ISSN No:-2456-2165

A Study to Assess the Effectiveness of Video Assisted Teaching on Knowledge Regarding Ventilator Operation and its Mode among Nurses of Sharda Hospital, Greater Noida, Uttar Pradesh

Ankita Chhikara,[1]
Nursing Lecturer
Medical Surgical Nursing Department
Sharda School of Nursing Science and Research, Sharda University
Knowledge Park-III,
Greater Noida, Uttar Pradesh-201306

Dr. Uppu Praveen,[2]
Associate Professor & Head,
Dept. of Community Health Nursing,
Sharda School of Nursing Science and Research, Sharda University,
Knowledge Park-III,
Greater Noida, Uttar Pradesh-201306

Sanjna Kumari,[3]
Assistant Professor,
Dept. of Child Health Nursing,
Sharda School of Nursing Science and Research, Sharda University,
Knowledge Park-III,
Greater Noida, Uttar Pradesh-201306

Corresponding Author- Dr. Uppu Praveen, Associate Professor & Head, Dept. Of Community Health Nursing, Sharda School of Nursing Science and Research, Sharda University, Knowledge Park-III, Greater Noida, Uttar Pradesh-201306

Abstract:- To facilitate patient care, advanced breathing devices require crucial nursing management. To recognise adverse occurrences and enhance the quality of care, the nursing staff in hospitals should have a basic awareness of how a ventilator operates.[1] Aim: The study's aim was to improve the knowledge of healthcare professionals regarding Ventilator Operation and its mode. Methodology: To determine the impact of a Video Assisted Teaching knowledge regarding Ventilator Operation and its mode among nurses, a quasi-experimental two group pre and post-test design was utilised. The target population for the study was nurses. Data analysis was done using the study's aims and assumptions as the basis for the sample size of 70. Statistical Package EZR - Software version 2.4 was used to analyse the data. Result: The pre-test knowledge scores of the control group and interventional group were 11.54±3.10 and 11.46±3.25, respectively. The experimental group's post-test knowledge scores were statistically significantly different from the control group's (p=0.00) mean scores in this study 24.17±3.61 and the control group's being 12.06 ± 2.73. Conclusion: Inadequate ventilator settings in combination with respiratory diseases and nurses' incapacity to spot impending deterioration can have serious repercussions, numerous complications, and a lengthened hospital stay. Since many decisions about ventilators are based on nurses' collaboration with doctors, nurses play a crucial role in supporting patients' health and recovery in high dependency settings.[2]

Keywords:- *Video Assisted Teaching, Ventilator Operation, Ventilator Mode, Mechanical Ventilation, Ventilator Associated Pneumonia, Ventilator Alarms.*

I. INTRODUCTION

The intensive care unit patients are very ill and frequently reliant on mechanical life support systems.[3]These mechanically ventilated patients' lives depend on the care provided by medical personnel, especially nurses.[4] The health or death of patients in intensive care units may depend on the skill and knowledge of the nursing staff. Modern intensive care units have cutting-edge technology that needs quick nursing attention.7 When used in conjunction with the patients' conditions, the modern technology used in critical care units can be beneficial[5,2] ; Additionally, until nurses display essential expertise and comprehension of these mechanical devices, neither of these technologies can benefit patients.[6] The quality of care and safety of intubated patients, however, are called into question by the fact that critical care literature frequently reveals that nurses working in intensive care units typically lack fundamental knowledge and expertise about the ventilator mechanics in relation to respiratory physiology.[2] The most frequent cause of hospitalizations to intensive care units is the necessity for positive pressure invasive ventilation, a mechanical intervention.[7] Critical thinking, quick decision-making, and immediate life-saving actions are required in respiratory emergencies, and these skills are derived from a fundamental grasp of ventilator mechanics in connection to respiratory physiology.[8] Since many decisions about ventilators are based on nurses' collaboration with doctors, nurses play a crucial role in supporting patients' health andrecovery in high dependency settings.[9] Inadequate ventilator settings in combination with respiratory diseases and nurses' incapacity to spot impending deterioration can have serious repercussions, numerous complications, and a lengthened hospital stay.[2]

➢ *Objectives*

- To prepare, validate and implement Video Assisted Teaching on knowledge regarding Ventilator Operation and its mode
- To determine the effectiveness of Video Assisted Teaching on knowledge regarding Ventilator Operation and its mode among nurses.

➢ *Research Hypothesis*

- H_{01}: There will be no significant difference between the pre-test and post-level knowledge scores regarding Ventilator Operation and its mode in the interventional group compared to control group.
- H_{02}: There will be no significant association between the pre-test and post-test knowledge scores regarding Ventilator Operation and its mode among nurses with their selected demographic variables.

II. METHODOLOGY

The impact of a Video Assisted Teaching nurses' knowledge regarding Ventilator Operation and its mode was evaluated using a quasi-experimental two group pre and post-test design. The population of the study included nurses from Sharda Hospital. The research was carried out between May and June of 2022. By employing the purposive sampling strategy, the study's sample size was 70 (using the Independence t-test formula).

➢ *Ethical Consideration:*

Obtained permission from

- Dean cum principal, School of Nursing Science and Research
- University ethical committee, Sharda University
- Medical Superintendent of Sharda Hospital
- Chief Nursing Officer of Sharda Hospital
- Participants consent will also be taken for the study

➢ *Inclusion Criteria*

- Nurses of Sharda Hospital, Greater Noida, Uttar Pradesh
- Nurses who are willing to participate in the study
- Nurses who are present at the time of data collection

➢ *Exclusion Criteria*

- Nurses who are not present during the data collection
- Nurses who are not willing to participate in the study

➢ *The Study Employed The Following Instruments To Gather The Data:*

- Demographic data is the first tool.
- Tool 2: Self-structured quizzes on Ventilator Operation and its mode.

III. STATISTICAL ANALYSIS

Using the statistical programme EZR - Version 2.4, descriptive and inferential statistics were utilised to analyse the data in accordance with the aims and hypotheses.

IV. RESULTS

The present study shows that, majority of the nurses were in the age group of ≤ 25 years i.e. 54.3% in control group and 62.9% in interventional group. Most of them were females i.e. 68.6% in control group and 71.4% in interventional group. Majority of them were Hindu i.e. 94.3% in control group as well as in interventional group. Most of them pursued G.N.M. as their basic nursing course i.e. 71.1% in control group and 52.3% in interventional group. Majority of them had clinical experience of 1-5 years i.e. 68.6 % in control group and 65.7% in interventional group. Majority were having non-critical as area of experience i.e. 65.7% in control group as well as in interventional group and Majority of them were staff nurse i.e. 74.3 % in control group and 80% in interventional group. Majority of them had income ≤24,000/- per month in control group as well as in interventional group. Both groups shared the same initial characteristics (were homogeneous). ($p>0.05$).

Table 1 compares the knowledge scores from the pre- and post-tests for nurses in the experimental group and control group. (N=70)

Knowledge scores at time-points	Experimental group			Control Group			Mean Difference	Independentt-test & *p* value
	n	M	SD	n	M	SD		
Pre-test(n=70)	35	11.46	3.257	35	11.54	3.109	0.08	t=0.113,*p*=0.911 (NS)
Post-test(n=70)	35	24.71	3.610	35	12.06	2.733	12.56	t= 16.53, *p*=0.0(S)

(NS = non-significant, S = significant, $p<0.05$ = significant)

Table 1 revealed that there is a statistically significant ($p<0.05$) mean difference noted in knowledge scores at post-test between interventional group and control group. This demonstrates that the interventional group of nurses' knowledge regarding Ventilator Operation and its mode was improved by Video Assisted Teaching.

V. DISCUSSION

The experimental group outperformed the control group on average in terms of knowledge scores in the post-test 24.17±3.61and the control group scoring 12.06 ± 2.73 which is statistically significant ($p<0.05$). This demonstrates that the interventional group of nurses' knowledge regarding Ventilator Operation and its mode was improved by Video Assisted Teaching. Another study, undertaken by Rafiq N,

Mughal F, Valliani K. provided support for the study shows that There was a significant (p=0.00) improvement in post-test scores for nurses' knowledge of ventilator mechanics and respiratory physiology. The pre-test knowledge score showed a mean score of 9.43±3.43 which comparatively improved after delivering the educational module along with the teaching sessions in the post-test 17.2±2.19.[1]

Nursing staff should be appreciated to participate in making ventilator related discussions for their patients. ICU orientation module should be revisited, and the power point presentation and the module developed under this project, should be added as a source material for nursing staff. This study discusses the nursing implications in relation to the knowledge and competency regarding Ventilator Operation and its mode.[5, 6]

VI. CONCLUSION

According to the findings, to facilitate patient care, advanced breathing devices require crucial nursing management. To recognise adverse occurrences and enhance the quality of care, the nursing staff in hospitals should have a basic awareness of how a ventilator operates. Educators should encourage nurses to make themselves competent about Ventilator Operation and its mode. Caring for a patient on mechanical ventilation requires teamwork, knowledge of care goals, and interventions based on best practices. The nurse administrator has to make sure that all nursing staff should be educated for the basic ventilator mechanics in order to ensure patient safety and quality care.

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