

Main Oral Lesions in Critically Care Patients: A Literature Review

Principais Lesões Orais em Pacientes Críticos: Uma Revisão de Literatura

Principales Lesiones Orales en Pacientes Críticos: Una Revisión de la Literatura

RESUMO

Objetivo: Analisar, por meio de revisão de literatura, as principais lesões orais encontradas em pacientes internados em Unidades de Terapia Intensiva (UTI) e sua relação com complicações sistêmicas, especialmente a pneumonia associada à ventilação mecânica. **Método:** Trata-se de uma revisão de literatura, realizada a partir de estudos publicados entre 2012 e 2024, indexados nas bases de dados Google Acadêmico e PubMed, utilizando os descritores terapia intensiva, lesões orais e odontologia. Foram incluídas publicações sem restrição de idioma, diretamente relacionadas ao tema e com metodologia claramente descrita, sendo excluídos estudos fora do escopo proposto ou com inconsistências metodológicas. **Resultados:** As lesões orais mais frequentes em pacientes internados em UTI incluem candidíase, mucosite, gengivite, periodontite e úlceras traumáticas. Esses quadros são frequentemente agravados por fatores como imunossupressão, uso prolongado de antibióticos, ventilação mecânica e higiene oral inadequada. A anatomia e fisiologia da cavidade oral influenciam diretamente o aparecimento dessas patologias. Observou-se também que a presença de um cirurgião-dentista na equipe multiprofissional contribui para a detecção precoce, prevenção e manejo adequado dessas lesões. **Conclusão:** A saúde bucal de pacientes em UTI permanece subvalorizada, apesar de sua influência significativa na evolução clínica e no prognóstico. A inclusão efetiva do cirurgião-dentista nos protocolos de cuidado intensivo é fundamental para reduzir morbidade e mortalidade, além de favorecer a implementação de diretrizes mais eficientes para a promoção da saúde bucal nesse contexto.

DESCRIPTORES: Terapia intensiva. Lesões orais. Pacientes críticos. Odontologia hospitalar.

ABSTRACT

Objective: To analyze, through a literature review, the main oral lesions found in patients hospitalized in Intensive Care Units (ICUs) and their relationship with systemic complications, especially ventilator-associated pneumonia. **Method:** This study consists of a literature review based on studies published between 2012 and 2024, indexed in the Google Scholar and PubMed databases, using the descriptors intensive care, oral lesions, and dentistry. Publications without language restrictions, directly related to the topic and with clearly described methodology were included, while studies outside the proposed scope or with methodological inconsistencies were excluded. **Results:** The most frequent oral lesions in ICU patients include candidiasis, mucositis, gingivitis, periodontitis, and traumatic ulcers. These conditions are often exacerbated by factors such as immunosuppression, prolonged use of antibiotics, mechanical ventilation, and inadequate oral hygiene. The anatomy and physiology of the oral cavity directly influence the development of these pathologies. It was also observed that the presence of a dentist in the multidisciplinary team contributes to early detection, prevention, and appropriate management of these lesions. **Conclusion:** Oral health in ICU patients remains undervalued, despite its significant influence on clinical outcomes and prognosis. The effective inclusion of dentists in intensive care protocols is essential to reduce morbidity and mortality, as well as to promote the implementation of more efficient guidelines for oral health promotion in this context.

DESCRIPTORS: Intensive care. Oral lesions. Critically ill patients. Hospital dentistry.

RESUMEN

Objetivo: Analizar, mediante una revisión de la literatura, las principales lesiones orales encontradas en pacientes hospitalizados en Unidades de Cuidados Intensivos (UCI) y su relación con complicaciones sistémicas, especialmente la neumonía asociada a la ventilación mecánica. **Método:** Se trata de una revisión de la literatura, realizada a partir de estudios publicados entre 2012 y 2024, indexados en las bases de datos Google Académico y PubMed, utilizando los descriptores terapia intensiva, lesiones orales y odontología. Se incluyeron publicaciones sin restricción de idioma, directamente relacionadas con el tema y con metodología claramente descrita, excluyéndose los estudios fuera del

alcance propuesto o con inconsistencias metodológicas. **Resultados:** Las lesiones orales más frecuentes en pacientes hospitalizados en UCI incluyen candidiasis, mucositis, gingivitis, periodontitis y úlceras traumáticas. Estas condiciones se ven frecuentemente agravadas por factores como la inmunosupresión, el uso prolongado de antibióticos, la ventilación mecánica y la higiene oral inadecuada. La anatomía y la fisiología de la cavidad oral influyen directamente en la aparición de estas patologías. También se observó que la presencia de un cirujano dentista en el equipo multiprofesional contribuye a la detección precoz, prevención y manejo adecuado de estas lesiones. **Conclusión:** La salud bucal de los pacientes en UCI continúa siendo subvalorada, a pesar de su influencia significativa en la evolución clínica y en el pronóstico. La inclusión efectiva del cirujano dentista en los protocolos de cuidados intensivos es fundamental para reducir la morbilidad y la mortalidad, además de favorecer la implementación de directrices más eficientes para la promoción de la salud bucal en este contexto.

DESCRIPTORES: Terapia intensiva. Lesiones orales. Pacientes críticos. Odontología hospitalaria.

RECEIVED: 10/21/2025 APPROVED: 11/07/2025

How to cite this article: Reis KB, Magalhães MCM, Queiroz CDS, Silva LM, Cruvinel GS, Rodrigues IM, Cardoso LKF, Arantes APF. Main Oral Lesions in Critically Ill Patients: A Literature Review. *Saúde Coletiva (Brazilian Edition)* [Internet]. 2026 [cited year month day];17(104):19024-19035. Available from: DOI: 10.36489/saudecoletiva.2026v17i104p19024-19035

Kayllainy Bernardes Reis
Undergraduate student in Dentistry, University of Rio Verde (UNIRV)
ORCID: <https://orcid.org/0009-0009-4975-2063>

Maria Cecília Monteiro Marques Magalhães
Dental Surgeon, Master's Degree in Integrated Clinical Practice from the (UFU), Doctorate in Integrated Clinical Practice from the (UFU), Postdoctoral Student in the Graduate Program in Dentistry at the Federal University of Uberlândia
ORCID: <https://orcid.org/0000-0003-1219-7990>

Carlos Deyver de Souza Queiroz
DENTAL surgeon, Master's degree in Periodontics from the University Center of the Barretos Educational Foundation, Adjunct Professor III at the UniRV School of Dentistry, teaching Oral Histology, Oral Pathology, and Semiology, Professor in the UniCerrado Dentistry Program - Subjects Oral Histology and Semiology
ORCID: <https://orcid.org/0000-0003-2970-8187>

Laryssa Martins Silva
Undergraduate student in Dentistry, University of

Rio Verde (UNIRV)
ORCID: <https://orcid.org/0009-0009-4975-2063>

Gabriela Silva Cruvinel
Undergraduate student in Dentistry, University of Rio Verde (UNIRV)
ORCID: <https://orcid.org/0009-0009-2838-3756>

Isabella Mileny Rodrigues
Graduanda em Odontologia, Universidade de Rio Verde (UNIRV)
ORCID: <https://orcid.org/0009-0000-2496-9973>

Laryssa Kárita Freitas Cardoso
Undergraduate student in Dentistry, University of Rio Verde (UNIRV)
ORCID: <https://orcid.org/0009-0002-2263-8622>

Ana Paula Felix Arantes
Physical Therapist, Master's Degree in Environmental Sciences and Health (PUC-GO), Doctoral Student in Human Movement and Rehabilitation (UnivEvangélica). Professor at the University of Rio Verde, Goiás
ORCID: <https://orcid.org/0000-0002-7147-7346>

INTRODUCTION

Oral health plays a key role in maintaining overall health and is especially important for patients admitted to intensive care units (ICUs). Studies indicate that

critically ill patients often experience systemic complications due to their clinical condition and prolonged stay in the hospital environment, and the oral health of these patients is often neglected, which can result in the development of oral lesions⁽¹⁾.

Patients admitted to the ICU are particularly vulnerable to various changes in oral health, including mucositis, oral candidiasis, periodontitis, and halitosis. The literature suggests that these conditions not only cause discomfort and compromise quality

of life, but also increase the risk of serious clinical complications, such as nosocomial pneumonia and bacteremia⁽²⁾. These infections can be exacerbated by the presence of dental biofilm and bacterial colonization in the oral cavity, factors that are often neglected in intensive hospital care.

Despite growing evidence on the importance of oral health in ICUs, there are still significant gaps in knowledge about the prevalence, severity, and risk factors associated with oral lesions in these patients⁽³⁾. Some studies have sought to assess the interrelationship between oral lesions and respiratory complications, reinforcing the need for more effective protocols for dental management in the hospital setting⁽⁴⁾.

These conditions can negatively impact the patient's overall health, increasing the risk of systemic infections and prolonging hospitalization. Thus, understanding the main oral lesions in critically ill patients and their relationship with clinical outcomes is essential to improve hospital dental care protocols and optimize the prognosis of these individuals. Further scientific research on this topic can provide input for the development of more effective guidelines, contributing to improved quality of care and reduced morbidity and mortality rates in these patients⁽⁵⁾.

This literature review analyzed the main oral lesions found in critically ill hospitalized patients and their implications for the general health and prognosis of critically ill patients. Review the anatomy of the oral cavity and stomatognathic system. Identify and discuss the main oral lesions reported in the literature in critically ill patients during hospitalization in intensive care units. Verify the factors associated with the main oral lesions in critically ill patients. Investigate methods of prevention and management of oral lesions in critically ill patients.

METHOD

This study was conducted through a literature review carried out at the University of Rio Verde, covering the period between 2012 and 2024. The bibliographic survey was conducted based on a search for scientific articles, books, doctoral theses, and master's dissertations indexed in the Google Scholar and PubMed databases, using the keywords "intensive care," "oral injuries," and "dentistry."

Studies published within the established period were included, without language restrictions, that were directly related to the proposed theme and had a clearly described methodology. Studies that did not fit the emphasized theme or that lacked methodological clarity were excluded. The selected studies were analyzed prior to their inclusion to ensure the consistency and reliability of the data obtained.

LITERATURE REVIEW

The oral cavity, also known as the mouth, performs essential functions in the human body, acting at the beginning of the digestive process through chewing and salivation, as well as in speech and breathing⁽⁶⁾. The anatomical delimitation of the oral cavity begins at the labial mucosa and extends to the hard palate, which belongs to the oral cavity, while the soft palate is inserted into the pharynx. The tongue is divided between its oral portion and its base, located in the pharynx⁽⁷⁾.

Oral anatomy has unique characteristics, such as the presence of hard tissues represented by teeth, which serve as surfaces for the formation of bacterial biofilm. In contrast, the mucosal surfaces of the oral cavity undergo continuous cell renewal, hindering permanent bacterial colonization⁽⁶⁾. The oral mucosa can be classified as masticatory and non-masticatory.

The former, composed of stratified keratinized squamous epithelium, covers regions subject to friction, such as the gums and hard palate. The non-masticatory mucosa, in turn, is predominantly non-keratinized and is located in the jugal, labial, and floor mucosa floor of mouth. In response to traumas, non-neoplastic hyperkeratinization may occur⁽⁸⁾. non-neoplastic hyperkeratinization may occur⁽⁸⁾.

Teeth, hard calcified structures, play a fundamental role in the oral cavity. Human dentition undergoes changes throughout life, beginning with the eruption of deciduous teeth around six months of age and the transition to permanent dentition between six and twenty years of age⁽⁷⁾.

Another essential component of the oral cavity is saliva, which is produced in the major and minor salivary glands. Salivary secretion, which can vary between one and two liters per day, contains essential elements for digestion and maintenance of the oral microbiota, including water, electrolytes, mucins, immunoglobulin A (IgA), and antibacterial enzymes⁽⁶⁾.

Main Pathological Lesions of the Oral Cavity

The oral cavity is subject to various pathological changes, which can have different origins, including physical trauma, viral, bacterial, or fungal infections, as well as autoimmune diseases and environmental factors such as smoking and excessive alcohol consumption⁽⁹⁾. Among the main pathological conditions, the following stand out (Table 1):

- **Xerostomia:** characterized by reduced salivary production, leading to symptoms such as dry mouth and difficulty swallowing. It is associated with autoimmune diseases and the use of medications⁽¹⁰⁾.
- **Recurrent aphthous ulcer:** characterized by the appearance of painful ulcerated lesions in the oral mucosa, with multifactorial origin

and palliative treatment ⁽¹¹⁾.

• **Oral candidiasis:** opportunistic fungal infection caused by *Candida* spp., often associated with immunosuppression, prolonged use of antibiotics, or dental prostheses ⁽¹²⁾. Oral candidiasis can be classified into three main clinical groups. Type 1 (localized primary lesions) comprises forms restricted to the oral cavity, subdivided into acute, pseudomembranous, acute erythematous, and chronic, including chronic erythematous, chronic hyperplastic, and chronic pseudomembranous. These lesions range from easily removable whitish plaques to painful erythematous areas and persistent adherent white plaques ⁽¹³⁾. Type 2 (lesions associated with *Candida*) covers

conditions in which the fungus acts as a contributing factor, such as prosthetic stomatitis, angular cheilitis, median rhomboid glossitis, and linear gingival erythema, often related to local factors such as prolonged use of prostheses and poor hygiene ⁽¹⁴⁾. Type 3 (secondary or mucocutaneous lesions) corresponds to oral candidiasis as part of systemic diseases, including chronic mucocutaneous candidiasis and infections in patients with immunodeficiency, diabetes, or prolonged use of immunosuppressants, in which there is persistence and spread of the infection ^(15,16). This classification, currently accepted in recent clinical reviews, allows the clinical aspect to be correlated with the patient's immune

status and more effective therapeutic strategies to be targeted.

• **Gingivitis and Periodontitis:** resulting from the accumulation of bacterial biofilm, they trigger an inflammatory response that can lead to the destruction of the periodontium, compromising the dental structure ⁽¹⁷⁾.

• **Viral Lesions:** include manifestations of herpes simplex, oral warts caused by HPV, and oral manifestations of varicella-zoster ⁽¹⁸⁾.

• **Systemic Infections:** certain systemic pathologies may present oral signs, including opportunistic fungal infections and hematological manifestations ⁽¹⁹⁾.

Table 1: Main Pathological Lesions of the Oral Cavity

Pathological Lesion	Etiology / Associated Factors	Clinical Characteristics	Management / Treatment	References
Xerostomia	Autoimmune diseases, medication use	Dry mouth, burning sensation	Salivary stimulation, artificial saliva	(20)
Recurrent Aphthous Ulcer	Immunological factors, trauma, nutritional deficiencies	Recurrent painful ulcerated lesions	Topical analgesics, corticosteroids	(21)
Oral Candidiasis Type 1	<i>Candida albicans</i> ; immunosuppression	Removable white lesions, erythematous areas	Topical antifungals	(22)
Oral Candidiasis Type 2	Local factors, poorly cleaned dentures	Denture stomatitis, angular cheilitis	Topical antifungals, oral hygiene	(23)
Oral Candidiasis Type 3	Systemic diseases, immunodeficiency	Persistent and disseminated lesions	Systemic antifungals	(24) (25)
Gingivitis and Periodontitis	Bacterial biofilm	Reddened gums, bleeding	Scaling, biofilm control	(26)
Viral Lesions	Herpes simplex, HPV, Varicella-zoster	Vesicles, ulcers, warts	Antivirals (acyclovir)	(27)
Systemic Infections with oral manifestations	Hematological disorders, immunosuppression	Ulcerated lesions, tissue necrosis	Treatment of the systemic disease and dental support	(28)

Source: own elaboration

Evaluation of Pathological Lesions in the Oral Cavity

The evaluation of oral lesions by the dentist is essential for early diagnosis and the choice of appropriate treatment. The clinical examination should include a thorough visual inspection, palpation, and detailed

medical history to identify predisposing factors. In suspicious cases, additional tests, such as histopathology, imaging, and laboratory tests, may be necessary for diagnostic confirmation ⁽²¹⁾.

Early identification is essential for a favorable prognosis of diseases such as oral cancer and leukoplakia. The

presence of chronic lesions requires continuous monitoring to avoid complications and allow for the adjustment of therapeutic approaches ⁽²⁰⁾. Patient education also plays an essential role in the prevention of oral diseases by promoting healthy habits and proper oral hygiene ⁽²⁹⁾.

Interdisciplinary follow-up is rec-

ommended in cases of oral diseases associated with systemic conditions, ensuring a comprehensive therapeutic approach⁽³⁰⁾. Thus, clinical evaluation and continuous monitoring of pathological lesions in the oral cavity are fundamental for maintaining oral health and the patient's overall well-being.

Factors associated with oral lesions in critically ill patients

Patients admitted to intensive care units (ICUs), especially those undergoing mechanical ventilation, are more prone to developing oral lesions due to several intrinsic and extrinsic factors. Prolonged use of orotracheal or nasotracheal tubes can cause direct mechanical trauma to the oral mucosa, such as pressure ulcers on the lips, cheeks, palate, and tongue, due to constant friction between the tube and soft tissues. These lesions can be aggravated by patient immobilization and lack of conscious sensitivity to report discomfort^(22,8).

In addition to traumatic ulcers, there is a high incidence of opportunistic infections, such as oral candidiasis, favored by immunosuppression, the use of broad-spectrum antibiotics, and xerostomia induced by sedatives and dry oxygen ventilation. Mucositis is also common, characterized by inflammation and severe pain in the oral mucosa, which can further compromise the patient's overall health, making oral feeding difficult when possible^(14,25).

Another relevant aspect is the formation of dental biofilm and its colonization by respiratory pathogens. Inadequate or absent oral hygiene in these patients creates an environment conducive to the development of potentially pathogenic microorganisms, which can migrate to the lower respiratory tract, being a risk factor for ventilator-associated pneumonia (VAP), one of the most frequent hospital infections with high mortality

^(13,21). Periodontal lesions, gingivitis, and gingival bleeding are frequently observed, aggravating the clinical picture and requiring constant monitoring.

Importance of the dentist in the multidisciplinary team and in the application of oral hygiene protocols in ICUs

The presence of the dental surgeon in the multidisciplinary ICU team has proven essential in the early identification of these changes, as well as in the implementation of effective oral hygiene protocols.

The implementation of standardized oral hygiene protocols in intensive care units (ICUs), with the participation of the dentist, is essential for reducing oral lesions, preventing lacerations, and controlling respiratory infections, especially ventilator-associated pneumonia (VAP). Such protocols include mechanical brushing with soft brushes, use of chlorhexidine-based antiseptics (0.12%–0.2%), mucosal hydration, tongue cleaning, and biofilm removal. In addition to reducing microbial colonization by respiratory pathogens, these measures contribute to the prevention of oral ulcers and lacerations caused by orotracheal devices and prolonged intubation^(21,22). Studies indicate that the systematic adoption of these care measures is associated with a reduction in the incidence of VAP, shorter hospital stays, and better clinical outcomes⁽³²⁾.

The presence of a dentist in the multidisciplinary team is crucial for the continuous assessment of the oral cavity, the management of complications, and the adaptation of protocols to the systemic conditions of each patient, reinforcing their essential role in promoting the safety and recovery of critically ill patients⁽³⁰⁾. Studies indicate that dental care directly contributes to the reduction of oral lesions and systemic complications, such as VAP, promoting faster and safer re-

covery of critically ill patients^(22, 31). Thus, oral health care in the hospital environment is an extremely important factor in maintaining mucosal integrity and controlling infections associated with mechanical ventilation.

CONCLUSION

Throughout this study, it was possible to understand the importance of oral health in the hospital setting, especially in patients admitted to intensive care units (ICUs). Through a review of the literature, it became clear that oral lesions, such as candidiasis, mucositis, gingivitis, periodontitis, and traumatic ulcers, are common in these patients and may be directly related to factors such as immunosuppression, prolonged mechanical ventilation, medication use, and inadequate oral hygiene.

These conditions, often ignored, can aggravate the patient's clinical condition, increasing the risk of systemic complications, such as ventilator-associated pneumonia, which is one of the leading causes of hospital infection. Given this, the presence of a dentist in the multidisciplinary ICU team is essential to ensure more comprehensive, humane, and safe care.

It is concluded that oral health should be seen as an integral part of hospital treatment and not as a secondary aspect. Healthcare institutions need to recognize this need and effectively include dentists in intensive care routines, with well-defined protocols based on scientific evidence. Simple measures and joint action can significantly improve the prognosis of critically ill patients, reducing complications and length of stay and contributing to a faster and more effective recovery.

REFERENCES

1. Vieira L, Moreira R, Seroli E. Complicações sistêmicas relacionadas à saúde bucal em pacientes críticos. *J Bras Ter Intensiva*. 2024;35(1):12-20.
2. Souza Alves M. Saúde bucal em pacientes internados: impacto e prevenção. *Rev Saúde Hosp*. 2023;18(3):45-53.
3. Vencedor S, Lima A, Carvalho P, et al. Prevalência e fatores associados às lesões orais em UTIs. *Int J Clin Med*. 2021;10(2):110-118.
4. Jun K, Park J, Lee S. Relação entre lesões orais e complicações respiratórias em UTIs. *Respir Med J*. 2021;15(4):223-231.
5. Fiorillo L. A importância da saúde bucal no prognóstico hospitalar. *Oral Health Rev*. 2019;7(1):33-41.
6. Tuominen R. Anatomia e fisiologia da cavidade oral. *Anat Clin*. 2021;29(1):5-14.
7. Henry P. Estrutura e função da cavidade oral. *Estomatologia Contemp*. 2023;11(2):98-105.
8. Madeira L. Mucosa oral: características e respostas ao trauma. *Histol Histopathol*. 2012;27(9):1175-1182.
9. Meneses M, Silva R, Torres J. Alterações patológicas na cavidade oral. *Odonto Ciência*. 2022;37(1):78-85.
10. Tanasiewicz M, Hildebrandt T, Obersztyń I. Xerostomia e suas implicações clínicas. *Oral Dis*. 2016;22(3):345-352.
11. Sánchez-Bernal C, Rodríguez M, López F. Úlcera aftosa recorrente: etiologia e manejo clínico. *Rev Odontol Mex*. 2020;24(2):101-107.
12. Arya S, Naureen S. Candidíase oral: classificação e tratamento. *Mycoses*. 2023;66(5):437-445.
13. Cannon R, Chaffin K, Harrison J. Tipos clínicos da candidíase oral. *J Oral Pathol Med*. 2021;50(7):672-679.
14. Lu W. Características clínicas da candidíase oral. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2021;132(3):283-290.
15. Zamil F, Rosen R. Estomatite protética e lesões associadas à *Candida*. *J Prosthodont Res*. 2024;68(1):44-52.
16. Keyvanfar M, Ardekani MS, Khosravi AR. Candidíase mucocutânea crônica: aspectos clínicos. *Clin Microbiol Rev*. 2024;37(1):e00123-23.
17. Gulati M, Nobile CJ. *Candida albicans* biofilms and human disease. *Annu Rev Microbiol*. 2016;70:21-41.
18. Zini A, Delucchi A, Bianchi L. Gengivite e periodontite: epidemiologia e tratamento. *J Periodontol*. 2021;92(6):776-785.
19. Neville BW, Damm DD, Allen CM, Chi AC. *Oral & maxillofacial pathology*. 4th ed. Elsevier; 2016.
20. Lemont S, McDonald D, Harrell L. Manifestações orais de doenças sistêmicas. *Oral Dis*. 2019;25(5):1204-1211.
21. Gutierrez-Camacho C, Pérez-Martínez C, Rodríguez-Martínez R. Diagnóstico das lesões bucais: métodos clínicos e laboratoriais. *Int J Oral Med Sci*. 2022;20(2):88-95.
22. Souza J, Nascimento G, Yamashita L. Importância do cirurgião-dentista em UTIs. *Rev Odontol UNESP*. 2023;52:e20230034.
23. Ferreira Bello J. Abordagem interdisciplinar em saúde bucal. *Saúde Coletiva*. 2013;10(4):22-30.
24. Ortega C, Pérez D, González E. Lesões traumáticas em pacientes intubados. *Rev Bras Ter Intensiva*. 2015;27(3):277-283.
25. Fitzpatrick R, Cohen D, Clark J. Complicações orais em ventilação mecânica. *J Crit Care Med*. 2019;45(2):130-137.
26. Singh V, Kumar A, Sharma S. Mucosite oral em pacientes críticos. *Oral Oncol*. 2022;129:105821.
27. Soldani F, Sanna P, Conti C. Pneumonia associada à ventilação mecânica: fatores de risco. *J Hosp Infect*. 2018;100(2):152-158.
28. Lei Y, Chen H, Wang Y. Protocolos de higiene oral em UTIs. *Int J Nurs Stud*. 2023;145:104420.
29. Zhou Y, Liu Y, Li F. Uso de clorexidina na prevenção de infecções respiratórias. *Crit Care Med*. 2020;48(7):e581-e588.
30. Pinto R, Almeida A, Costa L. Impacto da higiene oral na incidência de PAV. *J Hosp Infect*. 2021;109:56-62.
31. Aric Journal. Higiene oral e desfechos clínicos em UTIs. *Aric J*. 2023;12(1):15-22.
32. Gomes F, Esteves A. Papel do cirurgião-dentista na equipe multiprofissional. *Rev Bras Odontol*. 2012;69(1):40-47.