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"The Effectiveness Of An Educational Intervention Programme On Knowledge And Practice Regarding Mechanical Ventilator Among Nursing Students."

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As a powerful medication for treating hypoxemia and hypoxia, oxygen is a gas that is necessary for life. For a human to survive, they must be able to breathe. An object, fluids, bronchoconstriction, sickness, or other factors can all cause the airway to narrow or become obstructed in various conditions. An end tracheal or tracheotomy tube can be inserted to help maintain a patent airway in an emergency (such as a blockage of the airway) or during long-term care. Careful airway management is required. In cases where a patient exhibits a chronic acidosis, a rise in arterial carbon dioxide levels, and a continual decline in oxygenation, mechanical ventilation may be required. In critical care medicine, one of the treatment cornerstones is mechanical ventilation. The most widely used technique for treating critically sick patients is now mechanical ventilation.

Keywords: Educational intervention program, Mechanical ventilation, Nursing Studen.

1.INTRODUCTION

Mechanical ventilation is the term used in medicine to describe artificial ventilation, which replaces or supplements natural breathing using mechanical devices. This can be accomplished using a ventilator machine, or by compressing a bag or set of bellows to aid in breathing, as done by a licensed registered nurse anesthetist, doctor, physician assistant, respiratory therapist, paramedic, or other competent person. "Invasive" mechanical ventilation refers to any device that enters the body through the mouth (such as an endotracheal tube) or the skin (such as a tracheotomy tube).[2]

As the first-line supervisors when it comes to patients' and ventilators' problems, nurses must be able to recognize symptoms including respiratory distress, dyspnea, and increased work of breathing, as well as the actions that need to be taken to treat these concerns. Therefore, it is essential that nurses who provide care for patients on ventilators understand the basic functions of the device, including mode, settings, and alarms. The capacity to

promptly identify and address common ventilator and patient-related difficulties is also necessary for delivering the best patient-centered care and preventing consequences.[14]

When patients have respiratory insufficiency due to problems with their respiratory muscles and oxygenation system, the use of mechanical ventilation (MV) enhances gas exchange and reduces breathing effort.[15]

As soon as the patient's condition starts to improve, the weaning process (releasing the respiratory system) can start. In 15-20% of patients, the weaning process is noticeably delayed. It is called "prolonged weaning" if the process takes more than seven days after the initial spontaneous breathing attempt (SBT) or if at least three SBT fail."[16]

Approximately one-third of patients hospitalized to intensive care units (ICUs) globally require mechanical ventilation (MV) treatment. The requirement for mechanical ventilator assistance is one of the main requirements for admission to an intensive care unit. The evolution of the critical care and respiratory professions has been greatly aided by the advancement and use of mechanical ventilators in clinical settings.[5]

Critical care nurses‟ skill level is dependent upon their knowledge, experience of, and exposure to, critically ill patients.[19] By carefully and promptly reducing sedation and weaning patients off of ventilation, nurses can enhance patients' chances of recovering. The number of critical care bed days, the risk of complications, and the quality of patient outcomes will all be improved by the expert critical care nursing. A vital source of information for patients, family members, and other multidisciplinary team members is the nurse.[20]

2.OBJECTIVES

1.To assess the effectiveness of an educational intervention programme on knowledge and practice regarding Mechanical ventilator among nursing students.
2.To find out the correlation between the knowledge and practice regarding Mechanical ventilator among nursing students.
3.To find the association between the knowledge and practice score of nursing students with their selected demographic variables.

3.MATERIAL AND METHODS:

A quantitative research study was done to assess the effectiveness of an educational intervention programme on knowledge and practice regarding Mechanical ventilator among nursing students. quasi-experimental one group pretest posttest design was adopted for the present study. **Sample:** The accessible population for the study consists of B.Sc. nursing 3rd and 4th semester students**. Method:** Data was collected using self structured knowledge questionnaires and Observation checklist. The collected data was organized in master data sheet and analyzed using descriptive and inferential statistics as per the objectives of the study.

Research approach: The research approach chosen for the study was Quantitative research approach.

Research design: The research design adopted for the present study was Quasi experimental research design (one group pretest posttest design).
Setting of the study: The study was conducted in Rohilkhand College/School of Nursing, Bareilly, U.P.
Sample size: 50 students were selected for the study.
Sampling technique: purposive sampling technique was used to select the sample from the population.

Data-collection:

- Administrative permission would be obtained from Principal of Rohilkhand College of Nursing, Bareilly, U.P.
- Ethical permission would taken from ethical committee, BIU.
- Purpose of study would explain to participant and informed written consent will take from them.
- Pretest would be taken by using self-structure knowledge questionnaire and observational checklist.
- Educational intervention programme on mechanical ventilator would be given to participants.
- Posttest would be taken by using self-structure knowledge questionnaire and observational checklist.

CRITERIA MEASURES

All of the tool's components were analyzed using graphs, percentage distributions, frequency distributions, and the Chi-square test.

RESULT

Majority of nursing students (34%) were in 23-24 years of age, Majority of nursing students (60%) were in female, Majority of nursing students (54%) were in B.Sc. nursing 4th semester, Majority of nursing students (78%) were in Yes, Majority of nursing students (84%) were in Clinical experience & class teaching.

The study revealed that there was no significant association with their demographic variables i.e., age, gender, course and semester, previous information regarding mechanical ventilation, source of information regarding mechanical ventilation

Pre-test knowledge score was 92% (Inadequate knowledge), 8% (Moderate knowledge), 00% (adequate knowledge) & in the post test knowledge score was 0% (Inadequate knowledge), 94% (Moderate knowledge), 6% (adequate knowledge).

pre-test practice score was 86% (Inadequate knowledge), 14% (Moderate knowledge), 00% (adequate knowledge) & in the post test practice score was 0% (Inadequate knowledge), 62% (Moderate knowledge), 38% (adequate knowledge).

The results revealed that the mean post test knowledge score (15.78±3) was greater than the mean pre-test knowledge score (7.84±1.83) The calculated t value was (t=6.24), which

were found to be highly significant at the 0.05 level of significance, Therefore, it shows that an educational intervention program was effective to improve the level of knowledge of nursing students. The mean post test practice score (15.74±3.17) was greater than the mean pre-test practice score (6.4±2.14). The calculated t value was t=17.66, which was found to be highly significant at 0.05 level. Therefore, it shows that an educational intervention program was effective to improve the level of practice of nursing students.

RESULTS

Table No. 1 shows frequency and percentage distribution of demographic variables of study participants & it depicts that age shows majority of the students 17(34%) were 23-24 years of age whereas most of the students 30(60%) were females. Majority of the students 27(54%) were studied in B.Sc. Nursing 3rd semester. Most of the students 39(78%) had previous knowledge regarding mechanical ventilation and less than half of students 42(84%) had education programme as a source of information regarding mechanical ventilation 39.

DISTRIBUTION OF FREQUENCY AND PERCENTAGE OF DEMOGRAPHIC VARIABLES

S.NO.	DEMOGRAPHIC VARIABLES	FREQUENCY	%
1.	**Age** a) 19 -20 years b) 21-22 years c) 23-24 years d) d) Above 24 years	 **12** **13** **17** **08**	 **24%** **26%** **34%** **16%**
2.	**Gender** a) Male b) Female c) Others	 **20** **30** **00**	 **40%** **60%** **00%**
3.	**Course & year** a) B.Sc. Nursing 3rd semester b) B.Sc. Nursing 4th semester	 **27** **23**	 **54%** **46%**

4.	**Previous information regarding mechanical ventilator** a) Yes b) No	 **39** **11**	 **78%** **22%**
5.	**Source of information regarding mechanical ventilator** a) Clinical experience and class teaching b) Conferences, work shop & Training programme c) Mass media, books and journals d) d) No information	 **42** **03** **05** **00**	 **84%** **6%** **10%** **00%**

Table 2: Effectiveness of an educational intervention programme on knowledge regarding mechanical ventilator among nursing students

LEVEL OF KNOWLEDGE	**Pre-test knowledge score**			**Post-test knowledge score**	
	Score	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Inadequate knowledge	0-10	46	92%	0	0%
Moderate knowledge	11-20	4	8%	47	94%
Adequate knowledge	21-30	0	0%	3	6%
Total		**50**	**100%**	**50**	**100%**

Shows pre-test knowledge score was 92% (Inadequate knowledge), 8% (Moderate knowledge), 00% (adequate knowledge) & in the post test knowledge score was 0% (Inadequate knowledge), 94% (Moderate knowledge), 6% (adequate knowledge). Therefore, it may be concluded that the majority of respondents had low pre-test knowledge scores. There was an increase in responders who had experience with organized educational intervention programmes following their implementation.

Table 3: Comparison pre-test and post-test knowledge score of an educational intervention programme on knowledge regarding mechanical ventilator among nursing students.

S.NO.	Knowledge aspects	Mean	Mean%	SD	t value	Df
1	Pre-test	7.84	15.68%	1.83	-6.25	49
2	Post-test	15.78	31.56%	3		

Shows mean pre-test knowledge score was 7.84 and mean post –test knowledge score was 15.78 the difference between pre-test knowledge score was statistically significant.
Hence, it was inferred that there was an increase in the level of knowledge after educational intervention programme regarding mechanical ventilation among B.Sc. nursing 3rdth and 4th semester students. So the research hypothesis was accepted.

Table 4: Pre-test and post-test practice score regarding mechanical ventilator among nursing students.

LEVEL OF PRACTICE	Pre-test Practice score			Post-test practice score	
	Score	Frequency	Percentage	Frequency	Percentage
Inadequate knowledge	0-8	43	86%	0	0%
Mode rate knowledge	9-16	7	14%	31	62%
Adequate knowledge	17-24	0	0%	19	38%
Total		**50**	**100%**	**50**	**100%**

Shows pre-test practice score was 86% (Inadequate knowledge), 14% (Moderate knowledge), and 00% (adequate knowledge) & in the post test practice score was 0% (Inadequate knowledge), 62% (Moderate knowledge), 38% (adequate knowledge). Therefore, it may be concluded that the majority of respondents had low pre-test practice scores. There was an increase in responders who had experience with organized educational intervention programmes following their implementation

Table 5: Comparison pre-test and post-test practice score of an educational intervention programme on knowledge regarding mechanical ventilator among nursing students.

S. No.	Knowledge aspects	Mean	Mean%	SD	t value	Df
1	Pre-test	6.4	12.80%	2.14	-17.66	49

2	Post-test	15.76	31.52%	3.17		

Shows mean pre-test practice score was 6.4 and mean post–test practice score was 15.76 the difference between pre-test practice score was statistically significant.
Hence, it was inferred that there was an increase in the level of practice after educational intervention programme regarding mechanical ventilation among B.Sc. nursing 3rd and 4th semester students. So, the research hypothesis was accepted.

Table 6: Correlation between level of knowledge pre-test and practice pre-test of nursing students regarding mechanical ventilation

VARIABLES	**MEAN AND SD**	**R VALUE**	**P VALUE**
Knowledge	7.84 & 1.83	0.702	1.68
Practice	6.4 & 2.14		

Depicts that the correlation between knowledge pre-test and practice pre-test regarding knowledge of Mechanical ventilation was 0.702. It shows that there was a positive correlation between the knowledge and practice of Nursing Student.

Table 7: Correlation between level of knowledge post-test and practice post-test of nursing students regarding mechanical ventilation

Variables	**Mean and SD**	**r value**	**p value**
Knowledge	15.78 & 3	0.954	1.68
Practice	15.76 & 3.17		

Depicts that the correlation between knowledge post-test and practice post-test regarding knowledge of Mechanical ventilation was 0.954. It shows that there was a positive correlation between the knowledge and practice of Nursing Student.

Table 8: Association of level of knowledge score regarding mechanical ventilation among nursing students

S. No.	Demographic variables	Inadequate knowledge		Moderate knowledge		Adequate knowledge		df	Calculated Value	Table value	Result
		F	%	F	%	F	%				
1	**Age** a) 19 -20 years b) 21-22 years c) 23-24 years d) Above 24 years	00 00 00 00	00% 00% 00% 00%	9 8 14 6	18% 16% 28% 12%	3 5 3 2	6% 10% 6% 4%	6	1.65	2.45	Not significant
2	**Gender** a) Male b) Female c) Transgender	00 00 00	00% 00% 00%	19 25 00	38% 50% 00%	1 5 00	2 % 10% 00%	2	1.53	4.30	Not significant
3	**Course & Semester** a)B.Sc. Nursing 3rd semester b)B.Sc. Nursing 4th semester	00 00	00% 00%	23 20	46% 40%	4 3	8 % 6%	2	0.03	4.30	Not significant
4	**Previous information regarding mechanical ventilator** a) Yes b) No	00 00	00% 00%	35 07	70% 14%	4 4	8% 8%	2	4.33	4.30	Significant
5	**Source of information regarding mechanical ventilator** a) Clinical experience and class teaching b) Conferences, work shop & Training programme c) Mass media, books and journals d) No information	00 00 00 00	00% 00% 00% 00%	35 02 03 00	70% 4% 6% 00%	07 01 02 00	14% 2% 4% 00%	6	1.86	2.45	Not significant

DISCUSSION

The aim of the present study to evaluate the knowledge of Nursing students regarding 50 Nursing students was selected for the study group to assess their knowledge and Practice regarding Mechanical Ventilation. The chapter deals with discussion in accordance with the objective of the study and hypothesis.

OBJECTIVES

1. **To assess the effectiveness of an educational intervention programme on knowledge and practice regarding Mechanical ventilator among nursing students.**
   Pre-test knowledge score was 92% (Inadequate knowledge), 8% (Moderate knowledge), 00% (adequate knowledge) & in the post test knowledge score was 0% (Inadequate knowledge), 94% (Moderate knowledge), 6% (adequate knowledge).

2. **To find out the correlation between the knowledge and practice regarding Mechanical ventilator among nursing students.**
   Knowledge pre-test and practice pre-test regarding knowledge of Mechanical ventilation was 0.702. Knowledge post-test and practice post-test regarding knowledge of Mechanical ventilation was 0.954.

3. **To find the association between the knowledge and practice score of nursing students with their selected demographic variables.**

AGE

Percentage wise distribution of nursing students with relationship to their age, 12 (24%) were in 19-20 years, 13 (26%) were in 21-22years, 17 (34%) were in 23-24 years, 8(16%) was in above 24 years.

GENDER

Percentage wise distribution of nursing students with relationship to their Gender, 20 (40%) were in Male, 30 (60%) were in Female, 0 (00%) were in Transgender.

COURSE & YEAR

Percentage wise distribution of nursing students with relationship to their course & year, 23 (46%) were in B.Sc. Nursing 3rd semester, 27(54%) were in B.Sc. Nursing 4th semester.

PREVIOUS INFORMATION REGARDING MECHANICAL VENTILATION

Percentage wise distribution of nursing students with relationship to their Previous information regarding mechanical ventilation 39 (78%) were in YES, 11 (22%) were in NO.

SOURCE OF INFORMATION REGARDING MECHANICAL VENTILATION

percentage wise distribution of Nursing students with relationship to Source of information regarding mechanical ventilation, 42 (84%) were in Clinical experience & class teaching, 3

(6%) were in Conferences, work shop & Training programme, 5 (10%) were in Mass media, books and journals, 0 (0%) were in No information.

CONCLUSION

Based on the finding of the following conclusion were drawn:

- There is need to provide knowledge and practice regarding mechanical ventilation.
- Educational intervention program and observation checklist has significantly increase knowledge and practice of nursing students regarding Mechanical ventilation.

Thus, the investigator concludes Educational intervention program and observation checklist was helping in increasing the knowledge and practice of nursing students of Rohilkhand College of nursing, Bareilly, U.P.

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