

A Study to Assess the Effectiveness Planned Teaching Programme on Knowledge Regarding Ventilator Associated Pneumonia (VAP) among Staff Nurses Working in ICU's at Tertiary Care Hospital Karad

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Abstract: ***Objectives:** (1)To assess the existing knowledge of staff nurses regarding ventilator associated pneumonia.(2)To evaluate the effectiveness of Planned teaching program on knowledge of staff nurses regarding ventilator associated pneumonia.(3)To find out association between pre and post test knowledge score of staff nurses with their selected demographic variables. **Methods:** Quantitative research approach with pre experimental one group pre-test post test research design was used. The study was conducted at Krishna hospital karad. A 60 Staff nurses working in Intensive care unit were selected by Simple random sampling. The data were collected by structured questionnaire. The data were analyzed using descriptive and inferential statistics. **Results:** The pre-test and post-test knowledge score among staff nurses the pre-test mean score was 10.516 with SD 2.658 and post-test mean score was 16.633 and SD 2.524 and the mean difference was 6.117 and calculated t value was 17.712 which is statistically significant at level of <0.001. **Conclusion:** The study revealed that the planned teaching programme is effective to improve the knowledge about ventilator associated pneumonia.*

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

1. Introduction

Ventilator-associated pneumonia (VAP) is the most common healthcare-associated infection in adult critical care units. It is associated with increased intensive care unit (ICU) stay, patient ventilator days, and mortality.¹

Ventilator-associated pneumonia (VAP) is defined as pneumonia that occurs 48–72 hours or thereafter following endotracheal intubation, characterized by the presence of a new or progressive infiltrate, signs of systemic infection (fever, altered white blood cell count), changes in sputum characteristics, and detection of a causative agent.²

The mortality rate for Ventilated associated Pneumonia ranges between 27 and 76%. Pseudomonas or Acinetobacter pneumonia is associated with higher mortality rates than those associated with other organisms. Studies have consistently shown that a delay in starting appropriate and adequately dosed antibiotic therapy increased the mortality rates. Furthermore, VAP has been associated with prolonged ICU length of stay and higher costs for medical care since ICUs incur an important part of hospital expenses. Therefore, prevention of VAP could reduce the care utilized during hospitalization and decrease resource utilization and subsequent expenses.³

Critical care nurses have an important role in preventing VAP by decreasing risk factors, recognizing early symptoms, and assisting in diagnosis (Myrianthefs et al

(2004). Centres for Disease control and Prevention (CDC), 2003 guidelines for the prevention of VAP recommends hand washing, elevation of head end of bed, suctioning of subglottic secretions, use of hand gloves and implementation of comprehensive oral hygiene programme. The guidelines specify that an antiseptic agent be used as part of the oral care programme and oral chlorhexidine gluconate rinse is solely recommended for adults undergoing cardiac surgery.

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. Throughout empirical observation, Nurses' lack of knowledge may be a barrier to adhere to evidenced based guidelines for preventing ventilator-associated pneumonia and translating evidence based findings into consistent delivered care at the bedside remains a challenge. However, many studies have shown that, educational interventions, staff development programmes and multi – module programmes led to a substantial reduction of ventilator associated pneumonia. Therefore this study aimed at to evaluate the effectiveness of Planned teaching program on knowledge of staff nurses regarding ventilator associated pneumonia bundles.⁴

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2. Review of Literature

Kim Jess et al (2004), had conducted comparative study to exam the effect of a closed endotracheal suction system and open endotracheal suction system on oxygen saturation, ventilator associated pneumonia and nursing efficacy in mechanically ventilated patients. The author identified closed endotracheal suction system prevented ventilator associated pneumonia was cost effective and a safe suctioning system. A closed endotracheal suction system can be used with sensitivity to hypoxxygenation and with a high risk of ventilator associated pneumonia ⁵

Michael E. G.(2004)-has published an article on trauma service reveals that ARDS is a severe and common complication of major trauma requiring ventilator care. The most important early management principle is thus to identify the inciting event and remove the ongoing insult aggressively. Avoiding secondary insult is the corner stone of the supportive care and this is based on aggressive immune surveillance, nutritional support, fluid management and unrelenting oxygen delivery, he further says that the impact of the ventilator should be limited with regard to respiration pressure, tidal volume, inspired oxygen and level of respiratory pressure use of pulmonary toilet, the therapeutic bronchoscope, patient position including intermittent prone position and recruitment maneuvers are useful therapeutic complement for maintain functional residual capacity and decreasing shunt ⁶.

3. Research Methodology

Research approach and design: Quantitative research approach with pre experimental one group pre-test post test research design.

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) Have completed diploma in nursing or Bsc nursing degree.
- 3) Working in medical, surgical intensive care units of KH Karad

Exclusion Criteria

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

Description of the tool

Section-A: It consists of age, sex, qualification, working area, year of experience and previous source of information.

Section-B: It consists of structured knowledge questionnaire regarding Ventilator Associated Pneumonia.

Method of data collection:

Research Ethics Committee of the Krishna Institute of Medical Science Deemed to be University, Karad, had given permission before the data collection. After obtaining permission from the setting the patients were asked their willingness to participate in the study and informed consent was obtained. After collecting the demographic data, the pre-test level of knowledge regarding Ventilator Associated Pneumonia was assessed. After the pre-test, the planned teaching programme was conducted then after seven days the post-test knowledge was assessed by using same questionnaire.

4. 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 shows that Age wise distribution of sample reveals that majority 75% within the age group of 22-25 years and 25% were in the age group of 26-30 years. Gender distribution of sample reveals that about 68.33% were female. While 31.66% were male. The percentage distribution of patients in educational qualification shows that among 58.33% were B.B.sc. and 40% were RGNM. As regards to Year of work Experience 95% between 1-5 years and 5% between 6-10 years, respectively.

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 2 indicates most of the samples 35 (58.33%) were having average knowledge, 14 (23.33%) were having poor knowledge and 11(18.33%) were having good knowledge regarding VAP.

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

Table 3 indicates most of the samples 56 (93.33%) were having good knowledge, 4 (6.67%) were having average knowledge regarding VAP

Findings related to Effectiveness planned teaching programme on knowledge regarding ventilator associated pneumonia (VAP) among staff nurses

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 <0.001
Post test	16.633	2.524			

The table 4 indicates that the pretest and posttest knowledge score among staff nurses the pretest mean score was 10.516 with SD 2.658 and posttest mean score was 16.633 and SD 2.524 and the mean difference was 6.117 and calculated t value was 17.712 which is statistically significant at level of <0.001

Findings related to association between socio-demographic variables and knowledge score.

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

Demographic Variables	Variables	Knowledge score			Chi square value	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			

Data presented in table-5 revealed that there was no significant association between the knowledge score and selected socio-demographic variables at the level $p < 0.05$.

5. Discussion

The findings of the present study are discussed with reference to the objectives, hypothesis stated and with the findings of other similar studies. Ventilator Associated Pneumonia represents a major health problem because of the excess mortality and morbidity rate in hospital and also this infection will aggravate the underlying disease process and worsening the condition of the patient. VAP is medical condition that results from infection which floods the alveoli - small, air-filled sacs in the lung responsible absorbing oxygen from atmosphere⁷

Pneumonia has accounted for approximately 15% of all hospital-associated infections and 24% - 27% of all infections acquired in the medical intensive care unit, and coronary care unit, respectively. It has been the second most common hospital associated infection after that of urinary tract.⁸

The findings of the study reveals that the mean pre test knowledge score of the staff nurse regarding VAP was 10.516 and post test mean was 16.633 and calculated t value was 17.712 which significant at the level at >0.0001 , it

shows that the nurses increased their knowledge after planned teaching programme, the finding of the present study supported the study conducted by **Amina I. Badawy** on Effect of a structured teaching program for prevention of ventilator-associated pneumonia on knowledge and practices of intensive care nurses at Central Quwesna Hospital, in Egypt. Study shows that nurses were having unsatisfactory total knowledge and practice at the preprogram implementation, however, the score of total knowledge increased immediately after the program, and continued to be higher at the first follow-up phase, (statistically significant, $p < 0.001$) indicating that the nurses gained knowledge after implementation of teaching program.

The findings of the study also supported the study conducted by **Chithra R.A Janula Raju** with the title of Effectiveness, structured teaching programme, Knowledge, prevention ventilator associated pneumonia, critical care nurses that there was a marked increase in the overall knowledge score of post-test than pre-test score which represents the effectiveness of structured teaching 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.¹⁰

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.¹¹

6. 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.

7. Future Scope

Nursing Implications

The results of this study have implications on nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice

The result of this study encourages the use of planned teaching programme in nursing practice to help to increase the knowledge about ventilator associated pneumonia.

Nursing Education

The results of the study enables the nurses to prepare themselves to administered care to prevent ventilator associated pneumonia.

Nursing Administration

The nurse as an administrator should plan and organize training programs of ventilator associated pneumonia for Nursing personnel and motivating them in application of prevention of ventilator associated pneumonia in nursing practice. Planning and organization of such training programs require efficient team work, planning for man power, money, material and methods to conduct successfully at the hospital level.

Nursing Research

The study revealed that the planned teaching programme is effective to improve the knowledge about ventilator associated pneumonia. Nurse as a researcher use different kinds of teaching and learning programmes with the application of those teaching programme knowledge can be improved among staff nurses working in ICU'S.

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