International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

A Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge regarding Nursing Care of Ventilator Associated Pneumonia among B. Sc. Nursing Part III Students at Selected at Selected Nursing Colleges at Kota (Raj.)

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Abstract: ***Background*: In the medical field there are different types ventilators available. Mechanical ventilator is a common lifesaving intervention in the emergency department (ED) Mechanical ventilation is used to assist or replace spontaneous breathing. A ventilator as designed to move breathable air in and out of the lungs which helps in breathing for a patient who is physically unable to breath or breathing insufficiently. The drinker and show tank type ventilator of 1929 was one of the first negative-pressure machines widely used for mechanical ventilation. It is known as the iron lung. A vacuum pump fabricated a negative pressure up to the chamber which result in expansion of the patient chest. This change in geometry reduces the intra pulmonary pressure and allows the air into the patient's lung. When the vacuum is released, the negative pressure applied to the chest drops to zero and the elastic recoil of the chest and lungs are permitted for passive ventilation. Now a days most of the patients are provided with positive pressure ventilator. *Methods*: The present study is experimental one to assess the knowledge among B. Sc. nursing part III students regarding nursing care of ventilator associated pneumonia. An evaluative approach research approach used for present study. In this study a pre test post test research design was carried out to assess the effect of planned teaching programme. *Result*: The mean percentage pre-test score (56.80%) is highest in the area of diagnosis of VAP and (24.28%) is the least in the area of general Introduction of Respiratory System. Mean percentage post-test is maximum (98.97%) in the area of pneumonia and causative organism and least (84.62%) in the area of diagnosis of VAP.***

Keywords: Assess, Effectiveness, planned teaching programme, ventilator associated pneumonia

1. Background

In the medical field there are different types ventilators available. Mechanical ventilator is a common lifesaving intervention in the emergency department (ED) Mechanical ventilation is used to assist or replace spontaneous breathing.[6] A ventilator as designed to move breathable air in and out of the lungs which helps in breathing for a patient who is physically unable to breath or breathing insufficiently.[7] The drinker and show tank type ventilator of 1929 was one of the first negative-pressure machines widely used for mechanical ventilation. It is known as the iron lung. A vacuum pump fabricated a negative pressure up to the chamber which result in expansion of the patient chest. This change in geometry reduces the intra pulmonary pressure and allows the air into the patient's lung. When the vaccum is released, the negative pressure applied to the chest drops to zero and the elastic recoil of the chest and lungs are permitted for passive ventilation. Now a days most of the patients are provided with positive pressure ventilator.[5]

An intensive care unit of a special department of a hospital or health facility that provides intensive treatment medicine. ICU care to the patients with severe & life-threatening illness and injuries, which requires constant, close monitoring and support from specialist equipment and medications in order to ensure normal bodily functions.

Ventilator Associated Pneumonia is the most common nosocomial infection, with the prevalence rates ranging from 10% to 70% in critical care units. It is the sub type of hospital acquired pneumonia with occurs in people who are on mechanical ventilation through an endotracheal on tracheostomy tube for more than 48 hours with reported incidence of 6-20 times higher in these patients.[9] VAP is a major health care burden in terms of mortality increased in health care cost, increased length of ventilator days hospital stay with prolonged. VAP leads to continuously to be a common and potentially fatal complication of ventilator care.[10]

VAP can occur as an early onset or late onset. Patient with mechanical ventilation at early onset is more than 48 hours, more than 96 hours late on set VAP.[11] Normal human being the major defense mechanism include anatomic airway barriers, cough reflexes, mucous and clearance. Clinical Manifestations can either by objective when observed by physician or subjective when perceived by self. Clinical features of patients with VAP gradual or sudden onset of the symptoms like dyspnea & signs such as fever, tachypnea, increased or purulent secretions, leukocytosis, rhonchi, crackles, reduced breath sounds, bronchospasm.[54] Accurate diagnosis is important so that appropriate treatment can be instituted. Diagnosis on VAP needs a high clinical experience and bed side examination. Radiographic examination and microbiologic analysis of respiratory secretions, sampling methods.[18]

2. Need of the Study

Jyothikapoor (2022) stated a descriptive study to assess the knowledge and practice of ICU nurses on prevalence of VAP

among patients admitted in critical care units of government medical college & hospitals, Jammu. The sample consists of 50 ICU nurses. Purposive sampling technique was used to select the sample data were collected with the help of demographic protocol structured questionnaire and checklist. The result revealed that subjects 22 (44%) having average knowledge respectively.16 (32%) were having good knowledge, 8 (16%) & 4 (8%) were having below average and excellent knowledge respectively. That the result showed need Inservice training programmes conduct to staff nurses their knowledge& practice and decreases Ventilator Associated Pneumonia rates.[35] Statistical report of SMVMCH (Oct 2019- Sep 2021) A Prospective study was done at SMVMCH during a period between 24 months on the occurrence of pneumonia among the patients who were on mechanical ventilator in all CCU. The patients were meticulously monitored for more than 48 hours at frequent intervals and assessed for the development of Ventilator Associated Pneumonia by using of CPIS (Clinical Pulmonary Infection Score) until discharge.

The study findings revealed that Out of 127 patients 76 (59.8%) patients have not acquired Ventilator Associated Pneumonia, 24 (18.5%) patients were excluded due to mechanical ventilation less than 48 hours, 6 (4.7 %) of them were died, 21 (16.5%) of them had Ventilator Associated Pneumonia. The results of this study was concluded as the number of occurrence of VAP was increased in hospitals among patients on mechanical ventilation and there is a need for changing the approach of patient care for patients the staff nurse by providing Care for patients on mechanical ventilator.

The researcher felt that the nursing staff and students play a vital role in the prevention of VAP. CNE program for nurses will through a light for enhancing the knowledge and compliance with practice of Ventilator Bundle Care in preventing the occurrence of VAP. Researcher viewed that planning & systemic execution of practices may reduce the incidence & severity of VAP cases in ICU.

3. Methods

Study setting and period
The setting is easily approachable to assess the effectiveness of planned teaching programme on knowledge regarding nursing care of ventilator associated pneumonia among B. Sc. nursing part III students at selected at Selected nursing colleges at Kota, hence it was easy to get adequate samples for the said study. Data was collected from **21/11/2024 TO 22/12/2024 at Govt. college of Nursing, Kota (Raj.)**

Study Design and Population
In this study a pre-test post-test research design was carried out to assess the effectiveness of planned teaching programme on knowledge regarding nursing care of ventilator associated pneumonia among B. Sc. nursing part III students at selected at Selected nursing colleges at Kota. **Target population** for the study was B. Sc. Nursing part III students at selected colleges of Nursing, Kota (Raj.).

Sample Size
Total 70 B. Sc. Nursing Part III students at selected colleges of Nursing, Kota (Raj.).

Sampling Techniques and Approach
Non-probability convenient sampling technique was utilized to choose the example for this review. In the present study the investigator also used an evaluative approach for evaluation of the effectiveness of programme and researcher also evaluated the association of demographic variable with knowledge.

Tool for data collection
Based on the objectives of the study, a structured knowledge questionnaire was prepared by the researcher for the present study. The interview consisted of a sequence of questions for collecting information about a particular topic from respondents.

4. Data Collection Techniques

Main Study
Formal permission for main study was obtained from Principal, Govt. College of Nursing, Kota. **Main study was conducted from 21/11/2024 TO 22/12/2024**. In the wake of acquiring the consent examiner met the subjects and builds up the affinity, Purposive sampling (non probability sampling technique) was used. Total 70 B. Sc. Nursing part III students as samples selected for main study from above mentioned Institutes. After obtaining permission, researcher met with all samples self- introduction was given by the investigator, the purpose of the study was explained, to the subjects, I assured confidentially of the reply and the findings. Written consent is obtained from the samples to participate in the study. Pre-test was conducted by administering knowledge questionnaires. The PTP was give on the same day at the end of the pre-test. After 7 days post-test has been conducted with same questionnaire.

Data processing and analysis
Data were coded and entered into SPSS Version 26 software for analyses. Descriptive analysis including frequency distribution, proportion and mean was performed to sum up the attributes of the review subjects. The data obtained was analyzed using frequency, percentage, mean, median, mean percentage, standard deviation in terms of descriptive and inferential statistics.

5. Results

Section I:
Description of socio segment variables of samples under study

1) Majority (58.57%) of subjects were within the age group of 21-22 years while 08.57% of subjects were inside the age gathering of 19-20 years, 24.28% of subjects were inside the age gathering of 23-24 years and remaining subjects (8.57%) were within the age group of above 24 years.
2) Data shows that both male and female samples were (50.00%).
3) Majority 53 (75.71%) subjects belonged to Hindu religion. Out of remaining 15 (21.42%) were Muslims and remaining 02 (2.85%) were belonged to Christian's religion.
4) Majority 42 (60.00%) of subjects were belonged to nuclear family while remaining subjects 28 (40.00%) were

belonged to joint family.

5) Majority of subjects (34) 48.57% have monthly family income 30, 001 and above, remaining 21 (30%) subjects have monthly family income from 10, 001-20, 000/, 13 (18.57%) of subjects have monthly family income from 20, 001-30, 000/ and 02 (2.85%) of subjects have monthly family income up-to 10000/.
6) Majority 49 (70.00%) of subjects were had some previous sources of information regarding nursing care of ventilator associated pneumonia while remaining 21 (30%) of subjects had no previous sources of information regarding nursing care of ventilator associated pneumonia.
7) Majority of subjects 24 (34.28%) respondents were had previous source of information via Medical Personnel, while remaining 19 (27.14%) respondents were possessing previous source of information as workshop/seminar, 04 (5.71%) respondents were possessing previous source of information as Mass media and 02 (2.85%) respondents were possess previous source of information via Journals.

Section II: Assessing Existing Knowledge of Students Regarding Nursing Care of Ventilator Associated Pneumonia

1) The information in table likewise portray that the mean post-test data scores (24.91) was higher than their mean pre-test data scores (12.76).
2) The SD of pre-test (SD=1.59) is more dispersed than their post-test SD (SD=1.12).
3) Majority of subjects (92.85%) had scores ranging between (24-30) in post-test whereas in the pre-test none of them had scored above 21.
4) The **mean percentage pre-test score (56.80%) is highest in the area of diagnosis of VAP and (24.28%) is the least in the area of general Introduction of Respiratory System.**
5) **Mean percentage post-test is maximum (98.97%) in the area of pneumonia and causative organism and least (84.62%) in the area of diagnosis of VAP.**

Section III: Association between the Existing Knowledge

Score With Select Socio-Demographic Variables

The Chi-square test computed between knowledge and selected variables revealed that there was a significant association between the knowledge and selected Socio-demographic variables.

It is evident that the demographic variables such as Gender and religion; the determined chi square value is less than the critical value at $p<0.05$ level of significance. **So null hypothesis is accepted and research hypothesis is rejected.**

In Demographic variables such as Age, type of family, monthly family income, previous sources of Information and If yes, then sources; the calculated chi square value is higher than the critical value at $p<0.05$ level of significance. **So null hypothesis is rejected and research hypothesis is accepted.**

6. Conclusion

The **mean percentage pre-test score (56.80%) is highest in the area of diagnosis of VAP and (24.28%) is the least in the area of general Introduction of Respiratory System. Mean percentage post-test is maximum (98.97%) in the area of pneumonia and causative organism and least (84.62%) in the area of diagnosis of VAP.** The present study results revealed that though students possess some knowledge regarding nursing care of ventilator associated pneumonia but majority of them have inadequate to moderate knowledge. This is similar to the findings of the study conducted by other researchers.

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