

Missed Nursing Care in the Operating Room: A Narrative Review of Consequences, Contributing Factors, and Prevention Strategies

Bo Zhao*, Maoli Cheng

West China School of Public Health and West China Fourth Hospital, Sichuan University, Chengdu 610041, China

*Corresponding email: 2231515638@qq.com

Abstract

The operating room (OR) is a vital clinical setting in which surgical treatment and the care of critically ill patients are delivered, and its nursing work is characterized by high risk, high complexity, and high professional specificity. Missed nursing care (MNC), the partial or complete omission, or delayed performance, of required nursing measures, has become an internationally recognized indicator of nursing quality and patient safety. This narrative review synthesizes current evidence on MNC in the OR, including its conceptual basis, consequences, influencing factors, and prevention strategies. MNC threatens perioperative safety and recovery, increases the risk of adverse events, contributes to nurse burnout and turnover intention, and erodes the quality and safety management of health care organizations. Understaffing, inadequate material resources, complex and dynamic patient conditions, nurse-related factors such as inexperience and fatigue, and ineffective teamwork are consistently reported contributors. Promising strategies include dynamic staffing allocation, standardized perioperative nursing processes, nonpunitive safety cultures, tiered competency-based training, and the integration of nursing-sensitive quality indicators into routine quality monitoring. Future research should develop systematic risk assessment and intervention frameworks specific to the OR context. Reducing MNC is essential for safeguarding perioperative patients and advancing the quality of perioperative nursing.

Keywords

Missed nursing care, Nursing omission, Operating room, Perioperative nursing, Patient safety, Nursing quality, Influencing factors

Introduction

The operating room is one of the most high-risk and complex clinical settings in a hospital, where surgical treatment and emergency care for critically ill patients are provided. Nursing work in this environment is characterized by high risk, high complexity, and high professional specificity. Any nursing omission can directly compromise perioperative safety and patient outcomes. With the deepening of patient safety concepts in recent years, missed nursing care (MNC) has become an important indicator for evaluating nursing quality, safeguarding patient safety, and improving nursing management. It has been observed that MNC is the joint result of multiple interacting elements, including nurses' personal characteristics, the work environment, resource allocation, organizational management, and team collaboration [1].

This narrative review synthesizes current evidence on the concept, consequences, influencing factors, and

improvement strategies of MNC in the OR. Its aim is to provide a theoretical basis for reducing perioperative nursing risks and improving the quality and safety of OR nursing.

The concept of missed nursing care

The concept of MNC, also termed nursing omission, was first proposed and defined as the partial or complete omission, or delayed implementation, of required nursing measures for patients for various reasons. MNC is a nursing quality problem that exists worldwide. In the OR, the enclosed environment, the intense pace of work, and the high dependence of nursing operations on team coordination make nursing omissions particularly hidden and harmful. MNC is not caused by any single factor. Rather, it results from the interaction of nurses' personal characteristics, the work environment, resource allocation, organizational management, and team

collaboration.

Consequences of missed nursing care

MNC exerts harmful effects at the level of patients, nurses, and health care organizations.

Consequences for patients

The most direct consequence of MNC is a threat to patients' perioperative safety and the quality of their recovery. Patient-reported missed nursing care correlates with adverse events such as falls, infections, and pressure injuries and with lower satisfaction with nursing care. Physiologically, improper intraoperative positioning can lead to complications such as pressure injuries and nerve injuries. The omission of hypothermia prevention measures can induce intraoperative hypothermia, which in turn increases the risk of coagulation disorders and cardiovascular events. Breaches in aseptic technique can significantly increase the incidence of surgical site infections. In terms of safety, errors in the surgical safety verification process are among the greatest risk sources: Gauze or instruments retained in the body cavity or at the surgical site can have catastrophic consequences for surgical patients. In addition, MNC prolongs postoperative recovery and increases the possibility of additional treatment and reoperation. It also adds to patients' physical and psychological suffering and economic burden, and may even lead to irreversible physical injury or death. A study by Rahmani and colleagues found that different types of missed care were associated with adverse outcomes such as patient falls, infections, and prolonged hospital stay, suggesting that MNC is an important factor affecting patient safety [2].

Consequences for nurses

OR nurses work for long periods in high-pressure, high-risk environments. When omissions occur, they are prone to strong self-blame, guilt, and anxiety, and may even experience "second victim" reactions, which adversely affect their professional psychological development. If such negative psychological experiences accumulate over time, they can develop into burnout, emotional exhaustion, and even a stronger intention to leave the profession. A systematic review and meta-analysis showed that MNC is closely associated with reduced nurse job satisfaction [3]. Medical errors and adverse events among OR nurses in China are related to psychological health status and

educational level. Missed care may further aggravate nurses' psychological burden, thereby reducing the quality of nursing work [4]. In addition, when omissions cause harm to patients, OR nurses may face internal disciplinary action, damage to their professional reputation, or even corresponding legal liability. The occurrence of MNC can also impair trust relationships among nurses and increase work pressure and turnover intention [5].

Consequences for health care organizations

MNC lowers the overall medical quality and safety management level of health care organizations and increases management costs and social impact. On the one hand, complications caused by MNC can prolong hospital stays, increase consumption of medical resources, and reduce bed turnover, thereby affecting the hospital's medical quality evaluation. On the other hand, serious nursing errors may trigger adverse events and doctor-patient disputes and may even be exposed by the media, damaging the hospital's public credibility and reducing patients' trust in the quality of hospital services. Missed care is not only a clinical nursing problem but also an important quality and safety issue with downstream consequences for hospital resources and operational efficiency [6].

Factors contributing to missed nursing care

The factors contributing to MNC in the OR can be grouped into human resources, material resources, patient-related factors, nurse-related factors, and team coordination.

Human resources

Insufficient numbers of OR nursing staff are an important cause of MNC. OR nursing work is characterized by marked uncertainty and dynamics: Increases in emergency and complex surgeries sharply raise the demand for nurses. When human resources are insufficient, nurses are forced to undertake many non-nursing tasks such as retrieving supplies and transporting specimens. This diverts time and energy that should be devoted to direct nursing care and makes care execution untimely or omitted. Nursing understaffing not only increases nurses' work pressure but also reduces their ability to complete all nursing tasks. Perioperative safety verification, patient comfort, and health education are among the items most likely to be affected [7]. Lower

nurse staffing levels were consistently associated with higher rates of omitted nursing care, indicating that MNC reflects inadequate human resource allocation rather than individual negligence [8]. OR nurses work in high-intensity environments for long periods, and sustained workload can cause physical fatigue, reduced attention, and burnout, further lowering the accuracy of nursing task execution. Studies show that nurses' educational level, professional title, job experience, and professional competency all affect the quality of clinical nursing task completion [9]. Junior nurses, who lack experience, are unfamiliar with surgical procedures, and have limited ability to judge abnormal situations, are more prone to MNC. Senior nurses, who have stronger clinical risk identification, complete nursing tasks more completely. They also have lower rates of MNC.

Material resources

OR nursing is highly dependent on instruments, equipment, and consumables. The availability and integrity of material resources are the material prerequisite for implementing nursing measures. When special sutures, drainage tubes, or implants urgently needed during surgery are not prepared in advance, nurses must spend considerable time searching for them. The work rhythm is disrupted, and other nursing operations are easily omitted. It is evident that inadequate resources and supplies, together with heavy workload and frequent interruptions, increase nurses' cognitive load and lead to omission of nursing tasks. It is also observed that defects in material management in OR nursing can interrupt the workflow and force nursing staff to adjust work plans temporarily. If missing instruments or consumables are not identified during preoperative preparation, the intraoperative risk to patients increases. Intraoperative equipment failure or insufficient backup resources further compromises the quality of nursing collaboration.

Patient-related factors

Compared with general inpatients, surgical patients are in a special physiological and psychological state, and their perioperative nursing needs are complex and dynamic. Elderly patients and those with multiple comorbidities usually require closer clinical nursing observation, and their perioperative risk is markedly increased. When the number of surgical patients increases or nursing tasks are concentrated, nurses'

cognitive load increases and the risk of MNC rises accordingly. An increased number of patients and greater complexity of conditions are important causes of MNC. With insufficient human resources, nursing staff must prioritize urgent nursing tasks. Consequently, some nursing measures are not implemented in a timely manner [10]. Qualitative evidence shows that sudden deterioration of a patient's condition, or refusal of surgery by the patient or family members, can interrupt the original nursing process and is an important situational factor contributing to MNC [11].

Nurse-related factors

Nurse-related factors include professional competence, workload, fatigue, and clinical experience. Inadequate professional competence and insufficient clinical experience increase the risk of nursing errors. When facing complex surgical collaboration, specialized instrument use, or emergencies, junior nurses may have insufficient understanding of surgical procedures and risk identification. This makes them prone to inadequate execution of nursing measures or omission of important steps. Nurses' characteristics and professional competence are associated with the frequency of missed perioperative care [12]. Excessive workload and psychological fatigue can both lead to nursing errors. MNC occurred most often in nursing tasks that were time-consuming and required communication across multiple teams. The main reasons included staff pressure, fatigue, and inadequate team collaboration [13]. Research also shows that mental fatigue among OR nurses can reduce alertness and cognitive function, thereby increasing the probability of MNC.

Teamwork and communication

OR nursing is characterized by close collaboration among multiple professions, and the quality of team communication and collaboration affects the completion of nursing tasks. When team members share information inadequately, handovers are incomplete, or communication is not standardized, nursing information is easily lost, increasing the likelihood of MNC. Perioperative MNC occurs mainly in tasks related to preoperative preparation and team communication, and communication barriers and inadequate team collaboration are major causes of MNC [14]. OR nurses regard lack of team support, inadequate interprofessional collaboration, and the absence of

effective communication approaches as contributing factors to nursing errors [15]. In addition, team culture and the psychological safety climate influence the management of MNC. An open, egalitarian team culture enables nurses to raise risk information in a timely manner, whereas a punitive management model inhibits nurses' initiative in communication and reduces risk identification.

Strategies to reduce missed nursing care

The prevention and control of MNC is a systematic project that requires coordinated efforts in human resource management, material support, process optimization, safety culture development, and institutional support. The strategies below are mutually reinforcing rather than isolated.

Optimizing human resource allocation

Optimizing human resource allocation is a fundamental measure for preventing MNC. Managers should dynamically adjust nursing staffing according to surgical volume, surgical level, and time of day, and establish a dynamic human resource deployment mechanism. International evidence shows that nurse staffing levels and skill mix vary markedly across hospitals and are associated with patient outcomes. This suggests that managers need to continuously strengthen the scientific allocation of nursing resources.

Nursing managers should attend to nurses' work experience, establish a reasonable performance appraisal system, improve nurses' job satisfaction and career stability, and thereby reduce MNC caused by personnel factors at the source. At the same time, adverse event reporting and organizational learning should be encouraged, and institutional safeguards should be established to eliminate nurses' fear of punishment. This transforms omission events from objects of accountability into resources for improvement and shifts safety management from punishment-driven to learning-driven.

Standardizing nursing processes and building a safety culture

The OR should establish a standardized and normalized nursing process system, with emphasis on key links such as preoperative visits, patient identification, surgical safety verification, and management of high-value consumables. By developing standard

operating procedures, nursing risk assessment forms, and verification checklists for key links, nursing work can be made procedural and homogeneous. Structured perioperative safety processes, such as surgical safety checklists, are associated with reduced surgical complications and improved patient safety. The OR can also use quality management tools such as root cause analysis and failure mode and effects analysis. These tools can systematically analyze the causes of nursing errors, identify weak links in nursing processes, and propose improvement measures.

Strengthening nurse competency

The construction of tiered training systems oriented toward post competency has been emphasized. Differentiated training plans should be formulated according to OR nurses' years of work, professional level, and post responsibilities. Tiered training and assessment should be strengthened. Junior nurses should focus on improving familiarity with surgical procedures and the ability to predict risks, whereas senior nurses should focus on developing clinical decision-making and teaching and mentoring skills. Simulation drills and scenario-based teaching can also be used to improve nurses' ability to identify potential nursing risks and to shift nursing staff from passive execution to active risk prevention. Competency-based training models help to improve nurses' core competencies and reduce the risk of nursing adverse events [16]. In addition, attention should be paid to maintaining nurses' physical and mental health: Reasonable shift scheduling, psychological counseling, and stress-reduction services can reduce the erosion of nursing quality by burnout.

Building an integrated prevention and quality improvement system

The measures described above are not isolated but mutually supportive. Scientific allocation of human and material resources is the prerequisite. Standardized processes and a safety culture are the foundation. Strengthening nurse competency is the core. Informatization and continuous quality improvement are the keys to implementation and long-term effectiveness. Under a continuous quality improvement model, monitoring care left undone during nursing shifts can shift nursing management from experience-based to science-based management. It can

also improve the safety and reliability of OR nursing. Nursing-sensitive quality indicators provide a standardized, quantitative basis for monitoring OR nursing quality. They are important tools for identifying omission risks in a timely manner and implementing targeted improvements.

In the future, omission assessment and prevention strategies should be integrated into routine quality management on the basis of systematic theoretical frameworks of MNC, so as to shift from reactive correction to proactive prevention. Improving the patient safety culture can further reduce MNC and adverse events. This can safeguard patients' perioperative safety. These measures form a coherent approach to enhancing care quality [17].

Conclusion

The OR is a core diagnostic and therapeutic unit with high risk and high complexity, and nursing work covers patient safety verification, aseptic management, instrument counts, specimen management, and perioperative coordination. MNC directly affects nursing quality and patient safety, increases the incidence of surgery-related adverse events, and reduces treatment effectiveness and patient satisfaction. It also aggravates the psychological pressure on OR nurses, induces burnout and turnover intention, and affects the stability of nursing teams and the continuous improvement of nursing quality.

At present, MNC is receiving increasing attention both domestically and internationally. However, attention to its mechanisms, influencing factors, and intervention models under the special working environment of the OR remains relatively insufficient. Adverse event analysis, nursing quality management, and exploration of influencing factors have been emphasized. Less attention has been given to the dynamic change process of MNC and systematic prevention strategies. Future efforts should be grounded in the characteristics of OR nursing and conducted in depth from the perspectives of nurses' individual competence, human resource allocation, work process optimization, organizational safety culture, and informational support. This will help construct a scientific and effective risk assessment and intervention system for MNC.

By strengthening nursing safety management, improving

the work environment, and promoting continuous quality improvement, the incidence of MNC in the OR can be effectively reduced. This can ensure patients' perioperative safety and promote the high-quality development of perioperative nursing.

Funding

This work was not supported by any funds.

Acknowledgements

The authors would like to show sincere thanks to those technicians who have contributed to this research.

Conflicts of Interest

The authors declare no conflict of interest.

References

- [1] Abdullah, B. B., Abu-Moghli, F. A. (2026) Missed nursing care among hospital nurses in the Middle East: a systematic literature review. *Nursing Reports*, 16(2), 40.
- [2] Rahmani, P., Molaei Tavani, F., Sheikhalipour, Z., Behshid M, Khodayari MT, Zadi Akhuleh O. (2022) The relationship between attitude of nurses toward the patient safety and missed nursing care: a predictive study. *Journal of Healthcare Quality Research*, 37(3), 138-146.
- [3] Algin, A., Yesilbas, H., Kantek, F. (2024) The relationship between missed nursing care and nurse job satisfaction: a systematic review and meta-analysis. *Western Journal of Nursing Research*, 46(12), 980-988.
- [4] Song, Q., Tang, J., Wei, Z., Sun L. (2022) Prevalence and associated factors of self-reported medical errors and adverse events among operating room nurses in China. *Frontiers in Public Health*, 10, 1-8.
- [5] Ge, W., Zhu, T., Li, M., Zhu, X., Wang, H. (2026) Missed nursing care in the operating room: a qualitative analysis of nurses' perspectives. *BMC Nursing*, 25(1), 503.
- [6] Recio-Saucedo, A., Dall'Ora, C., Maruotti, A., Ball, J., Briggs, J., Meredith, P., Redfern, O. C., Kovacs, C., Prytherch, D., Smith, G. B., Griffiths, P. (2018) What impact do nursing care left undone have on patient outcomes? Review of the literature. *Journal of Clinical Nursing*, 27(11-12), 2248-2259.
- [7] Edfeldt, K., Nyholm, L., Jangland, E., Gunnarsson,

- A. K., Fröjd, C., Hauffman, A. (2024) Missed nursing care in surgical care: a hazard to patient safety: a quantitative study within the inCHARGE programme. *BMC Nursing*, 23(1), 233.
- [8] Griffiths, P., Recio-Saucedo, A., Dall'Ora, C., Briggs, J., Maruotti, A., Meredith, P., Smith, G. B., Ball, J. (2018) The association between nurse staffing and omissions in nursing care: a systematic review. *Journal of Advanced Nursing*, 74(7), 1474-1487.
- [9] Hendy, A., Abdel Fattah, H. A., Aboulela, M. A., Atia, G. A. E., Alshammari, M. S. S., Hables, R. M. M., Alzahrani, N. S., Hendy, A., Almarwani, A. M. (2024) Nursing professional commitment as a mediator of the relationship between work environment and missed nursing care among nurses: a cross-sectional analysis. *SAGE Open Nursing*, 10, 1-9.
- [10] Ahlstedt Karlsson, S., Svenningsson, E., Järbrink, H., Thylén, I., Engström, M. (2026) Missed nursing care in surgical units: a cross-sectional study on prevalence, causes, and influencing factors. *Applied Nursing Research*, 87, 1-8.
- [11] Hacıdursunoğlu Erbaş, D., Korkmaz, E., Feyizoğlu, G., Kaçmaz, C., Eti Aslan, F. (2026) Correlates of patient and nurse missed care: a multi-hospital cross-sectional study. *Journal of Clinical Nursing*, 35(8), 3431-3440.
- [12] Gillespie, B. M., Harbeck, E., Chaboyer, W. (2023) The association between operating room nurses' characteristics, competence, and missed nursing care: a national survey. *Journal of Nursing Management*, 2023, 1-11.
- [13] Gillespie, B. M., Harbeck, E., Chaboyer, W. (2025) The frequency and reasons for missed nursing care in Australian perioperative nurses: a national survey. *Journal of Clinical Nursing*, 34(3), 883-893.
- [14] Liu, G., Ji, X., Xiao, L., Teng, M., Zhou, X., Si, Z. (2025) Cross-cultural adaptation and validation of the MISSCARE Survey OR for Chinese operating room nurses: a methodological and cross-sectional study. *Nursing Open*, 12(7), e70274.
- [15] Chen, Y., Zhang, Y., Zhang, J., Luo, J. (2026) Facilitators of and barriers to teamwork between operating room nurses and other practitioners: a meta-synthesis of qualitative studies. *BMJ Open*, 16(4), e098386.
- [16] Gong, F., Mei, Y., Wu, M., Tang, C. (2025) Global reasons for missed nursing care: a systematic review and meta-analysis. *International Nursing Review*, 72(1), e13096.
- [17] Hessels, A. J., Paliwal, M., Weaver, S. H., Wurmser TA. (2019) Impact of patient safety culture on missed nursing care and adverse patient events. *Journal of Nursing Care Quality*, 34(4), 287-294.