

IMPACT OF HOSPITAL DENTISTRY ON THE ORAL HEALTH OF HOSPITALIZED PATIENTS

IMPACTO DA ODONTOLOGIA HOSPITALAR NA SAÚDE BUCAL DE PACIENTES HOSPITALIZADOS

IMPACTO DE LA ODONTOLOGÍA HOSPITALARIA EN LA SALUD BUCAL DE LOS PACIENTES HOSPITALIZADOS

Ismênia Edwirges Bernardes Marçal¹, Alberto Marçal Batista², Allyson Nogueira Moreira³,
Carolina Bosso André⁴, Monica Regina Pereira Senra Soares⁵

DOI: 10.54899/dcs.v23i92.6126

Recibido: 10/06/2026 | Aceptado: 03/07/2026 | Publicación en línea: 11/07/2026.

ABSTRACT

Cardiovascular diseases remain among the leading causes of hospitalization and mortality, making it essential to understand the relationship between systemic conditions and oral health in affected patients. This study characterized the epidemiological profile of individuals hospitalized at the Governador Valadares Municipal Hospital and evaluated their dental treatment needs, emphasizing the importance of hospital dentistry in comprehensive healthcare. A cross-sectional, observational, and quantitative design was adopted, involving 30 patients with cardiovascular diseases who underwent structured interviews and bedside intraoral examinations. The findings revealed a predominance of male patients, low educational attainment, and a substantial proportion of elderly individuals. Acute myocardial infarction was the most frequent cardiovascular condition, whereas arterial hypertension and diabetes mellitus represented the major associated comorbidities. Among dentate participants, high rates of dental biofilm, calculus, caries, gingivitis, and indications for tooth extraction were observed, reflecting considerable oral health impairment and limited access to preventive and restorative dental care. These results reinforce the close association between oral and systemic diseases, particularly within the cardiovascular context, and demonstrate that integrating dentists into multidisciplinary hospital teams may facilitate the early identification of infectious foci, the implementation of educational measures, and improvements in patients' quality of life. Hospital dentistry should therefore be regarded as a fundamental component of comprehensive healthcare and health promotion in hospital settings.

¹ Ph.D. candidate in Clinical Dentistry, Department of Restorative Dentistry, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brazil. E-mail: ismeniaedwirgesmg@hotmail.com

² Master of Science in Applied Health Sciences, Universidade Federal de Juiz de Fora, Governador Valadares, Minas Gerais, Brazil. E-mail: mbalberto92@gmail.com

³ Doctor of Dental Surgery, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brazil. E-mail: allysonnogueiradangelo@gmail.com

⁴ Ph.D. in Clinical Dentistry, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brazil. E-mail: carolina.bosso@gmail.com

⁵ Ph.D. in Health, Universidade Federal de Juiz de Fora, Governador Valadares, Minas Gerais, Brazil. E-mail: monica.pereira@ufjf.edu.br

Keywords: Dental Staff Hospital. Cardiovascular Diseases. Oral Hygiene.

RESUMO

As doenças cardiovasculares representam uma das principais causas de hospitalização e mortalidade, sendo fundamental compreender a relação entre as condições sistêmicas e a saúde bucal desses pacientes. Este estudo caracterizou o perfil epidemiológico de indivíduos internados no Hospital Municipal de Governador Valadares e avaliou suas necessidades odontológicas, destacando a relevância da odontologia hospitalar na promoção do cuidado integral. A pesquisa, de caráter observacional, transversal e quantitativo, incluiu 30 pacientes com doenças cardiovasculares, submetidos à aplicação de questionários estruturados e exames clínicos intraorais realizados à beira do leito. Os resultados evidenciaram predominância do sexo masculino, baixa escolaridade e elevada proporção de idosos. O infarto agudo do miocárdio foi a condição cardiovascular mais frequente, enquanto hipertensão arterial e diabetes mellitus destacaram-se entre as principais comorbidades associadas. Entre os pacientes dentados, observaram-se altas prevalências de biofilme dentário, cálculo, cárie, gengivite e necessidade de extrações, indicando importante comprometimento da saúde bucal e limitações no acesso a ações preventivas e restauradoras. Os achados reforçam a estreita relação entre doenças bucais e condições sistêmicas, especialmente no contexto cardiovascular, e demonstram que a inserção do cirurgião-dentista nas equipes multiprofissionais hospitalares pode contribuir para a identificação precoce de focos infecciosos, implementação de medidas educativas e melhoria da qualidade de vida dos pacientes. Dessa forma, a odontologia hospitalar configura-se como elemento essencial para a integralidade do cuidado e para a promoção da saúde em ambientes hospitalares.

Palavras-chave: Equipe Hospitalar de Odontologia. Doenças Cardiovasculares. Higiene Bucal.

RESUMEN

Las enfermedades cardiovasculares constituyen una de las principales causas de hospitalización y mortalidad, por lo que resulta fundamental comprender la relación entre las condiciones sistémicas y la salud bucal de estos pacientes. Este estudio caracterizó el perfil epidemiológico de los individuos hospitalizados en el Hospital Municipal de Governador Valadares y evaluó sus necesidades odontológicas, resaltando la importancia de la odontología hospitalaria en la atención integral de la salud. La investigación, de carácter observacional, transversal y cuantitativo, incluyó a 30 pacientes con enfermedades cardiovasculares sometidos a cuestionarios estructurados y exámenes clínicos intraorales realizados junto a la cama del paciente. Los resultados mostraron un predominio del sexo masculino, bajo nivel educativo y una elevada proporción de adultos mayores. El infarto agudo de miocardio fue la condición cardiovascular más frecuente, mientras que la hipertensión arterial y la diabetes mellitus fueron las principales comorbilidades asociadas. Entre los pacientes dentados se observaron altas prevalencias de biopelícula dental, cálculo, caries, gingivitis y necesidad de extracciones, lo que evidencia un importante deterioro de la salud bucal y limitaciones en el acceso a medidas preventivas y restauradoras. Los hallazgos refuerzan la estrecha relación entre las enfermedades bucales y sistémicas, especialmente en el contexto cardiovascular, y demuestran que la incorporación del odontólogo a los equipos hospitalarios multidisciplinarios favorece la identificación temprana de focos infecciosos, la implementación de acciones educativas y la mejora de la calidad de vida de los pacientes. En este sentido, la odontología hospitalaria constituye un componente esencial para garantizar la integralidad de la atención y la promoción de la salud en el ámbito hospitalario.

Palabras clave: Personal de Odontología en Hospital. Enfermedades Cardiovasculares. Higiene Bucal.



Esta obra está bajo una [Licencia Creative Commons Atribución- NoComercial 4.0 Internacional](https://creativecommons.org/licenses/by-nc/4.0/)

INTRODUCTION

Brazil has undergone a significant demographic transition over the past decades, characterized by increased life expectancy and population aging. Data from the 2022 Demographic Census showed that the population aged 65 years and older reached approximately 22.2 million individuals, corresponding to 10.9% of the Brazilian population and representing a 57.4% increase compared to 2010 (IBGE, 2024). This scenario poses new challenges to healthcare systems, particularly regarding the management of chronic non-communicable diseases, which become increasingly prevalent with advancing age.

Among the chronic conditions associated with population aging, cardiovascular diseases (CVDs) stand out as one of the leading causes of morbidity and mortality worldwide. Increased life expectancy, combined with prolonged exposure to risk factors over time, contributes to the rising incidence of these conditions among older adults. CVDs encompass a group of disorders affecting the heart and blood vessels and are associated with several risk factors, including arterial hypertension, diabetes mellitus, obesity, dyslipidemia, physical inactivity, smoking, and genetic predisposition (Machado *et al.*, 2004; World Health Organization, 2025). In Brazil, CVDs constitute a major cause of morbidity and mortality, generating substantial economic and social impacts due to the high demand for hospitalizations, multidisciplinary follow-up, and continuous treatment.

In this context, the comprehensiveness of healthcare delivery has become one of the greatest challenges in hospital care. The involvement of multidisciplinary teams enables the development of more comprehensive therapeutic strategies, promotes shared decision-making, and contributes to improving the quality of care provided to hospitalized patients (Silva *et al.*, 2023).

Furthermore, hospitalized patients frequently exhibit increased vulnerability to the development or worsening of oral disorders due to physical limitations, dependence on others for self-care, the use of multiple medications, reduced salivary flow, nutritional alterations, and

impairment of overall health status (Fernandes *et al.*, 2016; Santana & Vita, 2024). During hospitalization, oral hygiene may become inadequate, favoring the accumulation of biofilm, the development of dental caries, periodontal disease, opportunistic infections, and other oral conditions that may negatively affect clinical recovery and the quality of life of these patients (Pimentel *et al.*, 2025; Dos Santos *et al.*, 2025).

In this regard, Hospital Dentistry has assumed an increasingly important role in the prevention, diagnosis, and management of oral diseases among hospitalized patients, contributing to a more comprehensive and humanized approach to healthcare delivery (Oliveira *et al.*, 2025; Pimentel *et al.*, 2025).

Therefore, the present study aimed to characterize the epidemiological profile of patients with cardiovascular disease hospitalized in the wards of the Municipal Hospital of Governador Valadares (HMGV), to assess their oral health conditions and primary dental care needs, and to discuss the importance of hospital dental care within the context of comprehensive healthcare. Additionally, the study sought to investigate the relationship between the systemic and oral conditions observed in this population, providing evidence to support the development of interdisciplinary strategies aimed at health promotion and improving the quality of life of these patients.

THEORETICAL FRAMEWORK

Cardiovascular Diseases and Oral Health

The relationship between oral health and cardiovascular diseases has attracted increasing scientific interest over recent decades, particularly due to the recognition of periodontitis as a chronic inflammatory condition capable of exerting systemic effects. Although the association between these diseases was initially based on observational evidence, more recent studies have demonstrated plausible biological mechanisms supporting this relationship. Periodontitis is characterized by a persistent inflammatory response triggered by pathogenic microorganisms present in dental biofilm, promoting the destruction of the tooth-supporting tissues and the continuous release of inflammatory mediators into the systemic circulation (Sanz *et al.*, 2020).

Currently, consistent evidence indicates that individuals with periodontitis are at increased risk of developing atherosclerotic cardiovascular diseases, including acute myocardial infarction,

stroke, and coronary artery disease. The main mechanisms involved include the hematogenous dissemination of periodontopathogenic bacteria, increased low-grade systemic inflammation, endothelial dysfunction, and acceleration of the atherosclerotic process. Furthermore, bacterial components and inflammatory mediators produced during periodontal infection may contribute to the formation, progression, and instability of atherosclerotic plaques (Sanz *et al.*, 2020).

A comprehensive review published in 2024 concluded that a significant association exists between periodontal disease and cardiovascular diseases, although it emphasized that shared confounding factors, such as smoking, diabetes mellitus, obesity, and socioeconomic conditions, should still be considered when interpreting the findings. Despite these limitations, the body of evidence suggests that periodontitis may represent a potentially modifiable risk factor for cardiovascular events, highlighting the importance of periodontal disease prevention and treatment as part of broader health promotion strategies (Wang *et al.*, 2024).

In this context, the maintenance of oral health plays an important role in reducing the systemic inflammatory burden. Although definitive evidence demonstrating that periodontal treatment directly reduces the incidence of major cardiovascular events is still lacking, there is consensus that adequate oral hygiene and effective control of periodontal diseases should be incorporated into preventive measures for patients at increased cardiovascular risk (Sanz *et al.*, 2020).

Hospital Dentistry

Hospital Dentistry is a field dedicated to the promotion, prevention, diagnosis, and treatment of oral conditions in hospitalized patients, working in an integrated manner with multidisciplinary healthcare teams to maintain oral and systemic health and prevent complications that may affect clinical outcomes and quality of life (Silva *et al.*, 2022; Oliveira *et al.*, 2025).

Its development began in the nineteenth century in the United States through the pioneering work of Simon Hüllihen and James Garretson, with progressive expansion accompanying advances in comprehensive healthcare models (Aranega *et al.*, 2012). In Brazil, an important milestone was the publication of Federal Council of Dentistry Resolution No. 162/2015, which officially recognized certification in Hospital Dentistry and established guidelines for professional practice in hospital settings (Federal Council of Dentistry, 2015).

Although the National Curricular Guidelines advocate the training of generalist professionals capable of working at all levels of healthcare, the inclusion of Hospital Dentistry in undergraduate programs remains heterogeneous, resulting in different levels of professional preparedness (Brazil, 2021; Melo *et al.*, 2025).

The growing recognition of hospital dental care is supported by evidence demonstrating the relationship between oral and systemic health. Conditions such as dental biofilm, periodontal disease, odontogenic infections, mucosal lesions, and xerostomia may aggravate systemic diseases and increase the risk of hospital-acquired infections (Pimentel *et al.*, 2025; Oliveira *et al.*, 2025). Consequently, hospital dentists contribute not only through curative treatment but also by implementing preventive protocols, providing education, controlling infections, and monitoring oral conditions throughout hospitalization (Dos Santos *et al.*, 2025).

Studies have shown that systematic oral care reduces respiratory infections, antibiotic use, hospital costs, and improves patient safety indicators (Pimentel *et al.*, 2025; Dos Santos *et al.*, 2025). Multidisciplinary collaboration among healthcare professionals further strengthens comprehensive patient care, although challenges remain regarding the recognition of oral alterations and the integration of dentists into hospital teams (Lima *et al.*, 2020; Arruda *et al.*, 2024; Rocha and Ferreira, 2014; Silva *et al.*, 2020). Thus, Hospital Dentistry has become an essential component of contemporary healthcare, promoting prevention, early

Oral Health in Hospitalized Patients

Oral health is a fundamental component of overall health and quality of life, being directly associated with the physical, functional, and psychosocial well-being of individuals. In hospitalized patients, particularly those with physical limitations, systemic impairment, or partial or complete dependence on others for self-care, maintaining oral hygiene becomes an additional challenge, potentially favoring the development of oral alterations and systemic complications (Aguar *et al.*, 2010; Santana & Vita, 2024).

The oral cavity harbors a complex microbiota that, under conditions of imbalance, may act as a reservoir for potentially pathogenic microorganisms. Thus, neglecting oral hygiene during hospitalization promotes the accumulation of dental biofilm, the development of dental caries, periodontal disease, opportunistic infections, and other oral alterations that may negatively affect the patient's overall health status (Caldeira *et al.*, 2011; Dos Santos *et al.*, 2025).

In this context, daily oral hygiene constitutes the primary strategy for the prevention of oral diseases, as the regular mechanical removal of dental biofilm by the individual or by caregivers remains the most effective measure for maintaining periodontal health and preventing the progression of oral diseases (Zini *et al.*, 2021).

However, during hospitalization, many patients prioritize the treatment of the condition that led to their admission and consequently neglect oral healthcare. Furthermore, factors such as physical limitations, functional dependence, fatigue, pain, the use of multiple medications, and emotional disturbances may hinder or prevent the adequate performance of oral hygiene practices (Lima *et al.*, 2011).

Hospitalization itself may contribute to the deterioration of oral health. According to Pinheiro and Almeida (2014), hospitalization frequently causes abrupt changes in patients' routines and autonomy, affecting their ability to perform self-care. Additionally, several clinical and therapeutic conditions may promote mucosal dryness and reduced salivary flow, increasing bacterial colonization and elevating the risk of periodontal disease, mucosal lesions, and other infectious foci.

Given this scenario, the presence of a dentist within the multidisciplinary healthcare team has increasingly been recognized as an important strategy for health promotion and the prevention of complications in hospital settings. Lima *et al.* (2011) and Gaetti-Jardim *et al.* (2012) emphasized that dental care enables the development of preventive, educational, and therapeutic interventions, contributing to improvements in oral health conditions and, consequently, in patients' overall health status. Furthermore, it facilitates early diagnosis, specialized clinical follow-up, the request for complementary examinations when necessary, and the performance of dental procedures compatible with patients' systemic conditions (Aranega *et al.*, 2012; Oliveira *et al.*, 2025).

Within the context of hospital care, Gaetti-Jardim *et al.* (2012) highlighted the importance of integrating Dentistry with other healthcare disciplines, emphasizing its fundamental role in promoting comprehensive patient care. From this perspective, Guimarães *et al.* (2017) stressed that oral hygiene care should be incorporated into routine hospital practices, considering its contribution to infection prevention, morbidity reduction, and the facilitation of clinical recovery among hospitalized patients.

In recent years, scientific evidence has demonstrated that the implementation of standardized oral hygiene protocols may contribute to reducing hospital-acquired infections,

improving patient comfort, and decreasing the microbial burden of the oral cavity. Consequently, hospital dental care has been increasingly recognized as an essential component of comprehensive healthcare (Dos Santos *et al.*, 2025; Pimentel *et al.*, 2025).

Therefore, the development of permanent oral health education strategies, combined with the implementation of preventive protocols and the effective participation of dentists in multidisciplinary teams, is essential for promoting comprehensive healthcare and improving the quality of life of hospitalized patients (Aguar *et al.*, 2010; Santana & Vita, 2024; Pimentel *et al.*, 2025).

METHODOLOGY

This was an observational, cross-sectional study with a quantitative approach, approved by the Research Ethics Committee of the Federal University of Juiz de Fora (UFJF) under approval number 1.850.157 (UFJF-HU). All participants were informed about the objectives of the study and signed an Informed Consent Form (ICF), in accordance with the ethical principles established for research involving human subjects.

The sample consisted of 30 patients with cardiovascular diseases hospitalized in the wards of the Governador Valadares Municipal Hospital (HMGV), of whom nine were edentulous and 21 were dentate. Patients with cardiovascular diseases were included regardless of dental status, provided they had the cognitive and clinical capacity to respond to the questionnaires and participate in the proposed examinations. Intubated patients and those hospitalized in isolation wards or units with restricted access were excluded.

Participants were identified through an active search of hospitalized patients' medical records, allowing the collection of epidemiological and clinical information, as well as data regarding the main associated comorbidities. This stage was conducted by undergraduate students from the Dentistry and Medicine programs at the Federal University of Juiz de Fora – Governador Valadares Campus, who were members of the multidisciplinary ODONTOFASES Program (PROEXT 2015–2017).

Data collection was performed using a structured questionnaire containing sociodemographic information, including age, sex, marital status, and educational level, as well as data related to the type of cardiovascular disease, the presence of associated systemic diseases,

and aspects related to oral health. Oral hygiene habits, daily toothbrushing frequency, number of remaining teeth, and possible alterations in masticatory and phonetic functions were investigated.

Clinical dental assessment was performed at the bedside through a visual intraoral examination using a clinical mirror (Duflex) under the lighting conditions available in the hospital environment. The presence of clinically visible carious lesions, teeth with an apparent indication for extraction, pathological alterations of the soft tissues, and oral rehabilitation needs were recorded. Considering the limitations inherent to the hospital setting, no complementary radiographic examinations were performed. Therefore, the diagnosis of dental caries was based exclusively on visual clinical criteria, in accordance with recommendations in the literature, without the use of a dental explorer as a diagnostic method (Aranega *et al.*, 2012).

During the intraoral examination, the conditions of the soft tissues and oral structures were assessed, including the characteristics of the oral mucosa and the presence of erythema, nodules, abscesses, ulcers, spots, or white plaques. The tongue was examined for the presence of coating and fissures. Regarding the periodontal tissues, alterations such as gingivitis, hyperplasia, gingival recession, and purulent exudate were observed. Clinical indicators of oral health were evaluated in the dentition, including biofilm accumulation, dental calculus, tooth mobility, food debris, and halitosis.

Oral hygiene was assessed using the Simplified Oral Hygiene Index (OHI-S), according to the methodology proposed by Greene and Vermillion (1964). The analysis was performed on specific dental surfaces considered representative of overall oral hygiene conditions: the buccal surface of the maxillary right first molar, the buccal surface of the maxillary left first molar, the buccal surface of the maxillary right central incisor, the lingual surface of the mandibular left first molar, the lingual surface of the mandibular right first molar, and the buccal surface of the mandibular left central incisor. The presence of biofilm on these surfaces was used as an indicator of the individual's overall oral hygiene status (Last *et al.*, 1988).

The extraoral assessment included the observation of the presence or absence of angular cheilitis, lip ulcerations, lip dryness or desquamation, facial asymmetries, lymphadenopathy, and temporomandibular joint (TMJ) disorders. Information regarding the use of dental prostheses and the presence of pain symptoms related to the oral cavity was also recorded.

The collected data were organized into an electronic database using Microsoft Excel® software and subjected to descriptive statistical analysis. The results were expressed as absolute

and relative frequencies, allowing the characterization of the sociodemographic profile, systemic conditions, and oral health status of the study population.

RESULTS AND DISCUSSIONS

The oral health of hospitalized patients has received increasing attention in the scientific literature due to its influence on systemic conditions and clinical prognosis. In individuals with cardiovascular diseases, this relationship becomes even more relevant, since oral infections—especially periodontal diseases—may contribute to the maintenance of a systemic inflammatory state associated with the worsening of cardiovascular conditions (Sanz *et al.*, 2020; Zhou *et al.*, 2021).

Among the 30 patients with cardiovascular diseases evaluated, 30.0% resided in Governador Valadares, while the remainder came from surrounding municipalities, confirming the role of the Governador Valadares Municipal Hospital as a regional referral center for patients with cardiovascular conditions. A predominance of males (66.7%) was observed, with most participants being married (46.7%), presenting low educational attainment—60.0% had completed only elementary education—and a predominantly elderly age profile, with 40.0% being over 70 years of age (Table 1).

This profile is consistent with epidemiological studies on cardiovascular diseases in Brazil, which report a higher prevalence of these conditions among older male individuals with multiple risk factors and comorbidities (Malta *et al.*, 2022). Furthermore, the low educational level observed may represent an important social determinant associated with oral health conditions and access to dental care services.

Regarding the diagnosed cardiovascular conditions, acute myocardial infarction was the most prevalent (43.3%), followed by heart failure (16.7%), atherosclerosis (13.3%), and angina pectoris (13.3%). These findings reinforce the importance of investigating oral health conditions in this population, considering evidence linking chronic periodontal diseases to increased cardiovascular risk and progression of atherosclerosis (Sanz *et al.*, 2020; Sanghvi *et al.*, 2024).

Among dentate patients (n=21), a high prevalence of oral alterations was observed. Dental calculus was identified in 57.1% of individuals, dental biofilm in 71.4%, dental caries in 66.7%, indication for tooth extraction in 42.9%, fractured teeth in 42.9%, and tooth mobility in 14.3%.

These findings demonstrate a significant level of oral health impairment and suggest deficiencies in access to or utilization of preventive and restorative dental services (Table 1).

The high frequency of dental biofilm, calculus, and gingivitis observed in this study deserves particular attention, as these conditions are directly associated with the development and progression of periodontal disease. Furthermore, the presence of these alterations in patients with cardiovascular diseases reinforces the need for systematic dental follow-up, considering the potential impact of periodontal inflammation on cardiovascular health (Zhou *et al.*, 2021; Arbildo-Vega *et al.*, 2024).

The substantial proportion of edentulous patients (30.0%) also warrants attention. Considering that 40.0% of the sample were over 70 years of age and 43.3% had diabetes mellitus, this finding may reflect the cumulative effect of oral diseases throughout life, associated with limited access to healthcare services and inadequate control of chronic conditions. Tooth loss remains an important indicator of health inequality and may compromise essential functions such as mastication, phonation, and social interaction (Table 1). Among complete denture wearers, oral alterations such as tongue coating (44.4%), fissured tongue (22.2%), denture stomatitis (11.1%), resorbed alveolar ridge (11.1%), and lesions compatible with fibroma (11.1%) were observed. These findings demonstrate that the need for dental care persists even after tooth loss, making oral hygiene measures and periodic monitoring of the remaining oral structures essential.

Periodontal evaluation revealed gingival recession in 47.6% of patients and gingivitis in 66.7%, confirming the high frequency of gingival inflammatory alterations in the studied population. Additionally, more than half of the patients presented tongue coating (57.1%), a condition frequently associated with poor oral hygiene and increased microbial load in the oral cavity.

The coexistence of systemic diseases was also highly prevalent. Arterial hypertension was present in 70.0% of patients, diabetes mellitus in 43.3%, pulmonary diseases in 23.3%, and gastrointestinal diseases in 23.3%. An association between arterial hypertension and diabetes mellitus was observed in 44.4% of the sample. These findings reinforce the profile of high clinical complexity in these patients and highlight the need for an integrated multidisciplinary approach (Table 1).

The literature demonstrates that diabetes mellitus and periodontal disease have a bidirectional relationship, in which diabetes favors the development and progression of

periodontal disease, while periodontal inflammation may contribute to poorer glycemic control and an increased risk of cardiovascular complications (Sanz *et al.*, 2020; Alves *et al.*, 2007).

Regarding oral hygiene habits, although 90.5% of patients reported performing toothbrushing and 61.9% stated that they brushed their teeth two or more times per day, a high prevalence of dental biofilm, tongue coating, and gingivitis was observed during clinical examination. This finding suggests that brushing frequency does not always reflect the effectiveness of oral hygiene practices. Furthermore, 61.9% reported not using dental floss, and only 13.3% used mouth rinses, demonstrating the need for educational interventions aimed at improving oral hygiene behaviors.

The results of this study demonstrate that hospitalized patients with cardiovascular diseases present a high burden of potentially preventable oral conditions, highlighting the importance of integrating dentists into multidisciplinary hospital teams. Early identification of these alterations enables preventive, educational, and therapeutic interventions that may contribute to reducing infectious foci, improving quality of life, and promoting comprehensive health care for hospitalized patients (Oliveira *et al.*, 2025; Pimentel *et al.*, 2025).

Although the sample size of this study is limited, the findings provide an important epidemiological overview of the oral health conditions of hospitalized patients with cardiovascular diseases in a regional referral hospital, revealing dental care needs that are often neglected in the hospital setting and reinforcing the need to strengthen oral health promotion, prevention, and care actions across different levels of healthcare.

Table 1. Epidemiological profile, oral health conditions, and oral hygiene habits of hospitalized patients with cardiovascular diseases at HMGV.

Question	Frequency	
	N	%
Sociodemographic variables		
Gender		
Masculine	20	66,66
Feminine	10	33,33
Marital status		
Single	6	20,00
Married	14	46,66
Divorced	2	6,66
Widower	8	26,66
Age group (years)		
40 a 50	4	13,33
51 a 60	7	23,33
61 a 70	7	23,33
Over 70	12	40,00
Skin Color/ Ethnicity		
White	15	50,00
Mixed race	12	40,00

Black	3	10,00
Educational Level		
Illiterate	10	33,33
Incomplete elementary education	18	60,00
Completed secondary education	1	3,33
Cardiovascular Disease		
Hypertrophic cardiomyopathy	1	3,33
Atherosclerosis	4	13,33
Myocardial infarction	13	43,33
Angina pectoris	4	13,33
Cardiomegaly	2	6,66
Heart failure	5	16,66
Dilated cardiomyopathy	1	3,33
Clinical Dental Findings		
Yellow stains	11	52,38
Fractured teeth	9	42,85
Root remnants	6	28,57
Dental calculus	12	57,14
Tooth mobility	3	14,28
Indication for extraction	9	42,85
Abfraction lesions	1	4,76
Dental crowding	2	9,52
Dental caries	14	66,66
Clinical Appearance of Oral Mucosa		
Tongue coating	4	44,44
Fissured tongue	2	22,22
Denture stomatitis	1	11,11
Mandibular torus	1	11,11
Lesion compatible with fibroma	1	11,11
Resorbed mandibular ridge	1	11,11
Clinical Appearance of Gingiva		
Purulent discharge	1	4,76
Gingival recession	10	47,61
Gingivitis	14	66,66
Food debris	4	19,04
Pink gingiva (healthy appearance)	2	9,52
Other Systemic Conditions		
Pulmonary disease	7	23,33
Infectious-parasitic disease	2	6,66
Renal disease	3	10,00
Gastrointestinal disease	7	23,33
Diabetes mellitus	13	43,33
Hypertension	21	70,00
Stroke	1	3,33
Erysipelas	1	3,33
Gallbladder disease	1	3,33
Diabetes Mellitus		
Yes	5	55,55
Arterial Hypertension		
Yes	6	66,66
Diabetes Mellitus and Arterial Hypertension		
Yes	4	44,44
Oral Hygiene Habits		
Do you brush your teeth		
Yes	19	90,47
No	2	9,52
Do you use dental floss		
Yes	5	23,80

No	13	61,90
	3	14,28
Do you use mouthwash		
Yes	4	13,33
No	26	86,66

Temporomandibular Joint Symptoms

Pain	5	16,66
No symptoms	25	83,33

Source: Prepared by the authors based on the research findings

CONCLUSION

It was concluded that hospitalized patients with cardiovascular diseases presented a high frequency of comorbidities and significant dental treatment needs, with a particular emphasis on dental caries, gingival alterations, and poor oral hygiene. These findings reinforce the importance of hospital dental care as part of comprehensive patient management, contributing to health promotion and the prevention of adverse conditions during hospitalization.

REFERENCES

AGUIAR, A. S. W.; GUIMARÃES, M. V.; MORAIS, R. M. P.; SARAIVA, J. L. A. Atenção em saúde bucal em nível hospitalar: relato de experiência de integração ensino/serviço em odontologia. *Extensio: Revista Eletrônica de Extensão*, Florianópolis, v. 7, n. 9, p. 100-110, 2010.

ALVES, C.; ANDION, J.; BRANDÃO, M.; MENEZES, R. Mecanismos patogênicos da doença periodontal associada ao diabetes melito. *Arquivos Brasileiros de Endocrinologia & Metabologia*, São Paulo, v. 51, n. 7, p. 1050-1057, 2007.

ARANEGA, A. M.; BASSI, A. P. F.; PONZONI, D.; WAYAMA, M. T.; ESTEVES, J. C.; GARCIA JUNIOR, I. R. Qual a importância da odontologia hospitalar? *Revista Brasileira de Odontologia*, Rio de Janeiro, v. 69, n. 1, p. 90-93, 2012.

ARBILDO-VEGA, H. I. *et al.* Periodontal disease and cardiovascular disease: umbrella review. *BMC Oral Health*, London, v. 24, 2024.

ARRUDA, C. D. *et al.* Integração da equipe multiprofissional na odontologia hospitalar. *Brazilian Journal of Implantology and Health Sciences*, v. 6, n. 3, p. 1366-1377, 2024.

CALDEIRA, P. M.; COBUCCI, R. A. S. Higiene oral de pacientes em intubação orotraqueal internados em uma unidade de terapia intensiva. *Revista Enfermagem Integrada*, v. 4, n. 1, p. 731-741, 2011.

- DOS SANTOS, A. A. *et al.* Oral care practices for patients in intensive care unit: A systematic review. *International Journal of Dental Hygiene*, v. 23, n. 1, p. 80-88, 2025. DOI: 10.1111/idh.12822.
- FERNANDES, A. S.; EMILIANO, B. G. B.; MARTINS, A. R. L. A.; SOUZA, G. C. A. Conhecimentos e práticas de saúde bucal por pacientes internados e equipe. *Revista Ciência Plural*, v. 2, n. 3, p. 3-16, 2016.
- GAETTI-JARDIM, E.; SETTI, J. S.; CHEADE, M. F. M.; MENDONÇA, J. C. G. Atenção odontológica a pacientes hospitalizados: revisão da literatura e proposta de protocolo de higiene oral. *Revista Brasileira de Ciências da Saúde*, v. 11, n. 35, p. 31-36, 2013.
- GREENE, J. C.; VERMILLION, J. R. The Simplified Oral Hygiene Index. *Journal of the American Dental Association*, Chicago, v. 68, n. 1, p. 7-13, 1964.
- GUIMARÃES, A. C.; SOUZA, A. F.; FERREIRA, E. F. Avaliação da implementação de novo protocolo de higiene bucal em um centro de terapia intensiva para prevenção de pneumonia associada à ventilação mecânica. *Revista Mineira de Enfermagem*, Belo Horizonte, v. 17, n. 1, p. 177-184, 2013. DOI: 10.5935/1415-2762.20130015.
- INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). Censo Demográfico 2022: número de pessoas com 65 anos ou mais de idade cresceu 57,4% em 12 anos. Rio de Janeiro: IBGE, 2024. Disponível em: <https://agenciadenoticias.ibge.gov.br>. Acesso em: 17 jun. 2026.
- LAST, J. M. *A Dictionary of Epidemiology*, 2^a ed. New York: Oxford University Press, 1988
- LIMA, A. T.; GIFFONI, T. C. R.; FRANZIN, L. C. S.; MATSUURA, E.; PROGIANTE, P. S.; GOYA, S. Odontologia hospitalar: competência do cirurgião-dentista. *Revista UNINGÁ Review*, v. 28, n. 3, p. 164-171, 2016.
- MACHADO, A. C. P.; VADENAL, R.; CORTELLI, J. R. Doença periodontal e doença cardíaca. *Revista Internacional de Ciências da Saúde*, v. 2, n. 1, p. 73-87, 2017.
- MALTA, D. C. *et al.* Prevalence of cardiovascular diseases and associated factors in Brazilian adults. *Revista Brasileira de Epidemiologia*, v. 25, e220012, 2022.
- MELO, A. T. G.; PINTO, G. B.; CUNHA, D. E.; RODRIGUES, R. C. S.; VIANA FILHO, J. M. C. Brazilian panorama of training in Hospital Dentistry: from undergraduate to postgraduate studies. *Revista da ABENO*, v. 25, 2024. DOI: 10.30979/BrazJDentEduc.v25.2443.
- OLIVEIRA, C. E. G. *et al.* Hospital Dentistry: challenges, epidemiological profile of patients, and competencies of the dental surgeon in the hospital setting. *Brazilian Journal of Implantology and Health Sciences*, v. 7, n. 7, p. 1484-1495, 2025.
- PINHEIRO, T. S.; ALMEIDA, T. F. A saúde bucal em pacientes de UTI. *Revista Bahiana de Odontologia*, Salvador, v. 5, n. 2, p. 94-103, 2014.

PIMENTEL, D. R. *et al.* The importance of hospital dentistry in the prevention and control of infections in hospitalized patients: integrative review. *Research, Society and Development*, v. 14, n. 11, 2025. DOI: 10.33448/rsd-v14i11.49829.

ROCHA, A. L.; FERREIRA, E. F. Odontologia hospitalar: a atuação do cirurgião-dentista em equipe multiprofissional na atenção terciária. *Arquivos em Odontologia*, Belo Horizonte, v. 50, n. 4, p. 154-160, 2014.

SANGHVI, M. M. *et al.* The Association Between Periodontal Disease and Cardiovascular Disease: Insights From Imaging, Observational, and Genetic Data. *JACC: Advances*, v. 3, n. 10, p. 101241, 2024. DOI: 10.1016/j.jacadv.2024.101241.

SANTANA, R. S.; VITA, W. S. Condição de saúde bucal de pacientes internados em um hospital público brasileiro. *Revista Baiana de Saúde Pública*, v. 48, n. 1, 2024. DOI: 10.22278/2318-2660.2024.v48.n1.a4072.

SANZ, M. *et al.* Periodontitis and cardiovascular diseases: consensus report. *Journal of Clinical Periodontology*, v. 47, Suppl. 22, p. 268-288, 2020.

SILVA, J. L. M. D. E. *et al.* Odontologia Hospitalar: uma visão multiprofissional em um instituto público do Amazonas. *Research, Society and Development*, v. 11, n. 12, e313111234341, 2022.

WANG, W.; ZHENG, C.; YANG, J.; LI, B. Intersection between macrophages and periodontal pathogens in periodontitis. *Journal of Leukocyte Biology*, v. 110, n. 3, p. 577-583, 2021. DOI: 10.1002/JLB.4MR0421-756R.

WORLD HEALTH ORGANIZATION. Cardiovascular diseases (CVDs). Geneva: WHO, 2025. Disponível em: [https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)). Acesso em: 17 jun. 2026.

ZHOU, M.; DONG, J.; ZHA, L.; LIAO, Y. Causal Association between Periodontal Diseases and Cardiovascular Diseases. *Genes*, v. 13, n. 13, 2022.

ZINI, A.; MAZOR, S.; TIMM, H.; BARKER, M. L.; GRENDER, J.; GERLACH, R. W.; BIESBROCK, A. R. Effects of an oral hygiene regimen on progression of gingivitis/early periodontitis: A randomized controlled trial. *Journal of Dental Hygiene*, v. 95, n. 2, p. 85-94, 2021.