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# Effectiveness of Planned Teaching Programme on Knowledge and Practice Regarding Ventilator Bundle Care in Prevention of Ventilator Associated Pneumonia Among Nursing Officers at Selected Hospital, Bengaluru

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**Abstract:** ***Background: Ventilator-Associated Pneumonia (VAP) remains a significant challenge in intensive care units, contributing to morbidity, mortality, and healthcare costs. This study aimed to assess the effectiveness of a Planned Teaching Programme (PTP) on improving nursing officers' knowledge and practice regarding ventilator bundle care in preventing VAP. Methodology: A quasi-experimental one-group pre-test post-test design was adopted with 50 nursing officers selected through convenient sampling. Data were collected using structured questionnaires and observational checklists. Results: The mean pre-test knowledge score (14.40 ± 5.07) increased to (18.52 ± 5.75) in the post-test, and the mean practice score improved from (49.30 ± 13.93) to (59.92 ± 10.59). Statistical analysis showed a significant improvement (t=17.03 for knowledge; t=11.71 for practice, p<0.01). Conclusion: The PTP effectively enhanced both knowledge and practice levels among nursing officers. Keywords: Ventilator bundle care, ventilator-associated pneumonia, planned teaching programme, nursing officers, infection control.***

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## 1. Introduction

Mechanical ventilation is a vital life-support measure for critically ill patients in intensive care units (ICUs), yet it carries a significant risk of Ventilator-Associated Pneumonia (VAP) — a major cause of hospital-acquired infections, morbidity, and mortality. VAP can prolong hospital stays, increase healthcare costs, and adversely affect patient outcomes. Preventing VAP requires strict adherence to evidence-based nursing interventions known as the ventilator care bundle, which includes head-of-bed elevation, oral care with chlorhexidine, daily sedation breaks, peptic ulcer prophylaxis, and deep vein thrombosis prevention. Nursing officers play a pivotal role in implementing these interventions consistently. However, inadequate knowledge and poor adherence to standard guidelines often contribute to VAP occurrence. Hence, structured educational interventions are necessary to bridge the knowledge–practice gap. This study was undertaken to assess the effectiveness of a Planned Teaching Programme (PTP) in improving knowledge and practice of nursing officers regarding ventilator bundle care.

## 2. Methodology

A **quasi-experimental one-group pre-test post-test design** was adopted to evaluate the effectiveness of a Planned Teaching Programme (PTP) on knowledge and practice regarding ventilator bundle care in preventing Ventilator-Associated Pneumonia (VAP). The study was conducted among **50 nursing officers** working in selected hospitals at Bengaluru. Participants were selected using **non-probability convenience sampling**. Data were collected using a **structured knowledge questionnaire** and an **observational checklist** designed to assess pre- and post-intervention performance. The PTP focused on evidence-based ventilator care components, including head-of-bed elevation, oral hygiene, cuff pressure monitoring, and suctioning techniques. Following the intervention, post-test assessments were conducted using the same tools. Data were analyzed using **descriptive and inferential statistics**, including mean, standard deviation, paired *t*-test, and chi-square test, to determine the effectiveness of the PTP and its association with selected demographic variables. Ethical clearance and informed consent were obtained before data collection.

## 3. Results

The findings of the study revealed a significant improvement in the overall knowledge and practice of nursing officers following the implementation of the Planned Teaching Programme (PTP). The mean pre-test knowledge score was 14.40 ± 5.07, which increased to 18.52 ± 5.75 in the post-test, indicating a marked enhancement in conceptual understanding of ventilator bundle care components. Similarly, the mean practice score improved from 49.30 ± 13.93 to 59.92 ± 10.59, demonstrating a positive shift in the application of learned principles in clinical settings. The calculated t-values for knowledge (17.03) and practice (11.71) were both greater than the tabulated values at $p < 0.01$, confirming statistical significance. Graphical representations further supported this improvement trend, with post-test bars exceeding pre-test values for both domains. No significant association was found between post-test knowledge and most socio-demographic variables, except years of experience, which showed a positive correlation. These results validate the effectiveness of

structured teaching interventions in improving nursing competency and patient safety.

**Table 1:** Comparison of Knowledge Scores

| Test | Mean | SD |
|---|---|---|
| Pre-test | 14.40 | 5.07 |
| Post-test | 18.52 | 5.75 |

**Table 2:** Comparison of Practice Scores

| Test | Mean | SD |
|---|---|---|
| Pre-test | 49.3 | 13.93 |
| Post-test | 59.92 | 10.59 |

## 4. Discussion

The present study aimed to evaluate the effectiveness of a Planned Teaching Programme (PTP) on knowledge and practice regarding ventilator bundle care among nursing officers. The results revealed a statistically significant improvement in both knowledge and practice scores following the intervention, demonstrating that the structured educational approach effectively enhanced the participants' competence in preventing Ventilator-Associated Pneumonia (VAP). These findings are consistent with several previous studies conducted in India and abroad, which have shown that regular educational interventions and continuous training significantly reduce the incidence of VAP and improve compliance with evidence-based nursing protocols.

The improvement in knowledge from the pre-test to the post-test indicates that targeted teaching can address existing gaps in understanding of ventilator care components such as head-of-bed elevation, oral hygiene, cuff pressure maintenance, and subglottic suctioning. The corresponding improvement in practice scores emphasizes that increased awareness translates into better clinical performance when supported by supervision and reinforcement.

The lack of association between most demographic variables and post-test scores suggests that educational programmes are beneficial irrespective of age, gender, or educational qualification. However, the significant relationship between years of experience and knowledge gain highlights the role of professional exposure in facilitating better learning outcomes.

Overall, the study underscores the importance of ongoing in-service education, refresher workshops, and competency-based training to strengthen infection control practices among nursing personnel. Sustained educational efforts can contribute substantially to improved patient safety, reduced ICU morbidity, and enhanced quality of care in critical care settings.

## 5. Conclusion

The present study demonstrated that the Planned Teaching Programme (PTP) was highly effective in enhancing both knowledge and practice regarding ventilator bundle care among nursing officers. The significant improvement in post-test scores reflects the positive impact of structured education on clinical competence and adherence to infection-control practices. By implementing evidence-based ventilator care strategies—such as maintaining head-of-bed elevation, ensuring oral hygiene, and monitoring cuff pressure—nurses can play a crucial role in reducing the incidence of Ventilator-Associated Pneumonia (VAP). The study further highlighted that years of experience contributed to better learning outcomes, emphasizing the value of continual professional development. Regular educational interventions, reinforcement training, and evaluation of bedside practices are essential for sustaining these gains. Therefore, integrating structured teaching programmes within hospital training schedules can substantially improve patient safety and promote a culture of evidence-based nursing practice in critical care units.

## 6. Recommendations

1) Regular educational sessions for nursing staff on evidence-based ventilator care practices.
2) Periodic audits to monitor adherence to ventilator bundle protocols.
3) Development of institutional guidelines for VAP prevention.
4) Inclusion of ventilator bundle care training in nursing curriculum.
5) Further multicentric studies to evaluate long-term outcomes of such teaching interventions.

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