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Prevalence of missed nursing care in the operating room: A scoping review

Abstract

Background: Increasing surgical complexity and limited resources contribute to missed nursing care (MNC) in the operating room, with potential impacts on patient safety.

Objectives: To map the prevalence of MNC in the operating room, identify the most frequently omitted interventions, examine contributing factors and explore clinical and organisational implications.

Methods: A scoping review was conducted following the Joanna Briggs Institute (JBI) guidelines. A population, concept and context (PCC) framework was used to develop the review question. Searches were performed in MEDLINE, CINAHL and DOAJ. Eligible sources included quantitative and qualitative research, mixed-methods studies, reviews and relevant grey literature. Screening, data extraction and descriptive synthesis were performed.

Results: Six studies met the inclusion criteria. Two of the six were validation studies that confirmed the validity of the MISSCARE Survey-OR. Types of MNCs identified in the studies involve communication, perioperative documentation, patient surveillance and patient education. Contributing factors identified included mental fatigue, inadequate staffing, insufficient skill mix, workload, perceived competence, organisational environment and communication patterns.

Conclusion: The causes of MNC in the operating room are multifactorial. Interventions should focus on staffing optimisation, skills reinforcement and improved communication and documentation processes. Further multi-centre and longitudinal studies are needed to link MNC with clinical outcomes and patient-reported outcomes.

Keywords: perioperative nursing, missed nursing care, operating rooms, operating theatres

Introduction

Surgical safety is a global priority, and nursing plays a critical role in ensuring effective, continuous and safe care in the operating room. However, the increasing complexity of surgical procedures, combined with shortages of human and material resources, has contributed to the emergence of missed care, also known as missed nursing care (MNC). MNC is defined as necessary interventions that are omitted, either partially or completely, during the provision of care[1].

International studies recognise that the operating room environment is vulnerable to MNC due to its highly technical nature, demand for rapid responses and the heavy workload of nursing teams[2]. Frequently reported types of MNC include patient surveillance, interprofessional communication, accurate documentation and preventive interventions, all of which may directly compromise clinical outcomes, recovery time and patient satisfaction[3,4].

The causes of MNC are multifactorial and encompass excessive workload, staff shortages, frequent interruptions, mental fatigue and deficiencies in intra-team communication.

Despite the growing recognition of this phenomenon, research specifically addressing the operating room remains scarce, particularly within European and Lusophone contexts. There is therefore an urgent need to systematically map the available evidence to clarify the actual prevalence of MNC interventions in perioperative care and the factors influencing their occurrence.

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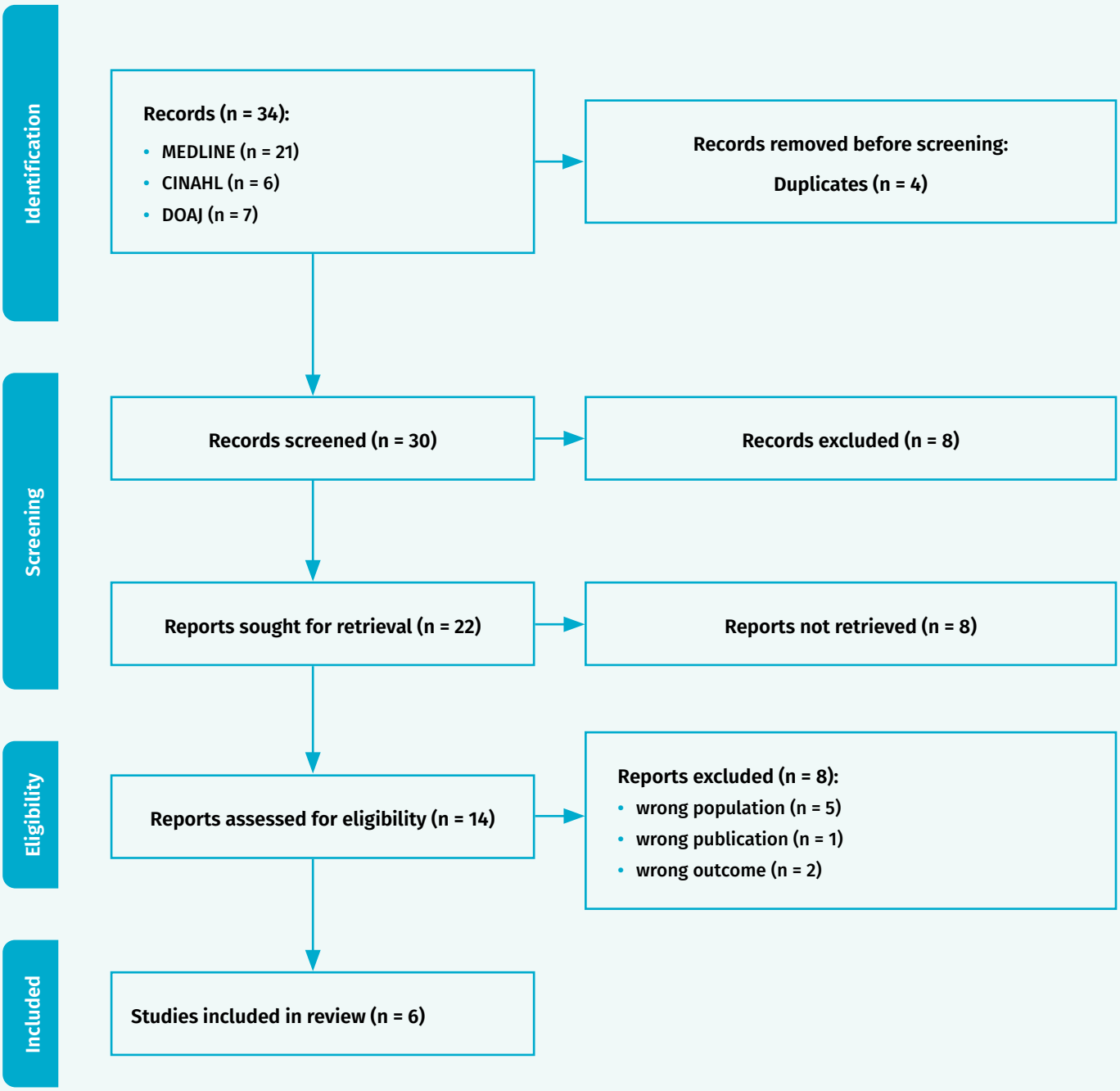

Figure 1: PRISMA flow diagram of the paper selection process

Review question and objectives

This scoping review was conducted in accordance with the Joanna Briggs Institute (JBI) guideline[5]. The review question was developed using the population (or participants), concept and context (PCC) framework.

The elements of PCC were defined as follows:

- population (or participants) – operating room nurses
- concept – MNC
- context – operating room.

From these elements, the resulting review question was: 'What is the prevalence of MNC interventions in the operating room context?'

The primary objective was to determine the prevalence of MNC interventions in the operating room.

The secondary objectives were to:

1. identify which nursing interventions are most frequently omitted in this setting
2. map the factors associated with MNC in the operating room
3. analyse the clinical and organisational implications of missed interventions for patient safety.

Methods

This review included quantitative and qualitative studies. Quantitative studies comprised experimental and observational designs, qualitative studies included qualitative data analysis. Reviews meeting the eligibility criteria were also considered.

Eligibility criteria

Studies were included if they addressed MNC among perioperative nurses or nursing teams in the perioperative environment. Quantitative and qualitative research, mixed-methods studies and systematic reviews focused on MNC within the perioperative period (pre-operative, intra-operative, or post-operative) were eligible for inclusion.

Studies were excluded if they did not directly address the phenomenon of MNC, or if they were conducted in contexts other than the perioperative environment. Excluded contexts included intensive care units, general wards, home care or long-term care facilities. Publications not involving nursing practice, as well as editorials, letters to the editor, opinion pieces or commentaries lacking empirical data, were also excluded. Studies unavailable in full text were likewise excluded.

Search strategy

To ensure a comprehensive and methodologically robust search, three electronic databases were selected based on their relevance to the topic, disciplinary focus and accessibility to peer-reviewed literature. These databases were MEDLINE (via PubMed), CINAHL Complete and the Directory of Open Access Journals (DOAJ).

We selected MEDLINE for its status as the leading biomedical database, ensuring access to high-quality empirical studies on MNC in perioperative settings. CINAHL Complete focuses on nursing and allied health. It captures clinically oriented research, including qualitative studies, practice guidelines and validation of tools such as the MISSCARE survey. These are relevant to perioperative nursing. DOAJ broadens coverage, identifying open-access and regionally published studies not indexed in traditional databases. This approach follows the JBI framework for scoping reviews. JBI emphasises diverse sources to reduce publication bias and enhance evidence mapping.

The strategic use of these three databases integrates disciplinary specificity, empirical rigour and publication diversity. This strategy identifies relevant literature on MNC in the perioperative environment. Search terms were defined as shown in the supplement. Searches employed Boolean operators and filters to optimise the retrieval of relevant results. Search strategies for each database are presented in tables 2–4 of the supplement.

Selection process

A total of 34 articles were identified via MEDLINE (n = 21), CINAHL (n = 6) and the DOAJ (n = 7). Of the 34 articles, four duplicates were removed, leaving 30 articles for title and abstract screening. After this screening, eight were excluded. The remaining 22 articles were considered potentially relevant. However, eight full-text articles could not be retrieved. Among the 14 full-text articles assessed for eligibility, another eight were excluded for not meeting the inclusion criteria (e.g. wrong context, non-nursing focus or lack of empirical data). Six studies met the inclusion criteria and were included in this scoping review (see Figure 1).

Results

A total of six studies were identified as relevant to the scoping review. The key characteristics of each study are summarised in Table 1.

Of the six included studies, four examined the prevalence and associated factors of MNC in the perioperative / operating room environment. Table 2 summarises their main characteristics, presented according to country of origin.

In Australia, a structural model was tested involving 602 operating room nurses[9]. The analysis demonstrated that sociodemographic characteristics (notably age), job satisfaction, intention to leave and perceived competence significantly influenced the frequency of MNC, with the model explaining 22.6 per cent of the variance[9].

A subsequent Australian national survey of 612 operating room nurses found that communication-related tasks, particularly handovers between team members and compliance with surgical time-outs, were the most frequently omitted[6]. The most common reasons included insufficient staffing, inadequate skill mix, fatigue and complacency, all of which were perceived to undermine teamwork and patient safety[6].

In Egypt, the relationship between job embeddedness, polychronicity and MNC was investigated among 210 nurses from nine hospitals[8]. Stronger organisational attachment and a greater ability to manage multiple tasks were significantly associated with lower levels of MNC, highlighting the protective role of these individual factors[8].

An Iranian survey of 385 operating room nurses reported that 77.9 per cent experienced varying levels of mental fatigue[2]. Mental fatigue was positively correlated with MNC, underscoring cognitive and psychological strain as an important risk factor in perioperative care[2].

Across these studies, communication, documentation, patient surveillance and patient education consistently emerged as the most vulnerable domains. Contributing factors operated at both the individual level (e.g. mental fatigue, competence, job embeddedness) and the organisational level (e.g. staffing shortages, skill mix and communication deficits).

Two studies in different countries, China and Sweden, addressed the psychometric validation of the MISSCARE Survey-OR. In China, the instrument was adapted and tested among 700 nurses from six tertiary hospitals[7]. The study demonstrated excellent internal consistency and confirmed validity through factor analysis, supporting its reliability in capturing perioperative MNC[7].

In Sweden, the instrument was translated and culturally adapted to the Swedish perioperative context, involving 107 nurses[4]. The tool showed high acceptability and strong psychometric properties (Table 1).[4]

Table 1: Key characteristics of each study

Authors (year)	Study design	Setting	Main findings
Gillespie et al. (2024)[6]	cross-sectional study	perioperative (including intra-operative)	Most MNC was related to communication practices. Statistical differences observed between nursing roles.
von Vogelsang et al. (2025)[4]	methodological validation study	perioperative	Swedish version of MISSCARE OR survey is valid with an item response rate of 95.3% and reliable (α = 0.76–0.95). Survey is useful for strategic planning and quality improvement.
Liu et al. (2025)[7]	cross-sectional and methodological validation study	operating room	High reliability (α = 0.94–0.96) and validity of the Chinese version of MISSCARE OR survey as an appropriate tool for assessment and planning.
El-Sayed et al. (2023)[8]	cross-sectional correlational study	operating room (intra-operative)	Job embeddedness negatively affects MNC. Polychronicity acts as a partial mediator.
Rahmani et al. (2025)[2]	descriptive cross-sectional study	perioperative (pre-, intra- and post-operative)	Mental fatigue positively correlated with MNC ($r = 0.319$, $p < 0.001$). Need for psychological support and organisational improvements.
Gillespie BM et al. (2023)[9]	cross-sectional study	operating room	Greater competence associated with lower MNC. Experience influences perceived competence.

Discussion

This scoping review mapped available evidence on the prevalence of MNC in the operating room, underscoring its multifactorial nature and consistent impact on key domains such as communication, documentation, patient monitoring and education across diverse healthcare systems.

Cross-country comparisons revealed contextual differences. In high-income countries such as Australia and Sweden, MNC was mainly associated with staff mix, team dynamics and perceived competence, suggesting that organisational efficiency and communication protocols may outweigh material constraints. In lower-resource contexts, including Iran and Egypt, structural deficits such as staff shortages and mental fatigue emerged as primary contributors. Despite these variations, intra-team communication and documentation consistently appeared as vulnerable domains across all settings, pointing to persistent systemic challenges in perioperative nursing.

These findings are in line with broader international evidence. An overview of reviews identified staffing adequacy, teamwork and communication breakdowns as recurring predictors of MNC with clear links to adverse patient outcomes[10]. Similarly, a large-scale survey of operating room nurses in the United States of America demonstrated that organisational characteristics such as facility size, nurse education level and perceived staffing adequacy were significantly associated with the frequency of missed perioperative care[11]. Another review identified reasons nurses omit or delay care, emphasising the role of workload, prioritisation and organisational culture in shaping the occurrence of MNC across settings[12]. Together, these studies strengthen the argument that MNC is not an isolated phenomenon but a systemic issue influenced by both individual and institutional factors.

The factors associated with MNC in the perioperative environment spanned both individual and organisational domains. At the individual level, mental fatigue, age, years of experience and perceived competence influenced the likelihood of MNC, with higher competence acting as a protective factor. Protective mechanisms such as job embeddedness and polychronicity also reduced the risk of MNC. At the organisational level, staffing shortages, inadequate skill mix and poor communication were consistently identified as major contributors.

The validation of the MISSCARE Survey-OR in China and Sweden further underscores the need for robust tools to measure MNC. Reliable, culturally adapted instruments are essential not only to identify high-risk domains but also to monitor trends and evaluate the impact of interventions. Nevertheless, heterogeneity in measurement and reporting continues to hinder direct comparisons of prevalence rates across contexts.

This review has several limitations. Most of the included studies used cross-sectional designs, limiting causal inference. The majority were single-country investigations, which reduces generalisability across cultural and organisational contexts. Inconsistencies

Table 2. Analysis by country

Country	Authors (year)	Main missed interventions	Associated factors
Australia	Gillespie et al. (2023)[9] Gillespie et al. (2024)[6]	• time-intensive tasks • intra-team • communication • patient education • documentation	• staffing shortages • workload • fatigue • complacency • perceived competence
Iran	Rahmani et al. (2025)[2]	• patient surveillance • hygiene practices • communication with patients	• mental fatigue ($p < 0.001$)
Egypt	El-Sayed et al. (2023)[8]	• team coordination • communication • documentation	• job embeddedness (protective) • polychronicity (partial mediator of MNC)
China	Liu et al. (2025)[7]	• not specified (tool validation only)	• environmental factors • communication • resource availability • empowerment
Sweden	von Vogelsang et al. (2025)[4]	• communication • safety checks • documentation	• organisational culture • communication gaps • personal factors

in reporting approaches constrained comparability and few studies examined the direct clinical consequences of MNC such as surgical site infections, complications and patient-reported outcomes, limiting understanding of its real-world impact.

Future research should therefore prioritise longitudinal and multi-centre studies, comparative analyses across countries and integration of MNC data with clinical outcomes and electronic health records. Incorporating patient-reported outcome measures would add valuable insights into how MNC affects patients' perceptions of safety and surgical experience. Standardisation of measurement tools across perioperative contexts is also critical to enhance comparability and strengthen the evidence base.

From a practice perspective, the evidence highlights the need for nursing managers and hospital administrators to address both systemic and individual contributors to MNC in the perioperative setting. Interventions should focus on optimising staffing models, reducing workload and improving team communication, while also supporting nurses' competence, resilience and professional engagement. Addressing MNC in the operating room is not merely a matter of workflow optimisation but a fundamental strategy for ensuring patient safety and fostering a culture of quality in perioperative nursing.

Conclusion

This scoping review shows that MNC in the operating room is a widespread and multifactorial problem. Despite contextual differences between high-resource and low-resource settings, MNC in communication and documentation consistently emerged as a universal vulnerability in perioperative nursing.

Validated tools such as the MISSCARE Survey-OR enable systematic monitoring of MNC, but further standardisation and integration with patient outcomes are required to strengthen evidence. Future research should focus on longitudinal and multi-centre studies that link MNC to clinical outcomes and patient-reported experiences, while also enabling meaningful cross-country comparisons.

For nursing leaders and hospital administrators, the findings highlight the urgent need to optimise staffing, enhance team communication and strengthen professional competence. Reducing MNC in perioperative care is not only essential for workflow efficiency but also a cornerstone strategy to improve patient safety, nurse wellbeing and the overall quality of surgical care.

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