

Factors Influencing Decision Making among Ambulance Nurses and Emergency Staff in Emergency Care Situations

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Abstract:

The decision-making process of ambulance nurses plays a critical role in ensuring effective emergency care and patient outcomes. This review explores the factors influencing the decision-making of ambulance nurses during emergency situations. The decision-making process in such settings is influenced by cognitive and emotional theories, which play vital roles in the way nurses process information and make decisions under time pressure. Patient-related factors, organizational factors, and personal factors also significantly impact decision-making. The complex interplay between these factors often results in a multi-faceted decision process, which can lead to improved or detrimental patient outcomes. By investigating these factors, this study aims to provide insights into how decision-making frameworks can be developed and improved, especially in high-stress emergency situations. Future research directions include integrating technological advancements to support decision-making processes and the continuous development of training frameworks.

Keywords: Ambulance nurses, emergency care, decision-making, cognitive decision-making, emotional decision-making, patient outcomes, organizational factors, personal factors, decision support, healthcare training, decision-making models.

1. Introduction

Emergency situations can pose a dilemma for healthcare professionals in terms of decision-making. Healthcare professionals are required to make timely decisions when they are involved in emergency care situations. The decisions made can have serious implications on patient outcomes; hence the decisions have to be apt (Al-Moteri, 2022). With the increase in out-of-hospital emergencies, the role of ambulance nurses has become pivotal in addressing emergencies prior to hospitalization. These nurses are required to make autonomous as well as team-based decisions. Given the complexity of the decisions, it is vital to understand the factors influencing the decisions made by ambulance nurses. Therefore, the objective of the review is to gain an understanding of the factors that influence the decision-making of ambulance nurses in emergency care situations. Ambulance nurses play a critical role in addressing out-of-hospital emergency care situations. Recently, the out-of-hospital emergency care has been in focus with the increase in incidents such as cardiac arrests outside hospitals. In Sweden, most emergency ambulance services are provided by nurses and paramedics. Nurses working in ambulances are a new addition to the team and have been reported to face challenges in decision-making. The decision-making becomes more challenging given that 93% of the emergency care situations are pre-hospital and mobile emergency situations. The decisions can be considered complex as they include numerous tasks that involve several personnel, time pressure, altered environments, and uncertain outcomes. Despite the complexities, not much consideration has been given to understand the factors influencing decision-making amongst nurses in ambulances.

2. Theoretical Framework

Theoretical Framework is to provide an overview of the essential theories regarding decision making processes, which are used to analyze the empirical findings and interpreting the results. The emphasis will be on cognitive and emotional decision making theories, which are considered the most important frameworks. Cognitive decision making theories focus on rational and logical thought processes during decisions made in emergency situations encountered by nurses. On the other hand, emotional decision making theories take into consideration the impact of sentiments and moods during feelings-driven and momentary choices. These two frameworks are therefore the basis for this thesis. The focus is on how these theories influence the outcomes of emergency care decisions made by ambulance nurses, by analyzing the influencing factors within the same context. This section is intended to help situate the empirical findings into theoretical groundings and encourage further research on this topic.

Decision making is a conscious or unconscious process of thinking, deliberating and concluding where several options are considered and one or more selected to act upon. It occurs at every moment in life and can be simple or complex, either individually or collectively done. People do not always foresee the effect of their choices, where decisions made are best viewed as predictions rather than certain outcomes. However, in emergency medical situations, prediction might not come easy since time always plays a crucial role in the unfolding chain of events, and uncontrollable factors create a fog of uncertainty. This cannot be more poignant than in the decisions made regarding an ill or injured person's health, condition or life. Hence, a paradigm-shifting co-evolution of theoretical and practical frameworks in research and disciplinary is pursued. From a theoretical perspective, the constructs of decision making are observed as determinants co-acting in an interplay that either enables expert outcomes or awards novice failures. (Jayatilake and Ganegoda2021)(Settembre-Blundo et al.2021)

The purpose of this chapter is to present the theoretical grounding for the study, focusing on the interplay of factors that influence decision making in emergency care situations. A review of the relevant literature is first provided to contextualize the study, followed by a description of the theoretical framework used to analyze the findings. The chapter concludes with a summary of how the theoretical framework contributes to the significance of the study. Overall, this chapter sets the stage for a deeper exploration of the factors that shape decision making and highlights the importance of considering both theoretical and practical perspectives in understanding emergency medical situations.

2.1. Cognitive decision making theories

Cognitive decision making theories focus on the cognitive aspects of the decision making process. The purpose of this section is to explore cognitive decision making theories in the context of ambulance nursing practices. These theories explain how nurses in emergency care situations process information, and evaluate options for action, resolving multiple choices prior to taking action. A large variety of cognitive models exist, highlighting different aspects of the cognitive processes involved in making decisions (Al-Moteri, 2022). A vital part of the cognitive decision making process is the formation and use of mental models. To decide upon an action, a nurse constructs a mental model of the possible actions. The mental model will reflect the outcome of a rational analysis of options prior to taking action. Other pertinent aspects of cognitive decision making include proposition of heuristics as a means of achieving efficient choice in complex situations and the recognition that there are sequences in how decisions are made, focusing first on fast and frugal heuristics, and later on rational analysis. Nevertheless, there are many cognitive biases that may impair decision making. These biases can take numerous forms or pitfall paths, showcasing the dangers of relying on cognition alone in decision making. Cognitive overload is discussed as key understanding of how too much cognitive input impairs the decisions of nurses in high pressured scenarios. Overall, cognitive decision making theories adequately describe how nurses make decisions in emergency care situations. Cognitive elements are linked to real life ambulance situations, with examples of how cognition is applied in practice. System-1 thinking is described as the dominant decision making approach, with its advantages and disadvantages. Training and experience mediate cognitive decision making, improving the levels of awareness in system-2 thinking. New insights of how cognitive frameworks guide nurses through critical deemed decision judgements are also discussed. Cognitive decision making theories represent the most salient decision making frameworks for ambulance nurses. However, cognitive decision making does not come without perils and pitfalls. A detailed understanding of the cognitive processes at play in the decision making of ambulance nurses has been described with theoretical models and concepts from cognitive decision making theory. (Diagnoses2021)

2.2. Emotional decision making theories

Emotions can play a central role in the decision making process. In emergency care situations, decision making is often rapid and involves emotional aspects (Al-Moteri, 2022). The following emotional decision making theories are investigated and their implications on the context of ambulance nurses are discussed.

Somatic Marker Hypothesis Damasio proposed that emotional responses become linked to thoughts or outcomes (somatic markers) through a learning process. When similar situations arise, the somatic markers are activated and influence subsequent decisions. The nurses often rely on their emotions and feelings to guide their choices. In a learning environment, the process of managing patients may go wrong, leading to feelings of fear or upset. These emotions create a somatic marker associated with that situation and may influence future decision making when similar patients arrive. Somatic markers can also be positive, directing thoughts towards desirable behaviors. After caring for a difficult patient and successfully resolving the issues, the nurses may feel good and be more inclined to take on similar patient interactions in the future, knowing that the outcomes will likely be good as well.

LeDoux's Dual Brain System LeDoux emphasizes the role of the unconscious in emotion and decision making. An emotional stimulus triggers two pathways: a fast, unconscious subcortical pathway and a slow, conscious cortical pathway. The choice is often influenced more by feelings than rational thoughts. In emergency care situations, choices with strong emotional content are decided rapidly. Rapid patient assessments are made based on physiological parameters and, for example, patient observations. A high score of a particular parameter may lead to feelings of fear and concern regarding that patient's condition. As a result, the nurses prioritize those patients even if no clinical decisions have been made, reflecting a choice influenced more by emotion than deliberation. This hypothesis emphasizes a possible imbalance between emotional responses and rational thought in decision making, a predicament often faced in emergency care situations. (Bijani et al., 2021)(Joseph-Williams et al.2021)

The Neurophysiological Model Koenig highlights the impact of empathy in clinical decision making. There is a tendency to choose treatments with positive effects for the patient rather than neutral or negative ones. The neuromodulator oxytocin enhances pro-social behaviors. Nurses experience empathy towards patients which involves imagining the patient's situation and feelings of personal distress, leading to emotional involvement. Empathy increases sensitivity to risk and promotes choices that avoid detrimental outcomes for the patient. The nurses sometimes have difficulty in handling patients who exhibit aggressive behavior due to an overdose of narcotics. Even though clinical decisions have been made regarding the treatment and procedures to be performed on the patient, the interaction does not proceed as planned. The nurses feel stressed and fearful, and building a rapport with the patient becomes difficult. The treatment is postponed, and the choice to proceed with the treatment is avoided in order to protect the patient from harm.

When assessing a patient's condition post-admission to the ICU, a clinical decision to proceed with extubation is made, but the decision is put on hold. There is a feeling of fear regarding the outcome and the nurses choose to request further examinations. In these examples, empathic concern leads to a choice that avoids possible negative outcomes for the patient. Another dimension of decision making in clinical settings is how stress affects choices. High stress can result in either an increased focus on a specific aspect of the situation or a failure to perceive important features. During a cardiac arrest, clear roles are defined for the team members, and the nurses are focused on administering drugs and recording the data. A choice is made not to conduct patient observations even though it is routine to question the dosage of the drugs administered. There were instances when the medications were inadvertently administered twice, pointing out possible "errors of omission," where the nurse fails to act on a decision made. (Eckerling et al.2021)(Moltke & Hindocha, 2021)(Di et al.2021)

Decision making is multi-faceted and emotional aspects are integrated. Empathy and concern for the patient are critical in health care but can also interfere with decision making. Awareness of the emotional aspects involved is important, and in the context of nursing education, training for emotions rather than only rational thought is needed to achieve the desired patient outcomes.

3. Factors Influencing Decision Making

Awareness of the situation, belief, control of consequence, decision execution, and mental model emergency care setting are factors influencing decision-making. The complexity and variety of situations encountered in real-life practice and how these influence judgments can be difficult to understand (Al-Moteri, 2022). Factors influencing decisions are categorized as either intrinsic or extrinsic. Influences relating to the individual, such as personality or motivation, are intrinsic, while influences from the environment, including social norms and educational systems, are extrinsic. For ambulance nurses, an array of influences shapes the decisions taken to care for the patient. To discover these influences, in-depth interviews were undertaken with ambulance nurses in various emergency care situations. The complexity of factors influencing decisions is illustrated, demonstrating how different influences may interplay in shaping outcomes. To aid understanding, factors are categorized as being related to the patient, the organization, or the individual nurse. (1) Patient factors address gymnastic and heart-related issues. Conducted interviews illustrated how patients' conditions and the resources available influenced the tempo of decision-making: the more critical the patient, the more rapid the decisions. (2) Organizational factors focus on how the organization

influences decision-making by either restricting or encouraging it. An example concerns CPR in a public space where a decision must be made between providing care in situ or transferring the patient to an ambulance. (3) Personal factors consider how an individual nurse's knowledge and experience affect their actions. These cognitive attributes may either assist in interpreting a situation or hinder decisions through doubt about one's abilities. Decisions taken by ambulance nurses in emergency care situations are complex, shaped by a variety of influences. Understanding these influences may highlight possibilities for improvement in decision-making.

3.1. Patient-related factors

Patient-related factors were the most influential in the decision-making processes of ambulance nurses. These factors included the patient's medical history, the presenting symptoms, and the immediate needs based on those aspects. As remarked by the interviewees, the nurses must assess these elements as rapidly and as accurately as possible in order to make informed decisions. Factors relating to the variations in patient conditions were brought up. The nurses explained that depending on how critical a patient's condition is, the priorities and actions taken in emergencies may vary. A priority at times may be to start a medication en route to the hospital, whilst at other times a patient may need to be "stabilized" before leaving the scene. Regarding the variation of actions taken in regard to the same emergency illness, an interviewee illustrated: "Depending on how the situation is, if a young person arrives in cardiac arrest and there are lots of witnesses, one starts to consider a lot of things, brings in lots of help, starts the CPR maybe even before the assessment." The emotional state of the patients and their families also influenced the nursing decisions. As described by the interviewees: "You have to try to calm them down and listen to them, follow them, be where they are." The nurses also stressed the importance of communicating with the patient, especially addressing what care he/she has a right to know and the patient's understanding of what is being done: "If the patient is awake, it is a very bad picture if he/she does not know who you are, or what you are doing." Overall, the factors related to the patients were identified as the most important in shaping the responses of ambulance nurses (Ebrahimian et al., 2018). Thus, a patient-centered approach apparently enhances the quality of the decisions made.

3.2. Organizational factors

Decision-making in the ambulance service comprises a balance between independence and the presence of frameworks. Within the ambulance service, an organization's factors such as structure, policies, and resources influence decision making. There is an overall policy for the organization that every nurse in the service has to adhere to in the field, as well as different types of protocols at different levels. Protocols can aid in making the best decision because they have been tried and tested, yet sometimes it is necessary to deviate from these protocols. Training and team dynamics shape how decision-making in the field develops and have input into how questions within protocols are interpreted (H.A. Ebben et al., 2015). Not all nurses think the same about a protocol due to background, experience, and how individual nurses view a protocol. A strong organizational culture, in which nurses can involve each other in deliberation and discussion about a decision, encourages this decision to be made more quickly. Support systems that ensure a decision is communicated promptly to those who need it, or who can assist it, also ensure a decision is acted upon quickly. In addition to issues with organizational culture, challenges such as staffing levels or lack of certain equipment ensure that a decision is not always acted upon how it should be (Al-Moteri, 2022). Personal experience, in these situations where staffing levels are low, has seen that training that is not possible to conduct in real life is skipped, and training that could be conducted on an emergency is also very difficult to have happen when only one nurse is on. Overall, leadership and management within ambulance services must strive to create more support for nurses, thus easing how decisions are made and ensuring decisions are always made the best way possible. Organizational influences on decision-making merit further investigation, especially frameworks that are responsive considering the unique demands of emergency care. Understanding these organizational influences is critical to improving overall patient outcome.

3.3. Personal factors

This subsection examines personal factors that affect the decisions of ambulance nurses. Personal factors refer to how individual characteristics can influence decisions, such as experience, education, and emotional resilience. These aspects also describe how decisions are made, acknowledging that choice processes can differ significantly from one nurse to another based on personal background and capability. The style of decision-making can depend on the individual attitude toward professional development. The ability to use experience as a learning tool can enhance decision-making abilities. Because stress and fatigue are influential in shaping decision processes, it is also important to recognize the limits of one's capacity (Al-Moteri, 2022). Decision-making procedures or abilities can therefore be systemized in 'what can be done' or 'what should not be done.' Some decisions may appear to be for the better, but experience recognizes that it has been detrimental to patients. Those decisions

should not have been made and awareness creates an ability to reject similar approaches in the future. Stress or fatigue can hinder one's ability to make appropriate decisions, choice processes in such states tend to become careless. Methods in which self-awareness and reflection can shape personal decision-making have also been examined. Personal awareness of values is thought to help exercise control over how decisions are made. In some cases, values can restrict considerations and impose decisions, illustrating the difficulty in distinguishing between personal values and professional ethics.

Values can be defined as principles or standards of behavior one deems as important. While professional ethics is a system where values are compiled into rules and obligations that conduct behavior, it can be argued that the interplay of personal values and professional ethics is what makes selection procedures so complicated (Torabi et al., 2018). Emergency care is highly ethical where all actions are argued with moral principles. Personal values can therefore greatly affect how decisions are made. Alternatively, acknowledging and understanding one's personal values is thought to minimize the risk of inappropriate decisions. Focusing purely on ethical principles and obligations can dull the sensitivity of moral judgment. Acknowledging that special values can affect decisions sheds light on how decisions can be wrongful. Illustrating awareness or understanding of principles behind why decisions are made significantly enhances the meaning of choice. Without such awareness, there is little implication in the discussion; thus, the importance of individual characteristics is recognized in the decision-making context. Personal factors are meant to illustrate how aspects can enhance proper decisions as well as hinder appropriate choices. Addressing the significance of individual characteristics contributes to understanding the holistic nature of decisions made in the context of emergency nursing.

4. Impact of Decision Making on Patient Outcomes

The decision-making processes of ambulance nurses are critical in determining patient outcomes in emergency situations. Effective decision making can lead to timely interventions that significantly improve patient care, while poor decision making can result in adverse patient outcomes, potential loss of life, and increased morbidity (Al-Moteri, 2022). Case studies have shown that wrong decisions made by emergency service personnel have led to preventable patient deaths. For instance, a patient who collapsed during a class reunion died after 45 minutes of unsuccessful resuscitation attempts, exacerbated by the failure of the emergency dispatcher to provide adequate first-aid advice. Another case involved a 97-year-old man who suffered fatal cardiac arrest due to a failure to activate the emergency response system in a nursing facility. Statistics reveal a stark contrast between the effectiveness of the Swedish ambulance service in saving lives compared to the UK, with outside factors like inappropriate decision making in Scandinavia costing an estimated 600 lives per year (Voss et al., 2020). These case studies underscore the fundamental link between decision making and patient outcomes and highlight the need for continuous efforts to improve decision-making practices.

To increase patient safety and quality of care, it is essential to share information about the most effective and cost-efficient decision-making practices. Inter-organizational collaborations can be useful arenas for sharing best practices in emergency care, as evident from a network initiative in three northern European countries. Furthermore, decision-making approaches can be refined through feedback mechanisms about patient outcomes following the decisions, as demonstrated in the different approaches taken by ambulance services and hospitals in Sweden and the UK. While ambulance services lack feedback on patient outcomes, hospitals receiving 999 calls have developed detailed systems to investigate adverse outcomes, resulting in better awareness of the implications of decisions. These insights are particularly relevant for Finland, where ambulance services control their own operation and complaint systems, leading to few unforeseen decision-making errors. Nonetheless, the impact of decision making on the overall effectiveness of emergency healthcare services is still fundamental, regardless of other factors.

5. Conclusion and Future Directions

The research presented in this paper provides an understanding of the factors influencing decision making among ambulance nurses in emergency care situations. Five participating nurses were followed during their shifts in an ambulance and emergency care unit, and interviews were conducted to capture their decision-making processes. The research highlights that decision making is multi-faceted, influenced by various experiential and contextual factors, and is a complex process, especially in high-pressure emergency care situations.

The findings reveal that a combination of concrete goals, previous experiences, and trust in one's ability to handle care situations drives the decision-making processes among ambulance nurses. Time pressure is identified as the most influential factor shaping the way decisions are made, resulting in a focus on life-threatening issues and the need for a broader understanding of a patient's condition. The research emphasizes the importance of integrating cognitive and emotional aspects

in training for nurses, as this could promote effective decision processes and modulate nurses' actions to avoid detrimental decision processes.

Future research could explore how technology affects decision-making processes in emergency care scenarios and consider the development of technology as a supportive tool. Organizations are encouraged to implement changes that support nurses in maintaining resilience in high-pressure environments and to consider education and training frameworks that are continual rather than one-off training. It may also be possible to develop decision-making guidelines specifically for emergency situations and to study how these guidelines affect patient outcomes. There is a call for a holistic approach in which academia, healthcare services, and technology developers work together to understand decision making as a means to improve patient outcomes and efficacy in healthcare (Al-Moteri, 2022).

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