

THE IMPORTANCE OF HOSPITAL DENTISTRY IN COMPLETE HEALTH CARE

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Abstract: The performance of hospital dentistry has a direct impact on improving systemic conditions and preventing complications in the health of hospitalized patients. This is reflected in the significant reduction in the incidence of respiratory infections, the reduction in the need for the use of systemic antibiotics and the reduction in the mortality rate. In recent years, there has been an increasing number of dental professionals in the hospital environment. However, this index is still insufficient considering the relevance of hospital dentistry. Research indicates that adopting a simple and economical oral care protocol in intensive care units (ICU) can reduce the risk of contracting Ventilator-Associated Pneumonia (VAP) by 46%. Furthermore, this approach also results in a significant reduction in costs, due to the reduction in medication consumption and the length of stay in ICU beds. Considering the importance of the subject, the objective of this review is to analyze the importance of hospital dentistry in preventing systemic complications and reducing the incidence of hospital infections, aiming to contribute to raising awareness about the need for training and dissemination of this area in universities and promoting implementation of standardized care protocols for the oral health of hospitalized patients. The presence of dental professionals within hospitals results in a significant reduction in the incidence of hospital-acquired infections, recovery and length of stay for patients and, consequently, costs for the institution. Furthermore, it is clear that the standardization and regularity of oral health care for hospitalized patients are essential for a faster and more effective recovery, contributing to saving lives. Encouraging and promoting hospital dentistry at universities is crucial to increasing awareness and participation of dental surgeons in this area. The training of future dental professionals

to work in hospital environments can be integrated into the academic curriculum through specific disciplines, supervised internships and residency programs, in addition to awareness-raising work. Through these training and dissemination initiatives, universities can prepare future dental surgeons to act competently and engaged in hospital dentistry, thus contributing to the improvement of health care offered to hospitalized patients.

Keywords: Intensive care units, oral health, Systemic infections.

INTRODUCTION

Hospital dentistry plays a vital role in improving systemic conditions and preventing health complications in hospitalized patients. To a large extent, it reduces the occurrence of respiratory infections and dependence on systemic antibiotics, resulting in a decrease in morbidity and mortality rates (Rocha; Travassos; Rocha; 2021).

During the 19th century, hospital dentistry was introduced to America thanks to the efforts of doctors Simon Hullihen and James Garretson. During its implementation, considerable efforts were made to promote oral health in hospitals, subsequently receiving support from the American Dental Association and gaining recognition within the medical community (Pascoaloti et al., 2019).

On the national scene, in 2013, a bill was presented in the Chamber of Deputies that makes the provision of dental care to patients admitted to hospital mandatory (BRAZIL, 2013). This project was approved by the Senate Plenary only in 2019, thanks to the great mobilization of the Federal Council of Dentistry (CFO) and the Presidents of the Regional Councils of Dentistry throughout Brazil (Calazans, 2019).

In 2022, a new bill was discussed that

makes the presence of a dental professional mandatory in multidisciplinary teams that provide care to patients who are under home care in the *home care* modality (BRAZIL, 2022).

According to Rocha and Ferreira (2014), who evaluated requests for dental care for patients admitted to Hospital Risoleta Tolentino Neves, in Belo Horizonte, during the period from January 2010 to January 2012, the total number of admissions to this hospital was of 27,068 patients. However, the number of evaluation requests sent to Dentistry corresponded to only 0.5% of this number. Considering that periodontal disease is one of the main causes and foci of systemic dissemination of potentially pathogenic microorganisms, attention to the oral health of hospitalized patients must be a priority in the healing process.

Pneumonia stands out as one of the main diseases acquired in intensive care environments, with its relevance attributed to the increase in invasive procedures, the growing density of patients in these units, the intense use of antimicrobials and, consequently, the increase in hospitalization time. of patients. Therefore, maintaining oral health, cleaning and sanitizing the oral cavity of patients admitted to hospitals must be part of the daily care protocol for these people (Cardoso; Bizani, 2015).

Considering the relevance of the subject, the objective of this review is to analyze the importance of hospital dentistry in preventing systemic complications and reducing the incidence of hospital infections, aiming to contribute to raising awareness about the need for training and dissemination of this area in universities and promoting implementation of standardized care protocols for the oral health of hospitalized patients.

HOSPITAL DENTISTRY

Hospital dentistry (OH) refers to the practice dedicated to the treatment of oral conditions that require procedures of different levels of complexity, conducted in the hospital environment. Its purpose is to improve both global health and the quality of life of hospitalized patients (Saldanha et al., 2015).

Over the years, dentistry has gradually expanded its presence in hospital environments, demonstrating its relevance beyond oral and maxillofacial surgeries. Godoi et al. (2009) carried out an analysis of the literature, which was initially scarce, along with hospital resources and infrastructure, and showed how the specialty has grown in intensive care centers and in scientific research. With the increasing appreciation of the area, it was realized that oral health care for hospitalized patients is relatively simple and economical, but brings great benefits, such as reducing the length of stay and, consequently, hospital costs. Furthermore, the authors highlighted in their study the connection between oral health and the general health of patients, emphasizing the importance of hospital dentistry in preventing diseases.

The predominant conception of OH as restricted only to surgeries is mistaken, as the area encompasses much more than that. It plays a crucial role not only in caring for special patients who require sedation for specific procedures, but also in assisting hospitalized patients, with a focus on preventing health complications. Until 2008, this limited view of OH resulted in poor care and infrastructure in hospitals. However, over the years, the specialty has gained space in intensive care centers and in scientific literature Godoi et al. (2009).

According to Webster and Anschau (2011) and Cutler and Sluman (2014), whose studies addressed dental care in a hospital environment, attention focused on preventing

and maintaining the oral health of patients on mechanical ventilation not only prevents around 50% of Pneumonia Associated with Mechanical Ventilation (PAVM) and reduces the use of antibiotics, but also reduces the length of stay of patients in Intensive Care Units (ICUs). This results in significant savings of R\$2,854.00 per day on a single bed. These data show that the presence of dentists in hospitals not only saves lives, but also contributes to the country's economy and progress.

THE IMPACT OF HOSPITAL DENTISTRY

Oral and systemic health is a two-way street, certain systemic diseases such as diabetes, hypophosphatasia, immunodeficiencies, kidney disorders and cancer can affect oral health as they leave the patient susceptible to dental caries, gingivitis, periodontitis and mucositis, due to immunological changes, side effects of medications, among others. Likewise, diseases in the mouth, such as periodontitis, which acts as a focus for the dissemination of microorganisms, can cause systemic disorders such as atherosclerosis, heart attack and complications of diabetes. In pregnant women, the occurrence of periodontitis increases the likelihood of the baby being born with a birth weight below normal.

To highlight the low insertion of dentistry in hospitals, Saldanha et al. (2015) carried out a study in the adult intensive care unit (ICU) of the Hospital Maria Aparecida Pedrossian of the Core of Hospital University Hospital at 'Universidade Federal de Mato Grosso do Sul', in the period of November and December 2013. In this study, it was demonstrated that only 9.5% of hospitalized patients had satisfactory oral hygiene conditions, while the other 90.5% were classified as deficient or precarious. The majority of patients in these

studies had gingivitis, biofilms and tongue coating, conditions that act as a reservoir for respiratory pathogens. In this research, the authors suggested using a simple and systematic oral assessment index, different from existing ones that were not practical or did not evaluate the quality of hygiene, such as the Simplified Oral Hygiene Index (IHO-S), proposed by Greene and Vermillion (1964).

The IHO-S evaluates the bacterial plaque index, assigning scores from 0 (absence of induct - bacterial plaque - or intrinsic stain) to 3 (presence of induct covering more than 2/3 of the examined surface). Although the IHO-S is widely used in outpatients as it is relatively practical, it does not prove to be comprehensive in ICUs, as it excludes completely edentulous patients.

For this reason, Saldanha et al. (2015) suggest in their research that ICUs adopt the Critical Patient Oral Hygiene Indicator (IHOPC), which is easy to apply and visualize the results. In addition to being more comprehensive, it adapts to the conditions and particularities of critical patients. The IHOPC assesses the presence of biofilm, gingivitis, coating, halitosis, airway secretion, blood and gastric/dietary secretion. Each item present in the patient's mouth is assigned 1 (one) point. The individual's oral hygiene will be considered satisfactory if it has only 1-point, poor hygiene if it has 3 to 4 points, and precarious if it has 4 or more points. This method is more effective as it evaluates far beyond bacterial plaque and includes edentulous patients.

Even though the importance of OH has already been discussed several times in the literature, the subject of OH in dentistry courses still needs to be greatly developed. Wayama et al. (2014) interviewed 500 dental surgeons and only 12% had practical experience with OH. The study by Medeiros et al. (2020), shows that only 31.9% of colleges have the subject in their curriculum and, of these, only 13% are

public institutions. This same study indicates that some of these faculties introduce OH as part of the Oral and Maxillofacial Surgery and Traumatology discipline. However, OH does not only involve the surgical part of dentistry, there must be a preventive and therapeutic approach as well. The lack of inclusion of this subject in the curriculum in dentistry courses ends up creating a lack of preparation and lack of interest among recent graduates in working in the area (Medeiros et al., 2020 and Pereira; Carvalho, 2023).

Most OH courses are offered by private institutions, with costs ranging between 1000 and 1700 reais. Furthermore, most of these courses are concentrated in the southeast region of the country, where there are generally more resources and infrastructure to offer specialization and training programs in specific areas. These factors contribute to making knowledge in hospital dentistry less accessible than it must be (Pereira; Carvalho, 2023).

Even so, with OH gaining recognition, in 2013 a bill was proposed in the Chamber of Deputies that would make dental care mandatory for patients admitted to hospitals (BRAZIL, 2013). In 2019, after the mobilization of the CFO and the Presidents of the Regional Dental Councils, the project was approved by the Senate Plenary (Calazans, 2019).

ORAL INFECTIONS RELATED TO HEALTH CARE IN A HOSPITAL ENVIRONMENT

Infections acquired in a hospital environment, linked to healthcare, often present a prevalence of common bacteria in the airways, due to the relationship with both the pathogenicity of microorganisms and the oral microbiota. These elements can result in high levels of morbidity and mortality, resulting in a considerable per capita cost (Costa, 2018). The oral cavity is susceptible to a variety of

microbial infections. Due to their anatomy and vascularization, these localized infections have the potential to spread systemically and cause serious harm to patients (Weyrich, 2020; Siqueira; Rôças, 2022).

ORAL CANDIDIASIS

According to studies addressed by Siqueira et al. (2014), *Candida* spp. It is one of the most common microorganisms found in ICU patients. This is due to the fact that candidiasis is an opportunistic infection, and hospitalized patients have a drop-in immunity, a decrease in oral pH and salivary flow, which are essential components of the body to defend against this fungus. The invasive form of oral candidiasis varies between 5 and 10 cases per 1,000 hospitalizations, which represents 5% to 10% of infections acquired in this sector, and has a mortality rate comparable to that of septic shock (De Luca et al., 2017).

Another important factor in the development of infections is that *Candida* spp. They easily adhere to surfaces, such as teeth, mucosa, orthodontic appliances, prostheses, intubation tubes, forming biofilms. Oral candidiasis increases progressively with patients' length of stay (Siqueira et al., 2014).

Aspects such as the ease of adhesion of pathogens, poor patient hygiene, decreased salivary flow due to medications, the mouth remaining open due to intubation, and immunological compromise of patients, contribute to the increased prevalence of infection (Siqueira et al., 2014).

The four most common types of oral candidiasis are: erythematous, pseudomembranous, chronic hyperplastic and angular cheilitis. The main symptoms are dysgeusia (change in taste), local discomfort and esophageal dysphagia (sensation of food or liquid stagnating in the lower part of the throat or chest after the patient starts swallowing), which can lead to nutritional

deficiency, slow recovery and prolonged hospital stay (Siqueira *et al.*, 2014).

The presence of a dental surgeon in hospitals is extremely important when faced with this information, as he or she can identify oral changes early, assess the presence of biofilms and carry out preventive procedures. The study by Siqueira *et al.* (2014) indicates that early drug treatment of candidiasis significantly increases the response to cure. Early initiation of antifungal medication (mistatin or miconazole - topical), use of enzymatic solutions containing lactoferrin and oral hygiene with chlorhexidine are measures that can be adhered to, aiming to reduce the incidence of oral candidiasis and other pathogens.

PNEUMONIA ASSOCIATED WITH MECHANICAL VENTILATION (PAVM)

Ventilator-Associated Pneumonia (VAP) is defined as that which develops 48 hours after the start of mechanical ventilation, being considered up to 48 hours after extubation. It is one of the most common hospital infections (HI) in ICUs (Beraldo; Andrade, 2008). The incidence of pneumonia varies from 9% to 68%, depending on the diagnostic approach, with a mortality rate ranging between 33% and 71%. In cases related to mechanical ventilation, the incidence can reach 85% (Cardoso; Bizani, 2015). Therefore, it is clear that, although mechanical ventilation has been a great discovery and saves lives, it can cause some harm to the patient.

This occurs because mechanical ventilation breaks the physiological barrier between the oropharynx and trachea, eliminating the cough reflex, which can result in the accumulation of secretions in the lungs and the aspiration of secretions contaminated by oral microorganisms (Cardoso; Bizani, 2015).

Many of the risk factors associated

with VAP are preventable. For this reason, Cardoso and Bizani (2015) developed a set of preventive measures, known as a bundle, to prevent the occurrence of VAP. This bundle was implemented in an intensive care center (ICU) of a hospital in the metropolitan region of Porto Alegre. One of the proposed measures includes care for the oral health of intubated patients, using 0.12% chlorhexidine. In addition to being easy to apply, this substance is absorbed by the oral mucosa and is released over time, and can provide effects for up to 12 hours. The authors observed a significant reduction in pneumonia cases in the hospital sector, decreasing from 13 for every 1,000 patients/day in 2013 to 5 for every 1,000 patients/day in the following year.

In addition to the study by Cardoso and Bizani (2015), research conducted by Beraldo and Andrade (2008), which examined the literature on the subject, revealed that 60% of the studies analyzed demonstrated that chlorhexidine has significant positive effects in reducing pneumonia. The same authors concluded that the preventive use of chlorhexidine is effective and safe, with no side effects.

SANITIZATION PROTOCOLS

In previous pages, the relevance of oral hygiene for the systemic health of hospitalized patients has already been emphasized. However, it is common for this aspect to be neglected in ICUs, either due to the lack of training of the nursing team or the absence of a qualified dental professional to identify and diagnose oral conditions, in order to guide the team appropriately. Therefore, it is essential and highly beneficial to implement Standard Operating Procedures (SOP) to systematize and ensure appropriate care for these patients (De Luca *et al.*, 2017).

To begin, it is essential to assess the health and oral hygiene of patients. According

to the study by De Luca et al. (2017), the authors suggest the use of the Bedside Oral Examination (EBL) to determine the need for a regular visit from a Dental Surgeon (DC). This exam, an adaptation of the Oral Assessment Guide originally developed for patients undergoing chemotherapy treatment, evaluates several aspects, including swallowing, salivation, lips, tongue, mucosa, gums, teeth and odor, assigning a score from 1 to 3 for each item. At the end of the exam, the scores are added together. If the patient achieves a score of up to 16, the CD visit will be periodic as needed. If the score is greater than 16, the CD visit will be daily.

Furthermore, the authors propose a detailed SOP for patients' oral hygiene. Briefly, the POP consists of brushing your teeth with a brush or swab soaked in chlorhexidine, cleaning the mucous membranes and tongue (including in completely edentulous patients) with gauze or a swab soaked in chlorhexidine, aspirating the excess and, if necessary, moisturizing the lips and mucous membranes with lip balm or artificial saliva. For patients undergoing orotracheal intubation, the SOP also includes scraping the tongue to remove the tongue coating and cleaning the tube and probe with gauze or a swab soaked in chlorhexidine (De Luca et al., 2017).

In the study conducted by Cardoso and Bizani (2015), in which the *bundle* was applied in a hospital, patients' oral hygiene was carried out with 0.12% chlorhexidine, recognized for its great bactericidal potential, using a small sponge measuring 3 to 4 times a day, with special care for possible allergies and/or changes in the mucosa. The authors observed that, among all the measures included in the

bundle, oral hygiene was one of the most effective in preventing VAP. They report that the implementation of standardized protocols in a hospital in Rio Grande do Sul resulted in a 40% reduction in VAP rates, while in another hospital in São Paulo, this number reached 51%.

In the study by De Luca (2019), the author also emphasizes the importance of cleaning patients' tongues to remove tongue coating, another significant focus of microorganisms in the oral cavity.

FINAL CONSIDERATIONS

Based on the above, it can be inferred that the presence of dental professionals within hospitals results in a significant reduction in the incidence of hospital infections, recovery and length of stay for patients and, consequently, in costs for the institution. Furthermore, it is clear that the standardization and regularity of oral health care for hospitalized patients are essential for a faster and more effective recovery, contributing to saving lives.

Certainly, encouraging and publicizing hospital dentistry at universities is crucial to increasing awareness and participation of dentists in this area. The training of future dental professionals to work in hospital environments can be integrated into the academic curriculum through specific disciplines, supervised internships and residency programs, in addition to awareness-raising work. Through these training and dissemination initiatives, universities can prepare future dental surgeons to act competently and engaged in hospital dentistry, thus contributing to the improvement of health care offered to hospitalized patients.

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