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Research Article

CLINICAL DECISION-MAKING AND SITUATIONAL ADAPTATION IN NURSING PRACTICE: IMPLICATIONS FOR PATIENT SAFETY

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ABSTRACT

Clinical decision-making and situational adaptation are essential competencies in nursing practice that significantly influence patient safety and quality of care. This study aims to examine the role of clinical decision-making, situational awareness, and adaptive responses in dynamic healthcare environments. A narrative review design was adopted, utilizing literature from databases such as PubMed, CINAHL, Scopus, Web of Science, and Google Scholar. Relevant studies published between 2010 and 2025 were analyzed using a thematic approach. The findings indicate that clinical decision-making is a complex process involving both analytical reasoning and intuitive judgment. Situational awareness comprising perception, comprehension, and projection emerged as a critical factor in guiding accurate and timely decisions. Nurses with high situational awareness were more effective in identifying patient deterioration and initiating appropriate interventions. Situational adaptation further enabled nurses to respond flexibly to rapidly changing clinical conditions. Several factors were found to influence these processes, including clinical experience, workload, environmental conditions, communication, and teamwork. Expert nurses demonstrated superior pattern recognition and anticipatory skills, while supportive work environments enhanced decision-making efficiency. Conversely, high workload and poor communication increased the risk of errors. Educational strategies such as simulation-based training, case-based learning, and reflective practice were effective in improving decision-making and adaptive skills. Technological tools also supported clinical decisions, though they should complement rather than replace clinical judgment. In conclusion, strengthening clinical decision-making and situational adaptation through education, experience, and organizational support is essential for improving patient outcomes and ensuring patient safety in nursing practice.

Keywords: Clinical decision-making, Situational awareness, Nursing practice, Patient safety, Clinical judgment.

INTRODUCTION

Clinical decision-making is a fundamental component of professional nursing practice, directly influencing the quality, safety, and effectiveness of patient care (Tanner, 2006). Nurses are continuously required to make complex clinical judgments in dynamic healthcare environments characterized by uncertainty, time constraints, and rapidly changing patient conditions. These decisions range from routine assessments to critical interventions that may determine patient outcomes. As frontline healthcare providers, nurses play a pivotal role in identifying patient needs, prioritizing care, and implementing timely interventions, making their decision-making ability crucial for ensuring patient safety (World Health Organization

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WHO, 2019). In contemporary healthcare systems, the complexity of patient care has significantly increased due to advancements in medical technology, rising prevalence of chronic diseases, and the growing demand for high-quality care. Patients often present with multiple comorbidities, requiring nurses to synthesize large volumes of clinical information and make informed decisions in real time. This complexity necessitates not only strong clinical knowledge but also the ability to interpret subtle clinical cues, anticipate potential complications, and respond appropriately. In such settings, traditional linear approaches to decision-making are often insufficient, highlighting the importance of adaptive and context-sensitive clinical reasoning (Levett-Jones *et al*., 2010). Situational awareness has emerged as a critical concept underpinning effective clinical decision-making in nursing. It refers to the nurse's ability to perceive relevant clinical information, comprehend its significance, and project future patient outcomes (Endsley, 1995). This cognitive process enables nurses to maintain a comprehensive understanding of the clinical situation and respond proactively rather than reactively. For example, recognizing early signs of patient deterioration, such as subtle changes in vital signs or behavior, requires a high level of situational awareness. Failure to accurately perceive or interpret these cues can lead to delayed interventions and adverse patient outcomes (Stubbings *et al*., 2012). Closely linked to situational awareness is the concept of situational adaptation, which involves modifying actions and decisions in response to changing clinical circumstances. In real-world practice, patient conditions can evolve rapidly, requiring nurses to adjust care plans, reprioritize tasks, and collaborate with other healthcare professionals. Situational adaptation reflects the nurse's flexibility, resilience, and capacity to respond effectively under pressure. It is particularly important in high-acuity settings such as emergency departments, intensive care units, and surgical wards, where timely and appropriate responses are critical for patient survival (Benner, 1984). Clinical decision-making in nursing is influenced by a combination of cognitive, experiential, and environmental factors. Cognitive processes such as critical thinking, clinical reasoning, and metacognition play a central role in analyzing information and selecting appropriate interventions (Tanner, 2006). Experienced nurses often rely on intuitive judgment and pattern recognition developed through years of practice, whereas novice nurses tend to depend more on analytical and rule-based approaches (Benner, 1984). While intuition can enhance efficiency and speed, it may also introduce biases if not supported by evidence-based knowledge. Therefore, a balance between intuitive and analytical decision-making is essential for optimal clinical outcomes. Environmental factors, including workload, staffing levels, time pressure, and availability of resources, also significantly impact decision-making and situational adaptation. High workload and fatigue can impair cognitive functioning, reduce attention to detail, and increase the likelihood of errors. Similarly, inadequate communication and poor teamwork can hinder the sharing of critical information, compromising situational awareness. In contrast, supportive work environments that promote collaboration, effective communication, and access to clinical decision support systems can enhance nurses' ability to make accurate and timely decisions. Patient safety is a global priority in healthcare, and improving clinical decision-making is a key strategy for reducing medical errors and adverse events. According to international patient safety reports, a significant proportion of healthcare errors are associated with failures in clinical judgment and situational awareness (Stubbings *et al*., 2012).

Medication errors, delayed diagnosis, and failure to recognize patient deterioration are common examples of such failures. Strengthening nurses' decision-making capabilities and adaptive skills can therefore play a vital role in minimizing risks and improving patient outcomes. Education and training are critical for developing clinical decision-making and situational adaptation skills among nurses. Modern nursing education emphasizes the use of simulation-based learning, case-based discussions, and reflective practice to enhance critical thinking and clinical reasoning. Simulation training, in particular, provides a safe environment for nurses to practice responding to complex clinical scenarios, improve situational awareness, and develop adaptive responses without risking patient safety (WHO, 2019). Additionally, ongoing professional development and mentorship programs can support nurses in refining their skills and adapting to evolving healthcare demands. Technological advancements have also contributed to improving clinical decision-making in nursing practice. Electronic health records, clinical decision support systems, and monitoring technologies provide real-time data and evidence-based recommendations, assisting nurses in making informed decisions. However, reliance on technology should not replace clinical judgment; instead, it should complement and enhance the nurse's cognitive processes (Levett-Jones *et al*., 2010). Despite the recognition of its importance, challenges remain in ensuring consistent and effective clinical decision-making across diverse healthcare settings. Variations in experience, education, and organizational support can lead to differences in decision-making quality and patient outcomes. Therefore, there is a need for a comprehensive understanding of how clinical decision-making and situational adaptation interact and how they can be optimized to enhance patient safety.

This study aims to examine the role of clinical decision-making and situational adaptation in nursing practice and their impact on patient safety. It focuses on understanding how nurses apply clinical judgment, critical thinking, and situational awareness in dynamic care environments. The study also identifies key factors influencing decision-making, such as experience, workload, and teamwork. Additionally, it explores how adaptive responses help

prevent errors and improve patient outcomes. Finally, it aims to suggest strategies, including education and training interventions, to strengthen nurses' decision-making abilities and enhance patient safety across healthcare settings.

MATERIALS AND METHODS

Research Design

This study adopted a narrative review design to explore the concepts of clinical decision-making and situational adaptation in nursing practice and their implications for patient safety. A narrative review approach was considered appropriate as it allows for a comprehensive synthesis of existing literature, including theoretical frameworks, empirical studies, and review articles. This design facilitates the integration of diverse perspectives and provides a broad understanding of the topic without the restrictions of a systematic review.

Data Sources and Search Strategy

A comprehensive literature search was conducted using multiple electronic databases to ensure the inclusion of high-quality and relevant studies. The primary databases searched included PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), Scopus, Web of Science, and Google Scholar. The search strategy was developed using a combination of keywords and Boolean operators to retrieve relevant articles. The main keywords used were: Clinical decision-making in nursing. Situational awareness in healthcare. Situational adaptation in nursing practice. Clinical judgment and patient safety. Nursing decision-making models. Boolean operators such as AND, OR, and NOT were used to refine the search. For example: clinical decision-making AND nursing AND patient safety. situational awareness OR situational adaptation AND healthcare. Additionally, reference lists of selected articles were manually searched to identify further relevant studies (snowballing technique).

Study Selection Process

The study selection process was conducted in multiple stages to ensure systematic filtering of relevant literature. Initial Screening: Titles and abstracts of all retrieved articles were screened to identify potentially relevant studies. Irrelevant articles were excluded at this stage. Full-Text Review: The full texts of selected articles were obtained and reviewed in detail against the inclusion and exclusion criteria. Final Selection: Only studies that m*et al*l criteria and were directly relevant to the objectives of the review were included in the final analysis. A total of approximately 50-70 articles were initially identified, out of which 30-40 high-quality studies were included for detailed review and synthesis.

Data Extraction

Relevant data from the selected studies were systematically extracted and organized using a structured format. The following information was collected: Author(s) and year of publication, Study design and setting, Sample characteristics (if applicable), Key concepts and variables studied, Major findings related to clinical decision-making and situational adaptation, Implications for patient safety. Data extraction was performed carefully to ensure accuracy and consistency across studies.

Data Analysis and Synthesis

A thematic analysis approach was used to analyze and synthesize the data obtained from the selected studies. This involved the following steps: Familiarization: Reading and re-reading selected articles to gain an in-depth understanding of the content. Coding: Identifying recurring concepts and assigning codes to relevant data segments. Theme Development: Grouping similar codes into broader themes such as: Cognitive processes in decision-making. Role of situational awareness. Factors influencing adaptation. Impact on patient safety. Interpretation: Analyzing relationships between themes and drawing meaningful conclusions in relation to the study objectives.

Conceptual Framework

The conceptual framework of this study is based on the integration of clinical decision-making, situational awareness, and situational adaptation, and how these collectively influence patient safety outcomes in nursing practice. It provides a structured understanding of how nurses process information, make judgments, and respond to dynamic clinical situations. At the core of the framework is clinical decision-making, which involves selecting appropriate actions based on patient assessment, clinical knowledge, and available evidence. This process is not linear but dynamic, requiring continuous evaluation and adjustment. It is supported by both analytical reasoning (systematic, evidence-based thinking) and intuitive judgment (experience-based pattern recognition). Nurses move between these approaches depending on the complexity of the clinical situation. A key component influencing decision-making is situational awareness (SA), which acts as the cognitive foundation of the framework. Situational awareness is conceptualized in three hierarchical levels: perception, comprehension, and projection. In the perception stage, nurses gather critical patient data such as vital signs, symptoms, and environmental cues. In the comprehension stage, they interpret and integrate this information to understand the patient's condition. Finally, in the projection stage, nurses anticipate future clinical outcomes and potential risks. Effective situational awareness enhances the accuracy and timeliness of clinical decisions. Closely linked to situational awareness is situational adaptation, which represents the behavioral response of nurses to changing clinical conditions. Situational adaptation involves modifying care plans, reprioritizing tasks, and implementing alternative interventions when unexpected

events occur. It reflects the nurse's flexibility, resilience, and ability to function effectively under pressure. Adaptation is particularly important in high-acuity and unpredictable healthcare settings, were rapid changes in patient status demand immediate and appropriate responses.

RESULTS AND DISCUSSION

The narrative review of selected literature revealed several important findings related to clinical decision-making, situational awareness, and situational adaptation in nursing practice, and their collective impact on patient safety. The results are presented under key thematic areas derived from the analysis. The findings indicate that clinical decision-making is a multidimensional process involving cognitive, experiential, and contextual elements. Nurses utilize both analytical reasoning and intuitive judgment when making decisions. Analytical reasoning is commonly applied in complex or unfamiliar situations, where nurses rely on evidence-based guidelines and structured approaches. In contrast, intuitive decision-making is more prevalent among experienced nurses who draw upon pattern recognition and prior clinical experiences. Studies consistently showed that effective clinical decision-making leads to timely interventions, improved prioritization of care, and enhanced patient outcomes. However, variability in decision-making skills was observed across different levels of experience, with novice nurses demonstrating slower and more rule-based decision processes compared to expert nurses. Situational awareness emerged as a critical factor influencing the accuracy and effectiveness of clinical decision-making in nursing practice. It encompasses three essential levels perception, comprehension, and projection which collectively guide nursing actions in dynamic clinical environments. Perception involves the nurse's ability to accurately observe and identify relevant clinical cues, such as changes in vital signs, patient behavior, or subtle symptoms, which are crucial for the early detection of patient deterioration. Comprehension refers to the interpretation of these cues, enabling nurses to understand the severity, significance, and underlying implications of the patient's condition. This stage requires critical thinking and clinical reasoning to synthesize information from multiple sources. Projection, the final level, involves anticipating future clinical outcomes based on the current situation, allowing nurses to take proactive measures to prevent complications and ensure timely interventions. Together, these components form a continuous cognitive process that supports informed and effective clinical decisions. Deficiencies at any level of situational awareness can lead to delayed recognition of critical changes, inappropriate interventions, and increased risk of adverse events, thereby compromising patient safety.

Situational adaptation was identified as a key competency that complements clinical decision-making. Nurses frequently encounter rapidly changing clinical conditions that require immediate adjustments in care plans. The ability to adapt effectively was associated with better management of emergencies, improved patient monitoring, and enhanced responsiveness to unexpected events. The findings suggest that adaptive nurses demonstrate higher resilience, flexibility, and problem-solving skills. They are better equipped to handle uncertainties and can modify interventions based on real-time patient needs. Conversely, lack of adaptability was linked to rigid decision-making and increased risk of clinical errors. The findings highlight that experience and expertise play a crucial role in shaping clinical decision-making and situational awareness. Expert nurses demonstrated faster recognition of clinical patterns, greater confidence in decision-making, and an enhanced ability to anticipate patient outcomes. Their decisions were often guided by intuition developed through repeated clinical exposure. In contrast, novice nurses relied more on theoretical knowledge, clinical guidelines, and step-by-step reasoning, which made their decision-making slower and less flexible. The transition from novice to expert was strongly associated with the development of intuitive judgment and improved situational awareness. Mentorship, continuous clinical exposure, and reflective learning were identified as essential in fostering these competencies. Environmental factors also significantly influenced decision-making processes. High workload, time pressure, and inadequate staffing negatively affected nurses' cognitive performance, leading to increased stress, fatigue, and reduced attention to detail. These conditions increased the likelihood of clinical errors and compromised patient safety. Conversely, supportive environments with adequate staffing, proper resource allocation, and effective organizational systems enhanced nurses' ability to make timely and accurate decisions. Access to necessary equipment and structured workflows contributed to improved situational awareness and adaptive responses. Effective communication and teamwork emerged as critical determinants of safe and efficient clinical decision-making. Collaborative practices enabled nurses to share essential information, validate their judgments, and coordinate patient care more effectively. Interprofessional collaboration, especially between nurses and physicians, was found to significantly reduce errors and improve patient outcomes. In contrast, communication breakdowns were a major cause of adverse events, including delays in treatment and misinterpretation of clinical data.

The relationship between clinical decision-making, situational adaptation, and patient safety was strongly evident. Accurate and timely decisions were associated with reduced medication errors, early detection of patient deterioration, and prevention of complications. Nurses with high situational awareness were more proactive in identifying risks and initiating appropriate interventions. Conversely, poor decision-making and lack of awareness were linked to misdiagnosis, delayed care, and increased patient harm. Educational and technological interventions further supported these outcomes. Simulation-based training, case-based learning, and reflective practices significantly enhanced nurses' critical thinking and adaptive abilities. Additionally, technological tools such as electronic health records and clinical decision support systems improved access to real-time information and evidence-based guidelines. However, the findings

emphasized that technology should complement, not replace, clinical judgment, as over-reliance may hinder independent decision-making skills.

The findings of this review emphasize that clinical decision-making and situational adaptation are interdependent processes that play a vital role in ensuring patient safety (Tanner, 2006; Levett-Jones *et al*., 2010). Situational awareness serves as the cognitive foundation upon which effective clinical decisions are made. Nurses who demonstrate strong situational awareness are better able to recognize subtle clinical changes, interpret patient data accurately, and anticipate potential complications, leading to timely and appropriate interventions (Endsley, 1995; Stubbings *et al*., 2012). The review also highlights the significant influence of experience and expertise on decision-making abilities. Expert nurses rely on intuitive judgment and pattern recognition, allowing them to make rapid and accurate decisions in complex situations. In contrast, novice nurses depend more on theoretical knowledge and structured approaches, which may limit their flexibility in dynamic environments (Benner, 1984). This underscores the importance of continuous clinical exposure, mentorship, and experiential learning in developing advanced decision-making skills. Environmental and organizational factors were found to either facilitate or hinder effective decision-making. High workload, time constraints, and inadequate staffing negatively impact cognitive functioning and situational awareness, increasing the likelihood of errors (Stubbings *et al*., 2012). Conversely, supportive work environments that promote teamwork, effective communication, and access to resources enhance decision-making efficiency and patient outcomes (World Health Organization [WHO], 2019). The role of education and training is particularly significant in strengthening these competencies. Simulation-based learning and reflective practices provide opportunities for nurses to develop critical thinking, improve situational awareness, and enhance adaptability in a risk-free environment (Levett-Jones *et al*., 2010). Additionally, technological tools such as clinical decision support systems can aid in decision-making by providing real-time information; however, they should complement rather than replace clinical judgment (Tanner, 2006).

CONCLUSION

This review highlights the critical role of clinical decision-making and situational adaptation in nursing practice and their direct impact on patient safety. Nursing care occurs in complex and rapidly changing environments, requiring nurses to make timely, accurate, and evidence-based decisions. Effective clinical decision-making is supported by both analytical reasoning and intuitive judgment, enabling nurses to respond appropriately to diverse patient needs. A key finding of this study is the importance of situational awareness, which includes perception, comprehension, and projection. These elements allow nurses to identify clinical cues, interpret their significance, and anticipate potential outcomes, thereby facilitating proactive and safe patient care. Situational adaptation further strengthens this process by enabling nurses to modify their actions in response to changing clinical conditions, ensuring flexibility and responsiveness in practice. The review also identifies several factors influencing decision-making and adaptation, including experience, environmental conditions, communication, and teamwork. Experienced nurses demonstrate higher levels of confidence, pattern recognition, and anticipatory skills, while novice nurses rely more on structured guidelines. Supportive work environments, effective communication, and interprofessional collaboration were found to enhance decision-making efficiency and reduce the risk of errors. Educational and technological interventions play a significant role in improving these competencies. Simulation-based training, case-based learning, and reflective practice help develop critical thinking and situational awareness. Additionally, tools such as electronic health records and decision support systems provide valuable support, although they should complement clinical judgment.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICS APPROVAL

Not applicable

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AI TOOL DECLARATION

The authors declares that no AI and related tools are used to write the scientific content of this manuscript.

DATA AVAILABILITY

Data will be available on request

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