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Original Research Article

A Study to Evaluate the Effectiveness of Structured Teaching Programme on knowledge regarding Prevention of Ventilator Associated Pneumonia among Staff Nureses at Selected Hospitals, Tumkur

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Abstract

Ventilator associated pneumonia (VAP) is pneumonia developing in a mechanically ventilated patient more than 48 hours after endotracheal intubation. It is one of the leading causes of death among hospital-acquired infections. The research design consisted of an evaluative approach with Pre - experimental one group pretest post- test design. Samples were selected by convenient sampling technique. The data was collected using structured knowledge questionnaire. The mean pre-test knowledge score was 24.2 and post-test knowledge score was 38.74 at 0.05 level of significance. Standard deviation of pretest is 3.62 for post test is 3.39 which indicates that the STP was effective in increasing knowledge of staff nurse regarding prevention of ventilator associated pneumonia

Keywords: Ventilator Associated Pneumonia (VAP), Endotracheal intubation, Structured Teaching Programme.

Introduction

Ventilator associated pneumonia (VAP) is pneumonia developing in a mechanically ventilated patient more than 48 hours after endotracheal intubation. It is one of the leading causes of death among hospital-acquired infections. The patient develops a shadow on the lungs, which causes fever, rise in the blood counts and other signs of infections [1].

The primary risk factor for the development of ventilator-associated pneumonia is a mechanical ventilation and improper care delivered after incubation. Critically ill patients especially incubated patients are at the higher risk of acquiring ventilator-associated pneumonia [2].

Pneumonia has accounted for approximately 15% of all hospital-associated infections and 27% and 24% of all infections acquired in the medical intensive-care unit (ICU) and coronary care unit, respectively. It has been the second most common hospital-associated infection after that of the urinary tract. Because of this tremendous risk, in the last two decades, most of the research on hospital-associated pneumonia has been focused on ventilator-associated pneumonia. Other major risk factors for pneumonia have been identified in various studies; most of these conditions usually coexist with mechanical ventilation in the same critically ill patients. These include a primary admitting diagnosis of burns, trauma, or disease of the central nervous system; thoraco-abdominal surgery; depressed level of consciousness; prior episode of a large-volume aspiration; underlying chronic lung disease; >70 years of age; 24-hour ventilator-circuit changes; fall-winter season; stress-bleeding prophylaxis with cimetidine with or without antacid; administration of antimicrobial agents; presence of a nasogastric tube; severe trauma [3].

Analysis of pneumonia-associated morbidity has shown that hospital-associated Pneumonia can prolong ICU stay by an average of 4.3-6.1 days and hospitalization by 4.9 days. Reducing ventilator-associated pneumonia is crucial, because it increases the risk of death of critically ill patient and also increases the patient's length of stay in intensive care units and consequently health care costs [4].

Prevention of ventilator associated pneumonia focuses on decreasing the risk of aspiration, preventing the entry of and colonization of pathogens in the respiratory tract, meticulous hand hygiene and infection control were crucial in reducing ventilator associated pneumonia [5].

The nurses' role in maintaining the patient oral hygiene is important because the contaminated oral secretion

would float to the sub-glottis area thereby increase the risk of ventilator-associated pneumonia [6].

The chance for increasing risk and rate of ventilator-associated pneumonia is highly depends up on the quality of nursing services rendered. Hence the researcher is aimed to assess the knowledge of staff nurses at selected hospitals regarding prevention of ventilator associated pneumonia and also aimed to improve the knowledge by providing structured teaching programme.

Objectives

1. To assess the knowledge of staff nurses regarding prevention of ventilator associated pneumonia at selected hospitals, Tumkur.
2. To evaluate the effectiveness of structured teaching programme regarding Prevention of Ventilator associated pneumonia by comparing pre test and post tests knowledge score.
3. To find out the association between the post test knowledge score with the selected demographic variables.

Hypothesis

H_1: There is a significant difference between the pre and post-test knowledge scores of the staff nurses regarding prevention of ventilator-associated pneumonia.

H_2: There is a significant association between the post-test knowledge scores of the staff nurses and the selected demographic variables.

Research Methodology

Research Approach:

The research approach adopted for this study was evaluative approach to determine the effectiveness of structured teaching programme regarding knowledge on prevention of Ventilator associated Pneumonia among staff nurses.

Research Design:

In the present study "one group pre-test, post-test design" was selected which is a Pre-experimental design to measure the effectiveness of structured teaching program on VAP among staff nurses.

Research Settings:

The study was conducted at Shridevi Hospital and Govt.District Hospital, Tumkur.

Population:

In the present study population included staff nurses who qualified with either diploma or bachelor in nursing andworked at selected settings at Govt. District Hospital and Shridevi Hospital,Tumkur.

Sample:

The sample comprised of 50 staff nurses working in medical wards, intensivecare unit and operation theatre at Govt. District Hospital and Shridevi Hospital, Tumkur.

Sampling Technique

The sample of the study was selected by adopting Non probability convenient sampling technique. The total sample size was 50 and they were selected based on inclusion criteria.

Data Collection Tool

Part I: Demographic Performa

The characteristics included; age, gender, professional qualification, professional experience, working hospital, present working area, in-service education on VAP, previous exposure to VAP cases.

Part II: Structured knowledge questionnaire.

It consists of series of 50 knowledge items on ventilator associated pneumonia divided into 7 areas such as Concept, Meaning and incidence rate, etiology and risk Factors, pathophysiology and complications, clinical manifestations, diagnostic evaluation, treatment and medical management, preventive measures and nurses role in prevention of ventilator associated pneumonia. All the items were multiple-choice questions. A score value of 1 was allotted to each correct response. The total knowledge score was 50.

Development of Structured Teaching Programme

The structured teaching program was developed based on the review of the related research and non-research literature and the objectives stated in the teaching plan.

Data Collection Procedure

Written permission was obtained from the medical superintendent and Nursing Superintendent of Govt. Hospital and Shridevi Hospital, Tumkur. The purpose of the study was explained to them and informed consent was obtained. The structured knowledge questionnaire was administered for 15 staff nurses in first shift, 10 staff nurses in second shift at Govt. District Hospital,Tumkur and on the same day for each group STP was administered. The next day structured knowledge questionnaire was administered in Shridevi Hospital Tumkur,10 staff nurses in first shift and 15 staff nurse in second shift on the same day from which the data was collected. On the same day STP was administrated for those Nurses, and then 10 minutes was allotted for discussion. After 7 days of STP, posttest was conducted with the same questionnaire for the same group of staff Nurses at both Govt. District hospital as well as Shridevi hospital to assess the effectiveness of STP.

Results

The study findings revealed that majority 38% of responds belongs to the age group of above 30 years, 60% were of female, 52% the respondents had

completed diploma in nursing and midwifery course, 44% of the respondents had a clinical experience of above 4 years, 50 % of staff nurses from private hospital and Govt. District hospital each, 48% were working inn Intensive care Unit, 84 % were not received any in –service education and 86% were not exposed to VAP cases.

Table 1: Distribution of Staff Nurses according to the sample characteristics

N=50

Demographic characteristics	Frequency		%
Age (Yrs)	21-25	13	26
	26-30	18	36
	Above 30	19	38
Gender	Male	20	40
	Female	30	60
Professional Qualification	GNM	26	52
	Basic B.sc Nursing	14	28
	Post B.sc Nursing	10	20
	Any other certified courses	0	0
Professional Experience	< 2 years	9	18
	2-4 Years	19	38
	>4 years	22	44
Working Hospital	District hospital	25	50
	Shridevi hospital	25	50
	Other institution	0	0
Present Working Area	Medical wards	19	38
	Intensive care Unit	24	48
	Operation theatre	7	14
In Service Education on VAP	Yes	8	16
	No	42	84
Previous Exposure to VAP Cases.	Yes	7	14
	No	43	86

Table 2: Pre-test, Mean, Standard deviation, Mean score percentage.

N=50

Knowledge	Max Possible score	Mean	SD	Range	Mean Score %
Ventilator associated pneumonia	50	24.2	3.62	16--31	48

The overall mean pre-test Knowledge score was 24.2, with standard deviation 3.62 and range from 16-31. The mean score percentage was found to be 48%. It was found that the sampled subjects were having inadequate knowledge regarding prevention of ventilator associated pneumonia before STP.

Table 3: Post-test, Mean, Standard deviation, Mean score percentage

N=50

Know-ledge	Max Possible score	Mean	SD	Range	Mean Score %
Ventilator associated pneumonia	50	38.74	3.39	29--45	77

The mean post-test knowledge on VAP was 38.74 with standard deviation 3.74 and Range from 29-45. The mean score percentage was computed and it was found to be 77%. It was found that the sampled subjects were having adequate Knowledge regarding prevention of Ventilator associated pneumonia after STP.

It is found that there is high gain in knowledge scores in post –test scores than pre-test score. 't' value was significantly higher than the 'p' value.(overall t value = 42.08) *(*P<0.05) (table-4). This is statistically evidenced that, there is a significance difference between Pre-test and post- test knowledge scores of staff nurses regarding prevention of ventilator associated pneumonia hence, H_1 There is significant difference between the pre and post-test knowledge scores of the staff nurses regarding prevention of ventilator-associated pneumonia was accepted.

Table 4: Pre and post-test mean, standard deviation and t-value on VAP among staff nurses.

N=50

Parameter	Mean	S.D	Range	Mean%	t -value	Result
Pre-test	24.2	3.62	16--31	48	42.08***	HS P<0.05
Post-test	38.74	3.39	29--45	77		
Improvement	14.54	2.44	--	29.08		

Note : * denotes significant at 0.05 level (highly significant).**

Table 5: Abstract of chi-square results of socio demographic characteristics and knowledge of staff Nurses regarding prevention of VAP

Sl . no.	characteristics	Chi-Square value	Df	Result	'p' value
1	Age in years	6.67	2	S*	5.99
2	Gender	16.68	1	S***	3.84
3	Professional qualification	0.17	3	N.S*	7.82
4	Professional experience	11.18	2	S**	5.99
5	Working hospital	1.47	2	N. S*	5.99
6	Present working area	1.46	2	N.S*	5.99
7	In-service education on VAP	4.48	1	S*	3.84
8	Previous exposure to VAP cases	1.17	1	N.S*	3.84

Note :- N.S*- Not significant, S- Significant *P<0.05

From the above, age, gender, Ppofessional experience, in-service education on VAP are significant with the post test knowledge scores of staff nurses regarding knowledge on prevention of VAP. The remaining characters i.e.Professional qualification, working hospital, present working area, and previous exposure to VAP cases were not significant with the post test knowledge scores of staff nurses regarding knowledge on prevention of VAP. Hence H_2 is accepted.

Recommendations

On the basis of findings of the study, the following recommendations were made.

1. A similar study can be replicated on a larger sample with different demographic characters.
2. An Experimental study can be under taken with control group.
3. A Study can be undertaken to find out the association between demographic variables and knowledge of staff nurses regarding prevention of ventilator associated pneumonia.
4. A Similar study can be conducted using other strategies like SIM, booklets ,pamphlets and information guide sheets.
5. Teaching and demonstration regarding preventive measures of VAP can be given to the staff nurses in clinical teaching.
6. A follow up study need to be conducted to find out the effectiveness terms of retention of knowledge among staff nurses and to re-in force health promotion nursing services.

Conclusion

The study findings showed that there was a significant increase in the knowledge of staff nurses after administration of STP regarding prevention of ventilator associated pneumonia. Hence it was concluded that STP has been an effective method to increase knowledge of staff nurses regarding prevention of ventilator associated pneumonia.

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