International Journal of Computational and Experimental Science and ENgineering (IJCESEN)

Vol. 10-No.4 (2024) pp. 3543-3551
http://www.ijcesen.com

ISSN: 2149-9144

Research Article

Nursing Decision-Making Under Time Pressure

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Article Info:

DOI: 10.22399/ijcesen.4660
Received : 01 June 2024
Accepted : 30 June 2024

Keywords

Abstract:

Nursing decision-making under time pressure is a critical aspect of healthcare that significantly impacts patient outcomes. Nurses often face high-stakes situations where they must quickly assess patient conditions, prioritize interventions, and make informed decisions with limited information. The ability to think critically and act swiftly is essential, as delays in decision-making can lead to adverse events. Factors such as

Nursing, decision-making, time pressure, patient outcomes, critical thinking

staffing levels, the complexity of patient cases, and the availability of resources can further complicate the decision-making process. Effective training in clinical judgment, prioritization, and situational awareness is vital to enhance nurses' ability to make sound decisions under pressure. Moreover, the psychological and emotional toll of working in high-pressure environments cannot be overlooked. Time constraints can lead to increased stress and fatigue, which may impair cognitive function and decision-making abilities. To support nurses in these challenging situations, healthcare organizations must foster a culture of teamwork and communication, ensuring that nurses feel empowered to seek assistance when needed. Implementing structured decision-making frameworks and simulation training can also help prepare nurses for real-life scenarios, enhancing their confidence and competence in delivering quality care efficiently. Overall, addressing the challenges of time-sensitive decision-making is crucial for maintaining patient safety and improving healthcare delivery.

1. Introduction

The idealized model of clinical decision-making, often taught in academic settings, follows a systematic, hypothetico-deductive approach: comprehensive data collection, generation of multiple hypotheses, sequential testing, and methodical evaluation leading to a definitive conclusion [1]. This linear model assumes the luxury of time for reflection and consultation. Yet, on a busy medical-surgical floor, in a bustling emergency department, or during a coded cardiac arrest, such luxury is nonexistent. Here, nurses must make dozens of consequential decisions per hour, often with incomplete information and amidst competing demands. The pressure is unrelenting, creating a state of cognitive load that can strain the mental resources necessary for optimal judgement. Time pressure, therefore, acts as a powerful environmental stressor that fundamentally alters the decision-making landscape, forcing a shift in cognitive strategy [2].

This shift is frequently described as a move from analytical to intuitive reasoning. The dual-process theory of cognition provides a useful framework for understanding this transition. It proposes two systems of thinking: System 1, which is fast, automatic, intuitive, and experience-based; and System 2, which is slower, effortful, analytical, and rule-based [3]. Under conditions of low stress and ample time, System 2 can dominate, allowing for careful analysis. Under severe time pressure, the cognitive burden makes sustained System 2 thinking difficult to maintain, prompting a reliance on the quicker, pattern-recognition capabilities of System 1 [4]. For the expert nurse, this is not a failure but an adaptation. Their intuition—often described as a "gut feeling" or "knowing without knowing why"—is not magical but the product of deep, tacit knowledge. It is the result of years of encountering similar clinical patterns, where signs, symptoms, and situational cues have been subconsciously cataloged and linked to specific patient states or outcomes [5]. This recognition-primed decision (RPD) model explains how experts can rapidly size up a situation, recognize it as typical or atypical, and mentally simulate a course of action without consciously comparing multiple alternatives [6].

However, the reliance on intuitive, heuristic-based thinking under time constraints is a double-edged sword. While it grants speed and efficiency, it introduces vulnerabilities. Cognitive heuristics—mental shortcuts—can lead to systematic errors or biases. For instance, the *availability heuristic*might cause a nurse to overestimate the likelihood of a diagnosis based on a recent, memorable case. *Anchoring bias* could see them fixating on an initial impression and failing to adjust in light of new, contradictory data [7]. *Confirmation bias* may lead to selectively attending to information that supports a preliminary hypothesis while ignoring disconfirming evidence. Under time pressure, the capacity to critically reflect and challenge one's own initial assessment is diminished, making these biases more potent and potentially dangerous [8]. Thus, the very adaptation that allows for function in a time-pressured environment carries inherent risks that must be acknowledged and mitigated.

Furthermore, the context of time pressure extends beyond individual cognition into the social and systemic fabric of healthcare. Decisions are rarely made in isolation. They occur within interdisciplinary teams, where communication under duress can become fragmented or incomplete. Hierarchical structures may inhibit junior staff from voicing concerns swiftly. Resource limitations—be it equipment, support staff, or even physical space—directly shape the options available to the nurse. The ethical dimension is also magnified; time pressure can force agonizing triage decisions, where the needs of one patient are balanced against another, or where thorough patient education and informed consent are truncated due to time constraints. Therefore, a comprehensive examination of nursing decision-making under time pressure must consider this multifaceted interplay between the nurse's mind,

the immediate clinical situation, the team dynamics, and the overarching healthcare system.

2. Theoretical Foundations of Clinical Decision-Making in Nursing

To understand how time pressure alters nursing judgement, one must first establish a baseline of the cognitive processes involved. Clinical decision-making in nursing is a complex synthesis of scientific knowledge, practical experience, ethical reasoning, and contextual awareness. Traditionally, nursing education has emphasized systematic, stepwise models akin to the nursing process (Assess, Diagnose, Plan, Implement, Evaluate), which align with analytical, System 2 thinking. These normative models prescribe a logical sequence for gathering and processing information to arrive at an optimal decision [1]. They are invaluable for novices, providing a structured scaffold to approach clinical problems. However, research in cognitive science and expertise reveals that in the dynamic reality of practice, especially under constraints, nurses and other clinicians seldom follow these linear pathways in a deliberate, conscious manner [9].

The recognition of this gap between theory and practice led to the development of descriptive models that seek to explain how decisions are actually made. Patricia Benner's seminal work, *From Novice to Expert*, grounded in the Dreyfus model of skill acquisition, was transformative for nursing [10]. Benner demonstrated that as nurses accumulate experience, their performance becomes progressively less reliant on abstract principles and rule-based thinking and more on a deep, holistic understanding of clinical situations. The expert nurse, she argued, perceives the clinical situation as a complete whole rather than a set of disparate facts. Their decision-making becomes intuitive, fluid, and often difficult to articulate, because it is based on a vast repository of past clinical encounters and patterns. This intuitive grasp is the cornerstone of the Recognition-Primed Decision (RPD) model developed by Gary Klein through studies of firefighters, military commanders, and nurses [6]. The RPD model posits that in time-pressured, high-stakes environments, experts do not generate and compare multiple options. Instead, they rapidly assess the situation, recognize it as familiar (or as a variant of a familiar prototype), and immediately generate a single, workable course of action. They may mentally simulate this action to check for flaws, but the process is rapid and largely non-conscious. This model effectively describes the "fast" decision-making of experienced nurses when a patient's condition deteriorates or when managing multiple competing tasks.

The interplay between intuitive (System 1) and analytical (System 2) thinking is dynamic and context-dependent. Daniel Kahneman's framing of these two systems highlights their respective strengths and weaknesses [3]. System 1 is efficient and essential for routine practice but prone to biases. System 2 is more reliable for novel or complex problems but is metabolically costly and slow. Under moderate time pressure, a skilled practitioner might engage in a "slowed-down" intuitive process or a "speeded-up" analytical one, a hybrid sometimes called *analytical intuition* or *intuitive analysis* [11]. Here, a pattern is recognized intuitively, but the nurse consciously and quickly checks key data points against the pattern before acting. However, under extreme time pressure, such as during a resuscitation, the cognitive resources for even this hybrid model are overwhelmed, and pure, skilled intuition—the direct application of deeply ingrained pattern-matching—takes over. The critical factor determining the quality of this intuitive response is the depth and accuracy of the underlying experiential knowledge base.

Time pressure exerts its influence by directly taxing cognitive resources. It increases *cognitive load*—the total amount of mental effort being used in working memory. Working memory, where information is actively processed and manipulated, has a very limited capacity [12]. When time pressure is high, the urgency itself consumes attentional resources (creating *emotional load*), the need to process information quickly increases *intrinsic load*, and poor system design (e.g., confusing charts or equipment) adds *extraneous load*. As cognitive load approaches or exceeds capacity, the ability to engage in deliberate, analytical System 2 thinking deteriorates. Attention narrows, or "tunnels," focusing on a subset of salient cues while potentially missing others [13]. The ability to consider alternative diagnoses or plans diminishes. This forced reliance on System 1 heuristics, while necessary for speed, is the primary pathway through which time pressure can precipitate decision-making errors, making the study of these cognitive dynamics crucial for patient safety initiatives.

3. Factors Influencing Decision-Making Under Time Constraints

The process of decision-making under time pressure is not uniform; it is profoundly shaped by a triad of interrelated factors: the characteristics of

the nurse, the nature of the patient and clinical situation, and the features of the environment and system in which care is delivered. Understanding these modulating variables is key to developing targeted support strategies.

At the individual level, the nurse's **experience and expertise** are the most significant determinants. As outlined by Benner, the novice or advanced beginner, lacking a rich library of patterns, must rely heavily on rules and analytical thinking, a process that is intrinsically slow and ill-suited to time pressure [10]. In contrast, the proficient or expert nurse can access a refined, subconscious pattern-matching system, allowing for faster and often more accurate situation assessment and action selection. **Knowledge**, both formal and tacit, forms the substrate of this expertise. A solid grasp of pathophysiology, pharmacology, and nursing science provides the framework upon which experiential patterns are built. **Fatigue and stress levels**, often exacerbated by long shifts and high workloads, directly impair cognitive function. Fatigue reduces working memory capacity, slows reaction times, and diminishes the cognitive flexibility needed to switch strategies or consider alternatives [14]. **Personal cognitive styles** also play a role; some individuals may have a higher tolerance for ambiguity or a greater natural propensity for rapid, intuitive judgement, though these traits can be developed through training and experience.

The **patient-related factors** present another layer of complexity. The **acuity and complexity of the patient's condition** are paramount. A straightforward, typical presentation (e.g., uncomplicated hyperglycemia in a known diabetic) allows for faster pattern recognition. An atypical, complex, or multi-system presentation (e.g., undifferentiated shock in a patient with multiple comorbidities) dramatically increases cognitive load, as the nurse must integrate a larger, more ambiguous dataset under the same time constraints [15]. The presence of **communication barriers**, such as language differences, cognitive impairment, or cultural factors, can slow data gathering and introduce uncertainty, consuming precious time and mental energy. Patient instability, where parameters are changing rapidly, creates a dynamic situation that requires continuous reassessment, further compounding time pressure.

Finally, and perhaps most critically, are the **environmental and systemic factors**. The **nurse-to-patient ratio** is a well-researched determinant. Higher ratios force nurses to spread their attention thinly, reducing the time available for each patient and increasing the frequency of task-switching, which itself carries a cognitive penalty and increases error risk [16]. **Interdisciplinary collaboration and communication** quality can ease or intensify pressure. Clear, closed-loop communication within a respectful, psychologically safe team allows for rapid, shared situational awareness and distributed decision-making. Conversely, hierarchical barriers, poor communication, or conflict create friction, waste time, and increase the cognitive burden on the individual nurse [17]. **Organizational culture** is a pervasive influence. A culture that prioritizes task completion and throughput over critical thinking fosters haste. A culture of safety, which encourages questioning, speaking up about concerns, and transparent discussion of errors, provides a supportive backdrop for managing pressure [18]. **Resource availability and ergonomics** also matter. Searching for missing equipment, dealing with malfunctioning devices, or navigating poorly designed electronic health records (EHRs) that obscure critical information all introduce delays and extraneous cognitive load, stealing time and focus from the core decision-making process [19].

4. Ethical Dimensions and Moral Distress in Time-Pressured Decisions

The compression of decision time does not merely challenge cognitive capacity; it also intensifies the ethical gravity of nursing practice. Nurses are moral agents, committed to principles of beneficence (doing good), non-maleficence (avoiding harm), autonomy (respecting patient wishes), and justice (fair distribution of resources). Time pressure can create situations where these principles come into acute conflict, leading to moral dilemmas and significant moral distress—the psychological anguish experienced when one knows the ethically right action to take but feels constrained from taking it due to institutional or situational barriers [20].

One of the most stark ethical manifestations of time pressure is **triage and resource allocation**. In emergency departments or disaster settings, nurses are often the first to perform triage, making rapid judgements about who receives immediate care and who must wait. This requires a utilitarian calculus—maximizing benefit for the greatest number—under extreme duress, which can conflict with the duty to care for each individual patient [21]. Even in non-disaster settings, high patient loads force a form of continuous, informal triage. A nurse must decide which of five patients needs their attention *right now*, potentially leaving others in discomfort or at risk. These are not merely logistical choices; they are weighty ethical

decisions with real consequences, made dozens of times a shift.

Time pressure also directly threatens the principle of **patient autonomy and informed consent**. Thorough consent processes—explaining procedures, discussing risks and benefits, answering questions, and ensuring understanding—require time. When a nurse is rushing to administer medication, prepare for a procedure, or transfer a patient, there is a powerful temptation to truncate these conversations, offering abbreviated explanations or framing choices in a way that encourages quick acquiescence [22]. This undermines the patient's right to self-determination and can erode the trust foundational to the therapeutic relationship.

Furthermore, the imperative for **task completion and efficiency**, often driven by systemic pressures for throughput and metrics, can conflict with the holistic, patient-centered ethos of nursing. A nurse may feel ethically compelled to spend time providing emotional support, listening to a patient's fears, or addressing family concerns. Under severe time constraints, these compassion-driven actions may be perceived as "luxuries" that threaten the completion of measurable tasks, leading to what has been termed "moral residue"—the lingering distress from repeatedly failing to provide the full measure of care one believes is owed [23]. This contributes to burnout and compassion fatigue, further depleting the emotional resources needed for sound judgement.

The cumulative effect of navigating these compressed ethical challenges is profound moral distress. When a nurse, due to lack of time, feels they have provided substandard education, inadequately managed a patient's pain, or been unable to advocate effectively, they experience a violation of their professional integrity. Unaddressed, this distress leads to burnout, turnover, and a decrease in the quality of care, creating a vicious cycle [24]. Therefore, supporting ethical decision-making under time pressure requires not only individual ethical resilience but also systemic changes that create realistic workloads and value the time-intensive, relational aspects of nursing care as essential, not elective.

5. Cognitive Strategies and Tools to Enhance Decision Quality

Given the inevitability of time pressure in many clinical settings, the focus must extend beyond describing its challenges to actively equipping nurses with strategies to preserve decision quality. These strategies involve both internal cognitive tools that nurses can employ and external aids provided by the system.

A foundational internal strategy is the cultivation of **metacognition**—the ability to "think about one's own thinking." Under pressure, it is easy to become locked into a single perspective. Metacognitive practices involve actively monitoring one's own cognitive processes: *Is my thinking becoming narrow? Am I discounting information that doesn't fit my initial hunch? What might I be missing?*Techniques like **cognitive forcing strategies** are deliberate mental checks to counter common biases [25]. For example, when an initial diagnosis seems obvious, a nurse might force themselves to actively ask, "What is the *least* likely explanation for these symptoms?" or "If my initial impression is wrong, what else could this be?" This brief mental pause, even if only a few seconds, can disrupt heuristic traps.

Mental simulation is a powerful tool used by experts, often subconsciously. Before implementing an action, the nurse can rapidly "run" the plan forward in their mind to anticipate potential problems: "If I give this diuretic, what will I need to monitor, and what might go wrong?" This pre-mortem analysis allows for pre-emptive adjustments and prepares the nurse for likely scenarios, reducing surprise and hesitation when time is critical [26]. Relatedly, the practice of **situation awareness**, as described by Endsley, involves continuously perceiving critical elements in the environment (Level 1), comprehending their meaning (Level 2), and projecting their status into the near future (Level 3) [27]. A nurse with high situation awareness is not just reacting to the current blood pressure reading but is projecting its trajectory and preparing interventions before a crisis manifests.

Externally, **clinical decision support systems (CDSS)** integrated into Electronic Health Records (EHRs) have significant potential. Well-designed CDSS can provide just-in-time information, such as drug interaction alerts, guideline-based care reminders, or calculated scores (e.g., early warning scores for deterioration). However, to be useful under time pressure, they must be highly intuitive, minimally disruptive, and present information in a rapidly digestible format. Poorly designed pop-up alerts that cause "alert fatigue" become part of the problem, adding extraneous cognitive load [28]. Effective CDSS for fast-paced environments should focus on streamlining information presentation—for instance, through integrated dashboards that visually highlight critical trends and outliers—rather than creating more interruptions.

Standardized communication tools and protocols are vital external aids that reduce

cognitive load by providing reliable structure. Tools like **SBAR** (Situation, Background, Assessment, Recommendation) ensure concise, complete handoffs and calls to physicians, ensuring nothing is omitted in haste [29]. **Clinical checklists** for complex procedures or emergency situations (e.g., sepsis bundles, pre-intubation checklists) help ensure critical steps are not missed when minds are taxed and time is short. They serve as cognitive netting, offloading memory demands and allowing the nurse to focus on higher-order thinking and patient interaction [30]. Finally, a culture that encourages **speaking up and team debriefing** is a strategic resource. The ability of a junior nurse or a colleague to voice a concern with a simple phrase like, "I have a concern," or "Let's pause for a second," can be a crucial error-prevention mechanism. Brief, post-event debriefs, even for non-critical events, help teams learn and refine their collective decision-making processes for future time-pressured situations [31].

6. Educational and Training Imperatives for Building Resilience

Preparing nurses to thrive, rather than merely survive, in time-pressured decision-making environments requires a paradigm shift in education and ongoing professional development. Moving beyond the transmission of static knowledge, training must focus on developing adaptive expertise, cognitive resilience, and the ability to manage the psychological stressors of rapid judgement.

The cornerstone of this preparation is **high-fidelity simulation (HFS)**. Unlike traditional skills labs, high-fidelity simulation creates immersive, realistic clinical scenarios that replicate the psychological and cognitive demands of real practice, including intense time pressure. Learners can experience the stress of a deteriorating patient, the need to prioritize multiple tasks, and the challenges of team communication in a safe environment where errors are learning opportunities, not patient harms [32]. Effective debriefing following simulation is where the deepest learning occurs. Facilitators guide learners to reflect not just on *what* they did, but *how* they thought—exploring their situational awareness, mental models, and the points where cognitive biases or stress may have influenced their choices. This reflective practice builds metacognitive skill. Repeated exposure to simulated pressure helps inoculate nurses against the paralyzing effects of stress, allowing them to access their knowledge and skills more effectively when it matters most [33].Training must also explicitly address the **development of intuitive judgement**. Since intuition is built on pattern recognition, curricula must be designed to expose learners to a wide variety of clinical patterns, both common and rare. This can be achieved through expanded use of case studies, interactive virtual patient platforms, and narrative pedagogies where experienced nurses share stories of challenging cases, making their tacit reasoning more explicit [34]. Encouraging learners to verbalize their thought processes during clinical placements ("think-aloud" protocols) helps them and their mentors identify gaps in pattern recognition and reasoning.

Furthermore, education must incorporate **stress inoculation and resilience training**. This involves teaching practical techniques for managing the physiological and psychological arousal that accompanies time pressure. Strategies can include tactical breathing exercises to control heart rate, techniques for cognitive reframing (viewing a stressful situation as a challenge rather than a threat), and mindfulness practices to improve focus and reduce reactive decision-making [35]. Building emotional intelligence—the ability to recognize and manage one's own emotions and those of others—is also crucial for maintaining effective team communication under pressure.

Finally, transitioning to practice requires robust **preceptorship and mentorship** programs. New graduates are particularly vulnerable to the negative effects of time pressure as they build their experiential knowledge base. A supportive preceptor can model effective decision-making strategies in real-time, provide "cognitive scaffolding" by talking through their reasoning, and help the novice nurse learn to filter and prioritize the overwhelming stream of clinical data [36]. This supportive relationship is a critical buffer against early-career burnout and promotes the safe development of clinical autonomy.

7. Organizational and Systemic Responsibilities

While individual competence and training are essential, the ultimate responsibility for fostering safe decision-making under time pressure lies with healthcare organizations and the broader system. Nurses operate within structures that can either amplify or mitigate the challenges of time-constrained judgement. Creating a supportive environment requires deliberate, multi-faceted action at the organizational level.

Foremost is the commitment to establishing **safe and sustainable nurse staffing levels**. The evidence is unequivocal: higher patient-to-nurse ratios are associated with increased mortality, failure-to-rescue events, nurse burnout, and job

dissatisfaction [16]. Time pressure is fundamentally a function of workload. No amount of cognitive training can fully compensate for a consistently unrealistic assignment. Organizations must move beyond viewing nursing as a cost to be minimized and recognize it as a critical safety investment. Implementing validated staffing models, such as those based on patient acuity, and establishing enforceable nurse-to-patient ratios are concrete steps to provide nurses with the time necessary for critical thinking and safe care [37].

Concurrently, organizations must **design systems and workflows that reduce cognitive burden and waste**. This involves human factors engineering principles applied to the clinical environment. Streamlining documentation requirements in EHRs, co-locating supplies, standardizing equipment, and creating intuitive workspaces reduce extraneous cognitive load and physical waste of time [19]. Furthermore, fostering a **culture of psychological safety** is paramount. Nurses must feel absolutely secure in speaking up about concerns, asking questions, or admitting uncertainty without fear of reprisal or ridicule. Leaders must actively model and reward this behavior. A culture of safety also embraces **just culture** principles, where decisions are evaluated in context, and system flaws are addressed rather than focusing solely on individual blame for errors made under pressure [38].

Investing in **team-based care models and interdisciplinary rounding** can distribute decision-making load and improve situational awareness. When roles are clear, communication is structured, and all team members (including physicians, pharmacists, therapists, and aides) are empowered to contribute their expertise, the cognitive burden on any single individual is reduced. This collaborative approach leads to more robust decisions and creates shared accountability [39]. Additionally, organizations must provide **access to immediate support resources**. This includes readily available clinical nurse specialists or educator support for bedside nurses facing complex situations, as well as robust employee assistance programs to address the psychological impacts of moral distress and chronic stress.

Finally, **leadership and management practices** must align with these goals. Nurse managers need the authority and resources to adjust staffing based on real-time acuity. Executive leadership must prioritize clinical outcomes and staff well-being over narrow financial metrics. Policy advocacy at the regional and national level is also a systemic responsibility, pushing for regulations that enforce safe staffing, fund nursing education, and support research into optimal work environments [40]. The system must recognize that the quality of nursing decisions is not merely a reflection of individual skill, but a direct product of the environment in which those decisions are made.

8. Conclusion

The quality of decisions made in the crucible of time pressure is the most accurate barometer of a healthcare system's true priorities. Supporting nurses in this relentless arena is not an optional luxury but an ethical and practical imperative for delivering safe, effective, and humane care. By integrating individual expertise with systemic support, we can ensure that when time is shortest and stakes are highest, nursing judgement remains a reliable beacon for patient well-being.

Author Statements:

- **Ethical approval:** The conducted research is not related to either human or animal use.
- **Conflict of interest:** The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper
- **Acknowledgement:** The authors declare that they have nobody or no-company to acknowledge.
- **Author contributions:** The authors declare that they have equal right on this paper.
- **Funding information:** The authors declare that there is no funding to be acknowledged.
- **Data availability statement:** The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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