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ASSOCIATION BETWEEN NURSES' KNOWLEDGE AND PRACTICE OF EARLY AMBULATION IN POSTOPERATIVE CARE: A CROSS-SECTIONAL STUDY

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Abstract

Background: *Early ambulation is an essential component of postoperative nursing care that promotes functional recovery and may reduce complications associated with prolonged immobility. Nurses' knowledge can potentially influence their ability to implement appropriate ambulation practices; however, the relationship between knowledge and practice may vary across clinical settings.*

Objective: *To determine the association between nurses' knowledge and practice of early ambulation in postoperative care.*

Methodology: *A quantitative, cross-sectional study was conducted among 91 nurses working in surgical wards, general wards, intensive care units, and other clinical areas. Data were collected using a structured questionnaire assessing participants' demographic characteristics, knowledge, and practice regarding postoperative early ambulation. Data were analyzed using IBM SPSS Statistics. Descriptive statistics were used to summarize the study variables, while Pearson's correlation coefficient was applied to determine the association between knowledge and practice. Statistical significance was considered at $p < 0.05$.*

Results: *Of the 91 nurses, 47.3% were aged 30–39 years, 90.1% were female, and 56.0% held a nursing diploma. Nearly two-fifths (39.6%) had more than 10 years of professional experience, while 61.5% had not received formal training related to early ambulation. Almost half (49.5%) worked in surgical wards. Nurses demonstrated generally favorable early-ambulation practices. Pearson's correlation showed a weak positive association between knowledge and practice ($r = 0.140$), which was not statistically significant ($p = 0.184$).*

Conclusion

Nurses demonstrated generally favorable practices regarding postoperative early ambulation. Although knowledge showed a positive tendency toward better practice, the association was weak and statistically non-significant. These findings suggest that factors beyond knowledge, including clinical experience, institutional protocols, supervision, staffing, and available resources, may influence early-ambulation practices. Targeted training combined with supportive organizational strategies may further strengthen postoperative mobilization practices.

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INTRODUCTION

This study will emphasize early ambulation as a key component of the work performed by postoperative nurses. It refers to the process of getting up and beginning to move as soon as possible following surgery. Prolonged inactivity may result in muscle loss, blood clots, hospital-acquired pneumonia, delayed gastric emptying, and functional decline. Early mobilization has emerged as a key element of enhanced recovery strategies aimed at improving function and lowering preventable morbidity after surgery (Castelino et al., 2016). Research on abdominal and thoracic surgery indicates that early-mobilization interventions can influence postoperative patient recovery, although the size of this effect appears to differ according to the population and the type of intervention. Enhanced recovery after surgery (ERAS) programs aim to minimize unnecessary immobility and encourage patients to resume normal levels of physical activity as soon as they can (Gustafsson et al., 2019). Early mobilization has been associated with better recovery outcomes following major surgeries, including shorter hospital stays for certain groups of patients (Wainwright et al., 2020). More recent research indicates that early mobilization included in ERAS bundles may lower the risk of postoperative complications and support recovery after emergency abdominal surgery, though the certainty of these findings was low (Torfadóttir et al., 2026).

Nurses play a central role in carrying out early-ambulation recommendations, as they frequently assess whether the patient is ready to mobilize, assist during the procedure, monitor vital signs, and encourage patient involvement. Consequently, it is essential that they possess a thorough understanding of the rationale for early ambulation, its contraindications, timing, safety precautions, and monitoring during mobilization. Research involving intensive care unit (Castelino et al.) nurses has demonstrated that although they may understand the benefits of early mobilization well, they may still lack crucial knowledge regarding patient selection and monitoring (Wang, Xiao, Zhang, Jia, & Shi, 2020). A further multicenter study revealed considerable variation between individuals in nurses' knowledge and perceptions of early mobilization (Zhang et al., 2022).

Few studies have explored the relationship between knowledge about early mobilization and actual practice. Zhang et al. (2023) reported a strong positive association between knowledge and early mobilization practice, whereas Sui et al. (2024) found that higher levels of knowledge were linked to improved practice at certain levels of practice. Greater knowledge does not, however, ensure better practice, as workload, insufficient staffing, inadequate equipment, the absence of standardized protocols, and a lack of training can all impede nurses' efforts to implement early mobilization (Sui, Gong, & Zhuang, 2024). In Iran, a recent study pinpointed knowledge gaps and patient-related barriers as factors contributing to difficulties in implementing early mobilization (Zare, Alizadeh, Heidarinejad, Heravi, & Razban, 2026).

Even though the importance of early ambulation is increasingly acknowledged, few studies have examined the relationship between nurses' knowledge and their actual practice in local settings. The aim of this study was to investigate the relationship between nurses' knowledge and their practice of early ambulation among postoperative patients.

Literature Review

Early ambulation has been increasingly integrated into postoperative recovery pathways, since immobility can delay functional recovery and contribute to postoperative complications. A randomized trial of patients undergoing major abdominal cancer surgery found that a structured early mobilization program improved the ability to walk independently by postoperative day 5 or at discharge compared with standard rehabilitation (Awasthi et al., 2019). Likewise, bed-based exercises after major abdominal surgery were shown to promote earlier ambulation and mobilization and to affect postoperative pain and anxiety, underscoring the value of progressive activity before independent walking (Simsek Yaban et al., 2024).

The evidence, however, does not consistently show that early mobilization by itself improves every postoperative outcome. A systematic review of gastrointestinal surgery covering 15 studies and 3,538 patients found that early mobilization sped up

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gastrointestinal recovery, yet in randomized trials it did not significantly lower morbidity, raise postoperative step counts, or shorten hospital stay (Willner, Teske, Hackert, & Welsch, 2023). A randomized controlled trial after pancreatic surgery likewise reported earlier ambulation, longer walking distances, and earlier bowel recovery, though it did not demonstrate a significant reduction in overall postoperative complications (Li et al., 2024). These findings indicate that the effectiveness of ambulation may hinge on the timing, intensity, patient condition, and consistency of implementation.

Nurses play a particularly crucial role in translating mobilization recommendations into bedside practice. A multicenter study of 296 ICU nurses found generally favorable knowledge, attitudes, and self-reported practices, with higher knowledge and attitude scores linked to better practice at lower and median practice levels; however, knowledge was not associated with practice among nurses with the highest practice scores (Sui et al., 2024). Another multicenter survey of nurses from eight hospitals revealed persistent variation between recommended and actual early-mobilization practices, suggesting that knowledge alone may not ensure consistent implementation (Wang et al., 2020).

Educational interventions may help close this knowledge practice gap. A quality-improvement project among surgical nurses reported gains in knowledge after a focused educational intervention on postoperative ambulation and complication prevention (Carides, 2021). Recent research among surgical-ward nurses and postoperative patients further revealed substantial gaps between the perceived importance and the actual performance of early-ambulation activities, especially pre-ambulation assessment and preparatory exercises (Park & Jeong, 2026). Instrument-development research has also highlighted the need for reliable methods to assess nurses' knowledge of early mobilization in postoperative patients (Jaata, Syam, Irwan, & Syahrul, 2021). Taken together, the literature supports the clinical importance of early ambulation while suggesting that nurses' knowledge, clinical decision-making, education, and organizational conditions may shape its implementation. Thus, examining the relationship between nurses' knowledge and actual practice remains important for identifying gaps in education and clinical practice.

Methodology

A quantitative, cross-sectional study design was employed to evaluate nurses' knowledge and practice concerning early ambulation in postoperative care. The study involved 91 registered nurses employed in surgical wards, general wards, intensive care units, and other pertinent clinical areas. Participants were selected through a non-probability sampling method in accordance with the predefined eligibility criteria. Data were gathered using a structured questionnaire that included items assessing nurses' demographic and professional characteristics, knowledge, and practices related to postoperative early ambulation. Ethical approval and institutional permission were secured prior to data collection, and informed consent was obtained from all participants.

Data were entered and analyzed using IBM SPSS Statistics. Descriptive statistics, such as frequencies, percentages, means, and standard deviations where applicable, were used to summarize participant characteristics along with knowledge and practice scores. Pearson's correlation coefficient was used to assess the association between nurses' knowledge and practice scores, as the variables satisfied the assumptions required for parametric correlation analysis. Statistical significance was set at p; 0.05, with a 95% confidence level.

Results:

Among the 91 participating nurses, the largest proportion were aged 30-39 years (47.3%), followed by those aged 20-29 years (38.5%). The majority were female (90.1%). Regarding education, more than half held a nursing diploma (56.0%), while 40.7% had a BSN degree. In terms of professional experience, 39.6% had more than 10 years of experience, followed by 29.7% with 1-5 years. Most nurses (61.5%) had not received formal training related to early ambulation. Nearly half (49.5%) worked primarily in surgical wards, while 23.1% worked in general wards and 14.3% in ICUs.

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Table 1. Sociodemographic and Professional Characteristics of Nurses (N = 91)

Characteristic	Category	n	%
Age (years)	20-29	35	38.5
	30-39	43	47.3
	40-49	13	14.3
Gender	Male	9	9.9
	Female	82	90.1
Education	Diploma	51	56.0
	BSN	37	40.7
	MSN	2	2.2
	Other	1	1.1
Professional experience	<1 year	5	5.5
	1-5 years	27	29.7
	6-10 years	23	25.3
	>10 years	36	39.6
Formal training received	Yes	35	38.5
	No	56	61.5
Primary area of work	Surgical wards	45	49.5
	General wards	21	23.1
	ICU	13	14.3
	Other	12	13.2

Inferential Statistics:

Pearson's correlation analysis showed a **weak positive relationship** between nurses' knowledge and practice of early ambulation (**r = 0.140, p = 0.184, n = 91**). Although the association was not statistically significant, the positive direction of the correlation suggests that better knowledge tended to be accompanied by better practice. Overall, the findings indicate that nurses demonstrated **generally favorable practice of early ambulation**, while the non-significant association suggests that factors other than knowledge may also influence clinical practice.

Table 2. Correlation

		Knowledge	Practice
Knowledge	Pearson Correlation	1	.140
	Sig. (2-tailed)		.184
	N	91	91
Practice	Pearson Correlation	.140	1
	Sig. (2-tailed)	.184	
	N	91	91

Discussion

The present study examined the association between nurses' knowledge and practice of early ambulation in postoperative care among 91 nurses. The findings demonstrated a **weak positive correlation** between

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knowledge and practice (**r = 0.140**); however, the relationship was **not statistically significant (p = 0.184)**. Thus, although nurses with higher knowledge tended to report slightly better early-ambulation practices, knowledge alone did not appear to be a significant determinant of practice in the present sample. Importantly, the overall practice findings were favorable, suggesting that nurses were generally applying early-ambulation practices in postoperative care despite the absence of a statistically significant knowledge practice relationship.

The favorable practice observed in the present study is consistent with findings from a study of postoperative nurses in Ghana, in which **97.0% of nurses reported encouraging early ambulation/exercise with analgesia** as part of postoperative pain management (Alhassoon, Alharazi, & Almutary, 2026). This supports the possibility that nurses may routinely incorporate ambulation into postoperative care even when their knowledge scores do not strongly predict practice. Similarly, Zhang et al. reported significant positive relationships between nurses' knowledge and early-mobilization practice, although their participants demonstrated only moderate practice levels and specific gaps in out-of-bed mobilization and implementation indicators (Zhang et al., 2022). These findings partially align with the direction of the current correlation because both studies suggest that knowledge and practice tend to move in the same positive direction, although the strength and statistical significance differed.

Conversely, the present finding differs from research demonstrating a significant knowledge–practice relationship. A recent study among ICU nurses in southeastern Iran found moderate knowledge and moderate self-perceived early-mobilization practice, with **higher knowledge significantly associated with better practice (Zare et al., 2026)**. Likewise, Alhassoon et al. reported adequate knowledge and good practice concerning immobility-complication prevention among nurses and identified a significant positive correlation between knowledge and practice; importantly, previous training was associated with better knowledge (Alhassoon et al., 2026). The difference may be attributable to variations in clinical setting, educational preparation, training exposure, institutional protocols, patient acuity, and the instruments used to measure knowledge and practice.

The absence of statistical significance in the current study should therefore not be interpreted as evidence that knowledge is unimportant. Early ambulation is a **multifactorial clinical practice**, and nurses may develop practical competence through routine clinical experience, institutional expectations, teamwork, supervision, and established postoperative routines. This interpretation is supported by evidence showing that organizational and patient-related factors including staffing, workload, available equipment, coordination, medical instability, sedation, and safety concerns can substantially influence nurses' ability to mobilize patients (Popoola, Dingle, MacLaren, & Dyson, 2022). A multicenter survey also identified insufficient equipment and staffing, inadequate training, lack of evaluation standards, and concerns regarding patient safety as important barriers to early mobilization (Koo et al., 2016).

The present findings are particularly relevant because **61.5% of the nurses in this study had not received formal training**, yet overall practice was considered favorable. This may indicate that practical experience and routine postoperative nursing responsibilities compensate, at least partially, for gaps in formal training. Nevertheless, recent evidence suggests that training remains important for strengthening specific aspects of early ambulation. A 2026 study among surgical-ward nurses found a consistent gap between the perceived importance and actual performance of early-ambulation activities, particularly in pre-ambulation assessment, muscle-strength and range-of-motion assessment, and preparatory exercises (Park & Jeong, 2026). Therefore, even when overall practice appears satisfactory, targeted education may improve the consistency and safety of individual components of early ambulation.

Another possible explanation for the weak correlation is that **knowledge and practice were measured cross-sectionally and practice may be influenced by factors beyond individual knowledge**. A qualitative study of cardiac-surgery nurses found high recognition of the importance of early mobilization but relatively low participation, with barriers involving limited knowledge, willingness,

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collaboration, protocols, and multidisciplinary role clarity (Mary, Afzal, Sehar, & Gilani, 2018). This reinforces the concept that knowing what should be done does not necessarily guarantee that the behavior will consistently occur in clinical practice.

Overall, the study demonstrates that nurses' early-ambulation practice was **generally favorable**, but the relationship between knowledge and practice was weak and statistically non-significant. The findings suggest that improving knowledge alone may not be sufficient to substantially change practice. Hospitals should therefore complement educational interventions with **clear early-ambulation protocols, adequate staffing and equipment, supportive supervision, interdisciplinary collaboration, and regular competency-based training.** Future longitudinal or interventional studies could determine whether structured educational and organizational interventions produce measurable improvements in nurses' early-ambulation practice.

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