

Nurse Fatigue and Its Influence on Decision-Making Accuracy and Work Performance among Operating Room Nurses

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ABSTRACT

Nurse fatigue among operating room (OR) nurses may influence decision-making accuracy and work performance by affecting cognitive functioning, efficiency, and the delivery of safe patient care in high-pressure clinical environments. This study examined the levels of nurse fatigue, decision-making accuracy, and work performance, as well as their relationships among 120 OR nurses from two government hospitals in Misamis Occidental, Philippines, using a descriptive-correlational research design. Data were gathered through a researcher-developed questionnaire and analyzed using mean, standard deviation, and Pearson's r . Findings revealed that OR nurses experienced severe nurse fatigue, very high decision-making accuracy, and excellent work performance. Results further showed that nurse fatigue had generally no significant relationship with decision-making accuracy, except for a significant relationship between physical fatigue and clinical judgment accuracy. In terms of work performance, nurse fatigue showed selective significant relationships, particularly between physical and mental fatigue and efficiency and productivity, while most other relationships were not significant. It is concluded that despite high levels of fatigue, nurses maintained strong decision-making accuracy and overall performance, although fatigue had some influence on efficiency-related outcomes. Therefore, it is recommended that hospital administrators and nursing managers implement targeted fatigue management strategies, such as adequate staffing, regulated workloads, and structured rest periods, while continuing professional development initiatives to sustain and enhance nurses' performance and the quality of patient care.

Keywords: decision-making accuracy, nurse fatigue, operating room nurses, work performance, workplace efficiency

INTRODUCTION

Operating room (OR) nurses, also known as perioperative nurses, play a crucial role in ensuring patient safety and well-being during surgical procedures (Singh and Arulappan, 2023). Their responsibilities include preoperative preparation, intraoperative patient monitoring, maintaining sterile technique, and efficiently managing surgical instruments and equipment. OR nurses work closely with surgeons, anesthesiologists, and other healthcare professionals to coordinate complex surgical care (Mayhob and AbdelSalam, 2023). The operating room is a high-stakes environment that requires precision, vigilance, and rapid clinical judgment, where even minor errors can have serious consequences (Thompson and Willis, 2018). These nurses must possess both technical expertise and strong cognitive skills to anticipate complications and respond promptly. The combination of physical and cognitive demands makes the OR one of the most challenging environments in healthcare. Understanding the role of OR nurses highlights the importance of addressing factors, such as fatigue, that may compromise performance.

The operating room environment places significant physical, cognitive, and emotional demands on nurses (Thompson and Willis, 2018). OR nurses often work extended surgical procedures, long hours, and rotating shifts, including night shifts that disrupt circadian rhythms (Alanmi, Alharazi, and Almutary, 2025; Smith and Jones, 2020). Physical demands, such as prolonged standing and handling heavy instruments, contribute to occupational fatigue (Barker and Nussbaum, 2011). Cognitive demands are high, as nurses must continuously process critical information, make decisions under pressure, and anticipate patient needs (Hwang, Lee, and Kwon, 2023). Emotional and psychological stress may arise from maintaining flawless performance in a fast-

paced, high-stakes environment (Cho and Steege, 2021). The combination of these stressors can negatively affect attention, judgment, and overall work performance (Wilson, 2022). Recognizing the intensity of the OR environment is essential to understanding the factors contributing to nurse fatigue and its consequences.

Nurse fatigue is a multidimensional condition encompassing physical, mental, and emotional exhaustion due to prolonged work demands (Cochran, 2021; Cho and Steege, 2021). It can be acute, resulting from a single long shift, or chronic, developing over repeated exposure to high workloads and insufficient recovery (Sagherian, Clinton, Abu-Saad Huijjer, and Geiger-Brown, 2017). In the OR, fatigue arises from extended shifts, night work, high cognitive load, and staffing shortages (Alanmi et al., 2025; Kim and Lee, 2022). This condition impairs attention, concentration, and decision-making capacity, posing risks to both the nurse's well-being and patient safety (Bell, Sprajcer, Flenady, and Sahay, 2023). Physiological and psychological manifestations include slower reaction times, reduced vigilance, and emotional exhaustion (Barker and Nussbaum, 2011). Fatigue is therefore a critical occupational hazard that requires institutional recognition and mitigation strategies. Addressing nurse fatigue is vital to sustaining safe, high-quality perioperative care.

Decision-making is central to perioperative nursing, as nurses frequently face situations requiring rapid, high-stakes judgments (Davis, 2019). Fatigue reduces cognitive processing capacity, attention span, memory recall, and analytical reasoning (Baumeister, Bratslavsky, Muraven, and Tice, 2007; Muraven and Baumeister, 2000). Nurses experiencing fatigue are more likely to make errors, such as incorrect medication administration, delayed responses to complications, or lapses in sterile technique (Bell et al., 2023; Brown and Hart, 2021). Studies indicate that decision fatigue can compromise clinical outcomes and reduce patient safety (Goudarzian et al., 2025; Levitt and Pineda, 2022). In high-pressure OR settings, even minor lapses in judgment can result in serious consequences (Lu, Xie, and Zhang, 2021). Managing fatigue and understanding its cognitive effects are essential to ensuring accurate, timely clinical decision-making (Turner, 2023). Effective strategies may include appropriate staffing, shift rotation, and workload management to mitigate cognitive depletion.

Work performance in nursing encompasses task completion, adherence to protocols, efficiency, and collaboration with the healthcare team (Cochran, 2021; Polit and Beck, 2017). For OR nurses, optimal performance is critical to patient safety, including accurate task execution and compliance with surgical protocols (Wright and Sha, 2025). Fatigue negatively impacts these outcomes, reducing productivity, slowing task completion, and increasing error rates (Barker and Nussbaum, 2011; Cho and Steege, 2021). Chronic fatigue contributes to burnout, job dissatisfaction, and decreased quality of care, ultimately affecting both patient outcomes and team performance (Kim and Lee, 2022). Understanding the relationship between fatigue and work performance is essential for implementing interventions to sustain high-quality care (Wilson, 2022). Hospitals and healthcare institutions must prioritize strategies to prevent fatigue and maintain nurse effectiveness (Sagherian et al., 2017). Addressing work performance challenges caused by fatigue ensures safer and more reliable surgical outcomes.

The OR presents unique challenges, including high cognitive load, long shifts, and constant high-stakes decision-making (Thompson and Willis, 2018; Hwang et al., 2023). Investigating the influence of fatigue on decision-making accuracy and work performance in this context is essential for improving patient safety and surgical outcomes (Peng et al., 2022). Evidence-based findings can inform hospital policies regarding shift scheduling, workload distribution, and fatigue mitigation strategies (Alanmi et al., 2025; Smith and Jones, 2020).

This study addressed a knowledge gap. Although nurse fatigue has been studied in general healthcare settings, research specifically targeting operating room nurses remains limited (Cho and Steege, 2021). Therefore, this study aimed to fill this gap by examining the direct effects of nurse fatigue on decision-making accuracy and work performance in the high-pressure operating room environment. By exploring these relationships, the research provides insight into the effects of fatigue on both individual and team performance in the OR. The study's findings will contribute evidence to support nurse scheduling, workload management, and patient safety policies. Ultimately, the research aims to enhance perioperative nurses' well-being and promote safe, effective surgical care.

The study is also significant to multiple stakeholders in the healthcare system. For nursing practice, it highlights how fatigue affects decision-making and performance, guiding interventions to manage workload and stress.

Hospital administrators can use the findings to optimize staffing, shift schedules, and operational efficiency, ultimately improving patient safety. Policymakers may benefit from the study's data to develop occupational health standards, wellness programs, and fatigue mitigation strategies. The research contributes to academic knowledge on nurse fatigue, particularly in high-stakes OR environments, identifying areas for further investigation. Patients indirectly benefit, as alert, well-rested nurses are better equipped to provide safe, effective surgical care. The study emphasizes the critical connection between nurse well-being, decision-making, and quality of healthcare delivery.

METHODS

The study employed a quantitative descriptive-correlational research design to examine the relationship between nurse fatigue, decision-making accuracy, and work performance among operating room nurses (Creswell, 2014). Conducted in two government hospitals in Misamis Occidental, Philippines, the study focused on Operating Room (OR) departments due to their demanding and high-stress clinical environment. A total of 120 OR nurses were selected through purposive sampling based on established inclusion criteria, including at least one year of OR experience and willingness to participate.

Data were gathered using a researcher-developed 4-point Likert-scale questionnaire. To ensure the instrument's validity, it underwent face and content validation by a panel of experts in nursing research and clinical practice, who evaluated each item for clarity, relevance, and alignment with the study variables. Revisions were made based on their recommendations to improve the accuracy and appropriateness of the questionnaire items.

In addition, the instrument underwent reliability testing through pilot testing with a group of operating room nurses who were not included in the final sample. The internal consistency of the questionnaire was assessed using Cronbach's alpha, yielding acceptable reliability coefficients across all constructs, indicating that the items consistently measured the intended variables.

Prior to data collection, ethical approval and institutional permissions were secured, and informed consent was obtained from all participants to ensure confidentiality, anonymity, and voluntary participation. The collected data were analyzed using descriptive statistics such as mean and standard deviation, while Pearson Product-Moment Correlation Coefficient (Pearson's r) was used to determine the significant relationships between nurse fatigue, decision-making accuracy, and work performance among operating room nurses.

RESULTS AND DISCUSSIONS

Level of Nurse Fatigue

The findings revealed that respondents experienced a severe level of fatigue across all measured areas, with mental fatigue obtaining the highest mean score ($M = 3.63$, $SD = 0.24$), followed closely by emotional fatigue ($M = 3.62$, $SD = 0.26$) and physical fatigue ($M = 3.60$, $SD = 0.29$). The overall mean score of 3.62 ($SD = 0.26$) indicates that operating room nurses consistently experienced severe fatigue in their clinical duties. These findings suggest that the demanding nature of the operating room environment exposes nurses to prolonged physical strain, intense cognitive demands, and emotional pressure associated with high-risk patient care and complex surgical procedures. The low standard deviation values further indicate that the respondents shared relatively similar experiences regarding fatigue, reflecting that this issue is widespread among operating room nurses. The results support previous studies emphasizing that nurse fatigue is a persistent concern in high-stress healthcare settings and may negatively affect nurses' well-being, decision-making capacity, work performance, and patient safety (Caruso, 2014; Scott, 2006; Ali & Mosadeghrad, 2023; Zainal et al., 2025). Consequently, the findings highlight the need for healthcare institutions to implement effective fatigue management interventions, including adequate staffing, workload regulation, structured rest periods, and wellness support programs for nurses.

Level of Decision-Making Accuracy

The findings revealed that respondents demonstrated a very high level of decision-making accuracy across all measured dimensions, with error recognition and correction obtaining the highest mean score ($M = 3.71$, $SD = 0.25$), followed by information processing ($M = 3.67$, $SD = 0.25$) and clinical judgment accuracy ($M = 3.61$, $SD = 0.26$). The overall mean score of 3.66 ($SD = 0.25$) indicates that nurses consistently demonstrated strong cognitive and clinical decision-making capabilities in the operating room. These findings suggest that operating room nurses are highly competent in assessing patient conditions, efficiently processing clinical information, and identifying and correcting potential errors during surgical procedures. The low standard deviation values further indicate consistency in responses, implying that high decision-making accuracy is a common characteristic among the respondents. The results support previous studies emphasizing the importance of clinical judgment, information processing, and error recognition in maintaining patient safety and effective perioperative care in high-pressure healthcare environments (Pignatiello et al., 2022; Ghaffari et al., 2023; Hwang et al., 2023; Verweij et al., 2024). However, despite the respondents' strong decision-making performance, the findings also suggest that prolonged exposure to severe fatigue may still pose risks to long-term cognitive functioning and patient safety if not properly addressed.

Level of Work Performance

Table 3 presents the level of work performance among operating room nurses, as reflected in task performance, efficiency, productivity, and the quality and safety of care. The findings revealed that respondents demonstrated an excellent level of work performance across all measured dimensions, with task performance, efficiency, and productivity each obtaining a mean score of 3.66 ($SD = 0.24$), while quality and safety of care recorded a mean of 3.65 ($SD = 0.25$). The overall mean score of 3.66 ($SD = 0.24$) indicates that nurses consistently demonstrated high levels of competence and effectiveness in their clinical responsibilities in the operating room. These findings suggest that operating room nurses can efficiently manage complex surgical duties, maintain workflow continuity, and ensure patient safety despite the demanding, high-pressure nature of perioperative care. The low, consistent standard deviation values further indicate that excellent work performance is common among the respondents. The results support previous studies emphasizing that strong task performance, operational efficiency, and adherence to quality and safety standards are essential components of effective perioperative nursing practice (Alharbi et al., 2025; Hur & Hickman, 2024; Ali & Mosadeghrad, 2023; Zainal et al., 2025). However, although nurses maintained excellent work performance, the presence of previously identified severe fatigue suggests that prolonged exposure to physically and mentally demanding conditions may eventually affect their long-term performance, well-being, and patient safety if fatigue management interventions are not implemented.

Significant Relationship Between the Respondents' Level of Nurse Fatigue and Their Level of Decision-Making Accuracy

The findings revealed that physical fatigue had a significant positive association with clinical judgment accuracy ($r_s = 0.276$, $p = 0.004$), supporting the rejection of the null hypothesis. This indicates that as physical fatigue increased, there was also a slight increase in reported clinical judgment accuracy among operating room nurses. However, physical fatigue showed no significant relationship with information processing or error recognition and correction, leading to the acceptance of the null hypothesis for these variables. Similarly, mental fatigue and emotional fatigue showed no significant associations with any dimension of decision-making accuracy, suggesting that cognitive and emotional exhaustion did not statistically affect respondents' ability to process information, recognize errors, or make accurate clinical decisions. These findings imply that operating room nurses were generally able to maintain high levels of decision-making accuracy despite severe fatigue. This may be attributed to their professional competence, clinical experience, and adaptation to the high-pressure demands of the operating room environment. The findings support the Job Demands–Resources (JD-R) Theory of Demerouti et al. (2001) and Bakker and Demerouti (2017), which explains that job resources such as teamwork, organizational support, professional training, and clinical experience can buffer the negative effects of job demands and fatigue on performance outcomes. The significant relationship between physical fatigue and clinical judgment accuracy further suggests that physical exhaustion may subtly influence certain aspects of cognitive functioning, particularly those requiring sustained attention and rapid clinical judgment during prolonged surgical procedures. This finding is consistent with studies indicating that physical strain in

perioperative settings contributes to fatigue-related challenges that may affect cognitive performance and decision-making (Pi et al., 2025; BMC Nursing, 2025; MDPI, 2024). Nevertheless, the absence of significant relationships between mental and emotional fatigue and decision-making accuracy indicates that respondents were still able to maintain cognitive performance and professional functioning despite these demands. The findings highlight the complex relationship between fatigue and decision-making accuracy and suggest that while fatigue is highly prevalent among operating room nurses, various organizational, personal, and professional factors may help maintain clinical performance in high-intensity healthcare environments.

Significant Relationship Between the Respondents' Level of Nurse Fatigue and Their Level of Work Performance

The findings revealed that physical fatigue was significantly associated with efficiency and productivity ($r_s = 0.215$, $p = 0.027$), leading to the rejection of the null hypothesis. This indicates that higher levels of physical fatigue were associated with changes in nurses' efficiency and productivity in the operating room setting. However, physical fatigue showed no significant relationship with task performance, quality, or safety of care, leading to the acceptance of the null hypothesis for these variables. Similarly, mental fatigue demonstrated a highly significant relationship with efficiency and productivity ($r_s = 0.249$, $p = 0.010$), while showing no significant relationships with task performance, quality, or safety of care. In contrast, emotional fatigue showed no significant relationships across all dimensions of work performance, indicating that emotional exhaustion did not statistically affect respondents' clinical performance in this study. These findings suggest that physical and mental fatigue primarily influence the speed, efficiency, and productivity of nurses' work rather than their ability to perform essential clinical tasks or maintain patient safety. This finding can be explained by the Job Demands–Resources (JD-R) Theory by Demerouti et al. (2001) and Bakker and Demerouti (2017), which posits that excessive job demands, such as prolonged workloads, cognitive pressure, and physical strain, can deplete nurses' energy and negatively affect performance outcomes. In operating room settings, nurses are exposed to demanding schedules, prolonged standing, multitasking, and rapid clinical decision-making, all of which may reduce efficiency and productivity as fatigue increases. This finding is supported by studies indicating that fatigue impairs concentration, slows task completion, and decreases workflow efficiency in high-intensity healthcare environments (Ali & Mosadeghrad, 2023; Goudarzian et al., 2025; Hur & Hickman, 2024). However, the absence of significant relationships between fatigue and both task performance and quality and safety of care suggests that nurses may still maintain core clinical responsibilities and patient safety despite experiencing fatigue. This may be attributed to compensatory mechanisms, professional competence, teamwork, and organizational support systems that help sustain performance in high-stakes environments, as emphasized in the JD-R framework (Bakker & Demerouti, 2017; Gou et al., 2024; Udushirinwa et al., 2022). Overall, the findings indicate that while nurse fatigue, particularly physical and mental fatigue, may reduce operational efficiency and productivity, operating room nurses are still capable of maintaining essential clinical functions and quality patient care through adaptive strategies, experience, and professional resilience.

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that operating room nurses experience severe levels of physical, mental, and emotional fatigue due to the demanding nature of perioperative work; however, despite these challenges, they continue to demonstrate very high decision-making accuracy and excellent work performance in carrying out clinical responsibilities, maintaining efficiency, and ensuring patient safety. The findings further revealed that nurse fatigue has only a limited influence on decision-making accuracy, with physical fatigue showing a significant relationship with clinical judgment accuracy, while physical and mental fatigue selectively affect efficiency and productivity among nurses. These results suggest that although fatigue is highly prevalent in operating room settings, nurses are still able to sustain professional competence and quality patient care through experience, clinical expertise, organizational support, and adaptive coping mechanisms. Overall, the study highlights the complex relationship between nurse fatigue, cognitive functioning, and work performance, emphasizing the importance of maintaining supportive work environments to sustain both nurse well-being and healthcare quality.

Based on the study's findings and conclusions, hospital administrators and nursing managers may prioritize implementing comprehensive fatigue management strategies, including adequate staffing, regulated shift schedules, structured rest periods, wellness programs, and ergonomic workplace improvements, to reduce physical and mental fatigue among operating room nurses. Healthcare institutions may also strengthen continuous professional development programs, simulation-based training, and decision-making enhancement workshops to sustain nurses' high levels of clinical competence, productivity, and quality patient care. Furthermore, supportive supervision, sufficient clinical resources, and effective organizational support systems may be maintained to preserve the excellent work performance of operating room nurses despite the demands of the clinical environment. Future researchers may conduct similar studies using mixed-methods or longitudinal approaches to further examine the effects of fatigue on nurse performance while exploring additional variables such as workload, coping strategies, resilience, organizational culture, and social support across various healthcare settings. Furthermore, it is recommended to expand the sample to include multiple hospitals across regions, rather than limiting participants to a small number of government hospitals in a single province. This broader coverage would improve the representativeness and generalizability of the findings, enabling stronger comparisons across healthcare settings and enhancing the external validity of the results.

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