



REVISIONES

Oral hygiene care to the orotracheally Intubated patient: Influencing Factors. Systematic Review

Cuidados de higiene oral ao utente intubado orotraquealmente: Fatores influenciadores. Revisão sistemática da literatura

Cuidados de higiene bucal al paciente intubado orotraqueal: Fatores influyentes. Revisión sistemática de la literatura

Tânia Filipa Cabrita Xavier¹

Filipe Correia de Melo¹

Maria do Céu Mendes Pinto Marques²

¹ Msc. in Nursing. Nurse at the Algarve University Hospital Center, Faro, Portugal. taniacabritaxavier@gmail.com

² PhD in Psychology. Professor in Nursing. Comprehensive Health Research Center (CHRC), Department of Nursing at the University of Évora. Évora, Portugal.

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ABSTRACT:

Aims: Identify factors that interfere in the provision of oral hygiene care, developed by nurses, to orotracheally intubated patients in intensive care units, on primary scientific evidence.

Methods: A systematic literature review study, developed according to the Joanna Briggs Institute protocol. To obtain the articles, a search on B-On® and PubMed® was made. The terms used in the search took into account the vocabulary indexed to the Medical Subject Headings (MeSH) database, having been structured according to Boolean operators, with the following combination in English: “Oral Hygiene” AND “Pneumonia, Ventilator-Associated” OR “Pneumonia, Ventilator Associated” AND “Critical Care Nursing”. Articles published between December 2017 and December 2020, in English, Portuguese and Spanish, available in full, published in peer-reviewed scientific journals (peer review) and which fit the PICO question developed for the study, were defined as limiting.

Results: After applying the inclusion and exclusion criteria, eight articles of a primary and qualitative nature were included in the review that address the factors that influence the provision of oral hygiene care by nurses to patients undergoing orotracheal intubation.

Conclusions: The oral hygiene care practices provided to users under orotracheal intubation, by nurses, are influenced by their knowledge, attitudes, available resources, training and institutional policies, as well as by factors related to the user that are mainly related to difficulties in access to the oral cavity.

Key words: Oral Hygiene, Intratracheal intubation, Pneumonia Ventilator-Associated, Critical Care Nursing, Intensive Care Units

RESUMO:

Objetivo: Identificar evidências científicas primárias sobre os principais fatores que interferem na prestação de cuidados de higiene oral, desenvolvidos pelos enfermeiros, aos utentes intubados orotraquealmente, nas unidades de cuidados intensivos.

Métodos: Estudo de revisão sistemática da literatura, desenvolvido segundo o protocolo do *The Joanna Briggs Institute*. Para a obtenção dos artigos recorreu-se aos motores de busca B-On® e PubMed®. Os termos utilizados na pesquisa tiveram em consideração o vocabulário indexado à base de dados Medical Subject Headings (MeSH), tendo sido estruturada segundo os operadores booleanos, com a seguinte combinação em inglês: “*Oral Hygiene*” AND “*Pneumonia, Ventilator-Associated*” OR “*Pneumonia, Ventilator Associated*” AND “*Critical Care Nursing*”. Foram definidos como limitadores, artigos publicados entre dezembro de 2017 e dezembro de 2020, em Inglês, Português e Espanhol, disponíveis na íntegra, publicados em revistas científicas revistas por pares (*peer review*) e que se enquadrassem na pergunta PICO desenvolvida para o estudo.

Resultados: Após a aplicação dos critérios de inclusão e exclusão, foram incluídos na revisão oito artigos de natureza primária e qualitativa que abordam os fatores que influenciam a prestação de cuidados de higiene oral, pelos enfermeiros, aos utentes sob intubação orotraqueal.

Conclusões: As práticas de cuidados de higiene oral prestadas aos utentes sob intubação orotraqueal, pelos enfermeiros, são influenciadas pelo seu conhecimento, atitudes, recursos disponibilizados, treino e políticas institucionais, bem como por fatores relacionados com o utente que se prendem, maioritariamente, com dificuldades de acesso à cavidade oral.

Palavras-chave: Higiene bucal, Intubação intratraqueal, Pneumonia associada à ventilação mecânica, Enfermagem de cuidados críticos, Unidade de terapia intensiva.

RESUMEN:

Objetivos: Identificar evidencias científicas primarias sobre los principales factores que interfieren en la prestación de cuidados de higiene bucal, desarrollados por enfermeros, a usuarios intubados orotraquealmente en unidades de cuidados intensivos.

Método: Estudio de revisión sistemática de la literatura, desarrollado según el protocolo del Instituto Joanna Briggs. Para la obtención de los artículos se utilizaron los motores de búsqueda B-On® y PubMed®. Los términos utilizados en la búsqueda tuvieron en cuenta el vocabulario indexado a la base de datos Medical Subject Headings (MeSH), habiéndose estructurado según operadores booleanos, con la siguiente combinación, en inglés: “*Oral Hygiene*” AND “*Pneumonia, Ventilator-Associated*” OR “*Pneumonia, Ventilator Associated*” Y “*Critical Care Nursing*”. Se definieron como limitantes artículos publicados entre diciembre de 2017 y diciembre de 2020, en inglés, portugués y español, disponibles en su totalidad, publicados en revistas científicas revisadas por pares (*peer review*) y que se ajustan a la pregunta PICO desarrollada para el estudio.

Resultados: Después de aplicar los criterios de inclusión y exclusión, se incluyeron en la revisión ocho artículos de carácter primario y cualitativo que abordan los factores que influyen en la prestación de cuidados de higiene bucal por parte de los enfermeros a pacientes sometidos a intubación orotraqueal.

Conclusión: Las prácticas de cuidado de la higiene bucal brindadas a los usuarios en intubación orotraqueal, por parte de los enfermeros, son influenciadas por sus conocimientos, actitudes, recursos disponibles, capacitación y políticas institucionales, así como por factores relacionados al usuario que se relacionan principalmente con las dificultades de acceso a la cavidad oral.

Descritores: Higiene Bucal, Intubación Intratraqueal, Neumonía Asociada al Ventilador, Enfermería de Cuidados Críticos, Unidades de Cuidados Intensivos

INTRODUCTION

The presence of orotracheal intubation is a constant in patients hospitalized in Intensive Care Units (ICU) for the need to maintain the permeable airway, either by the nature of the critical disease, or by the need for sedation, which make it impossible to breathe independently⁽¹⁾. However, by allowing mechanically assisted ventilation, the

presence of an orotracheal tube predisposes patients to an increased risk of developing pneumonia associated with intubation, by hindering access to the mouth, facilitating biofilm accumulation⁽¹⁾ and, on the other hand, by reducing the body's natural defense barriers, such as the cough reflex and the closure of the epiglottis, which ultimately facilitate the entry of microorganisms into the lower airway⁽²⁾. Pneumonia associated with intubation is defined as pneumonia that appears in the person with an orotracheal tube for more than 48 hours or in a person who has been extubated for less than 48 hours⁽³⁾. It is considered the most common^(3,4) and most deadly healthcare-associated infection in Intensive Care Units (ICU)⁽⁴⁾, contributing significantly to increased morbidity, mortality, increased days of hospitalization and a significant increase in associated health costs⁽⁵⁾.

Because it is a global problem, due to its high prevalence and the prognosis associated with pneumonia associated with intubation, a set of intervention bundles have been developed by several countries that aim to prevent it. Oral hygiene is one of the strategies present in these bundles, which occupies a central place in their prevention, by allowing the reduction of the accumulation of dental plaque, biofilms and consequent bacterial load in the oral cavity of the patient under intubation⁽¹⁾ significantly reducing the risk of these microorganisms being taken to the lower airways. Despite the guidelines and the known benefits of this action, it is not always considered a priority by institutions and nursing teams, being mostly developed heterogeneously and inconsistently⁽⁶⁾. Therefore, nursing care plays a central role in the development of highly complex and extremely relevant practices. In this sense, the present systematic literature review (SLR) arises, whose objective is to identify the factors that interfere with oral hygiene care practices developed by nurses to orotracheal intubated patients in the ICU. Their knowledge will make them known in the places of care, allowing the subsequent development of strategies aimed at promoting safe care, based on scientific evidence.

METHODS

Considering the relevance of the theme, a systematic literature review was carried out according to the guidelines of The Joanna Briggs Institute⁽⁷⁾. Thus, the respective review protocol was designed, which began with the research question, formulated according to the PICO method: P (Population) –Nurses; I (Intervention) – Provision of oral hygiene care to the patient under orotracheal intubation; C (context): Adult Intensive Care Unit; O (Outcome = Results) – Factors that influence. After the design of the PICO method, the research question was defined: What are the factors that influence oral hygiene care to the patient under orotracheal intubation, provided by nurses in intensive care units?

After the review question was formulated and the objective of the research was structured, the inclusion criteria of the studies were defined, summarized in table 1.

Table 1: Synthesis of PICO Criteria for the Selection of Studies in the Systematic Review

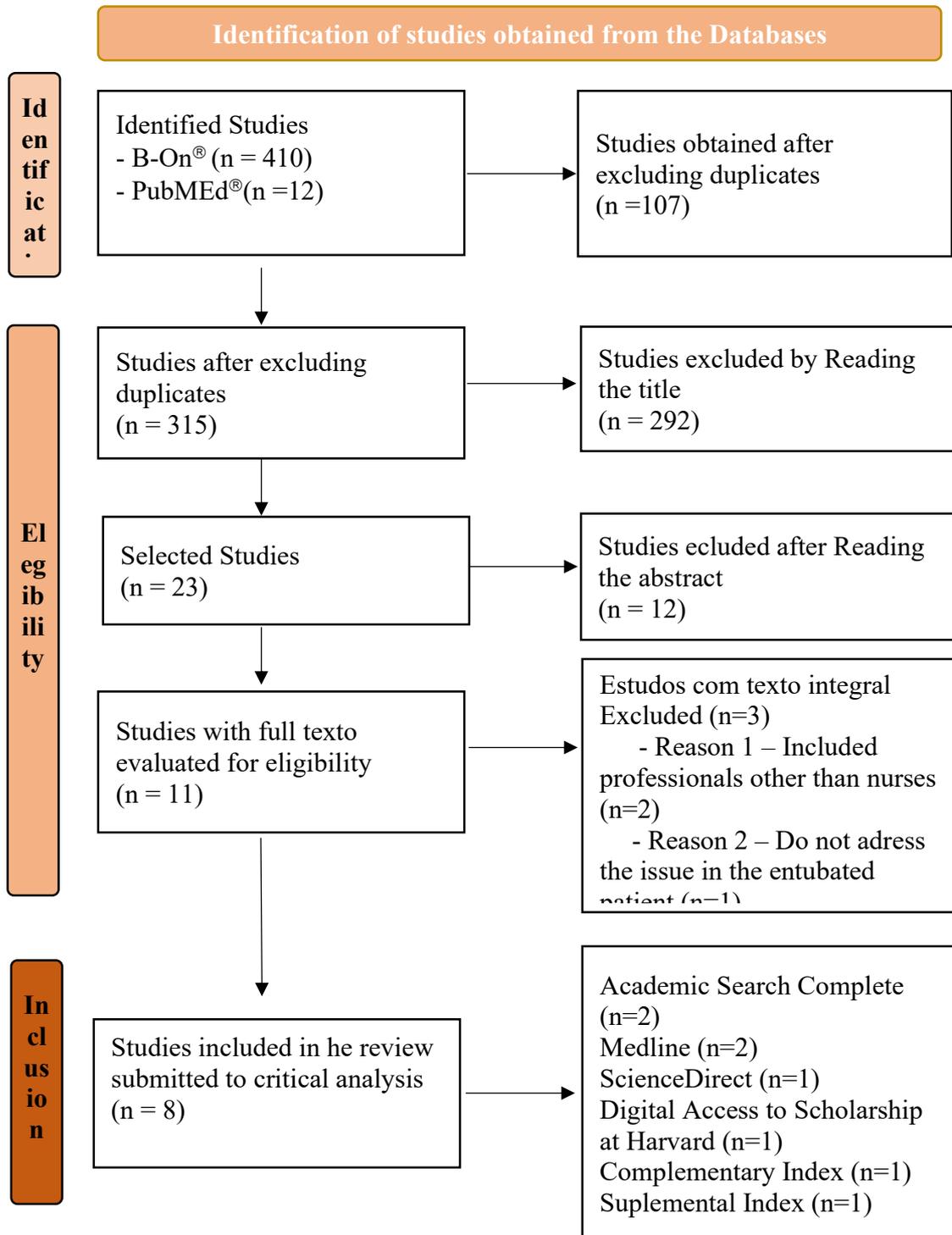
PICO	Inclusion Criteria
Participants	Nurses working in adult intensive care units
Intervention	Providing oral hygiene care
Context	Adult Intensive Care Unit
Outcomes	Factors that influence the provision of oral hygiene care to the patient undergoing orotracheal intubation

The research strategy included only published studies and was carried out in three steps. First, a generalist search was performed in the databases Google Scholar, PubMed® and Online Knowledge Library (B-On®) that allowed identifying all keywords and descriptors used. Subsequently, a second survey was conducted, with vocabulary indexed to the Medical Subject Headings database (MeSH®) on April 17, 2021, in the search engines: *Biblioteca do Conhecimento Online* (B-On®) and PubMed®. For this research were used the limiters: articles published between December 2017 and December 2020; available in full text; peer review; published in academic journals and available in Portuguese, English and Spanish.

The terms used in the search were structured according to Boolean operators, with the following combination in English: “Oral Hygiene” AND “Pneumonia, Ventilator-Associated” OR “Pneumonia, Ventilator Associated” AND “Critical Care Nursing”.

In the third step, articles were selected for inclusion in the systematic review. From the research, 422 articles (410 via B-On® and 12 via PubMed®) were obtained. After the removal of duplicates (n=107) resulted in 315 articles. By reading the title, 23 articles were selected (292 excluded). Through reading the abstract, 12 articles were excluded because they did not answer the research question, did not answer the research question in the outlined context or did not present an appropriate methodology, leaving the sample with 11 articles for full text analysis. From these, after evaluation, only primary studies were selected, remaining 8 articles for the systematic review of the literature, belonging to the databases: Academic Search Complete (2 articles), Medline (2 articles), ScienceDirect (1 article), Digital Access to Scholarship at Harvard (DASH) (1 article), Complementary Index (1 article) and Supplemental Index (1 article). This process was carried out independently and autonomously by 2 reviewers, and the selected studies were obtained by their consent. In the flowchart performed (Figure 1), it was possible to systematize the selection process of the studies.

Figure 1: Flowchart of the article selection process



Adapted from PRISMA (2021) ⁽⁸⁾

The evaluation of the methodological quality of the selected studies was performed according to the criteria defined by The Joanna Briggs Institute^(7,8,9) using the levels of

evidence according to the characterization of the studies (table 2) and the instrument “Critical Appraisal Checklist for Analytical Cross-sectional Studies”⁽⁷⁾, assuming as studies of correct methodology and proven quality those who gathered at least 7 affirmative answers in 8.

Table 2: Assessment of the methodological quality of the studies included in the systematic review^(9,10)

	Article	Level of Evidence (JBI) ^(9,10)
E1	Al-Zaru, I., Batiha, A., Al-Talla, A., Bani, M., Alhalaiaqa, F. ⁽¹⁴⁾	4b. Cross-sectional, descriptive and correlational study
E2	Alja’afreh, M., Mosleh, S., Habashmeh, S. ⁽¹³⁾	4b. Descriptive cross-sectional study
E3	Dale, C., Smith, O., Butty, L., Rose, L. ⁽¹¹⁾	4th Descriptive observational non-interventional study
E4	Gharuri, S., Javaeed, A., Chaudhry, A., Khan, A., Mustafa, K. ⁽¹⁵⁾	4b. Cross-sectional study
E5	Khasanah, I, Sae-Sia, W., Damkliang, J. ⁽¹⁶⁾	4th descriptive study
E6	Sreenivasan, V., Ganganna, A., Rajashekaraiiah, P. ⁽¹⁷⁾	4b. Descriptive cross-sectional study
E7	Tanguay, A., Reeves, I., LeMay, S., Khadra, C., Gosselin, E., St-Cyr-Tribble, D. ⁽¹²⁾	4b. Cross-sectional, descriptive and correlational study
E8	Tanguay, A., Lemay, S., Reeves, I., Gosselin, E., St-Cyr-Tribble, D. ⁽⁶⁾	4b. Cross-sectional, descriptive and correlational study

RESULTS

The extraction of data from each article was performed by creating a table (table 3) that included, for each study, the following information: authors, title, place, year, objective of the study, intervention developed, period of time, type of participants and main results. The presentation of data in a table is recommended by JBI⁽⁷⁾ and its main objective is to conduct the narrative process and summaries of the data found.

The articles included in the systematic literature review were published between the years 2017 and 2020 and include nurses and intubated patients, with samples ranging from 28 to 375 nurses and 47 to 428 patients. The context concerns Intensive Care Units (ICU). In its entirety, are descriptive studies, mostly cross-sectional, which used the questionnaire as the main data collection strategy. Regarding the demographic origin of the studies, these were performed in different countries: Canada^(6,10,11), Jordan^(12,13), Pakistan⁽¹⁴⁾, Thailand⁽¹⁵⁾ and India⁽¹⁶⁾.

Through the analysis and rigorous interpretation of the studies included in this review, we identified that most articles focus on knowledge^(6,12-14,16), attitude^(6,12-14,16) and oral hygiene care practice of nurses to intubated patients^(13,14,11,16). Some of them address the influence of sociodemographic data^(6,11), resources^(11,13,14,16) and the existence of standardized instruments of action (guidelines, norms and/or protocols)^(6,11-13,15,16) in the practice of care. Other included studies also address the factors related to the difficulty of access to the oral cavity of users for the provision of hygiene care^(10,14,16).

Table 3: Summary of studies obtained – Factors that interfere in the provision of oral hygiene care to patients undergoing orotracheal intubation

Authors Title Year, Country	Objective Participants Intervention Period	Outcomes
Al-Zaru, I., Batiha, A., Al-Talla, A., Bani, M., Alhalaiqa, F. ⁽¹⁴⁾ Knowledge, attitudes and practices of oral care in mechanical ventilated patients	To identify the knowledge, attitudes and practices of ICU nurses regarding oral hygiene practices for intubated patients. 135 nurses Questionnaire Applied in two Jordanian university hospitals between June to August 2013	Average Knowledge: 53.6%. Nurses do not have a correct knowledge and perception about the characteristics of cleaning solutions and adequate resources to perform oral hygiene care; Attitude: 67.5% consider oral hygiene as a medium priority. However, when compared to activities with the greatest impact on clinical stabilization, oral hygiene was ranked last; 43.25% provide oral hygiene care considered ideal, and this gap is related to the lack of standardization of care, lack of adequate equipment and institutional policies; Factors influencing the practice of oral care: equipment and solutions available at the institution; nurse-patient ratio; available time; difficult access to the oral cavity and odor; lack of knowledge about the relationship between oral hygiene care and the prevention of intubation-associated pneumonia.

2020, Jordânia		
<p>Alja'afreh, M., Mosleh, S., Habashmeh, S. (13)</p> <p>Nurses' perception and attitudes towards oral care practices for mechanically ventilated patients</p> <p>2018, Jordan</p>	<p>Explore the perception and attitudes of ICU nurses</p> <p>96 nurses</p> <p>Questionnaire</p> <p>Applied in three Jordanian hospitals between February to September 2016</p>	<p>Perception: Only 65% follow a specific oral hygiene protocol; Most consider oral hygiene to be a high-priority activity. Attitude: 68% consider oral hygiene care as unpleasant; More than 50% consider the oral cavity difficult to access; 47% consider that the condition of the oral cavity of ventilated users will worsen, regardless of the nursing care provided to them; Attitudes are strongly influenced by thoughts, reasoning and lack of time. Training: 78% would like to learn more about oral hygiene care through continuing education programs with workshops; 80% consider that they need to receive more standardized information, based on scientific evidence.</p>

<p>Dale, C., Smith, O., Butty, L., Rose, L. ⁽¹¹⁾</p> <p>Prevalence and predictors of difficulty accessing the mouths of intubated critically ill adults to deliver oral care: An observational study</p> <p>2017, Canada</p>	<p>To identify the prevalence and predictors of difficult access to the oral cavity</p> <p>428 participants</p> <p>Patients aged ≥18 years, intubated for a period of ≥48 hours</p> <p>Observational, non-participatory study</p> <p>Held at four ICUs in Toronto between 2015-2016</p>	<p>Difficulty in accessing the oral cavity identified in 83% of users. The difficulties are related to the difficulty in visualization (74%), in the cooperation of the user (55%) and in the space available to insert the instruments (53%). 35,5% had difficulties in the 3 categories. Patients' behaviors that contribute to the difficulty in accessing the oral cavity are: coughing/choking (60%), closing the mouth (49%), biting (45%) and locating or reaching tubes during care. The variables associated with extremely difficult access are related to neurological or traumatic pathology on admission, lack of pain assessment or treatment in the 4 hours before care, the presence of more devices in the oral cavity and the duration of intubation. For these reasons, the need for a multidisciplinary intervention that includes strict hygiene care is highlighted, with resources for pain assessment and management whenever necessary.</p>
<p>Gharuri, S., Javaeed, A., Chaudhry, A., Khan, A., Mustafa, K. ⁽¹⁵⁾</p> <p>Knowledge and attitudes of Pakistani intensive care unit nurses regarding oral care delivery to mechanically ventilated patients</p> <p>2020, Pakistan</p>	<p>To identify the knowledge, attitudes and practices of oral hygiene care</p> <p>81 nurses</p> <p>Questionnaire</p> <p>Applied in four hospitals in two cities of Pakistan between January and July 2018</p>	<p>Knowledge: Low levels of knowledge. Only 39.5% agree that intubation-associated pneumonia can be transmitted by contamination of secretions from the oral cavity. Attitude: 59.3% of nurses consider the mouth to be the most difficult area of the body to clean; 30.9% strongly agree; 20% strongly believe that oral hygiene is a high-priority care. 66.7% disagree with the fact that there are other more important care than oral hygiene care in unstable users; 49.4% disagreed that the state of the mouth of intubated patients deteriorates over time, regardless of the nursing care provided; 90.2% consider that the oral cavity is a difficult area to clean. Practices: 63% of nurses reported not having time to provide oral hygiene care at least once a day; 61.7% reported not having received adequate training to provide adequate oral hygiene care; 46.9% of nurses agree with the fact that they have enough resources in their units to provide oral hygiene care; 46.9% agree that the toothbrushes provided by the hospital are suitable for users.</p>

<p>Khasanah, I, Sae-Sia, W., Damkliang, J.⁽¹⁶⁾</p> <p>The effectiveness of oral care guideline implementation on oral health status in critical ill patients</p> <p>2019, Thailand</p>	<p>To test the effectiveness of introducing an oral hygiene care guideline</p> <p>28 nurses</p> <p>47 patients</p> <p>Questionnaire</p> <p>Applied during 2 months of the year 2017</p>	<p>Rogers' Diffusion and Innovation Theory was used to develop and apply an oral hygiene care guideline and an oral cavity assessment tool. Theory developed and based on four basic elements: 1- development of a guideline (based on 6 essential points: assessment of the oral cavity, preparation, oral hygiene care, patient monitoring, patient reassessment and records); 2- Communication based on: workshops, books, presentations, demonstrations and private coaching session; 3- 2 month implementation time period; 4 - Involvement of hospital management;</p> <p>Performance: After intervention 88 to 100% of oral hygiene care on intubated patients was developed was advocated; This process helped to improve evidence-based knowledge and practices; Nurses' performance in this study is not related to professional experience or level of education.</p>
<p>Sreenivasan, V., Ganganna, A., Rajashekaraiyah, P.⁽¹⁷⁾</p> <p>Awareness among intensive care nurses regarding oral care in critically ill patients</p> <p>2019, India</p>	<p>To identify the knowledge, attitudes and practices of ICU nurses in relation to oral hygiene care</p> <p>200 nurses</p> <p>Questionnaire</p> <p>January to June 2014, applied to Nurses from 21 different hospitals</p>	<p>Only 18% were able to identify all ventilation-associated pneumonia prevention strategies; 82% identified complications associated with ventilator-associated pneumonia; 91,5% of respondents reported performing oral hygiene to users in intensive care units with irrigation with chlorhexidine; Only 2% reported using a toothbrush and toothpaste; 3,5% reported using saline solution for mouth hygiene; 3,5% reported not using any of the strategies listed; 76,5% reported that the main barrier to disinfecting the oral cavity is the presence of mechanical obstructions. Another barriers identified is the lack of professionals; There are no protocols based on scientific evidence. Oral hygiene practices are generally guided towards the comfort of users at the expense of the effective removal of microorganisms; Most nurses react better to oral hygiene protocols to guide their practices.</p>
<p>Tanguay, A., Reeves, I., LeMay, S.,</p>	<p>To describe nurses' oral hygiene practices.</p>	<p>41% reported having an oral hygiene protocol in their unit, nonetheless, only 57% consider that the existing protocol is up to date; 99% consider that nurses are responsible for</p>

<p>Khadra, C., Gosselin, E., St-Cyr-Tribble, D. ⁽¹²⁾</p> <p>Survey of oral care practices in Quebec for intensive care patients receiving mechanical ventilation</p> <p>2018, Canada</p>	<p>Secondary objective: the influence of sociodemographic data on oral hygiene care practices</p> <p>375 nurses</p> <p>Questionnaire</p> <p>October 2009 to January 2010</p>	<p>providing oral hygiene care; Oral hygiene practices: 31% reported using an adult toothbrush and 4% use an pediatric; 19% use non-foaming toothpaste and 15,4% reported using foam toothpaste. Oral cotton swabs are used every 2 to 4 hours, while toothbrushes with toothpaste, on average, are used every 12 hours; The most used cleaning solutions are water (67,1%), oral cleaning solutions (63,7%) and 0.9% sodium chloride (42.5%); Knowledge about oral hygiene is around 65%. Only 48,5% of the participants reported having received training and 85.1% would like to learn more about this care; The level of education and previous training have a positive correlation with the quality of oral hygiene care provided. No correlation was found between the length of service and the quality of oral hygiene care practice; 88,2% of nurses reported needing more equipment and time; Was demonstrate the needed to develop protocols based on scientific evidence.</p>
<p>Tanguay, A., Lemay, S., Reeves, I., Gosselin, E., St-Cyr-Tribble, D.</p> <p>⁽⁶⁾</p> <p>Factors influencing oral care in intubated intensive care patients</p> <p>2019 Canada</p>	<p>To identify the factors that interfere with the practice</p> <p>Secondary objective: to explore variations in intentions</p> <p>375 nurses</p> <p>Questionnaire</p> <p>October 2009 to January 2010</p>	<p>Intention is influenced by three determinants: attitude, subjective norms and the perception of behavioral control; The perception of difficulty/ease and attitude are the constructs that most influence the level of intention to practice oral hygiene care; Knowledge, number of years in ICU and resources positively influence the intention and perception of difficulty; Prior training seems to positively influence the perception and the intention to practice oral hygiene care. Stressed the importance of developing training programs and of nursing schools incorporating this knowledge into their curricula. It's imperative to integrate scientific knowledge, as is the case with the introduction of guidelines. However, It's essential to provide adequate resources, as well as to provide the perception of the difficulty/ease to adopt certain behaviors. Another initiative involves changing the perception, through the review of policies and protocols, as the development and implementation of tools to assess the oral health status of intubated users.</p>

DISCUSSION

In the studies analyzed, although all of them are directed to the practice of oral hygiene care to intubated users, the knowledge of nurses was evaluated in relation to their knowledge of the correct practice of oral hygiene⁽¹¹⁻¹³⁾, the mechanisms of transmission⁽¹⁴⁾ and strategies to prevent pneumonia associated with intubation⁽¹⁶⁾, since all these are related. In the analyzed samples, the knowledge of nurses is considered median/low⁽¹¹⁻¹³⁾. In the study by Al-Zaru, Batiha, Al-Talla, Bani & Alhalaiqa⁽¹³⁾, the results indicate that nurses do not have adequate knowledge about the correct care practice, nor a clear perception of the ideal characteristics of the cleaning solutions used in the oral cavity (ranging from the use of chlorine-hexidine, sodium chloride, hydrogen peroxide and sodium bicarbonate).

Al-Zaru et al⁽¹³⁾ also show that nurses are unaware of the appropriate equipment for the removal of dental plaque, since they identify as the main resources to be used for this function, the foam sticks and oral swabs (80% of respondents)⁽¹³⁾ to the detriment of the use of small and soft bristle brushes⁽¹⁷⁻¹⁹⁾ preferably with an incorporated suffocation system, defined in the literature as the appropriate resource⁽¹⁸⁾. These data meet the study developed by Tanguay, Reeves, LeMay, Khadra, Gosselyn & Cry-tribble⁽¹¹⁾, which identified that the knowledge of nurses in relation to the correct practice of oral care is considered low, and by the study conducted by Alja'afreh et al, 2018⁽¹²⁾, in which most respondents do not correctly identify the indicated frequency for oral cavity aspiration and only 63% identify the correct frequency for the use of toothbrush.

Guari, Javaeed, Chaudry, Khan & Mustafa⁽¹⁴⁾ evaluated the knowledge of nurses regarding the mechanisms of transmission of pneumonia associated with intubation and despite considering that in general nurses have good knowledge, Regarding the practice related to oral hygiene care, only 40% of respondents agree that the disease can be transmitted by contaminated oropharyngeal secretions. This fact is corroborated by Al-Zaru et al⁽¹³⁾, since they identified that there is a lack of knowledge of nurses about the relationship between oral hygiene care and the prevention of pneumonia associated with intubation.

Sreenivasan, Gangana & Rajashekaraiah⁽¹⁶⁾ evaluated nurses' knowledge of strategies to prevent pneumonia associated with intubation and only 18% of nurses correctly identified the listed strategies. However, 82% of respondents were able to identify the consequences associated with pneumonia associated with intubation listed by the questionnaire (increased days of hospitalization; increased mortality; increased costs associated with hospitalization).

Regarding the origin of nurses' knowledge in relation to the practice of oral hygiene, Al-Zaru et al⁽¹³⁾, report that the majority of senior nurses transmit them, followed by nursing schools.

There are a number of factors, identified by the studies, that interfere with the attitude of nurses in relation to oral hygiene care. These mainly involve the prioritization of oral

hygiene in relation to other care provided by nurses⁽¹²⁻¹⁴⁾, thoughts and reasoning associated with care^(12,14), and evaluation (favorable/unfavorable, ease/difficulty) that professionals make the act of sanitizing the mouth of orotracheal intubated users, which ultimately influences their level of intention to practice care ⁽⁶⁾.

In general, nurses surveyed by the studies identified consider oral hygiene care as a high priority activity^(12,14). However, Al-Zaru et al⁽¹³⁾, were more incisive in their analysis and identified that nurses consider the oral hygiene of the intubated user as a median priority, when compared to other daily activities such as the physical evaluation of the user, respiratory kinesiterapy, alternation of decubitus, hygiene care and bed comfort, among others. However, when comparing oral hygiene with activities that are related to the clinical stabilization of the patient, such as the administration of oxygen therapy, aspiration of secretions, administration of therapy, admission of users in the Intensive Care Unit, and the maintenance practices of catheters, which was classified as last⁽¹³⁾.

Concerning the thoughts and reasoning associated with this care, in the studies identified by Alja'afreh et al⁽¹²⁾ & Gharuri et al⁽¹⁴⁾, a large percentage of nurses believe that the state of mouth of orotracheal intubated patients shall worsen, regardless of the care given. Being the oral cavity of the intubated patients considered by 90,2% of the respondents in the study of Guari et al⁽¹⁴⁾ as an area of the body difficult to sanitize. Alja'afreh et al⁽¹²⁾ adds that this task is considered by 68% of nurses as unpleasant. Since odor is one of the factors identified by Al-Zaru et al⁽¹³⁾, which contributes most to this association. Tanguay et al⁽⁶⁾ add that the perception of the ease/difficulty to perform a given task and the favorable/unfavorable evaluation to adopt it are the constructs that most influence the level of intention of oral care practice. Several authors emphasized that the involvement of hospital institutions, along with teaching institutions, plays a key role in the transmission of knowledge and the inherent construction of knowledge, thoughts and associated reasoning^(6,12,15 16).

In the studies analyzed, the practice of oral hygiene care to intubated patients is considered heterogeneous⁽¹⁶⁾ and of low quality⁽¹¹⁻¹³⁾, being mainly a task considered for the comfort and well-being of users, to the detriment of the effective removal of microorganisms^(13,16). This relates to knowledge (already stated), resources, time, experience, need for adequate training and institutional policies.

In terms of resources, the practice is influenced by the widespread lack of adequate means for the provision of oral hygiene care^(13,16) and the equipment provided by institutions^(6,11,13,14).

In relation to time, most nurses surveyed in the studies report not having adequate time to provide oral hygiene care^(6,11-14,16) and this factor is greatly influenced by the ratios (nurse-user) in the services^(11,13,16). Being highlighted by the study conducted by Guauri et al⁽¹⁴⁾, 63% of nurses reported not having time to provide oral hygiene care at least once a day.

Regarding the influence of sociodemographic data in the practice of oral hygiene care, Tanguay et al⁽¹¹⁾ & Al-Zaru⁽¹³⁾ report that nurses with more years of experience in ICU

tend to provide oral hygiene care ^(11,13) and to perform structured oral cavity evaluations more frequently⁽¹¹⁾. However, in the only correlational study found in the sample, no correlation was found between the length of service in the ICU and the quality of oral hygiene practice⁽¹¹⁾. Tanguay et al ⁽¹¹⁾ referred that the only positive correlation found in the quality of care is related to the level of education and previous training of nurses.

Specific training programs are identified by many of the nurses surveyed in the studies as a pressing need^(6,11,12,14). Thus, the importance of the involvement of hospital institutions is also praised^(6,12,13,16), through the development of educational programs directed to the needs of nurses^(6,12,15) that facilitate the introduction of scientific knowledge in the practice of care⁽¹²⁾ and that contradict the data found in the study of Al-Zaru et al⁽¹³⁾, which identify as the main source of knowledge of this practice, the transmission made by senior nurses. Another measure involves the introduction of standardized instruments, through updated protocols or guidelines^(6,11,13,16), since most nurses react better to standardized information available in the work areas to guide their practices, increasing their commitment to oral hygiene care to intubated patients^(12,16). As these measures, the development of comprehensive educational programs and the introduction of instruments that guide the performance of professionals in oral hygiene care, one of the recommendations presented in several articles and experts' opinions that address this issue^(1,2,18).

Regarding the presence of action protocols or guidelines in the sample studies, their presence is quite variable. Alja'afreh et al⁽¹²⁾ reported that in the three hospitals analyzed in Jordan, 65% of respondents reported having protocols of action. Tanguay et al⁽¹¹⁾, in their study conducted in two university hospitals in Canada, highlight that only 41% of respondents have protocols of action, however, 57% consider them outdated. On the other hand, Sreenivasan et al⁽¹⁶⁾ developed their study in India, in 21 hospitals, and report that the protocols are non-existent.

The influence of the introduction of training programs and protocols is quite noticeable in the study developed by Khasanah, Sae-Sai and Samkhang⁽¹⁵⁾, in Thailand. After the elaboration of a structured teaching program (with workshops, presentations, and private coaching sessions), with development and introduction of a Guideline and support of hospital management over two months, they obtained a performance of 88 to 100% of the nurses included in the sample, during the oral hygiene care contemplated in the Guideline developed, with significant increases in the state of oral health of the users. Nevertheless, Alja'afreh et al⁽¹²⁾ emphasize that it is not enough to develop training programs and standardize care. These are one of the ways identified by studies to increase nurses' knowledge and influence them in the acquisition of perceptions and attitudes that may influence practice, based on scientific evidence^(6,12). It is also necessary to monitor the practice of care⁽¹²⁾, so that it is possible to raise awareness of them and to implement strategies aimed at improving them.

Some of the studies analyzed identify as influencing factor of oral hygiene care practices the great difficulty in accessing the oral cavity of intubated users^(10,14,16).

Since the main difficulties encountered are related to visualization⁽¹⁰⁾, the space available to insert instruments^(10,16) and the lack of cooperation of the user⁽¹⁰⁾. These difficulties are amplified when users have neurological or traumatic pathology on admission (to the detriment of medical pathologies), when they have more than one device in the oral cavity, more days of intubation and present periods of agitation and pain in the four hours preceding oral hygiene care⁽¹⁰⁾. Users' behaviors that contribute most to access difficulties include coughing/choking, closing the mouth, biting, and locating or reaching devices during care. In this way, the importance of a multi-disciplinary approach, including the provision of rigorous oral hygiene care, using the assessment and management of agitation and pain, whenever necessary, is highlighted⁽¹⁰⁾.

This study has some limitations, because it was limited to the selected languages, the lack of consensus in the questionnaires used by the authors and some lack of consensus definition in the terms used as: attitude, perception and knowledge. Another limitation is the lack of characterization of oral care practice considered appropriate for each reality, when there are no protocols or institutional guidelines.

CONCLUSION

Ensuring that the practice of oral hygiene care to users under orotracheal intubation is successful implies an effective and joint work of institutions, nurses and a multidisciplinary and holistic approach to the user. To answer the question of research formulated, it is possible to conclude that the practice of oral hygiene care of nurses to users under orotracheal intubation is influenced by their knowledge, attitude, resources available, time available, training and institutional policies, as well as, by factors related to the user, which are mainly related to difficulties in accessing the oral cavity.

The articles studied present convergent results, and point out as an urgent need the development of educational and training programs aimed at increasing the know-how of nurses regarding the mechanisms of transmission and prevention strategies of pneumonia associated with intubation, highlighting the need for correct oral hygiene practice. These programs should be directed to nurses and seek the transmission of knowledge based on updated scientific knowledge, aimed at demystifying erroneous thoughts and reasoning, often associated with these practices. These should seek the change of practice, currently based on the comfort and well-being of the user, for a safe and sustained practice that seeks the effective removal of microorganisms and prevention of their arrival in the lower airways. Another of the institutional measures identified is the introduction of updated standardized instruments of action (in the form of guidelines or protocols) that guide the performance of the nursing team and increase their commitment to oral care, and is also necessary for its monitoring. However, it is not enough to bet on the transmission of knowledge and consequent change of attitudes, an active role is essential on the part of health institutions that aim to provide services with adequate resources. These resources include the availability of adequate equipment for the provision of safe oral hygiene care, as well as

professionals, increasing the nurse-user ratio and allowing greater time availability for the provision of oral hygiene care.

The literature also points to the need for a multidisciplinary approach to the user who seeks to increase their comfort and well-being, reducing the difficulties of access, visualization of the oral cavity and cooperation of the user, passing these measures, evaluation and management of agitation and pain, allowing the provision of safe oral hygiene care.

This study is relevant, current and convincing of the emerging need for institutions and health professionals to unite in the path of continuous improvement of oral hygiene care practice, with a significant impact on the health of patients under orotracheal intubation.

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