



CRITICAL CARE NURSES' KNOWLEDGE AND PRACTICE REGARDING PREVENTION OF VENTILATOR ASSOCIATED PNEUMONIA AT TERTIARY CARE HOSPITAL LAHORE

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ABSTRACT

Background:

Aim: The aim of this study is to assess the knowledge and practices of critical care nurses regarding the prevention of ventilator associated pneumonia, in ICUs of Jinnah and Punjab Institute of Cardiology, and government hospitals of Lahore Pakistan.

Materials and Methods: A descriptive cross-sectional study was conducted in different ICUs of Jinnah and Punjab Institute of Cardiology Hospital Lahore, Pakistan. Data was collected from 151 Nurses working in critical care units, through Purposive sampling technique. The Tool used for data collection was closed ended questionnaire distributed among participants. Study duration was four months.

Results: The study was descriptive cross-sectional, so descriptive statistics was applied, frequency distribution was calculated, data normally was checked. The study shows that the participants with good knowledge was 62 (41.1%), fair knowledge were 54 (35.8%), and the participants with poor knowledge were 35 (23.2%). Similarly, Participants with good practices were 62 (41.1%), fair practices were 50 (33.1%), and the 39 (25.8%) were poor practices.

Conclusion: The Study concluded that the majority of Nurses having good knowledge and practices regarding ventilator associated pneumonia.

Keywords: knowledge, practices, critical care nurse, ICU, ventilator associated pneumonia.

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INTRODUCTION:

Ventilator associated pneumonia is a well-known nosocomial infection that affects lung parenchyma of a patient who is receiving mechanical ventilation through endotracheal tube (Karakaya, Duyu, & Yersel, 2022). Ventilator associated pneumonia is caused by bacterial colonization in the oropharynx of critically ill patients, but it can also cause by other microorganism include such virus e.g. Herpesviridae or the "classic" respiratory viruses, influenza A, etc. (Elkammoshi, Ashur, El Magrahi, Abdulatif, & Almarouq, 2021).

This bacterial infection of lung parenchyma can increase due to prolong intubation and mechanical ventilation by invasive endotracheal tube. When the endotracheal tube stay inside the trachea this allows direct entry of microorganism into the lungs (Lim, Abidin, Liew, Roberts, & Sime, 2019). Although various causes promote further bacterial colonization of respiratory tract such as mucous production in large amount and absence of cough of cough reflex (Loha et al., 2022). The frequency of VAP in the ICU is high and VAP's negative impact on patient outcomes and resource is more (Kharel, Bist, & Mishra, 2021).

The incidence of ventilator associated pneumonia varies among different regions based on resource allocation, level of nurses knowledge and their practices whereas, In Asian countries are more common and range from 3.5 to 46 infections 1000 mechanical ventilation Mathai, A. S., Phillips, A., & Isaac, R. (2016). Around the globe ventilator associated pneumonia account for the 2nd most drastic nosocomial infection (Iyengar, Bahl, Vaishya, & Vaish, 2020). Worldwide, Prevalence of ventilator associated pneumonia is 12.6%, 13.5% in US, 19.4% in Europe, 13.8% in Latin America and 16% in South Asia. While in Pakistan VAP rate among adults is 30.5%. Early detection and prompt actions of possible complications may contribute to reduce the incidence of ventilator associated pneumonia. (Aziz et al., 2020).

Here are some strategies that critical care nurses can use to prevent VAP such as Hand hygiene. Hands hygiene is the most effective way to prevent the spread of infection. Nurses should wash their hands with soap and water or use alcohol-based hand sanitizer before and after touching the patient, the ventilator, or any equipment (Rello et al., 2017). The second most important strategy is Oral care which is an important aspect of preventing VAP.

Nurses should perform oral care at least twice a day to remove any oral secretions and prevent the growth of bacteria. This can be done using

chlorhexidine mouthwash, suctioning, and brushing the teeth (Galhardo et al., 2020).

The Regular ventilator circuit changes can help to reduce the risk of VAP. Nurses should change the ventilator circuit every 48 to 72 hours or as per hospital policy (Celik Aysegul, Oznur, & Asiye, 2020). Nurses should use sterile techniques when performing any invasive procedures, such as suctioning or changing the tracheostomy tube. This can help to prevent the introduction of bacteria into the patient's airway (Lakra, 2022).

The application of knowledge to the care of critically ill patients is a hallmark of professional nursing practice. Many non-pharmacological evidence-based strategies aimed at preventing VAP can be seen as part of basic and routine nursing care, a direct responsibility of the bedside intensive care nurse and can easily be instituted at minimal costs; neglecting any of these could put the patient at risk of infection (Llauradó et al., 2016).

Certain practices should be performed by critical care nurses to reduce the risk of ventilator associated pneumonia such as follow strict aseptic techniques in intubation, frequent suctioning according to patient's needs, and place the patients in semi fowler position around 35 degrees (Güner & Kutlutürkan, 2022). knowledgeable nurses are required to take best and timely decision's about patients' conditions to minimize the risks. Good practices of critical care nurses improve patients recovery (Said, 2017). In fact, there was less study conducted about the Critical care nurse's knowledge and practices regarding the prevention of ventilator associated pneumonia So, it's very necessary to assess the nurse's knowledge and their practices to explicit the lacking and promote the quality of patient care.

Worldwide, Prevalence of ventilator associated pneumonia is 12.6%, 13.5% in US, 19.4% in Europe, 13.8% in Latin America and 16% in South Asia. While in Pakistan VAP rate among Adults observed as 17% and 30.5% in adults. Early detection and prompt actions of possible complications may contribute to reduce the incidence of ventilator associated pneumonia. Despite the availability of evidence-based guidelines for VAP prevention, the incidence of VAP remains high in ICUs. Critical care nurses play a crucial role in implementing oral care practices that prevent VAP, but their knowledge, attitudes, and practices may var

Therefore, it is essential to assess the knowledge, and oral care practices of critical care nurses for preventing VAP in a tertiary care hospital pneumonia (Aziz et al., 2020). So, the study aims to determine knowledge, and practices of critical

care nurses regarding prevention of ventilator associated pneumonia.

Materials and Methods

A quantitative cross sectional study design was Conducted to assess the critical care Nurses Knowledge and Practice regarding Prevention of ventilator associated Pneumonia. Data was collected from registered nurses working in ICUs of public tertiary care hospitals of Lahore (Jinnah and Punjab institute of cardiology). The setting of the study was registered Nurses working in ICUs of tertiary care hospital of Lahore. Duration of this study was 9 months. Sample size was 153 Nurses

Calculated by Kish Lesile Proportion formula. Data was collected through adapted questionnaire of knowledge and Practice regarding prevention of ventilator associated pneumonia in critical care units. Purposive sampling technique was used for data collection. After collecting the data, the data was compute analyze by software program (SPSS) version (22). The ethical consideration was followed which is organize by the Superior University Department of Nursing. The Participants all the confidentiality was ensure any participant who are not willing to participate can be withdraw from study any time. There will be no potential harm and benefits for the study.

CHAPTER ANALYSIS

Variable	Category	Frequency%
Age	20-25	44 (44%)
	26-30	36(36%)
	31-35	44(44%)
	36-40	100 (100%)
Gender	Male	24(24%)
	Female	100 (100%)
Marital status	Single	37(37%)
	Married	94 (94%)
Qualification	General Nursing	62(62%)
	Post RN	56 (56%)
	BSN Generic	33 (33%)
Experience	1-3years	32 (32%)
	4-6years	55 (55%)
	7-9 years	42 (42%)
	10-12 years	22 (22%)
Department	Medical ICU	78 (78%)
	Surgical ICU	48 (48%)
	Neuro ICU	25 (25%)

Table No:1 Demographics characteristics

The demographic table Shows that the majority of the age group with 36 to 40 years. Majority population were female. The majority Nurses marital status was married. The majority of nurses were general nursing diploma holder. The majority of Nurses were 4 to 6 years' experience. The majority nurses working in medical ICUS. Majority of participants have good knowledge regarding "Which is best recommended route when intubating a patient". The majority of the participants have good have poor knowledge

regarding "Head of the bed elevation should ranging from" The majority of nurses have good knowledge regarding " A Nurse is caring a ventilated patient is required to wash hands. The majority of nurses have good knowledge regarding "continuous education of ICU nurses on prevention of nosocomial infection is associated with "The majority of participants have good knowledge regarding "During the care of ventilated patients the maintenance of adequate pressure.

Questions	Respond	Frequency%
Which is best recommended route when intubating a patient	True	137 (137%)
	False	14 (14%)
Head of the bed elevation should	True	37 (37%)
	False	114(114%)
A Nurse is caring a ventilated patient is required to wash hands	True	126 (126%)
	False	37 (37%)
Continuous education of ICU nurses on prevention of nosocomial infection is associated with	True	127 (127%)
	False	24 (24%)
During the care of ventilated patients, the maintenance of adequate cuff pressure	True	107 (107%)
	False	44 (44%)

Table No:2 Knowledge questionnaire

The majority of participants have good practice regarding "Hand washing before entering ICU". The majority of participants have good practice regarding "Hand washing before suctioning and wear gloves in ICU". The majority of participants have good practice regarding "Position a patient in a semi recumbent position". The majority of participants have good practice regarding "Clean

mouth using toothbrush or gauze moistened with mouth wash. The majority of participants have good practice regarding Suction secretions as they accumulate, if necessary". The majority of participants have good practice regarding "Documentation".

Question	Respond	Frequency%
Hand washing before entering ICU	Done	96 (96%)
	Not done	55 (55%)
Hand washing before suctioning and wear gloves in ICU	Done	109 (109%)
	Not done	47 (47%)
Position a patient in a semi recumbent position	Done	97 (97%)
	Not done	54 (54%)
Clean mouth using toothbrush or gauze moistened with mouth wash	Done	102 (102%)
	Not done	49 (49%)
Suction secretions as they accumulate, if necessary	Done	100 (100%)
	Not done	51 (51%)
Documentation	Done	126 (126%)
	Not done	25 (25%)

Table No:3 Practice questionnaire

DISCUSSION:

Majority of participants respond to true option to the question that the " Which route is best recommended when intubating a patient " were 137 (90.7%). Majority of the participants respond to the true option "Head of the bed elevation should be ranging from " those who tick true option were 114 (75.5%). Majority of the participants respond to true option to the question that "A nurse caring a ventilated patient is required to wear sterile gloves during " those who tick true option were 126 (83.4%). Majority of the participants respond to the true option to the question that "Continuous education to ICU nurses on the prevention of nosocomial infection is associated with " those who tick true option were 127 (84.1%). Majority of the participants respond to the true option to the question that "During the care of ventilated patient maintenance of adequate cuff pressure" were 107 (70.9%).

Majority of the Nurses select the done option were 116 (96%) regarding " Hand washing before entering ICU ". Majority of the nurses select the done option were 109 (72.2%) regarding "Hand washing before suctioning and wear gloves ". Majority of the nurses select the Not done option were 97 (64%) regarding "Position a patient in a semi recumbent ". Majority of the participants select the done option were 102 (67.5%) regarding " Clean mouth using toothbrush or gauze moistened with mouth wash ". Majority of the nurses select the done option were 100 (66.2%)

regarding "Suction secretions as they accumulate, if necessary ". Majority of the nurses select the done option 126 (83.4%) regarding " Documentation ".

CONCLUSION

Based on the finding of my study, its concluded that the current knowledge and practices of nurses regarding the prevention of ventilator associated pneumonia are good. Nurse demonstrated a solid understanding of the condition and implementing appropriate care practices. This study revealed good ICU nurses' knowledge on VAP preventive strategies and knowledge reflect in their practice. This indicates that effort in education and training have been effective in equipping nurses with the necessary skills and knowledge to provide quality care to ventilated patients. However, continuous education can enhance the quality of care provided to mechanically ventilated patients and also improve outcomes for these patients.

LIMITATION

- 1.Time duration is the first and foremost limitations of the study
- 2.convenient sampling was used which is limited the generalizations. Participants is only selected from government hospital.
- 3.Closed ended questionnaire is used for data collection which gives little choice to the participants.

RECOMMENDATIONS:

The current study investigates the level of knowledge and practices of the critical care Nurses regarding prevention of ventilator associated pneumonia. The future research can work on the enhancement of knowledge and practice to conducted experimental study by which they can assess knowledge and practice to give the interventions for enhancement of knowledge and towards the prevention of VAP. The future researchers can play a part to implement education programs and familiar about the competent care to mechanically ventilated patents.

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