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IMPORTANCE OF DENTIST IN THE UNIT OF THERAPY PEDIATRIC INTENSIVE CARE UNIT (PICU): LITERATURE REVIEW

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Review Article

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Abstract. Hospital dentistry is a set of practices of the dental surgeon that collaborates with oral care, through the implementation of multidisciplinary teams in the nosocomial environment, whose mission is to prevent and treat oral infections that interfere with systemic evolution. of hospitalized patients. The objective of this study it will be to analyze the oral care performed in Units of Therapy Intensive Pediatric (UTIP) under you aspects from the promotion of oral health and quality of life of pediatric patients. The study was developed through a bibliographic review using the Integrative Literature Review method. A survey of articles and literature sampling was carried out, including scientific productions nationals and international node period of 2015 the 2022 what if related to the theme and presented coherence during the search. This form, we conclude what the Careful with the oral cavity offered by the Dentist contributes to the general health and well-being of patients pediatrics by means of one dentistry what prevents, promotes the recovery and improves quality of life.

Keywords — Hospital Dentistry; Oral Hygiene; Pediatric Intensive Care Units .

1 Introduction

Hospital dentistry is a set of practices of the dentist who collaborates with the care oral, through from the implementation of multidisciplinary teams in the nosocomial environment, whose mission is to prevent and treat oral infections that interfere in the systemic evolution of hospitalized patients. Oral health in childhood is directly linked to comprehensive health and, consequently, to quality of life. The relevance of actions that encourage the promotion and prevention of oral health is highlighted, enhancing the recovery of pediatric patients hospitalized and under care in Intensive Care Units (ICU) [1, 2].

According to the American Academy of Pediatric Dentistry (AAPD), children's oral health like this as the perinatal they are fundamentals on you which the education preventive and the service dental must to be built. THE promotion of health oral in children is essential for the development of structure Bucomaxillofacial, minimizing potential infectious risks and favoring the maintenance of the health of the pediatric patient [3].

Node context hospital, above all in the ICU, you care with the hygiene of mouth yet are located as priority low what, associated the lack or absence of the dentist, can lead to precariousness in the diagnostic evaluation and in the execution of practices effective of treatment and maintenance from the health children and youth [4]. Insufficient oral hygiene promotes plaque accumulation and colonization by pathogenic bacteria, what facilitate the dissemination of pathogens. It is known what the bad hygiene oral cavity increases the risk of pathology in others organs, such as the respiratory system. The state of oral hygiene of ICU patients affects the occurrence of ventilator-associated pneumonia (VAP) , the recurrence of mouth dry in addition of injuries oral put cause of medications, disorders from the chew, discomfort to the to swallow and difficulty in carry out the hygiene oral on its own.

In the Units of Therapy Intensive Pediatric (UTIP), the PAVM and the second complication nosocomial more common, being able to entail serious consequences, as periods more long of time of intubation and higher risk of mortality [5]. The humidity and temperature of the oral cavity provide a suitable environment for the development of species bacterial organized and complex with several degrees of virulence. Therefore, the oral cavity of hospitalized patients is significantly colonized put agents pathogenic; initially by Staphylococcus Aureus and, in a later phase, the Pseudomonas Aeruginosa and the Haemophilus Influenzae , being these last more virulent and difficult of eradicate. In intubation to cavity oral remains opened by long periods of time, causing xerostomia and compromising the health oral and the integrity of the teeth. Such fact node patient childish, when newly erupted, you teeth are extremely vulnerable the caries, one time what the process of mineralization yet no it is finished [6].

Pediatric patients hospitalized in PICUs are becoming a public health problem due to high costs of care and increased morbidity and mortality rates. Healing processes and clinical outcomes in debilitated pediatric patients can be affected by poor oral health; therefore, oral hygiene should be an integral part of health care protocols. Regardless of the use of enteral feeding tubes, endotracheal intubation, or mechanical ventilation, hospitalized children are increasingly susceptible to changes in the oral environment. Conditions related to these changes include mucosal changes due to emotional stress, motor weakness, and

side effects of medications. In addition from that, those patients they are more vulnerable to Contamination of respiratory system due the aspiration of liquid oropharyngeal [7, 8].

Saliva has a significant influence on the maintenance of oral health and hospitalization interferes with salivary secretion, decreasing salivary levels of immunoglobulins and antimicrobial enzymes and, consequently, inducing a change in the oral microbiome. Hyposalivation and decreased enzyme concentrations also they can modify to the surfaces mucous membranes to the far away of tract respiratory, facilitating the colonization put pathogens and increasing the risk of infections opportunists. Being like this, the length of stay in the PICU is proportionally related to the quantity and quality of oral biofilm and proliferation of respiratory pathogens [9, 10].

Oral hygiene care in PICU patients is often inadequate, although these children be submitted the evaluations and cleanings buccal regular. THE Ineffective or irregular oral hygiene can increase the proliferation of pathogenic microorganisms, disturbing the balance of the oral microflora; however, when effective and regular, it becomes important for ventilated patients, for example, reducing the incidence of VAP. Oral hygiene protocols are effective in eliminating tongue coating, dental biofilms and periodontal inflammation, helping to prevent opportunistic infections in critically ill patients.

Some correlations can be established between to the illnesses systemic in patients of UTIP and a considerable increase in bacteria pathogenic in the cavity oral, highlighting the need of measures preventive and curatives to minimize or eliminate the risk of infection. To the brushes of tooth, the chlorhexidine a 0.12%, the chloride of cetylpyridinium and scrapers of language yet they are tools effective to decrease or prevent the colonization of bacteria pathogenic in the cavity oral [11, 12]. Therefore, the objective of this study will be to analyze the oral care performed in PICU under you aspects from the promotion of health oral and quality of life of pediatric patients.

2 Materials and Methods

The study was developed through a bibliographic review using the Integrative Literature Review method [2], artificial intelligence, enabling an understanding of the factors related to the subject. A survey of articles and literature sampling was carried out, including national and international scientific productions from 2015 to 2022 that were related to the topic and presented coherence during the research. They were excluded productions scientific what no if related to the theme and were outside the selected years.

The search he was divided in three phases, being the first related the elaboration of a question: “Which the importance from dental care to patients admitted to Pediatric ICU?”. THE second phase consisted in the search of the articles put quite from the Library Virtual Health, with reference and textual databases LILACS (Latin American and Caribbean Literature in Health Sciences), Google Scholar, SCIELO (Scientific Electronic Library Online) and MedLine (Pubmed). In the third phase, data collection was carried out with a semi-structured script containing: Title of the article, Author(s), Year, Database, Objective and Results. Thus, the analysis of the results was carried out through thorough reading, with the objective of to enjoy to the information important. There was also the comparison of the data highlighted in the analysis of the articles, where the interpretation

and synthesis of the results became fundamental to the theoretical framework.

3 Results and Discussion

You results obtained they were 14 articles referents to the years of 2015 the 2022, according to Table 1, in increasing temporal order (Appendix). It is worth noting that the PICU is a specialized hospital unit designed to provide intensive care to seriously ill children. These units they are especially equipped with technology doctor advanced and one highly team trained, including doctors and the team multidisciplinary, what work together to monitor and treat pediatric patients intensively.

PICUs are designed to manage a variety of serious medical conditions in children, including respiratory diseases, cardiac problems, trauma, neurological disorders and infections of nature diverse. Generally he has equipment specialized, such as fans, monitors cardiac, bombs of infusion and others devices advanced, to provide vital support and continuous monitoring. For Procópio et al. the multidisciplinary team in a PICU it works in set to to guarantee the better result possible for each patient pediatric, adapting you treatments and care according to necessary to meet the individual needs of each child [13].

Hospital dentistry plays a crucial role in the PICU, although it can often be overlooked in comparison to other medical specialties. Many children admitted may have systemic conditions that make them vulnerable to oral problems, as caries, infections and ulcers. Second Behzadi, the The Dentist performs regular, daily assessments regarding the maintenance and conservation of the oral health of hospitalized patients, identifying problems early and implementing preventive measures to reduce the risk of complications [14].

The health oral suitable and fundamental to the prevention of the infections, especially in critically ill patients. In this sense, Fernandez et al., (2017) and Lan et al. (2021) agree that Hospital Dentistry works together with other health teams to implement strict oral hygiene protocols, thus reducing the risk of associated infections the cavity oral. THE Pneumonia Associated the Ventilation Mechanics (PAVM) and a serious complication that can occur in pediatric patients who are receiving invasive ventilatory support in a PICU.

THE PAVM and defined as one pneumonia what if develops in patients what are receiving ventilation mechanics put quite of one tube endotracheal or tracheostomy put at least 48 hours. For Keikha et al. (2021), there are several risk factors for its development, including the duration of mechanical ventilation, the use of sedation, age, presence of comorbidities, previous lung injuries, suppression of the immune system and the aspiration of gastric contents. It usually occurs when microorganisms colonize the airways aerial of patient hospitalized and enter to the lungs, lots of times due the inadequate suction techniques , contamination of ventilation equipment or prolonged use of endotracheal tubes.

Treatment of VAP usually involves the use of specific antibiotics to combat the identified pathogens, along with respiratory support measures and other supportive therapies as needed. It is important to select appropriate antibiotics based on bacterial cultures and sensitivities to ensure treatment efficacy. Therefore, Mensah et al. (2023) report what the strategies for prevention measures include adopting rigorous measures for proper maintenance of mechanical ventilation devices, careful suction practices and regular daily

oral hygiene.

Other aspect important and crucial above all us patients children's with One of the most common congenital heart diseases is infective endocarditis (IE). Infective endocarditis is a serious infection of the inner lining of the heart, including the heart valves. In the PICU, infective endocarditis can be a complex and challenging condition to treat. It is often caused by bacteria, although it can be caused by other microorganisms, such as fungi, that enter the bloodstream through skin lesions, surgical wounds, dental procedures, or other sites of infection [15].

Children with congenital heart disease, implanted cardiac devices, a history of cardiac surgery, or other conditions that affect heart function are more likely to risk of to develop endocarditis infectious. THE treatment from the endocarditis infectious in the PICU usually involves a multidisciplinary approach involving pediatric cardiologists, infectious disease specialists, and surgeons, including the use of medications. A rapid and accurate approach to the diagnosis and treatment of infective endocarditis is essential. in the PICU to minimize the risk of complications serious and improve you clinical results. In addition from that, measures preventive suitable, as prophylaxis antibiotic before of invasive procedures in high-risk patients can help reduce the incidence of infective endocarditis.

In that sense, the hygiene oral and one part essential of the care provided in the UTIP, because it has repercussions significantly in the health general and the well-being of pediatric patients. Maintaining proper oral hygiene helps prevent a number of complications, including ventilator-associated pneumonia (VAP) and secondary oral infections. Oral hygiene care should include regular cleaning of the teeth and gums of patients, especially those who are unconscious, intubated, or in critical condition. This can be done with a soft toothbrush or moistened gauze, depending on the patient's condition. of standard oral and of the conditions clinics of the patients interned [16].

Maintaining adequate hydration of patients is essential for oral health. THE xerostomia he can increase the risk of caries, gingivitis, infections buccal and discomfort for the patient. Therefore, and important to guarantee the hydration suitable intraoral, but also extraoral, put quite from the lanolin trihydrate, very used in UTIP. For Ludovichetti and al. (2022), good oral hygiene ensures the prevention of aspiration of contaminated oral secretions, which can lead to pneumonia or other respiratory complications. It is important that patients receive a complete and daily dental evaluation, especially those with chronic and serious conditions.

The PICU nursing team must receive guidance on how to properly perform the hygiene oral of the patients and the importance from the maintenance from the health oral during the hospitalization hospital. That he can include techniques of brushing, use of mouthwashes and etc. THE multidisciplinary collaboration he must be stimulated put quite of trainings and training carried out for the Dentist, of mode the favor the transdisciplinary collaboration to to guarantee one good hygiene oral, preventing complications and promoting the recovery of hospitalized pediatric patients.

4 Conclusion

Dentistry in the Pediatric Intensive Care Unit (PICU) has crucial importance in the recovery and well-being of hospitalized patients, as it:

- promotes multidisciplinary integration, working with other specialties to ensure holistic and comprehensive care;
- enables early dental evaluation, identifying oral problems and maintaining adequate oral hygiene to prevent ventilator-associated pneumonia and secondary infections;
- supports the education of caregivers about oral hygiene practices, brushing techniques, and the use of mouthwashes for pediatric patients; and
- contributes to the general health and well-being of pediatric patients through preventive and restorative dentistry that promotes recovery and improves quality of life.

References

[1] Silva FC. Scope of hospital dentistry: literature review. Rev Odontol Haco. 2020;1(2):14-22.

[2] Silva JLMD, Santos FCM, Ribeiro E, Soares KS, Bolzan FAC, Prestes GBR. Dentistry hospital: a multidisciplinary vision in a public institute of Amazon. Res Soc Dev. 2022;11(12):1-9.

[3] Olatosi OO, Oladugba THE, Oyapero THE, Belie F, Owais T, Weber-Gasparoni K, et al. The preexperimental study to assess the impact of an interdisciplinary educational intervention on nurses' knowledge of perinatal and infant oral health care. J Int Soc Prev Community Dent. 2019;9(6):619-29.

[4] Johnstone L, Spence D, Koziol-McClain J. Oral hygiene care in the pediatric intensive care unit: practice recommendations. Pediatr Nurs. 2010;36(2):85-96.

[5] Jun MK, Ku JK, Kim IH, Park SY, Hong J, Kim JY, et al. Hospital Dentistry for Intensive Care Unit Patients: A Comprehensive Review. J Clin Med. 2021;10(16):3681.

[6] Ludovichetti FS, Zuccon A, Positello P, Zerman N, Gracco A, Stellini E, et al. Preventive oral hygiene and ventilator-associated pneumonia in pediatric intensive care unit. Eur J Paediatr Dent. 2022;23(4):298-302.

[7] Konuk Sener D, Aydin M, Cangur S, Guven E. The effect of oral care with chlorhexidine, vitamin E and honey on mucositis in pediatric intensive care patients: A randomized controlled trial. J Pediatr Nurs. 2019;45:e95-e101.

[8] Silva GEM, Thomsen LPR, Lacerda JCT, Botelho SHB, Reis JAC, Ferreira RDA, et al. Hospital dentistry in Brazil: where are we? An analysis of the scenario in recent years. R Fac Odontol. 2020;61(1):92-7.

[9] Pine CLS, File FP, Ax FC, Santos SS, Mallet ARX, Ataide T, et al. Oral and tracheal microbiota of pediatric and adolescent patients in an intensive care unit. Spec Care Dentist. 2021;41(5):599-606.

[10] Winning L, Lundy FT, Blackwood B, McAuley DF, El Karim I. Oral health care for the critically ill: a narrative review. Crit Care. 2021;25(1):353.

[11] Ullman A, Long D, Lewis P. The oral health of critically ill children: an observational cohort study. J Clin Nurs. 2011;20(21-22):3070-80.

[12] Barbosa de Castro Piau CG, Azevedo TD, de Castro Piau AG, Miranda AF, Pinheiro JA, Bezerra AC. Oral microbial colonization in pediatric intensive care unit patients. J Dent Child. 2016;83(2):53-9.

[13] Procopio SW, Ribeiro AA, Miyahira KM, Branch EB, Portela MB, Castro A. Is the oral cavity of intensive care unit pediatric patients more susceptible to methicillin-resistant Staphylococcus aureus infection? Microb Drug Resist. 2022;28(7):787-94.

[14] Behzadi F, Khanjari S, Haghani H. Impact of an education program on the performance of nurses in providing oral care for mechanically ventilated children. Aust Crit Care. 2019;32(4):307-13.

[15] Miranda AF, Lia EN, de Carvalho TM, Piau CG, Costa PP, Bezerra AC. Oral health promotion in patients with chronic renal failure admitted to the Intensive Care Unit. Clin Case Rep. 2015;4(1):26-31.

[16] Navya PN, Dhananjaya G, Chandra P. Efficacy of chlorhexidine wipes on colonization of Pseudomonas aeruginosa and Staphylococcus aureus in both ventilator and nonventilator patients in pediatric intensive care unit. J Indian Soc Pedod Prev Dent. 2020;38(3):289-92.

Appendix

Table 1: Literature review on the importance of oral hygiene in the PICU

Author(s)/Year	Title	Objective	Conclusion
Walnut et al. (2015)	*Oral hygiene and pneumonia in children in Intensive Care Unit: systematic review.*	To identify evidence on the effect of oral hygiene in preventing VAP in children admitted to neonatal or pediatric ICUs.	Oral hygiene integrated into a hospital infection–prevention protocol is associated with reduced VAP in children hospitalized in ICU; there is no evidence for the effectiveness of oral hygiene with chlorhexidine in children admitted to the ICU.
Piau et al. (2016)	*Colonization of oral microbiota in patients in the Pediatric Intensive Care Unit.*	To assess oral microbial colonization before and after the implementation of an oral hygiene protocol for hospitalized children in a PICU, using healthy non-hospitalized children as a control group.	Pathogenic bacteria were present in the oral cavity of hospitalized children in almost all cases, decreasing significantly after adequate oral hygiene procedures incorporated into daily care.
Melo et al. (2017)	*Health oral of children and teenagers hospitalized: challenges and perspectives.*	To assess the oral health condition of hospitalized children and adolescents.	A deficiency in oral health conditions was found among hospitalized children and adolescents, emphasizing the need for oral health care in the hospital environment.
Austrian-Milk et al. (2018)	*Dental assessment of patients in Pediatric Intensive Care Unit.*	To report clinical features of children served by the Dentistry Service of the Pediatric ICU of a reference hospital of the SUS, as well as record oral health conditions and treatments performed by the dental team.	Children hospitalized in a Pediatric ICU may present oral mucosal changes from admission; the constant presence of a dentist in the ICU team is mandatory to treat and promote adherence to oral care, preventing adverse events in the oral cavity, avoiding complications/delays, and aiming at shorter hospital stays and comprehensive care.

Table 1 (continued)

Author(s)/Year	Title	Objective	Conclusion
Sener et al. (2019)	*Effect of oral hygiene with chlorhexidine, vitamin E and honey on mucositis in Pediatric Intensive Care Unit patients: a randomized controlled trial.*	To determine the effect of oral care with chlorhexidine, vitamin E and honey in the management of oral mucositis (OM) in children treated in a PICU.	Vitamin E was the most effective agent in OM management, followed by honey; chlorhexidine was less effective than the other two. Vitamin E is recommended in preventive and therapeutic oral-care practices for mucositis.
Olatosi et al. (2019)	*Pre-experimental study to evaluate the impact of an interdisciplinary action on nurses' knowledge in perinatal and childhood oral health care.*	To assess the impact of an interdisciplinary educational intervention on nurses' knowledge about perinatal and infant oral health care.	Positive impact evidenced by increased nurse knowledge about oral hygiene care and its inclusion in general health education; a rapid decline between post-test and the six-month evaluation indicates the need for continuing education and assessment.
Pine et al. (2020)	*Oral and tracheal microbiota of pediatric and adolescent patients in Intensive Care Unit.*	To characterize the oral and tracheal microbiota of patients hospitalized in a PICU.	PICU patients are susceptible to colonization by respiratory and opportunistic pathogens from the first hours of hospitalization.
Silva (2020)	*Scope of hospital dentistry: literature review.*	To discuss the role of the dentist in hospital settings (ICU and oncology) and the importance of hospital dentistry in the explored literature.	Treatment of the stomatognathic system in the hospital is fundamental for systemic-health maintenance and improvement, comfort and quality of life, and reduction of hospitalization costs.
June et al. (2021)	*Hospital Dentistry for the care of patients in the Intensive Care Unit: a review.*	To review oral hygiene status, oral-care guidelines and outcomes in ICU patients from a dental perspective for effective oral care.	Highlights the importance of establishing guidelines for oral-health assessment in ICU patients and summarizes data useful for future studies; further studies on maintaining good oral hygiene among ICU patients are necessary.
Lan et al. (2021)	*Prevention of Ventilator-Associated Pneumonia (VAP) in neonates through oral care, use of colostrum and sodium bicarbonate.*	To investigate the effect of oral care via combined use of colostrum and sodium bicarbonate in preventing VAP.	Combined use of colostrum and sodium bicarbonate in oral care may reduce VAP incidence in pediatric patients and shorten mechanical-ventilation duration.

Table 1 (continued)

Author(s)/Year	Title	Objective	Conclusion
Winning et al. (2021)	*Oral health care in critically ill patients: a narrative review.*	To discuss current oral-hygiene practices, identify deficiencies and offer suggestions for future research.	Oral health is important in critically ill patient management; improved oral-health practices are associated with reduction of respiratory complications such as VAP.
God & Silva et al. (2022)	*Hospital dentistry: a multidisciplinary vision in a public institute in Amazonas.*	To understand healthcare professionals' views regarding the presence of the dentist in the hospital environment.	The multidisciplinary team supports insertion of the dentist in hospitals, providing benefits for comprehensive patient care and improving systemic and oral conditions.
Ludovichetti et al. (2022)	*Prevention, oral hygiene and ventilator-associated pneumonia in the Pediatric Intensive Care Unit.*	To analyze current literature on the relationship between pediatric VAP and poor oral hygiene, and whether improving oral hygiene could affect nosocomial pneumonia onset in PICU children.	Retrieved articles emphasize the importance of good oral-care bundles to mitigate bacterial proliferation and prevent ventilator-associated pneumonia.