P-ISSN: 2617-9806
E-ISSN: 2617-9814

Impact Factor: RJIF 5.2
www.nursingjournal.net

International Journal of Advance Research in Nursing

Volume 8; Issue 2; Jul-Dec 2025; Page No. 432-437

Received: 15-08-2025
Accepted: 20-09-2025

Indexed Journal
Peer Reviewed Journal

A Study to assess the effectiveness of nurse led clinical pathway on the knowledge & competency of the nurses at Apollo specialty hospitals, Trichy

[1]Deepika Selvakumar and [2]Leborin Viji

[1] Deputy Clinical Nurse Specialist Apollo Speciality Hospitals, Trichy, Tamil Nadu, India
[2] Chief Nursing Officer Apollo Speciality Hospitals, Trichy, Tamil Nadu, India

Corresponding Author: Deepika Selvakumar

DOI: https://www.doi.org/10.33545/nursing.2025.v8.i2.F.574

Abstract

Background of the study: Critical care nurses play a pivotal role in improving the effectiveness of mechanical ventilation, preventing harm, and optimizing patient outcomes. The knowledge and skills of nurses regarding the care of a patient on a mechanical ventilator determines the patients' outcome. Clinical pathways (CPWs) are tools used to guide evidence-based healthcare.

Objective: The present study was aimed to assess the effectiveness of implementing nurse led clinical pathway on ventilator care.

Research methodology: Quantitative research approach, Quasi experimental research design – one group pretest posttest was adopted as research methodology. Structured knowledge questionnaire was prepared to assessment the knowledge and Competency check tool was made to check the skill of the nurses. 30 critical care nurses assigned with ventilator patients were selected for the study using convenient Sampling technique. Implementation of Nurse led clinical pathway on ventilator care was made to stressing importance of holistic care of ventilator patients.

Results: The study findings stated that before implementation of the Nurse led clinical pathway, pain assessment of patient (Behavioral rating scale), suctioning protocols, Use of communication sign board, management of clinical alarms, Eye care are the major areas of concern. After implementing the Nurse Led Clinical Pathway, there was 30% increase in mean knowledge status of the nurses and 25% increase in mean competency level of the nurses.

Conclusion: Implementing Clinical Pathways in a nursing environment involves developing evidence-based care plans, gaining approval from relevant stakeholders, training the nursing staff, and incorporating ongoing review. Though we have care bundles on place, this study helped us to assess, intervene and improve upon providing holistic care for the ventilator patients.

Keywords: Ventilator care, clinical pathway, nursing care

1. Introduction

Each year, an estimated 20 million people worldwide receive invasive mechanical ventilation. Epidemiological studies revealed that as high as 70% of patients admitted to the intensive care unit (ICU) require mechanical ventilation at some point during their stay in ICU. An international prospective cohort study of 15,757 patients admitted to the ICU found that 5183 (33%) were on mechanical ventilation for more than 12 h, with one third of them suffering from ARDS.

Critical care nurses play a pivotal role in improving the effectiveness of mechanical ventilation, preventing harm, and optimizing patient outcomes. The knowledge and skills of nurses regarding the care of a patient on a mechanical ventilator determines the patients' outcome. There are several other complications associated with the mechanically ventilated patients apart from VAP.

Clinical pathways (CPWs) are tools used to guide evidence-based healthcare. Their aim is to translate clinical practice guideline recommendations into clinical processes of care within the unique culture and environment of a healthcare institution. A CPW is a structured multidisciplinary care plan with the following characteristics: (1) it is used to translate guidelines or evidence into local structures; (2) it details the steps in a course of treatment or care in a plan, pathway, algorithm, guideline, protocol or other "inventory of actions"; and (3) it aims to standardize care for a specific clinical problem, procedure or episode of healthcare in a specific population.

Implementing Clinical Pathways in a nursing environment involves developing evidence-based care plans, gaining approval from relevant stakeholders, training the nursing staff, and incorporating ongoing review. Caring for a patient on mechanical ventilation requires teamwork, knowledge of care goals, and interventions based on best practices. Though we have care bundles on place, holistic care for the ventilator patients on nursing care aspects are still a concern.

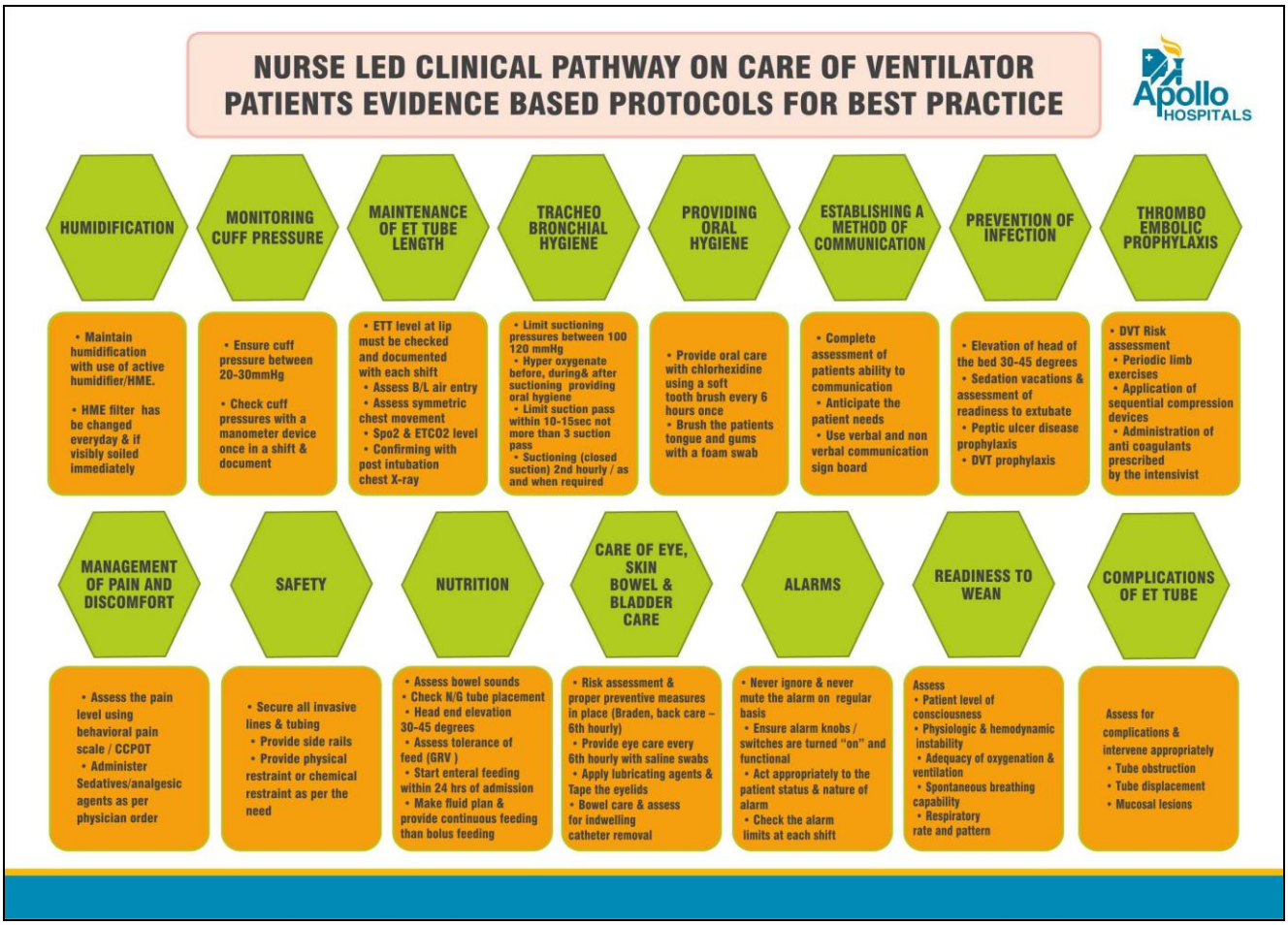
This study intended to provide a comprehensive nurse led clinical pathway comprises of evidence based nursing best practices for caring mechanically ventilated patients. The objective of this study is to assess the knowledge & competency level of the nurses on the nursing care of ventilator patients, to establish the nurse led clinical

pathway on nursing care of ventilator patients and to assess the knowledge and competency level of the nurses on the nursing care of ventilator patients after the nurse led clinical pathway. This study was limited to nurses assigned for ventilator patients in MICU and CTICU in day shift & General shift.

2. Materials and Methods

Approach of this study was Quantitative Research Approach. Quasi experimental– one group pretest posttest was adopted as research design. Dependent variable of the study was knowledge and competency of nurses. Independent variable of the study was Nurse led clinical pathway on ventilator care. Nurses assigned with ventilator patients were included as study participant using purpose sampling technique. Nurses assigned with critical ventilator patients which includes doctor's order of do not turn position, DNR, DNI patients, Patient on EVD (External ventricular drain), Patients with burns more than 20%, Nurses assigned during night shifts were excluded from the study. Data collection was carried out for the period of 3 months. Permission was obtained from the ethical committee, Apollo Speciality Hospitals, Trichy. 30 nurses who are assigned with ventilator patients who met the inclusion criteria was selected as study participants using purposive sampling technique. Demographic data were collected from the participants which includes Age, Gender, Emp. No, Work experience, Experience in Apollo, Area posted/ Experience in ICU. Knowledge questionnaire was used to assess the knowledge includes 20 questions related to the nursing care of ventilator patients (Monitoring vital parameters, suctioning, maintaining ET position, oral hygiene, communication, DVT prevention, Eye care, Cuff pressure, suction pressure, clinical alarm management, Tube feeding) using Microsoft forms. Competency check tool (CCT) was used to assess competency includes 15 components scoring 50 sub skill set parameters related to nursing care of ventilator patients. Pre and post competency assessment was carried out by the internal auditors. Nurse led clinical pathway on ventilator care was prepared based on evidenced based protocols and reviewed by panel of experts. Created pathway was brought to the nurse's knowledge through structured teaching program. Demonstration and return demonstration of components of Nurse Led Clinical Pathway was done by the educator. After 1 week of Structured Teaching Program, the knowledge and competency of the nurse was reassessed. Descriptive statistics (frequency & percentage, Mean) and inferential statistics was used to analyze the data. Knowledge level of the nurses were interpreted as adequate (76-100%), basic (51-75%) and minimal knowledge (<50%). Competency level of the nurses were interpreted as per benner's theory as Novice (1-10), Advanced beginner (11-20), Competent (21-30), proficient (31-40) and expert (41-50). The content validity of the tool was obtained from experts.

The clinical pathway on nursing care of ventilator patients which is derived from the evidence based protocols for best practices. It consists of 15 major components which includes Humidification, Monitoring cuff pressure, monitoring vital parameters, Maintenance of ET tube length and position, Tracheo-bronchial hygiene, providing oral hygiene, establishing a method of communication, Prevention of infection, Thrombo-embolic prophylaxis, Management of pain and discomfort, Safety, Nutrition, Skin and eye care, Management of clinical alarms, Readiness to wean, Anticipation and prevention of complications.



3. Results and Discussion

The major findings of the study were as follows

Among the 30 study participants, 3.3% had minimal knowledge, 43.4% had basic knowledge, 53.3% of the patients had adequate knowledge in pre-knowledge assessment before implementation of Clinical pathway on Ventilator care. The analysed report of knowledge assessment were depicted in the below figures

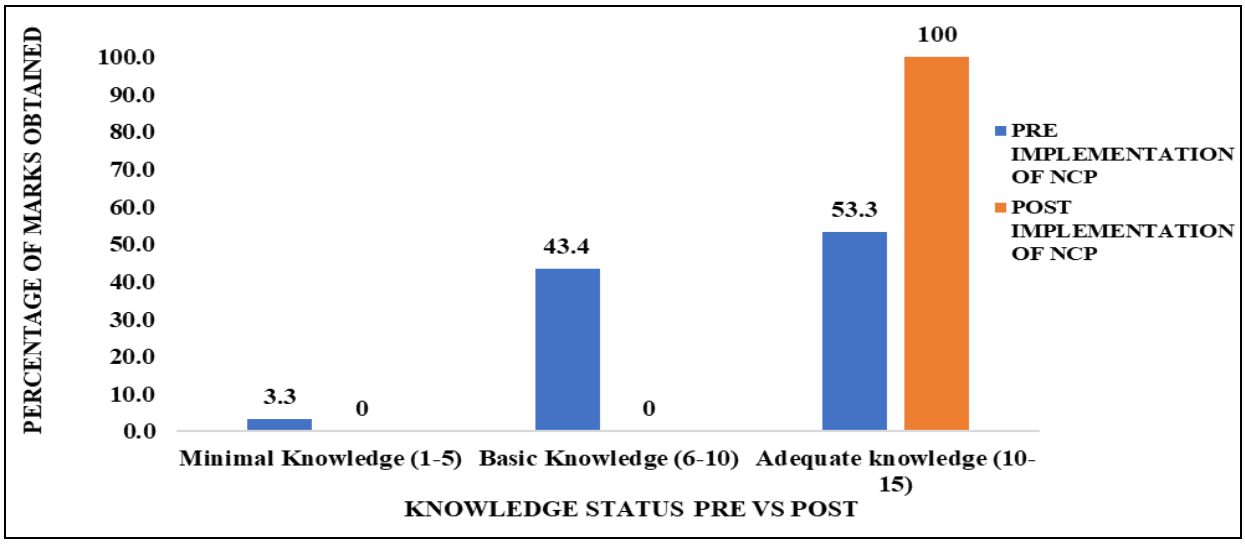


Fig 1: Effectiveness of Nurse Led Clinical Pathway on Knowledge Status of Nurses Assigned with Ventilator Patients

Fig 1 represents the effectiveness of nurse led clinical pathway on knowledge of nurses assigned with ventilator patients (in percentage) that 100% of study participants got adequate knowledge on ventilator care

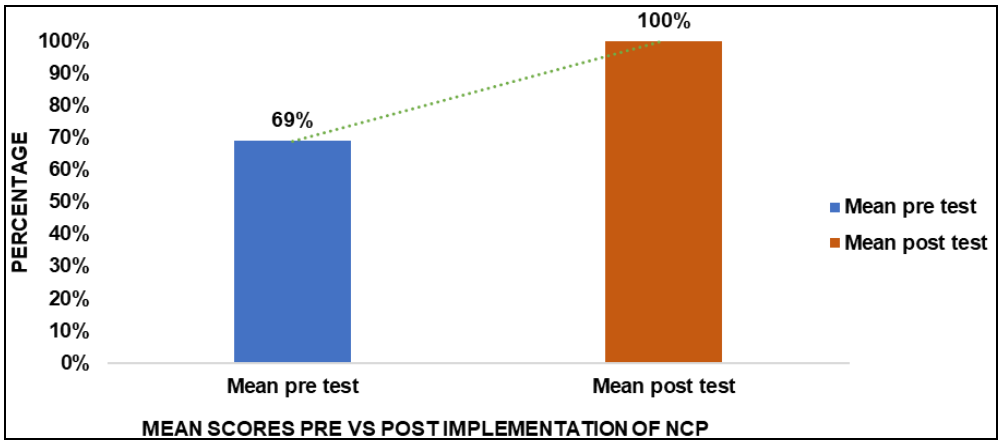


Fig 2: Mean Pre-Test Scores Vs Mean Post Test Scores

Figure 2 depicts the comparison of mean pretest scores with mean post test scores. The mean percentage of knowledge score before implementation of clinical pathway was 69% which was increased to 100% after implementation of clinical pathway.

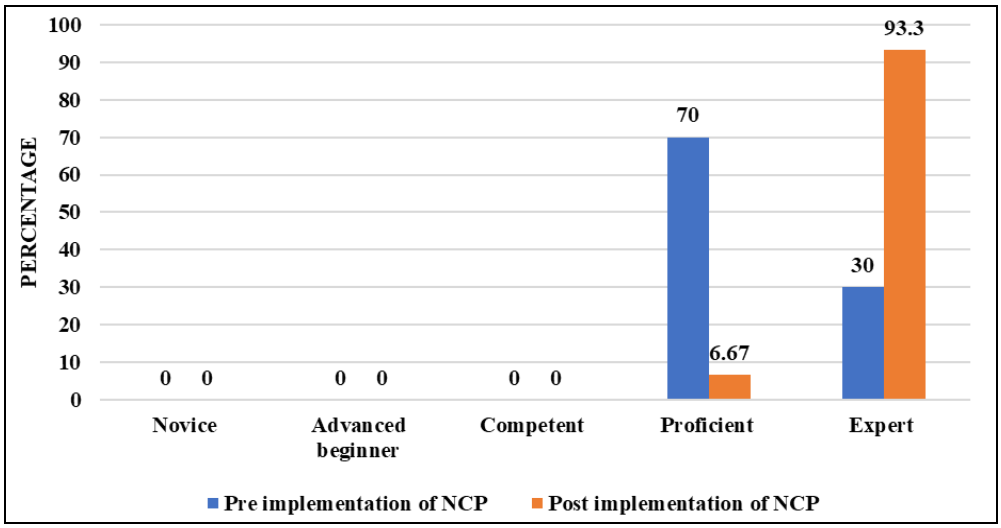


Fig 3: Effectiveness of NCP On Competency of Nurses Assigned with Ventilator Patients

Fig 3 represents the effectiveness of nursing clinical pathway on competency of nurses assigned with ventilator patients. Scoring of skill assessment were interpreted as per benner's theory of competency.

Among 30 study participants, 70% were proficient, 30% were expert. After implementation of the nurse led clinical pathway, 6.67% were proficient and 93.3% were expert.

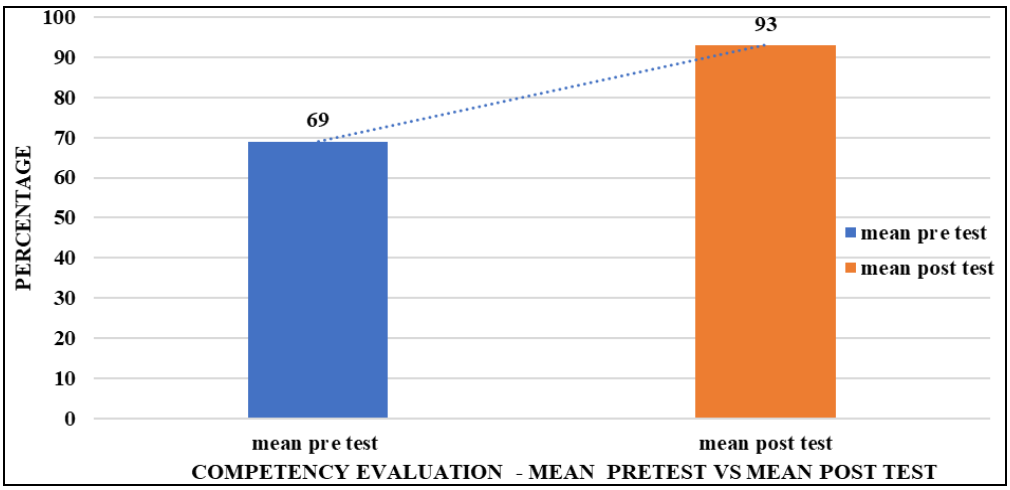


Fig 4: Effectiveness of Nurse Led Clinical Pathway on Competency of Nurses Assigned with Ventilator Patients

Fig 4 depicts the effectiveness of Nurse led clinical pathway on competency of nurses assigned with ventilator patients in terms of mean percentage. The mean percentage on competency of nurses on ventilator care before implementation of clinical pathway was 69% which was increased to 93% after implementation.

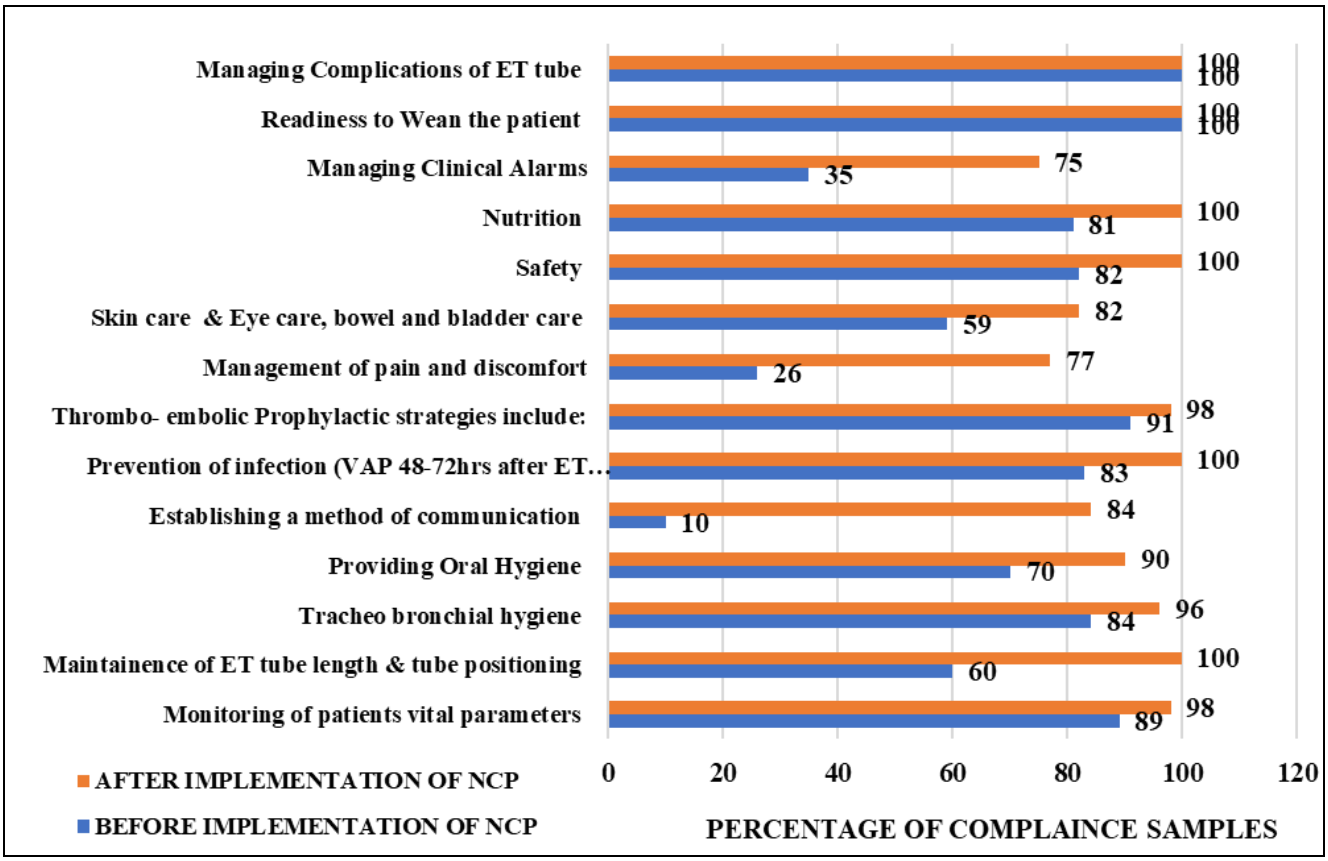


Fig 5: Effectiveness of Nurse Led Clinical Pathway on Competency of Nurses Assigned with Ventilator Patients

Fig 5 represents the effectiveness of nurse led clinical pathway on each skill set in competency assessment. The major areas of concerns were addressed and corrected. Establishing a method of communication which is use of communication sign board which was increased to 84% from 10%. Management of pain and discomfort increased from 26% to 77%. Managing clinical alarms from 35% to 75%. Maintaining ET length and tube positioning from 60% to 100%. Eye care, skin care from 59% to 82%

Table 1: Data Analysis of knowledge assessment Pre Vs Post implementation of Nurse – Led Clinical Pathway on Ventilator care

	Pre-Test	***Post Test***
Mean	10.33333333	15
Variance	4.91954023	0
Observations	30	30
P(T<=t) one-tail	0.00	
t Critical one-tail	1.70	
P(T<=t) two-tail	0.00	
t Critical two-tail	2.05	
alpha value	0.05	

*p<0.05 significant, p<0.01 – Highly significant

Table 1 implies that paired t test was used to assess the effectiveness of Nurse Led Clinical Pathway on the knowledge of nurses. P value found to be 0.00 implies highly significant (p<0.01), Thus the null hypothesis was rejected and proved that there is significant difference in implementing nurse led clinical pathway on the knowledge level of nurses.

Before implementation of the Nurse led clinical pathway, in competency analysis, pain assessment of patient (Behavioral rating scale), suctioning protocols, Use of communication sign board, management of clinical alarms, Eye care are the major areas of concern. After implementing the Nurse Led Clinical Pathway, there was 30% increase in mean knowledge status of the nurses, thus H_1 accepted and more than 20% increase in mean competency level of the nurses, thus H_2 is accepted. Implementing Clinical Pathways in a nursing environment involves developing evidence-based care plans, gaining approval from relevant stakeholders, training the nursing staff, and incorporating ongoing review. Caring for a patient on mechanical ventilation requires

teamwork, knowledge of care goals, and interventions based on best practices. Though we have care bundles on place, this study helped us to assess, intervene and improve upon providing holistic care for the ventilator patients.

4. Conclusion

We believe that what so ever research study we conduct should create a difference in clinical practice through translating the intervention at the bedside. Thus this clinical pathway helped us in translating the evidence based protocols for best practices in improving our nurses' knowledge and competency on holistic care while handling ventilator patients.

The present study has implications for nursing practice, nursing education, nursing administration and nursing research. The nurse working in the ICUs should be trained in evidence based protocols on ventilator care & Implementing this knowledge on their routine clinical practice. Organizing continuing nursing education for staff nurses will help to promote and update their knowledge on clinical pathways on ventilator care. Frequent audits can be done on care compliance to know the competency level of the nurses handling ventilator patients thereby preventing missed care. The nursing research intended to offer up to date suggestions in implementing the standard guidelines & evidences to practice in future. Nursing researchers can conduct further detailed studies with the same clinical pathway on patient outcomes like ALOS. An extensive experimental study can be conducted for larger number of samples in the health care settings.

References

1. Kübler A, Maciejewski D, Adamik B, Kaczorowska M. Mechanical ventilation in ICUs in Poland: a multi-center point-prevalence study. Med Sci Monitor: Int Med J Exp Clin Res. 2013;19:424–430.
2. Neto AS, Barbas CS, Simonis FD, Artigas-Raventós A, Canet J, Determann RM, *et al*. Epidemiological characteristics, practice of ventilation, and clinical outcome in patients at risk of acute respiratory distress syndrome in intensive care units from 16 countries (PRoVENT): an international, multicentre, prospective study. Lancet Respir Med. 2016;4(11):882–893.
3. Kacmarek RM. The mechanical ventilator: past, present, and future. Respir Care. 2011;56(8):1170–1180.
   Ku T, It E. Mechanical ventilation in the intensive care unit: a prospective study of indications and factors that affect outcome in a tertiary hospital in Nigeria. J Anesth Clin Res. 2017;8(4):1–6.
4. Dharmarajan. Assessment of knowledge regarding mechanical ventilation among staff nurses working in selected hospital, Mangalore with a view to develop an information pamphlet. Int J Recent Sci Res. 2013;4(3):1410–1413.
5. Dipali D. A study to assess the knowledge and compliance of critical care nurses regarding ventilator care bundle in prevention of ventilator associated pneumonia. Medico-Legal Update. 2019;19(1):1–5. Suhara Fathimath KA, George J, Tomas KJ, Chacko J, Varghese J, B. [Study on ventilator care practices]. 2019.
6. National Center for Biotechnology Information. Mechanical Ventilation. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 [cited 2025 Oct 25]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK546384/

How to Cite This Article
Selvakumar D, Viji L. A Study to assess the effectiveness of nurse led clinical pathway on the knowledge & competency of the nurses at Apollo specialty hospitals, Trichy. International Journal of Advance Research in Nursing. 2025; 7(2):432-437.