



INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL
SCIENCES & TECHNOLOGY

e-ISSN:2455-5134; p-ISSN: 2455-9059

EFFECTIVENESS OF A PLANNED TEACHING PROGRAMME ON
KNOWLEDGE REGARDING VENTILATOR ASSOCIATED
PNEUMONIA AMONG STAFF NURSES WORKING IN A TERTIARY
CARE HOSPITAL IN SRINAGAR

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Paper Received: 09th November, 2021; **Paper Accepted:** 20th November, 2021;

Paper Published: 24th December, 2021

How to cite the article:

Nusrat Jan, Rajinderjit Kaur Bajwa,
Effectiveness of a Planned Teaching
Programme on Knowledge Regarding
Ventilator Associated Pneumonia
Among Staff Nurses Working in a
Tertiary Care Hospital in Srinagar,
IJRMST, July-December 2021, Vol 12,
207-227, DOI:
<http://doi.org/10.37648/ijrmst.v11i02.018>



ABSTRACT

Background: When it comes to hospital-acquired illnesses, the most prevalent one to face is ventilator-associated pneumonia (VAP). 27 percent of all critically sick patients are infected with pneumonia, making it the second most frequent nosocomial infection. One-group pre-test and post-test study design was employed in the quantitative research technique. It was done in Krishna hospital in karad. Simple random sampling was used to choose 60 Intensive care unit staff nurses. Structured questionnaires were used to gather the data. An in-depth statistical analysis was performed on the collected data. Staff nurses' pre-test and post-test knowledge scores were 10.516 and 16.633, respectively, and the mean difference was 6.117, with a computed t value of 17.712 that is statistically significant at a level of 0.001 (p 0.001), indicating a statistically significant difference. It has been shown that the proposed educational programme is successful in improving the understanding of ventilator-associated pneumonia (VAP).

Keywords: –*Ventilator Associated Pneumonia, Planned Teaching Programme, Staff Nurses and ICU.*

INTRODUCTION

The most prevalent healthcare-associated infection in adult critical care units is ventilator-associated pneumonia (VAP). It has been linked to an increased length of stay in the intensive care unit (ICU), as well as a higher fatality rate. 1 A new or progressive infiltrate, signs of systemic infection (fever, altered white blood cell count), changes in sputum characteristics, and the detection of a causative agent are all characteristics of Ventilator-Associated Pneumonia (VAP), which is defined as pneumonia occurring 48–72 hours after endotracheal intubation.

For patients with respiratory failure and acute disease, mechanical ventilation is a life-saving technique. Complications such as nosocomial infection and sepsis are common in patients on mechanical ventilation. An infection-induced inflammation of the lung's parenchyma is referred to as pneumonia. Endotracheal intubation is regarded as a VAP if it occurs within 48 to 72 hours after the procedure. Within 48 hours after being admitted to the hospital, a patient may develop VAP. Beyond intubation, there are two types of VAP: early-onset (occurring during the first five days) and late-onset (occurring after the first five days). In most cases,

VAP is caused by bacteria gaining entry into the lungs and overcoming the host's defensive mechanisms. For example, if the amount of bacteria present in an inoculum high enough, or the germ is extremely dangerous, it might lead to lung infection. [2] Early onset pneumonia, which occurs within 48 to 72 hours following tracheal intubation, is mainly caused by aspiration, which complicates the procedure of tracheal intubation.

Between 27 and 76 percent of patients with Ventilator Associated Pneumonia die. Pseudomonas or Acinetobacter pneumonia has a greater death rate than other pathogens. Increasing death rates have been linked to a delay in initiating suitable and effective antimicrobial medication. VAP has also been linked to a longer stay in the ICU and greater medical expenditures, as ICUs account for a significant portion of hospital spending. As a result, preventing VAP may minimise the amount of time patients spend in the hospital, as well as the amount of money they spend on treatment.

Nurses that are knowledgeable and experienced are essential to patient care, and prompt and precise decision-making decreases the dangers to patients. Research shows that nurses are not aware of evidence-based interventions to reduce

VAP, according to a number of studies. Preventing VAP and the associated morbidity may both be accomplished via the implementation of Structured Teaching Programs that focus on patient education and hands-on treatment. The purpose of this research was to evaluate the effects of a structured education programme on the knowledge and practise of nurses working in a tertiary care hospital in preventing ventilator-associated pneumonia.

An important aspect of infection control is educating staff members on infection control practises and monitoring infection rates and compliance. [6] Ventilator-associated pneumonia (VAP) mortality among intubated patients has been reduced significantly as a result of nurses' increased understanding of the disease. Effective preventative measures can only be implemented if nurses are educated about the condition and equipped with evidence-based prevention tactics. Care for patients may be improved if nurses had more information at their disposal. In order to avoid VAP, intensive care nurses are the ideal people to implement evidence-based recommendations since they are always at the patient's bedside. However, in order to follow these procedures, nurses must be aware of the issue and knowledgeable with ventilator care bundles. Nurses that are well-trained and informed are critical to

ensuring the safety of patients in the hospital. An intensive care nurse's knowledge of evidence-based procedures should provide them the confidence to make the right choices and avoid bad outcomes in the recovery of their mechanically ventilated patients.

LITERATURE REVIEW

Kim Jess et al (2014), We compared the effects of a closed endotracheal suction system with an open endotracheal suction system on oxygen saturation, ventilator-associated pneumonia and nursing effectiveness in mechanically ventilated patients. Closed endotracheal suction was shown to be a cost-effective and safe alternative to open endotracheal suction in preventing ventilator-associated pneumonia. It is possible to utilise a closed endotracheal suction system that has a high risk of ventilator-associated pneumonia with sensitivity to hypoxxygenation.

Michael E. G.(2014), ARDS is a serious and frequent consequence of significant trauma that need ventilator treatment, according to an article published on trauma service.. It is consequently critical to identify the triggering event and actively eliminate the continuing insult. As a part of the supportive care, avoiding secondary insults relies on a combination of aggressive immune surveillance and

nutrition, fluid management, and unrelenting oxygen delivery, he adds. The ventilator's impact should be limited with regard to respiration pressure, tidal volume, inspired oxygen, and the level of respiratory pressure.

Mishra R, Rani N (2020), An estimated 6 to 52 percent of critically sick patients are infected with ventilator-associated pneumonia (VAP), which is the second most frequent nosocomial infection among these patients. In certain particular hospital settings, the infection may reach 76 percent. Methods and materials: To achieve the goals, a pretest and posttest design with one group was used. The samples were selected using a non-probability convenience sampling method. An ICU at a tertiary hospital in India recruited 30 nurses to participate in the study. The structured knowledge questionnaire and the structured observational practise checklist were used to evaluate the nurses' knowledge and practise before to and after the exam. A variety of statistical techniques were used to examine and interpret the data. The mean pre-test scores for knowledge and practise were 7.79 and 10.33, respectively. After the organised instruction programme, the post-test knowledge and practise scores were 24.1 and 17.16, which indicates an increase in knowledge and practise. For

knowledge and practise, the estimated t-test result was 14.95, which was highly significant at the 0.05 level. Nursing knowledge and skills in preventing ventilator-associated pneumonia have been enhanced as a result of this research's Structured Teaching Program.

Drnovšek, R., Milavec Kapun, M. & Rajkovič, U. (2021), Patients who are mechanically ventilated are at risk for developing ventilator-associated pneumonia, a hospital-acquired lung infection. As a result, a risk assessment model was established that could be used to identify people who were most at risk of acquiring the condition. Clinical data was used to evaluate the model's design. Those alternatives whose evaluations most clearly confirmed the usefulness of the evaluation approach are detailed in the findings. It is hoped that the assessment model would aid in a comprehensive review by incorporating patient-related risk factors and the application of preventative interventions. With the rise of COVID-19 illness, the model combines nursing-specific data that have previously been underutilised in avoiding ventilator-associated pneumonia and encourages nurses to take an active role in addressing this multidisciplinary healthcare challenge.

Maebed, A.Z.M., Gaber, Y., Bakeer, W. *et al.* (2021), ICU patients who are intubated are at risk for developing ventilator-associated pneumonia (VAP), which increases mortality, length of stay in the hospital, and treatment expenses. 60 of the 213 patients who were mechanically ventilated in the ICU developed VAP. VAP patients had a death rate of 41.7%. A hospitalised patient's endotracheal aspirate yielded sixty bacteria. Biochemical studies, sensitivity assays, and automated VITEK®2 System analysis followed the cultivation of the various isolates. VAP's link to drug-resistant bacteria is worrisome, and it must be dealt with right once.

RESEARCH METHODOLOGY

Research approach and design: Using a pre-experiment, one-group, pre-test, post-experiment research design, this is a quantitative study.

Setting: The study was conducted at Krishna hospital karad.

Target population: Staff nurses working in Intensive care unit

Sampling technique: Simple random sampling

Sample size: total sample size 60 Staff nurses working in Intensive care unit

Inclusion Criteria

- 1) Willing to participate in the study.
- 2) Working in medical, surgical intensive care units of KH Karad
- 3) Have completed diploma in nursing or Bsc nursing degree.

Exclusion Criteria

- 1) Having speciality courses in respiratory care.
- 2) Working in out patient department and General other wards.
- 3) Not present at the time of data collection.

Description of the tool

Section-A: Age, gender, education, place of employment, number of years of

experience, and prior sources of information are all included.

Section-B: Ventilator Associated Pneumonia (VAP) knowledge questionnaire is included.

Method of data collection:

The Krishna Institute of Medical Science Deemed to be University, Karad's Research Ethics Committee has granted clearance prior to data collection. Patients' desire to participate in the research was gauged once authorization from the setting was secured, and their informed consent was gained. Pre-test knowledge of Ventilator Associated Pneumonia was tested after collecting demographic data. It was only after seven days of instruction that the results of the post-test questionnaire were compared to the pre-test.

RESULTS

Table 1: “Frequency and percentage distribution of samples according to their sociodemographic variables”

Sr.No	Variables	F	%	
1	Age(Years)	22-25	45	75
		26-30	15	25
2	Gender	Male	19	31.67
		Female	41	68.33
3	Educational Qualification	RGNM	24	40
		B.B.sc.	35	58.33
		P.B.B.sc.	1	1.67
4	Year of work Experience	1-5 years	57	95
		6-10 years	3	5

Table 1 demonstrates that the sample's age distribution suggests that 75% of participants were between the ages of 22 and 25 while 25% were between the ages of 26 and 30. The percentage of females in the sample was found to be around 68.33 percent. Males comprised just 31.66 percent of the population. Patients' educational qualifications are distributed as follows: 58.33% have a B.B.sc., whereas 40% have an RGNM. 95% of workers have 1-5 years of experience, while 5% have 6-10 years of experience.

Table 2 shows that 35 samples (58.33 percent) had average knowledge, 14 samples (23.33 percent) had bad knowledge, and 11 samples (18.33 percent) had strong understanding of VAP.

Table 2: “Pretest Knowledge score among Staff nurses regarding Ventilator associated pneumonia (VAP)”

Grades	Score	Frequency	Percentage
Poor	0-8	14	23.33
Average	9-12	35	58.33
Good	13-20	11	18.33

Table 3 shows that 56 (93.33 percent) of the samples had strong understanding of VAP, whereas just 4 (6.67%) had mediocre knowledge.

Table 3: “Posttest Knowledge score among Staff nurses regarding Ventilator associated pneumonia (VAP)”

Grades	Score	Frequency	Percentage
Poor	0-8	0	0
Average	9-12	4	6.67
Good	13-20	56	93.33

Research on the effectiveness of a designed training programme for staff nurses on their awareness of ventilator-associated pneumonia (VAP).

Table 4: Comparison of pretest and posttest knowledge score among staff nurses

	Mean	SD	Mean Difference	t value	Significant
Pre test	10.516	2.658	6.117	17.712	Significant at <math><0.001</math>
Post test	16.633	2.524			

Table 4 shows that among staff nurses, the mean pre- and post-test knowledge scores were 10.516 and 16.633, respectively, with a mean difference of 6.117 and a computed t value of 17.712, which is statistically significant at a threshold of 0.001.

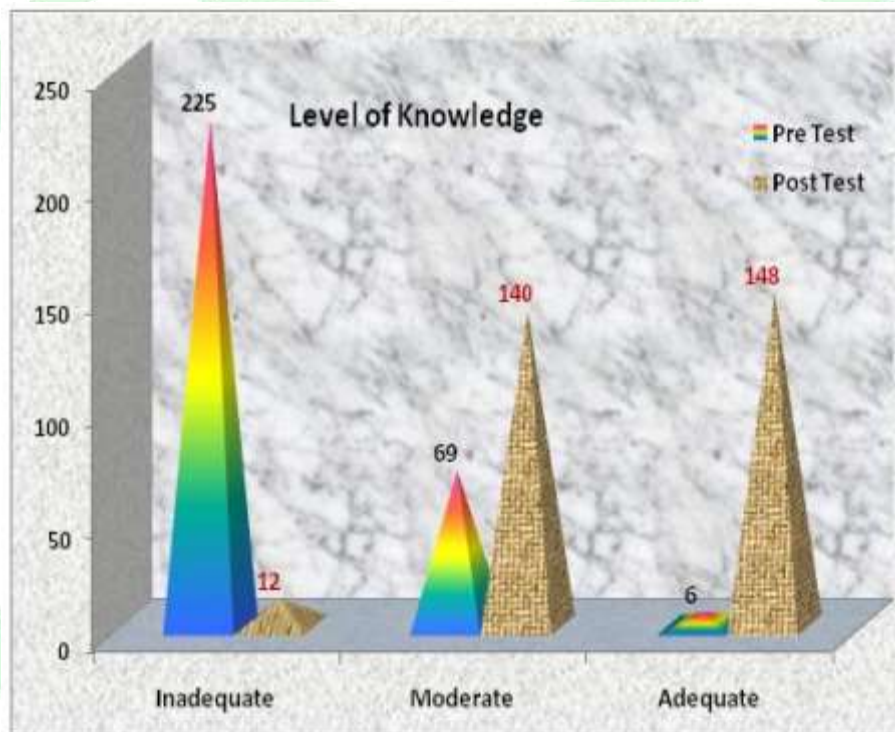


Figure: 1 “showing the comparison of overall knowledge score of Critical care nurses regarding Ventilator associated pneumonia during pre and posttest”

An investigation on socio demographic factors and knowledge scores.

Table 5: Association between socio-demographic variables and knowledge score

Demographic Variables	Variables	Knowledge score			Chi squarevalue	df	P- Value
		Poor	Average	Good			
Age (Years)	22-25	9	29	7	2.767	2	0.2507

	26-30	5	6	4			
Gender	Male	5	10	5	1.120	2	0.5712
	Female	9	25	6			
Educational Qualification	RGNM	7	11	5	2.823	4	0.5879
	B.B.sc.	7	22	6			
	P.B.B.sc.	0	2	0			
Year of work Experience	1-5 years	12	35	10	4.711	2	0.0920
	6-10 years	2	0	1			

No statistically significant relationship between the knowledge score and selected socio-demographic factors was found in table-5.

DISCUSSION

The study's results are reviewed in light of the aims and hypotheses outlined in the paper as well as those of other research of a similar kind. As a result of the high mortality and morbidity rates in the hospital, as well as the fact that this infection will exacerbate the patient's condition, Ventilator Associated Pneumonia is a serious health hazard. As the name suggests, VAP is a medical illness caused by an infection that overflows into the lung's alveoli, the tiny air-filled sacs responsible for absorbing oxygen from the surrounding environment.

An estimated 15 percent of all hospital-acquired infections are caused by pneumonia, while 24 percent - 27 percent

of all infections acquired in the medical critical care unit and the coronary care unit are caused by the disease. Until recently, it was the second most prevalent hospital-acquired illness, behind urinary tract disease.

After the planned teaching programme, the staff nurses' mean pre-test knowledge score on VAP increased to 10.516 and their post-test knowledge score increased to 16.633 and their calculated t value increased to 17.712, showing a significant t value of >0.0001 ; this finding backed up Amina I. Badawy's study on the impact of a structured prevention teaching programme. It has been shown that prior to implementation of the teaching programme, nurses had poor total knowledge and practise, but this was quickly remedied by the implementation of the programme, with a rise in total knowledge immediately and continuing at the first follow-up phase ($p0.001$).

There was a significant increase in post-test knowledge scores compared to pre-test scores among critical care nurses who were tested, indicating the success of the organised instruction programme. The calculated t test value was found to be 5.934 which are highly significant at 0.01. Thus the structured teaching programme was effective in improving the knowledge of critical care nurses regarding prevention of ventilator associated pneumonia.

The finding of the present study also supported the study conducted by V. Hemavathy et al with the title of a study to assess the effectiveness of structured teaching program on knowledge regarding prevention of ventilator associated pneumonia among staff nurses working in intensive care unit selected hospital. The total sample were 30 staff nurses. Pre- test and post-test scores was assessed by using structured questionnaires. The result of the study concluded that mean and standard deviation of knowledge level score in pre-test was 13.23 and 2.29 and post test score was 16.53 and 2.3. the calculated „t“ value was 16.94 which reveals that there was statistically highly significant difference between the pre test and post test score. It is evidenced that the structured teaching programme was significantly effective in improving knowledge regarding prevention

of ventilator associated pneumonia among staff nurses working in intensive care unit.

CONCLUSION

The current study shows that the nurses had satisfactory total knowledge at the pre-program implementation, indicating that the respondents lacked knowledge. However, the score of total knowledge increased immediately after the planned teaching program, indicating that the nurses gained knowledge after the teaching program.

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