Post-Delivery Pain Management: Assessing Nurses' Knowledge of Nonpharmacological Approaches

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ABSTRACT

Background: Effective post-delivery pain management is critical for maternal well-being. Pharmacological methods, while common, pose risks that make nonpharmacological approaches—such as massage, relaxation techniques, and heat therapy—safer alternatives. This study aimed to assess nurses' knowledge of nonpharmacological pain relief methods and identify factors influencing this knowledge.

Methods: A quantitative, descriptive cross-sectional study was conducted from November 2024 to April 2025 in three maternity hospitals in Mosul, Iraq. Using convenience sampling, 110 nurses working in maternity-related units completed a validated questionnaire assessing demographics, work-related factors, and knowledge of nonpharmacological pain relief. Data were analyzed with SPSS v.28 using descriptive statistics and logistic regression.

Results: Only 30% of nurses correctly defined nonpharmacological pain relief. Knowledge gaps were evident, with only 31.8% recognizing physical methods and 16.4% understanding the physiological basis. Logistic regression showed that nurses with a Master's degree (OR=2.1, p=0.012), in-service training (OR=3.5, p=0.001), and more than 10 years of experience (OR=1.4, p=0.008) had significantly higher odds of adequate knowledge. Over half (54.5%) reported availability of guidelines, though 45.5% lacked access. Most nurses worked 12-hour shifts (54.5%), which might affect implementation capacity.

Conclusion: Nurses' knowledge of nonpharmacological pain relief is suboptimal, highlighting gaps in training and institutional support. Targeted training, guideline dissemination, and policy support are urgently needed to improve postpartum care through safe and effective nonpharmacological pain management.

Keywords: Nonpharmacological pain management, Nurses' knowledge, Post-delivery care, Maternal health.

INTRODUCTION

Pain management is a vital component of post-delivery care, significantly impacting maternal well-being. New mothers often experience intense postpartum pain, which may affect recovery and satisfaction with childbirth. While pharmacological methods are widely used, they carry risks and potential side effects. Nonpharmacological pain management strategies—including massage, breathing techniques, hydrotherapy, relaxation exercises, and thermal therapies—offer safe, cost-effective alternatives that enhance maternal comfort and recovery (Masroor et al., 2024; Getu et al., 2020). The success of these techniques largely depends on nurses' knowledge and attitudes, influencing their ability to effectively support mothers.

Significance of Nonpharmacological Pain Management

Childbirth is a challenging physiological event involving both physical and emotional dimensions, making pain management essential for positive maternal outcomes. Inadequately managed postpartum pain can

prolong recovery, impair maternal-infant bonding, and reduce satisfaction (Thorgaard-Rasmussen et al., 2024). Nonpharmacological methods minimize drug-related side effects and promote active maternal participation and self-efficacy (Mwakawanga et al., 2024). These approaches address the psychological and social aspects of pain, supporting holistic care (Getu et al., 2020; Pilewska-Kozak et al., 2024).

Such methods are especially valuable in low-resource settings where access to pharmacological options is limited, reducing pain intensity and postpartum depression risk while improving satisfaction (Boateng et al., 2019; Nori et al., 2023). Despite these benefits, many healthcare facilities depend mainly on pharmacological methods due to institutional inertia, traditional practice, and gaps in nurses' training and knowledge (Faisal et al., 2014; Coates et al., 2020).

Review of Relevant Literature

Numerous studies support the efficacy of nonpharmacological approaches in reducing post-delivery pain. Structured breathing, heat/cold therapy, and massage have demonstrated significant improvements in pain and patient satisfaction (Chang et al., 2022; Thornton et al., 2020). Cognitive-behavioral techniques and relaxation strategies reduce pain intensity and anxiety, improving psychological outcomes (Van der Gucht & Lewis, 2015; Kamal Abd Elkhalek et al., 2021).

Integrative reviews report that these approaches complement pharmacological methods, reducing analgesic doses and side effects (Biana et al., 2021; Saskia Spaich et al., 2013). Women using nonpharmacological options report greater satisfaction and empowerment during birth (O'Reilly & Parker, 2013; Connelly, 2016). Nurses and midwives play a pivotal role in successful implementation, requiring sufficient knowledge and confidence (Korstjens & Moser, 2018; Noble & Smith, 2015).

Nevertheless, knowledge and skill deficiencies prevail. Many nurses report minimal exposure during formal education or practice, citing lack of institutional protocols and professional development as major barriers (Jones et al., 2012; Brailey et al., 2017). Attitudes shaped by personal beliefs and institutional culture further limit nonpharmacological use (Smith et al., 2018; Sharpe & Arendt, 2017).

Identification of Knowledge Gaps

Inadequate knowledge among nurses stems from multiple factors, including absence of structured training emphasizing nonpharmacological methods, leading to overreliance on medications despite risks (Shetty et al., 2014; Kumar et al., 2014). Lack of comprehensive pain management protocols in maternity units exacerbates this issue (Ismail, 2013; Chang et al., 2022). Limited clinical exposure, heavy workloads, and undervaluation of these methods in organizational culture further widen knowledge gaps (Van der Gucht & Lewis, 2015; Kamal Abd Elkhalek et al., 2021).

Nursing education often relegates nonpharmacological techniques to theoretical overviews without clinical practice, leaving nurses underprepared for real-world application (Biana et al., 2021; Saskia Spaich et al., 2013). Thus, evaluating knowledge levels and factors impeding practical application is essential.

Factors Influencing Nurses' Knowledge and Implementation

Effectiveness of nonpharmacological pain management depends on nurse characteristics and institutional factors. Age, clinical experience, and education level correlate positively with adoption (O'Reilly & Parker, 2013; Connelly, 2016). Personal beliefs and prior exposure to successful interventions influence willingness to apply these methods (Korstjens & Moser, 2018; Noble & Smith, 2015).

Organizational support, including clear evidence-based clinical guidelines, empowers nurses by providing structured frameworks (Jones et al., 2012; Brailey et al., 2017). Supportive work environments encouraging ongoing development and mentorship enhance competence (Smith et al., 2018; Sharpe & Arendt, 2017). Conversely, high workloads, insufficient staffing, and outdated policies hinder implementation (Shetty et al., 2014; Kumar et al., 2014).

Cultural attitudes within healthcare can marginalize nonpharmacological methods, favoring pharmacological interventions as the sole effective pain relief (Ismail, 2013; Chang et al., 2022). Educational interventions must address knowledge and reshape attitudes for broader acceptance.

Research Rationale and Study Objectives

Despite proven benefits, significant gaps remain in nurses' knowledge and use of nonpharmacological pain relief, affecting postpartum care quality. This study aims to:

1. Assess nurses' knowledge of nonpharmacological pain relief methods.
2. Analyze associations between nurses' knowledge and influencing factors.

METHODS

Administrative Arrangements

Before data collection, formal approval was obtained from the University of Mosul-College of Nursing. A detailed research proposal was submitted, and ethical clearance was secured from the institutional review board. Data collection commenced after official approvals, adhering to ethical guidelines.

Study Design

A quantitative, descriptive cross-sectional study assessed nurses' knowledge of nonpharmacological post-delivery pain management. Conducted between November 12, 2024, and April 1, 2025, it provided a snapshot of knowledge levels and influencing factors within the target population.

Sample and Sampling

Convenience sampling recruited 110 nurses from maternity-related units in three Mosul hospitals. Inclusion criteria were registered nurses with at least six months of clinical experience working in maternity wards, labor rooms, emergency units, ICUs, or C/S rooms, who voluntarily agreed to participate. Nursing interns, students, and nurses on leave during data collection were excluded.

Study Setting

Data were collected from Al-Batool Teaching Hospital (n=40), Al-Khansaa Teaching Hospital (n=35), and Al-Salam Teaching Hospital (n=35). These facilities were selected for their large maternity units and diverse nurse populations.

Data Collection Tools

The knowledge assessment section consisted of 8 multiple-choice questions covering definitions, categories, physiological mechanisms, and benefits of nonpharmacological methods. Each correct response was awarded one point, with total possible scores ranging from 0 to 8. A score of 5 or above (≥62.5%) was categorized as "adequate knowledge," while scores below 5 indicated "inadequate knowledge." A structured questionnaire included:

- Section 1: Demographics and professional background (age, education, experience, training, site of work, hospital).
- Section 2: Work-related factors (working hours, guideline availability, training timing).
- Section 3: Knowledge assessment (definitions, types, benefits, physiological basis of nonpharmacological pain relief).

The questionnaire was developed in English and validated by nine experts in maternal health and nursing education. A pilot test with 10 nurses ensured clarity and appropriateness. Cronbach's alpha >0.81 confirmed reliability.

Data Collection Procedure

After verbal informed consent, questionnaires were distributed during nurses' shifts without disrupting workflow. Participants completed forms independently and returned them in sealed envelopes to maintain confidentiality.

Limitations

This study used convenience sampling, which may introduce selection bias and limit the generalizability of findings to broader nursing populations. While this method facilitated data collection in high-volume maternity hospitals, future studies should consider random sampling for more representative insights.

Statistical Analysis

Data were analyzed using SPSS v.28. Descriptive statistics summarized demographics and knowledge scores. Inferential tests, including chi-square and binary logistic regression, identified associations with significance set at $p < 0.05$.

RESULTS

Table 1: Nurses' Demographic Characteristics, (n=110)

Characteristic	Category	Frequency	Percentage
Age Group	21–30 years	38	34.5%
	31–40 years	45	40.9%
	41–50 years	20	18.2%
	>50 years	7	6.4%
Education Level	Diploma	35	31.8%
	Bachelor	60	54.5%
	Master	15	13.6%
Years of Experience	<5 years	40	36.4%
	5–10 years	45	40.9%
	>10 years	25	22.7%
Training Courses	Pain Management	70	63.6%
	Obstetric Care	50	45.5%
	Neonatal Care	30	27.3%
Site of Work	Labor Room	25	22.7%
	Maternity Postoperative Ward	30	27.3%
	C/S Room	15	13.6%
	Emergency Unit	20	18.2%
	ICU	20	18.2%
Hospital	Al-Batool Teaching Hospital	40	36.4%

Characteristic	Category	Frequency	Percentage
	Al-Khansaa Teaching Hospital	35	31.8%
	Al-Salam Teaching Hospital	35	31.8%

Most nurses were aged 31–40 years (40.9%), held a Bachelor's degree (54.5%), and had 5–10 years of experience (40.9%). The majority received pain management training (63.6%). Work settings were mainly maternity postoperative wards (27.3%) and labor rooms (22.7%). Nurses were evenly distributed across three teaching hospitals.

Table 2: Work-Related Factors, (n=110)

Factor	Category	Frequency	Percentage
Working Hours	8 hours	30	27.3%
	12 hours	60	54.5%
	>12 hours	20	18.2%
Guidelines	Yes	60	54.5%
Availability	No	50	45.5%
Training Received	Never Received	25	22.7%
	During Formal Education	30	27.3%
	During Postgraduate Education	20	18.2%
	After Employment	35	31.8%

Most nurses worked 12-hour shifts (54.5%) with guidelines available to slightly over half (54.5%). Training timing varied, with 31.8% receiving training after employment.

Table 3: Knowledge Assessment of Nonpharmacological Pain Relief, , (n=110)

Item	Correct Answer Frequency	Percentage
Definition of nonpharmacological pain relief	33	30.0%
Cognitive-Behavioral methods	28	25.5%
Physical methods	35	31.8%
Emotional Support	30	27.3%
Environmental Comfort	25	22.7%
Patient-Family Involvement	20	18.2%
Benefits of nonpharmacological pain relief	25	22.7%
Physiological basis of methods	18	16.4%

Only 30% correctly defined nonpharmacological pain relief. Knowledge was lowest regarding physiological basis (16.4%) and patient-family involvement (18.2%). Physical methods had the highest correct recognition (31.8%).

Knowledge Level Description

- 30% of nurses demonstrated adequate knowledge.

- 70% had inadequate knowledge.

Table 4: Factors Associated with Adequate Knowledge (Binary Logistic Regression)

Variable	Adjusted Odds Ratio (OR)	95% Confidence Interval	p-value
Master's Degree (vs. Diploma)	2.1	1.2–3.8	0.012
In-Service Training (vs. None)	3.5	1.6–7.4	0.001
Years of Experience	1.4	1.1–1.8	0.008

Nurses with Master's degrees were 2.1 times more likely to have adequate knowledge than those with diplomas. In-service training increased odds 3.5 times, and additional years of experience also significantly improved knowledge.

DISCUSSION

This study found that nurses working in maternity units in Mosul have suboptimal knowledge of nonpharmacological pain relief methods. In the Iraqi context, several sociocultural and systemic healthcare factors may influence the adoption of nonpharmacological methods by nurses. Cultural norms often emphasize medical authority and traditional pharmacological interventions, potentially marginalizing alternative approaches. Additionally, Iraq's healthcare system, recovering from years of conflict and resource constraints, prioritizes urgent care over holistic models, limiting institutional emphasis on nonpharmacological training. Gender norms and communication hierarchies may also affect how nurses advocate for or implement such practices in postpartum care. Understanding these contextual barriers is crucial for tailoring effective interventions.

With only 30% demonstrating adequate understanding. Similar studies (Jones et al., 2012; Brailey et al., 2017) report comparable deficiencies, often linked to limited education and institutional support.

The significant association between higher education level and knowledge aligns with findings by O'Reilly and Parker (2013), who emphasized the role of advanced qualifications in improving clinical competencies. In-service training emerged as the strongest predictor, reinforcing the critical importance of continuous professional development (Smith et al., 2018).

Despite the recognized benefits of nonpharmacological methods (Boateng et al., 2019; Nori et al., 2023), nearly half of the nurses reported lack of guideline access, a barrier also noted by Faisal et al. (2014) and Coates et al. (2020). This institutional deficit potentially hampers consistent practice and knowledge reinforcement.

The low understanding of physiological mechanisms may reduce nurses' confidence in applying these methods, a gap echoed in international literature (Kamal Abd Elkhalek et al., 2021). The predominance of 12-hour shifts (54.5%) may limit time available for implementing time-intensive nonpharmacological techniques, consistent with workload-related barriers described by Shetty et al. (2014).

Overall, these findings underscore the need for structured educational programs integrating nonpharmacological pain management into nursing curricula and ongoing training frameworks. Institutional policies must prioritize guideline dissemination and resource allocation to support nurses in delivering holistic postpartum care.

CONCLUSION

The study highlights critical gaps in nurses' knowledge of nonpharmacological post-delivery pain relief methods in Mosul's maternity hospitals. Educational level, in-service training, and clinical experience positively influence knowledge, but many nurses still lack sufficient understanding and access to guidelines.

Addressing these deficiencies through enhanced education, continuous training, and supportive institutional policies is essential to improve postpartum care quality and maternal outcomes.

RECOMMENDATIONS

1. Incorporate dedicated modules on nonpharmacological pain management into national nursing curricula to build foundational competence.
2. Partner with NGOs, the Ministry of Health, and professional nursing associations to deliver recurring workshops and seminars.
3. Establish peer mentorship programs within maternity units to encourage practical knowledge transfer and foster a supportive learning culture.

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