Original Research Article

A survey of oral care practices among nurses in adult intensive care units of a tertiary care hospital.

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Abstract:

Oral care is an essential aspect of intensive care nursing practice, particularly for patients who are mechanically ventilated. Poor oral hygiene among critically ill patients has been associated with colonization of pathogenic microorganisms, which can predispose patients to ventilator-associated pneumonia (VAP). **Aim of the study:** To assess oral care practices, training, and attitudes among nurses working in adult intensive care units of a tertiary care hospital. **Materials and methodology:** A cross-sectional survey was conducted among 124 nurses using a structured questionnaire. **Results:** Data were analyzed using descriptive statistics and chi-square tests. Among the 124 nurses surveyed, 74 (60%) were female and 50 (40%) were male. The majority of participants were aged 31–40 years (50, 40%), followed by 20–30 years (43, 35%), 41–50 years (19, 15%), and 51–60 years (12, 10%). Most nurses (87, 70%) reported receiving formal training in oral care, and 106 (85%) were confident in providing oral care to ventilated patients. Despite this, 50 (40%) expressed anxiety when providing care to ventilated patients, and 62 (50%) felt anxious while caring for non-oriented patients. Oral care frequency varied: 62 (50%) provided care twice daily, 37 (30%) thrice daily, and 25 (20%) on an as-needed basis. Chlorhexidine was the most commonly used agent (74, 60%), followed by normal saline (31, 25%), betadine (12, 10%), and tap water (6, 5%). Nearly all participants (112, 90%) were aware of complications from inadequate oral care, though dentist involvement was minimal (12, 10%). Nurses (87, 70%) were identified as the primary providers of oral care. Chi-square testing revealed no significant association between training and confidence ($p = 0.084$) or anxiety ($p = 1.000$). However, chemical use distribution ($p < 0.001$) and responsibility allocation ($p < 0.001$) were statistically significant, indicating strong preferences. **Conclusion:** The findings emphasize the need for standardized oral care protocols, regular training, and enhanced collaboration with dental professionals to improve patient outcomes.

Keywords: Critical care nursing, Mechanical ventilation, Oral hygiene, Patient care, Tertiary care hospital

Introduction:

Oral care is a fundamental component of nursing practice in intensive care units (ICUs), particularly for patients who are mechanically ventilated. Poor oral hygiene in critically ill patients has been associated with colonization of the oropharynx by pathogenic

microorganisms, which can significantly increase the risk of ventilator-associated pneumonia (VAP), one of the most common and serious ICU-acquired infections. [1-5] Nurses, being the primary caregivers at the bedside, play a pivotal role in ensuring that effective oral care practices are delivered consistently. [6,7]

Despite its importance, oral care in ICUs often receives less attention compared to other aspects of critical care, and practices vary significantly between institutions and countries.[8,9] The availability of guidelines and evidence-based protocols has improved awareness, but studies have shown that adherence remains inconsistent, often influenced by factors such as workload, resource availability, and lack of standardized training.[10-13]

Furthermore, the choice of oral care agents, such as chlorhexidine, saline, or betadine, continues to generate debate. While chlorhexidine has been widely recommended to reduce microbial colonization and the incidence of VAP, recent reviews have questioned its overall effectiveness and highlighted potential adverse effects, suggesting that practice should be individualized. [14,15] Given these variations and challenges, it is important to understand the current state of oral care practices among ICU nurses, especially in tertiary care hospitals, to identify gaps and opportunities for improvement.

Materials and Methodology:

This descriptive cross-sectional study was conducted among 124 nurses working in adult intensive care units of a tertiary care hospital. Data were collected using a pre-validated structured questionnaire consisting of 11 items related to demographic details, training, confidence, anxiety, frequency of oral care, preferred chemical agents, awareness of complications, dentist involvement, and perceptions of responsibility. The questionnaire included closed-ended questions with categorical options (Table 1). Nurses were surveyed anonymously, and informed consent was obtained prior to participation. Data were analysed using descriptive statistics (frequency and percentage). Associations between categorical variables (e.g., training vs. confidence) were tested using chi-square analysis. A chi-square goodness-of-fit test was used to evaluate distribution preferences for chemical agents and responsibility for oral care. Statistical significance was set at $p < 0.05$.

Table 1: The questionnaire for the survey

S.N	QUESTION	RESPONSE
1	Gender	Male / Female
2	Age (Years)	20–30 / 31–40 / 41–50 / 51–60
3	Training in oral care	Yes/No
4	Knowledge of oral care for ventilated patients	Yes/No
5	Anxiety during care for ventilated patients	Yes/No
6	Anxiety during care for non-oriented patients	Yes/No
7	Frequency of oral care for ventilated patients	Twice a day / Thrice a day / As needed
8	Chemical used for oral care	Normal saline / Betadine / Chlorhexidine / Tap water
9	Awareness of complications due to lack of oral care	Yes/No
10	Dentist visits to ICU	Yes/No
11	Who should perform oral care	Nurses / Intensivist / Surgeon/Physician / Dentist / None

Results:

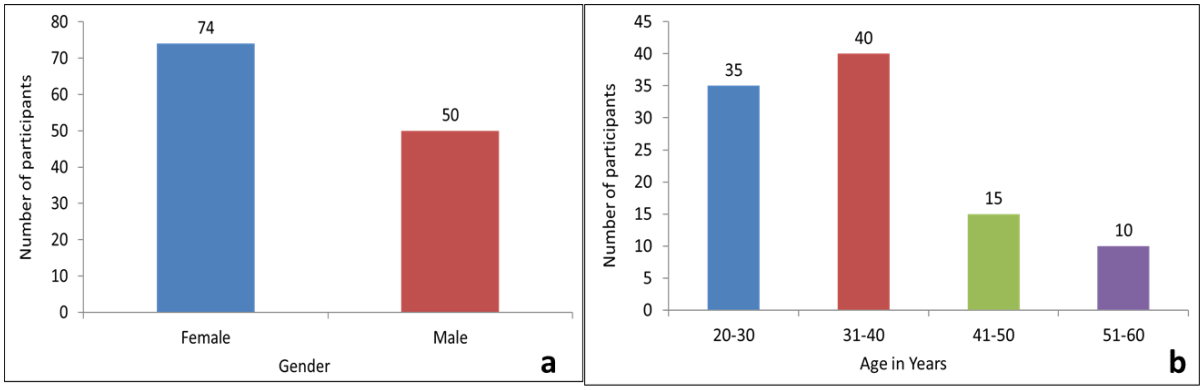
Among the 124 nurses surveyed, 74 (60%) were female, and 50 (40%) were male. The majority of participants were between 31 and 40 years of age (40%), followed by those aged 20–30 years (35%), 41–50 years (15%), and 51–60 years (10%). Formal training in oral care was reported by 87 nurses (70%), while 37 (30%) had not undergone training. Confidence in providing oral care to ventilated patients was expressed by 105 nurses (85%), whereas 19 (15%) reported lacking confidence. Chi-square testing showed no statistically significant association between training and confidence ($\chi^2 = 2.98$, df = 1, $p = 0.084$).

Anxiety while providing oral care to ventilated patients was reported by 50 nurses (40%), compared to 74 (60%) who denied such anxiety. Anxiety was more prevalent (50%) while giving care to non-oriented patients. However, no statistically significant association was found between training and anxiety in ventilated patient care ($\chi^2 = 0.00$, df = 1, $p = 1.000$).

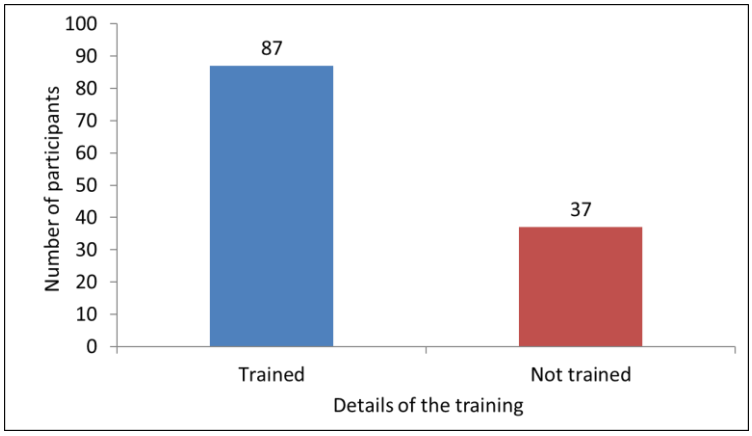
Regarding oral care frequency for ventilated patients, 62 nurses (50%) reported twice daily care, 37 (30%) provided care thrice daily, and 25 (20%) offered it as needed. A highly significant preference was observed in the chemical agents used for oral care ($\chi^2 = 92.19$, df = 3, $p < 0.001$), with chlorhexidine being the most commonly used (60%), followed by saline (25%), betadine (10%), and tap water (5%).

Awareness of complications from inadequate oral care was high, with 112 nurses (90%) acknowledging risks such as pneumonia and oral infections. Only 12 nurses (10%) reported regular dental visits to the ICU. When asked who should perform oral care for ventilated patients, 87 nurses (70%) chose nurses, 25 (20%) preferred dentists, 6 (5%) suggested intensivists, and another 6 (5%) suggested physicians or surgeons. This distribution was also

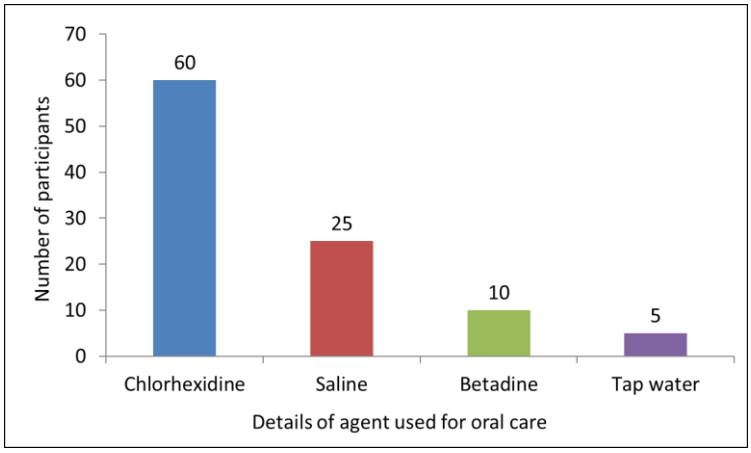
highly significant ($\chi^2 = 141.74$, df = 3, $p < 0.001$), reflecting a strong consensus that ICU nurses should be primarily responsible.



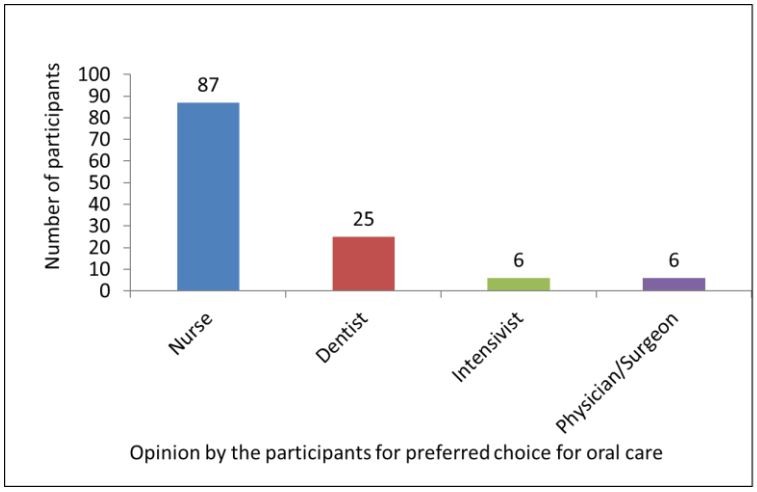
Graph 1: Shows the demographic details of the study participants. (a) shows the gender distribution while (b) shows the age wise distribution of the participants.



Graph 2: Shows the status of the oral care training of the participants



Graph 3: Shows the type of agent used for the oral care



Graph 4: Shows the opinion of the participants on who should take care of the oral care

Discussion:

This study highlights important insights into the practices, challenges, and preferences of ICU nurses in providing oral care to critically ill patients. Despite the majority of participants (70%) receiving formal training, our analysis revealed no statistically significant association between training and confidence in providing oral care to ventilated patients. This contrasts with findings by Bashirian et al, who reported that structured educational interventions significantly improved nurses' competence and confidence in oral care delivery. The lack of association in our study may reflect variability in the quality or recency of training programs.[16]

Anxiety was reported by 40% of nurses when performing oral care for ventilated patients and 50% when caring for non-oriented patients. Similar findings were noted in a study by Al-Tamimi M et al, where nurses reported challenges due to endotracheal tubes and lack of patient cooperation. These results suggest that beyond training, emotional and psychological support, as well as simulation-based practice, may be necessary to reduce anxiety.[17]

The strong preference for chlorhexidine (60%) is consistent with global ICU practices, where it is widely recommended for preventing ventilator-associated pneumonia (VAP). A meta-analysis by Dai W confirmed that chlorhexidine oral care significantly reduces VAP incidence in mechanically ventilated patients.[18] However, more recent evidence, cautions that routine chlorhexidine use may not always translate to reduced mortality and may have side effects such as oral mucosal irritation. This discrepancy highlights the need for context-specific guidelines in ICUs.[19]

The finding that 90% of nurses recognized the complications of poor oral hygiene aligns with earlier studies emphasizing the link between inadequate oral care and hospital-acquired infections.[20] However, involvement of dentists may reduce the ventilator associated pneumonia. Although the dentists were rarely integrated into ICU care teams but it should be considered. This gap underscores the need for greater interdisciplinary collaboration.[21]

Finally, the significant consensus that nurses (70%) should be primarily responsible for oral care underscores their frontline role in ICU patient management. While dentists and physicians

may provide specialized input, nurses' frequent bedside presence makes them best positioned to deliver consistent care.

Overall, while training remains essential, our results suggest that confidence and reduced anxiety may depend on a broader combination of factors, including institutional protocols, ongoing professional development, and psychological preparedness. The highly significant preference for chlorhexidine and nurse-led oral care reflects current evidence-based practices, but emerging concerns over chlorhexidine safety warrant further evaluation in local contexts.

Conclusion:

The nurses in adult ICUs demonstrate a foundational understanding and practice of oral care, there is a clear need for enhanced training, standardized protocols, and interdisciplinary collaboration to ensure optimal patient outcomes. Future research should focus on developing and implementing evidence-based oral care protocols, evaluating their effectiveness, and fostering a collaborative approach to patient care in ICU settings.

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