most volunteers reported using these respirators, as recommended by the Agency. Likewise, they have made use of disposable aprons, which have been regulated and required by the agency.

Regarding pre-procedure antimicrobial mouthwashes, the ANVISA has recommended the use of oxidizing agents (eg hydrogen peroxide from 0.5 to 1% or povidone iodine to 0.2%), with the objective of to reduce viral load.

Chlorhexidine does not appear to be effective¹⁵. The literature has demonstrated that, although povidone iodine is related to cases of hypersensitivity, it has exhibited antiviral activity, as well as hydrogen peroxide; however, the action of Chlorhexidine needs further studies related to SARS-CoV-2 to be defined^{4, 25, 26}. Most participants have acted in disagreement with what the recommendation in the literature, since 68.42% provided Chlorhexidine 0.12 - 0.2% as pre-procedure mouthwash to patients, only 10.52% provided hydrogen peroxide 1 %, and none of them offered povidone-iodine 0.2 - 1% to their patients.

A study in Istanbul, Turkey, also revealed a similar pattern among dentists regarding use of Chlorhexidine before dental procedures (61.7%), with the use of hydrogen peroxide in second place (52%) and the use of povidone-iodine in third place (43.1%)²⁷. Although that study shows that povidone iodine was used, this did not occur in this present study.

During the appointments, relevant studies^{16, 17} and ANVISA¹⁵ recommended the continuous aspiration of residual saliva, if possible with a high-power suction system (vacuum pump). The cleaning of the hoses that are part of the suction system must be done, at the end of each shift service, with a chlorine-based disinfectant at a concentration of 2500mg of chlorine per liter of water¹⁵. However, none of the participants said they had access to this type of system in the health services in which they work.

With regard to the sources of information, it is necessary to emphasize the importance of the information sources to which dental surgeons have access^{16, 18}. In the literature, it is possible to perceive the trend of most professionals to search for information on official agencies websites; however, there is also a considerable number of participants whose information comes from social media^{16, 17, 28}, which are not sources considered to be reliable.

Although all research volunteers seek information and explanation from websites such as the Ministry of Health and WHO websites, less than half - only 40% - have enrolled in any course. Learning and training through courses and lectures constitutes Permanent Education in Health (EPS) for the healthcare service.

It is essential to highlight that EPS activities are fundamental for the improvement of work processes and could have reduced some weaknesses, such as questions about the signs / symptoms and mouthwashes. EPS is very relevant to patient safety and quality, since education is an essential practice in building safer patient care and at higher quality²⁹.

Regarding healthcare management actions, it is interesting to emphasize that it would be necessary to offer courses and training on the subject for professionals, as in some points there are weaknesses. In addition to the absence of this technical support, there is also a lack of material resources for the provision of healthcare, as, according to the survey, most volunteers had difficulties in obtaining PPE (75%). However, it is worth noting that several Brazilian cities faced problems in purchasing medical and hospital supplies during the COVID-19³⁰ outbreak.

The local management, through the Oral Health Management of the Municipal Health Secretariat of Maceió (SMS), acted appropriately when issuing a note in April 2020 in accordance with ANVISA's guidelines guiding dental surgeons to postpone the procedures that were not clinically urgent or emergencies¹⁵.

Due to the profession nature, dental surgeons are exposed to pathogens located in patients' oral cavities and airways. The risk of contracting COVID-19 for dentists is one of the highest among all health professions²⁰. This reflects on the psychological state of the professionals, as all study participants believe that it is very likely that SARS-CoV-2 infection is a risk for themselves, in addition to all of them being concerned about transmitting the

disease to someone in their family due to the your profession.

A study found that COVID-19 was psychologically affecting more than 80% of dental surgeons¹⁶, while another one revealed that despite having knowledge and having modified their services according to recommended guidelines, dentists worldwide are in a state of anxiety and fear while working in their respective fields, due to the impact of the COVID-19 pandemic on humanity³¹.

Conclusion

Despite all COVID-19 pandemic obstacles and challenges, the dental

surgeons of Maceió ESF have been able to have a good performance in their clinical procedures, for the most part, considering the new WHO, Ministry of Health and ANVISA guidelines. In addition, they demonstrated to having a good level of knowledge on the subject. However, there is an absence of qualification and training that could work as Permanent Education in healthcare services and address some weaknesses like learning of signs / symptoms and pre-procedure antimicrobial mouthwashes that are more effective to control infection.

Referências

1. Iser BP, Sliva I, Raymundo VT, Poletto MB, Schuelter-Trevisol F, Bobinski F. Definição de caso suspeito da COVID-19: uma revisão narrativa dos sinais e sintomas mais frequentes entre os casos confirmados. *Epidemiol Serv Saude*. 2020 Jun 22;29:e2020233.
2. Phelan AL, Katz R, Gostin LO. The novel coronavirus originating in Wuhan, China: challenges for global health governance. *Jama*. 2020 Fev 25;323(8):709-10.
3. WHO. World Health Organization. Coronavirus disease (COVID-19) pandemic: WHO Coronavirus Disease (COVID-19) Dashboard [Internet], 2021 Fev. [Acesso em 2021 Fev 12] Disponível em: <https://covid19.who.int/>. Acesso em: 12 fev. 2021.
4. Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. *Int J Oral Sci*. 2020 Mar 3;12(1):1-6.
5. CFO (Brasil). Conselho Federal de Odontologia. Manual de boas práticas em biossegurança para ambientes odontológicos. [Internet]. E-book: Conselho Federal de Odontologia, 2020 [citado em 2020 10 Fev]. Disponível em: <https://website.cfo.org.br/wp-content/uploads/2020/04/cfo-lanc%CC%A7a-Manual-de-Boas-Pra%CC%81ticas-em-Biosseguranc%CC%A7a-para-Ambientes-Odontologicos.pdf>
6. Backer JA, Klinkenberg D, Wallinga J. Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China, 20–28 January 2020. *Euro Surveill*. 2020 Fev 6;25(5):2000062.
7. Painel Coronavírus. [Internet] Brasil: Ministério da Saúde. 2021 – [citado em 2 fev. 2021] Disponível em: <https://covid.saude.gov.br/>.
8. COVID-19: Painel do Coronavírus - Coronavírus-Brasil. [Internet] Brasil: Ministério da Saúde - Secretaria de Vigilância em Saúde, 2020 Jul. 21- [citado em 23 Jul. 2021]. Disponível em: <https://covid.saude.gov.br/>.
9. Informe Epidemiológico COVID-19: Cenário Epidemiológico Maceió / AL. In: Boletim – Coronavírus [Internet]. Maceió: Gerência de Vigilância das Doenças e Agravos Transmissíveis e Não Transmissíveis – Secretaria Municipal de Saúde, 23 Fev. 2021 - [citado em 24 Mar. 2021]. Disponível em: <http://www.maceio.al.gov.br/wp->

content/uploads/2021/02/pdf/2021/02/Boletim-covid-19-n.%C2%BA-234-de-23-de-fevereiro-de-2021-SE-07%C2%AA.pdf.

10. Novel CP. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China. *Zhonghua liu xing bing xue za zhi= Zhonghua liuxingbingxue zazhi*. 2020 Feb 17;41(2):145.
11. Sarti TD, Lazarini WS, Fontenelle LF, Almeida AP. Qual o papel da Atenção Primária à Saúde diante da pandemia provocada pela COVID-19?. *Epidemiol Serv Saude*. 2020; 29(2): e2020166.
12. COVID-19: Painel do Coronavírus - Coronavírus-Brasil. [Internet] Brasil: Ministério da Saúde - Secretaria de Vigilância em Saúde, 2020 Jul. 20 - [citado em 21 Jul. 2021]. Disponível em: <https://covid.saude.gov.br/>.
13. Boletim Epidemiológico Especial: Semana Epidemiológica 2 (10 a 16/01/21). In: Boletins Epidemiológicos. [Internet] Brasil: Ministério da Saúde, 2021- [citado em 02 fev. 2021]. Disponível em: https://www.gov.br/saude/pt-br/media/pdf/2021/janeiro/22/boletim_epidemiologico_covid_46-final.pdf.
14. NOTA TÉCNICA Nº 9/2020-CGSB/DESF/SAPS/MS. COVID-19 E ATENDIMENTO ODONTOLÓGICO NO SUS, [Internet]. Brasília – DF: Ministério da Saúde/SAPS - Secretaria de Atenção Primária à Saúde, Março 2020 - [citado em 23 jul. 2020]. Disponível em: http://website.cfo.org.br/wp-content/uploads/2020/03/COVID-19_ATENDIMENTO-ODONTOLOGICO-NO-SUS.pdf.
15. NOTA TÉCNICA GVIMS/GGTES/ANVISA Nº 04/2020. Orientações para serviços de saúde: medidas de prevenção e controle que devem ser adotadas durante a assistência aos casos suspeitos ou confirmados de infecção pelo novo coronavírus (SARS-CoV-2). [Internet]. Brasil: ANVISA - Agência Nacional de Vigilância Sanitária, Março 2020 – [citado em 23 jul. 2020] Disponível em: <http://portal.anvisa.gov.br/documents/33852/271858/Nota+T%C3%A9cnica+n+04-2020+GVIMS-GGTES-ANVISA/ab598660-3de4-4f14-8e6f-b9341c196b28>.
16. Duruk G, Gümüşboğa ZŞ, Çolak C. Investigation of Turkish dentists' clinical attitudes and behaviors towards the COVID-19 pandemic: a survey study. *Braz Oral Res*. 2020;34.
17. Cagetti MG, Cairoli JL, Senna A, Campus G. COVID-19 outbreak in North Italy: an overview on dentistry. A questionnaire survey. *Int J Environ Res Public Health*. 2020 Jan;17(11):3835.
18. Vieira-Meyer AP, Coutinho MB, Santos HP, Saintrain MV, Candeiro GT. Brazilian Primary and Secondary Public Oral Health Attention: Are Dentists Ready to Face the COVID-19 Pandemic?. *Disaster Med Public Health Prep*. 2020 Sep 10:1-8.
19. Candeiro GT, Gavini G, Vivian RR, Carvalho BM, Duarte MA, Feijão CP. Knowledge about Coronavirus disease 19 (COVID-19) and its professional repercussions among Brazilian endodontists. *Braz Oral Res*. 2020;34.
20. Tysiąc-Miśta M, Dziedzic A. The attitudes and professional approaches of dental practitioners during the COVID-19 outbreak in Poland: a cross-sectional survey. *Int J Environ Res Public Health*. 2020 Jan;17(13):4703.
21. Batista A, Antunes B, Faveret G, Peres I, Marchesi J, Cunha JP. Análise socioeconômica da taxa de letalidade da COVID-19 no Brasil. Núcleo de Operações e Inteligência em Saúde (NOIS). 2020 May 27.

22. Hallal PC, Hartwig FP, Horta BL, Silveira MF, Struchiner CJ, Vidaletti LP, Neumann NA, Pellanda LC, Dellagostin OA, Burattini MN, Victora GD. SARS-CoV-2 antibody prevalence in Brazil: results from two successive nationwide serological household surveys. *Lancet Glob Health*. 2020 Nov 1;8(11):e1390-8.
23. Gaspar Gabriela da Silveira, Figueiredo Nilcema, Lucena Edson Hilan Gomes de, Ceissler Cindy Avani Silva, Cavalcanti Ronald Pereira, Goes Paulo Sávio Angeiras de. Characterization of Dental Surgeons of Pernambuco State in the COVID-19 Pandemic Context: Preliminary Data. *Pesqui. Bras. Odontopediatria Clín. Integr.* [Internet]. 2020. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1983-46322020001500302&lng=en. Epub Aug 31, 2020.
24. Ejaz H, Alsrhani A, Zafar A, Javed H, Junaid K, Abdalla AE, Abosalif KO, Ahmed Z, Younas S. COVID-19 and comorbidities: Deleterious impact on infected patients. *J Infect Public Health*. 2020 Aug 4.
25. Carrouel F, Gonçalves LS, Conte MP, Campus G, Fisher J, Fraticelli L, Gadea-Deschamps E, Ottolenghi L, Bourgeois D. <? covid19?> Antiviral Activity of Reagents in Mouth Rinses against SARS-CoV-2. *J Dent Res*. 2020 Oct 22:0022034520967933.
26. Seneviratne CJ, Balan P, Ko KK, Udawatte NS, Lai D, Ng DH, Venkatachalam I, Lim KS, Ling ML, Oon L, Goh BT. Efficacy of commercial mouth-rinses on SARS-CoV-2 viral load in saliva: Randomized Control Trial in Singapore. *Infection*. 2020 Dec 14:1-7.
27. Sezgin GP, Şirinoğlu Çapan B. Assessment of dentists' awareness and knowledge levels on the Novel Coronavirus (COVID-19). *Braz Oral Res*. 2020;34.
28. De Stefani A, Bruno G, Mutinelli S, Gracco A. COVID-19 outbreak perception in Italian dentists. *Int J Environ Res Public Health*. 2020 Jan;17(11):3867.
29. Koerich C, Erdmann AL, Lanzoni GM. Interação profissional na gestão da tríade: educação permanente em saúde, segurança do paciente e qualidade. *Rev Lat Am Enfermagem*. 2020;28.
30. Sodré F. Epidemia de Covid-19: questões críticas para a gestão da saúde pública no Brasil. *Trabalho, Educação e Saúde*. 2020;18(3).
31. Ahmed MA, Jouhar R, Ahmed N, Adnan S, Aftab M, Zafar MS, Khurshid Z. Fear and practice modifications among dentists to combat novel coronavirus disease (COVID-19) outbreak. *Int J Environ Res Public Health*. 2020 Jan;17(8):2821.

How to cite this article:

Oliveira MGN, Cardoso AC, Vieira ICO, Guimarães JATL. Knowledge and changes in clinical behavior of Maceio ESF dental surgeons facing COVID-19 pandemic. *Rev. Aten. Saúde*. 2021; 19(68): 301-312.