Original Article

Survey of knowledge, attitude and performance of Intensive Care Unit nurses regarding oral care of patients under mechanical ventilation in educational hospitals of Ahvaz, 2017

Simin Jahani[1], Tayebeh Poursangbor[2*]

[1] Assistant Professor of Nursing, Nursing Care Research Center in chronic Diseases, Ahvaz Jundishapur University of Medical Sciences, Ahvaz ,Iran. [2] BSc student in nursing, Student Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran.

Correspondence: Tayebeh Poursangbor. BSc student in nursing, Student Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran. Email: tpoursangbor@yahoo.com

ABSTRACT

Objective: Oral care is one of the basic aspects of nursing work, which is important in patient's comfort, his health and decreasing the risk of developing pneumonia. However this care is not standardized. Since the explanation of current situation is the first and most important step for standardizing this care, this study was conducted to evaluate the knowledge, attitude and practice of intensive care unit nurses regarding oral care of mechanically ventilated patients in Ahvaz educational hospitals. Methods: A three-part questionnaire was designed by the researcher for this cross-sectional study including demographic information, knowledge and attitude, as well as a checklist for evaluating performance. The sampling method was census-based. From 130 nurses who had the inclusion criteria 100 ones completed questionnaires. Performance checklist was completed by researcher or head nurse for these 100 people by covert observation. Data was analyzed using SPSS software version 20. Results: Findings showed that 29% of nurses had poor knowledge, 39% moderate and 32% good. There was a direct relation between knowledge and employment (P-value = 0.031, r = 0.264). The attitude of 55% of nurses was poor, 41% moderate and 4% good. Performance of all participants was evaluated poor (76%) and moderate (24%) by researcher and head nurse. There was a significant reverse relationship between performance and age (P-Value = 0.010, r = -0.257). Conclusion: Inclusion of this procedure in nursing student's curriculum, holding classes for intensive unit nurses and preparing a clinical evidence-based protocol are the suggestions of this study

Keywords: attitude, ICU, knowledge, mechanical ventilation, oral care.

Introduction

After hospitalization and changing the normal flora of patients' mouth in favor of gram-negative organisms which have more pathogenicity, and with growth of pathogens in the oral cavity local and general complications occur.[1,2] Local complications include: dryness of mouth, decreased salivation, inflammation of the oral mucosa, dental plaque, inflammation and swelling of the gums, tooth decay, tooth infection and aggregation of pathogenic bacteria in the mouth and throat.[3,4] Patients admitted to the Intensive Care Unit[1] for several reasons such as immunity system disorder, underlying diseases, the presence of tracheal tube and nasogastric tube, oxygen therapy, side effects of drugs, decreased fluid intake and no swallowing, are prone to oral problems more and faster than other patients.[5]

Nosocomial infections occur in approximately 10.3-39.7% of patients in ICU, which is 1.7-7 times higher than in other general wards.[6] Ventilator Associated Pneumonia[2] is the most important, most dangerous and most common (outbreak = 47%) hospital acquired infection in the ICUs,[3,6,7,8] which the change in the normal flora of the mouth in patients with mechanical ventilation increases its risk.[5,9] The occurrence of VAP leads to increased mortality, prolonged hospitalization

---

[1] ICU
[2] VAP

and increased treatment costs.[6,10,11,12] VAP increases the mortality rate of patients approximately 24-40% [3] and the duration of their admission to the ICU by 13 days.[6] It also increases hospitalization costs by 40,000 to 10,000$ per patient.[6]

Recent studies have shown that there is a direct correlation between proper oral care of patients under mechanical ventilation and the reduction of VAP occurrence in ICU,[13,14,15] and a 75% decrease in VAP occurrence and a 43% reduction in mortality of ICU patients have also been reported.[16] For this reason, oral hygiene is one of the main tasks of nursing care, since patients under ventilation are completely dependent on nurses.[17] Although the importance of oral care for patients with mechanical ventilation and its role in reducing VAP has been revealed, still this care is not carried out properly by nurses and is not based on research evidence.[18,19,20]

For example, in a study by Binkley et al. in 2004 in the United States, the knowledge and performance of nurses in ICUs regarding oral care was investigated and findings showed that 92% of nurses placed a high priority for oral care. However, they stated that oral care requires specific standards and protocols as well as more training.[21] In another study by Rello et al. in 2007 in seven European countries, 93% of nurses said they needed more education in this field. Also, cleaning the oral cavity was considered difficult by 68% of the nurses, and 32% of them, described this procedure as unpleasant, in addition to difficulty. In the 59 ICUs examined in this study, oral care was performed once a day (20%), twice a day (31%) and three times a day (37%), but it contained a simple mouthwash and toothbrush was not used.[22] In another study by Costello et al. aimed to survey the level of nurses' knowledge about oral care in Ireland in 2008, most nurses (90%) considered oral care as important aspects of nursing care, but did not have sufficient knowledge for performing it and had difficulty during doing it. Lack of time, lack of necessary equipment, patient confusion and lack of supervision and existing laws about this procedure were among the problems mentioned by nurses.[23] In a study by Alotaibi et al. with the aim of evaluating the knowledge and attitude of Saudi nurses working in the intensive care units on oral care of patients under mechanical ventilation in Riyadh, Saudi Arabia, in 2016, participants were divided into two groups: nursing experts and graduate nurses. There was no correlation between knowledge and educational level of these two groups in this study. Most nurses believed that cleansing of oral cavity was difficult, and providing oral care to patients with mechanical ventilation is very important and high priority.[7]

Despite the obvious importance of the nurses' role in reducing mortality due to VAP, which can be prevented by proper oral care, so far no studies have been conducted in this field in Ahvaz. Therefore, the present study was designed with the aim of " Survey of knowledge, attitude and practice of Intensive Care Unit nurses regarding oral care of patients under mechanical ventilation" in order to clarify the situation of Ahvaz educational hospitals in this regard, and further steps can be taken to improve this nursing care.

Subjects and Methods

The present study is a cross-sectional descriptive study in which the knowledge, attitude and practice of intensive care units nurses regarding oral care of patients under mechanical ventilation have been investigated. After submitting the proposal to the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences and obtaining the code of ethics IR.AJUMS.REC.1396.714, as well as receiving a recommendation from the Student Research Committee, the researcher went to the research hospitals, and after providing the necessary explanations to the nursing staff and giving assurance on the confidentiality of research information and obtaining their informed consent collected the information using the questionnaire.

The sample size included 130 nurses working in adult intensive care units of Ahvaz educational hospitals (Imam Khomeini, Golestan, Razi). Due to the low number of personnel in these wards, sampling was done by census method.

The inclusion criteria of this study were having a bachelor or postgraduate degree in nursing and having at least one year of work experience in the intensive care unit. Also, the exclusion criteria for the study were non-complete answering the questions.

The research tool consisted of a questionnaires and a checklist designed by the researcher. The questionnaire consisted of three parts: demographic information, attitude assessment questionnaire and knowledge assessment questionnaire. The demographic information section included questions such as age, gender, level of education, marital status, length of employment, and type of employment. This part was answered anonymously.

In second part of the questionnaire designed to measure the knowledge of nurses, the questions were in form of correct and incorrect. This section consisted of 7 questions and the minimum and maximum score of it was zero and 7 respectively. Scores were divided into three categories of poor knowledge (0-3), moderate knowledge (4-5), and good knowledge (6-7).

In attitude questionnaire the questions were in form of a 5-part Likert scale, from completely agree to completely disagree. This section contained 14 questions, with a minimum and maximum score of 14 and 70 respectively. Scores were categorized into three groups: weak attitude (14-35), moderate attitude (36-52) and good attitude (53-70).

A checklist was also designed to measure nurses' performance, including questions in form of a 5-part Likert scale, from always to never. This part was completed by the researcher or researcher assistant or head nurse through indirect supervision of nurses' performance. Based on the number of times the nurse accomplished each item during the procedure, the person who completed the checklist chose one of the options. This section included 25 questions, with a minimum and maximum score of 25 and 125 respectively, which divided into

three categories: poor performance (25-62), average performance (63-93) and well performance (94-125).

To evaluate the validity of the tool, ten faculty members of the Nursing and Midwifery Faculty of Ahwaz Jundishapur University of Medical Sciences reviewed the questionnaire and checklist. The CVR values of knowledge and attitude questionnaire and performance checklist were 0.68, 0.80 and 0.81, respectively. Also, the CVI values were 0.88, 0.89 and 0.99, respectively. Cronbach's alpha Coefficient method was used to test the reliability. Cronbach's alpha coefficient was used to determine the reliability of the instrument and its values for knowledge and attitude questionnaire and performance checklist were 0.63, 0.81 and 0.97 respectively.

All analyzes were performed using SPSS software version 20. To describe the data, mean and standard deviation were used in quantitative variables and frequency and percentage in qualitative variables. Spearman correlation coefficient test was used to analyze the data.

Results

Of the 130 staff employed in these wards, 100 ones completed the questionnaires whom 98 of them were women and 2 were men. The mean age of participants in this study was 32.75 ± 5.78 and the mean of their working experience was 9.49 ± 5.51 years. There were 90 people with bachelor degree and the rest of them held a postgraduate degree. Regarding the type of recruitment, 15 (22.4%) of them were official, 44 (65.7%) were informal and 8 (11.9%) were employed, and 33 others did not answered this question.

According to Table 1, 29 participants of the in this study (29%) had poor knowledge, 39 nurses (39%) had moderate knowledge and 32 others (32%) had good knowledge about oral care of patients under mechanical ventilation. Also, 55 nurses (55%) had poor attitudes, 41 ones (41%) had moderate attitude and 4 people (4%) had a good attitude towards this procedure. In addition, 76 participants (76%) had poor performance and the rest 24 ones (24%) had moderate performance, and no one with a good performance was observed.

Due to the lack of homogeneity of data Spearman correlation coefficient was used to measure the relationship between three variables of knowledge, attitude and practice with demographic information. The results will be explained in detail below.

As shown in Table 2, there is a significant direct relationship between knowledge and type of employment (P-Value = 0.031) (r = 0.264). It means, nurses whose employment status is uncertain such as contract nurses have a higher level of knowledge than others, which is probably because they have recently been employed and their knowledge is up to date. There was no significant relationship between attitude and demographic information in this study. There was a significant relationship between performance and gender (P-value= 0.011) (r = 0.254), which indicates that male nurses performance was better. Of course, since only two men participated in this study, this is not a reliable result. Also,

there was a significant inverse correlation between performance and age (P-value = 0.010) (r = 0.257), which proved better performance of younger people. This finding is probably due to the fact that nursing job is among the hard and detrimental businesses, and those who have served many years of work in this profession suffer job exhaustion and do not have the quality of the early years of service.

Discussion

The aim of this study was to assess the knowledge, attitude and practice of nurses working in intensive care units of educational hospitals in Ahvaz.

In a study conducted by Mohsen Adib Bagheri et al. in 2013, findings showed that knowledge of nurses in this field is not sufficient which is consistent with the findings of present study because in the present study, 39% of participants had poor knowledge and 29% were moderate. The participants of that study did not have enough information on the frequency of this procedure and how to do it, and stated that they have not been properly prepared for oral care of ventilated patients. They also ranked this procedure as seventh priority among ten other procedures. In this study, it turned out that only 16% of nurses used checklist for this care. Lack of time, lack of staff, and too much writing tasks have been reported as major barriers to oral care in this study.[24]

In another study by Jordan and colleagues in 2014, the results were in line with the results of our study and showed that the knowledge of nursing staff in this issue is not enough, which is probably due to the fact that oral care is considered to be negligible during the university courses and it has not been adequately considered. The performance of nursing staff was also evaluated as inappropriate in this study, which is similar to finding of present study, which was found that 76% of the subjects had poor performance and 24% had a moderate performance. But the attitude of the participants of this study was positive regarding this procedure. This finding was not consistent with the findings of current study on the attitudes of the people, because as noted before the attitude of 55% of nurses was poor and 41% were moderate in present study. Since one of the most important factors influencing the attitudes of individuals is their work space, this positive attitude is probably due to the culture of work space and the atmosphere prevailing on the ICUs assessed in this study. Lack of time and shortage of personnel have been reported as the main barriers to oral care in this research.[8]

Also, in several studies in Asian countries such as Singapore, Malaysia, China and Taiwan, the results showed that nurses working in ICUs, despite the high importance they have for oral care, have stated that they have not been specifically trained and prepared for this procedure and as a result, they provide this care due to the routine in their department, that is not based on principles and the equipment that using them is proven to be useful in studies, such as toothbrushes , are not used.[25-27] In present study, contrary to these studies, nurses did not give high importance to oral care of these patients, but

other findings from these studies were in line with current study. The low importance of this procedure from Ahvazian nurses' point of view is probably due to the fact that during their studies and their theoretical lessons at university there was little emphasis on this issue. Severe shortages of nursing staff in Ahvaz, and as a result of lack of time, can be considered as another reason for this nurses' attitude.

Limitations of this research include the reluctance of some personnel to answer to demographic questions, the mental state of the staff when answering the questions and the error of the person completing the performance checklists.

Conclusion

This study showed that most nurses working in ICUs of educational hospitals of Ahvaz do not have sufficient knowledge about oral care of patients with mechanical ventilation. Also, these people do not have a positive and good attitude toward this procedure, and the performance of all participants in this study was at weak and moderate levels. Therefore, considering the importance of this procedure in reducing the length of hospitalization, costs and mortality rate, it should be arranged that nursing students learn this procedure based on principles. Therefore, it is recommended that members of the Nursing Board include this forgotten procedure in the nursing student's curriculum. It is also necessary to organize training classes for personnel working in intensive units on how to do oral care properly and its importance. Therefore, nursing managers of hospitals, Nursing Association and other relevant organizations should put these classes on their schedule. On the other hand, the preparation of a principled protocol based on clinical evidence should be placed as a priority for other researchers.

Acknowledgment

References

1. Adib-Hajbaghery M, Ansari A, Azizi Fini I. Oral care in ICU patients: a review of research evidence. *Feyz* 2011; 15(3):280-93.

2. Miranda AF, de Paula RM, de Castro Piau CG, Costa PP, Bezerra AC. Oral care practices for patients in Intensive Care Units: A pilot survey. Indian J Crit Care Med 2016;20:267-73.

3. Javadinia SA, Kuchi Z, Saadatju A, Tabasi M, Adib-Hajbaghery M. Oral care in trauma patients admitted to the ICU: Viewpoints of ICU nurses. Trauma MON. 2014;19(2):e15110.

4. Türk G, Güler K. E, Eser I, Khorshid L. Oral care practices of intensive care nurses: A descriptive study. International Journal of Nursing Practice, 18, 347–353.

5. Chan EY, Hui-Ling Ng I. Oral care practices among critical care nurses in Singapore: a questionnaire survey. Applied Nursing Research. 2012;25(3):197-204.

6. Kyung JC, Nam YY. Relationship on the type A/B personality, attitudes and behaviors to oral care in Intensive Care Unit nurses. IJBSBT 2016;8(2): 383-394.

7. AK Alotaibi, SK Alotaibi, M Alshayiqi, and S Ramalingam. Knowledge and attitudes of Saudi intensive care unit nurses regarding oral care delivery to mechanically ventilated patients with the effect of healthcare quality accreditation. Saudi J Anaesth. 2016 Apr-Jun; 10(2): 208–212.

8. Jordan A, Badovinac A, Spalj S, Par M, Slaj M, Planč ak D. Factors influencing intensive care nurses' knowledge and attitudes regarding ventilator-associated pneumonia and oral care practice in intubated patients in Croatia. Am J Infect Control. 2014 Oct;42(10):1115-7.

9. Atar, N.Y., (2014). Adult Basic problems and basic nursing care in Intensive Care Patients, Nobel Tıp Kitapevi, Istanbul, Turkey.

10. Kollef MH, Hamilton CW, Ernst FR. Economic impacts of ventilator-associated pneumonia in a large matched cohort. Infect Control Hosp Epidemiol. 2012;33:250-6.

11. Özveren H, Özden D. Turkish nurses' attitudes and practices regarding oral care. Int J Nurs Knowl. 2015 Oct;26(4):163-9.

12. Atay, S, Karabacak, U. Oral care in patients on mechanical ventilation in Intensive Care Unit: literature review. International Journal of Research in Medical Sciences 2014; 2 (3): 822-829.

13. Yurdanur D, Nasibe F. A recent view and evidence-based approach to oral care of Intensive Care Patient. International Journal of Caring Sciences 2016; 9(2):1177-85.

14. Mervat Anwar Abd El-Aziz. Effect of educational program on nurses, knowledge and skills about oral care for traumatized patients. AAMJ 2014; 12(1): 25-47.

15. Hajibagheri A, Azizi Fini I. Mouth Care in patients receiving mechanical Ventilation: A systematic review. Nurs Midwifery Stud.2012;1(2);51-61.

16. Alotaibi AK, Alshayiqi M, Ramalingam S. Does the presence of oral care guidelines affect oral care delivery by intensive care unit nurses? A survey of Saudi intensive care unit nurses. Am J Infect Control. 2014;42(8):921-2.

17. Oliveira MS, Borges AH, Mattos FZ, Semenoff TA, Segundo AS, Tonetto MR, et al. Evaluation of different methods for removing oral biofilm in patients admitted to the intensive care unit. J Int Oral Health 2014;6:61-4.

18. Diaz TL, Zanone SJ, Charmo-Smith C, Kamoun H, Barrais AI. Oral care in ventilated intensive care unit patients: Observing nursing behavior through

standardization of oral hygiene tool placement. Am J Infect Control. 2017 1;45(5):559-561.

19. Tanguay, A. A survey of oral care practices for intensive care patients receiving mechanical ventilation. *Am J Crit Care*. 2013;22:e24–5.

20. Lin, H.L., Yang, L.Y., Lai, C.C. Factors related to compliance among critical care nurses with performing oral care protocols for mechanically ventilated patients in the intensive care unit. Am J Infect Control. 2014;42:533–535.

21. Binkley C, Furr LA, Carrico R, McCurren C. Survey of oral care practice in U.S. intensive care units. Am J Infection Control 2004; 32(3): 161-9.

22. Rello J, Koulenti D, Blot S, Sierra R, Diaz E, De Waele JJ, et al. Oral care practices in intensive care units: a survey of 59 European ICUs. Intensive Care Med 2007; 33(6): 1066-70.

23. Costello T, Coyne I. Nurses' knowledge of mouth care practices. Br J Nurs. 2008 Feb 28-Mar 12;17(4):264-8.

24. Mohsen Adib-Hajbaghery, Akram Ansari, and Ismail Azizi-Fini. Intensive care nurses' opinions and practice for oral care of mechanically ventilated patients. Indian J Crit Care Med. 2013; 17(1): 23–27.

25. Soh KL, Soh KG, Japar S, Raman RA, Davidson PM. A cross-sectional study on nurses' oral care practice for mechanically ventilated patients in Malaysia. J Clin Nurs. 2011;20(5-6):733-42.

26. Qu X, Xie H, Zhang Q, Zhou X, Shi Z. A survey on oral care practices for ventilator-assisted patients in intensive care units in 3A hospitals of mainland China. Int J Nurs Pract. 2015;21(6):699-708.

27. Lin YS, Chang JC, Chang TH, Lou MF. Critical care nurses' knowledge, attitudes and practices of oral care for patients with oral endotracheal intubation: a questionnaire survey. J Clin Nurs. 2011;20(21-22):3204-14.

Table 1. Frequency levels and frequency percentage of knowledge, attitude and practice of nurses

Variable levels	Knowledge		Attitude		Practice	
	Frequency	Frequency percentage	Frequency	Frequency percentage	Frequency	Frequency percentage
Poor	29	29%	55	55%	76	76%
Moderate	39	39%	41	41%	24	24%
Good	32	32%	4	4%	0	0

Table 2. Relationship between knowledge, attitude and practice with demographic information using Spearman correlation coefficient

Demographic variables	Knowledge		Attitude		Practice	
	correlation coefficient (r)	P-Value	correlation coefficient (r)	P-Value	correlation coefficient (r)	P-Value
Age	0.054	0.593	-0.116	0.251	-0.257	0.010*
Gender	0.086	0.397	0.044	0.663	0.254	0.011*
Marital status	-0.007	0.946	0.008	0.938	0.163	0.106
Employment type	0.264	0.031*	-0.076	0.543	-0.073	0.557
Educational degree	-0.055	0.589	0.037	0.717	-0.031	0.758