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A descriptive study to assess the knowledge and practice of intensive care nurses on prevention of ventilator-associated pneumonia (VAP) among patients admitted in critical care units of Government Medical College Hospitals, Jammu (J&K)

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Abstract
Ventilator Associated Pneumonia (VAP) is defined as a type of pneumonia in a patient receiving mechanical ventilation that was not present at the time of admission to hospital or that occurs 48 hours after intubation and mechanical ventilation. Host factors includes patient's age of more than 65 years and co-mortalities. It carries a high mortality rate ranging 6-68% and may be as high as 74% in high risk population indicating a serious health hazard among ventilated patients. This study was under taken to assess the knowledge and practice of intensive care nurses on prevention of ventilator-associated pneumonia (VAP) among patients admitted in critical care units of Government Medical College Hospitals, Jammu (J&K). The sample consisted of 50 intensive care nurses. Purposive sampling technique was used to select the sample. Socio-demographic profile, a self structured questionnaire and a checklist was used to collect the data from subjects. The results revealed that maximum subjects 22(44%) were having average knowledge followed by 16(32%) were having good knowledge, 8(16%) and 4(8%) were having below average and excellent knowledge respectively. It was found that the practice regarding the prevention of ventilator-associated pneumonia was unsatisfactory among intensive care nurses of hospitals. Thus, it is concluded that in service education and training programmes should be conducted for the nurses so as to improve their knowledge and practice and to decrease in infections among patients.

Keywords: intensive care nurses, ventilator-associated pneumonia and critical care units

1. Introduction

Society for healthcare epidemiology of America/Infectious diseases society of America reported 10-20% of patients undergoing ventilation in America developed VAP. This broad range may reflects the disparity in diagnostic criteria and differences between populations in disease severity quantitative culture sampling of endo tracheal aspirates may optimize the diagnosis and management of hospital acquired Pneumonia including VAP [1].

Advanced diagnosis and early management of possible complications may contribute to low incidence. Lack of adequate nursing staff (which should be ideally 1:1) may adversely affect the quality of care given to the patients may be the reasons of increased incidence, even through VAP is a serious problem in developed countries. The lowest incidences in developing countries may be contributed by inadequate knowledge and awareness about problem which can cause the disease not to be well addressed [2].

Ventilator Associated Pneumonia (VAP) is defined as a type of pneumonia in a patient receiving mechanical ventilation that was not present at the time of admission to hospital or that occurs 48 hours after intubation and mechanical ventilation. It is characterized by a new or a progressive pulmonary infiltrate, fever, leukocytosis, prevelent tracheo-bronchial secretions. It carries a high mortality rate ranging 6% - 68% and may be high as 74% in high risk population indicating a serious health hazard among ventilated patients [3].

The Centres for Diseases control and prevention defines VAP is a lung infection that develops in a person who is on a ventilator [4]. In critically ill patients associated with intubation and mechanical ventilation alter normal defence against infection. The placement of an artificial airway such as endo tracheal tube or tracheostomy tube alters the host defences and contributes to the development of pneumonia once colonization occurs [5].

Host factors include patients' age of more than 65 years and co-mortalities. Ibrahim *et al.* in 2001 [6] examined 132 patients with ventilator associated pneumonia. Most of the patients had underlying illnesses such as congestive heart failure (55%), Chronic Obstructive disease (45%), Diabetes Mellitus (27%), Acute Renal failure (28%), Immuno compromise (14%) and Bacteriaemia (9.8%) [6]. The most promising host factor prevention measure noted in the literature is to maximized nutritional status, providing adequate nutritional support improves organ function in critical care patients and significantly lowers patient's risk of infection [7].

Strategies have been created in an attempt to find a solution to the problem of VAP in the world, these strategies incorporate a number of evidence based strategies proved in the literature to decrease VAP and increase positive patient's outcomes. ICU Nurses are in best position to put strategies into practice as they are at the patient's bed side 24 hours a day and therefore important role in the prevention of VAP [8]. Nevertheless nurses need to have an awareness of problem as well as knowledge on prevention strategies so as to adhere to such practices.

Skilled and knowledgeable nurses are extremely important and needed to make appropriate decisions in patient care and minimize risks to patients.

Objectives

- To assess the knowledge of intensive care nurses regarding ventilator- associated pneumonia among patients admitted in critical care units of hospitals.
- To assess the practice of intensive care nurses regarding prevention of ventilator-associated pneumonia among patients admitted in critical care units of hospitals.

2. Methodology

For the present study, Descriptive research approach and Non Experimental research design was used. The research setting was critical care units of Government Medical College Hospitals, Jammu such Main ICU, Emergency ICU1, Emergency ICU2 and CCU. The sample consisted of 50 subjects. Purposive sampling technique was used to select the sample. Prior to the data collection procedure, formal permission was obtained from the ethical committee of the Government Medical College Hospitals, Jammu.

Socio-demographic profile, a self structured questionnaire and a checklist was used to collect the data. Socio-demographic profile included items like age (in years), residence, professional qualification, clinical experience and area of experience. Data collection was done in the month of december 2016. Prior to interview the questionnaire to the subjects, investigator gave self introduction to the subjects and explained the purpose of gathering information. A good rapport was established with the subjects. They were assured that their responses will be used kept confidential and the information will be used only for research purpose. Formal consent was taken from girls. The data gathered was analyzed and calculated by descriptive statistics.

Description of tool

Part 1: Demographic variables of subject

This part consists of items for obtaining personal information about subjects such as age (in years), residence, professional qualification, clinical experience and area of experience.

Part 2: Structured questionnaire and checklist

Structured Questionnaire: This part consists of 30 multiple choice questions. Each question consists of four options, out of which one option is correct and given one mark whereas the rest of three options are wrong and marked Zero (0). The questions are related to following aspects:-

Table 1

Area	Items
Related to Ventilator associated pneumonia	14
Related to knowledge and practice of intensive care nurses	16
Total	30

Table 2: Creteria Measured

Levels	Score	Percentage
Excellent	>24	>80%
Good	20-24	65-80%
Average	15-19	50-64%
Below Average	<15	Below 50%

3. Results

Part- I

Table 3: Frequency and percent distribution of sample characteristics

	Frequency	Percentage (%)
Age (in years)		
20-30	22	44
31-40	18	36
41-50	7	14
Above 50	3	6
Residence		
Urban	25	50
Rural	25	50
Professional qualification		
GNM	45	90
B.Sc. Nursing	5	10
Post Basic B.Sc. Nursing	0	0
M.Sc. Nursing	0	0
Clinical Experience		
0-5 years	30	60
5-10 years	10	20
10-15 years	4	8
Above 15 years	6	12
Area of Experience		
Medical wards	12	24
Surgical wards	8	16
ICU/CCU	15	30
Emergency Department	10	20
Orthopedic wards	5	10

Table 3 reveals the frequency and percentage distribution of sample characteristics of the study subjects. Distribution of study subjects, according to age (in years) of the subjects showed that maximum (44%) staff nurses between the age of 20-30 years followed by 36% staff nurses were between the age of 31-40 years, 14% were between the age of 41-50 years and only 6% above the age of more than 50 years. According to residence 50% were from urban area and 50% were from rural areas. As per professional qualification majority (90%) of subjects were GNM and 10% were B.Sc. Nursing degree holder. In context to clinical experience maximum of the subjects were having 0-5 years experience, 20% were having 5-10 years experience, 8% were having 10-15 years experience and only 12% having above 15 years experience. As per area of experience 24% staff nurses were having experience of medical wards followed by 16% were having experience of surgical wards, 30% were having experience of emergency department and only 10% were having experience in ortho paedic wards.

Table 4: Frequency and percentage distribution of level of knowledge among intensive care nurses regarding prevention of ventilator-associated pneumonia among patients admitted in critical care units

	Knowledge Score		
Level of Knowledge	**Score**	**N**	**%**
Excellent Good	Above 24	4	8%
	20-24	16	32%
Average	15-19	22	44%
Below average	Below 15	8	16%

Maximum Score = 24
Minimum Score = 0

Table 4 reveals the level of knowledge among intensive care nurses regarding prevention of ventilator-associated pneumonia among patients admitted in critical care units which revealed that 44% of intensive care nurses were having average knowledge followed by 32% were having good knowledge, 16% were having below average knowledge and only 8% intensive care nurses were having excellent knowledge on prevention of ventilator-associated pneumonia.

Table 5: Frequency and percentage distribution of level of practice among intensive care nurses regarding prevention of ventilator-associated pneumonia among patients admitted in critical care units n=50

	Practice Score		
Level of Practice	**Score**	**n**	**%**
Satisfactory	50-70%	18	36%
Unsatisfactory	Below 40%	32	64%

Maximum Score = 24
Minimum Score = 0

Table 5 depicts that 32(64%) intensive care nurses were unsatisfactory in level of practice regarding prevention of ventilator-associated pneumonia whereas 18(36%) were satisfactory in level of practice regarding prevention of ventilator-associated pneumonia.
Thus this study reveals that the knowledge and practice of intensive care nurses regarding ventilator-associated pneumonia was average and unsatisfactory respectively.

4. Discussion

Objective1: To assess the knowledge of intensive care nurses regarding ventilator-associated pneumonia among patients admitted in critical care units of hospital

The baseline level of knowledge of intensive care nurses regarding ventilator-associated pneumonia revealed that out of 50 nurses maximum 22(44%) had average knowledge and 16(32%)had good knowledge regarding ventilator-associated pneumonia which is consistent with the study conducted to assess the levels of intensive care nurses on prevention of ventilator-associated pneumonia among nurses working in intensive care units of anesthesia and re-animation clinics. A evidence based knowledge form was used to collect data. The results revealed that knowledge of intensive care nurses regarding ventilator-associated pneumonia was average [9].

Objective 2: To assess the practice of intensive care nurses regarding prevention of ventilator-associated pneumonia among patients admitted in critical care units of hospital

The study revealed that the intensive care nurses were unsatisfactory in level of practice regarding prevention of ventilator-associated pneumonia which is consisted with a descriptive study conducted to assess 45 critical care nurses' knowledge and compliance with ventilator-associated pneumonia bundle at Cario University hospitals. A 20-itemed questionnaire was used to collect the data. The study revealed that the practice was unsatisfactory and there was no specific protocol for ventilator-associated pneumonia prevention [10].

5. Conclusion

The study revealed that intensive care nurses were having average knowledge and unsatisfactory practice regarding prevention of ventilator-associated pneumonia. Thus, it is concluded that in service education and training programmes should be conducted for the nurses so as to improve their knowledge and practice and to decrease in infections among patients.

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