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THE EFFECT OF EVIDENCE-BASED NURSING PRACTICES ON PATIENT RECOVERY IN INTENSIVE CARE UNITS

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Abstract

Background: Evidence-based nursing practices have become integral to modern healthcare, particularly in intensive care units (ICUs), where critically ill patients require highly specialized care. These practices combine the best available research evidence with clinical expertise and patient values to improve outcomes. Despite their recognized importance, the specific impact of evidence-based nursing on patient recovery in ICUs warrants further investigation.

Methods: This quasi-experimental study involved 200 ICU patients divided into an intervention group (n = 100) receiving evidence-based nursing care and a control group (n = 100) receiving routine care. The intervention included standardized protocols for infection prevention, pain management, early mobilization, delirium prevention, and nutritional support. Data on ICU length of stay, infection rates, time to mobilization, and recovery status (measured by the Glasgow Outcome Scale) were collected and analyzed using descriptive and inferential statistics.

Results: The intervention group demonstrated significantly better outcomes compared to the control group. Key findings included a shorter ICU stay (>7 days: 18% vs. 37%), lower infection rates (e.g., ventilator-associated pneumonia: 4% vs. 12%), earlier mobilization (within 48 hours: 73% vs. 41%), and improved recovery status (good recovery: 68% vs. 47%). All differences were statistically significant ($p < 0.05$).

Conclusion: Evidence-based nursing practices significantly enhance patient recovery in ICUs by reducing complications, shortening hospital stays, and improving functional outcomes. These findings underscore the importance of integrating structured, evidence-based protocols into ICU nursing care to optimize patient outcomes and healthcare quality. Hospitals should prioritize training and support for nursing staff to sustain these benefits.

Background

Evidence-based nursing practice has emerged as a cornerstone in modern healthcare delivery, particularly in high-acuity settings such as intensive care units (ICUs). The increasing complexity of patient conditions in ICUs demands not only clinical expertise but also a foundation of scientifically validated practices that ensure optimal care. Evidence-based nursing integrates the best available research evidence with clinical expertise and patient values, thereby bridging the gap between research and practice to improve patient outcomes(Yu & Wu, 2024).

In ICUs, where patients often face life-threatening conditions, timely and accurate nursing interventions are critical. Traditional practices that rely solely on experience or outdated protocols may not meet the demands of modern critical care. The application of evidence-based nursing practices offers a structured approach to decision-making, ensuring that care is grounded in the most current and effective methods available. This approach enhances the consistency and quality of care, which is essential in the fast-paced, high-risk environment of the ICU(Xu et al., 2024).

The recovery process of patients in ICUs is multifaceted, involving the stabilization of physiological functions, prevention of complications, and support for physical and emotional healing. Nursing care plays a pivotal role in this process. From managing ventilators and administering medications to monitoring vital signs and preventing infections, nurses are on the frontline of patient recovery. The integration of evidence-based protocols in these nursing interventions can significantly influence the trajectory of patient recovery(Yi et al., 2024).

One key area of focus in evidence-based ICU nursing is the prevention of healthcare-associated infections, such as ventilator-associated pneumonia and catheter-associated urinary tract infections. These complications not only prolong hospital stays but also increase morbidity and mortality. Evidence-based guidelines for infection control—such as hand hygiene, sterile techniques, and early mobilization—are crucial in reducing these risks and promoting faster recovery(Liu et al., 2022).

Another vital component of evidence-based practice in ICUs is pain management. Pain and discomfort are common among critically ill patients, and inadequate pain control can hinder recovery. Through evidence-based assessments and interventions, nurses can better manage pain, reduce stress responses, and improve patient satisfaction. This, in turn, can facilitate faster weaning from mechanical ventilation, enhanced mobility, and improved psychological outcomes(Elhabashy et al., 2024).

Effective communication and patient-centered care are also central to evidence-based nursing in the ICU. Patients and their families often experience emotional distress due to the severity of illness and the unfamiliar environment. Evidence-based practices promote strategies such as structured family meetings, consistent information sharing, and the use of decision aids, which help align treatment goals with patient preferences and foster trust and cooperation(Connor et al., 2023).

Nutritional support, another domain influenced by evidence-based practice, is essential for recovery in critically ill patients. Malnutrition and inadequate caloric intake can impair wound healing, immune function, and overall strength. Nurses, guided by evidence-based protocols, work closely with dietitians to ensure appropriate nutritional interventions are implemented promptly and effectively(Ali et al., 2025).

Early mobilization of ICU patients, once considered controversial, is now widely supported by evidence as a safe and beneficial practice. It helps prevent muscle wasting, reduce the duration of

mechanical ventilation, and shorten ICU stays. Evidence-based nursing protocols that incorporate early mobility have shown significant improvements in patient outcomes and long-term recovery(Xu et al., 2024).

Delirium management is another challenge in ICUs that benefits from an evidence-based approach. Delirium is common among critically ill patients and can lead to long-term cognitive impairment. Nurses play a critical role in early detection and non-pharmacological interventions, such as orientation protocols and sleep hygiene, which are supported by evidence to reduce the incidence and severity of delirium(Danielis et al., 2022).

The implementation of evidence-based practices in ICUs often requires continuous education and support for nursing staff. Training programs, clinical guidelines, and decision support tools are essential to empower nurses with the knowledge and confidence to apply research findings in practice. Organizational commitment and a culture of inquiry are also key factors in sustaining evidence-based care(Ali et al., 2025).

Ultimately, the adoption of evidence-based nursing practices in intensive care units holds the potential to transform patient recovery. By standardizing high-quality interventions, reducing variability in care, and aligning treatment with the best available evidence, nurses can contribute significantly to improved patient outcomes, reduced complications, and enhanced quality of life post-ICU.

Methodology

Research Design

This study employed a quantitative, quasi-experimental design with a non-equivalent control group to assess the effect of evidence-based nursing practices on patient recovery in intensive care units (ICUs). The intervention group received care based on a structured set of evidence-based nursing protocols, while the control group received routine standard nursing care. This design was selected to allow for comparison between the two groups while considering the ethical and practical constraints of randomization in critical care settings.

Study Setting

The study was conducted in the adult intensive care units of two comparable tertiary care hospitals. Both hospitals had similar ICU structures, staffing patterns, and patient profiles, which ensured consistency across the two study groups.

Study Population and Sample Size

The study population included critically ill adult patients admitted to the ICU. A total sample of **200 patients** was included, with **100 patients in the intervention group** and **100 patients in the control group**. The sample size was calculated based on an effect size of 0.5, power of 0.8, and significance level of 0.05, using G*Power software. A consecutive sampling method was used to recruit patients over a three-month period.

Inclusion Criteria

Patients were eligible for inclusion if they:

- Were aged 18 years or older.
- Were admitted to the ICU for at least 48 hours.
- Wereconscious or had a responsible family member available to provide informed consent.
- Had no terminal illness or do-not-resuscitate (DNR) order.
- Were not transferred from another hospital’s ICU.

Exclusion Criteria

Patients were excluded if they:

- Were under 18 years old.
- Had an ICU stay shorter than 48 hours.
- Were brain-dead or had a documented DNR.
- Had psychiatric disorders that interfered with communication or assessment.
- Were readmitted to the ICU during the data collection period.

Intervention

The intervention group received nursing care based on standardized evidence-based protocols covering infection prevention (e.g., hand hygiene, catheter care), pain management, early mobility, delirium prevention, communication strategies, and nutritional support. These protocols were developed in accordance with current international guidelines and were implemented by trained ICU nurses who underwent a two-week training workshop prior to the study.

Data Collection Tools and Procedures

Data were collected using a structured data collection form that included demographic and clinical variables, length of ICU stay, incidence of complications (such as infections or delirium), pain levels (measured using the Visual Analog Scale), and time to mobilization. Recovery outcomes were assessed using standardized indicators: duration of ICU stay, time to first mobilization, incidence of ICU-acquired infections, and Glasgow Outcome Scale score at discharge.

Data for both groups were collected prospectively by a team of trained research nurses who were blinded to the group allocation to minimize bias. Data collection occurred over a three-month period.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Review Boards (IRBs) of the participating hospitals. Written informed consent was obtained from all patients or their legal representatives. Confidentiality and anonymity were maintained throughout the study, and all participants were assured of their right to withdraw at any time without any impact on their care.

Data Analysis

Data were analyzed using IBM SPSS Statistics Version 26. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the data. Independent t-tests and Chi-square tests were used to compare differences between the intervention and control groups. A p-value of less than 0.05 was considered statistically significant. Missing data were managed using listwise deletion.

Results

A total of 200 patients were included in this study, divided equally between the intervention group (n = 100), who received evidence-based nursing care, and the control group (n = 100), who received routine care. The demographic and clinical characteristics of both groups were similar at baseline. Key outcome variables—such as duration of ICU stay, incidence of ICU-acquired infections, time to first mobilization, and discharge recovery status—were analyzed and compared between the two groups.

Table 1: Demographic Characteristics of Participants (N = 200)

Characteristic	Intervention Group (n = 100)	Control Group (n = 100)	Total (N = 200)
Age (≥ 60 years)	42 (42.0%)	39 (39.0%)	81 (40.5%)
Age (< 60 years)	58 (58.0%)	61 (61.0%)	119 (59.5%)
Male	56 (56.0%)	59 (59.0%)	115 (57.5%)
Female	44 (44.0%)	41 (41.0%)	85 (42.5%)
Length of ICU Stay (> 7 days)	18 (18.0%)	37 (37.0%)	55 (27.5%)
Length of ICU Stay (≤ 7 days)	82 (82.0%)	63 (63.0%)	145 (72.5%)

The age and gender distributions were relatively balanced across the two groups. Notably, only 18% of patients in the intervention group had ICU stays longer than 7 days compared to 37% in the control group. This suggests a potential positive effect of evidence-based nursing practices on reducing ICU length of stay.

Table 2: Incidence of ICU-Acquired Infections (N = 200)

Type of Infection	Intervention Group (n = 100)	Control Group (n = 100)	Total (N = 200)
No Infection	89 (89.0%)	68 (68.0%)	157 (78.5%)
Ventilator-Associated Pneumonia	4 (4.0%)	12 (12.0%)	16 (8.0%)
Catheter-Associated UTI	3 (3.0%)	10 (10.0%)	13 (6.5%)
Central Line-Associated BSI	4 (4.0%)	10 (10.0%)	14 (7.0%)

Infection rates were significantly lower in the intervention group. For example, ventilator-associated pneumonia occurred in only 4% of the intervention group compared to 12% in the control group. Similarly, catheter-associated urinary tract infections and central line-associated bloodstream infections were also lower. This suggests that evidence-based infection prevention protocols were effective in minimizing ICU-acquired infections.

Table 3: Time to First Mobilization (N = 200)

Time to First Mobilization	Intervention Group (n = 100)	Control Group (n = 100)	Total (N = 200)
Within 48 hours	73 (73.0%)	41 (41.0%)	114 (57.0%)
After 48 hours	27 (27.0%)	59 (59.0%)	86 (43.0%)

Early mobilization was significantly more common in the intervention group, with 73% of patients mobilized within 48 hours compared to only 41% in the control group. Early mobilization is associated with improved recovery outcomes, indicating a beneficial impact of evidence-based practices in this area.

Table 4: Discharge Recovery Status (Glasgow Outcome Scale) (N = 200)

Recovery Outcome	Intervention Group (n = 100)	Control Group (n = 100)	Total (N = 200)
Good Recovery (Score 5)	68 (68.0%)	47 (47.0%)	115 (57.5%)
Moderate Disability (4)	18 (18.0%)	30 (30.0%)	48 (24.0%)
Severe Disability (3)	8 (8.0%)	14 (14.0%)	22 (11.0%)
Vegetative State (2)	4 (4.0%)	6 (6.0%)	10 (5.0%)
Death (1)	2 (2.0%)	3 (3.0%)	5 (2.5%)

A higher proportion of patients in the intervention group (68%) achieved a good recovery score compared to the control group (47%). Additionally, the percentage of patients with moderate or severe disability was lower in the intervention group. Mortality was slightly lower in the intervention group (2%) than in the control group (3%). These findings reinforce the overall effectiveness of evidence-based nursing care in improving functional recovery and reducing complications at discharge.

Discussion

The present study aimed to evaluate the effect of implementing evidence-based nursing practices on patient recovery in intensive care units. The results revealed significant improvements in key recovery indicators such as reduced ICU stay, lower infection rates, earlier mobilization, and better discharge outcomes among patients who received evidence-based nursing care compared to those who received routine care. These findings support the growing body of literature emphasizing the efficacy of structured, evidence-informed nursing interventions in critical care settings.

One of the most notable outcomes was the marked reduction in ICU length of stay among the intervention group. Only 18% of patients in this group stayed longer than 7 days compared to 37% in the control group. This aligns with findings from Liu et al. (2022), who emphasized that structured evidence-based bundles like the ABCDEF protocol contribute to reducing ICU complications and hospital days, especially among septic patients, thereby enhancing overall outcomes.

The study also found that ICU-acquired infections—including ventilator-associated pneumonia, catheter-associated urinary tract infections, and bloodstream infections—were significantly lower in the intervention group. This reflects previous evidence from Xu et al. (2024), whose systematic review concluded that evidence-based prevention strategies, including early rehabilitation and airway management, significantly reduce complications in ICU patients. Our study reinforces the necessity of incorporating evidence-based infection control measures into standard ICU nursing routines.

Moreover, 73% of patients in the intervention group were mobilized within 48 hours, compared to just 41% in the control group. Early mobilization is a well-documented element of evidence-based ICU care, preventing ICU-acquired weakness and promoting faster recovery. Qin Xu et al. (2024) demonstrated that early rehabilitation, particularly as part of a multidisciplinary approach, was effective in decreasing the incidence of functional decline and delirium in ICU patients.

Pain management and delirium prevention—though not quantified independently in our study—were also embedded in the evidence-based care protocols used. These components are critical, as supported by Yi et al. (2024), who showed that cluster nursing interventions, when evidence-based, can significantly reduce patient anxiety and complications from intubation and extubation, further contributing to a smoother recovery process.

In terms of recovery quality, patients in the intervention group had better discharge outcomes as measured by the Glasgow Outcome Scale. Specifically, 68% achieved a "good recovery" compared to 47% in the control group. This finding echoes Honglan Yu and Liming Wu (2024), who reported improved Barthel Index scores and psychological status among ICU patients who received evidence-based nursing, suggesting faster functional recovery and better quality of life.

Evidence-based practice does not only influence clinical outcomes but also enhances treatment adherence. Although not directly assessed in this study, high-quality nursing practices have been shown to increase patient compliance. Yu and Wu (2024) found significantly higher treatment compliance rates among patients managed with evidence-based nursing interventions, highlighting the trust and clarity that structured care brings to both patients and families.

An essential part of the intervention success is the competency of nurses. As noted by Elhabashy et al. (2024), nurses trained in evidence-based protocols demonstrated significantly higher competency in managing mechanically ventilated patients. The current study indirectly supports this by showing better outcomes in the intervention group, where trained staff delivered standardized, evidence-aligned care.

Another strength of evidence-based nursing lies in its psychological impact. ICU patients often suffer from stress, anxiety, or post-intensive care syndrome. Yi et al. (2024) found a decrease in anxiety and depression in patients receiving structured cluster care. Our findings may reflect a similar benefit, as seen in the lower incidence of complications and earlier mobilization—both associated with improved emotional wellbeing.

Pressure injury prevention, another essential ICU metric, was not directly assessed in this study but remains a relevant point. Xu et al. (2024) reported a significantly reduced incidence of pressure ulcers with evidence-based care, indicating that such protocols improve both patient safety and satisfaction. Future research can incorporate this element to further validate comprehensive nursing impact.

The liberation bundle—a modern component of ICU care—has been shown to improve outcomes in pediatric ICU settings. A study by Reem Ali et al. (2025) demonstrated enhanced nurse performance and patient recovery following education on the liberation bundle. Although our study focused on adult ICUs, the principles of standardizing care through education and protocol-driven interventions remain universally applicable.

From an economic standpoint, Connor et al. (2023) highlighted the return on investment of evidence-based practice across acute care settings. While this study did not measure cost, the reduction in ICU stay and complications strongly suggests a favorable economic impact. Lower resource use, improved patient turnover, and fewer readmissions are likely consequences of improved nursing care quality.

Despite the robust outcomes, it is important to recognize the complexity of implementing evidence-based practices. As noted in the rapid review by Danielis et al. (2021), factors such as staffing, education, institutional support, and nurse autonomy all influence the efficacy of such interventions. Our study assumed standardized implementation, but real-world adaptation may require addressing organizational and structural barriers.

The sustainability of outcomes from evidence-based interventions also merits attention. Elhabashy et al. (2024) observed a decline in nurse competency over time without continued reinforcement. This underlines the importance of ongoing training, mentorship, and institutional culture that supports continual evidence application to maintain improvements.
Lastly, while the results of this study are promising, limitations include the short-term scope of outcome measurement and the exclusion of long-term post-discharge recovery data. As Liu et al. (2022) suggested, monitoring patients' physical, cognitive, and mental health for months after discharge is essential to fully assess the effect of ICU-based interventions.

Conclusion

In conclusion, this study demonstrates that evidence-based nursing practices significantly improve patient outcomes in intensive care units by reducing length of stay, lowering complication rates, promoting earlier mobilization, and enhancing recovery at discharge. The findings strongly support the integration of structured, evidence-informed care models in ICU settings as a means to enhance both clinical quality and patient experience. To ensure long-term success, hospitals should invest in training, support systems, and ongoing evaluation mechanisms that reinforce evidence-based care as a sustainable standard in critical care nursing.

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