

Dental care during the COVID-19 pandemic: an integrative review

Cuidados odontológicos durante a pandemia do COVID-19: uma revisão integrativa

Laércio Almeida de MELO¹  0000-0002-9276-0116

Jéssica Mayara de Figueirêdo OSÉAS¹  0000-0003-1421-3405

Júlio César Brigolini de FARIA²  0000-0001-9698-9498

Beatriz de Pedro Netto MENDONÇA²  0000-0001-6364-5912

Camila Moreira LIMA²  0000-0001-8252-2168

Fabiola Pessôa Pereira LEITE²  0000-0001-6316-5679

Adriana da Fonte Porto CARREIRO¹  0000-0002-0833-1926

ABSTRACT

Objective: The study and enactment of dental preventive measures, in response to the COVID-19 pandemic, are necessary to prevent cross-infections between professionals and patients. The objective of this integrative review was to identify the COVID-19 preventive practices in dentistry. **Methods:** The electronic search was conducted on these databases: Pubmed / Medline, Web of Science, Cochrane Library, Scopus, LILACS and Scielo, using the following descriptors and / or words: "Coronavirus disease 2019"; "Coronavirus 2019"; "Covid-19"; "2019-ncov"; "Sars-cov2"; "Dental practice"; "Dental care"; "Dentistry"; "Dental medicine" and "Oral medicine". PRISMA was used as a reference for designing it. **Results:** A total of 11 articles were included and the preventive measures against COVID-19 were based on guidelines from health agencies and consisted of: perform only emergency treatments; reschedule patients with suspected disease; hand washing; disinfection of surfaces with 70% alcohol; testing dental professionals for the disease; use the N95 mask; disposable lab coats, and face shields. Children, in addition to the measures mentioned above, should routinely drink a lot of water and be provided with healthy diets. No study has evaluated the efficacy and effectiveness of these measures. There is a lack of scientific evidence on the preventive protocols adopted against COVID-19 in dentistry since preventive measures are recommended by health agencies. **Conclusion:** Consequently, professionals are recommended to follow the guidelines by these organizations until effective and efficient preventive protocols tailored to dentistry are established.

Indexing terms: Community dentistry. Infection control. Dental education.

RESUMO

Objetivo: O estudo e a adoção de medidas preventivas odontológicas, em resposta à pandemia do COVID-19, são necessárias para evitar infecções cruzadas entre profissionais e pacientes. O objetivo desta revisão integrativa foi identificar as práticas preventivas do

▼ ▼ ▼ ▼ ▼

¹ Universidade Federal do Rio Grande do Norte, Departamento de Odontologia. Av. Senador Salgado Filho, 1787, Lagoa Nova, Natal, RN, Brasil. Correspondence to: LA Melo. E-mail: <laercio_melo91@hotmail.com>.

² Universidade Federal de Juiz de Fora, Faculdade de Odontologia, Departamento de Odontologia. Juiz de Fora, MG, Brasil.

▼ ▼ ▼ ▼ ▼

How to cite this article

Melo LA, Oséas JMF, Faria JCB, Mendonça BPN, Lima CM, Leite FPP, et al. Dental care during the COVID-19 pandemic: an integrative review. RGO, Rev Gaúch Odontol. 2022;70:e20220033. <http://dx.doi.org/10.1590/1981-86372022003320200125>

COVID-19 em odontologia. **Métodos:** A busca eletrônica foi realizada nas seguintes bases de dados: Pubmed / Medline, Web of Science, Cochrane Library, Scopus, LILACS e Scielo, utilizando os seguintes descritores e / ou palavras: "Coronavirus disease 2019"; "Coronavirus 2019"; "Covid-19"; "2019-ncov"; "Sars-cov2"; "Dental practice"; "Dental care"; "Dentistry"; "Dental medicine" and "Oral medicine". O PRISMA foi utilizado como referência para sua realização. **Resultados:** Um total de 11 estudos foram incluídos e as medidas preventivas contra COVID-19 foram baseadas em diretrizes dos órgãos de saúde e consistiram em: realizar apenas tratamentos de emergência; reagendar pacientes com suspeita de doença; lavar as mãos; desinfetar superfícies com álcool a 70%; testar profissionais de odontologia para a doença; usar a máscara N95; jalecos descartáveis e protetores faciais. As crianças, além das medidas mencionadas acima, devem rotineiramente beber muita água e receber dietas saudáveis. Nenhum estudo avaliou a eficácia e a efetividade dessas medidas preventivas. Faltam evidências científicas sobre os protocolos preventivos adotados contra o COVID-19 em odontologia, uma vez que medidas preventivas são recomendadas pelos órgãos de saúde. **Conclusão:** Consequentemente, recomenda-se aos profissionais que sigam essas organizações até que sejam estabelecidos protocolos preventivos eficazes e eficientes, adaptados à odontologia.

Termos de indexação: Odontologia comunitária; controle de infecções; Educação em Odontologia.

INTRODUCTION

During pandemic periods, individual and collective preventive measures are necessary to contain the spread of disease¹. These measures are even more critical during the early stages of the pandemic, as there is still no vaccine to prevent the disease [1]. The incidence of COVID-19 has been increasing exponentially globally and some cases are characterized by severe respiratory syndromes that lead to death [2,3]. Currently, COVID-19 affects more than 210 countries from all continents in the world [3].

COVID-19 is transmitted from person to person through respiratory droplets and direct contact with body fluids. Indirectly, contamination can also occur through contact with contaminated surfaces; when individuals touch these surfaces and bring their hands to the mouth, eyes and nose. Fecal transmission has also been suggested [4]. From these data, a dental environment, characterized by closed rooms and high concentrations of aerosols, is favorable for the transmission of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) among professionals and patients [5].

Recently, a study published by the New York Times showed that dentists have the highest risk of contracting COVID-19 [6]; the intimate contact with patients' oral cavity favors cross-infection [6]. Thus, some global health regulatory organizations, such as the American Dental Association and the United Kingdom's National Health Service, advise dental professionals to perform only urgent dental procedures, avoiding elective treatments and routine imaging exams [1,2,5,7-14]. These measures may reduce the flow of patients to hospitals and ensure that more beds are available for patients with COVID-19.

With this scenario, the dentist is at risk of contamination today, through the treatment of emergencies, and in the future when social isolation has been discontinued. Therefore, the study and enactment of dental preventive measures, in response to the COVID-19 pandemic, are necessary to prevent cross-infections between professionals and patients. Given the lack of reviews with appropriate methodologies, the present study aims to answer the following question through an integrative literature review: what dental care is needed during a new coronavirus pandemic to minimize contamination?

METHODS

A review was carried out on all types of studies published in literature, characterizing it as integrative. PRISMA (Main Items for Reporting Systematic Reviews and Meta-analyses) was used as a reference for designing it [15]. As inclusion criteria, studies that involved preventive dental procedures against COVID-19 by dentists, institutions, or organizations were included. In this review, there were no restrictions on the year of publication and language. Studies that evaluated other types of coronaviruses other than SARS-CoV-2 were excluded.

The electronic search was conducted by three researchers (LAM, FPPL, JMOF), independently, from may 2020 to July 2020, on these databases: Pubmed / Medline, Web of Science, Cochrane Library, Scopus, LILACS and Scielo, using the following descriptors and / or words: "Coronavirus disease 2019"; "Coronavirus 2019"; "Covid-19"; "2019-ncov"; "Sars-cov2"; "Dental practice"; "Dental care"; "Dentistry"; "Dental medicine" and "Oral medicine". Manual searches were also carried out on the references of the articles that were read in full. The search strategies elaborated for each database are described in table 1.

Table 1 – Search strategies for the study databases.

DATABASE	STRATEGY
Pubmed/Medline	(((((Coronavirus disease 2019) OR Coronavirus 2019) OR Covid-19) OR 2019-ncov) OR Sars-cov2)) AND (((((Dental practice) OR Dental care) OR Dentistry) OR Dental medicine) OR Oral medicine)
Web of Science	TS=(Coronavirus disease 2019 OR Coronavirus 2019 OR Covid-19 OR 2019-ncov OR Sars-cov2) AND TS=(Dental practice OR Dental care OR Dentistry OR Dental medicine OR Oral medicine)
Cochrane Library	"Coronavirus disease 2019" OR "Coronavirus 2019" OR "Covid-19 OR 2019-ncov" OR "Sars-cov2" and "Dental practice" OR "Dental care" OR "Dentistry" OR "Dental medicine" OR "Oral medicine"
Scopus	ALL ("Coronavirus disease 2019" OR "Coronavirus 2019" OR "Covid-19 OR 2019-ncov" OR "Sars-cov2") AND ALL ("Dental practice" OR "Dental care" OR "Dentistry" OR "Dental medicine" OR "Oral medicine")
LILACS	"Coronavirus disease 2019" OR "Coronavirus 2019" OR "Covid-19 OR 2019-ncov" OR "Sars-cov2" and "Dental practice" OR "Dental care" OR "Dentistry" OR "Dental medicine" OR "Oral medicine"
Scielo	"Coronavirus disease 2019" OR "Coronavirus 2019" OR "Covid-19 OR 2019-ncov" OR "Sars-cov2" and "Dental practice" OR "Dental care" OR "Dentistry" OR "Dental medicine" OR "Oral medicine"

After searching the databases, the titles and abstracts were organized in a standardized form. The three researchers, using the inclusion and exclusion criteria, separated the studies that would be read in full and could be included in the review. To complete this step, manual searches of the bibliographic references of the included articles were made.

After reading the studies in full, their data were extracted and annotated by each of the three authors (LAM, FPPL, JMOF), independently and then collectively. The data related to the research (sample, the country where the study was conducted, objective, institution, organizations, or professional who adopted the preventive behaviors and types of prevention) were recorded. Methodological characteristics (the type of study) and outcomes were also recorded.

When there was disagreement between the authors, they consulted a fourth author (JCBF), who guided them to consensus. The Grading of Recommendations Assessment, Developing and Evaluation (GRADE) method was used to evaluate the quality of the studies included in this review. The quality of evidence had four grades, which represented the confidence in the results: high, moderate, low, or very low [16].

RESULTS

A total of 95 titles and abstracts were obtained from the electronic search. Of these, 25 were selected based on the inclusion and exclusion criteria and read in full. The manual search, made on the reference lists of articles read in full, did not yield relevant articles. Ultimately, 11 were selected to be included in this review (Figure 1). The studies that were read in full but were not included for review are described, and the respective reasons for exclusion are provided in table 2.

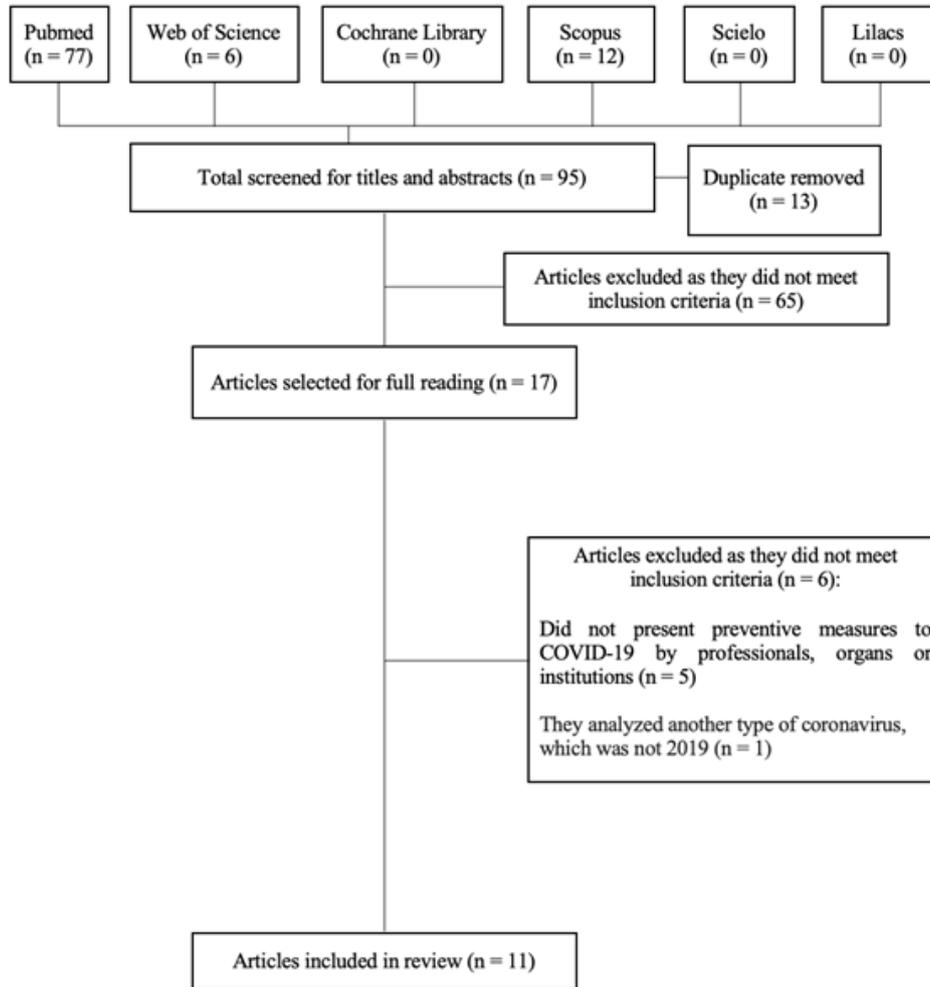


Figure 1 – Flowchart of the study.

Table 2 – Exclusion criteria and articles excluded after reading in full.

They did not present preventive measures against COVID-19 by professionals or organizations/institutions (5)
Martelli-Júnior et al. [15]
Farooq & Ali [16]
Gu et. al. [19]
Sabino-Silva et al. [20]
Guo et al. [21]
They analyzed another type of coronavirus, which was not 2019 (1)
Gaffar et al. [22]

Six reviews, 1 letter of recommendation to the editor, 2 case studies referring to hospital units, and 2 cross-sectional studies were included in this integrative review. A total of 368 dentists and 50 hospital units were evaluated. The main preventive measures for COVID-19 in dental care were as follows: (a) suspension of elective care and performance of only emergency procedures, (b) rescheduling patients after with signs and symptoms of COVID-19 (fever, cough, and/or shortness of breath in the last 14 days), (d) thorough hand washing by patients and professionals, (e) regular disinfection of office surfaces with 70% alcohol, (f) testing all professionals involved in dentistry, and (g) use of common

plus waterproof disposable coats as well as type N95 masks, goggles, face shields, and gloves. Children, in addition to the measures mentioned above, should routinely drink a lot of water and be provided with healthy diets.

None of these approaches were analyzed for their effectiveness in preventing the infection with the new coronavirus. The measures presented in the studies were based on guidelines from the World Health Organization or local health agencies.

The objectives, methodology, and outcomes of each of the studies reviewed are shown in table 3. Additionally, each of the studies included in the review had low methodological quality (table 4).

Table 3 – Characteristics and summary of preventive measures in the studies included in the integrative review.

1 of 2

Study	Study location and type	Objective	Sample	Institution, organization, or professional that adopted or guided preventive conduct	Types of preventive measures to COVID-19
Edwards et al. [7]	United States; Case report	A multidisciplinary Michigan Medicine team met to obtain and report consensus on the management of maxillofacial trauma during the COVID-19 pandemic	1 medical unit	Michigan Medicine	The institution recommends dental treatment only in urgent cases. In emergency cases of facial trauma, common coats plus waterproof disposable coats should be used, as well as N95 masks, goggles, face shields, and gloves
Dave M et al. [1]	London; Recommendation letter to the editor	Recommend urgent dental care procedures in the COVID-19 pandemic season	There are no reports	Manchester University	Dental treatment only in urgent cases; Use of complete Personal Protective Equipment (PPE); Extraction of teeth with poor prognosis and testing all dental professionals for the disease
Khader Y et al. [8]	Jordan; Observational	Assess the level of awareness, perception, and attitude towards COVID-19 and infection control among dentists in Jordan	368 dentists	Jordanian dentists	Treat only urgent cases; Regular hand washing by professionals and patients; use of absolute isolation with rubber dikes; Use of complete PPE and disinfection of surfaces with 70% alcohol
Mallineni et al. [9]	No location specification; Literature revision	Report current data on the pediatric population affected by COVID - 19 and highlight considerations for dentists who assist children during this pandemic.	There are no reports of the number of studies included	National Health Surveillance Agency (ANVISA) - Brazil and American Academy of Pediatric Dentistry	Treat only urgent cases; Use of N95 masks associated with disposable surgical masks and use of face shields. Always follow local, regional and national guidelines and guidelines regarding the use of preventive measures to COVID-19.
Yang et al. [2]	China; Observational	Assess the provision of health services in tertiary public hospitals during the COVID-19 epidemic in China and assess the regional difference in telehealth.	48 public dental hospitals	Public dental hospitals - China	Dental care only in emergency cases and dental call centers
Spagnuolo et al. [10]	No location specification; Literature revision	Assess the impact of COVID-19 on dentistry	There are no reports of the number of studies included	World Health Organization; American Dental Association; Wuhan University; Stomatology Hospital - Wuhan	Treat only dental emergencies; Use of complete PPE; Use of powerful suckers; Protect all places of handling by the professional with film paper; Disinfect contact surfaces by professionals and patients with 70% alcohol and prefer treatments that generate less aerosols
Yang et al. [11]	Beijing, China; Case report	Summarize the experience with prevention and clinical recommendations for the control of the COVID-19 epidemic	1 medical unit	Department of Oral and Maxillofacial Surgery and Stomatology Hospital (Beijing University)	Treat only emergencies; Suspect patient care in an isolated environment; Constant hand washing; Use of complete PPE and disinfection of alcohol-based surfaces

Table 3 – Characteristics and summary of preventive measures in the studies included in the integrative review.

2 of 2

Study	Study location and type	Objective	Sample	Institution, organization, or professional that adopted or guided preventive conduct	Types of preventive measures to COVID-19
Wang et al. [12]	China; Literature revision	To present preventive measures to COVID-19 in the dental care of pediatric patients	There are no reports of the number of studies included	Infectious Disease Prevention and Control Act - China	Perform only emergency treatments that do not generate aerosols, such as atraumatic restorations; Guide parents to train their children to wash their hands, maintain good oral hygiene, drink plenty of water and eat a healthy diet; Use of PPE by professionals and everyone in the dental environment
Meng et al. [5]	China; Literature revision	Provide recommended management protocols for dentists and students in areas affected by COVID-19	There are no reports of the number of studies included	Wuhan University Stomatology School and Hospital	Treatment of dental emergencies only; Avoid treatments that generate aerosols; Always work with 4 hands; Check the signs and symptoms of COVID-19 in patients and, in their presence, suspend the service
Peng et al. [13]	China; Literature revision	Recommend infection control measures during dental practice	Não há There are no reports of the number of studies included	China National Health Commission	Treat only urgent cases; In the identification of signs and symptoms of COVID-19 (fever, cough and / or shortness of breath in the last 14 days), reschedule the patient; Hand washing by the professional and patient; Use white fabric coats associated with disposable coats, N95 and surgical masks, face shields and disposable gloves; Provide mouthwash before service
Ge et al. [14]	China; Literature revision	Report precautions to be taken in dental environments to prevent COVID-19	There are no reports of the number of studies included	Chinese Stomatology Association; World Health Organization	Treat only urgent cases; Assess signs and symptoms of COVID-19 and, in the presence, reschedule the patient; Use complex levels of individual protection (N95 mask, use of common coats associated with disposables and facial protectors); Hand washing and disinfection of surfaces with 70% alcohol

Table 4 – Evaluation of the quality of studies according to GRADE.

1 of 2

Study	Delimitation	Methodological limitations	Inconsistency	Indirect evidence	Inaccuracy	Other considerations	Quality (GRADE)
Edwards et al. [7]	Case report	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	No additional considerations	Very low
Dave et al. [1]	Letter of recommendations	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	No additional considerations	Very low
Khader et al. [8]	Observational	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	No additional considerations	Very low
Mallineni SK et al., 2020 [9]	Literature revision	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	Review done without methodological details	Very low
Yang Y et al., 2020 [2]	Observational	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	No additional considerations	Very low
Spagnuolo et al., 2020 [10]	Literature revision	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	Review done without methodological details	Very low

Table 4 – Evaluation of the quality of studies according to GRADE.

2 of 2

Study	Delimitation	Methodological limitations	Inconsistency	Indirect evidence	Inaccuracy	Other considerations	Quality (GRADE)
Yang Y et al., 2020 [11]	Case report	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	No additional considerations	Very low
Wang et al., 2020 [12]	Literature revision	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	Review done without methodological details	Very low
Meng L et al., 2020 [5]	Literature revision	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	Review done without methodological details	Very low
Peng X et al., 2020 [13]	Literature revision	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	Review done without methodological details	Very low
Ge Z et al., 2020 [14]	Literature revision	Severe (type of study)	Severe (do not have estimates of effects)	Severe (do not compare interventions)	Severe (no confidence intervals)	Review done without methodological details	Very low

Note: Methodological limitations: studies other than randomized controlled trials; lack of allocation of individuals; absence of masking; and failures to control confounding factors. Inconsistencies: High differences in effect estimates and overlapping confidence intervals. Indirect evidence: No comparison between interventions. Inaccuracy: High-confidence intervals.

DISCUSSION

The present study is an integrative literature review aimed at identifying preventive practices against COVID-19 in dentistry. All types of studies that met the established inclusion criteria were included. A systematic review of controlled and randomized clinical trials, with reliable scientific evidence, was not possible; there are no comparative studies on groups that did and did not adopt preventive measures against COVID-19 in dental care. All the studies reviewed were of low quality. The low quality was related methodological biases, such as the absence of comparison groups, lack of methodological design in the reviews, and the types of studies carried out; according to GRADE, studies that are not randomized clinical trials already commence analysis on a low-quality level.

From the electronic and manual searches, only a few studies recommended preventive measures to COVID-19 in dental environments; this made it difficult to extensively survey factors that could protect dental professionals and patients from the disease. The novelty of the SARS-CoV-2 and the nature of COVID-19 pandemic it has caused have been attributed to the scarcity of studies.

In general, the review revealed that the prevention of COVID-19 in dentistry involves the suspension of elective care, performing only emergency treatment, rescheduling patients with suspected infection, constant hand washing, surface disinfection with 70% alcohol, mass disease testing for dental professionals, and adding the N95 mask, disposable lab coats, and face shields to the PPE already used. Children must be encouraged to drink a lot of water and maintain a healthy diet [1,2,5,7-14]. The suspension of dental care, except for emergencies, is justified by the high risk of exposure of dentists through intimate contact with the structures of the oronasal cavities, which constitute major contamination routes for COVID-19 [6]. In addition, the procedures performed in the dental environment continually expose professionals to potentially contaminated aerosols [7]. Urgent care must be exercised, and it is essential that patients do not go to hospitals and occupy beds that could be used for providing care to patients with COVID-19. According to the Centers for Disease Control and Prevention (CDC), urgent and emerging situations in dentistry are dental trauma, pulpitis, osteitis, pericoronitis, abscess, extensive caries, endodontic access openings in patients with pain and adjustments in dentures and appliances that cause damage to oral structures [17].

Identifying patients with suspected disease is of paramount importance for prevention. The professional has the autonomy to reschedule suspected COVID-19 patients and avoid close contact with them. According to the interim guidance of American Dental Association (ADA), these patients should be rescheduled for at least 14 days after the identification of these symptoms. Consequently, dental professionals must identify signs and symptoms of COVID-19 (fever, cough, and/or shortness of breath in the last 14 days) [18]. Questions eliciting the presence of the known signs and symptoms of COVID-19 should be planned before visits and body temperature should be verified [13,14,18]. In addition, the ADA recommends that all professionals must have received their seasonal flu vaccine and should check their own temperature twice a day [18].

Handwashing with soap and water and disinfection of surfaces in the office or clinic with 70% alcohol help in eliminating the virus and reducing its cross-transmission. Touching contaminated surfaces and touching the face is one of the main modes of transmission. The emulsifying function of soap, which involves the rupture of the viral envelope, and the viral protein denaturation promoted by 70% alcohol are capable of killing the virus. In the absence of soap and water, hand cleansing can be performed with 70% alcohol gel. Frequent testing of dental professionals is necessary; positive cases can be isolated early enough to prevent cross-infection of their patients, families, and co-workers [23].

Most studies suggest adding the N95 mask, disposable lab coats, and face shields to PPEs that are already used routinely (fabric coats, hats, surgical masks, and gloves). The N95 mask has a high resistance to aerosol contamination, with a greater filtering capacity than the surgical mask. Recently, a preliminary study found that by using an individual barrier attached to the dental chair, aerosol dispersion can be reduced by an average of 94.9%. This device consists of a layer of PVC film combined to a layer of polypropylene mounted on a frame and is positioned between the oral cavity and the professional. Therefore, in addition to using the N95 mask, the individual barrier can be an alternative to minimize aerosol exposure [24]. Wearing disposable coats over the fabric coat (minimum weight of 30g/m²) is essential to avoid the contamination of the clothing used by the professional and the next patient to be treated. To be successful with this measure, the ideal is to change the disposable lab coat for each patient. The facial protector, on the other hand, aims to protect the entire face from aerosols generated during care [23].

Finally, two studies that evaluated preventive behavior in children recommend frequent water intake and healthy diets, in addition to the measures mentioned above. These measures are important for preventing dehydration and strengthening the immune system, which may prevent the severe progression of COVID-19.

In this review, all preventive measures were based on recommendations from global and local organizations for the prevention of highly contagious respiratory diseases, such as COVID-19. No study on the effectiveness and efficiency of preventive practices against COVID-19 in dentistry has been carried out, which allows us to err on the side of over-protection because there are no specific studies on the topic. Observational and longitudinal studies on the preventive measures against COVID-19 in dental environments are needed and called for. Meanwhile, the adoption of the measures presented in private and public dental practices is recommended, until specific COVID-19 measures are established in the field of dentistry. For dental professionals, the need for studies on this topic is extremely important. These clinicians work with potentially contaminated instruments and dental preparations. Therefore, they are susceptible to contact with aerosols and saliva of patients who may have COVID-19. Research that will elucidate the disinfection method (type of disinfectant, concentration and exposure time of the disinfectant in the material) specific to the 2019-nCoV of non-sterile instruments is necessary. Another point to be considered for future studies is to verify other ways of eliminating this virus on these surfaces, such as the use of ultraviolet light. Finally, due to the high costs that new preventive measures can generate for clinicians, evaluations regarding the possibility of reusing equipment, such as the N95 mask, should be considered in future works.

CONCLUSION

In conclusion, there is a lack of scientific evidence on the efficiency and effectiveness of specific protective measures for new coronaviruses in the dental environment. Existing preventive measures are based on recommendations

from global organizations and local health care providers for highly contagious respiratory infections. However, the adoption of the guidelines provided by global and local health agencies is recommended until effective and efficient preventive measures against COVID-19 specific to dentistry are established.

Collaborators

LA Melo, conception, design, intellectual and scientific content of the study; acquisition, interpretation and analysis of data; manuscript writing. JMF Oséas, acquisition, interpretation and analysis of data; manuscript writing. JCB Faria, BPN Mendonça, CM Lima and FPP Leite, manuscript writing; critical revision. AFC Carreiro, participated in the study design and coordination; analyzed and interpreted the data; helped to draft the manuscript; critical revision.

REFERENCES

- Dave M, Seoudi N, Coulthard P. Urgent dental care for patients during the COVID-19 pandemic. *Lancet*. 2020;395(10232):1257. [http://dx.doi.org/10.1016/S0140-6736\(20\)30806-0](http://dx.doi.org/10.1016/S0140-6736(20)30806-0)
- Yang Y, Zhou Y, Liu X, Tan J. Health services provision of 48 public tertiary dental hospitals during the COVID-19 epidemic in China. *Clin Oral Investig*. 2020;24(5):1861-1864. <http://dx.doi.org/10.1007/s00784-020-03267-8>
- WHO. Coronavirus disease 2019 (COVID-19) situation report–34. World Health Organization web [cited 2020 Jul 20]. Available from: <<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports> 2020>.
- Laishuan W, Yuan S, Tiantian X, Jianhua F, Xing F, Dezhi M, et al. Chinese expert consensus on the perinatal and neonatal management for the prevention and control of the 2019 novel coronavirus infection (First edition). *Ann Transl Med* 2020;8(3):47. <http://dx.doi.org/10.21037/atm.2020.02.20>
- Meng L, Hua F, Bian Z. Coronavirus Disease 2019 (COVID-19): emerging and future challenges for dental and oral medicine. *J Dent Res*. 2020;99(5):481-487. <http://dx.doi.org/10.1177/0022034520914246>
- The New York Times. The workers who face the greatest coronavirus risk. [cited 2020 Jul 20]. Available from: <<https://www.nytimes.com/interactive/2020/03/15/business/economy/coronavirus-worker-risk.html>>.
- Edwards SP, Kasten S, Nelson C, Elnor V, McKean E. Maxillofacial trauma management during covid-19: multidisciplinary recommendations. *Facial Plast Surg Aesthet Med*. 2020;2(3):157-159. <http://dx.doi.org/10.1089/fpsam.2020.0158>
- Khader Y, Nsour M, Al-Batayneh OB, Saadeh R, Bashier H, Alfaqih M, et al. Dentists' awareness, perception, and attitude regarding COVID-19 and infection control: A cross-sectional study among Jordanian dentists. *J Public Health Surveill*. 2020;6(2):e18798. <http://dx.doi.org/10.2196/18798>
- Mallineni SK, Innes NP, Raggio DP, Araujo MP, Robertson MD, Jayaraman J. Coronavirus disease (covid-19): characteristics in children and considerations for dentists providing their care. *Int J Paediatr Child Dent*. 2020;30(3):240-245. <http://dx.doi.org/10.1111/jpd.12653>
- Spagnuolo G, De Vito D, Rengo S, Tatullo M. COVID-19 outbreak: an overview on dentistry. *Int J Environ Res Public Health*. 2020;17(6):2094. <http://dx.doi.org/10.3390/ijerph17062094>
- Yang Y, Soh HY, Cai ZG, Peng X, Zhang Y, Guo CB. Experience of diagnosing and managing patients in oral maxillofacial surgery during the prevention and control period of the new coronavirus pneumonia. *Chin J Dent Res*. 2020;23(1):57-62. <http://dx.doi.org/10.3290/j.cjdr.a44339>
- Wang Y, Zhou CC, Shu R, Zou J. Oral health management of children during the epidemic period of coronavirus disease 2019. *Sichuan Da Xue Xue Bao Yi Xue Ban*. 2020;51(2):151-154. <http://dx.doi.org/10.12182/20200360101>
- 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;12(1):9. <http://dx.doi.org/10.1038/s41368-020-0075-9>
- Ge Z, Yang L, Xia J, Fu X, Zhang Y. Possible aerosol transmission of COVID-19 and special precautions in dentistry. *J Zhejiang Univ Sci B*. 2020;21(5):361-368. <http://dx.doi.org/10.1631/jzus.B2010010>
- Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JP. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *PLoS Med*. 2009;6(7):e1000100. <http://dx.doi.org/10.1371/journal.pmed.1000100>
- GRADE working group: the Grading of Recommendations Assessment, Development and Evaluation [Internet] [cited 2020 Apr 20]. Available from: <<http://www.gradeworkinggroup.org>. 2014>.
- CDC Recommendation: Postpone Non-Urgent Dental Procedures, Surgeries, and Visits [Internet]. [cited 2020 Sep 26]. Available from: <<https://www.cdc.gov/oralhealth/infectioncontrol/statement-COVID.html>. 2020>.
- American Dental Association. Interim Guidance for Minimizing Risk of COVID-19 [Internet] [cited 2020 Sep 26]. Available from: <https://www.ada.org/media/CPS/Files/COVID/ADA_COVID_Int_Guidance_Treat_Pts.pdf. 2020>.
- Martelli-Júnior H, Machado RA, Martelli DRB, Coletta RD. Dental journals and coronavirus disease (COVID-19): A

- current view. *Oral Oncol.* 2020;196:104664. <http://dx.doi.org/10.1016/j.oraloncology.2020.104664>
20. Farooq I, Ali S. COVID-19 outbreak and its monetary implications for dental practices, hospitals and healthcare workers. *Postgrad Med.* 2020;96(1142):791-792. <http://dx.doi.org/10.1136/postgradmedj-2020-137781>
21. Gu J, Han B, Wang J. COVID-19: gastrointestinal manifestations and potential fecal-oral transmission. *Gastroenterology.* 2020;158(6):1518-1519. <http://dx.doi.org/10.1053/j.gastro.2020.02.054>
22. Sabino-Silva R, Jardim ACG, Siqueira WL. Coronavirus COVID-19 impacts to dentistry and potential salivary diagnosis. *Clin Oral Investig.* 2020;24(4):1619-1621. <https://doi.org/10.1007/s00784-020-03248-x>
23. Lee IK, Wang CC, Lin MC, Kung CT, Lan KC, Lee CT. Effective strategies to prevent coronavirus disease-2019 (covid-19) outbreak in hospital. *J Hosp Infect.* 2020;105(1):102-103. <http://dx.doi.org/10.1016/j.jhin.2020.02.022>
24. Montalli VAM, Garcez AS, Montalli GAM, França FMG, Suzuki SS, Mian LMT, et al. Individual biosafety barrier in dentistry: an alternative in times of covid-19. Preliminary study. *RGO, Rev Gaúch Odontol.* 2020;68:e20200088. <http://dx.doi.org/10.1590/1981-863720200001820200088>

Received on: 24/6/2020

Final version resubmitted on: 26/9/2020

Approved on: 19/5/2021

Assistant editor: Luciana Butini Oliveira