

POOR ORAL HYGIENE: RISK FACTORS RESULTING FROM CHANGES IN THE ORAL MICROBIOTA

Vitor Guerche Grund

Cruzeiro do Sul, Universidade de Franca -
UNIFRAN Franca, São Paulo
<https://orcid.org/0009-0009-9930-4912>

Diogo Barbosa Palhares

Cruzeiro do Sul, Universidade de Franca -
UNIFRAN Franca, São Paulo, Brasil
<https://orcid.org/0009-0006-5833-3168>

Mariana Chrissy Marra Silva

Cruzeiro do Sul, Universidade de Franca -
UNIFRAN Franca, São Paulo,
<https://orcid.org/0009-0004-3230-0769>

Júlia Jamile Barbosa Palhares

Cruzeiro do Sul, Universidade de Franca -
UNIFRAN Franca, São Paulo
<https://orcid.org/0000-0001-7507-0810>

Dulce Helena Pena de Andrade

Graduated in Dentistry by: Universidade
de São Paulo, Master and PhD in dentistry
by: Universidade de São Paulo. Professor
at: ``Universidade de Franca``, Franca, São
Paulo
<http://lattes.cnpq.br/5090670813486568>

All content in this magazine is
licensed under a Creative Com-
mons Attribution License. Attri-
bution-Non-Commercial-Non-
Derivatives 4.0 International (CC
BY-NC-ND 4.0).



Abstract: Introduction: Changes in the oral microbiota, as a result of poor hygiene, can lead to local and systemic problems which can lead to a reduction in the patient's quality of life. In this sense, this systematic literature review aims to understand how risk factors intensify this problem. Method: A systematic review of the databases was carried out: google academic, pubmed and virtual health library (VHL). The key words used were "oral health", "oral hygiene", "immunology", "microbiota" and "periodontal diseases" to select the 13 articles analyzed. **Discussion:** Oral health is important to promote quality of life for the individual and its deficiency causes negative changes in different spheres of the individual's life, as well as predisposing systemic diseases with the potential to cause impairment of general functions and death. Therefore, it is valid to understand the determining processes in periodontal health and disease and analyze modifiable/avoidable risk factors such as smoking, chronic emotional stress, the impact of the pandemic resulting from Covid-19, the Human Immunodeficiency Virus (HIV) and use of legal and illegal substances. **Conclusion:** Given the analyzes carried out on the aforementioned risk factors, they appear to be determinants for the intensification of the health-disease process due to their potential to damage the oral microbiota and harm periodontal health. Furthermore, when altered, it has the capacity to cause negative effects on the individual's life. This way, maintaining periodontal health is a mechanism for promoting quality of life. **Keywords:** Oral health; oral hygiene; immunology; microbiota; periodontal diseases.

INTRODUCTION

The oral cavity is inhabited by various microorganisms. These populations are regulated by the acidity, humidity, supply of organic matter and immunity of the occupied oral cavity. (1) All of these aspects mentioned can be mediated by the individual's eating habits and oral hygiene, maintaining the oral environment in stable conditions and, thus, not causing harm to the host of these organisms. (2)

Some systemic diseases can result in an imbalance of the oral microbiota, such as diabetes, cirrhosis, hepatocellular carcinoma, among others. Furthermore, imbalances in the diet can result in losses such as changes in the ideal conditions of the oral cavity for the survival of the microbiota. (3) Bad personal oral hygiene habits, together with bad eating habits, also cause damage to immunity, for example, in prolonged and untreated cases of cavities that lead to diseases, such as pulpitis, which is the inflammatory process of the tooth pulp. (3)(4)

Oral hygiene is essential, as its deficiency leads to an increase in pathogenic microorganisms, presenting a lingual biofilm, which can cause infections in other parts of the body. This is due to the existence of a resident microbiota, made up of around 700 species of microorganisms, which participates in the development of the immune system. (1) (5)

Without oral hygiene, one may be predisposed to oral dysfunctions that affect the gastrointestinal system and disrupt the patient's quality of life. (6) To give an example of the importance of hygiene, hospital practice is observed in which the use of a tongue cleaner, in addition to other accessory hygiene tools, is observed in patients under mechanical ventilation, resulting in the reduction of biofilm lingual and, consequently, other pathologies. (7)

The general objective of this literature review is to understand how some risk factors contribute to poor oral hygiene and, consequently, alter the oral microbiota and the immune system, resulting in periodontal comorbidities. The risk factors to be discussed include smoking, chronic emotional stress, the impact of the pandemic resulting from Covid-19, Human Immunodeficiency Virus (HIV) and the use of legal and illicit substances.

METHODOLOGY

This work consists of a systematic literature review, containing the analysis of 13 bibliographies. For this, the following databases were used: google academic, pubmed and virtual health library (VHL). The key words used to search for articles were “oral health”, “oral hygiene”, “immunology”, “oral microbiota” and “periodontal diseases”, which were duly verified in the DECS/MESH descriptors. Among the articles, 8 are recent, having been published between 2021 and 2022, and 5 are from periods prior to 2021.

DISCUSSION

It is known that oral health is essential to guarantee a good quality of life, since oral conditions interfere in different spheres of daily life, such as nutrition, social interaction and sleep hygiene, influencing the health and disease process, a since poor oral health predisposes to depression, dementia, pneumonia and other systemic diseases that can eventually lead to impairment of general functions and death. (6)

Therefore, it is important to understand that there is an influence of factors that determine the process of periodontal health and disease, such as nutrition, drug use, stress, oral hygiene, socioeconomic status, access to health services, presence of biological entities that determine the composition of the oral

biofilm, activity of the immune system in the individual's oral mucosa and genetic predisposition. (8)

It is important to highlight that many of the risk factors are avoidable/modifiable, exemplified by smoking, which is one of the main causes of deaths, according to the World Health Organization (WHO). (9) Through tobacco by-products, there are changes in oral immunology, such as a greater effect on the formation of plaques by bacterial microorganisms due to periodontal tissues being more susceptible to their actions, as well as interference in tissue healing and possible inflammation or damage to the oral cavity. (9) Consequences of a certain risk are the appearance of stains on the teeth, dysgeusia, reduced salivary flow, periodontitis, stomatitis and bad breath. (9)

Another associated factor, which is currently very evident, corresponds to emotional stress, which has a strong relationship with an imbalance in oral health. This, in turn, in addition to also leading to periodontal diseases, also results in temporomandibular disorders, geographic tongue, aphthous ulcers and herpes simplex. Its psychosomatic origin means that, along with chronic stress, other diagnoses appear, such as depression, conditions that are similar in their pathophysiology: unregulated secretion of the hormone cortisol. (10) The increase in cases of both diagnoses, mainly in 2020 and 2021, correlates with the impact of the pandemic on the lives of the population, resulting from Covid-19. (11)

During the pandemic, in addition to the emotional stress factor, this contributed to the reduction in dental appointments, even more so as it is one of the ways the virus is transmitted. This way, it is emphasized how compromised oral health has been, which contributes to the appearance of several diseases already mentioned above. (11)

Furthermore, it is also worth remembering the oral lesions that are directly linked to the pathophysiological process of the acquired immunodeficiency virus (HIV). It is known that once the virus is installed in the body, a process of aggression against the immune system begins, which makes the body vulnerable to infections and opportunistic diseases, due to the established immunosuppression, which generates Acquired Immunodeficiency Syndrome. (AIDS), a serious pathology that can lead to death. Some oral lesions found in patients with HIV are oral candidiasis, hairy leukoplakia, non-Hodgkin's lymphoma, necrotizing ulcerative periodontitis, among others. (12)

A final factor of great social importance in which oral health is compromised is due to the use of legal and illicit substances (drugs), which, in addition to causing systemic changes in the individual's body, cause degeneration of oral tissues as they are used. by the user, which leads to xerostomia, reduced salivary flow, bruxism, halitosis, tooth loss, stomatitis, angular cheilitis and other diseases. (13)

It is noteworthy that oral health is directly

linked to the individual's general health, and even has the capacity to intensify systemic diseases, as well as present their clinical conditions. Therefore, maintaining oral health is essential to prevent the patient from developing infectious processes and serious pathologies. (13)

CONCLUSION

Given the above, the risk factors analyzed, including smoking, chronic emotional stress, the impact of the pandemic resulting from Covid-19, the Human Immunodeficiency Virus (HIV) and use of legal and illicit substances, have the potential to affect negatively affect periodontal health. And this, when altered, has negative effects on eating, socializing and sleeping, as well as intensifying the health-disease process and causes local and systemic problems, which have the potential to cause harm to the individual and death. This way, maintaining oral health and controlling risk factors are determining factors for promoting quality of life for individuals.

REFERENCES

1. Pathak JL, Yan Y, Zhang Q, Wang L, Ge L. The role of oral microbiome in respiratory health and diseases. *Respir Med* [Internet]. 2021 ago 1 [citado 2022 nov 23];185. Available from: <http://www.resmedjournal.com/article/S0954611121001815/fulltext>
2. Zaura E, Nicu EA, Krom BP, Keijser BJE. Acquiring and maintaining a normal oral microbiome: Current perspective. Vol. 4, *Frontiers in Cellular and Infection Microbiology*. Frontiers Media S.A.; 2014.
3. M. Cintoni1 ERFSGIFFMCMAG. The oral microbiota in oral and systemic diseases. *Microb Health Dis* 2019; 1: e209.
4. Aguda -Etiologia P, Tratamento D. Pulpite aguda: etiologia, diagnóstico e tratamento. 2017 jul 17 [citado 2022 nov 23]; Available from: <https://bdigital.ufp.pt/handle/10284/6314>
5. LUÍSA PAOLA DA SILVA FERREIRA. Protocolo de higienização bucal em pacientes portadores de doenças crônicas domiciliadas: uma abordagem interdisciplinar. [citado 2022 nov 23]; Available from: <https://tede2.uepg.br/jspui/handle/prefix/3132>
6. Aida J, Takeuchi K, Furuta M, Ito K, Kabasawa Y, Tsakos G. Burden of Oral Diseases and Access to Oral Care in an Ageing Society. *Int Dent J*. 2022 ago 1;72(4):S5–11.
7. da Silva Santos PS, Mariano M, Kallas MS, Vilela MCN. Impacto da remoção de biofilme lingual em pacientes sob ventilação mecânica. *Rev Bras Ter Intensiva* [Internet]. 2013 [citado 2022 nov 23];25(1):44–8. Available from: <http://www.scielo.br/j/rbti/a/xt5bnwJVqhHnz9zcgMMkgxD/abstract/?lang=pt>
8. Seizer L, Schubert C. On the Role of Psychoneuroimmunology in Oral Medicine. *Int Dent J*. 2022 dez 1;72(6):765–72.
9. Fontanelli ML, Simonato LE. COMO O TABAGISMO PODE INFLUENCIAR NA SAÚDE BUCAL, DOENÇA PERIODONTAL E CÂNCER BUCAL. *Revista Ibero-Americana de Humanidades, Ciências e Educação* [Internet]. 2022 out 31 [citado 2022 nov 21];8(10):938–45. Available from: <https://www.periodicorease.pro.br/rease/article/view/7170>
10. Almeida RS de, Guimarães J de L, Almeida JZ de. ESTRESSE EMOCIONAL E SUA INFLUÊNCIA NA SAÚDE BUCAL | *DêCiência em Foco* [Internet]. [citado 2022 nov 21]. Available from: <https://revistas.uninorteac.com.br/index.php/DeCienciaemFoco0/article/view/148>
11. dos Santos MFB, Pires ALC, Saporiti JM, Kinalski MDA, Marchini L. Impact of COVID-19 pandemic on oral health procedures provided by the Brazilian public health system: COVID-19 and oral health in Brazil. *Health Policy Technol*. 2021 mar 1;10(1):135–42.
12. Vasconcelos J de J, Orsolin PC, Carvalho T de A. View of Oral health education for people living with HIV/AIDS: is there evidence in the literature? [Internet]. [citado 2022 nov 21]. Available from: <https://rsdjournal.org/index.php/rsd/article/view/36253/30248>
13. Bontempo M de S, Andrade CM de O. View of Oral changes due to drug consumption: a review of the Literature [Internet]. [citado 2022 nov 21]. Available from: <https://rsdjournal.org/index.php/rsd/article/view/36779/30535>