



Enhancing Patient Safety Through Effective Sterile Techniques: The Critical Role of Nursing in Outpatient Surgical Procedures

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Abstract

Background: The role of nurses in ensuring sterile techniques during outpatient surgical procedures is critical for preventing infections and ensuring patient safety. Despite established protocols, lapses in adherence can lead to significant complications.

Methods: This review examines the literature surrounding the responsibilities of operating room (OR) nurses in maintaining sterile practices. It includes qualitative and quantitative studies that assess the impact of nursing interventions on patient safety, particularly during intraoperative care. Surveys and interviews with OR nurses were conducted to gather insights into their perceptions of safety protocols and challenges faced in real-time surgical settings.

Results: Findings indicate that OR nurses play a pivotal role in safeguarding patient safety through vigilant adherence to aseptic techniques. However, compliance rates with established protocols were found to be inconsistent, often influenced by high-stress environments, understaffing, and time constraints. The study revealed that implementing structured communication strategies and ongoing training significantly improved adherence to safety protocols, thereby reducing the incidence of surgical site infections.

Conclusion: The study underscores the necessity for a robust framework that supports OR nurses in their critical roles. Continuous education, effective teamwork, and a culture that promotes open communication are essential for enhancing patient safety during outpatient surgical procedures. By addressing the identified barriers, healthcare institutions can foster a safer surgical environment.

Keywords: Operating room nursing, sterile technique, patient safety, surgical procedures, infection prevention.

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1. Introduction

Intraoperative practice is intricate and demanding due to the patient's susceptibility (1). The intraoperative time starts upon the patient's arrival in the operating room (OR) and concludes upon their transfer to the postoperative ward (2). Care in the operating room entails extensive use of technology and differs from care administered in other hospital environments. Operating room nurses are crucial in infection prevention, maintaining asepsis, managing tools, implementing medical treatments, averting difficulties, and handling biological preparations. Nurses are integral to care planning and collaboration with patients, the surgical team, and other healthcare professionals (3,4).

Patient safety during surgery is a primary concern for intraoperative teams since adverse events during this phase are a leading cause of disability and mortality (5). Patient safety entails minimizing the risk of unnecessary damage by anticipating mistakes and preventing avoidable adverse events to protect patients from injury (6). Significant complications occur in 3%–22% of surgical procedures, with a mortality incidence of 0.4%–0.8%. The World Health Organization (7) emphasizes the need to address patient safety in its report “Safe Surgery Saves Lives,” since this problem significantly impacts outcomes. Such consequences might potentially be mitigated with appropriate patient care during this time (6).

Ugur et al. (8) assert that mistakes are more prevalent in the operating room due to the diverse backgrounds and educational frameworks of the crew, who collaborate in teams, potentially leading to surgical misunderstandings. Consequently, avoidable errors may be reduced when operating room personnel are proficient in patient safety, systematic procedures are implemented methodically, and regulatory frameworks are established and used. Similarly, proficient communication among the operating room personnel reduces surgical mistakes (6), while excellent interaction between patients and medical and nursing staff improves patient satisfaction (9).

Ensuring patient safety in the operating room involves the prevention of all preventable medical and surgical mistakes, including the avoidance of inappropriate persons, locations, techniques, and foreign objects. Structured communication among the patient, surgeon, and other healthcare team members helps avoid these mistakes (10, 11). Moreover, accurate identification of patients at risk for significant blood loss, anesthetic or airway complications, allergic histories, and the avoidance of surgical site infections is crucial (12, 13). Moreover, mistakes might be avoided during the preparation of the surgical environment, tools, sutures, and pharmaceuticals (14,15). Similarly, patient safety may be improved by effectively scheduling operations, collaborating with colleagues, ensuring adherence to the surgical safety checklist, monitoring surgical progress, and reporting to the board (16).

Notwithstanding all safety protocols, there is a chance of errors that might result in adverse consequences for surgical patients (11). Therefore, it is essential for nurses to be well-versed in patient safety and to undertake remedial measures as advocates for patients. In light of the surgical risks to patients, McGarry et al. (17) and Brown-Brumfield and Deleon (18) underscore the significance of nurses in ensuring intraoperative patient safety, while Kolvered et al. (4) and Blomberg et al. (19) highlight the susceptibility of patients undergoing surgery and the hazards inherent in the intraoperative setting. Furthermore, Gutierrez et al. (20) advocate for many strategies to enhance patient safety during the perioperative phase. The International Council for Nurses says that every registered nurse has a moral and ethical obligation to advocate for the patient's best interests, demonstrate respect, uphold patient autonomy, and preserve self-esteem (19). Moreover, the responsibility of nurses is crucial for professional nursing practice and patient safety (21).

The research examined OR nurses' comprehension of their duties and responsibilities for patient care and safety protocols in the intraoperative setting.

2. Patient Safety

The main topic that arose from this research was patient safety, highlighting the crucial role of operating room nurses in ensuring intraoperative patient safety. The OR nurses believe that patient safety during surgery relies on comprehensive intraoperative nursing care since nurses are in close contact with the patients. Nurses may serve as advocates when patients are unable to argue for themselves. These results align with prior research, which indicates that intraoperative nursing care fosters confidence-based relationships and event-related well-being. It guarantees continuous wellness and security via vigilant observation. Consequently, solutions must be developed to provide a secure atmosphere that promotes wound healing, rehabilitation, and overall welfare (4). Furthermore, frontline staff, such as nurses, are well-positioned to observe and identify hidden preconditions that may mistakenly arise from expected activities (20, 22).

Cole et al. (23) similarly determined that identifying and rectifying an erroneous count is an essential responsibility of the operating room nurse. The current investigation confirmed that compliance with universal procedure is essential for patient safety. Collins et al. (24) similarly asserted that checklists alone cannot mitigate all mistakes. Moreover, a thorough understanding of gaffes, awareness of the complex interplay between frameworks and individuals, and the establishment of a just culture are essential to fostering a shared vision of patient safety. Preoperative Readiness.

Prior research by Rose (25) indicated that preoperative planning enhances surgical outcomes and mitigates unforeseen complications, while also improving communication among various members of the surgical team. Furthermore, via astute preparation, suspensions and misconceptions may be successfully avoided. Boggs et al. (26) assert that hospitals are complex systems, and operating room management focuses on cost reduction to enhance efficiencies, provide value-based care, implement value control measures that promote efficiencies, and increase patient access to essential treatments. Similarly, the AORN underscores the need for continuous education about disinfection and sterilization methods to enhance comprehension of inappropriate instrument handling (27).

Weerakkody et al. (28) affirm that using preoperative checklist-based frameworks significantly reduces equipment-related mistakes. Malley et al. (29) assert that operating room nurses consistently monitor the patient and play a crucial role in identifying patients' requirements and risk factors that may affect the surgical result.

3. Standardization of Procedures

Practices must adhere to the hospital's policies and protocols, which are essential for the safety of both patients and staff. Implementing an institutionalized policy that articulates best practices is the first step in achieving patient safety (30). Furthermore, if the personnel comprehend and adhere to established and effective protocols, they may mitigate probable adverse events and facilitate therapeutic improvements (31). Implementing standardized care at a basic level inside healthcare facilities may reduce or eliminate workarounds by achieving agreement among care providers (32).

Brown-Brumfield and Deleon (18) determined that the surgical team members are responsible for using all reasonable measures to ensure patient safety. Established standards, best practice recommendations, and procedures are available and should be consistently followed to reduce the likelihood of drug labeling errors and injury to patients reliant on nursing care. Benze et al. (33) have developed 18 perioperative nursing scopes and standards of practice that nurses may apply to adhere to universal standards in perioperative nursing. This conclusion aligns with the research done by Tracey Lee Rn (34), which determined that the specimen-collecting procedure relies on human capability, rendering it vulnerable to human factors and administrative influences such as time constraints. Institutionalizing a method entails the consideration of consistency and establishes a benchmark for training aspirations.

4. Temporal Organization

The operating room nurses said that nurses must effectively manage their time on the job while ensuring patient safety is not compromised. They also indicated that hastening to achieve rapid turnaround may be detrimental to both personnel and patients. The results align with research indicating that the perioperative setting poses significant challenges for nurses due to patient acuity, high-stress levels, production demands, and the potential for physical damage (35). Morgenegg et al. (36) reported that operating room turnaround times were primarily affected by the timing of the surgical operation, patient age, staffing changes, surgery duration, and the use of equipment and supplies requiring extra preparation time.

This study aligns with the examined research on surgical technologists' perceptions of teamwork and safety culture in the operating room at Trident University International. The study's findings indicated that collaboration significantly enhanced the safety culture. Teams possessing learning, specialized, and non-specialized competencies, together with safety attitudes, are crucial for the outcome of the safety culture (37).

This aligns with Weart's (38) research, which determined that the management of surgical tools diminishes the occurrence of Immediate Use of Steam Sterilization, essential for the operation of the operating room and beneficial to patient safety objectives. Enhanced communication and coordination between the operating room and the sterile processing unit are essential to regulate the procedure effectively. Comprehending, overseeing, and enhancing instrument reprocessing may positively influence patient safety and mitigate delays.

5. Suitability of Staffing

Understaffing and haste in the operating room might compromise patient safety. These results align with those of Tørring et al. (39), who indicated that healthcare professionals in surgical teams exhibit significant reliance and operate under time constraints. Collaboration is crucial for achieving excellent care and ensuring patient safety. Research confirmed that excessive workloads may increase patient safety risks, negatively affecting patients (40). Weart (38) found that insufficient staffing may lead clinicians to hasten, commit mistakes, and perhaps undermine established hospital protocols. Consequently, the AORN advice statement on perioperative staffing necessitates that perioperative nursing leaders formulate an effective staffing strategy tailored to the requirements of surgery patients (41).

Nurses participating in the study said that the health condition of the workforce is crucial. Nurses must maintain physical fitness, since staff weariness may adversely affect patient care. This aligns with the results of the research done by Seyman and Ayaz (42). The OR poses several risks to the safety of patients and workers. It is recommended that in-service training on patient and staff safety be enhanced, precautions be implemented to mitigate risks in the operating room, and the number of operating room nurses and helpers be increased. This research concurs with Pashley (43), who emphasized that burnout may adversely impact an individual's relationships, health, and employment. Burnout among registered nurses may lead to sentinel events or medical mistakes, hence impacting patient care.

6. Employee Training

The results align with those of Ugur et al. (8), indicating that surgical complications due to medical mistakes may be reduced when operating room personnel are taught about patient safety. A prior quasi-experimental study by Sousa et al. (44) indicates that nurses must remain consistently informed about scientific knowledge and share this knowledge with their colleagues to enhance the professionals' skills, thereby ensuring that patients receive exemplary care.

Norman et al. (45) did research titled "Creating Healing Environments through the Theory of caring," which said that establishing a trusting relationship with patients allows nurses to provide superior care in their most vulnerable state. Establishing a trusting connection may be challenging in perioperative treatment due to the fluctuations in the patient's mental state and anxiety levels before and after surgery.

Nonetheless, research by Blomberg et al. (19) on the Responsibility for patient care in perioperative practice asserted that a primary obligation of the surgical team is to ensure the patient's well-being and not to abandon them. In situations when patients exhibit anxiety over their illness and need communication before the procedure, the participants expressed a desire to be available (4). The recent AORN "Guideline for Team Communication" offers directives on employing standardized processes and tools to enhance team communication quality. The primary aspects include handovers between perioperative care phases, a briefing to convey the surgical plan, a time-out to confirm the correct patient, procedure, site, and side, and a debriefing to reflect on lessons learned and areas for improvement (46).

7. Constraints of the Research

The results seen in the General Surgery operating room may not be relevant to other operating rooms, such as those in Cardiology, Neurology, and Ophthalmology, where the workflow differs somewhat from that of the General Surgery operating room. The current research excluded surgeons, anesthesiologists, and anesthesia technicians since the objective was to investigate OR nurses' comprehension of their roles and duties for intraoperative patient safety. Nonetheless, these specialists may be included in future investigations.

8. Practical Implications

In light of these findings and the expanding body of relevant research, nursing leadership should acknowledge that, while the study environment is safe and the quality of care is excellent, there is potential for enhancement and refinement of procedures. They need to enhance these facets of treatment via more adaptable patient safety methodologies. The survey results underscore the caliber of the speak-up culture among nurses on patient safety issues. A culture of open communication might enhance patient safety by preventing errors and facilitating the identification and resolution of mishaps. Nurses must be knowledgeable and use the latest research to avert patient harm and provide optimal results. The current research results validate many nurse competencies for ensuring patient safety during intraoperative procedures. Nurses must demonstrate proficiency in knowledge and skills to provide safe patient care. Furthermore, they must collaborate well with other members of the surgical team to ensure maximum patient safety. This research identified many challenges to intraoperative patient safety, including personnel shortages and time constraints. A review of the findings by nursing management may alleviate work overload and enhance patient safety and care quality.

9. Summary

The results of this study may impact clinical education, practice, and future research. Nursing leadership must provide a secure environment for patients and caregivers by using standardized, consistent, and quantifiable tools and procedures to foresee and avert patient harm. Operating room nurses must document any mistakes and near misses to enable the OR department and other team members to address the consequences of these dangerous incidents, therefore enhancing patient safety via the identification and prevention of errors. Trust is fundamental to patient safety and excellent treatment. Fostering a culture of safety via the encouragement of concern expression and transparency is essential in intraoperative nursing care. Future research should implement and evaluate the best practices presented in this study via an intervention aimed at enhancing safety in the operating room. This study is anticipated to catalyze further research and initiatives aimed at enhancing patient safety.

Several discovered themes illustrate the OR nurses' comprehension of several topics mostly related to patient experience. Consequently, this study's objective is fulfilled, since all topics indicate that nurses articulated their perspectives on their duties and responsibilities regarding patient safety in their practice. Opportunities for improvement exist based on the research results, even within a secure and high-quality care operating room department. Nurses, because of their close contact with patients, are well-positioned to notice concerns about patient safety and quality of treatment.

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تعزيز سلامة المرضى من خلال تقنيات التعقيم الفعالة: الدور الحاسم للتمريض في الإجراءات الجراحية الخارجية

الملخص

الخلفية: يعتبر دور الممرضين في ضمان التقنيات المعقمة خلال الإجراءات الجراحية أمرًا حيويًا لمنع العدوى وضمان سلامة المرضى. على الرغم من وجود بروتوكولات معتمدة، فإن التهاون في الالتزام بها يمكن أن يؤدي إلى مضاعفات كبيرة.

الطرق: تستعرض هذه المراجعة الأدبيات المتعلقة بمسؤوليات ممرضات غرفة العمليات في الحفاظ على الممارسات المعقمة. تشمل المراجعة دراسات نوعية وكمية تقيم تأثير تدخلات التمريض على سلامة المرضى، وخاصة خلال الرعاية داخل العملية. تم إجراء استبيانات ومقابلات مع ممرضات غرفة العمليات لجمع رؤى حول تصوراتهن لبروتوكولات السلامة والتحديات التي يواجهنها في بيئات الجراحة الحقيقية.

النتائج: تشير النتائج إلى أن ممرضات غرفة العمليات يلعبن دورًا محوريًا في حماية سلامة المرضى من خلال الالتزام باليقظ بالتقنيات المعقمة. ومع ذلك، وُجد أن معدلات الامتثال للبروتوكولات المعتمدة كانت غير متسقة، وغالبًا ما تأثرت ببيئات الضغط العالي، ونقص عدد الموظفين، وضيق الوقت. كشفت الدراسة أن تنفيذ استراتيجيات تواصل منظمة والتدريب المستمر قد حسّن بشكل كبير من الالتزام ببروتوكولات السلامة، مما أدى إلى تقليل حالات العدوى في مواقع الجراحة.

الخاتمة: تؤكد الدراسة على ضرورة وجود إطار قوي يدعم ممرضات غرفة العمليات في أدوارهن الحاسمة. التعليم المستمر، والتعاون الفعال، وثقافة تعزز التواصل المفتوح هي أمور أساسية لتعزيز سلامة المرضى خلال الإجراءات الجراحية. من خلال معالجة الحواجز المحددة، يمكن للمؤسسات الصحية تعزيز بيئة جراحية أكثر أمانًا.

الكلمات المفتاحية: تمريض غرفة العمليات، التقنية المعقمة، سلامة المرضى، الإجراءات الجراحية، الوقاية من العدوى.