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Original Article

Effect of Educational Guidelines on Nurses' Knowledge and Practices Regarding Ventilator Associated Pneumonia at Tertiary Care Hospital Lahore

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ABSTRACT

Ventilator associated pneumonia (VAP) is a kind of pneumonia which develops in patients receiving mechanical breathing after 48 hours. One of the most prevalent nosocomial infections and the main factor in the high morbidity and mortality of intensive care units is ventilator-associated pneumonia (VAP). In order to prevent VAP, intensive care unit nurses are best equipped to use the available evidence-based measures (VAP). **Objective:** To determine the effect of educational Guidelines on the knowledge and practice of nurses regarding ventilator associated pneumonia. **Methods:** A Quasi-experimental one group pre-post, test was used conducted between January 2022 to May 2022 at a tertiary care hospital in Lahore, Pakistan, in the department of Medical intensive care unit and surgical intensive care unit. 36 registered nurses were selected by convenience sampling from tertiary care hospital Lahore according to inclusion and exclusion criteria. A structured questionnaire was used to evaluate the pre-post data that contained 20 MCQ-based knowledge questionnaire and 21 items containing practice checklist were used to check the practice level of nurses before and after guidelines-based educational intervention. **Results:** The results revealed a positive effect of educational guidelines on improving the nurse's knowledge and practice about Ventilator-associated pneumonia (VAP). Mean ± S.D (7.78 ± 1.22; 15.86 ± 1.22) (8.94 ± 2.39; 17.39 ± 0.96) in post-test respectively with a statistically significant p-value (p-value <0.001). **Conclusion:** The education of nurses by educational guidelines has a positive effect on improving nurses' knowledge and practice about Ventilator-associated pneumonia (VAP).

INTRODUCTION

One of the most frequent pneumonias that people on ventilators develop in hospitals is known as ventilator-associated pneumonia (VAP). High morbidity and death during hospitalization is major cause of VAP. The fact that intensive care unit nurses frequently are not aware of evidence-based recommendations for preventing VAP has a negative effect on patient care. Patients having mechanical ventilation had a frequency of 8 to 28% Ventilator-Associated Pneumonia [1]. With continuing use of a ventilator, it could develop worse [2]. Worldwide, the prevalence of ventilator-associated pneumonia ranges from 5% to 67%, and its high death rate is between 24% and 70% [3]. The major cause of infection-related death in critically ill patients is VAP, the second most frequent illness picked up in hospitals. VAP is acknowledged as a critical issue everywhere. In Europe, there are 14.5 incidence of VAP per 1,000 ventilator days. It happens in approximately in 10–20% of patients who need mechanical breathing, and this rate has not reduced throughout the years. It has a detrimental impact on patient outcomes and is related to increased intensive care unit (ICU) mortality [4]. In the US, there are 2 to 16 occurrence of VAP every 1,000 ventilator days [5]. In underdeveloped nations, the VAP rate ranges from 1.5 to 41.7 per 1000 ventilator days. Additionally, frequent hospital acquired infections (HAI) are related to higher patient costs, longer hospital stays, and mortality in impoverished nations [6]. Studies suggest that about 55% cases with VAP can be prevented by having appropriate knowledge and proper practicing protocols [7]. Due to lack of nurses knowledge and poor practice regarding VAP prevention patients are affected [8]. VAP is preventable, therefore appropriate knowledge and

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practices among ICU Nurses are recommended to reduce the prevalence of VAP [9]. ICU Nurses should have equipped with knowledge and timely managed which will reduce the occurrence of VAP. Different nursing practices can reduce the incidence of VAP and patient's outcomes measure can be improved [10]. Critical care Nursing is a complex specialty which is developed to serve the diverse health needs of seriously sick patients with fatal and life-threatening conditions [11]**.** The number of days spent in the ICU can be decreased from 36 to 27 days by using a bundle to avoid VAP. Because of preventive efforts, infection rates have decreased from 8.6 VAP/1000 ventilator days to 2.0 VAP/1000 ventilator days. Headboard elevation between 30° and 45°, oral hygiene with 0.12% chlorhexidine mouthwash, mechanical teeth brushing, endotracheal tube pressure check, and ventilator filter position are examples of low-cost, simple-to-implement preventive measures [1]. In Pakistan, there is a frightful situation due to continuous increase in ventilator associated pneumonia. A statistically significant relationship exists between ventilator associated pneumonia and use of guidelines; it shows guidelines are still ignored for caring the patients. Proper usage bundle guidelines at the hospitals are the need of hour in Pakistan to reduce the high rates of ventilator associated pneumonia [12]. Since, nurses need to get the education about guidelines regarding prevention of VAP to improve the knowledge and practice of nurses for empowering the nurses. This influences the researcher to conduct the study.

METHODS

A quasi-experimental study One Group Pre-test Post-test was conducted from January 2022 to May 2022, Registered nurses were included from the Medical and surgical ICU department of tertiary care hospital Lahore Pakistan. 36 registered nurses were selected by using purposive sampling technique. Nurses who attended the recent training session on prevention of ventilator associated pneumonia, who had the plan to go on leave and who had the previous ventilator associated pneumonia were excluded from the study. To calculate the sample size, mean and standard deviation is used from the previously published articles. Sample size was 36 by adding 20% drop out rate and 80% power of the test. Data collection tool was adopted from the published research with permission [13]. Tool had three parts Part a Demographic Variables, Part B Knowledge Assessment Questionnaire, Part C Practice checklist. Educational intervention was given to the nurses by making small groups including 3-5 nurses in each group and also carried out with 1 nurse according to availability and working schedule. 10 Weeks educational training was given by using PowerPoint lectures cum audio-visual demonstration and videos regarding the VAP, classification of VAP, criteria to diagnose ventilator associated pneumonia and guidelines to reduce the VAP. Total 15 sessions were conducted by taking 3 sessions per week. 2 weeks were given for the implication of knowledge and 4 weeks were given for practice improvement. SPSS version 20.0 used for statistical analysis. Demographic and professional variables assessed by frequency and percentages. Data collected in the form of whole numbers and twice i.e., before and after educational intervention. Mean difference calculated by paired t-test with $p \leq 0.05$ considered as significant.

RESULTS

Total 36 individuals were chosen from Services Hospital Lahore. Table 1 depicted that most of the nurses 29(80.6%) had Diploma in Nursing. Almost of 15(41.6%) the nurses had working experience between 1-5 years; 13(36.1%) were 30-34 Years of age, majority of the nurses are female (Table 1).

Variables	F (%)
Age (years)	32.97±4.35
25-29	11(30.6)
30-34	13(36.1)
34-39	9(25)
40-44	3(8.3)
Gender	
Female	36(100)
Male	0 (0)
Education	
Diploma nursing	29(80.6)
BScN	7(19.4)
Experience (Years)	
<1	1(2.8)
1-5	15(41.1)
6-10	9(25)
>10	11(30.5)

Table 1: Demographic Variables of study sample

Table 2 depicted that Mean ± S.D in pre-teaching indicates all nurses had poor level of knowledge while in post-teaching, majority of the nurses had good level of knowledge. This showed a statistically significant difference in mean Knowledge Scores after intervention with p-value <0.05.

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Knowledge	7.78 ± 1.22	15.86 ± 1.22	8.08	30.81	<0.001

Table 2: pre and post intervention comparison of Knowledge score of nurses regarding ventilator associated pneumonia (n=36)

Table 3 depicted that Mean ± S.D in pre-teaching indicates poor level of Practice in all nurses had while in post-teaching, majority of nurses had good level of Practice.

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This showed a statistically significant difference in mean Practice Scores after intervention with p-value <0.05.

Variable	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Mean difference	t-test	p-value
Practice	8.94 ± 2.39	17.39 ± 0.96	8.44	-19.9	<0.001

Table 3: pre and post intervention Comparison of practice score of nurses regarding ventilator associated pneumonia(n=36)

DISCUSSION

The goal of this study was to evaluate the effect of educational Guidelines for improving the knowledge and practice of nurses regarding VAP. Nurses provide the care to the patients in the health care facilities. Knowledge and practice of the nurses are the essential element to control the ventilator associated pneumonia that in result improve the patient care. A pre-test post-test quasi experimental study was conducted to evaluate the effect of educational guidelines on the knowledge and practice of nurses regarding ventilator associate pneumonia. Current study has the statistically significant difference (p<0.05) in the knowledge of the studied nurses in pre-post intervention Mean ± S.D (7.78 ± 1.22 15.86 ± 1.22) as the previous study conducted at private tertiary care hospital Karachi that nurses had the poor knowledge regarding evidence based guidelines for the prevention of VAP, before educational program which highlights the positive correlation between knowledge and evidence based guideline [14]. There is statistically significant difference (p<0.05) in the knowledge of the studied nurses in pre-post intervention Mean ± S.D (7.8 ± 2.9 10.8 ± 2.1) So, educational programs should be arranged by the Nursing administrators to enhance the knowledge and practice for reduction in ventilator associated pneumonia. The findings of the current study are consistent with the studies of quasi experimental studies conducted in Jordan which also revealed a statistically significant difference (p<0.05) in the knowledge of the studied nurses in pre and post intervention [15]. Similar findings were revealed by Apisarnthanarak *et al.*, study conducted in tertiary care center Thailand; the study found significant difference in pre-post in educational intervention [16]. The study also found the unsatisfactory knowledge level of the participants before educational intervention, while satisfactory knowledge level was assessed after educational intervention. In comparison to the study conducted in by Jansson *et al.*, which show the systematic review the effectiveness of the educational program on nurses' knowledge and practice in association with patients suffering from VAP [17]. The review not only found the effectiveness of the educational program in reducing the VAP. The current study has reported statistically significant differences in studied nurses' practice in pre-post intervention Mean ± S. D (8.94 ± 2.39 117.39 ± 0.96). Similar findings were reported by Osti *et al.*, study conducted in Nepal the study found statistically significant difference between the practice of the entire studied nurses (100%) between pre and post-program implementation [18]. The study showed high significance throughout the follow up of the program implementation i.e., decline in scores significant improvement in the post-test scores (p<0.001). Similarly, a quasi-experimental study by Mishra and Rani conducted in India and found the effectiveness of the management guidelines in the practice of the nurses regarding educational guidelines on VAP [19, 20]. The study also reported improved performance of the studied nurses' post-intervention implementation (p<0.001). It is indicated that well defined educational guideline in the different aspect of ventilator associated pneumonia is helpful in improving knowledge and practice of nurses.

CONCLUSIONS

This study concluded the effect of educational guidelines improving nurses' knowledge and practice regarding VAP has a significant positive impact.

Conflicts of Interest

The authors declare no conflict of interest

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