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A study to evaluate the effectiveness of structured teaching programme on knowledge regarding ventilator-associated pneumonia bundle of care among GNM students in selected Index Nursing College, Indore (M.P.)

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Abstract
Ventilator-associated pneumonia (VAP) is a frequent infection in ICU patients on mechanical ventilation, commonly occurring after intubation. Effective oral care within a care bundle can lower VAP rates by 60%. Nurses play a vital role in VAP prevention, but gaps in knowledge may affect adherence to guidelines. A study assessed GNM nursing students' understanding of VAP care bundles, revealing that knowledgeable nurses can better mitigate patient risks. A pre-experimental study demonstrated that a structured teaching program significantly increased GNM students' knowledge about VAP, with post-test scores rising significantly from a mean of 7.65 to 15.02, confirming the program's effectiveness and rejecting the null hypothesis. The study involved 40 students with varied clinical exposure, predominantly female, using a one-group pretest post-test design to measure knowledge improvement.

Keywords: Knowledge, ventilator-associated pneumonia (VAP), bundle of care, GNM nursing students

Introduction

Background of the Study

Ventilator-associated pneumonia (VAP) is a common infection in ICU patients receiving mechanical ventilation and can develop 48 hours post-intubation. The "bundle of care" approach helps deliver optimal care, reducing VAP rates by 60% when good bedside oral care is included. Nurses are crucial in preventing VAP due to their constant presence at the bedside; however, a knowledge gap in infection prevention may hinder adherence to evidence-based guidelines for its prevention. Pneumonia is the second most common nosocomial infection in critically ill patients is associated with high mortality and morbidity. Incidence of HAP increases by 6-21 fold in mechanically ventilated patients, rendering VAP as the most common nosocomial infection in critically ill patients.

Need of the study: Ms. Lata, Ms. Deepa Mukherjee, Prashant et.al conducted this study assessed the efficacy of a structured education module in enhancing the VAP prevention knowledge and behaviors of ICU nurses in Gurugram. 60 nurses were evaluated both before and after a three-day educational intervention was implemented using a quasi-experimental method. The findings demonstrated an improvement in practical performance (p = 0.005) and a considerable gain in knowledge (from 3.3% to 33.3%). The abilities acquired were useful even if the total knowledge increase was not statistically significant (p = 0.066). While practice increased (p = 0.000), knowledge declined (p = 0.000) in the control group. The study recommends frequent training be included into hospital education systems to improve patient care and indicates that organized, evidence-based training is essential for improving ICU nurses' competency in avoiding VAP. STP is being increasingly integrated into medical education to facilitate hands-on learning in a safe environment. This study aimed to evaluate the knowledge of GNM nursing Students regarding VAP bundles, GNM students Nurses may use evidence-based practice and lower morbidity if they are knowledgeable about VAP.

In order to minimize the dangers to patients, prompt and accurate decisions are made by knowledgeable future trained nurses. Nurses' ignorance of evidence-based strategies for preventing VAP .VAP may be prevented by using a structured teaching program on care bundle knowledge which will significantly lower the risk of morbidity The purpose of this study was to evaluate the effectiveness of a structured Teaching program on knowledge about the care bundle on prevention of ventilator-associated pneumonia among GNM nursing students.

Problem statement: A pre-experimental Study to assess the effectiveness of structured Teaching program on knowledge regarding Ventilator-Associated Pneumonia Bundle of Care among GNM Nursing Students in selected INDEX College of nursing Indore.

Objectives of study

1. To assess the mean pre-test knowledge score regarding Ventilator-Associated Pneumonia Bundle of Care among GNM Nursing Students
2. To evaluate the effectiveness of structured Teaching program on on knowledge regarding Ventilator-Associated Pneumonia Bundle of Care among GNM Nursing Students.
3. To find out association between pre-test knowledge score with selected demographic variables.

Hypothesis

Research Hypothesis (H_1): The mean post-test knowledge score will be significantly higher than the mean pre-test knowledge score regarding Ventilator-Associated Pneumonia Bundle of Care among GNM Nursing students

after structured Teaching program on at 0.05 level of significance.

Research hypothesis (H_2): There will be significance association between pre-test knowledge and their selected demographic variables.

Variables: Independent Variable: In this study structured Teaching program on Ventilator-Associated Pneumonia Bundle of Care among GNM nursing students was the independent variables.

Dependent Variable: In this study Knowledge regarding Ventilator-Associated Pneumonia Bundle of Care among GNM nursing students was the dependent variables.

Research Methodology
Research Approach: Quantitative approach.
Research Design: One group pretest post-test research design.

Population: GNM nursing students.
Research Setting: Selected INDEX Nursing School.
Sampling Technique: Non-probability purposive sampling technique.
Sample Size: 40

Sampling Criteria
Inclusion Criteria:
- Who are all willingly to participate in this study
- Who are available at the time of data collection

Tool for Data Collection
Part 1: Demographic data of GNM students.
Part 2: Assessment of knowledge by structured knowledge questionnaire.

Analysis and interpretation: data are based on data collected through structured knowledge questionnaire Analysis and interpretation of data was done by using descriptive and inferential statistics based on the objectives of the study and hypothesis to be tested.

Table 1: Frequency and percentage distribution of sample according to their socio-demographic variables N=40.

Socio-demographic variables.		frequency	Percentage
Studying In	GNM 2st year	18	45%
	GNM 3 rd year	22	55%
Gender	Female	28	70%
	Male	12	30%
Area of clinical exposure	ICU	13	32.5%
	ICCU	10	25%
	SICCU	11	27.5%
	NICU	6	15%

Table 1 presents the frequency and percentage distribution of a sample of 40 individuals according to their socio-demographic variables. In terms of education, 45% are in the 2nd year of GNM while 55% are in the 3rd year. Gender distribution shows 70% are female and 30% are male. Regarding clinical exposure areas, 32.5% are in the ICU, 25% in the ICCU, 27.5% in the SICCU, and 15% in the NICU**.**

Table 2: Grading of sample based on pre-test knowledge score and post-test knowledge score (N= 40)

S.No.	Score	Grading	Pretest Score		Post test score	
			Frequency	percentage	Frequency	percentage
1.	0-5	Fair	27	67.5%	0	0%
2.	6-10	Average	13	32.5%	0	0%
3.	11-15	Good	0	0%	30	75%
4.	16-20	Excellent	0	0%	10	25%
Total			40	100%	40	100%

Table 2 Grading of a sample of 40 participants shows that in the pre-test, 67.5% scored between 0-5 (Fair) and 32.5% between 6-10 (Average), with no participants scoring above 10. In the post-test, 75% scored between 11-15 (Good) and 25% scored between 16-20 (Excellent), indicating significant improvement. Therefore, it can be concluded that most research participants have a high level of understanding about ventilator-associated pneumonia and bundle of care. This indicates that structured Teaching program was effective in increasing knowledge score regarding regarding Ventilator-Associated Pneumonia Bundle of Care among GNM nursing students.

Table 3: Comparison between Mean, Standard deviation and‘t’ value of pretest and post-test knowledge score. (N= 40)

Knowledge score	Mean	SD	Mean Difference	t – value	Df	Result
Pretest	7.65	2.42	7.37	19.8	39	S
Post test	15.02	1.91				

Paired t value 39=19.8, P≤0.05

Interpretation: The data presented in table no. 3 shows that the mean post test knowledge score 15.02 is apparently higher than the mean pre test knowledge score7.65,the dispersion of post test score (SD±1.51) is lesser than pre test score (SD±2.36) and the paired t value (t_{39}=19.8 p≤0.05) is greater than tabulated t value (t_{39}=1.68 p≤0.05) shows there is significance difference between pre test and post test knowledge score ,thus null hypothesis is rejected and research hypothesis is accepted. This indicated structured Teaching program was effective in increasing knowledge score regarding regarding Ventilator-Associated Pneumonia Bundle of Care among GNM nursing students.

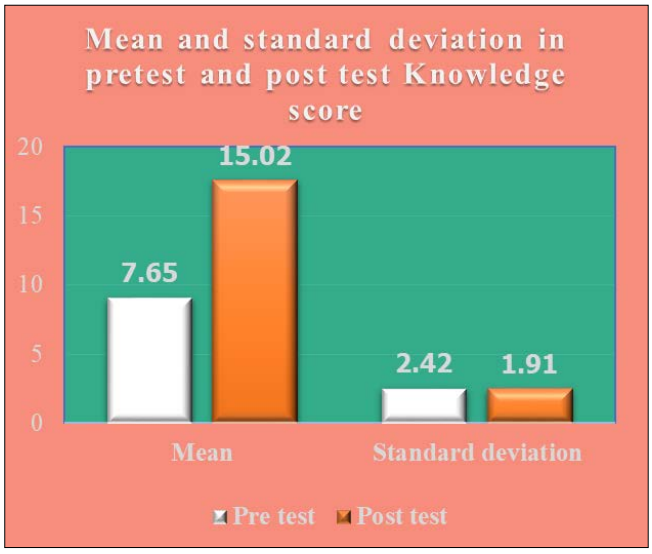

Fig 1: Bar diagram representing mean and standard deviation in pretest and post test knowledge score.

Discussion & Conclusion

The study analyzed a sample of 40 GNM nursing students, revealing that 45% were in their 2nd year and 55% in their 3rd year, with a gender distribution of 70% female and 30% male. Clinical exposure included 32.5% in ICU, 25% in ICCU, 27.5% in SICCU, and 15% in NICU. Pre-test results indicated that 67.5% scored 0-5 (Fair) and 32.5% scored 6-10 (Average), while post-test results showed 75% scored 11-15 (Good). The mean post-test score of 15.02 surpassed the mean pre-test score of 7.65, demonstrating a significant improvement ($t(39)=19.8$, $p \leq 0.05$). The effectiveness of the structured teaching program in enhancing knowledge about Ventilator-Associated Pneumonia Bundle of Care among GNM students was confirmed, rejecting the null hypothesis.

Recommendation

- Similar research may be carried out using alternative demographic variables and huge sample sizes.
- To reinforce results, a comparable study might be conducted in diverse contexts.
- A quasi-experiment research design can be used to perform a study.
- The research may be carried out with the intention of offering guidelines.

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