

Nurse Clinical Decision-Making in Head Injury Patients

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ABSTRACT

Background: A head injury is a critical emergency that requires fast and appropriate treatment to prevent disability and death. Management of head injury patients is closely related to nurses' clinical decision-making. This study aims to explore nurses' experiences in clinical decision-making when managing head injury patients in the Emergency Department (ED). **Methods:** This study employed a qualitative design with a phenomenological approach to explore in-depth the experiences of nurses in Waluyo Jati Hospital, East Java, Indonesia. Data were collected from nine nurses selected using purposive sampling, based on inclusion criteria: (1) a minimum education level of a Diploma in Nursing, (2) possessing a minimum of five years of clinical experience in the emergency department, and (3) having completed key emergency care certifications. The number of participants was determined based on data saturation, which was reached when the eighth and ninth interviews produced no new themes. Data collection was conducted through semi-structured in-depth interviews lasting 30–40 minutes each. All interviews were audio-recorded and transcribed verbatim. Data were analysed using Interpretative Phenomenological Analysis (IPA) to identify emerging patterns and themes. Triangulation was done through the use of multiple data sources, including interview transcripts, field notes, and the researcher's reflection journal. **Results:** The study identified three core themes: (1) Clinical Decision-Making Model as an expert nurse for head injury patients, (2) Factors influencing clinical decision-making by nurses, and (3) Nurse Clinical Decision-Making Implications. **Conclusion:** Nurses' clinical decision-making has a critical role for head injury patients in emergency departments, where time and precision can mean the difference between life and death.

Keywords: *Clinical Decision Making; Nurses; Head Injury; Phenomenology; Emergency Department*

INTRODUCTION

Head injury is a critical medical condition that requires rapid and accurate clinical decision-making to prevent permanent disability or death (Van Gils *et al.*, 2020). Globally, head injury is the fifth leading cause of death and accounts for nearly half of all trauma-related fatalities (Laeke *et al.*, 2019). In developing countries, the mortality rate for head injury patients ranges between 17.5% and 70% (Critchley *et al.*, 2020), with delays in clinical decision-making identified as a major contributing factor (Hants *et al.*, 2023). These delays often occur within emergency departments (EDs) (Ekwantoro *et al.*, 2020), where time-sensitive decisions must be made under extreme pressure, often with limited information and resources.

In such high-stakes environments, nurses are frequently the first healthcare professionals to assess and initiate care for head injury patients (Oh *et al.*, 2022). However, despite their central role, nurses' authority in clinical decision-making is often constrained by institutional protocols and legal limitations (Storaker *et al.*, 2019). Many clinical decisions in life-threatening scenarios are made based on delegated responsibility from physicians, rather than autonomous nursing judgment (Dagne & Beshah, 2021). Furthermore, decision-making in emergency situations is often unplanned, instinctive, and shaped by personal experience and professional confidence (Diamond-fox & Bone, 2021).

Previous research on clinical decision-making in nursing has primarily focused on three areas: general clinical decision-making within nursing practice (Watkins, 2020), preferred decision-making styles (Pitel & Mentel, 2017), and decision-making based on delegation (Jiang *et al.*, 2023). However, these studies have not

Received: October 30, 2024; Received in revised form: September 15, 2025; Accepted: September 21, 2025

adequately explored how emergency nurses make independent or semi-autonomous decisions in critical cases such as head injuries—where timing, professional judgment and context sensitivity are paramount.

This gap highlights the need for a deeper understanding of how ED nurses make clinical decisions specifically in head injury cases—what models of decision-making they employ, what factors influence their decisions, and what implications these decisions have for patient outcomes, professional practice, and legal accountability (Al-Azri *et al.*, 2020; Ip *et al.*, 2015). This study addresses these issues by investigating nurses' lived experiences, focusing on how they navigate the complexities of clinical decision-making under pressure in real-world emergency settings. This study is based on the argument that clinical decision-making for emergency room nurses is very important to do research in dealing with patients with injuries that can be seen from their experience directly dealing with patients, such as experience determining the decision-making model that must be done, factors that influence decision-making, and implications for clinical decision-making nurses in handling head injury cases (Arra *et al.*, 2023).

The aim of the study differed from previous studies, as it focused on finding out the extent of Emergency Department (ED) nurses' experience in performing clinical decision-making in head injury patients. Accordingly, this study is based on three questions. First, what is the clinical decision-making model of emergency room nurses for head injury patients? Second, what are the factors that influence clinical decision-making in head injury patients? Third, what are the implications of nurses' clinical decision-making for head injury patients?

METHODOLOGY

Research Setting

The research was conducted over the course of one month at the Emergency Department (ED) of Waluyo Jati Hospital, East Java, Indonesia, a regional referral hospital for emergency cases, particularly head injuries.

Research Design

The research used a qualitative design with a phenomenological approach, which is appropriate for exploring the lived experiences and meaning-making processes of emergency department nurses in clinical decision-making for patients with head injuries.

Population and Sampling

The population in this study consisted of nurses working in the ED. Informants were selected using a purposive sampling technique, allowing the researcher to deliberately choose participants who could provide rich, relevant, and diverse information related to the research topic.

Inclusion Criteria

A total of nine informants were selected based on predetermined inclusion criteria: as (1) having a minimum education level of a Diploma in Nursing (D3), (2) Possessing a minimum of five years of clinical experience in the emergency department and (3) having completed key emergency care certifications, including Basic Trauma Cardiac Life Support (BTCLS), Emergency First Aid (EFA), and Emergency Ambulance Service Training (EAST).

Sample Size and Data Saturation

The sample size of nine participants was considered sufficient based on qualitative sampling principles that emphasise depth and richness of data rather than statistical representation. Data saturation was achieved when interviews with the eighth and ninth informants no longer yielded new themes, categories, or variations in the data, indicating that additional interviews were unlikely to contribute further insights relevant to the research questions. This point of saturation ensured that the study had captured a comprehensive understanding of the phenomenon under investigation.

Data Collection

Data collection was conducted through in-depth, semi-structured interviews, each lasting approximately

30–40 minutes. Interviews were audio-recorded with participant consent and supplemented by field notes that captured contextual and non-verbal observations. The researcher acted as the primary instrument in data collection, ensuring consistency and reflexivity throughout the process.

Data Analysis

Data analysis was carried out using Interpretative Phenomenological Analysis (IPA) as described by Smith *et al.* (2009). The steps included: (1) thoroughly reading interview transcripts, (2) taking detailed notes to identify meaningful expressions and experiences, (3) developing emergent themes from significant statements, (4) clustering themes and connecting patterns, (5) interpreting meanings, (6) constructing narrative accounts supported by verbatim quotes, and (7) presenting the final thematic structure (Smith *et al.*, 2009).

Triangulation

Triangulation was done through the use of multiple data sources, including interview transcripts, field notes, and the researcher's reflection journal. This helped to cross-verify findings and strengthen the validity of interpretations.

Credibility and Trustworthiness

This strategy collectively ensured the credibility, dependability, confirmability, and transferability of the study's findings, in line with established standards of qualitative research.

Global Context and International Framework Review

In this study, in a global context, a brief review of the international nursing regulatory framework was conducted. This review informed the interview guide and the analysis, allowing for a comparative perspective on the authority, autonomy, and legal protection afforded to nurses in emergency decision-making.

International Guidelines and Comparative Perspective

Key international guidelines from the International Council of Nurses (ICN) in 2021 on nurses' roles and responsibilities were considered as a benchmark against which the local finding could be contrasted. Furthermore, studies from various healthcare systems (Haddad *et al.*, 2023) were referenced to understand how systemic structures influence nursing autonomy globally. This approach enriches the methodology by not only capturing local experiences but also framing them within broader international discourses on nursing practice.

Ethical Consideration

The researchers obtained ethical approval from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Brawijaya, Indonesia, with reference number 67/EC/KEPK-S2/03/2020 on 31st March 2020.

RESULTS

Clinical Decision-Making Model as an Expert Nurse for Head Injury Patients

The results of the research in in-depth interviews with informants can be seen in Table 1 as follows:

Based on Table 1, it can be explained that the form of clinical decision-making as an expert nurse (expert) on head injury patients based on the results of in-depth interviews with informants can be categorised into two models of nurse clinical decision-making, namely clinical decision-making based on intuition and decision-making based on analytics. Clinical decision-making based on intuition was carried out by informant 4, informant 8, informant 1, and informant 2 as follows: First, they have experience in BTCLS, EFA, and EAST training. Second, being an emergency room nurse for more than five years (>5 years). Third, they are accustomed to handling head injury cases of mild, moderate, and severe severity.

Table 1: Clinical Decision-Making Model as an Expert Nurse for Head Injury Patients

Informant	Experience As an Expert Nurse	Clinical Decision-Making Model	Action in What Cases	Interview Narrative
Informant 4	- Attended BTCLS, EFA, and EAST training. - Nurse >5 years - Accustomed to handling head injury cases	Intuition	Management of mild, moderate, and severe head injury cases	<i>"If there is a COB (severe brain injury) patient, we immediately take them to P1. We have attended EFA training, so if there is a patient, we immediately take oxygenation measures."</i>
Informant 8	- Attended BTCLS, EFA, and EAST training. - Nurse >5 years - Accustomed to handling head injury cases	Intuition	Management of mild, moderate, and severe head injury cases	<i>"The patient was brought in with a severe head injury from an accident, causing a reflex reaction showing a GCS of 1-1-2 as well as vomiting. During triage, the patient was immediately moved to the resting area. The first step was to free his airway, and if there was vomit, the nurse immediately addressed it with a finger swab or suction. This action was immediately performed by the nurse."</i>
Informant 5	- Attended BTCLS, EFA, and EAST training. - Nurse >5 years - Accustomed to handling head injury cases	Analytical	Management of mild, moderate, and severe injury cases	<i>"What is certain is that for patients with any injury, we look at the A, B, and C; especially if the injury is severe, we make sure the breathing and circulation and the environment are secured first; what else is clear is the ABC handling first?"</i>
Informant 3	- Attended BTCLS, EFA, and EAST training. - Nurse >5 years - Accustomed to handling head injury cases	Analytical	Management of mild, moderate, and severe injury cases	<i>"If it's a P1 patient, it must be fast, so the golden period must be less than 5 minutes; if it's a P3 patient, it's okay not to consult a doctor."</i>
Informant 1	- Attended BTCLS, EFA, and EAST training. - Nurse >5 years - Accustomed to handling head injury cases	Intuition	Management of mild, moderate, and severe head injury cases	<i>"I think making clinical decisions does require experience. So, the longer we work, the more cases we encounter; the more we get used to making decisions on cases like that (head injury)."</i>
Informant 2	- Attended BTCLS, EFA, and EAST training. - Nurse >5 years - Accustomed to handling head injury cases	Intuition	Management of mild, moderate, and severe injury cases	<i>"Because it's been a long time, so I'm used to it, so what must be done must be this or must be this."</i>

BTCLS - Basic Trauma Cardiac Life Support; EFA - Emergency First Aid; EAST - Emergency Ambulance Service Training; COB - Critical Observation Brain; GCS - Glasgow Coma Scale; ABC - Airway, Breathing, and Circulation

Analytic-based clinical decision-making was carried out by informant 5 and informant 3 as follows: First, they have experience in BTCLS, EFA, and EAST training. Second, being an emergency room nurse for more than five years (>5 years). Third, they are accustomed to handling head injury cases of mild, moderate, and severe severity.

Factors Influencing Clinical Decision-Making by Nurses

The results of the research in in-depth interviews with participants can be seen in Table 2 as follows:

Based on Table 2, it can be explained that the factors that influence clinical decision-making by nurses in head injury patients are as follows: First, the factor of loss of authority is felt by emergency room nurses in making clinical decisions on head injury patients by waiting for instructions from doctors because they do not dare to make their own decisions. Second, fear of making the patient worse. In this case, nurses are afraid of making the patient's condition worse after the action is taken. Third, replacing doctors' duties. Nurses more often replace doctors' duties, where the action should be carried out by a doctor but delegated to nurses. Fourth, SOP (standard operational procedure) for clinical decision-making according to the doctor's instructions. In this case, nurses implement the SOP, which requires making clinical decisions based on the doctor's instructions. Fifth, there is no clear regulation on delegation from doctors to nurses. In this case, nurses feel that there is no clear delegation between doctors and nurses. Sixth, there is no clear legal regulation. In this case, nurses feel that there is a need for clear legal regulations related to clinical decision-making.

Table 2: Factors Influencing Clinical Decision-Making by Nurses

Informant	Factors	Coding	Interview Narrative
Informant 8	Loss of authority to the patient	Internal	"If there is a head injury patient, we triage first. The first thing we do is give oxygen, and we still have to wait for instructions from the doctor and report to the doctor. Then we wait for the next instruction. We don't dare to make our own decisions."
Informant 7	Fear of aggravating the patient's condition	Internal	"Fear definitely exists, but because it is something we have to do, Head trauma is a very big risk; we are worried about our actions later, let's say there is something wrong, we are worried that there is a fracture that we don't know about, which will automatically make it worse."
Informant 9	Replacing the doctor's work	Internal	"Almost all nursing actions on patients are actually performed by doctors; it's just that they are delegated to nurses. So in the future, it is expected that if all of them are indeed delegated to nurses, they should all be included in nursing actions."
Informant 3	The Standard Operating Procedures for clinical decision making according to doctor's instructions	External	"So we work according to SOP (Standard Operational Procedure). The SOP here is according to the doctor's instructions, and the SOP requires us to do so."
Informant 5	There is no clear regulation on delegation from doctors to nurses	External	"If it is indeed the realm of nursing, it's okay to put it into nursing, not delegated. The delegation is not clear either; because the delegation is not written. When there is an incident, the SOP talks, even though we take action every day. That's why we need a nurse's license, so if anything happens, everything is legal."
Informant 6	There is no clear legal regulation	External	"We hope we are legally protected because we always do delegated work."

Nurse Clinical Decision-Making Implications

The results of the research in in-depth interviews with participants can be seen in Table 3 as follows:

Based on the data in Table 3, it can be explained that the implications of nurses' clinical decision-making are, first, saving the patient's life. Nurses can give life to patients by making the right decisions. Second, increasing the patient's family trust in nurses. In head injury cases, patients often die. In this case, the family entrusts the safety of their family member to the nurse. Nurses get the mandate to save head injury patients, and families entrust the safety of their family members to nurses. They trust the nurse that the patient can be saved. Third, improving the caring attitude of nurses as professionals. Nurses, as professionals, must make every effort to save patients.

Table 3: Nurse Clinical Decision-Making Implications

Informant	Implications	Coding	Interview Narrative
Informant 3	Saving the patient's life.	Patient	"P1 patients are handled by the Head of the Guard (the leader of the medical personnel on duty), so from the beginning to the end of treatment, the patient is handled by the Head of the Guard until stabilized or referred."
Informant 6	Saving the patient's life.	Patient	"At that time, the apneu patient was in code blue condition, and the doctor was not available. I myself performed CPR and asked other nurses to provide bagging. It worked, so for me, it was the most memorable experience."
Informant 7	Increase the trust of the patient's family.	Patient's Family	"I still take action regardless of the patient's condition at that time. I asked the patient's family, who was near the patient at that time, "Do you agree if this device is installed in the patient's body?" They answered, "Yes, ma'am. The important thing is that the patient recovers."
Informant 5	Increase the trust of the patient's family.	Patient's Family	"We just intend to help. From the first time, we intended to help so that the family would not be sad and believe that the patient would survive."
Informant 1	Improve the caring attitude of nurses as professionals	Nurse	"There are many cases of death; even referral is not necessarily possible. Even trepanation has a low success rate. But as professionals, we do our best because we care."
Informant 2	Improve the caring attitude of nurses as professionals	Nurse	"Everything must be considered in terms of humanity. We are trying to keep the patient safe, and conscientiously, I care."

DISCUSSION

Nurse clinical decision-making in head injury cases is based on the nurse's experience as a nurse in the emergency department. Good clinical decisions can be made based on the model used in clinical decision-making. Factors that influence clinical decision-making and the implications of clinical decision-making are based on a sense of responsibility as a professional nurse, clinical experience, and training. In addition, nurses must be able to work in teams, respect each other, and understand their respective responsibilities as well as clear regulations and legal protection to avoid conflict.

Clinical Decision-Making Model as an Expert Nurse for Patients with Head Injuries

Clinical decision-making by nurses in cases of head injury is closely tied to their professional experience and clinical expertise in the emergency department. The study findings revealed that expert nurses utilise two primary models of decision-making: the intuition-based model and the analytic-based model. The intuition-based model emerges from repeated exposure to similar clinical scenarios. Experienced nurses rely on their ability to quickly recognise patterns and make rapid decisions, often without consciously referring to protocols. This is consistent with Benner's (1982) theory, which differentiates expert nurses from novices based on their intuitive grasp of clinical situations. Marino *et al.* (2020) and Taylor *et al.* (2017) further support this, emphasizing that intuition in nursing is built through repeated practice and reflection.

On the other hand, the analytic-based model is employed when nurses face unfamiliar or complex conditions. In these cases, decisions are made through structured assessment, logical reasoning, and the application of clinical guidelines. Stafford *et al.* (2022) and Sale *et al.* (2024) assert that even experienced nurses integrate both intuition and analysis, depending on the context. This dual-model approach is particularly evident in high-risk emergency settings, such as head injury cases, where nurses must balance speed with accuracy. As such, the decision-making model used is not rigid but rather fluid and context-dependent, shaped by the nurse's level of experience and situational demands.

Factors that Influence Clinical Decision-Making by Nurses

Several factors influence how nurses make clinical decisions, particularly in high-stakes situations involving head injury patients. The first and foremost is clinical experience and training, which build the foundation for confident and accurate judgment. Nurses who have undergone specific training such as Basic Trauma Cardiac Life Support (BTCLS), Emergency First Aid (EFA), and Emergency Airway Skills Training (EAST) are better equipped to assess patients swiftly and initiate appropriate interventions. However, systemic and regulatory limitations also play a significant role. The study found that nurses often experience a loss of authority or autonomy in decision-making due to hierarchical structures or unclear delegation from physicians. Kusumaningrum *et al.* (2013) and Farčić *et al.* (2020) found similar limitations, where nurses are dependent on doctors for action orders, reducing their responsiveness during emergencies. Additionally, psychological factors such as fear of adverse outcomes and anxiety when dealing with life-threatening conditions were identified. Shih *et al.* (2021) and Nia *et al.* (2016) highlighted how the potential for patient mortality increases emotional stress, which can impact decision-making.

Clear delegation protocols and legal protection are crucial to mitigate these risks. Suryanti *et al.* (2021) and Sila *et al.* (2019) emphasised that written delegation from physicians provides legal and professional safeguards for nurses. Furthermore, Dunger *et al.* (2017) stressed that although nurses often act under delegated authority, such decisions must be supported by institutional and legal frameworks to ensure accountability and confidence in care.

Nurse Clinical Decision-Making Implications

The implications of clinical decision-making in head injury patients are profound—not only for the patient but also for families, healthcare teams, and institutions. Effective decision-making can improve survival rates, reduce complications, and foster trust between nurses and patients' families. Kwon *et al.* (2020) describe professional nurses as responsive and perceptive to patient needs, traits that are crucial in emergency situations.

Family presence during treatment can enhance transparency and trust. Bradley (2021) notes that family members who witness nursing care are more likely to believe that everything possible is being done. This aligns with the findings of this study, where nurses' timely decisions positively influenced family perceptions and satisfaction. Moreover, nursing care infused with compassion and professionalism is central to quality outcomes. According to Watson's theory of human caring and Swanson's theory of caring, clinical decision-making should not only be technically sound but also emotionally and ethically grounded (Chipu & Downing, 2022). When nurses act with a sense of professional integrity and caring, patients benefit holistically—both clinically and emotionally (Esquivel-Garzón *et al.*, 2025). This study contributes uniquely by focusing specifically on life-threatening head injury scenarios, providing insights into how expert nurses function in high-pressure environments.

This study's findings reveal both significant parallels and striking divergences with global research on emergency nursing decision-making. The reliance on both intuitive and analytical models aligns with international literature, which consistently identifies experience as a critical driver for developing clinical intuition (Institute of Medicine, US, 2011). The swift, pattern-recognition-based actions of expert nurses are a universal characteristic of high-performing emergency departments worldwide. However, a critical divergence emerges in the domain of autonomy and legal framework. While nurses in many developed countries operate under well-defined scope of practice regulations that grant them significant autonomy in emergency interventions (Haddad *et al.*, 2023), the nurses in the study described an environment defined by constrained authority and dependence on delegation. The pervasive themes of “loss of authority”, “fear” of aggravating the condition” and the need for “clear legal regulation” highlight a systemic barrier that is less pronounced in studies from countries with more mature independent nursing practice acts. This suggests that the challenges in clinical decision-making are not solely individual or experience-based but are profoundly shaped by national regulatory and medico-legal contexts. The Indonesian nursing practice environment, as evidenced here, may reflect a more physician-centric model, whereas other global settings are increasingly adopting a collaborative interprofessional model where nurses are empowered as autonomous practitioners within a defined scope (Institute of Medicine, US, 2011).

Limitations

This study has several limitations that need further investigation. First, it involved nurses in a type C hospital, where the organizational culture tends to be more doctor-centric in clinical decision-making, with limited authority for nurses. This may be different in a type A hospital, where nurses are more encouraged to make clinical decisions independently or in teams. Secondly, data collection was subjective, focusing on nurses' experience in dealing with head injury cases, which may vary in situation and handling.

CONCLUSION

This study highlights the critical role of nurses in clinical decision-making for head injury patients in emergency departments—where time, precision, and confidence can mean the difference between life and death. Drawing from rich experiential data, the research reveals that experienced nurses utilise both intuition-based and analytic-based decision-making models, depending on the complexity and familiarity of each clinical situation. The findings underscore that clinical experience, professional responsibility, psychological resilience, teamwork, and regulatory clarity are key factors shaping nurses' decisions. However, systemic barriers such as lack of autonomy, unclear delegation, and limited legal protection remain significant challenges that must be addressed.

This study opens several avenues for future research. Firstly, a comparative study between different hospital classes (e.g., Type A vs. Type C) in Indonesia is crucial to understand how organisational hierarchy and culture impact nursing autonomy. Secondly, research employing quantitative methods is needed to correlate specific clinical decision-making models with patient outcomes (e.g., door-to-intervention time, mortality rates) in head injury cases. Thirdly, an in-depth policy analysis of the Indonesian Nursing Practice and its implementation across healthcare institutions would identify specific gaps between law and practice. Lastly, exploring the perspective of emergency physicians and hospital administrators on nurse delegation and autonomy would provide a holistic view of the interprofessional dynamics at play.

Recommendation

For regulatory bodies and policymakers: Revise and clarify the nursing practice act: clearly define the scope of practice and autonomous decision-making authority for emergency nurses, particularly for time-critical interventions in trauma care. This must be supported by robust legal protection for actions performed in good faith within this defined scope.

For hospital management: Implement structures delegation policies: move from verbal, ad-hoc delegation to written, standing delegation orders for common emergency procedures, co-signed by the head of the emergency department and the chief of nursing. This provides clear institutional backing for nurses.

For nursing education and professional development: Integrate decision-making science into curricula: enhance nursing education with dedicated training on clinical reasoning, both analytical and intuitive, using case studies and simulations focused on emergency scenarios.

Conflict of Interest

The author declare that have no conflict of interest.

ACKNOWLEDGEMENT

The authors express their gratitude to all informants, Research, and Community Service Institutions of Universitas Nurul Jadid, Indonesia, for their support of this research.

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