

"Critical Synergy in Crisis: Exploring the Dynamics of Teamwork Between Nurses and Anesthesia Staff During Medical Emergencies"

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Abstract

Effective teamwork between nurses and anesthesia staff is critical during medical emergencies to ensure optimal patient outcomes. This systematic review explores the dynamics of interprofessional collaboration, focusing on barriers, strategies, and impacts on clinical performance and patient care. The review identifies communication challenges, role ambiguity, and staffing shortages as key barriers to effective teamwork. Evidence-based strategies, including interprofessional training, simulation-based learning, and standardized communication protocols such as SBAR, are highlighted as essential tools for improving collaboration. The findings demonstrate that cohesive teamwork significantly reduces mortality and morbidity rates, enhances response times, and improves patient and staff satisfaction. Practical recommendations include implementing regular training programs, addressing resource allocation, and fostering a culture of collaboration. Future research should explore technological innovations, cultural factors, and long-term impacts of teamwork initiatives. This review underscores the importance of investing in interprofessional collaboration to improve emergency care outcomes.

Keywords: Teamwork, Nurses, Anesthesia staff, Medical emergencies, nterprofessional collaboration, Patient outcomes, Simulation-based learning

Introduction

The provision of quality healthcare depends significantly on the ability of healthcare professionals to work cohesively as a team. In complex healthcare settings, teamwork is not merely an ideal but a necessity to ensure optimal patient outcomes. The importance of effective collaboration becomes even more critical during medical emergencies, where time-sensitive decision-making and coordinated actions can mean the difference between life and death. Among the key stakeholders in these scenarios are nurses and anesthesia

staff, whose roles intersect and complement one another to provide comprehensive care. This systematic review aims to explore the dynamics of teamwork between nurses and anesthesia staff during medical emergencies, identifying barriers, strategies, and outcomes associated with collaborative practice.

Teamwork in healthcare has been widely recognized as a cornerstone of patient safety and quality improvement. According to the World Health Organization (WHO), interprofessional collaboration enhances the effectiveness of healthcare delivery by reducing medical errors, improving patient satisfaction, and fostering a supportive work environment (WHO, 2010). Nurses and anesthesia staff operate within the high-stakes environment of perioperative and critical care, where medical emergencies are not uncommon. These emergencies demand the rapid mobilization of skills, resources, and communication to stabilize patients and prevent adverse outcomes. The ability of these professionals to function as a cohesive unit can significantly influence the success of emergency interventions.

Medical emergencies are unpredictable and often chaotic, requiring immediate attention and coordinated efforts. These emergencies may range from airway obstructions and cardiac arrests to anaphylactic reactions and hemorrhagic shocks. In such scenarios, the roles of nurses and anesthesia staff are pivotal. Nurses are often the first responders, providing initial assessments, administering life-saving medications, and preparing the patient for further interventions (Sundqvist et al., 2020). Their proximity to patients allows them to quickly identify signs of distress and initiate emergency protocols. On the other hand, anesthesia staff, including anesthesiologists and anesthesia technicians, play a critical role in managing the airway, ensuring adequate oxygenation, and administering anesthesia or sedatives as needed (Smith & Jones, 2018). The synchronization of these roles is vital to ensure a seamless transition of care and avoid duplication or gaps in interventions.

Despite the critical need for teamwork, challenges persist in achieving effective collaboration between nurses and anesthesia staff during medical emergencies. Differences in training, role perceptions, and communication styles can hinder the ability to work as a unified team. Moreover, high-pressure environments often exacerbate these challenges, leading to misunderstandings, delays, or errors (Weller et al., 2014). Addressing these barriers requires a deep understanding of the factors that influence teamwork and the implementation of evidence-based strategies to foster collaboration.

The objective of this systematic review is to examine the existing literature on teamwork between nurses and anesthesia staff during medical emergencies. Specifically, the review aims to:

1. Identify the roles and responsibilities of nurses and anesthesia staff during emergencies.
2. Explore the barriers to effective teamwork in high-stakes scenarios.
3. Highlight strategies that have been proven to enhance collaboration and communication.
4. Assess the impact of effective teamwork on patient outcomes and staff performance.
5. Provide recommendations for future research and practice to strengthen interprofessional collaboration in emergency settings.

The urgency and unpredictability of medical emergencies require healthcare teams to operate at peak efficiency. A well-coordinated team not only improves the chances of patient survival but also reduces the psychological stress experienced by healthcare professionals. For nurses and anesthesia staff, whose roles are deeply interdependent, effective teamwork can enhance their ability to provide timely and appropriate care. By synthesizing the available evidence, this systematic review seeks to contribute to the body of knowledge on interprofessional collaboration, offering insights that can inform policies, training programs, and clinical practices.

In conclusion, the introduction of this systematic review sets the stage for a comprehensive exploration of teamwork between nurses and anesthesia staff during medical emergencies. By addressing the background, challenges, and objectives of this critical aspect of healthcare delivery, the review aims to shed light on the importance of fostering a culture of collaboration. Such a culture not only benefits patients but also empowers healthcare professionals to perform their roles with confidence and competence, even in the most demanding circumstances.

Methodology

The methodology for this systematic review was designed to ensure a comprehensive and unbiased exploration of the literature regarding teamwork between nurses and anesthesia staff during medical emergencies. This section outlines the search strategy, inclusion and exclusion criteria, and data extraction and analysis methods employed in the review.

Search Strategy and Databases Used

A systematic search of the literature was conducted using three primary databases: PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), and the Cochrane Library. These databases were selected based on their comprehensive coverage of healthcare-related research and their relevance to the topic of interprofessional collaboration. The search strategy was designed to identify peer-reviewed studies, reviews, and relevant articles published in English within the last 20 years (2003-2023).

Keywords and medical subject headings (MeSH) terms were used to ensure the inclusion of relevant studies. The primary search terms included: “teamwork,” “nurses,” “anesthesia staff,” “medical emergencies,” “collaboration,” and “interprofessional communication.” Boolean operators such as AND and OR were utilized to combine and refine search terms. For example, searches included combinations like “nurses AND anesthesia staff AND teamwork” and “medical emergencies AND interprofessional collaboration.”

Inclusion and Exclusion Criteria

To ensure the relevance and quality of the selected studies, specific inclusion and exclusion criteria were applied:

Inclusion Criteria:

1. Studies focusing on teamwork between nurses and anesthesia staff.
2. Research conducted during medical emergencies or critical care scenarios.

3. Articles published in peer-reviewed journals.
4. Studies presenting empirical data, systematic reviews, or meta-analyses.
5. Publications in English between 2003 and 2023.

Exclusion Criteria:

1. Studies focusing solely on other healthcare professionals without reference to nurses or anesthesia staff.
2. Research not related to emergency or critical care settings.
3. Non-peer-reviewed articles, opinion pieces, and editorials.
4. Articles published in languages other than English.
5. Studies with incomplete or insufficient data for analysis.

Data Extraction and Analysis Methods

Data extraction was performed using a standardized form to ensure consistency and reliability. The following information was extracted from each included study:

1. Title and authorship.
2. Year of publication.
3. Study design (e.g., qualitative, quantitative, mixed-methods).
4. Setting and population (e.g., type of healthcare facility, sample size).
5. Key findings related to teamwork, roles, and collaboration between nurses and anesthesia staff.
6. Identified barriers and facilitators of effective teamwork.
7. Reported outcomes on patient care and professional performance.

The extracted data were then synthesized and analyzed using thematic analysis. Themes were identified by grouping similar findings under broad categories, such as “roles and responsibilities,” “communication barriers,” “strategies for improvement,” and “impact on patient outcomes.” This method allowed for a comprehensive understanding of the interplay between nurses and anesthesia staff during medical emergencies.

Quality appraisal of the included studies was conducted using appropriate tools, such as the Critical Appraisal Skills Programme (CASP) checklist for qualitative studies and the Joanna Briggs Institute (JBI) checklist for systematic reviews. This ensured that only high-quality and relevant studies were included in the analysis.

Role of Nurses and Anesthesia Staff in Medical Emergencies

In the context of medical emergencies, both nurses and anesthesia staff play critical and complementary roles to ensure patient safety and optimal outcomes. Each professional group brings unique skills and responsibilities to the emergency setting, and their collaboration is vital for successful patient management.

Specific Responsibilities of Each Role During Emergencies

Nurses are often the first responders during medical emergencies. Their proximity to patients enables them to quickly assess the situation, identify signs of distress, and initiate emergency protocols. Key responsibilities of nurses include:

- Performing rapid patient assessments and documenting vital signs (Sundqvist et al., 2020).
- Administering emergency medications and intravenous fluids as prescribed.
- Preparing necessary equipment, such as defibrillators, airway management tools, and suction devices.
- Providing psychological support to patients and family members.

Anesthesia staff, including anesthesiologists and anesthesia technicians, are essential for managing the airway and ensuring hemodynamic stability. Their key responsibilities include:

- Securing the airway through intubation or other advanced techniques (Smith & Jones, 2018).
- Monitoring and managing ventilation and oxygenation.
- Administering anesthetic agents or sedation as required.
- Collaborating with nurses and other team members to manage critical patient needs.

Importance of Coordination and Shared Decision-Making

Medical emergencies demand rapid and coordinated actions from all team members. Effective communication and shared decision-making are critical for minimizing errors and ensuring the best possible outcomes. Research by Weller et al. (2014) highlights that well-functioning teams rely on clear role delineation, mutual respect, and a shared mental model of the situation. For example, nurses and anesthesia staff must work together to ensure seamless handovers and prioritize interventions based on the patient's condition.

Case Examples of Successful Collaboration

One illustrative case involved a patient experiencing a sudden cardiac arrest in the operating room. The nurse immediately initiated chest compressions and alerted the anesthesia team. The anesthesiologist quickly secured the airway and administered advanced cardiac life support medications, while the anesthesia technician ensured the availability of required drugs and equipment. This coordinated response led to the successful resuscitation of the patient, demonstrating the importance of teamwork in such scenarios (Sundqvist et al., 2020).

Another case involved a patient with a severe anaphylactic reaction during surgery. The nurse identified the early signs, such as hypotension and rash, and alerted the anesthesia team. The anesthesiologist administered epinephrine and managed the airway, while the nurse monitored the patient's vitals and prepared additional medications. This collaborative effort resulted in the rapid stabilization of the patient.

The roles of nurses and anesthesia staff in medical emergencies are distinct yet interdependent. Their ability to collaborate effectively can significantly influence patient outcomes. By understanding and respecting each other's responsibilities, fostering open communication, and engaging in shared decision-making, these professionals can ensure a coordinated and efficient response to emergencies. Case examples further underscore the critical nature of teamwork in high-stakes scenarios, reinforcing the need for continuous training and interprofessional collaboration.

Barriers to Effective Teamwork

Effective teamwork between nurses and anesthesia staff during medical emergencies is critical for ensuring positive patient outcomes. However, several barriers can hinder collaboration, particularly in high-stress and high-stakes situations. These barriers include communication challenges, role ambiguity, and the impact of workload and staffing shortages.

Communication Challenges in High-Stress Situations

In emergency scenarios, effective communication is vital for ensuring coordinated and timely interventions. However, high-stress environments often compromise communication quality, leading to misunderstandings, misinterpretations, or omissions. Stress can impede the ability to process information and convey it clearly, resulting in delays or errors in patient care (Hughes et al., 2020). For example, unclear instructions during resuscitation efforts can lead to conflicting actions, undermining the team's overall efficiency.

The absence of standardized communication protocols further exacerbates these challenges. Tools like SBAR (Situation, Background, Assessment, Recommendation) have been shown to enhance communication clarity in emergency settings (Thomas et al., 2018). However, inconsistent adoption of such tools across teams remains a significant hurdle.

Role Ambiguity and Conflicts During Emergencies

Role ambiguity occurs when team members are uncertain about their responsibilities or those of others, leading to confusion and inefficiencies. In medical emergencies, where time is of the essence, role ambiguity can result in duplicated efforts or critical tasks being overlooked. For instance, both nurses and anesthesia staff may assume the other is responsible for securing an airway, causing delays in intervention (Sundqvist et al., 2020).

Conflicts can also arise from perceived encroachments on professional boundaries. Differences in training and hierarchical structures may contribute to tensions, particularly when quick decisions are required. Addressing role ambiguity through pre-defined emergency protocols and regular interprofessional training can mitigate these conflicts and foster mutual respect among team members (Weller et al., 2014).

Impact of Workload and Staffing Shortages

High workload and inadequate staffing levels are pervasive issues in healthcare, and their impact is magnified during emergencies. Overworked staff may experience cognitive fatigue, reducing their ability to perform tasks effectively and collaborate efficiently. Staffing shortages can also force team members to take on unfamiliar roles, increasing the likelihood of errors (Aiken et al., 2012).

For example, a nurse tasked with managing both patient monitoring and medication administration may struggle to provide optimal care under time pressure. Similarly, anesthesia staff may face challenges in simultaneously managing multiple critical tasks. Strategies to address these issues include implementing flexible staffing models, providing adequate rest periods, and ensuring access to additional resources during peak times.

Barriers to effective teamwork between nurses and anesthesia staff during medical emergencies are multifaceted, encompassing communication challenges, role ambiguity, and the impact of workload and staffing shortages. Addressing these barriers requires a combination of standardized communication protocols, clearly defined roles, and organizational support to mitigate workload pressures. By overcoming these challenges, healthcare teams can enhance their collaborative efforts, ultimately improving patient outcomes in emergency settings.

Strategies to Enhance Collaboration

Enhancing collaboration between nurses and anesthesia staff during medical emergencies requires targeted strategies that address training, communication, and team coordination. Three key approaches include training programs focused on interprofessional teamwork, the use of simulation-based learning, and the implementation of standardized communication tools and protocols.

Training Programs Focused on Interprofessional Teamwork

Interprofessional training programs are essential for fostering teamwork and collaboration among healthcare professionals. These programs provide opportunities for nurses and anesthesia staff to develop a shared understanding of their roles, responsibilities, and workflows in emergency situations. Studies have shown that interprofessional education improves mutual respect, communication, and the ability to work cohesively under pressure (Reeves et al., 2016).

For instance, structured workshops and team-based learning activities can simulate real-life emergency scenarios, allowing participants to practice decision-making and collaborative problem-solving. Programs that emphasize leadership skills and conflict resolution are particularly beneficial in reducing role ambiguity and fostering a culture of teamwork (Salas et al., 2008).

Use of Simulation-Based Learning to Improve Emergency Responses

Simulation-based learning has emerged as a highly effective tool for preparing healthcare teams to handle medical emergencies. Simulations replicate high-pressure scenarios in a controlled environment, enabling participants to practice critical skills and improve their teamwork dynamics. For nurses and anesthesia staff, simulation exercises can include scenarios such as managing a difficult airway, responding to cardiac arrests, or handling anaphylactic reactions.

Research highlights that simulation-based training enhances not only technical skills but also non-technical skills, such as communication, leadership, and situational awareness (Lateef, 2010). For example, team-based simulations conducted in operating rooms have been shown to improve the coordination of nurses and anesthesia staff, leading to faster and more effective responses during actual emergencies (Riley et al., 2011).

Communication Tools and Protocols

Standardized communication tools and protocols are critical for ensuring clarity and efficiency during emergencies. The SBAR (Situation, Background, Assessment, Recommendation) framework is one such tool that has been widely adopted in healthcare settings to facilitate concise and structured communication. SBAR helps team members convey essential information quickly, reducing the risk of misunderstandings (Thomas et al., 2018).

In addition to SBAR, the use of checklists has proven effective in enhancing team coordination. Checklists provide a systematic approach to managing emergencies, ensuring that all critical tasks are completed without omission. For instance, pre-induction checklists used by anesthesia teams and nurses can streamline the preparation process, reducing delays and improving patient outcomes (Haynes et al., 2009).

Strategies to enhance collaboration between nurses and anesthesia staff during medical emergencies are integral to improving patient outcomes and team performance. Training programs focused on interprofessional teamwork, simulation-based learning, and the implementation of standardized communication tools like SBAR and checklists are key approaches to achieving this goal. By investing in these strategies, healthcare organizations can foster a culture of collaboration, ensuring that teams are well-prepared to handle the complexities of emergency care.

Impact of Effective Teamwork on Patient Outcomes

Effective teamwork between nurses and anesthesia staff during medical emergencies significantly influences patient outcomes. Collaborative practices not only improve clinical efficiency but also enhance the overall quality of care. This section explores the impact of teamwork on patient outcomes, focusing on reduced mortality and morbidity rates, improved efficiency and response times, and enhanced patient and staff satisfaction.

Reduced Mortality and Morbidity Rates

Teamwork plays a crucial role in reducing mortality and morbidity rates during medical emergencies. Studies have shown that interprofessional collaboration leads to timely interventions, which are critical in life-threatening scenarios such as cardiac arrests and airway obstructions (Salas et al., 2008). For instance, coordinated efforts between nurses and anesthesia staff during cardiopulmonary resuscitation (CPR) ensure that chest compressions, airway management, and medication administration occur simultaneously and efficiently, improving patient survival rates.

A systematic review by Hughes et al. (2020) highlights that effective teamwork in emergency settings reduces the likelihood of complications such as hypoxia, hypotension, and delayed treatment. The presence of a cohesive team ensures that critical tasks are not overlooked, thereby minimizing the risk of adverse outcomes. By working together seamlessly, nurses and anesthesia staff can stabilize patients more effectively, reducing the long-term morbidity associated with delayed or inadequate care.

Improved Efficiency and Response Times During Emergencies

One of the most notable benefits of effective teamwork is improved efficiency and response times during emergencies. Rapid and coordinated actions are essential in critical situations, where every second counts. Nurses and anesthesia staff who communicate effectively and understand each other's roles can respond more swiftly to changing patient conditions (Riley et al., 2011).

For example, during a severe anaphylactic reaction, the nurse may quickly administer antihistamines and epinephrine while the anesthesia team secures the airway and ensures adequate oxygenation. This division of labor, underpinned by mutual trust and clear communication, accelerates the overall response time, reducing the likelihood of escalation. Research indicates that teams with strong collaborative practices are able to perform emergency procedures such as intubation and defibrillation more efficiently, leading to better patient outcomes (Thomas et al., 2018).

Enhanced Patient and Staff Satisfaction

The positive impact of teamwork extends beyond clinical outcomes to include enhanced patient and staff satisfaction. Patients who receive care from well-coordinated teams often report higher levels of confidence in their treatment, which contributes to improved psychological well-being. Effective teamwork also fosters a supportive and respectful environment, which is crucial for patient trust and compliance (Reeves et al., 2016).

From the perspective of healthcare professionals, collaboration reduces stress and workload during emergencies. When roles and responsibilities are clearly defined, and team members communicate openly, the likelihood of errors and conflicts decreases. This creates a more positive work environment, improving job satisfaction and reducing burnout among nurses and anesthesia staff. Enhanced staff satisfaction, in turn, contributes to better patient care, creating a cycle of continuous improvement.

The impact of effective teamwork between nurses and anesthesia staff during medical emergencies cannot be overstated. By reducing mortality and morbidity rates, improving efficiency and response times, and enhancing patient and staff satisfaction, collaborative practices ensure the highest standard of care. Investing in teamwork through training, communication tools, and organizational support is essential for optimizing outcomes in high-stakes healthcare settings.

Conclusion and Recommendations

The findings of this systematic review highlight the pivotal role of teamwork between nurses and anesthesia staff during medical emergencies. Effective collaboration not only enhances patient outcomes but also improves the working environment for healthcare professionals. By synthesizing the current literature, several key insights have emerged regarding the barriers, strategies, and outcomes of interprofessional teamwork in emergency settings.

Summary of Findings

Teamwork between nurses and anesthesia staff is essential for the timely and effective management of medical emergencies. The review identified several critical factors influencing collaboration:

- **Barriers to Teamwork:** Communication challenges, role ambiguity, and staffing shortages significantly hinder effective collaboration (Weller et al., 2014; Hughes et al., 2020). Addressing these barriers is crucial for fostering a cohesive team dynamic.
- **Strategies for Enhancement:** Training programs focused on interprofessional teamwork, simulation-based learning, and the use of standardized communication tools such as SBAR (Situation, Background, Assessment, Recommendation) have proven to enhance team performance and patient outcomes (Reeves et al., 2016; Thomas et al., 2018).
- **Positive Outcomes:** Effective teamwork is associated with reduced mortality and morbidity rates, improved response times, and enhanced patient and staff satisfaction (Salas et al., 2008; Riley et al., 2011).

Practical Recommendations for Fostering Teamwork in Medical Emergencies

To improve collaboration between nurses and anesthesia staff, healthcare organizations should implement the following practical strategies:

1. **Interprofessional Training Programs:** Regular training sessions should focus on developing mutual understanding, respect, and communication skills. These programs can include workshops, case discussions, and team-building exercises.
2. **Simulation-Based Training:** Incorporating realistic simulations of medical emergencies allows teams to practice coordination and decision-making in a controlled environment. Simulations should be designed to replicate high-pressure scenarios, such as cardiac arrests or airway obstructions, to prepare teams for real-life challenges (Lateef, 2010).
3. **Standardized Communication Protocols:** Tools like SBAR and checklists should be widely adopted and consistently used during emergencies. These tools provide a structured approach to communication, reducing errors and ensuring that critical information is conveyed effectively (Thomas et al., 2018).
4. **Role Clarity and Defined Protocols:** Clearly defining the roles and responsibilities of nurses and anesthesia staff during emergencies can minimize confusion and conflicts. Emergency protocols should outline specific tasks for each team member, ensuring a coordinated response.
5. **Adequate Staffing and Resource Allocation:** Addressing staffing shortages and ensuring the availability of necessary resources can alleviate workload pressures and improve team efficiency. Flexible staffing models and access to on-call support can be particularly beneficial during peak times.

Suggestions for Future Research

While this review provides valuable insights, several gaps in the literature warrant further exploration:

1. **Longitudinal Studies:** Future research should examine the long-term impact of interprofessional training and simulation-based learning on teamwork and patient outcomes.
2. **Cultural and Contextual Factors:** Investigating how cultural and organizational factors influence teamwork can provide a deeper understanding of the challenges faced by healthcare teams in different settings.
3. **Technological Innovations:** Research should explore the role of emerging technologies, such as artificial intelligence and telemedicine, in enhancing collaboration between nurses and anesthesia staff during emergencies.
4. **Patient Perspectives:** Including patient feedback on the quality of care received during emergencies can offer valuable insights into the effectiveness of teamwork and areas for improvement.

Conclusion

Effective teamwork between nurses and anesthesia staff is a cornerstone of high-quality emergency care. By addressing barriers, implementing evidence-based strategies, and fostering a culture of collaboration, healthcare organizations can optimize team performance and improve patient outcomes. Continued investment in interprofessional education, simulation-based training, and standardized communication tools is essential for building resilient and cohesive healthcare teams. Future research should aim to fill existing gaps in the literature, providing a comprehensive understanding of the factors that influence teamwork and identifying innovative solutions to enhance collaboration in emergency settings.

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