"A Study To Assess The Effectiveness Of Planned Teaching Programme On Knowledge Regarding Care Of Patients On Mechanical Ventilation Among ICU Staff Nurses In Selected Hospitals Of Udupi District"

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Abstract: Mechanical ventilation is a life-saving procedure, used for critically ill patients who are unable to breath spontaneously. However, patients on mechanical ventilation are susceptible to develop complications i.e, Ventilator-Associated Pneumonia (ventilator care). Incidence of ventilator care ranges from 5% to 67% with the highest rates seen among immune compromised, surgical, and elderly patients. The estimated risk of developing ventilator care is 1.5% per day and decreases to less than 0.5% per day after the 14" day of mechanical ventilation. Ventilator care increases the duration of hospitalization by 7 days and thereby the cost of health-care. Ventilator care is classified into early-onset (occurring 5 days) and late-onset (occurring 25 days) ventilator care after intubation.[4]

Index Terms – Effectiveness, Planned Teaching Programme.

I. INTRODUCTION

Nurses play a crucial role in the health care delivery system and it implies for the need of competent nurses. Competency is achieved by gaining theoretical knowledge and practical experience. The management of critically ill patients has become increasingly important in the modern medical and nursing systems. One among which is the patients with mechanical ventilator.[1]

Many patients admitted into the intensive care unit require airway maintenance and mechanical ventilator support. It is important that all qualified nurses working in critical care environments understand the indications for the use of mechanical ventilation, the modes of ventilation delivery and the most common associated complications.[2]

Ventilator Care is the medical term for artificial ventilation where mechanical means is used to assist or replace spontaneous breathing. This may involve a machine called a ventilator or the breathing may be assisted by an Anaesthesiologist, certified registered nurse anaesthetist, physician, physician assistant, respiratory therapist, paramedic, or other suitable person compressing a bag or set of bellows.[3]

A mechanical ventilator is a machine that is essential to support patients to breathe when they are unable to ventilate and oxygenate on their own due to critical illness or having surgery. Patients are connected to a ventilator by a hollow tube that goes from their mouth to their trachea, thereby providing the function of respiratory muscles. In the meantime, the patient remains on the ventilator until they can breathe independently [3].

Infections are big concerns of any intensive care units. It is the nurse's responsibility to see that each and every one follows these precautions for who come in contact with their patients. The infectioncontrol department plays a vital role in educating nurses on the prevention of ventilator care among intubated patients. Reduction in the incidence rate of ventilator care ultimately decreases the associatedburden of illness.[5]

According to the Center for Disease Control and Prevention (CDC, 2012), Ventilator associated pneumonia (ventilator care) is that type of pneumonia developing 48 hours post intubation. It is diagnosed by the presence of a number of indicators including: manifestations of pulmonary infection aspresence of a disturbance in body temperature> 38-C or <36-C. leucocytosis and purulent tracheal secretions, new or persistent infiltrates delectable on chest radiographs, and positive deep tracheal aspiration culture.[5]

The quality of care received by a patient in any hospitals depends on the care given by the nursesof that particular hospital. The quality can be improved if the nurses follow evidence-based nursing practices. These practices should be reviewed at set intervals for improvements. Tracking and measuring nursing sensitivity quality indicator will help in setting up the best practices. The management of critically ill patients has become increasingly important in modern medical and nursing systems. Critical care nurses play a crucial role in improving the effectiveness of mechanical ventilation, preventing harm, and optimizing patient outcomes. The skills and knowledge of health teams regarding the care of a patient on a mechanical ventilator and patients' clinical status enable them to fine-tune ventilator settings to maximize the benefits of ventilator support while minimizing complications [5, 6.]

Knowledge of nurses about the functions and limitations of ventilator modes, causes of distress, dyssynchrony with ventilator, and appropriate management enable them to provide high-quality centered care [7, 8.] As nurses are the first-line manager challenged with patients' and ventilators' problems, it is crucial to recognize the problems such as respiratory distress, dyspnea, and increased work of breathing, and the actions to be taken to solve these problems. So, the nurses who provide care for ventilated patients must understand the basic ventilator support including ventilator mode, setting, and alarms. It is also important to be skilled in promptly identifying and managing common patient and ventilator-related problems to provide optimal patient-centered care and prevent complications [9].

II. CONCEPTUAL FRAMEWORK

A Conceptualization is a process of forming ideas and plans. A Conceptual framework is atheoretical approach to the study of problem that are scientifically based and it emphasizes the selection, arrangement and classification of its concepts. Conceptual framework is a group of concepts and a set of proportion that spells out the relationship between them, conceptual frameworkdeals with abstract (concepts) that are assembled by virtue of their relevance to a common theme. It serves as a spring board for the generation of research hypothesis and can provide an important concept for scientific research[18].

Conceptual framework for this study was derived from system theory 1968.

Present study is basedon 'system model'. The components of system are
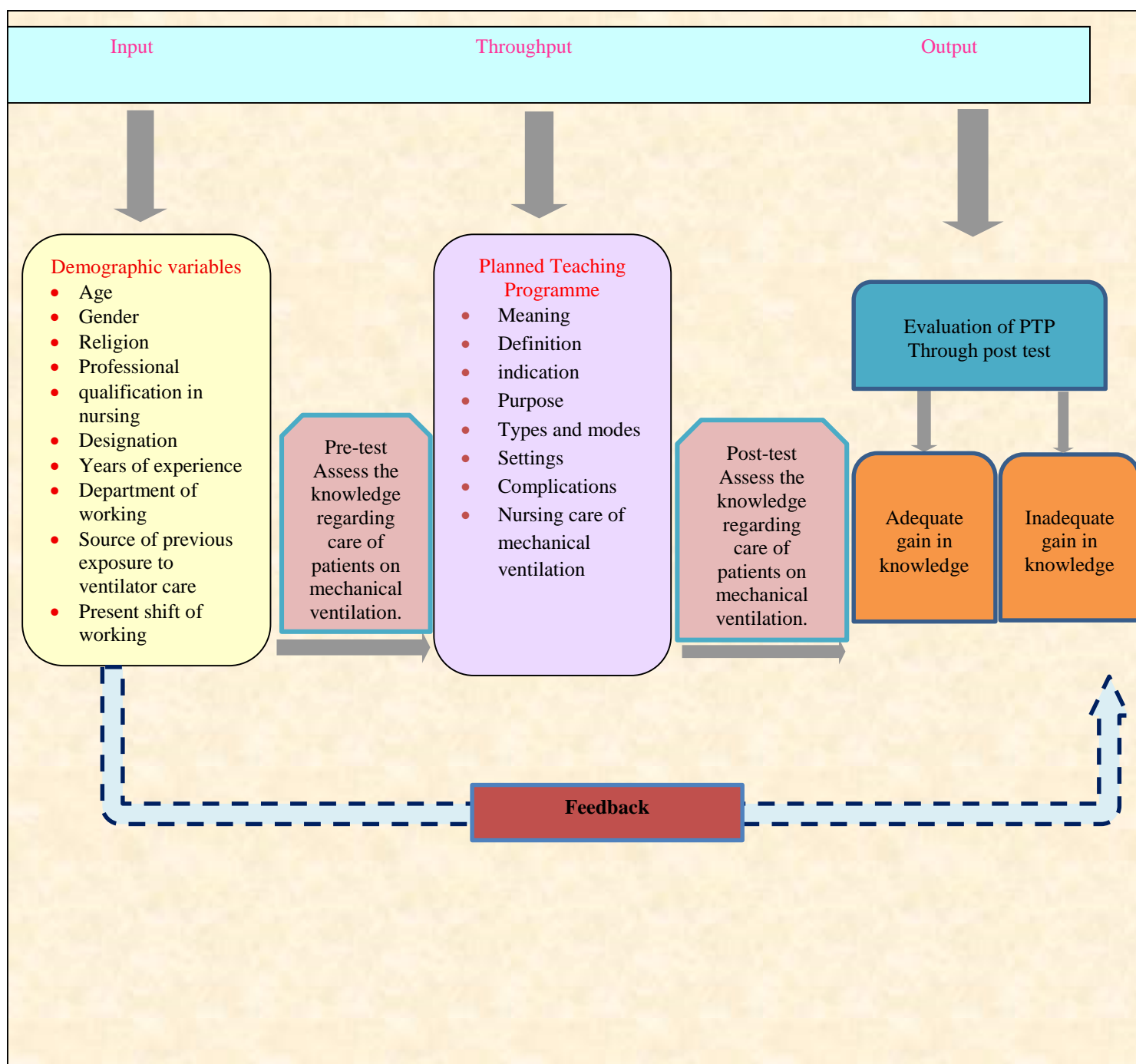
- Input

- Throughput

- Output and Feedback.

Input	Throughput	Output

Demographic variables
- Age
- Gender
- Religion
- Professional
- qualification in nursing
- Designation
- Years of experience
- Department of working
- Source of previous exposure to ventilator care
- Present shift of working

Pre-test Assess the knowledge regarding care of patients on mechanical ventilation.

Planned Teaching Programme
- Meaning
- Definition
- indication
- Purpose
- Types and modes
- Settings
- Complications
- Nursing care of mechanical ventilation

Post-test Assess the knowledge regarding care of patients on mechanical ventilation.

Evaluation of PTP Through post test

Adequate gain in knowledge

Inadequate gain in knowledge

Feedback

Figure 1: Conceptual Framework of open system theory- By Bertalanffy and J.W Kenny.

III) MATERIALS AND METHODS

Quasi Experimental research design with Quantitative approach was used in this study to assess the Knowledge regarding Care of patients on mechanical ventilation among ICU staff nurses. In the view of nature of the problem and accomplish the objectives of the study, a structured self-administered Questionnaire was prepared to assess the knowledge of ICU staff nurses on care of patients on mechanical ventilation. 60 ICU staff nurses were selected by purposive sampling technique. The tool for data is a self-administered questionnaire which consist of two Part (A) Consist of 9 questions related to selected demographic variables and the second part (B) consist of structured questionnaire which was consisting 39 questions on care of patients on mechanical ventilation among ICU staff nurses. The stability of the tool is found to be 0.8 and internal consistency found to be 0.89; which indicate the tool is stable and reliable and feasible. The total possible score of the structured questionnaire was 39. The data was collected and tabulated in MS Excel and analysed with descriptive and inferential statistics using IBM SPSS Version 22

III) RESULT AND DISCUSSION

The demographic variables of the samples are described in terms of age, gender, religion, professional qualification in nursing, designation, years of experience, department of working, source of previous exposure to ventilation and present shift of working.

Figure 3 shows that that majority of 75% are belongs to age group of 20-25 years, 19 % are belongs to age group of 26 - 30 years, 3% are belongs to age group of 31- 35 years and above 35 years.
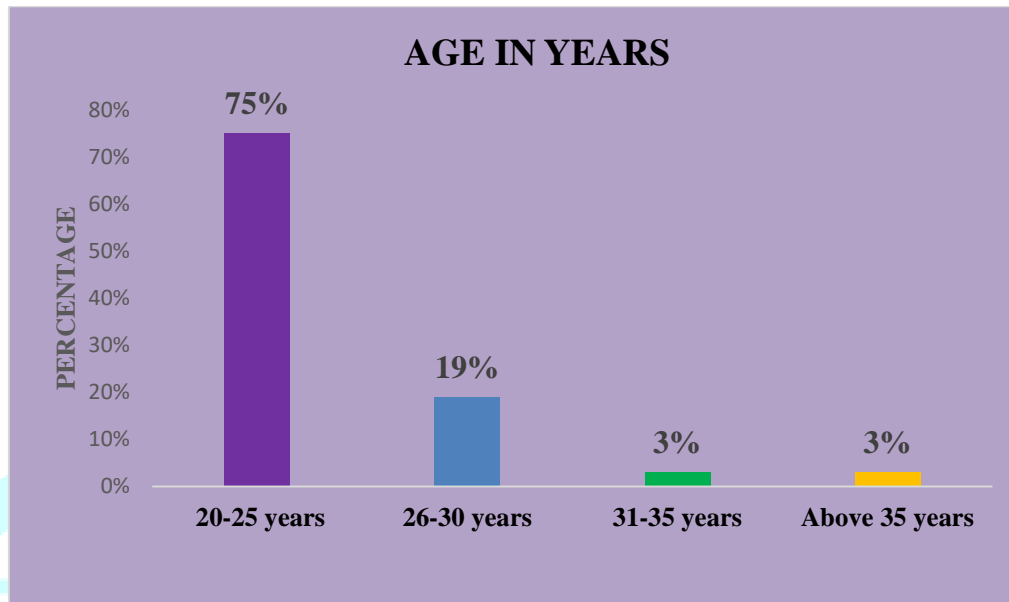
n= 60

Figure 4 shows that among the sample 78 % are females and remaining 22% of the samples are males.
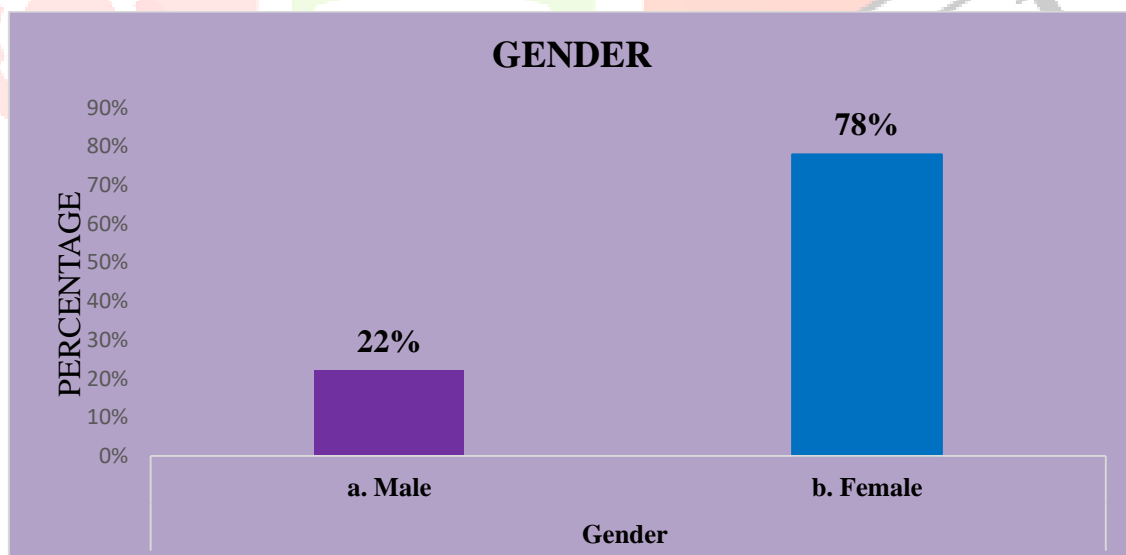
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Figure 5 shows that majority of the 63% were Hindu, 35 % were Christian and 2 % were Muslim.

n= 60

RELIGION
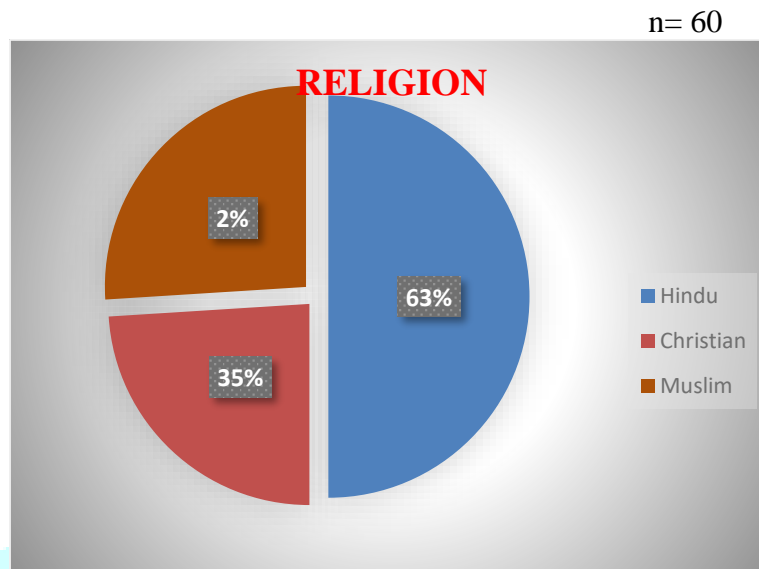
2%

63%

35%

Hindu
Christian
Muslim

Figure 6 shows that majority of the 46% samples had GNM nursing, 42% were P.B.B.Sc. nursing, 10% were had B.Sc. nursing and only 2% was M.Sc. nursing.

n=60

46%

42%

10%

2%

50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%

PERCENTAGE

a. GNM   b. B.Sc. Nursing   c. P.B.B.Sc. Nursing   d. M.Sc. Nursing
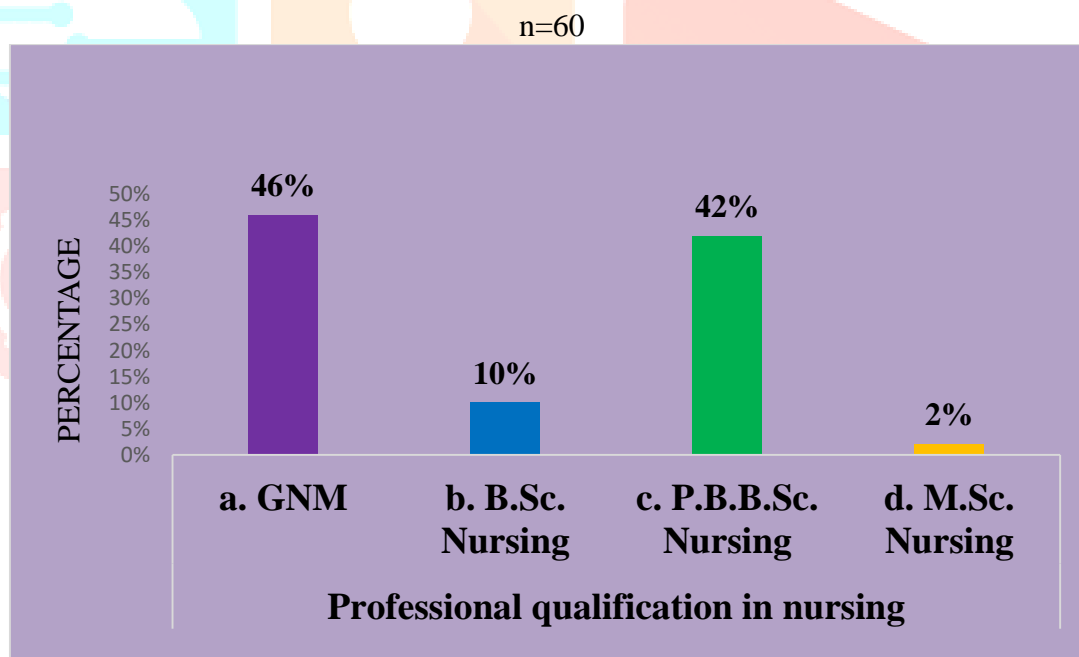
Professional qualification in nursing

Figure 7 shows that majority of the 88 % were staff nurse, 10% were ward incharge, 2% were nursing supervisor.
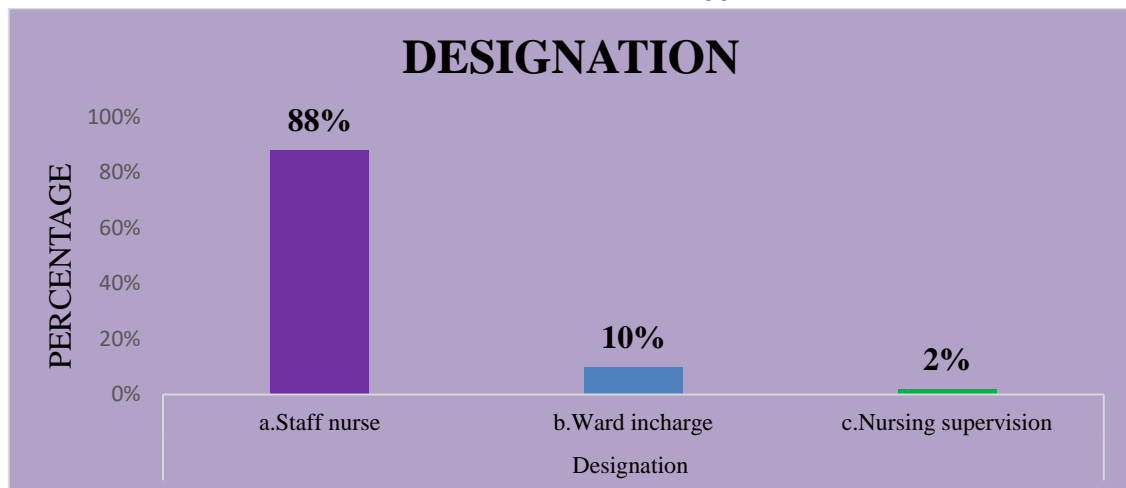
n= 60

Figure 8 shows that majority of the 49 % were had less than 1 year experience, 42 % had 1-3 years, 6 % more than 7 years and 3 % 4-6 years.
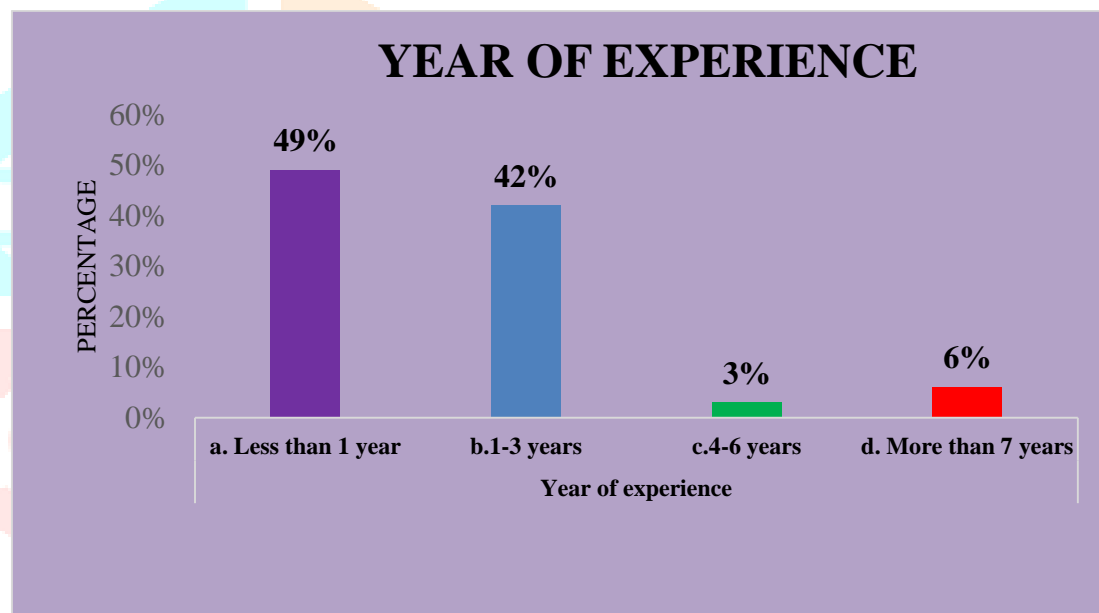
n =60

Figure 9 shows that majority of the 45 % were working in emergency department / casualty ICU, 37 % in medical ICU and 11 % in surgical ICU.
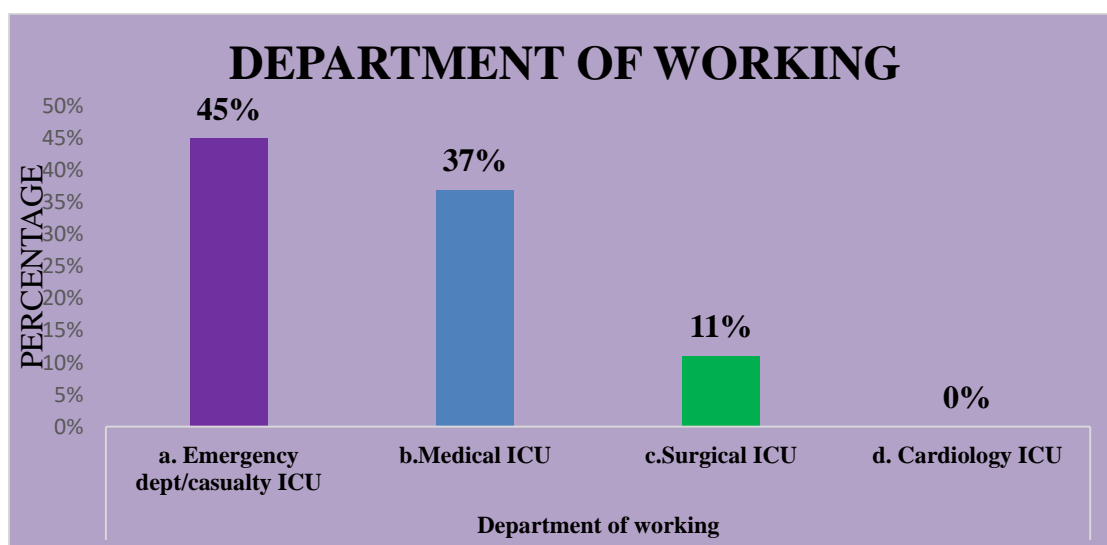
n = 60

Figure 10 shows that majority of the 65% got information through books, 17% through videos, 15% through workshop and remaining 3 % through special training /CNE.
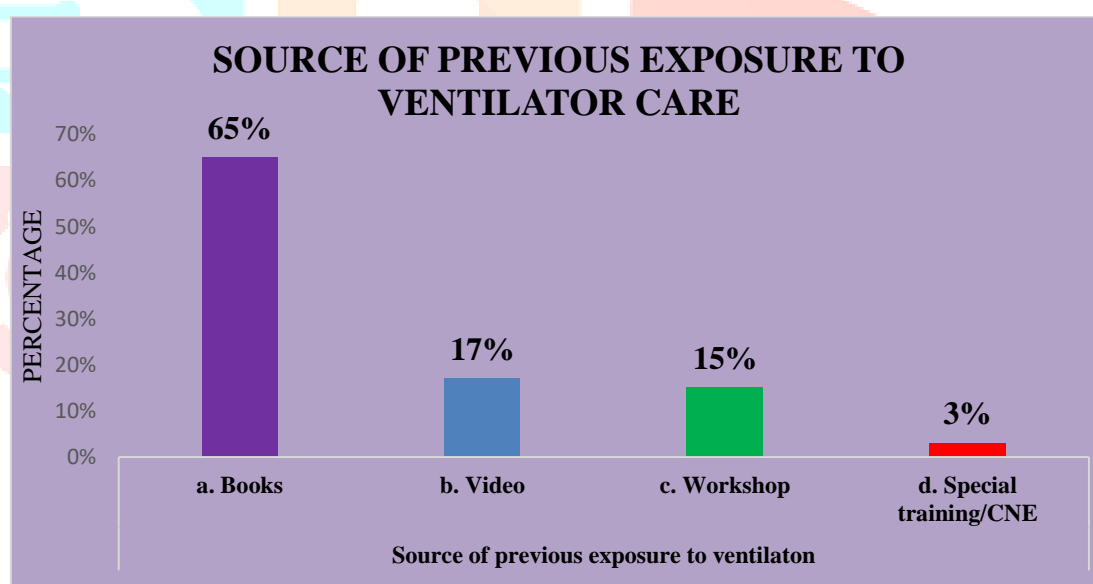
n =60

Figure 11 shows that majority of the 42 % were having morning shift 8am-2 pm, 28% had afternoon shift 2pm-8pm and 30 % had night shift 8pm-8 am.
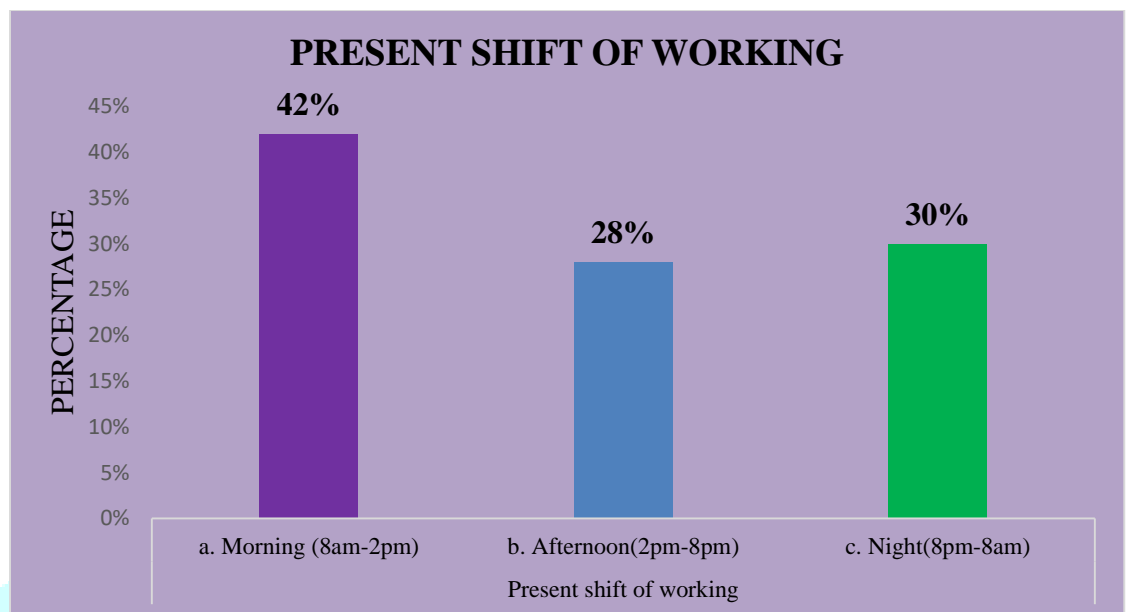
n=60

PRESENT SHIFT OF WORKING

Table 2, shows that during pretest majority of 53 (88%) ICU staff nurses had average knowledge level, 7 (12%) had poor knowledge. During posttest majority of 46 (77%) gained excellent knowledge and 14 (23%) got good knowledge. None of them belongs to poor knowledge category.

N =60

SL.NO	Overall knowledge	Frequency (f)		Percentage (%)	
		Pretest	Post test	Pretest	Post test
1	POOR	7	0	12 %	0%
2	AVERAGE	53	0	88 %	0%
3	GOOD	0	14	0%	23%
4	EXCELLENT	0	46	0%	77%
	TOTAL	60	60	100 %	100%

Table 3 shows area-wise analysis of knowledge regarding care patients on mechanical ventilation among ICU staff nurses, in that overall knowledge mean was 31.5 and mean percentage was 77% with standard deviation of 5.437.

N = 60

SL.NO	AREA	MAXIMUM SCORE	MEAN	MEAN PERCENTAGE	STANDARD DEVIATION
1	Meaning, definition& indication of MV	05	4.3	72%	1.483
2	Types & modes of MV	09	6.8	71%	1.251
3	Setting of mechanical ventilation	06	4.25	71%	1.324
4	Complications of MV	03	2.7	90%	0.89
5	Nursing care management	16	13	82%	0.489
	TOTAL	**39**	**31.5**	**77%**	**5.437**

The table 3 showed association of pretest level of knowledge score with selected demographic variables. The variable present shift of working had significant association with knowledge score. The variables such as age, gender, religion, professional qualification, designation, years of experience, department of working and source of previous exposure to ventilator care does not show any significant association.

N =60

SL.NO	Demographic value	Chi- square value	Df	P- value	Significance
1.	Age in years	0.0469	1	0.997	NS
2.	Gender	0.589	1	0.442	NS
3.	Religion	1.2719	1	0.529	NS
4.	Professional qualification	0.668	1	0.882	NS
5.	Designation	0.777	1	0.677	NS
6.	Years of experience	2.346	1	0.503	NS
7.	Department of working	0.127	1	0.988	NS
8.	Source of previous exposure	4.615	1	0.202	NS
9.	Present shift of working	12.898	1	0.0015	S*

The data gathered were summarized in the master sheet and both descriptive and inferential statistics were used for analysis and interpretation of the findings. The analysis and interpretation of the data focuses on the results of the study. The findings revealed that the variable present shift of working had significant association with knowledge score and there was no significant association between existing knowledge and demographic variables.

LIMITATIONS OF THE STUDY

1. Sample size was small so the generalization is possible only for the selected participants.
2. Study was conducted only in selected hospital, which restricts the generalization.
3. Only knowledge was considered in the present study.

RECOMMENDATIONS

1. A similar study may be conducted on a large sample spread over community in different hospital.

2. A study can be conducted among health care workers in different aspects of health promotion of care of patients on mechanical ventilation.

3. A similar study can be conducted in different setting.

4. A study can be conducted among nursing students explore the knowledge, attitude and practices regarding care of patients on mechanical ventilation.

5. A study can be conducted to assess the effectiveness of innovative teaching methods.

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