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Oral hygiene in critically ill patients at a tertiary hospital in São Paulo, Brazil: a best practice implementation project

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ABSTRACT

Objectives: This project aimed to promote evidence-based practices related to the oral health of critically ill patients in an intensive care unit in Brazil.

Introduction: The oral hygiene of patients on mechanical ventilation is an essential component of nursing care quality, and well-defined guidelines ensure appropriate care. Mechanical ventilation is associated with the risk of ventilator-associated pneumonia, which can increase mortality, length of stay, time on mechanical ventilation, and hospital costs.

Methods: This project was guided by the JBI Evidence Implementation Framework, which consists of seven stages: (1) identification of the area of practice to be changed, (2) involvement of change agents, (3) context assessment and readiness for change, (4) review of practices against evidence-based audit criteria, (5) implementation of practice changes, (6) reassessment of practices using a follow-up audit, and (7) consideration of the sustainability of changes in practice.

Results: Four audit criteria were developed to evaluate compliance with best practices. In the follow-up audit, Criteria 1, 2, and 3 obtained compliance of $\geq$ 80%. Thus, for Criterion 1, all the patients on mechanical ventilation for more than 24 hours were evaluated by the oral medicine team, resulting in 100% compliance. For Criterion 2 on appropriate oral hygiene measures, a compliance rate of 80% was achieved. For Criterion 3, 39 professionals (90.7%) participated in educational activities related to the oral health protocol for critically ill patients, obtaining 90.7% compliance. For Criterion 4 regarding patients being evaluated before receiving any oral health care, improvement was low (only 50%), revealing the need for further improvement.

Conclusion: This best practice project improved the professional practice of nursing staff and increased compliance with best practices for the oral health of critically ill patients.

Spanish abstract: http://links.lww.com/IJEBH/A175

Keywords: clinical audit; evidence; evidence-based nursing; implementation; intensive care unit; oral hygiene

JBI Evid Implement 2025; 23(1):4–13.

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The authors declare no conflicts of interest.

DOI: 10.1097/XEB.0000000000000413

What is already known

- Oral hygiene is important to prevent ventilator-associated pneumonia.
- An oral health care protocol can help prevent pneumonia and increase patient comfort.
- A multidisciplinary approach is recommended to manage the oral health of critically ill patients.

What this paper adds

- Establishing a team of ICU nurses to disseminate best practices and answer questions during shifts is an effective strategy to increase compliance with best practices.

- The use of a validated tool for evaluating the oral mucosa is feasible; however, nurses need to understand its importance for the individualized care of patients.
- In-person educational techniques associated with theoretical classes improve team engagement during training.

INTRODUCTION

Patients admitted to intensive care units (ICUs) usually need mechanical ventilation, which exposes them to the risk of ventilator-associated pneumonia (VAP).[1] This condition is defined as pneumonia in patients who have been mechanically ventilated for more than 48 hours through an endotracheal tube (ET) or tracheostomy (TC). VAP is associated with increased mortality, length of stay, time on mechanical ventilation, and hospital costs.[2]

Preventive measures for VAP include raising the head portion of the bed, stopping sedation (daily awakening), and adopting proper oral hygiene. Thus, oral care is an important part of the care of critically ill ventilated and non-ventilated patients. Effective oral hygiene guidelines help to reduce the incidence of pneumonia and increase patient comfort.[1]

Specific oral care for mechanically ventilated intubated patients should include appropriate techniques, materials, solution, and frequency. The presence of an ET can cause debris accumulation, creating a medium conducive for microbial growth, in addition to limiting inspection and access to the oral cavity.[3]

A systematic review evaluated the effects of oral hygiene on the incidence of VAP and demonstrated that the use of chlorhexidine (solution or gel) was associated with decreased VAP rates in critically ill adults; moreover, no significant differences were noted in mortality, duration of mechanical ventilation, or length of ICU stay between groups using chlorhexidine or placebo.[4] The appropriate management of patients' oral care in the ICU is an essential component of nursing care quality, and the use of well-defined guidelines can ensure appropriate care.[5]

A survey study conducted in Brazil reported that 68.4% of ICU staff received regular training on patients' oral hygiene and care, and a defined oral care protocol was present in 73.4% of the surveyed ICUs.[6] However, the high rates of VAP in Brazil compared with other countries may reflect low adherence to oral hygiene protocols, which may be related to beliefs and attitudes that persist, despite adequate training.[7]

A JBI evidence summary[8] on best practices for oral care in mechanically ventilated patients includes the following recommendations:

- An oral health care guideline can improve nursing practices in the oral hygiene of intubated patients (Grade B).
- The oral hygiene status of patients should be assessed through a validated and documented tool upon admission (Grade B).
- Toothbrushes, toothpaste, dental floss, and mouthwash (if necessary) should be used to maintain oral hygiene (Grade B).
- There is conflicting evidence regarding the use of mouthwashes containing chlorhexidine (solution or gel) in adult ICU patients; therefore, a mouthwash with chlorhexidine cannot be currently recommended (Grade B).
- A multidisciplinary team approach is recommended to improve patients' oral health (Grade B).

Despite the conflicting evidence, the use of chlorhexidine remains a common practice in routine oral health care in ICU patients; however, its routine use should be recommended with caution.[1] Regarding assessment tools, a systematic review on existing tools used by health professionals to assess the oral health of older patients outside the field of dentistry concluded that, despite methodological limitations, the Oral Health Assessment Tool (OHAT) and the Revised Oral Assessment Guide are the most complete and developed with the best methodological quality.[9]

The OHAT is a valid and reliable oral health assessment instrument.[9] The final score is the sum of items that can range from 0 (very healthy) to 16 (very sick).[10] Its Kappa coefficient is moderate (0.48–0.60) for lips, tongue, gums, saliva, and oral hygiene, while for other categories, it is 0.61–0.80. The intraclass correlation coefficients for the total OHAT scores are 0.78 for intra-caregivers and 0.74 for inter-caregivers. In Brazil, the OHAT was translated and validated for older patients considering assessment by non-dental professionals, and more than 95% of professionals considered the instrument useful in detecting oral problems.[11] As a result of this validation, the tool is known as the "Oral Health Assessment Tool for Dental Screening."

At the hospital where the present study was carried out, there is an organizational oral health care protocol for patients on mechanical ventilation;

however, it contains some inconsistencies related to oral hygiene frequency and techniques. The oral hygiene routine for critically ill patients (as described in the protocol) recommends a frequency of three times a day, the use of a 0.12% chlorhexidine solution, the use of a toothbrush and aspirator, and lip hydration. Oral hygiene is prescribed in the care plan by the nurse and performed by nursing technicians. In a recent review assessing the effects of oral hygiene care on the incidence of VAP in critically ill patients receiving mechanical ventilation in hospital ICUs, the use of chlorhexidine in oral hygiene was found to reduce the incidence of VAP compared with placebo or usual care. Moreover, there was no negative impact on the duration of mechanical ventilation, length of stay, or mortality, nor were there any other undesirable events.[12] Therefore, we chose to maintain oral hygiene care with chlorhexidine.

The clinical leader of this project, an ICU nurse, observed that the implementation of best practices for oral hygiene for patients under mechanical ventilation can affect the incidence of VAP and patient comfort. Therefore, this project used an audit and feedback strategy to promote best practices regarding the oral hygiene of critically ill patients under mechanical ventilation in a tertiary hospital in Brazil.

OBJECTIVES

The objective of this project was to promote evidence-based practices for the oral health of critically ill patients admitted to the cardiac ICU of a philanthropic hospital in São Paulo, Brazil, to improve patient outcomes and resource usage. The specific objectives were to:

- verify compliance with best practices for the oral hygiene of intubated patients under mechanical ventilation through a baseline audit;
- identify barriers and facilitators to improve compliance and develop strategies to address areas of non-compliance for the oral health of critically ill patients; and
- assess changes in compliance with evidence-based practices after implementing strategies to improve the oral health of critically ill patients.

METHODS

This project was guided by the JBI Evidence Implementation Framework, which is based on an audit and feedback process, along with a structured approach to identifying and managing barriers to compliance with best practices. The framework consists of seven phases: (1) identification of the area of practice to be changed, (2) involvement of change agents, (3) context assessment and readiness for change, (4) review of practices against evidence-based audit criteria, (5) implementation of practice changes, (6) reassessment of practices using a follow-up audit, and (7) consideration of the sustainability of changes in practice.[13]

The JBI Practical Application of Clinical Evidence System (PACES) and the Getting Research into Practice (GRiP) tools were used to implement best practices in three stages: (1) implementation planning, (2) baseline assessment and implementation, and (3) impact evaluation and sustainability.

The project was approved by the Research Ethics Committee of the hospital where the project was conducted and followed resolution 466/12 of the National Health Council. The health professionals participating in the improvement activities signed an informed consent form.

Stage 1: Implementation planning

The audit team comprised the project leader, four nurses from the cardiology ICU, a dentist from the oral medicine team, and a nurse from the Infection Control Service. These team members were responsible for training the nursing staff, collecting audit data, and overseeing the implementation of the project. The main stakeholders were the cardiology ICU nursing manager, the oral medicine team coordinator, a senior nurse from the Infection Control Service, the manager of Quality and Care Protocols, the manager of nursing development, and the ICU physiotherapy coordinator. The oral medicine team included six dentists. All professionals contributed to the project regarding the oral health care protocol and educational activities.

The project was conducted in the cardiology ICU of a large philanthropic hospital in São Paulo, Brazil. The hospital has 523 beds. Of these, 12 are in the cardiology ICU, which is intended for severe cardiac patients or for the post-operative period following cardiac surgery.

The nursing team at the cardiology ICU was composed of a nursing coordinator, two lead nurses, 16 nurses, 31 nursing technicians, and nursing residents. Nursing technicians perform nursing activities prescribed by nurses in the patient care plan. For this

project, the sample consisted of non-resident nurses, nursing technicians, and the medical records of intubated patients under mechanical ventilation. Four nurses who were part of the project team and those professionals who were on vacation or sick leave were excluded.

Stage 2: Baseline assessment and implementation

The baseline audit took place from July 1 to 31, 2021 to assess current practice against best practice recommendations. Table 1 shows the audit criteria derived from a JBI summary of the best available evidence (used in the baseline and follow-up audits) as well as a description of the sample and the method used to measure compliance with best practices.

The results of the baseline audit were presented to the project team. The GRiP tool was used to document barriers to best practices and develop strategies to improve compliance. The barriers ranged from institutional approvals, protocol limitations, staff awareness, and lack of training. The stakeholders were engaged in developing strategies to increase compliance. These included the revision of an oral health care protocol, routine assessment, participation of the oral medicine team in managing the oral health of intubated patients, and staff training (nurses and nursing technicians).

Stage 3: Impact evaluation and sustainability

A follow-up audit was conducted to measure improvement in compliance with best practices following the implementation of strategies. The same criteria were used as in the baseline audit. All patients intubated between October 1 and 15, 2021 were included, and nursing staff were observed while performing oral hygiene on eligible patients.

Table 1: Audit criteria, sample, and method used to measure compliance

Audit criteria	Sample	Method used to measure compliance with best practices
1. A multidisciplinary approach is used to improve the oral health of patients admitted to the ICU.	Baseline audit: 12 patients Follow-up audit: 7 patients	Checking patient medical records. In the baseline audit, an oral health assessment by the oral medicine team was not routinely performed. Therefore, the auditor marked "NO" for all records. In the follow-up audit, the auditor marked "YES" when there was a record of an oral medicine assessment in the patient's record.
2. Appropriate oral hygiene measures (e.g., brushing teeth, use of antiseptics) are implemented based on the oral health assessment findings.	Baseline audit: 28 professionals Follow-up audit: 30 professionals	Observation of professionals while conducting oral hygiene at the bedside. The auditor marked "YES" if the oral hygiene techniques followed the nursing prescription and the oral health protocol recommendations, considering the following items: • Oral hygiene kit (toothbrush and aspirator) • Antiseptic solution (0.12% chlorhexidine) • Lubricant or lip moisturizer • Cuff pressure confirmation • Dirt removal from the perioral region and the outer part of the lips • Antisepsis of the perioral region and outer part of the lips with a prescribed solution for 2 minutes • Aspiration of saliva and supernatant before, during, and after the procedure • ET cleaning with gauze and filtered water. The auditor marked "NO" if the professional did not perform any of the above-mentioned actions.
3. An oral health care protocol for mechanically ventilated patients is in place within the health care facility to guide local practices.	Baseline audit: 43 professionals Follow-up audit: 43 professionals	In the baseline audit, there was no training on the oral health protocol for critically ill patients. Therefore, the auditor marked "NO" for all professionals. In the follow-up audit, the auditor marked "YES" for the professionals who participated in the training and understood the care protocol.
4. Mechanically ventilated patients are first evaluated before receiving any oral health care.	Baseline audit: 12 patients Follow-up audit: 7 patients	Checking patient medical records. In the baseline assessment, the auditor marked "NO" if the oral health assessment by the nurses using a validated instrument was not performed. In the follow-up audit, the auditor marked "YES" if there was a nursing assessment in the patient's record.

As the follow-up audit took place over 15 days, the number of intubated patients was lower than in the baseline audit, which took place over 30 days. The number of professionals in the nursing team also varied between audits due to vacations and sick leave.

RESULTS

Baseline audit

The baseline audit was conducted from July 1 to 31, 2021, and data on the oral hygiene of 12 patients on mechanical ventilation were collected from the patients' medical records. Bedside observations of oral hygiene procedures performed by nursing staff were also conducted. The unit nursing team consisted of 47 professionals; however, four nurses were not included in the sample because they were part of the project team. Moreover, nine professionals did not sign the consent form; therefore, the final sample consisted of 34 professionals.

Compliance for Criterion 2 (Appropriate oral hygiene measures [e.g., brushing teeth, use of antiseptics] are implemented based on the findings of the oral health assessment) was lower than 5%, while compliance for the remaining criteria was 0%. This was because there was no institutionalized protocol indicating that appropriate oral hygiene measures (brushing teeth, use of antiseptics, frequency) should be implemented based on an oral health assessment of patients on mechanical ventilation. Therefore, it was not routine for nurses to use a validated instrument to assess the oral health of patients.

Strategies for Getting Research into Practice (GRiP)

The project team assessed the baseline audit results and used the GRiP tool to identify barriers and develop strategies to overcome these barriers. The GRiP results are shown in Table 2.

They development of an evidence-based oral health care protocol for critically ill patients was the most challenging barrier for the implementation team. This process involved all stakeholders, and included a literature review, adaptation of the recommendations to the context of the hospital, and the establishment of new routines to support care practices. Open communication and engagement of all stakeholders occurred at all times throughout the project.

The oral health assessment performed by nurses was another important barrier. This is because the team was unable to find a validated tool in Brazil for intubated patients that could be used by non-dental professionals. Thus, a validated instrument for patients with cognitive impairment was used. After frequent discussions with the oral medicine team, it was decided not to make any adaptations to the original instrument. Nonetheless, adding this one more specific assessment to the nurses' workload was an important point of discussion. Therefore, detailed training emphasizing the importance of this assessment and the inclusion of the tool in the electronic medical record as a checklist to be completed in approximately 2 minutes were important implementation strategies.

Educational actions, including oral health assessment best practices, were important strategies to overcome the nursing team's lack of knowledge barrier. This strategy was supported by an oral health reference team, consisting of four nurses from four shifts. These team members helped to reinforce best practices and clarify any questions from nurses or nursing technicians. There was ongoing communication with this team during the implementation process.

The educational initiative, "Oral hygiene in critically ill patients: a best practice project," followed the recommendations of the GREET checklist[14] and was based on distance and face-to-face teaching methodologies. It consisted of online video lessons and face-to-face meetings facilitated by the team of reference nurses with information cards on the oral hygiene protocol. After the meetings, the reference team helped to maintain best practices in the unit. The meetings took place in the ICU over a period of 20 days during the working hours of the ICU professionals, with a total time of 30 minutes. The video lessons lasted around 30 minutes and were presented as two modules: one on the assessment tool and the other on the hygiene protocol. The training was designed by the project leader based on the literature.[8] The objectives were to orientate the nursing team on the oral hygiene protocol for mechanically ventilated patients, teach them how to use the oral mucosa assessment tool, and present the recommended practices for oral hygiene in mechanically ventilated patients.

Follow-up audit

Figure 1 compares compliance with best practice in the baseline and follow-up audits.

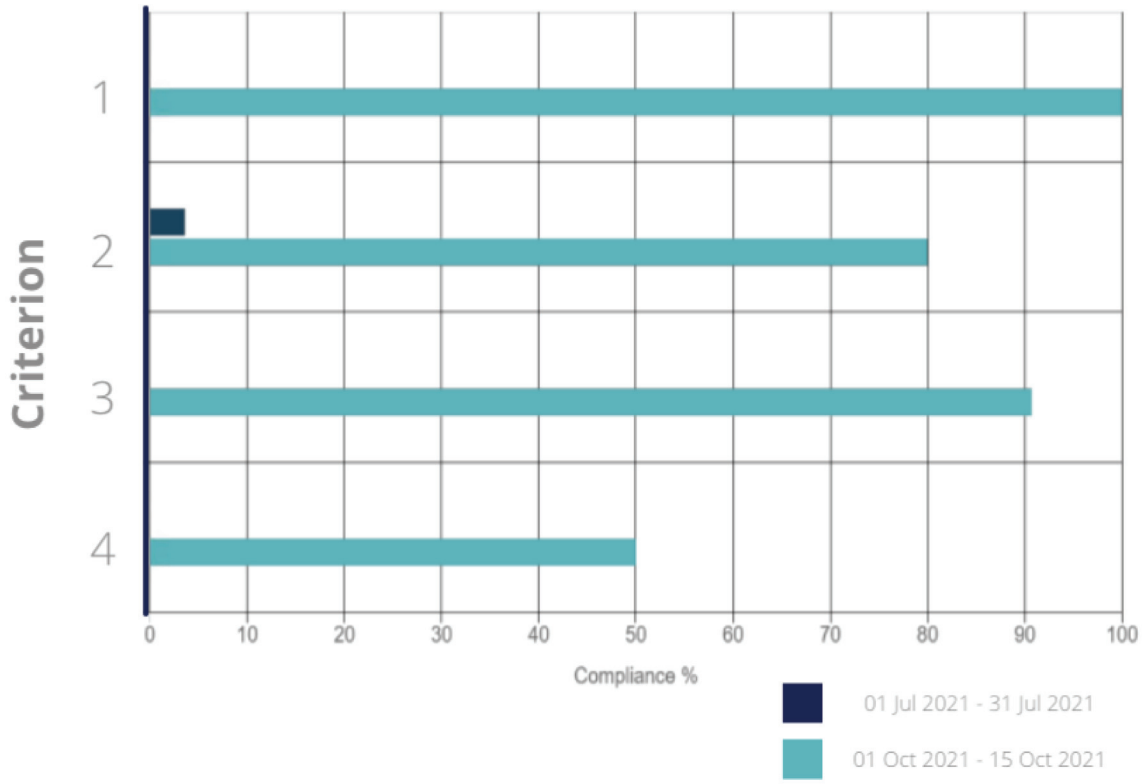
Table 2: Getting Research into Practice (GRiP) analysis

Barriers	Strategies	Resources	Results
• Low adherence to institutional oral health care protocol for patients on mechanical ventilation.	• Revise oral health care protocol for critically ill patients.	• Inclusion of best practices recommended by JBI into the hospital's oral health care protocol for critically ill patients. • Discussion with the relevant areas (ICU Nursing Management, Oral Medicine, Infection Control Service, Quality and Safety, Physiotherapy) to define strategies for the implementation of best practices, including new routines.	• Revision of oral health care protocol for critically ill patients, with the inclusion of JBI best practices.
• Lack of a validated instrument to assess oral health in mechanically ventilated patients.	• Use an instrument validated in Brazil for dental screening of patients with cognitive impairment. • Establish a feasible assessment routine compatible with the nurses' current workload.	• Literature review to identify the suitable instrument for the target population that could be used by non-dental professionals. • Discussion with the oral medicine team to validate the use of the selected instrument. • Inclusion of the instrument in the electronic medical records, to be completed as a checklist. • Step-by-step video demonstrating how to register the instrument in the electronic medical records.	• The Oral Health Assessment Tool for dental screening was selected and included in the electronic medical record (see Appendix II, http://links.lww.com/IJEBH/A176).
• Lack of oral medicine care flow for intubated patients.	• Develop a patient care flow to be evaluated by the oral medicine team.	• Daily visit by the oral medicine team to evaluate intubated patients.	• Patients intubated for more than 24 hours were evaluated by the oral medicine team.
• Lack of nursing team knowledge on best practices for the oral health of critically ill patients.	• Training on oral health assessment best practices.	• Training for the nursing team using video classes and cards. • Establishment of a team of ICU nurses as a reference in oral health to disseminate best practices and answer questions during shifts. • Disclosure of the reference team on social networks and via hospital email.	• Training delivered to more than 90% of professionals.
• High number of training sessions for the ICU nursing team.	• Staggered training sessions so that there was no work overload for the team.	• Consultation with the Nursing Coordination and Development team to propose suitable times for training.	• Oral health training was included in the unit's training schedule.
• Difficult bedside observations due to shift changes.	• Oral hygiene records by a professional.	• Alignment with the Nursing Coordination to minimize work schedule changes during training and follow-up audit.	• Bedside observations for 80% of professionals.

In the follow-up audit, compliance increased for the four audit criteria. Criteria 1, 2, and 3 showed compliance of $\geq$ 80%. The improvement for Criterion 4 was more modest, at 50%. In total, 39 professionals (90.7%) participated in the educational activities related to the oral health protocol for critically ill patients (Criterion 3). All seven patients intubated during this period were included and were examined by the oral medicine team, resulting in 100% compliance for Criterion 1 (*A multidisciplinary approach is used to improve the oral health of patients admitted to the ICU*). Compliance for Criterion 4 (*Mechanically ventilated patients are evaluated before receiving any oral health care*) was 50%, meaning that only half of the patients were evaluated by nurses before receiving oral health care.

For Criterion 2 (Appropriate oral hygiene measures [e.g., brushing teeth, use of antiseptics] are implemented based on the findings of the oral health assessment), there was increased compliance with all care verified during oral hygiene (Table 3), resulting in a compliance rate of 80%.

It should be noted that the measures routinely performed at the institution included the use of an oral hygiene kit with a toothbrush and aspirator, 0.12% chlorhexidine antiseptic solution, and lip lubricant/moisturizer. The other activities were instituted during this implementation project; thus, as shown in Table 2, these were the activities with the highest percentage gain in compliance. The use of lip moisturizer, ET cleaning, and cuff pressure verification did not reach 100% compliance, with rates ranging from 80% to 90%.



Note: Dark blue = baseline audit; light blue = follow-up audit

Audit criteria

1. A multidisciplinary approach is used to improve the oral health of patients admitted to the ICU (7 of 7 collected samples).
2. Appropriate oral hygiene measures (e.g., brushing teeth, use of antiseptics) are implemented based on oral health assessment findings.
3. An oral health care protocol for mechanically ventilated patients is in place within the health care facility to guide local practices (43 of 42 collected samples).
4. Mechanically ventilated patients are first evaluated before receiving any oral health care (7 of 7 collected samples).

Figure 1: Compliance with best practice recommendations: comparison of baseline and follow-up audits (%).

DISCUSSION

This project analyzed oral hygiene practices in critically ill patients admitted to the ICU of a Brazilian tertiary hospital using audit data before and after implementation of evidence-based best practices. After baseline audit data were collected, the team used the JBI PACES and GRiP tools to identify barriers to seek strategies and resources to improve compliance with best practices. The initial audit used four criteria to compare current practices against the best evidence available in the literature. Low compliance was observed for all the criteria and there was no oral health assessment upon ICU admission or after orotracheal intubation.

The same aspect was examined in a previous study on nurses' perceptions of the oral health of patients on mechanical ventilation. The results indicated that although most nurses considered that oral hygiene

Table 3: Nursing care observed during oral hygiene in baseline and follow-up audits

Assessed measures	Baseline audit n (%)	Follow-up audit n (%)
Oral hygiene kit (toothbrush, aspirator)	28 (100)	30 (100)
Antiseptic solution (0.12% chlorhexidine)	28 (100)	30 (100)
Lubricant or lip moisturizer	22 (78.6)	28 (93.3)
Cuff pressure confirmation	1 (3.6)	25 (83.3)
Dirt removal from the perioral region and the outer part of the lips	18 (81.8)	30 (100)
Antisepsis of the perioral region and lips (2 minutes)	21 (75)	30 (100)
Aspiration of saliva and supernatant	17 (60.7)	30 (100)
Endotracheal tube hygiene	1 (3.6)	27 (90)

was an important practice for VAP prevention, 80% did not follow an evidence-based protocol.[15] In this study sample, oral hygiene was prescribed and performed without prior assessment of the patient's needs. In addition, the participation of dentists (oral medicine) was restricted to urgent cases referred by the ICU medical and multidisciplinary teams.

Some studies have demonstrated that oral hygiene is often neglected by physicians and nurses and that it is not a priority in care planning.[16,17] This can be explained by nurses' insufficient knowledge about oral hygiene of high-risk patients, caused by training gaps on the subject.[18] One study reported that nurses consider it necessary to have an evidence-based protocol for oral care in hospitalized patients, and this need is even greater for ICU nurses.[19] Thus, the greatest achievement of this implementation project was to develop an oral health care protocol for patients on mechanical ventilation. The involvement of different disciplines was fundamental in ensuring that the proposed changes would be feasible in the project setting. The project team trained 90.7% of the nursing team, which required commitment from the clinical leader and the reference team of nurses. This strategy was effective in incorporating the new care practices into daily routine, as the shift nurses had ready access to the reference nurses when they had questions regarding oral hygiene or during the registration of the dental screening evaluation. This result corroborates the findings of another study, which found that fully engaged nurses promoted excellence in care.[20] The patients in the cardiology ICU were predominantly undergoing cardiac surgery and often remained intubated for less than 24 hours. This indicator had an important impact on decreasing VAP rates and reinforced the excellent multidisciplinary care provided to patients at the project site.

Oral health assessment by nurses using a validated instrument was a major challenge during the project. This is because, despite the oral hygiene of intubated patients being performed exclusively by the nursing staff, detailed assessment was not part of routine practice. Thus, it was necessary to identify an instrument that was suitable for the target population, easy to use, and compatible with the hospital's electronic medical records. The chosen tool was the OHAT for dental screening. Even though this was an established practice, the rate of compliance for this criterion was around 50%, which demonstrates the need for greater internalization of the practice as an integral part of patient care.

Evidence shows that a high proportion of patients is admitted to ICU with impaired oral hygiene requiring immediate dental treatment. This justifies the involvement of dentists in the oral hygiene protocol, given that diseases such as periodontitis and caries cannot be treated with oral brushing and rinsing alone. However, there is insufficient literature on the management of oral hygiene by nurses using an objective assessment method, and it is not possible to state conclusively that management by nurses is not fully effective or even ineffective.[21]

The COVID-19 pandemic highlighted the need to involve a dentist as a member of the ICU multidisciplinary team, considering the increased mechanical ventilation time and consequently, the increased VAP rates. The involvement of a dentist would improve the assessment of the oral health of patients, thereby

helping to reduce comorbidities and increase comfort for critically ill patients.[22] The role of dentists in the ICU must be collaborative, working together with nurses to improve care quality and safety. The dentists' role should cover areas other than those already addressed by the nursing team, such as performing invasive procedures to prevent or treat oral infections.

There was high adherence to measures related to the use of materials, such as toothbrushes, aspirators, 0.12% chlorhexidine antiseptic solution, and lip balm, which were already standardized in the hospital after implementation. The hospital where this project was conducted had a different structure than most Brazilian hospitals, and such materials were not always available. However, the availability of these materials did not necessarily ensure adherence to best practices. Therefore, when the team understood the importance of care and the main steps to be followed during oral hygiene, adherence increased, as seen in the results. There were also opportunities to improve adherence to practices that did not achieve 100% compliance, such as lip lubrication, confirmation of ET cuff pressure, and external cleaning of the ET.

Despite the impact of the COVID-19 pandemic, which increased nursing workload[23] and affected the quality of the nurses' work life,[24] the support and acceptance of this project reinforced the hospital's commitment to excellence in health and person-centered care. The results of the project will be presented to the participating nursing team to provide feedback, highlighting positive achievements and discussing areas for improvement.

Project limitations

There sample of patients intubated for more than 24 hours was small due to the clinical characteristics of the unit. This limited the number of oral health assessment record verifications performed by nurses.

CONCLUSION

Evidence-based practices for the oral health of critically ill patients were implemented in a cardiology ICU. The results of the baseline audit were used to identify barriers and facilitators. This analysis was then used to develop strategies to address areas of non-compliance. Future initiatives to ensure the sustainability of the project would be regular training of the entire nursing team, including newly admitted nurses and nursing residents, as well as periodic protocol updates based on new findings and recommendations in the scientific literature. Replicating this project in other hospital ICUs will help to refine the audit criteria, especially regarding the oral health assessment performed by nurses, as well as expanding the role of the oral medicine team in other units.

ACKNOWLEDGMENTS

The authors would like to thank the Brazilian Centre for Evidence-based Healthcare: A JBI Centre of Excellence and the Assistance Board of the hospital for their support. We would also like to thank the reference nursing team for being multipliers of good oral health practices for critically ill patients. Finally, we would like to thank the entire nursing team at the cardiology ICU for their support during the project and to the Instituto de Ensino e Pesquisa Sírio-Libanês.

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