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Knowledge and practice of staff nurses regarding nursing care of patients; on mechanical ventilator

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Abstract

Critical illness is a life threatening event that disturbs the full system of an individual. About 80% of patients in intensive care units are reported to require mechanical ventilation, and nursing care of patients receiving mechanical ventilation has become increasingly important, including nurse-led weaning of ventilator patients. With the right knowledge and right skills, nurses can reduce the risk of complications, decrease the length of time in the hospital stay and improve patient outcome. Patients on mechanical ventilator are totally depended on nurses. So the nursing personnel have a major role to play in sustaining the lives of the patients by meeting health requirements.

Methods: The objective of the study was to assess the knowledge and practice of staff nurses regarding care of patient on mechanical ventilator and find the correlation between the knowledge and practice. Survey approach was used in the study. A sample of 110 staff nurses who met the inclusion criteria and who are working in the mentioned hospitals of Guwahati were selected using simple random sampling technique.

Result: The study results showed that majority i.e. 61.82 percent of the respondent had 'Moderately Adequate knowledge', followed by 30.0 percent with 'Adequate knowledge' and only 8.18 percent had 'Inadequate knowledge' regarding nursing care of patients on mechanical ventilator. Results of the association between knowledge of the staff nurses and selected demographic variables showed that there is significant association between knowledge of the staff nurses and years of working experience. Results of correlation showed that there is a positive correlation between knowledge and practice of the staff nurses regarding nursing care of patients on mechanical ventilator.

Keywords: Mechanical ventilator, nurses, knowledge

1. Introduction

Illness can strike anybody at any time or age. Critical illness is a life threatening event that disturbs the full system of an individual. Critical illness affects their physical, psychological, socio cultural and spiritual level. In nursing, the nurses serve as a catalyst by making complex timely decision and judgment to promote life process [1]. About 80% of patients in intensive care units are reported to require mechanical ventilation, and nursing care of patients receiving mechanical ventilation has become increasingly important, including nurse-led weaning of ventilator patients [2]. The critically and chronically ill patients who require ventilator for survival are a diverse population which includes children as well as adults. The disease conditions requiring mechanical ventilation also range from genetic conditions to acquired condition like trauma and post-operative complications [3].

A study about the incidence of mechanical ventilation in a large population of patient admitted to the ICU reported that 49% of the 3884 patients included in the APACHE III database had received mechanical ventilation, bus also noted that a significant percentage (64%) of these patients were in the post-operative period and therefore need mechanical ventilation for less than 24 hours. In contrast, an observational study performed in 48 Spanish medical surgical ICUs found that 46% of patients were mechanically ventilated at least for 24 hours [4].

Expertise knowledge is required for nursing in critical care setting in order to be proactive. Therefore, it is essential for nurses to have relevant skills and understanding required for their role as they are the key of information to patients, relatives and other members of interdisciplinary team. With the right knowledge and right skills, nurses can reduce the risk of complications, decrease the length of time in the hospital and improve patient outcome.

Patients on mechanical ventilator are totally depended on nurses. So the nursing personnel have a major role to play in sustaining the lives of the patients by meeting health requirements. Thus for this, a thorough knowledge and skills regarding the nursing care of patients on mechanical ventilator is very much essential.

Shikh EL. *et al.* (2000) ^[5] had conducted descriptive study of nosocomial respiratory infections and nurses performance related to infection control measures in artificially ventilated patients among 30 patients and 30 nurses. The study revealed a high incidence of nosocomial respiratory infection i.e 83.3% and pseudomonas was the causative agent in more than one fourth of the cases. Moreover, nurses infection control practices were inadequate ^[5].

Gomes V. (2010) ^[6] conducted a study on Critical care nurses' knowledge on evidence based guidelines for prevention of ventilator associated pneumonia in South Africa which showed that, out of the 83 participants, 18 achieved a pass mark of 70% on the multiple choice part of the questionnaire and were considered to have adequate knowledge on the evidence based guidelines for prevention of VAP ^[6].

Materials and methods

Objectives of the study

- 1) To assess the knowledge of staff nurses regarding nursing care of patients on mechanical ventilator by Structured Self-Administered Questionnaire.
- 2) To assess the practice of staff nurses regarding nursing care of patients on mechanical ventilator by Observational Checklist.
- 3) To find out the correlation between the knowledge and practice of staff nurses regarding nursing care of patients on mechanical ventilator.
- 4) To find out the association between knowledge of staff nurses regarding nursing care of patients on mechanical ventilators with some selected demographic variables.
- 5) To find out the association between practice of staff nurses regarding nursing care of patients on mechanical ventilators with some selected demographic variables.

The investigator has selected 'Survey Approach descriptive in nature', as it was found to be most suitable for studying the problem under study. The research design selected for the study was 'descriptive survey design'. The study was conducted in Guwahati Medical College and Hospital, Guwahati, GNRC Hospitals, Guwahati and Hayat Hospital, Guwahati. In the present study, the selected target population was the staff nurses working in departments of various ICUs.

A sample of 110 staff nurses who met the inclusion criteria and who are working in the mentioned hospitals of Guwahati were selected using simple random sampling technique. Staff nurses who were willing to participate and have completed at least one month of their clinical experience in any of the Intensive Care Units were included in the study.

The tool was prepared by the investigator after an extensive study of the related literature and with the guidance of experts.

Results

Results show that majority of the staff nurses (60.91%) fall under the age group of 27- 35 years, 27.27 percent of them

fall under the age group of 18- 26 years whereas only 11.82 percent of them fall under the age group > 35 years.

Knowledge level of 110 staff nurses was assessed using Structured Self-Administered Questionnaires and was analyzed using descriptive statistics. The range, mean, median and standard deviation was calculated. The maximum possible score for the knowledge questionnaires was 30, out of which the knowledge scores was graded as "adequate", "moderately adequate" and "inadequate" using the formula 'Mean \pm Standard Deviation'.

The knowledge scores of staff nurses ranged from 13-27 with mean 23.009 and standard deviation 2.90. The data shows that majority i. e. 61.82 percent of the respondent had 'Moderately Adequate knowledge', followed by 30.0 percent with 'Adequate knowledge' and only 8.18 percent had 'Inadequate knowledge' regarding nursing care of patients on mechanical ventilator.

The Practice scores of staff nurses on endotracheal Suctioning ranged from 13- 36 with mean 28.17 median and standard deviation 3.456. Majority i.e. 61.82 percent of the respondents had 'Moderately Adequate Practice', followed by 25.45 percent with 'Adequate Practice' and only 8.18 percent had 'Inadequate Practice' on nursing care of patients on mechanical ventilator.

The relationship between knowledge score and practice score was tested using 'Spearman's rho coefficient of correlation.

The calculated value of co-relation co-efficient 'r' was found to be 0.655 and p value is 0.001. This indicated that there is a positive correlation between the two variables i. e. higher the knowledge score, higher is the practice score of the staff nurses regarding nursing care of patients on mechanical ventilator.

Hence it can be inferred that knowledge and practice of the staff nurses regarding nursing care of patients on mechanical ventilator is positively co-related.

To test the association between knowledge score and age chi-square (χ^2) was applied.

The obtained χ^2 value for the practice of the staff nurses regarding nursing care of patients on mechanical ventilator with age was 4.27, (df = 4) and p value = 0.371. Hence no significant association between the practice score and the age of the staff nurses was found.

The obtained χ^2 value for the practice of the staff nurses regarding nursing care of patients on mechanical ventilator with qualification was 8.51, (df = 4) and p value = 0.074. Hence no significant association between the practice score and qualification of the staff nurses was found.

The obtained χ^2 value for the practice of the staff nurses regarding nursing care of patients on mechanical ventilator with years of working experience was 19.80, (df = 4) and p value = 0.001. Hence a significant association between the practice score and years of working experience of the staff nurses was found.

The obtained χ^2 value for the practice of the staff nurses regarding nursing care of patients on mechanical ventilator with exposure to training programme was 2.49, (df = 2) where p value = 0.29. Hence a significant association between the practice score and years of working experience of the staff nurses was found.

Results of the association between knowledge of the staff nurses and selected demographic variables showed that there is significant association between knowledge of the staff nurses and years of working experience. Similarly

results of the association between practice of the staff nurses and selected demographic variables showed that there is significant association between practice of the staff nurses and years of working experience. Results of correlation showed that there is a positive correlation between knowledge and practice of the staff nurses regarding nursing care of patients on mechanical ventilator.

Discussion

In the present study out of 110 samples, majority (60.91 %) of the staff nurses were between the age group of 27 – 35 years, followed by 27.27 % of the staff nurses between the age group of 18- 26 years. The study finding is consistent with the study findings by Joshua S. (1999) in M. S. Ramiah Medical College and Teaching Hospital, Bangalore where majority of the staff nurses were between the age group of 27 – 35 years.^[7] Similar findings were also observed in the study conducted by Kituyi W. P. *et al.* (2011) aimed at determining the knowledge and practices among 200 nurses who managed post-operative patients at the Moi Teaching and Referral Hospital in Kenya where majority of the staff nurses were between the age group of 27 – 33 years.^[8]

The findings of the study showed that majority (66.36%) of the staff nurses had 'moderately adequate practice' on nursing care of patients on mechanical ventilator, followed by 25.45% with 'average practice'. Only 8.18% had 'inadequate practice'. This finding is similar to a study conducted by Joseph C. *et al.* (2005) in Vellore, India on 60 staff nurses which revealed that the practice of the staff nurses on care given to patients on mechanical ventilator was 'moderately adequate' with a score of 75 %.^[9] Similar trends were also observed by the study conducted by Presneill J. *et al.* (2007) to assess the care of patients on mechanical ventilator by the staff nurses. The overall care was 'moderately adequate' below the score of 75 percent.^[10]

The findings of the study revealed that there was a positive correlation' ($r=0.655$) between the knowledge level and practice level regarding nursing care of patients on mechanical ventilator. This finding is similar to a finding conducted by Presneill. J. J. *et al* (2007) which revealed that there was a positive correlation' ($r=0.73$) between the knowledge level and practice level of the staff nurses and to improve compliance in hand hygiene^[10].

Conclusion

It was also found that majority of the staff nurses had 'moderately adequate knowledge' as well as 'moderately adequate practice' regarding nursing care of patients on mechanical ventilator. Thus there is an utmost need to develop the knowledge and skills of the staff nurses regarding care of patients on mechanical ventilator so that they acquire adequate knowledge and practice for improving the outcome of such patients in the hospitals.

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