

Knowledge and attitudes of Pakistani intensive care unit nurses regarding oral care delivery to mechanically ventilated patients

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Abstract

Objective: To assess the knowledge and attitudes of intensive care unit nurses regarding oral care delivery to mechanically ventilated patients.

Methods: The cross-sectional study was conducted from January to July 2018 across four hospitals in the twin cities of Rawalpindi and Islamabad, Pakistan. Data was obtained from randomly selected nurses with the help of a 14-item self-reporting questionnaire. Data was analysed using SPSS 23.

Results: Out of 81 nurses, 76(93.8%) were female, and 47(58%) had experience up to 10 years. When the participants were asked if disease can be transmitted from other patients, 23(28.4%) said it was likely, 22(27.2%) said it was most likely and 16(19.8%) said they did not know. When asked if the disease can be transmitted from the aspiration of contaminated secretions from the oropharynx, 32(39.5%) nurses said it was likely, 31(38.3%) said it was not likely and 9(11.1%) did not know. Knowledge level was significantly associated with level of education ($p < 0.05$). In terms of attitude, 54(66.7%) nurses disagreed that there were more important tasks to do for unstable patients than oral care, indicating a good attitude.

Conclusion: Knowledge and attitude among the subjects were found to be good regarding oral care delivery to mechanically ventilated patients.

Keywords: Knowledge, Attitude, Intensive care unit, Nurses, Oral care. (JPMA 70: 1203; 2020)

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Introduction

Intensive care unit (ICU) is the part of any hospital that handles critically ill and unconscious patients. Some of these patients would at some point in their time at the ICU require mechanical ventilation which involves taking over a patient's breathing through an endotracheal tube (ETT) that is passed through the oral cavity into the trachea. Under these circumstances, the oral care of such patients becomes a challenging issue. Oral care for these patients remains a very vital aspect of nursing care offered to such patients.¹ The goal of oral care is to maintain the oral state of these patients in a clean, comfortable and moist manner that is infection-free.² ICU patients may require oral intubation to help them maintain a patent airway. The ETT, which is often used for this role, has been strongly linked to ventilator-associated pneumonia (VAP), which is one of the most common causes of nosocomial infections among mechanically-ventilated patients in the ICU.^{3,4}

Hospital-acquired pneumonia (HAP) is one of the

commonest complications seen among ICU patients.⁵ VAP is a subdivision of HAP and it is defined by the American Thoracic Society as pneumonia occurring in mechanically-ventilated patients after not <48hours.⁶ In the United States, VAP has been reported as the second most common hospital-acquired infection and the commonest nosocomial infection among mechanically-ventilated patients.⁷ The VAP rate among developing countries is placed at 1.5 to 41.7 per 1000 ventilator-days.⁸⁻¹⁰ VAP is regarded as a major morbidity predictor among critically ill patients.¹¹ It has been shown that there is a change in the oral flora of intubated patients to predominantly gram-negative flora which comprises organisms with high virulence that have been implicated in VAP.^{12,13} All this goes to show the importance of oral care in ICU patients on mechanical ventilation, and this oral care is almost exclusively provided to these patients by the ICU nursing staff. The nursing staffs are also in charge of all the oral care needs of such patients and this make them central to any effort geared towards reducing VAP.^{14,2} Studies have been done involving Saudi Arabian and Malaysian nurses, and it has also been reported that VAP among ICU patients results in a significant increase in the mean duration of ICU stay as well as the cost and duration of hospitalisation, indicating the economic impact of VAP not just on the

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patients but also on their families and friends.¹⁵⁻¹⁷ Local literature is sparse in this critical area.

The current study was planned to assess the knowledge, attitude and practices of ICU nurses regarding oral care delivery to mechanically-ventilated patients.

Subjects and Methods

The cross-sectional study was conducted from January to July 2018 across four hospitals in the twin cities of Rawalpindi and Islamabad, Pakistan, after getting approval from the ethics committee of Poonch Medical College, Rawalakot, Azad Jammu and Kashmir. Lists of the nurses employed in the ICUs of these hospitals were collected from the respective Human Resource (HR) departments and all the nurses were approached with an informed written consent form. Those who agreed to volunteer were included.

Data was collected using a 14-item pre-designed self-administered questionnaire in line with a study done in Saudi Arabia.¹⁵ The questionnaire was validated by two epidemiologists. Internal consistency test showed the Cronbach's alpha value of 0.80. To assess the knowledge of the nurses, the following scenario was used: "A 25-year-old male was rushed to a hospital following a road traffic accident, where he was admitted to the intensive care unit. He was on mechanical ventilation since his admission a week ago. Yesterday he developed pneumonia." The knowledge of the participants was evaluated on a five-point Likert scale which ranged from 'least likely' to 'most likely' possible ways of pneumonia transmission.

The participants were asked to record their responses by keeping the above scenario in mind. Baseline characteristics of the respondents and responses to knowledge, attitude, and practice related questions were noted. Data was analysed at 95% confidence interval (CI) using SPSS 23. Fisher's exact test was used to observe the association between knowledge and level of education of the nurses.

Results

Of the 135 nurses approached, 81(60%) completed the questionnaire. Of them, 76(93.8%) were female; 47(58%) had work experience up to 10 years; 48(59.3%) had a 3-year bachelor's degree; 32(39.5%) had a 2-year nursing diploma; 1(1.2%) had a 6-year masters' degree; 60(74.1%) worked in day shifts; 38(46.9%) were part of surgical ICUs; and 39(48.1%) belonged to medical ICUs (Table-1).

When asked if the disease can be transmitted from other

Table-1: Socio-demographic characteristics of all study participants (n = 81).

Characteristics	N	%
Gender		
◆ Male	5	6.2
◆ Female	76	93.8
Age Groups (Years)		
◆ 18 to 30	16	19.8
◆ 31 to 40	24	29.6
◆ 41 to 50	33	40.7
◆ 51 to 60	8	9.9
Years of Employment		
◆ 1 to 3	24	29.6
◆ 4 to 10	23	28.4
◆ 11 to 20	25	30.9
◆ > 20	9	11.1
Education		
◆ Nursing Diploma	32	39.5
◆ Bachelor's Degree	48	59.3
◆ Master's Degree	1	1.2
Type of Nurses' Shift		
◆ Day	60	74.1
◆ Evening	8	9.9
◆ Night	13	16
Type of ICU in which nurses work		
◆ Surgical	38	46.9
◆ Medical	39	48.1
◆ Paediatric	4	4.9

ICU: Intensive care unit.

patients, 23(28.4%) nurses said it was likely; 22(27.2%) said it was most likely; and 16 (20%) were unaware. Also, 31(38.3%) nurses said the disease was not likely to be transmitted by healthcare workers' hands; 23(28.4%) said it was likely; and 23(28.4%) said it was not likely (Table-2).

When asked if the oral cavity is a difficult area of the body to clean, 48(59.3%) nurses agreed and 25(30.9%) strongly agreed. Also, 16(20%) strongly agreed and 27(33.3%) agreed that oral care is a top priority for mechanically-ventilated patients. Further, 54(66.7%) nurses disagreed that there are more important tasks to do for unstable patients than oral care (Table-3).

Moreover, 51(63.0%) nurses disagreed that they have adequate time to provide oral care at least once a day and 50 (61.7%) disagreed that they have been given adequate training in providing oral care. However, 38(46.9%) nurses agreed that the supplies they need to provide oral care are readily available in their unit, and 38(46.9%) agreed that the toothbrushes provided by the hospital are suitable for their patients (Table-4).

The level of knowledge regarding two questions was

Table-2: Knowledge about the mechanism of transmission amongst study participants.

Questions	Responses N (%)				
	Least likely	Not likely	Don't know	likely	Most likely
Can disease be transmitted from other patients?	18 (22.2)	2 (2.5)	16 (19.8)	23 (28.4)	22 (27.2)
Can disease be transmitted from the aspiration of contaminated secretions /from the oropharynx?	0 (0.0)	31 (38.3)	9 (11.1)	32 (39.5)	9 (11.1)
Can disease be transmitted from health care workers hands	0 (0.0)	31 (38.3)	17 (21.0)	24 (29.6)	9 (11.1)
Can disease be transmitted from contaminated respiratory equipment?	0 (0.0)	23 (28.4)	26 (32.1)	23 (28.4)	9 (11.1)
Can disease be transmitted from preadmission colonization?	0 (0.0)	13 (16.0)	17 (21.0)	34 (42.0)	17 (21.0)

Table-3: Attitude of study participants towards oral care delivery to mechanically ventilated patients.

Statements	Strongly agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)
"The oral cavity is a difficult area of the body to clean."	25 (30.9)	48 (59.3)	0 (0.0)	7 (8.6)	1 (1.2)
"Oral care is a very high priority for mechanically ventilated patients"	16 (19.8)	27 (33.3)	22 (27.2)	16 (19.8)	0 (0.0)
"I find the cleaning of oral cavity to be an unpleasant task."	3 (3.7)	19 (23.5)	32 (39.5)	20 (24.7)	7 (8.6)
"No matter what I do, the mouths of most of the ventilated patients seem to get worse the longer they are on ventilator."	5 (6.2)	22 (27.2)	14 (17.3)	40 (49.4)	0 (0.0)
"There are more important tasks to do to the unstable patients than the oral care."	5 (6.2)	10 (12.3)	2 (2.5)	54 (66.7)	10 (12.3)

Table-4: Responses of study participants in reply to the statements about practices.

Statement	Strongly agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly disagree N (%)
"I have adequate time to provide oral care at least once a day"	1 (1.2)	20 (24.7)	9 (11.1)	51 (63.0)	0 (0.0)
"I have been given adequate training in providing oral care"	9 (11.1)	1 (1.2)	12 (14.8)	50 (61.7)	9 (11.1)
"There are supplies readily available in our unit to provide oral care in our unit"	0 (0.0)	38 (46.9)	16 (19.8)	27 (33.3)	0 (0.0)
"The toothbrushes provided by the hospital are suitable for our patients"	0 (0.0)	38 (46.9)	11 (13.6)	32 (39.5)	0 (0.0)

Table-5: Relationship between correct knowledge (response of "most likely") and level of education.

Questions	Level of education		p-value
	Nursing Diploma (N = 32)	Bachelor's/ Master's Degree (N = 49)	
Can disease be transmitted from other patients?	4 (12.5)	18 (36.7)	0.012
Can disease be transmitted from the aspiration of contaminated secretions from the oropharynx?	2 (6.3)	7 (14.3)	0.273
Can disease be transmitted from health care workers hands	2 (6.3)	7 (14.3)	0.273
Can disease be transmitted from contaminated respiratory equipment?	2 (6.3)	7 (14.3)	0.273
Can disease be transmitted from preadmission colonization?	3 (9.4)	14 (28.6)	0.041

*Fisher's Exact test was done to obtain p-values.

significantly associated with academic qualification (Table-5).

Discussion

The current study showed a significant difference in the knowledge of the respondents based on their level of education. This was not consistent with a previous study

done in Saudi Arabia.¹⁵ Different studies have tried to show the factors that affect oral care delivery to ICU patients by the nursing staff. The knowledge and attitude of nurses, regarding delivering of oral care to these patients as well as the availability of the hospital supplies were some of the factors which were evaluated in these studies.^{15,17-21} In one European survey, 88.1% of

ICU nurses classified oral care as a top priority for their patients.²² This finding is backed by the results of the current study. Another study carried out in Malaysia showed 84.7% of ICU nurses accepted that they needed improved knowledge for practicing oral care.²³ Even though these nurses agreed that oral care is a top priority, many studies showed that nurses saw it as a very difficult procedure which they were not enthusiastic about and for which their knowledge was not sufficient.²⁴⁻²⁷ This means that nurses need to be knowledgeable about both the problems, and evidenced-based preventive strategies they need to adhere to and incorporate into their care.²⁸ Oral care practices differ among healthcare facilities,²⁹ and even include brushing of patient's mouth with chlorhexidine and a broad-spectrum antibiotic agent.³⁰⁻³² Also, regarding the timing of performing oral care on patients, the recommendation varies from 2-hourly to 12-hourly.^{22,23,25}

A study done among Malaysian ICU nurses revealed 61.3% of the nurses stating that the oral cavity of mechanically-ventilated patients still got worse no matter how much it was cleaned, but in the current study, 49.4% of the nurses disagreed that the oral cavity of their mechanically-ventilated patients got worse no matter what they did. The same study also showed that 84.7% of the respondents agreed that they needed better oral care equipment in their ICUs 33, which was not in line with the current study.

Most of the nurses in the current study had a fair knowledge about the mechanism of transmission of disease from the oral cavity which goes in line with a Saudi Arabian study.¹⁵ The attitude of the respondents of the current study also showed similar findings to two different studies.^{15,34} For example, when the respondents were asked if oral care was a top priority for mechanically-ventilated patients, 53.1% of the subjects either strongly agreed or agreed, while none of them strongly disagreed. However, a study including 96 ICU nurses in Saudi Arabia showed higher percentages, around 94%.³⁴ Also, regarding cleaning of the oral cavity being an unpleasant task, over 30% of the nurses in the current study either disagreed or strongly disagreed, while 39.5% of them were neutral. This is different from the aforementioned study which showed that 68% of the nurses claimed it was an unpleasant task.³⁴ When asked about the oral cavity being a difficult part to clean, 90.2% of the respondents of the current study either agreed or strongly agreed. However, this finding was in contrast with the Saudi Arabian study, where only about 50% of the

respondents agreed that the oral cavity was indeed difficult to clean.³⁴ Other studies also showed low attitude to oral care among nurses.^{35,36} For example, a study showed that 68.1% of participants stated that cleaning of the oral cavity was a difficult and unpleasant task, and, according to another study, 40.8% of the participants stated that it was difficult, while 16.2% said it was unpleasant using appropriate oral care methods and having positive oral care attitudes.^{34,37} Overall, it is fair to say that the nurses from the current study had a slightly better attitude to oral care than the nurses in the previous two studies,^{34,37} where their attitude was described as poor. When the nurses were asked if they have been given adequate training in providing oral care, 72.8% of the respondents in the current study either strongly disagreed or disagreed. This contrasts with a study,³⁴ where 71% of the nurses claimed they had been giving adequate training in providing oral care, although 78% of them still indicated that they would like to learn more by attending continuing education workshops and 80% of them said they would require more information on evidence-based standard procedures. It has been stated that poor knowledge among healthcare providers can lead to negative attitudes towards VAP. Therefore, one of the noted potential measures for mechanically-ventilated patient's health is designing educational programmes for VAP prevention.^{38,39}

The limitations of the current study included a small sample size and its cross-sectional design which limits generalisability of the findings. Also, no statistical method was used to work out the sample size, and validity and reliability testing of the data-collection tool was done only minimally.

Despite the limitations, the current study recommends better training and awareness sessions for ICU nurses regarding the standardised methods of delivering oral care to mechanically-ventilated patients.

Conclusion

The overall level of knowledge, attitude and practice regarding oral care delivery in ICU nurses was found to be good. Still, there is room for improvement, and continuous medical education among nurses may ultimately improve the practice of oral care delivery and reduce the ventilator-associated infections.

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