

A Study to Assess the Knowledge and Compliance of Critical Care Nurses Regarding Ventilator Care Bundle in Prevention of Ventilator Associated Pneumonia

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ABSTRACT

Mechanical ventilation is one of the major supportive modalities in the intensive care unit but it carries a lot of risks and complications, the most common one being VAP. VAP is a problem in intensive care units worldwide and dramatically increases morbidity and mortality rates on mechanically ventilated patients. It is the most common infectious complication among patients admitted to intensive care unit^[1]. Knowledge of nurses on ventilator care bundle for the prevention of VAP and adherence to them would reduce the risk of occurrence of VAP and decrease morbidity and mortality of mechanically ventilated patients in the ICU. Nursing care is growing rapidly in conjunction with technology and it is catching up with developed countries guidelines and standards of care. Nursing shortage, however, is a burden and intensive care nurses are in huge demand. The few intensive care nurses still practicing need to constantly update themselves with current knowledge and scientific evidence on many issues existent in the ICU, including VAP^[2]. The four primary recommended practices includes: elevating the head of the bed to 30 degrees, sedation vacations, oral care with chlorohexidine (CHG) and subglottic suctioning endotracheal tubes. Ventilator “bundles” usually include other elements such as deep venous thrombosis (DVT) prophylaxis, peptic ulcer prophylaxis. The nurse are expected to care for these patients in a setting of intensive care unit. The nurses should have thorough knowledge of the modes of ventilation, assessment, and trouble shooting of ventilators and assessment and care of the patients requiring mechanical ventilation.^[3,4]

The result shows that more than half (56.7%) of the staff nurses had excellent knowledge regarding ventilator care bundle and 43.3% of them had good knowledge regarding ventilator care bundle. It shows that knowledge and compliance of staff nurses regarding ventilator care bundle were found to have significant association.

Keywords: *Compliance, Critical care nurse, Ventilator-associated pneumonia (VAP), Ventilator care Bundle,*

INTRODUCTION

The lungs are usually amongst the major organs involved in multiple organ failure and thus the challenge of delivering appropriate ventilation with as little complications as possible is extremely important. Nosocomial pneumonia is a leading cause of death from hospital-acquired infections, with an associated crude

mortality rate of approximately 30 percent. Ventilator-associated pneumonia (VAP) refers specifically to nosocomial bacterial pneumonia that has developed in patients who are receiving mechanical ventilation. To ensure the highest standards of nursing care, nursing practice must be based on a strong body of scientific knowledge. This can be achieved through adherence to the evidence based guidelines for prevention of VAP, ultimately improving patients' outcomes. Improved outcomes will shorten patient's ICU length of stay, hospitalization as well as benefit the patient financially with decreased hospital costs. Hospitals also gain benefits as they are continually faced with the challenge of providing cost effective services to patients and communities^[1]

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PURPOSES

To assess the knowledge, compliance of staff nurses regarding ventilator care bundle.

NEED OF THE STUDY

Intubation and mechanical ventilation both increase the risk of bacterial pulmonary infection because the invasive endotracheal tube allows direct entry of bacteria into the lower respiratory tract since the tube is located in the trachea. Bacterial colonization in the respiratory tract is further facilitated by the absence of the cough reflex and excessive mucus secretion in the mechanically ventilated patients.^[5] Nosocomial pneumonia is a leading cause of death from hospital-acquired infections, with an associated crude mortality rate of approximately 30 percent. Ventilator-associated pneumonia (VAP) refers specifically to nosocomial bacterial pneumonia that has developed in patients who are receiving mechanical ventilation. Ventilator-associated pneumonia that occurs within 48 to 72 hours after intubation is usually termed early-onset pneumonia; it often results from aspiration, which complicates the intubation process. Ventilator-associated pneumonia that occurs after this period is considered late-onset pneumonia.

Between 5-15% of hospital in-patients develop infection during admission to intensive care unit (ICU). ICU patients are 5-10 times more likely to acquire nosocomial infections than patients in the wards and approximately 86% of hospital associated pneumonia is linked with mechanical ventilation. The prevention of Ventilator Assisted Pneumonia (VAP), a hospital acquired infection, among intensive care patients is a major clinical challenge. It is a condition that is associated with high rates of morbidity, mortality, length of stay and hospital costs.^[6]

Conceptual Framework: The conceptual framework is developed by the investigator herself based on the critical thinking of nursing practice Health Belief Model (HBM) developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels working in the U.S. aims to assess the knowledge and compliance of critical care nurses regarding ventilator care bundle in prevention of ventilator associated pneumonia.

RESEARCH METHODOLOGY

Design: Exploratory survey research design

Sample: 60 nurses.

Tool: Demographic data, structured questionnaire, Observation checklist

Validity: Validation of the tool was done by experts and modifications were made accordingly.

Reliability: The reliability of the tool was calculated to be 0.9538 for knowledge aspects and 0.8072 for practice aspects. Split half method, Inter rater method was used to find out the reliability for knowledge and compliance aspects which was analysed using Karl Pearson coefficient correlation.

DATA COLLECTION

Data was collected from 60 subjects working in critical care unit.

DATA ANALYSIS

The data collected was analysed using descriptive and inferential statistics.

Major Findings of the Study:

- Majority of 71.7% of the staff nurses had age 21-25 years, 25% of them had age 26-30 years, and remaining 3.3% of them had age above 35 years.
- Majority of 75% of them were females and 25% of them were males.
- Majority, 95% of them had B.Sc. Nursing, 1.7% of them had GNM and 3.3% of them had Post B.Sc.
- Majority shows 81.7% of them had 1-3 years of total experience and 18.3% of them had more than 3 years of experience
- Majority shows, 58.3% of them had less than one year of ICU experience, 33.3% of them had 1-3 years of experience and 8.3% of them had more than 3 years of experience.
- Majority shows, 33.3% of them were working in CCU, 33.3% of them were working in ICU and 33.3% of them were working in NTU.
- Majority, 51.7% of them were in Evening shift, 23.3% of them were in morning shift and 25% of them were working in night shift.
- Majority shows, 51.7% were in the evening shift followed by 25% in night and 23.3% in morning.

Findings related to knowledge of staff nurses regarding ventilator care bundle: It shows that more than half (56.7%) of the staff nurses had excellent knowledge regarding ventilator care bundle and 43.3% of them had good knowledge regarding ventilator care bundle.

Findings related to compliance of staff nurses regarding ventilator care bundle: It shows that knowledge and compliance of staff nurses regarding ventilator care bundle were found to have significant association. More the knowledge, better is the compliance, as the p-value is less than 0.05.

Findings related to association between knowledge regarding ventilator care bundle and selected demographic variables of staff nurses: It shows that shift was found to have significant association with the knowledge of the staff nurses regarding ventilator care bundle, as the p-value corresponding to shift was small, the null hypothesis is rejected.

Findings related to association between compliance regarding ventilator care bundle and selected demographic variables of staff nurses: It shows that area of work and Shift were found to have significant association with the compliances of the staff nurses regarding ventilator care bundle, as the p-values corresponding to area of work and shift was small, the null hypothesis is rejected.

CONCLUSION

The Findings of the study show that there is a highly significant association between knowledge and compliance scores of the group. There is significant association of knowledge score with shift and compliance scores with area of work and shift as 'p' value <0.001.

This study could help in increasing the knowledge and compliance of staff nurses regarding ventilator care bundle in prevention of VAP.

DISCUSSION

In the present study 43 (71.7%) of the subjects were from the age group of 21-25 years whereas 15 (25%) of them were in the age group of 26-30 years. Majority 45 (75.%) of subjects were females and only 15 (25%) were males. Maximum 57 (95%) did their B.Sc. nursing, whereas 2 (3.3%) did their PBSc nursing where as G.N.M 1 (1.7%). Most 49 (81.7%) of the subjects had 1-3 years of experience remaining 11(18.3%) of the subjects had

> 3 years of total experience. Most 35 (58.3%) of the subjects had less than 1 year remaining 20 (33.3%) of the subjects had 1-3 years of experience remaining 5(83%) of the subjects had > 3 years of total ICU experience. There was equal representation 20 (33.3%) of subjects had CCU, ICU, NTU experience. Majority 31(51.7%) of the staff nurses were in evening shift while around 23 - 25% morning shift & night shift respectively. More than half (56.7%) of the staff nurses had excellent knowledge regarding ventilator care bundle and 43.3% of them had good knowledge regarding ventilator care bundle. Majority (71.7%) of the staff nurses had good compliance regarding ventilator care bundle, 18.3% of them had satisfactory compliance and 10% of them had excellent compliance regarding ventilator care bundle. It shows that knowledge and compliance of staff nurses regarding ventilator care bundle were found to have significant association. More the knowledge, better is the compliance, as the p-value is less than 0.05.

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Conflict of Interest: Nil

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