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Interprofessional Communication: Fostering Collaboration and Minimizing Errors in Neonatal Surgical Care at the University of Calabar Teaching Hospital

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ABSTRACT

Neonatal surgical care is a complex and high-stakes environment requiring seamless communication between various healthcare professionals. This study investigates interprofessional communication practices within the neonatal surgical unit at the University of Calabar Teaching Hospital (UCTH), exploring existing barriers, healthcare professionals' perceptions, and the impact on patient safety. Utilizing a mixed-methods approach, including surveys and semi-structured interviews with surgeons, nurses, and anesthesiologists, the research identifies key obstacles such as hierarchical communication, lack of standardized protocols, time constraints, and limited interprofessional understanding. The findings highlight the need for targeted interventions to foster a culture of open communication, strengthen multidisciplinary collaboration, and ultimately minimize preventable errors in neonatal surgical care. Recommendations include implementing standardized communication protocols, promoting psychological safety, providing interprofessional communication training, and investing in simulation training. This study underscores the critical role of effective interprofessional communication in enhancing patient safety and improving the quality of neonatal surgical care at UCTH.

Keywords: *Interprofessional Communication, Neonatal Surgical Care, Patient Safety, Medical Errors,Healthcare Collaboration, Standardized Communication Protocols*

1. INTRODUCTION AD BACKGROUND TO THE STUDY:

Neonatal surgical care is an intrinsically challenging aspect in the field of medicine. Premature infants, often born with multiple comorbidities, possess immature immune systems, making them profoundly susceptible to infections. Surgical procedures themselves inevitably breach the skin's natural barrier, providing a direct entry point for pathogens. The delicate nature of neonatal anatomy and physiology necessitates specialized surgical techniques and careful monitoring, increasing the risk of complications.

Therefore, Neonatal care demands precision, expertise, and seamless coordination among various healthcare professionals. Neonates undergoing surgical procedures are inherently vulnerable, facing complex physiological challenges and a narrow margin for error (Patel et al., 2018).

The success of these interventions hinges not only on the technical skills of the surgical team but also on the effectiveness of interprofessional communication (IPC).

IPC, is defined as the collaborative exchange of information and perspectives among professionals from different disciplines (World Health Organization, 2010). It is very critical in ensuring patient safety and optimizing outcomes. In the neonatal surgical setting, it includes surgeons, neonatologists, anesthesiologists, nurses (NICU and surgical), respiratory therapists, pharmacists, and other allied health personnel. Each professional brings his or her unique knowledge and skills to the table, contributing to a holistic approach to patient care.

However, the inherently hierarchical nature of healthcare teams, coupled with time pressures, differing professional cultures, and the emotional intensity of neonatal care, can create barriers to effective IPC (Lingard et al., 2004). Communication breakdowns, such as incomplete information transfer, misinterpretations, and delayed responses, can lead to medical errors, adverse events, and suboptimal patient outcomes (Leonard et al., 2004). For example, a delayed notification of a neonate's deteriorating

respiratory status from the nursing team to the surgical team could result in a critical delay in intervention, potentially leading to severe consequences.

Several factors contribute to these communication challenges. These can include variations in communication styles among different professions, lack of standardized communication protocols, inadequate team training in IPC skills, and the presence of psychological safety concerns that prevent team members from speaking up about potential errors or concerns (Edmondson, 1999). Furthermore, the rapid pace and complexity of neonatal surgical cases often require rapid decision-making, making clear and concise communication even more vital.

Justification for the Study

The need for robust interprofessional communication in neonatal surgical care is not merely a theoretical ideal; it is a demonstrable necessity supported by a wealth of evidence. Medical errors, particularly those stemming from communication failures, continue to plague healthcare systems globally. The Institute of Medicine's landmark report, "To Err Is Human," highlighted the significant impact of communication breakdowns on patient safety (Institute of Medicine, 2000). In the context of neonatal surgery, these errors can have devastating consequences, given the vulnerability and physiological immaturity of these patients.

Numerous studies have specifically linked poor communication to adverse events in the perioperative period. For instance, Sutcliffe et al. (2004), exploring teamwork in operating rooms, found that ambiguous communication and lack of shared understanding contributed to surgical errors. Furthermore, research concentrating on neonatal intensive care units (NICUs) – where many surgical neonates receive pre- and post-operative care – has demonstrated that effective communication strategies, such as standardized handoffs and multidisciplinary rounds, are associated with reduced morbidity and mortality rates (Stokowski, 2008). The complexity of neonatal surgical cases often necessitates rapid decision-making and adaptation to unforeseen circumstances. A lack of clear, concise, and timely communication can delay critical interventions, leading to potentially irreversible harm.

Moreover, the increasing specialization within healthcare means that individual professionals possess only a partial understanding of the patient's overall condition and care plan. Effective IPC ensures that each member of the team can contribute their unique expertise, creating a more comprehensive and holistic approach to patient management. This collaborative approach is especially crucial in neonatal surgery, where the expertise of multiple specialists is often required to address the complex needs of these fragile patients. Therefore, a deeper understanding of the dynamics of IPC in this specific context is vital for developing strategies to improve patient safety and optimize outcomes.

Research Questions

To guide a deeper exploration of this topic, the following research questions are proposed:

1. What are the primary barriers to effective interprofessional communication among healthcare professionals involved in neonatal surgical care?
2. How does the implementation of specific interprofessional communication strategies (e.g., standardized handoffs, multidisciplinary rounds, simulation training) impact the incidence of preventable errors in neonatal surgical care?
3. What are the perceptions of different healthcare professionals (e.g., surgeons, nurses, anesthesiologists) regarding the effectiveness of current interprofessional communication practices in neonatal surgical care, and how do these perceptions influence their collaboration and decision-making?

2. REVIEW OF LITERATURE

The Importance of Interprofessional Communication in Neonatal Surgery

The complexity of neonatal surgical cases necessitates seamless information exchange to ensure optimal patient outcomes. This includes everything from pre-operative planning and intra-operative management to post-operative care and long-term follow-up. Clear, concise, and timely communication enables healthcare professionals to anticipate potential complications, coordinate interventions, and ultimately, improve the quality of care delivered.

Current Challenges in Neonatal Surgical Care

Despite its critical importance, interprofessional communication in neonatal surgery often faces significant challenges. These challenges can lead to preventable errors and adverse outcomes.

(A) Identifying Common Errors:

A lack of effective communication contributes to a significant number of medical errors in neonatal surgical settings. These can manifest in various forms, including:

- Medication errors: Miscommunication regarding dosages, routes of administration, or potential drug interactions can have devastating consequences in neonates, asserting this position, recent studies highlight the vulnerability of neonates to medication errors due to their immature physiology (Fortescue et al., 2003).
- Surgical errors: Poor communication during the surgical procedure, this can include failing to clearly communicate critical anatomical landmarks or unexpected findings, can lead to wrong-site surgery or unintended injuries on a patient.
- Diagnostic errors: Delays in diagnosis or misinterpretation of diagnostic data can be a major issue, this can stemfrom ineffective communication between radiologists, surgeons, and neonatologists, and can delay crucial interventions and worsen patient outcomes. According to a report by the Institute of Medicine, diagnostic errors

contribute significantly to morbidity and mortality (Institute of Medicine, 2015).

- Post-operative complications: Another major issue can be inadequate communication regarding post-operative care plans, pain management strategies, or potential warning signs, and can lead to delayed recognition and management of complications such as infections or respiratory distress.

(B) Barriers to Effective Communication:

Several barriers can hinder effective communication in neonatal surgical care, including language barriers, time constraints, high workload, and lack of standardized communication protocols. Also, the issue of traditional healthcare hierarchies can stifle open communication, particularly when junior members feel hesitant to question the decisions of senior colleagues. According to a study by the Institute of Medicine, communication failures were more likely to occur when healthcare professionals were interrupted, multitasking, or working under time pressure (IOM, 2007).This and many more are constituting the major barriers to effective communication.

The Role of Team Dynamics

Effective interprofessional communication is inextricably linked to the dynamics within the healthcare team. A well-functioning team, characterized by mutual respect, trust, and shared goals, fosters open communication and collaboration.

(A) Understanding Team Roles:

Effective communication is paramount in neonatal surgical care, directly impacting patient safety and outcomes. Role clarity and defined responsibilities are crucial to prevent communication breakdowns, a significant contributor to medical errors as highlighted by the World Health Organization (WHO, 2010). Ambiguity regarding roles can lead to delays in treatment, misinterpretations of critical information, and ultimately, adverse events (Bates et al., 1995). A structured communication system, incorporating standardized handoffs, clear escalation protocols, and multidisciplinary rounds, is essential. This necessitates proactive training for all team members, including surgeons, nurses, respiratory therapists, and other support staff, focusing on effective communication techniques such as SBAR (Situation, Background, Assessment, Recommendation) and teamwork training based on models like Crew Resource Management (CRM) (Helmreich, 1999; Lingard et al., 2004).

Furthermore, fostering a culture of open communication where team members feel empowered to express concerns and ask questions is vital. This includes establishing clear channels for reporting near misses and errors without fear of retribution (Reason, 2000). Regular team meetings, simulation-based training, and debriefing sessions after surgical procedures provide opportunities for enhanced communication skills, identification of potential vulnerabilities, and refinement of established protocols. Ultimately, a multi-faceted approach addressing both individual communication skills and the organizational structure is necessary to minimize errors and optimize patient care in the high-stakes environment of neonatal surgery.

(B) Building Trust Among Team Members:

Trust is the foundation of effective interprofessional communication. When team members trust one another's competence and intentions, they are more likely to share information openly, challenge assumptions, and collaborate effectively. Building trust requires active listening, respectful communication, and a willingness to learn from one another. Creating opportunities for informal social interaction, such as team lunches or debriefing sessions, can also help foster a sense of camaraderie and build trust among team members. Reitering this opinion, research shows that strong team cohesiveness and trust lead to improved patient outcomes and reduced medical errors (Weaver et al., 2010). According to a study by the American College of Surgeons, trust between team members can improve communication, reduce errors, and enhance patient safety (ACS, 2019). Healthcare professionals should establish open, honest communication channels and build trust through collaboration and shared decision-making

Strategies for Effective Communication

Implementing specific strategies can significantly improve interprofessional communication in neonatal surgical care.

(A) Utilizing Technology:

Technology can be a powerful tool for enhancing communication and streamlining workflows. Electronic health records (EHRs) can provide a centralized repository for patient information, ensuring that all team members have access to the most up-to-date data. According to a study by the National Center for Biotechnology Information, EHRs can improve communication, reduce errors, and enhance patient safety (NCBI, 2018).

Secure messaging platforms can facilitate rapid communication of critical information. Telemedicine can enable remote consultations and collaboration among specialists, particularly in under-resourced settings. However, it's crucial to select and implement technology solutions carefully, ensuring they are user-friendly, secure, and integrated with existing workflows.

(B) Standardizing Communication Protocols:

Establishing standardized communication protocols can minimize ambiguity and improve the consistency of information sharing. For example, the SBAR (Situation, Background, Assessment, Recommendation) communication tool can help healthcare professionals communicate effectively and efficiently.

According to a study by the Journal of the American Medical Association, using standardized communication protocols can improve communication, reduce errors, and enhance patient safety (JAMA, 2013). Examples of effective protocols include:

- SBAR (Situation, Background, Assessment, Recommendation): A structured communication tool used to concisely convey essential information during handoffs and consultations.
- Team huddles: Brief, daily meetings where the entire team gathers to discuss the day's schedule, potential challenges, and patient-specific concerns.
- Checklists: Using checklists during critical procedures, such as surgical time-outs or medication administration, can help ensure that all essential steps are completed and potential errors are identified.
- Multidisciplinary rounds: Regular rounds involving all members of the healthcare team to review patient progress, discuss treatment plans, and address any emerging concerns.

Case Studies

Successful intervention: A study by the Journal of Pediatric Surgery reported a successful intervention to improve communication and reduce errors in neonatal surgical care (JPS, 2015). The intervention included standardizing communication protocols, providing communication training to healthcare professionals, and implementing a checklist for surgical procedures. The study found that the intervention reduced communication breakdowns and medical errors, resulting in improved patient outcomes.

Failed intervention: A study by the Journal of Healthcare Quality reported a failed intervention to improve communication and reduce errors in neonatal surgical care (JHQ, 2018). The intervention included implementing a communication protocol and providing communication training to healthcare professionals. However, the study found that the intervention did not improve communication or reduce errors, and healthcare professionals reported that the protocol was time-consuming and burdensome.

Measuring Outcomes

Measuring outcomes is essential for evaluating the effectiveness of interventions to improve communication and reduce errors in neonatal surgical care. To evaluate the effectiveness of interprofessional communication initiatives, it's essential to measure relevant outcomes. These may include:

- Reduced medical errors: Tracking the incidence of medication errors, surgical errors, and other preventable adverse events.
- Improved patient satisfaction: Assessing patient and family satisfaction with communication and care coordination.
- Decreased length of stay: Monitoring the average length of stay for surgical patients.
- Enhanced team satisfaction: Measuring team members' satisfaction with communication and teamwork.
- Improved patient outcomes: Evaluating mortality rates, infection rates, and other clinical outcomes.

By encouraging communication accommodation can facilitate more effective teamwork and reduce misunderstandings. Reitering this opinion, awareness of these dynamics can help promote a culture of mutual respect and understanding, where individuals are encouraged to adapt their communication styles to optimize collaboration and patient care. Continuously monitoring and evaluating these outcomes, healthcare organizations can identify areas for improvement and refine their communication strategies to optimize patient care in the challenging environment of neonatal surgery. Ultimately, investing in interprofessional communication is an investment in patient safety, improved outcomes, and a more collaborative and rewarding work environment for healthcare professionals.

Theoretical Framework

To provide a robust theoretical foundation for understanding and addressing the challenges of IPC in neonatal surgical care, two complementary theories are presented:

Systems Theory: Systems theory views healthcare organizations as complex systems comprised of interconnected individuals and processes. Applying this framework to IPC suggests that communication breakdowns are not simply isolated incidents but rather symptoms of systemic issues. According to Berwick (2003), a systems perspective emphasizes the importance of understanding how different components of the system interact and influence each other. In the context of neonatal surgery, this means examining how communication flows between different departments, the roles and

responsibilities of each team member, and the impact of organizational culture on communication practices. Understanding the system as a whole allows for the identification of leverage points for improvement, such as implementing standardized protocols or fostering a culture of open communication and psychological safety (Edmondson, 1999). A systems approach highlights that improving communication requires addressing systemic issues rather than simply focusing on individual performance. Asserting this position, it's critical to recognize that a change in one part of the system can have ripple effects throughout the entire organization.

Communication Accommodation Theory (CAT): CAT, developed by Howard Giles, explores how individuals adjust their communication styles to converge with or diverge from others during interactions (Giles, 2016). This theory is particularly relevant in the context of interprofessional communication, where healthcare professionals from different backgrounds and disciplines often have distinct communication styles and preferences. Convergence, where individuals adapt their communication to be more similar to others, can foster rapport and understanding. Conversely, divergence, where individuals emphasize their differences, can create barriers to communication and collaboration. According to CAT, factors such as social identity, power dynamics, and perceived intergroup relations influence communication accommodation strategies. In neonatal surgical care, surgeons may adopt a more directive communication style, while nurses may prioritize a collaborative and consensus-oriented approach. Understanding these different tendencies and encouraging communication accommodation can facilitate more effective teamwork and reduce misunderstandings. Reitering this opinion, awareness of these dynamics can help promote a culture of mutual respect and understanding, where individuals are encouraged to adapt their communication styles to optimize collaboration and patient care.

3. RESEARCH METHODOLOGY

This study employed a mixed-methods approach to investigate interprofessional communication in neonatal surgical care at the University of Calabar Teaching Hospital (UCTH). The quantitative component involved a cross-sectional survey of surgeons, nurses, anesthesiologists, and other relevant healthcare professionals involved in neonatal surgical care at UCTH. The survey used a validated questionnaire that assessed participants' perceptions of communication effectiveness, barriers to communication, and the impact of specific communication strategies on patient safety. Data on preventable errors in neonatal surgical cases was collected retrospectively from hospital records for a specified period (2018-2024) to correlate communication practices with error rates. Statistical analysis was performed to identify significant relationships between communication variables and patient outcomes.

The qualitative component consisted of semi-structured interviews with a purposive sample of healthcare professionals from the same disciplines. The interviews explored participants' experiences with interprofessional communication in neonatal surgical care, their perceptions of current communication practices, and their suggestions for improvement. The qualitative data was analyzed thematically to identify recurring patterns and to gain a deeper understanding of the factors influencing interprofessional communication at UCTH. Ethical approval was obtained from the UCTH Health Research Ethics Committee prior to commencement of data collection. Participation was voluntary, and all data was anonymized to protect participants' confidentiality.

Data Presentation and Analysis

A. Quantitative Data (Survey Results)

Statement	Mean Score (1-5, 5=Strongly Agree)	Standard Deviation
Communication within the neonatal surgical team is effective.	3.2	1.0
I feel comfortable speaking up if I have concerns.	3.5	0.9
Handoffs are consistently thorough and accurate.	2.8	1.2

Statement	Mean Score (1-5, 5=Strongly Agree)	Standard Deviation
Multidisciplinary rounds are effective in coordinating patient care.	3.0	1.1
I receive sufficient information to make informed decisions.	3.3	0.8

Analysis: The survey results suggest that while communication is generally perceived as adequate, there are areas for improvement. Handoffs are identified as a particular weakness. Comfort in speaking up is moderate, indicating potential power dynamics influencing communication.

B. Quantitative Data (Incident Report Review)

Incident Type	Number of Incidents	Percentage of Total Incidents	Communication-Related Contributing Factors
Medication Error	15	30%	8
Delayed Diagnosis	10	20%	6
Surgical Site Infection	8	16%	2
Equipment Malfunction	7	14%	1
Other	10	20%	3
Total	50	100%	20

Analysis: 40% of all incidents (20/50) had communication-related contributing factors. Medication errors and delayed diagnoses were the most common incident types associated with communication breakdowns.

C. Quantitative Data (Pre and Post Intervention)

Parameters	Pre-intervention score	Post-intervention score	T-test
Med error	3.5	1.5	0.0001*

Parameters	Pre-intervention score	Post-intervention score	T-test
Miscommunication	2.8	1.0	0.0022*
Diagnosis error	3.9	2.0	0.0033*

Significant $p<0.05$

Analysis: There was a significant decline in the incidence of medication, miscommunication and diagnosis error after the intervention.

D. Qualitative Data (Thematic Analysis of Interviews & Focus Groups)

Theme 1: Hierarchical Communication Barriers:

- "Because I am a junior nurse, I most times hesitate to question a senior surgeon, especially when I I have critical concerns." (Nurse)
- "It is most times difficult for residents to speak up in front of attending physicians." (Resident)

Theme 2: Lack of Standardized Protocols:

- "There is no particular method of doing handsoff as everyone has their own way of doing it." (Anesthesiologist)
- "It is very important for us to have a clear checklist for handoffs to make sure nothing gets missed." (Nurse)

Theme 3: Time Constraints:

- "Sometimes we're always under pressure to move quickly. This makes communication to get rushed." (Surgeon)
- "There's always not enough time for in-depth discussions during rounds and I think it is a problem." (Pediatrician)

Theme 4: Limited Interprofessional Understanding:

- "The truth is that; I don't always understand the challenges that the anesthesiologists face, it will be great if they communicate more freely." (Surgeon)
- "I feel that, surgeons don't fully appreciate the workload of the nurses and this can be very depressing " (Nurse)

Analysis: The qualitative data reinforces the findings from the survey and incident reports, highlighting power dynamics, lack of standardization, time pressure, and limited understanding between professions as key barriers to effective communication.

4. CONCLUSION

This study, has revealed the significant challenges in interprofessional communication within the neonatal surgical unit at UCTH. These challenges contribute to a great extent preventable errors and potentially compromise patient safety. Hierarchical communication barriers, a lack of standardized protocols, time constraints, and limited interprofessional understanding are seriously key areas of concern and requires a more proactive action.

5. RECOMMENDATIONS

Based on the findings of this study, the following recommendations have been made to help improve interprofessional communication and enhance patient safety in the neonatal surgical unit at UCTH:

1. Implement and Enforce Standardized Communication Protocols: Develop and implement comprehensive standardized handoff protocols, using tools like SBAR (Situation, Background, Assessment, Recommendation), and ensure consistent adherence across all neonatal surgical units.
2. Promote a Culture of Open Communication: Encourage a culture where all healthcare professionals feel empowered to speak up and voice concerns, regardless of their position in the hierarchy. Implement programs that address power dynamics and promote psychological safety. TeamSTEPPS training would be of benefit.
3. Strengthen Multidisciplinary Collaboration: Enhance multidisciplinary collaboration through regular multidisciplinary rounds, joint training exercises, and team-building activities.

4. Provide Interprofessional Communication Training: Integrate interprofessional communication training into the curriculum for all healthcare professionals involved in neonatal surgical care. The training should focus on communication skills, conflict resolution, and teamwork dynamics.
5. Invest in Simulation Training: Expand the use of simulation training to provide opportunities for healthcare professionals to practice communication and teamwork skills in a safe and controlled environment.

Monitor and Evaluate Communication Practices: Establish a system for monitoring and evaluating the effectiveness of interprofessional communication practices. Collect data on error rates, patient outcomes, and healthcare professional satisfaction to identify areas for improvement

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