Effectiveness of an Educational Program on Nursing Staffs' Knowledge toward Oral Care of Intubated Patients at Intensive Care Unit in Al-Diwaniya Teaching Hospital

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الخلاصة:

خلفية البحث: العناية بالفم هي إجراء تمريضي حيوي للمرضى المنببين والذي يهدف إلى تقليل الوفيات و المراضة بين مرضى وحدة العناية المركزة عن طريق منع الالتهاب الرئوي المرتبط بجهاز التنفس الصناعي.

الهدف: تهدف هذه الدراسة الى تقييم معارف الملاك التمريضي تجاه العناية بالفم للمرضى المنببين قبل وبعد تنفيذ البرنامج التعليمي.

المنهجية: تم استخدام المنهج شبه التجريبي (الاختبار القبلي والبعدي لمجموعة واحدة) لإجراء هذه الدراسة التي تم اجراؤها في الفترة من 22 / كانون الأول / 2020 الى 2 / أيار / 2021. استخدمت طريقة أخذ العينات غير الاحتمالية (الهادفة) لاختيار عينة الدراسة المكونة من (27) من الملاك التمريضي العاملين في وحدة العناية المركزة بمستشفى الديوانية التعليمي. ولتحقيق أهداف الدراسة قام الباحث ببناء أدوات الدراسة المكونة من البرنامج التعليمي واستبانة المعرفة. تكونت الاستبانة من جزئين: الجزء الأول الخاص بالخصائص الديموغرافية للملاك التمريضي المشاركين في الدراسة، والجزء الثاني المتكون من (25) سؤالا متعدد الخيارات موزعة على (4) محاور لتقييم معارف الملاك التمريضي تجاه العناية بالفم للمرضى المنببين. لتحليل النتائج، تم استخدام الإحصاءات الوصفية (التكرارات والنسبة المئوية الوسط الحسابي، الانحراف المعياري) والاحصاءات الاستدلالية (الانوفا، اختبار t).

النتائج: أظهرت الدراسة ان هناك فروق ذات دلالة إحصائية بين درجات معارف الملاك التمريضي في الاختبار البعدي مقارنة بنتائجهم في الاختبار القبلي (المتوسط الحسابي= 0.82 في الاختبار القبلي، بينما في الاختبار البعدي كان المتوسط الحسابي هو0.93). كما أظهرت الدراسة أن هناك علاقة ذات دلالة احصائية فقط بين معارف الملاك التمريض ومستوى تعليمهم.

الاستنتاجات: وخلصت الدراسة الى ان للبرنامج التعليمي إثر إيجابي في معارف الملاك التمريضي تجاه العناية بالفم للمرضى المنببين في مستشفى الديوانية التعليمي.

التوصيات: وأوصت الدراسة بضرورة استخدام بروتوكول العناية بالفم في وحدات العناية المركزة وحث الكادر التمريضي على المشاركة في الدورات التعليمية والتدريبية الخاصة بالعناية بالفم في وحدات العناية المركزة.

الكلمات المفتاحية: معارف الممرضين، البرنامج التعليمي، العناية بالفم، المرضى المنببين.

ABSTRACT

Background: Oral care is vital nursing action for intubated patients that aims to reduce the mortality and morbidity among intensive care unit patients by preventing Ventilator-associated pneumonia.

Objective: The study aimed to assess the nursing staff's knowledge toward oral care of intubated patients before and after the implementing the educational program.

Methodology: A pre-experimental (one-group pre\post-test) design is used to conduct this study which was from the period 22 \ December \ 2020 to 2\ May\2021. The non-probability (purposive) sampling is used to select the study sample that composed of (27) nursing staff working in the ICU in Al-Diwaniya Teaching Hospital. To achieve the objectives of the study, the researcher constructed the study instruments consisting of the educational program

and the knowledge questionnaire. The questionnaire consisted of two parts: the first part related to the demographic characteristics of the nursing staff participating in the study, and the second part which consisted of (25) multiple-choice questions distributed on (4) domains to assess the knowledge of the nursing staff towards the oral care of the intubated patients. To analyze the results, descriptive statistics (frequencies, percentage, arithmetic mean, standard deviation) and inferential statistics (ANOVA, t-test) were used.

Results: The study showed that there are significant differences between nurses' knowledge scores in the post-test when compared to their scores in the pre-test (M=.082 in the pre-test, while in the post-test, M=.093). The study also showed there is a significant relationship only between nursing staffs' knowledge and their level of education.

Conclusion: The study concluded that the educational program has a positive effect on the nursing staffs' knowledge regarding oral care for intubated patients in Al-Diwaniyah Teaching Hospital.

Recommendation: The study recommended the necessity of using the oral care protocol in the intensive care units and urged the nursing staff to participate in educational and training courses on oral care in intensive care units.

Keyword: Nurses' knowledge, an educational program, oral care, intubated patients.

INTRODUCTION

The World Health Organization (WHO, 2019) stated that oral health is crucial to general health, well-being, and quality of life predictor [1]. Kazimiroff et al. (2015) mentioned that mouth problems such as caries, gingivitis, and periodontitis in immune-compromised patients might lead to further diseases. Nevertheless, there are difficulties in quantifying the association between oral health and the changes in systemic health [2].

Oral care is one of the most vital tasks of the ICU nursing staff when nursing care is provided to intubated patients, where the intubated patients depend entirely on the nursing staff to meet their needs, including oral care. Oral care greatly contributes to reducing ventilator-associated pneumonia (VAP) [3]. The American Thoracic Society (2005) defines VAP as pneumonia that occurs in ICU patients 48 hours or more after receiving endotracheal intubation [4].

Patients who used ventilator machines are more likely to have VAP due to the presence of the endotracheal tube (ETT). ETT provides an excellent opportunity for microbial organisms, such as fungi and bacteria, to adhesion and formation of biofilm on both its inner and outer surfaces. ETT contribute to increase the nosocomial infection among ICU patients [5].

The risk of microbes aspirated is increased with the presence of ETT that leads to obstruction of the human body's primary reflects, compared with patients without oral intubation, the intubated patients need specific oral care to prevent microbial colonization. When oral care has provided, the materials, mouth solution, technique, and the frequency of providing oral care should be taken into consideration [6].

Oral care measures should be managed to prevent oropharyngeal microbes from colonization [7]. Gupta et al. (2016) reported that providing effective oral care to ICU patients could contribute to reducing the occurrence of VAP by 60% among these patients [8]. The American Association of Critical-Care Nurses (2017) reported that efficient oral care includes using a small, soft toothbrush, such as a pediatrics toothbrush, to brush some parts in the oral cavity including the teeth, tongue, and gums, unless there

are contraindications to using the toothbrush, in addition to moisturizing the lips and mucous membrane of the mouth every 2 to 4 hours. The use of chlorhexidine gluconate (0.12%) to rinse twice daily is effective for controlling dental plaque [9].

Many factors and barriers can affect the quality of oral care for intubated patients including nurses' knowledge, where Khasanah et al. (2019) stated that knowledge is essential to maintain adherence to routine oral care for intubated patients [7]. Lin et al. (2011) reported that although the nursing staff has knowledge about the risks of VAP but is ignorant of how to prevent it, including ignorance of the link between oral care and VAP prevention [10]. Other factors also can affect the provision the oral care include the nursing staffs' socio-demographic characteristics including age, gender, level of education, and experience years in ICU [3, 11].

AIMS OF THE STUDY

1. To assess the nursing staffs' knowledge toward oral care of intubated patients.
2. To determine the effectiveness of the educational program on nursing staffs' knowledge toward oral care of intubated patients.
3. To find out the relationship between the nursing staffs' knowledge and their selected demographic data (age, gender, level of education, and years of experience in ICU).

METHODOLOGY

A pre-experimental design was used to carry out the study that is applied by using the pre and post-test approach for one sample group (study sample). The study period started from 22 \ December \ 2020 to 2 \ May \ 2021 at ICU in Al-Diwaniya Teaching Hospital. A non-probability (purposive) sampling method was used to select 27 nurses working in ICU to participate in the study.

The researcher constructed the study instruments (educational program and knowledge questionnaire) based on the nurses' preliminary assessment results and the review of relevant literature and study. Experts in different fields were evaluated the content of the program. The revision was made on the program contents based on these experts' recommendations and suggestions.

To collect the nursing staffs' demographic data, the researcher used the demographic data form. This form consists of (4) items; they are age, gender, educational level, experience years in ICU. The researcher used the knowledge questionnaire, which consist of 25 multiple-choice questions, to evaluate the effectiveness of the educational program on the nursing staffs' knowledge toward oral care for intubated patients.

These 25 multiple-choice questions distributed on four domains: First domain: this domain consist of (5) items related to nurses' knowledge about oral cavity anatomy and physiology. Second domain: this domain consist (5) items related to nurses' knowledge about oral cavity health assessment. Third domain: this domain consist (5) items related to nurses' knowledge about materials, tool and agents used in oral care. Forth domain: this domain consist (10) items related to nurses' knowledge about oral care and its importance.

The validity of the study tools was determined by (19) experts, who have more than (10) years of experience in their fields. The pilot study was carried out to determine the study instrument reliability. The questionnaire reliability was determined through using test and re-test approach that obtained through evaluating (five) ICU nurses in Al-Diwaniyah Teaching Hospital. The time interval between the test and re-test was four weeks to determine

the study instrument reliability. The result of the reliability shows that the person correlation coefficient was (r = 0.89).

The researcher was obtained the approval of the nursing staff for the purpose of participating in the study and conducting the pre-test. After the nurses were filled out the demographic data form, they have undergone the pre-test. All nurses who have a score less than 60% in pre-test were included to participate in the educational program and the post-test. Data were analyzed by using SPSS, descriptive statistics (frequencies, percentage, arithmetic mean, standard deviation), and inferential statistics (ANOVA, t-test) were used.

RESULTS

Table (1): Distribution of the Study Sample According to The Socio demographic Data (N=27).

Demographic Data	Groups	Frequency	Percent
Age / Years	21 to 25	12	**44.4**
	26 to 30	9	**33.3**
	31 to 35	5	**18.5**
	36 to 40	1	**3.7**
	Total	**27**	**100.0**
	Mean and SD 27.59 ±3.342		
Gender	Male	14	**51.9**
	Female	13	**48.1**
	Total	**27**	**100.0**
Education level	Secondary	3	**11.1**
	Institute	7	**25.9**
	College	17	**63.0**
	Total	**27**	**100.0**
Years of experience in ICU	1 to 5	20	**74.1**
	6 to 10	7	**25.9**
	Total	**27**	**100.0**

ICU=intensive care unit, N= Number, SD= Stander deviation

Table 1 shows that (44.4%) of the participant was within the age group of (21-25) years. Regarding gender, the proportion of males was close to females, as the proportion of males was (51.9%), while the females of them were (48.1%). With regard to educational level, the percentage of those who obtained a bachelor's degree was (63%). Concerning years of experience in ICU, the results showed that (74.1%) of respondents have (1-5) years of experience in ICU.

Table (2): Comparison of Nursing Staffs' Knowledge Scores between the Pre-test and Post-test

Main studied domains	Pairs	Ass.	Study sample n=27		t-value	d.f.	p-value
			Mean	SD			
Assessment of nurses' knowledge regarding oral anatomy and physiology	**Pre-test**	Low	1.33	.193	-14.689	26	**.000 HS**
	Post-test	High	1.91	.115			

Assessing nurses' knowledge regarding oral health assessment	**Pre-test**	Low	1.20	.124	-18.110	26	**.000 HS**
	Post-test	High	1.77	.154			
Assessing nurses' knowledge regarding materials, tools and solutions used in oral care	**Pre-test**	Low	1.26	.134	-17.152	26	**.000 HS**
	Post-test	High	1.83	.132			
Assessing the nurses 'knowledge regarding oral care and its importance	**Pre-test**	Low	1.31	.092	-13.521	26	**.000 HS**
	Post-test	High	1.77	.154			
Overall evaluation of nursing staffs' knowledge	**Pre-test**	**Low**	**1.28**	**.082**	**-30.261**	**26**	**.000 HS**
	Post-test	**High**	**1.84**	**.093**			

Ass. = Assessment, Std. = standard Deviation, T= T. test, DF= degree of freedom, HS= High significant, cut of =0.33

Table 2 shows that the overall assessment of nursing staffs' knowledge at pre-test was low with a statistical mean equal to (1.28), while in post-test, the overall assessment of nursing staffs' knowledge was high with a statistical mean equal to (1.84) at all main studied domains. In addition, the study showed that there is a highly significant difference between knowledge scores in pre and post-test at (p-value = .000).

Table (3): Relationship between the Overall Nursing Staffs' knowledge (Post-Test) and Their Demographic Data by ANOVA

Demographic Data		d.f.	F	Sig.
Age	Between Groups	7	1.850	**.135**
	Within Groups	19		
	Total	**26**		
Educational Level	Between Groups	7	5.931	*.001*
	Within Groups	19		
	Total	**26**		
Years of experience in ICU	Between Groups	7	1.659	**.179**
	Within Groups	19		
	Total	**26**		

DF= degree of freedom, F=one way ANOVA calculated value, Sig= Significant

Table 3 shows that there is a statistically significant relationship only between the nurses' knowledge and their educational level (at p-value =.001), while there is no statistically significant relationship between their knowledge and the rest of the sociodemographic variables including (age, and years of experience in ICU).

Table (4): Means Difference (Independent Sample t-test) In the Overall Nursing Staffs' Knowledge (Post Test) According to Their Gender

Overall	Gender	Mean	Std. Deviation	T-Value	D.F.	P-Value
Overall Knowledge	Male	1.84	.092	1.629	52	**.109**
	Female	1.48	.509			

Std. = standard Deviation, T= T. test, D.F = degree of freedom

Table (4) shows there is no significant relationship between the overall nursing staffs' knowledge (Post-test) and their gender.

DISCUSSION

The sample was consists of (n=27) nurses those purposively allocated to the study sample. As in Table (1), the study showed that more than two fifth (44.4%) of participant nurses was within (21-25) years age group with mean age equal to (27.59) years for the study sample, which ranged between (21-40) years old. This result supported by the study conducted by (Ibrahim et al., 2015) [12]. According to the point of view, the majority of ICU nursing staff needs to be young to cover all ICU duties, with the necessity need for experienced nurses to guide and train the new nurses.

Concerning gender, the present study revealed that more than half (51.9) of nurses in study sample were males. This result line with study was done by Al-Jubouri and Jaafar (2018) [13]. From the researcher's point of view, although the ratio between males and females is relatively close, the difficulty of working in ICU requires patience and endurance, and these traits are found in males more than females.

Related to the educational level, the study shows that less than two thirds (63%) of the nurses participating in the study hold a Bachelor's degree in Nursing. This finding supported by the study conducted in Dubai by Cherian and Karkada (2015) [14]. This result can be explained from the researcher's point of view that the increase of academic nurses in the intensive care unit can be attributed to the ICU requires highly-qualified nurses. In addition, the other reason is the opening of the College of Nursing in Al-Diwaniyah Governorate in previous years, which led to the supply of the health institutions with nursing college graduates in sufficient numbers.

Regarding years of experience, the study revealed that approximately three quarters (74.1) of the nurse in the study sample had less than five years of experience in the intensive care unit. This result is in the same line with the study performed by (Na'el & Mohammed, 2019) [15]. The researcher confirmed that the majority of nurses were young and had low experience in ICU.

As in Table (2), the overall evaluation of nursing staffs' knowledge, in the pre-test period, was low with a statistical mean equal to (1.28). This result is consistent with the study conducted in Addis Ababa in 2019 by Shetie, where the proportion of nurses in the study sample who have good knowledge about oral care was only (25.2%) [16], another study conducted by Jahani and Poursangbor (2019) found that only (32%) of nurses had good knowledge about oral care for mechanically ventilated patients [17]. In addition, (Afshar et al., 2017), reported that the overall evaluation of nurses' knowledge regarding oral care of ICU patients was low [18]. This result can be explained from the researcher's point of view that, the lack of knowledge about oral care among the ICU nurses can be attributed to many reasons, including; the lack of training courses on this topic, continuing education in hospitals does not give sufficient attention to oral care in their curriculum. Also, as supported by (Booker et al., 2013) [19], ICU nurses did not give oral care the proper attention and they believed that it a "comfortable intervention" rather than a protective measure.

In post-test period, the study shows improvement in the nurses' knowledge about oral care of intubated patients after implementing the educational program as shown in Table (2), where the overall evaluation of knowledge was high, with statistical mean equal to (1.84).

The study revealed that, there are highly statistically significant difference between the overall nurses' knowledge in pre and post-test periods (at p-value= 0.000), where the nursing staff's knowledge scores in the post-test was greater than their knowledge scores in the pre-test.

These findings are similar to those in the study done by (Ragotero et al., 2016), who reported that, there is significant difference between the nurses'

knowledge about oral care in pre and posttest, where they found that there was improvement in the nurses' knowledge after conducting the oral care educational program [20]. Cherian and Karkada (2015), reported that the improvement in nurses' knowledge were highly statistically significant difference (at p value =0.0001) after conducting the educational program sessions. In addition, they reported that the nurse had inadequate knowledge before they conducted the educational program, where the mean score of nurses' knowledge during pre-test period was (9.93). While the mean score of nurses' knowledge in posttest was (18.5) that reflects the improvement in nurses' knowledge about oral care in post-test period [14]. Abd Elbaky et al. (2015) reported that the level of nurses' knowledge, regarding oral care of mechanically ventilated patients, is improved after the educational program has been implemented [21]. In addition, the present result also supported by the study done by Abd EL-Aziz (2014), who reported that the nurses' knowledge about oral care was unsatisfactory during pre-test. While in post-test the nurse had a satisfactory level of knowledge about oral care, where the program improve the knowledge to (100%) in nurses holder the bachelor degree, and (93.3%) in diploma degree nurses, this reflects the statistically significant differences between the nurses' knowledge in pre and post the implemented educational program [22].

The study demonstrates that the educational program has a positive impact on the improvement of the nursing staffs' knowledge concerning oral care of intubated patients.

As for the relationship between the nurses' knowledge and their demographic characteristics, the study showed as in Table (3), there was no significant relationship between nurses' knowledge and their age at (p value=.135). This finding is supported by the studies done by Mishra and Rani (2020) [23] and Shetie (2019) [16], where they found that there was no statistically significant relationship between nurses' knowledge and their age groups. Regarding the level of education, the study shows that there was high significant relationship between nurses' knowledge with their level of education (at p-value=.001). This result supported by Al-Jubouri and Jaafar (2018) [13]. The study also revealed that there is no statistically significant relationship between nurses' years of experience in ICU with their knowledge toward the oral care of intubated patients (at p-value= .179). This result supported by (Thapa, & Shrestha, 2019) [24]. As in Table (4), the study shows there is no significant relationship between nurses' knowledge and their gender, at (p-value= .109). This result agree with the studies conducted by Mishra and Rani (2020) [23] and Cherian and Karkada (2015) [14] where they found that there is no significant association between nursing staffs' gender and their knowledge about oral care.

CONCLUSION

The study concluded that the educational program has effectively contributed to improving the nurses' knowledge about the oral care of intubated patients, as this was evident through the results of pretest and post-test.

RECOMMENDATIONS

1. The study recommended that, the nursing staff need to be encouraged and motivated for participating in special training programs and conferences about oral care of intubated patients.

2. The researcher also recommended creating a written updated protocol about oral care of intubated patients to confirm adequate knowledge, unified, and safe nursing practices.

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