



Hospital Dentistry: challenges, epidemiological profile of patients, and competencies of the dental surgeon in the hospital setting

Carlos Eraldo Gadelha de Oliveira¹, Ana Tafet Nascimento Alexandre¹, Herlon Alberto Clementino¹, Ataíde Matias de Oliveira¹, Maria Cláudia Oliveira da Silva¹, Etiene Pereira Duarte Lins¹, Rodolfo Scott Verissimo¹, Ilan Hudson Gomes de Santana¹



<https://doi.org/10.36557/2674-8169.2025v7n7p1484-1495>

Artigo recebido em 15 de Junho e publicado em 25 de Julho de 2025

REVIEW ARTICLES

ABSTRACT

Introduction: Hospital Dentistry has become established as a fundamental component of multidisciplinary teams, standing out due to the interface between oral health and systemic conditions in hospitalized patients. **Objective:** To critically analyze the challenges for consolidating Hospital Dentistry in Brazil, the epidemiological profile of the patients treated, and the competencies required of dental surgeons in the hospital setting. **Methods:** Narrative literature review, with searches conducted in PubMed, Scopus, LILACS, and SciELO databases, covering publications from 2010 to 2025. Original studies, systematic reviews, guidelines, and consensus documents directly addressing hospital dental practice were included. **Results:** A significant increase in scientific production on the topic was observed over the past fifteen years. The profile of hospitalized patients requiring dental care is characterized by high clinical complexity, predominantly involving immunosuppressed individuals, mechanically ventilated patients, oncology patients, and transplant recipients. Dental interventions have been shown to reduce infectious complications, such as ventilator-associated pneumonia, and to contribute to the management of oral manifestations of oncologic therapies. The competencies required of hospital dental surgeons include expanded knowledge of systemic pathophysiology, hospital pharmacology, management of critically ill patients, and strict adherence to biosafety and patient safety protocols. **Conclusion:** Despite regulatory advances and growing recognition of the importance of Hospital Dentistry, structural, educational, and organizational challenges still limit its universal implementation. Investments in public policies, specialized training, and evidence-based care protocols are essential to consolidate this practice as an integral part of hospital care.

Keywords: Oral Health; Patient Safety; Intensive Care Units; Stomatitis



¹ Federal University of Paraíba

Autor correspondente: *Ilan Hudson Gomes de Santana* ilan.hudson@academico.ufpb.br

This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)





INTRODUCTION

Hospital Dentistry has been consolidating over the past decades as a strategic field of practice within multidisciplinary healthcare teams, particularly in medium- and high-complexity institutions. Its incorporation into the hospital setting arises from the growing understanding that oral conditions are closely linked to patients' systemic health, directly influencing clinical prognosis, length of hospital stay, rates of healthcare-associated infections, and quality of life during hospitalization [1].

Scientific evidence accumulated in recent decades reinforces the role of dental surgeons in the prevention, diagnosis, and management of oral alterations affecting hospitalized patients, especially those admitted to intensive care, oncology, cardiology, nephrology, and transplant units [2,3]. Complications such as chemotherapy-induced oral mucositis, medication-related osteonecrosis, odontogenic infections with systemic repercussions, and the well-documented ventilator-associated pneumonia (VAP) are examples of conditions where dental interventions demonstrate significant clinical impact [4,5].

In Brazil, the inclusion of Dentistry within hospital environments gained regulatory support with the publication of Resolution RDC No. 7/2010 by the National Health Surveillance Agency (ANVISA), which established the mandatory presence of dental surgeons in Intensive Care Units (ICUs) of public and private hospitals. This regulation marked a milestone in the institutionalization of Hospital Dentistry as a practice essential to hospitalized patient safety. Since then, there has been a progressive expansion of dental professionals in hospitals, although regional and structural disparities still limit the effectiveness of this integration in many institutions [6].

The epidemiological profile of patients requiring dental care in hospital settings is characterized by high clinical complexity, predominantly involving immunosuppressed individuals, polytrauma patients, those subjected to prolonged mechanical ventilation, or undergoing oncologic treatments. National and international studies show a high prevalence of oral lesions, opportunistic infections, mucosal alterations, and complications related to poor oral hygiene among these patients, highlighting the need for preventive protocols and early interventions [7,8].



The competencies required of hospital dental surgeons go beyond performing conventional clinical procedures. They include the ability to recognize systemic alterations with oral repercussions, manage critically ill patients, work in an integrated manner within multidisciplinary teams, master pharmacotherapeutics specific to hospital care, and apply biosafety measures at more stringent levels. Recent literature further underscores the need for specific training in Hospital Dentistry, focusing on patient safety protocols, management of medical emergencies in dental-hospital settings, and clinical conduct tailored to different patient profiles [9,10].

In this context, the present narrative review aims to critically analyze the main challenges faced by Hospital Dentistry in Brazil, outline the epidemiological profile of patients treated in this setting, and discuss the clinical, technical, and ethical competencies required of dental surgeons to ensure safe and effective practice in the hospital environment, in light of the most recent scientific evidence.

METODOLOGY

The design of this study is a narrative literature review, employing an exploratory and descriptive approach aimed at critically analyzing the role of Hospital Dentistry, including the challenges to its implementation, the epidemiological profile of hospitalized patients treated, and the competencies required of dental surgeons practicing in hospital settings.

The bibliographic search was conducted between May and June 2025 in the PubMed/MEDLINE, Scopus, LILACS, and SciELO databases, which are regarded as highly relevant sources for the Health Sciences. Controlled descriptors were used according to the MeSH (Medical Subject Headings) and DeCS (Health Sciences Descriptors) vocabularies, with the following combinations: Hospital Dentistry, Inpatients, Oral Health, Patient Safety, Intensive Care Units, Oral Infections, Oral Mucositis, Pneumonia, Ventilator-Associated, in addition to free terms such as “dental care in hospitals,” “hospital-based dentistry,” and “oral health in critically ill patients.”

Articles published from January 2010 to May 2025 in Portuguese, English, and Spanish were included, with the goal of covering the most recent and representative publications on the subject. The selection encompassed original studies, systematic



reviews, scientific society consensus statements, clinical guidelines, public policy documents, and narrative review articles that specifically addressed aspects related to the practice of Dentistry in hospital environments.

Exclusion criteria comprised publications that did not directly address the topic of Hospital Dentistry, studies focusing exclusively on experimental or animal models, isolated case reports, letters to the editor, unpublished dissertations and theses, and documents without full-text access.

The selection process was conducted in two stages. Initially, the titles and abstracts of the identified articles were screened for preliminary eligibility. Subsequently, the full texts of potentially relevant articles were thoroughly read to verify their alignment with the objectives of this review. During the analysis of selected articles, the main extracted data included: methodological characteristics of the studies, epidemiological profile of the evaluated patients, types of dental interventions performed, relevant clinical outcomes, and recommendations for professional practice.

In addition to the electronic search, a manual search was performed in the reference lists of the selected articles to identify additional publications that could strengthen the discussion. Data synthesis was carried out qualitatively, emphasizing a critical interpretation of findings, identification of existing gaps in the literature, and discussion of clinical and organizational implications for Hospital Dentistry.

RESULTS AND DISCUSSION

The analysis of the literature revealed a significant increase in publications related to Hospital Dentistry over the past fifteen years, reflecting the consolidation of this field as an essential area of practice in the healthcare of hospitalized patients [11]. The reviewed studies emphasize that the inclusion of dental surgeons within hospital environments, particularly in Intensive Care Units (ICUs), has contributed substantially to the prevention of infectious complications, the maintenance of oral health, and the improvement of clinical outcomes in critically ill patients [12].

Table 1 — Characteristics of the studies included in the discussion: year, authors, title, results, and conclusions

Year	Authors	Title	Main Results	Conclusions
2020	SILVA et al.	<i>Hospital Dentistry in Brazil: Where Are We?</i>	Analyzed the growth of Hospital Dentistry in Brazil, highlighting the increase in publications and the progressive inclusion of dental surgeons in hospitals.	Demonstrated consolidation of the field and the need for public policies to strengthen these services.
2014	Bellissimo-Rodrigues et al.	<i>Effectiveness of a Dental Care Intervention in the Prevention of Lower Respiratory Tract Nosocomial Infections</i>	Dental intervention reduced respiratory infections in ICU patients.	Recommended the systematic inclusion of dental care in ICUs to prevent VAP.
2024	Rangelova et al.	<i>Ventilator-Associated Pneumonia in the Neonatal Intensive Care Unit— Incidence and Strategies for Prevention</i>	Identified a high incidence of VAP in neonates and highlighted preventive strategies.	Reinforced the importance of oral care to reduce the risk of VAP.
2022	Singh et al.	<i>Efficacy of Oral Care Protocols in the Prevention of Ventilator-Associated Pneumonia</i>	Oral hygiene protocols proved effective in reducing VAP.	Suggested routine implementation of dental protocols in ventilated patients.
2024	Nurhidayah et al.	<i>The Effect of Oral Care Intervention in Mucositis Management Among Pediatric Cancer Patients</i>	Oral care reduced the severity of mucositis in pediatric oncology patients.	Advocated early dental intervention for mucositis management.
2022	Walinski et al.	<i>Review of Oral Mucositis Treatment Guidelines with an Emphasis on Laser Therapy</i>	Reviewed mucositis guidelines, highlighting the role of laser therapy.	Indicated the effectiveness of laser therapy in reducing pain and severity of mucositis.



Source: Data from the present study (2025)

The epidemiological profile of patients requiring dental care in the hospital setting is characterized by high clinical complexity. There is a predominance of immunosuppressed individuals, patients undergoing prolonged mechanical ventilation, oncology patients, transplant recipients, individuals with hematologic diseases, and critically ill patients with multiple systemic comorbidities. Multicenter studies indicate a high prevalence of oral alterations in these groups, including opportunistic infections, ulcerations, mucositis, drug-induced xerostomia, and active odontogenic infection foci, all of which can exacerbate the systemic condition of these patients [12].

One of the main clinical targets of hospital dental care is the prevention of ventilator-associated pneumonia (VAP). Several systematic reviews and meta-analyses have demonstrated that the presence of dental biofilm and oral infectious foci contributes to the colonization of the lower airways by pathogenic microorganisms, increasing the incidence of VAP [13,14]. The implementation of oral hygiene protocols—including regular mechanical tooth brushing, the use of antiseptics such as chlorhexidine, and the elimination of odontogenic infection sources—has proven effective in reducing the rate of respiratory infections in intubated patients, thereby establishing Dentistry as an integral part of patient safety strategies in intensive care units (ICUs) [15,16].

Beyond preventive measures, the management of oral complications associated with cancer treatment stands out, particularly oral mucositis induced by radiotherapy and chemotherapy. The literature shows that early intervention by hospital dentists can reduce the severity of these conditions, minimize the risk of secondary infections, and improve quality of life during hospitalization. Protocols that include the application of low-level laser therapy, topical care with cytoprotective agents, and oral hygiene guidance have been incorporated into oncology centers with promising results [17,18].

From a professional competency perspective, hospital dentists require a clinical profile distinct from that of outpatient dental practice. In addition to technical proficiency in conventional dental procedures, an in-depth understanding of the pathophysiology of systemic diseases, hospital pharmacology, drug interactions, and the management of patients with hematologic, respiratory, and cardiovascular disorders is



essential. Working in intensive care settings also demands familiarity with life support equipment, interpretation of vital parameters, and the ability to integrate into multidisciplinary teams, in accordance with patient safety guidelines established by regulatory agencies such as ANVISA (RDC No. 7/2010) [19,20].

However, challenges to the effective implementation of Hospital Dentistry remain significant, particularly within the context of Brazil's Unified Health System (SUS). Structural barriers, financial constraints, lack of institutional protocols, and a shortage of professionals with specialized training still hinder the universalization of this service [21,22].

In summary, the findings of this review demonstrate that the integration of dentists into the hospital environment is a proven measure with a positive impact on preventing systemic complications and promoting the overall health of hospitalized patients. Nonetheless, for this practice to reach its full potential, it is essential to strengthen public policies that support Hospital Dentistry, expand specialized training, and standardize care protocols based on high-quality scientific evidence.

CONCLUSION

Hospital Dentistry has established itself as an essential component of multidisciplinary care for hospitalized patients, with significant impacts on infection prevention, control of oral complications, and the promotion of patient safety. The epidemiological profile of individuals receiving such care reveals high clinical complexity, requiring dentists to possess specific competencies for managing interrelated systemic and oral conditions. Despite notable advances, structural, educational, and organizational challenges still limit the universalization and effectiveness of this practice in Brazil, underscoring the need for investments in public policies, specialized training, and scientific production focused on this field.

REFERENCES

- 1- Kunkel GH, Roberts GK. Hospital Dentistry: The Swiss-Army Knife of Dental Medicine. *J Dent Educ.* 2021 Feb;85(2):112-115.



- 2- da Silva JL, de O El Kadre GD, Kudo GA, Santiago JF Junior, Saraiva PP. Oral Health of Patients Hospitalized in the Intensive Care Unit. *J Contemp Dent Pract.* 2016 Feb 1;17(2):125-9.
- 3- Lau A, Dodson TB, Sonis ST, Kaban LB. An Outcomes Study of 40 Years of Graduates of a General Practice Dental Residency. *J Dent Educ.* 2015 Aug;79(8):888-96.
- 4- Fatahzadeh M. The dentist's role in the prevention and management of necrotizing stomatitis in the immunosuppressed. *Quintessence Int.* 2018;49(5):399-405.
- 5- Owosho AA, DeColibus K, Hedgepeth B, Wood BC, Sansoni RE, Gleysteen JP, Schwartz DL. The Role of Dental Practitioners in the Management of Oncology Patients: The Head and Neck Radiation Oncology Patient and the Medical Oncology Patient. *Dent J (Basel).* 2023 May 17;11(5):136.
- 6- BRASIL. *Agência Nacional de Vigilância Sanitária (ANVISA)*. Resolução RDC nº 7, de 24 de fevereiro de 2010. Dispõe sobre os requisitos mínimos para funcionamento de Unidades de Terapia Intensiva e dá outras providências. *Diário Oficial da União, Brasília, DF, 25 fev. 2010*
- 7- Santos Zambrano TB, Guillén Vivas XS, Santos CB, de Fátima Mestre V, Maddela NR, Galarza Santana LE, Couto de Almeida RS. Evaluation of brushing efficiency in reducing oral microbiota in mechanically ventilated patients admitted to an intensive care unit. *Infect Prev Pract.* 2024 Feb 3;6(1):100346.
- 8- Silva DHF, Camargos JH, Rodrigues JG, Nogueira LS, Azevedo DA, Carvalho MDG, Pinheiro MB. Impact of oral hygiene in patients undergoing mechanical ventilation in the COVID-19 pandemic. *Rev Assoc Med Bras (1992).* 2020 Sep 21;66Suppl 2(Suppl 2):96-101.
- 9- Carrard VC, van der Waal I. The role of the dentist in the diagnosis and management of patients with oral mucosal diseases. *Med Oral Patol Oral Cir Bucal.* 2021 Mar 1;26(2):e256-e260.
- 10- Winters ME, Hu K, Martinez JP, Mallemat H, Brady WJ. The critical care literature 2023. *Am J Emerg Med.* 2024 Nov;85:13-23. doi: 10.1016/j.ajem.2024.08.010.
- 11- SILVA, Gabriela Elen Moreira; THOMSEN, Luciana Pereira da Rocha; LACERDA, Júlio César Tanos; BOTELHO, Sérgio Henrique Benfenatti; REIS, Júbila Aparecida Costa; FERREIRA, Raí Douglas de Araújo; RESENDE, Renata Gonçalves. *Odontologia hospitalar*



no Brasil: onde estamos? Uma análise do cenário dos últimos anos. *Revista da Faculdade de Odontologia de Porto Alegre, [S. l.], v. 61, n. 1, p. 92–97, 2020.*

12- Bellissimo-Rodrigues WT, Meneguetti MG, Gaspar GG, Nicolini EA, Auxiliadora-Martins M, Basile-Filho A, Martinez R, Bellissimo-Rodrigues F. Effectiveness of a dental care intervention in the prevention of lower respiratory tract nosocomial infections among intensive care patients: a randomized clinical trial. *Infect Control Hosp Epidemiol.* 2014 Nov;35(11):1342-8.

13- Rangelova V, Kevorkyan A, Raycheva R, Krasteva M. Ventilator-Associated Pneumonia in the Neonatal Intensive Care Unit-Incidence and Strategies for Prevention. *Diagnostics (Basel).* 2024 Jan 23;14(3):240.

14- Villaamil A, Han L, Eloy P, Bachelet D, Gennequin M, Jeantrelle C, Moyer JD, Weiss E, Foucrier A. Risk factors of second ventilator-associated pneumonia in trauma patients: a retrospective cohort study. *Eur J Trauma Emerg Surg.* 2023 Aug;49(4):1981-1988.

15- Santos Zambrano TB, Guillén Vivas XS, Santos CB, de Fátima Mestre V, Maddela NR, Galarza Santana LE, Couto de Almeida RS. Evaluation of brushing efficiency in reducing oral microbiota in mechanically ventilated patients admitted to an intensive care unit. *Infect Prev Pract.* 2024 Feb 3;6(1):100346.

16- Singh P, Arshad Z, Srivastava VK, Singh GP, Gangwar RS. Efficacy of Oral Care Protocols in the Prevention of Ventilator-Associated Pneumonia in Mechanically Ventilated Patients. *Cureus.* 2022 Apr 2;14(4):e23750.

17- Nurhidayah I, Nurhaeni N, Allenidekania A, Gayatri D, Mediani HS. The Effect of Oral Care Intervention in Mucositis Management Among Pediatric Cancer Patients: An Updated Systematic Review. *J Multidiscip Healthc.* 2024 Jul 17;17:3497-3515.

18- Walinski CJ, Mellusi SM, Brodeur AE, Marchick E, Katz D, Van Putten M. Review of oral mucositis treatment guidelines with an emphasis on laser therapy. *Gen Dent.* 2022 Mar-Apr;70(2):22-26.

19- Cvijic A, Kvernenes M, Åstrøm AN, Tsilingaridis G, Bletsas A. Treatment of Traumatic Dental Injuries in the Public Dental Services-A Qualitative Exploration of Perceived Challenges and Needs. *Dent Traumatol.* 2025 Feb;41(1):93-103.

20- Balmith M, Cordier W, Bhayat A, Basson C, Morule M, Schellack N. An evaluation of knowledge and perception of pharmacology in undergraduate oral hygiene students and



recent graduates at a single higher institution in Pretoria. *Int J Dent Hyg.* 2024 Nov;22(4):791-801.

21- Oliveira APC, Gabriel M, Poz MRD, Dussault G. Challenges for ensuring availability and accessibility toin health care services under Brazil's Unified Health System (SUS). *Cien Saude Colet.* 2017 Apr;22(4):1165-1180. Portuguese, English. doi: 10.1590/1413-81232017224.31382016. Erratum in: *Cien Saude Colet.* 2017 Jul;22(7):2397-2424.

22- Tenny N, Schram BM, Kish J, Sadler T, Kaine R, Kaufman K, Lutzky S, Heinemann A. Systemic barriers hinder person-centered home and community based services (HCBS): Perspectives of service users and professionals. *Disabil Health J.* 2025 Jul;18(3S):101629.