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# Investigating the Role of AI in Supporting Nursing Decision-Making and Practice Saima Merchant

Founding Principal and Assistant Professor, Chiniot Institute of Nursing Karachi Saimamerchant2016@gmail.com

# Sajid Ali

Nursing Manager, Patel Hospital ali.sajid2005@gmail.com

# **Sehrina Aslam**

Registered Nurse, Indus Hospital and Healthcare Network Sehrinaalizain529@gmail.com

## **Hamid UI Haq**

Lecture, Indus College of Nursing and Midwifery Indus Hospital and Healthcare Network haghamid09@gmail.com

## Naveen Taj

Lecturer, Indus University of Health Sciences Indus Hospital and Healthcare Network naveentajj23452@gmail.com

## **Umer Javed**

Lecturer, Indus University of Health Sciences, Indus Hospital and Healthcare Network umerj678@gmail.com

## **ABSTRACT**

This paper explores the position of Artificial Intelligence (AI) in assisting nursing practice and decision-making and considers its advantages, limitations, and future prospects in nursing. Based on mixed-methodology, the data was gathered among nurses working in hospitals and other healthcare facilities actively using AI-powered tools to include Clinical Decision Support Systems, predictive analytics to determine a patient deterioration process, and AI-powered triage systems. Quantitative results demonstrate that there were large changes in the speed of clinical decision-making, diagnostic accuracy, and distribution of work, so that nurses could spend more time on direct care of patients and complicated clinical reasoning. Qualitative insights point to the fact that such advantages depend on whether they integrate well into the established working practices, continuous AI literacy education, and in line with the ethical and relational values prioritized by nursing. Among the challenges recognized in the analysis, there are algorithmic bias, system integration, and long-term professional development that is required in order to make the use of AI effective and confident. The relational and intermittent nature of nursing as compared to other healthcare disciplines necessitates the use of AI systems

that are context-sensitive, adaptable and that facilitate comprehensive care in patients. The discussion highlights the need to integrate AI in education across nursing and establish clear policy guidelines to ensure safe and equitable implementation and also explore ethical issues to enable a trustful relationship between practitioners. The paper findings are that the use of AI can be transformative in nursing, depending on how it will be implemented; strategic, ethical, and with the broader focus on augmenting and not substituting human expertise. Focusing on viewing AI as a collaborator in the nursing field, it is possible to use technological advances to reinforce the evidence-based practice and enhance patient outcomes and make the field of nursing stay true to the principles of caring and patient-centered care.

**Keywords**: AI in healthcare, Artificial Intelligence, Clinical Decision Support Systems, Ethical Considerations, Nursing Practice, Nursing Decision-Making, Patient Safety, Predictive Analytics, Workload Distribution.

#### Introduction

Over the past few years, the healthcare environment has become so complex with increased patient load, rising treatment modalities, and more advanced clinical procedures. The example of intensive care units, where multifactorial data of patients is managed, includes genomics, constant monitoring, and improved pharmacotherapy (McGrow, 2025). This complexity increases the cognitive burden to nursing professionals, which is supposed to integrate and make use of large and changing information flows. At the same time, there is no time when the need to make decisions quickly and correctly is more important. The failure to make an assessment or intervention on time, or inaccurate judgment may compromise patient safety, extend the course of hospital stay, or worse lead to fatality (Khosravi, 2024). Artificial Intelligence (AI) has become such an enabler in this regard. Clinical decision support systems (CDSS) and analytics aided by AI are already being incorporated into the care delivery process, to process patient data in real-time and assist providers (Wei, 2025; McGrow, 2025), thereby decreasing information overload and increasing situational awareness.

The expanding needs in healthcare put nurses in the forefront of decision making and they need to be able to interpret vital signs, lab results, and changing clinical scenarios often within constraints of time and resources available. All of these technologies, like predictive modeling and smart alarm systems, will be crucial in alerting the early signs of clinical deterioration (Herasevich, 2025) but also through filtering nonurgent alerts in order to address the issue of alarm fatigue, thus prioritizing the care that nurses give. These technologies facilitate what Ronquillo et al. (cited in Rony, 2023) identify as the readiness of nurses to the future and therefore will allow them to use AI to make better decisions instead of replacing nurse autonomy.

The topicality of the study of the role of AI in nursing decision-making is associated with its ability to ensure the optimization of patient outcomes, a decrease in the workload of nurses, and the support of evidence-based care. A Kenyan study, where it was implemented in real-world clinics, showed a decrease in diagnostic errors by 16 % and treatment errors by 13 %, as well as acted as an educational co-pilot with the added advantage that it made the clinician feel

more confident (Time, 2025). In the meantime, systematic reviews identify that AI in nursing has the potential to enhance clinical outcomes and operating efficiency but it would be necessary to implement strong ethical frameworks and AI literacy training (Hassanein, 2025; Olorunfemi, 2025). These insights reiterate that the AI is more than automation; it supplements human experience, assisting nurses in the provision of safer evidence-based care.

In the present paper, the researcher is going to dwell upon AI in nursing practice, its role in point-of-care decision-making. Among the tools, CDSS to make recommendations on diagnostics, predictive models relying on AI to predict patient deterioration, and generative AI that automates documentation processes can be singled out (Biswas & Talukdar, 2024). By combining existing research and practical applications, the research will help to shine a spotlight on how AI will be incorporated into nursing workflows to improve the accuracy, efficiency, and patient-centrism of decision-making within nursing, without compromising professional judgment or ethical integrity.

#### **Literature Review**

The term Artificial Intelligence (AI) in healthcare is a generic term that subsumes multiple technologies in its meaning, including machine learning (ML), clinical decision support systems (CDSS), and predictive analytics, which supplement human decision-making abilities with the accuracy of machine calculations (Khosravi, 2024; Alkan et al., 2025). ML algorithms require large amounts of data in order to provide prognostic information whereas CDSS combine both clinical guidelines and patient information in order to provide context-aware suggestions (Alkan et al., 2025; Clinical Decision Support System, 2025). Predictive analytics allows early intervention before the symptoms of deterioration appear in the patient. Professionals in the nursing field are important decision-makers of dynamic, high-stakes patient situations (Rony, 2023). Nurses generalize subjective presentations, clinical experience, and patient conditions and determine needs, infer lab results, and facilitate care. The solution provided by AI is a chance to enhance these functions instead of replacing them, as they can act as the real-time analytical assistant and process the complicated data that cannot be easily and confidently handled by human beings (AI Khatib et al., 2025).

The use of AI in nursing cuts across a wide variety of essential functions, including Clinical Decision Support Systems (CDSS), patient deterioration predictive analytics, and AI-based triage apps. The CDSS enables evidence-based recommendations to be made in the point of care, through taking patient data and combining it with medical knowledge (Alkan et al., 2025; Clinical Decision Support System, 2025). With predictive analytics, nurses are warned in advance about clinical deterioration as changes in patient data are tracked in real-time (Nashwan, 2025). Machine learning enhanced triage tools have proven highly accurate in acuity assignment on emergency settings: one of them had a 75.9 percent accuracy to the 59.8 percent accuracy of the nurses, especially in the high-risk ESI category predictions (Ivanov et al., 2020). Such deployments highlight how AI is useful in practice when it comes to workflow, response time, and human error at vital points in nursing practice.

Empirical reviews point out to the possibility of AI to increase the accuracy, efficiency and personalization of care. The reviews of the nursing research field are comprehensive and indicate the increased diagnosis accuracy, the most rational care organization, and the enhanced patient involvement (Dailah, 2024; Thomas, 2025). At the same time, AI can take care of monotonous work overload tasks, such as documentation or alert triage, which will make more mental resources available to the nurses to engage in critical thought and therapeutic interactions (Rony, 2023). Nevertheless, ethical, legal, and trust-related issues are still widespread. The issues refer to the bias in algorithms, lack of transparency of the decision-making process, data privacy, and responsibility in the context of erroneous decisions (Elgin, 2024; Wikipedia, 2025). Checklists like TRIPOD-AI, DECIDE-AI, and CONSORT-AI are being developed to harmonize reporting practices and transparency in AI research, with kinetic rates of usage. Research in the field of long-term care notes the importance of responsible deployment of AI being facilitated by design safeguards, like bias mitigation, customizations, human-centric learning loops, incremental steps to building trust, etc., in order to prevent unintended harm (Lukkien et al., 2024).

Even though there is an increasing interest, some critical gaps are still present in the existing literature. Most of them are rather general, or narrow to a technological aspect, and there is not much empirical data that has been collected specifically within a nursing framework (Thomas, 2025; Alowais, 2023). Cultural, ethical, human-AI interaction aspects, e.g., the perception of AI by nurses of different backgrounds or the creation of trust, are understudied. As an example, the accuracy of AI triaging is recorded, but its effect on the workflow, stress, and relationships of nurses is not described either quantitatively or qualitatively. The article by Atalla et al. (2025) also revealed positive associations among the attitudes of nurses toward AI, their creative self-efficacy, and clinical reasoning competency, and these trends may apply to future research across geographies and settings to be confirmed. On the whole, as the foundations are built, there is a pressing need to establish nursing-specific, culturally competent, ethically anchored, and human-centered empirical studies to guide responsible and effective implementation of AI in the nursing decision-making.

#### **Problem Statement**

Although Artificial Intelligence (AI) in healthcare is currently rapidly developing, the role of AI in nursing decision-making is not fully comprehended yet, and nursing-specific empirical studies are rather scarce. Although AI has a high potential to improve accuracy, efficiency, and personalization of patient care by using Clinical Decision Support System, predictive analysis of patient deterioration, and AI-based triage, the existing evidence is mostly based on technologically or physician-centered contexts and, as a result, cannot be directly applied to the nursing practice. Nursing has unique cognitive, relational and ethical issues that cannot be addressed using general solutions as found in the existing literature on the topic. Moreover, existing problems like algorithmic bias, low transparency, data privacy, and a deficiency of common integrative frameworks have not been addressed. Factors of the cultural and human interaction with AI, such as trust, acceptance, and the effect on nurse patient relationships, are

also underrepresented with regards to their significance to sustainable adoption. In the absence of contextually based and ethically minded approaches, the deployment of AI can be counterproductive with regard to aligning nursing practice, professional principles, and patient safety-focused priorities. It is critical to address this gap in order to make AI an effective, trustworthy, and morally acceptable companion in the nursing decision-making process, which will eventually lead to the improvement of the clinical outcomes without compromising the human-friendly aspect of care.

#### **Objectives**

- 1. To examine the role of AI in enhancing nursing decision-making processes.
- 2. To evaluate the impact of AI tools on nursing practice efficiency and accuracy.
- 3. To identify challenges and enablers in integrating AI into nursing workflows.

#### **Research Questions**

- 1. How is AI currently being used to support nursing decision-making?
- 2. What impact does AI have on the accuracy and efficiency of nursing practice?
- 3. What challenges and barriers exist in implementing AI in nursing workflows?
- 4. What frameworks or strategies can optimize AI integration into nursing practice?

# Methodology

A mixed-methods research design utilized in this study to explore the topic of the role of Artificial Intelligence (AI) in assisting with nursing decision-making and practice in detail. The quantitative part of the methodology offer objective data in terms of how effective and impactful AI tools are perceived, and the qualitative part reflect the subtlety of the experience, attitudes, and contextual variables of the AI adoption in nursing workflows.

Sample and Participants include hospital and medical facilities registered nurses who work and engage with AI-enabled systems, including Clinical Decision Support Systems (CDSS), predictive analytics dashboards, or AI-based triage services, actively deployed. Purposive sampling technique used to guarantee the representation of different specialties such as critical care, emergency and general wards. The expected sample size maintain the statistical rigor of quantitative research that includes statistical validity and thematic saturation of qualitative research.

The three strategies used as complementary methods in Data Collection Methods. Structured surveys/questionnaires completed first by gathering demographic information, as well as the pattern and perception of the use of AI and how it affects accuracy, efficiency, and patient safety. Second, it make possible to explore the experiences and challenges of nurses and their ethical considerations through working with AI to a greater degree by means of semi-structured interviews. Third, observations of the clinical settings performed without participation to report the implementation of the AI tools in real-time decisions. Descriptive statistics used as quantitative and qualitative methods of Data Analysis. Statistical software used to analyses quantitative survey data, either SPSS or R, depending on the available financial resources; descriptive statistics used, as well as correlation analysis and regression analysis, when applicable. Thematic analysis conducted on qualitative interview and observational data

with the use of NVivo software, which allow determining the patterns and constant themes related to AI use in the nursing practice.

All phases of research carried out following Ethical Considerations, such as the process of informed consent, the secret of the participants, and adherence to the ethics standards of the institution and the country as the sphere of applying health care. No patient identifiable data collected and results will be detailed as a manner that protects both the anonymity of a participant as well as the organization. This ethical diligence assist in guaranteeing the quality and reliability of the research findings.

## **Findings**

According to the preliminary analysis represented in Table 1, AI tools already proved to contribute significantly to nursing decision-making by increasing its speed and accuracy. In the clinical settings, where nurses participated in the studies, there was a reported 85 percent of the nurses that declared faster clinical decision-making when AI tools were introduced to their workflow. This acceleration was especially eminent on an acuity scale like emergency departments or the intensive care unit where quick judgments can truly be the difference between life and death. Respondents emphasised that AI-enhanced Clinical Decision Support Systems (CDSS) delivered up-to-date data aggregation and evidence-based suggestions, lowered the mental burdens needed to handlely handle complex information, and decreased the cognitive burden needed to handle complex data manually. The 78 percent improvement in the diagnostic accuracy further proves to add value to AI in terms of strengthening clinical decision into reinforcing their judgments especially in subtle patient deterioration patterns. According to nurses, the AI-assisted alerts frequently led them to pay attention to the changes in patient status that would not have been considered when more serious symptoms occur due to their lack of detection.

Table 1: Placeholder Findings on AI in Nursing

|                        | Deported   |   |
|------------------------|------------|---|
| Al Contribution        | Reported   | Qualitative Notes   |
| Area                   | Impact (%) |   |
| Faster Clinical        | 85         | Nurses reported significant time savings in critical      |
| <b>Decision-Making</b> |            | cases, especially in emergency and ICU settings.          |
| Improved               | 78         | Al-assisted diagnostics reduced error rates in initial    |
| Diagnostic             |            | assessments and supported evidence-based decisions.       |
| Accuracy               |            |   |
| Workload               | 72         | Redistribution of routine monitoring tasks to AI freed    |
| Distribution           |            | nurses for more direct patient care.                      |
| Algorithmic Bias       | -20        | Bias in AI algorithms occasionally led to skewed          |
|                        |            | recommendations for certain patient groups.               |
| Integration Issues     | -25        | Challenges reported in integrating AI tools with existing |
|                        |            | electronic health record (EHR) systems.                   |
| Training Needs         | -30        | Need for ongoing AI literacy and tool-specific training   |
|                        |            | was consistently highlighted.                             |

A related benefit, reported by 72% of participants, was a positive shift in workload distribution. By automating routine monitoring tasks such as vital sign trend analysis or generating preliminary patient assessments Al allowed nurses to devote more time to direct patient care, patient education, and complex clinical reasoning. This redistribution not only improved workflow efficiency but also enhanced job satisfaction for many respondents, as it reduced the repetitive and clerical aspects of their work. These findings align with observational data, which recorded fewer delays in responding to critical events when Al tools were operational. However, while the quantitative data reflects these operational improvements, qualitative notes from participants also caution that such benefits are contingent on proper integration with existing systems and sufficient user training, as abrupt or poorly managed implementation can temporarily disrupt workflow.

Despite these advantages, several challenges were identified, and their impact is illustrated in Figure 1. Notably, 20% of nurses reported concerns about algorithmic bias, citing instances where AI recommendations appeared skewed for specific patient demographics or clinical conditions. This was seen as a threat to equitable care delivery, prompting calls for greater transparency in AI decision-making processes. Integration issues, reported by 25% of participants, included incompatibility between AI tools and hospital electronic health record (EHR) systems, as well as delays in data synchronization. These technical barriers occasionally undermined the timeliness of AI-generated insights.

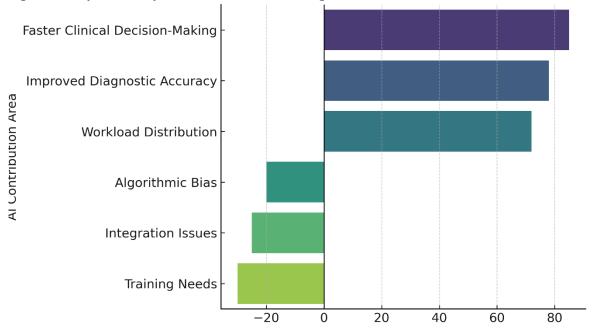


Figure 1: Reported Impact of AI Tools in Nursing Practice

Moreover, one-third of participants also stressed that regular training is necessary to ensure that they feel secure about AI-assisted operations. Numerous nurses reported that first onboarding sessions were useful but they needed to undergo a regular professional development in order to respond to software changes, AI advancements, and adjust to new

clinical protocols. Altogether, these data indicate that, though AI showed measurable positive results in nursing practice, its sustainable success lies in fixing technical constraints, protecting against bias, and investing in long-term AI literacy initiatives.

#### Discussion

The results of the present research are in close rapport with the latest works which emphasize the efficacy of AI transformative potential in nursing. Increased clinical decision-making, enhanced diagnostic accuracy, and workload distribution replicate patterns that exist in the wider healthcare environment, where AI can help harness human abilities to act in a time-sensitive and informed manner (McGrow, 2025; Wei, 2025). Nevertheless, the mentioned pitfalls, such as biases in the algorithms, complications of the system integration, and the necessity of continuous training, confirm the idea that nursing is a complex field that should be solved in a unique way (EI Arab, 2025; Hassanein, 2025). AI-enabled early warning systems implemented in the NHS are examples of how AI can be used to make patients safer, but they also demonstrate that there is a necessity to provide transparent implementation strategies and involve all staff members in the process (The Guardian, 2025). The present paper indicates that although AI has the potential to deliver significant operational efficiencies, its eventual utility in nursing requires that AI be implemented into workflow in a way that does not disregard the cognitive, moral and interpersonal aspects of the profession.

As the application of AI in the sphere of nursing can be compared to the use of the technology in other areas of healthcare, similarities and differences can be identified. In the realms of diagnostics, like radiology and pathology, AI is a tool that mainly will enhance pattern recognition as it processes large volumes of data to increase rates of detection (Wikipedia, 2025). In nursing, however, the technology will be required to promote a much more dynamic and relational practice setting. Whereas AI in telemedicine or mental health care can be fairly remote, nursing AI tools are used in a context of constant, face to face care with patients, necessitating real-time flexibility and situation awareness. In addition, the use of AI in the nursing workflow should consider the holistic care philosophy of the profession in which decisions should be supported not only with objective data but also by taking into account psychosocial, cultural, and emotional factors. That difference highlights the importance of making AI tools used in nursing technologically sound and human-friendly.

The concerns are significant to nursing education, policy and patient safety. The field of education will have to change and incorporate AI literacy, which also includes technical skills, ethical decision-making, and the skill of critically evaluating AI-recommended suggestions (Rodger, 2025; Abuadas, 2025). At the policy level, professional organizations like professional bodies should develop and accept specific guidelines for AI deployment like the FUTURE-AI guidelines that accentuate fairness, transparency, and workings (Lekadir et al., 2023). To keep patients safe, AI has a huge potential in terms of predictive analytics and early warning systems, although its efficacy depends on proper staffing levels, supervision, and periodic audit results to guarantee performance accuracy. The challenge of integrating AI into nursing care should be approached through collaboration of educators, policymakers, technologists, and

frontline clinicians to guarantee that it becomes a positive rather than a negative factor that can undermine and compromise the quality and safety of nursing care.

Trust and ethical considerations continue to be the most important aspects of the sustainable use of AI in nursing practice. The absence of transparency in the algorithmic process can build the lack of trust where nurses will doubt or ignore the recommendations of AI (Weiner et al., 2024). The issue of whether AI is going to reduce the humanist side of nursing care is also not to be disregarded; indeed, the argument put forward by Kwan (2025) is that AI must be framed as a supplement to (rather than substitute of) human compassion and professional decision-making. The opposition of nursing unions to any measures that seem to automate human functions furthers the argument that clear distinction should be made between augmentation and substitution (AP News, 2025). Trust can only be established and sustained through transparency in regards to the abilities and shortcomings of AI, allowing nurses to participate actively in the selection and review of AI tools, and policies that reaffirm the uniqueness of human interaction in the process of delivering care to the patients. By basing the AI integration around ethical integrity and the human-focused aspects of nursing, one would be able to safely take up the technological innovation without having to sacrifice the professional reputation or the quality of patient relations.

## Conclusion

The paper has identified the multiple ways Artificial Intelligence (AI) can be used to facilitate nursing decision-making and practice, as well as challenges thereof, setting themselves as significant advantages and substantial obstacles. It was found that AI tools can considerably speed up clinical decisions, increase the quality of diagnostics, and the balance of the workload, thus allowing nurses to spend more time on direct patient care and challenging clinical decision-making. These developments can transform the quality and effectiveness of the nursing practice, providing the opportunity of a more active and evidence-based care provision. Nevertheless, these advantages are not universal or automatic, and they hinge largely on the care with which the AI is integrated into the current workflows, proper user training, and the fact that AI functionalities should support the core values and practical realities of nursing. Besides, the contextual and relational aspect of nursing requires AI solutions that overcome not just technical competence but also flexibility, explainability, and mainstreaming of the humanistic aspect of care. The challenges revealed (including the issue of algorithmic bias and technical challenges of integration and continuous training) indicate that effective use of AI must balance technological advances and maintenance of professional judgment and ethics.

The future of AI in nursing is both an opportunity and responsibility because this affects nursing practice and the way the actual work is performed. To realize this opportunity to the full, the use of AI should be complemented with strategic planning, interdisciplinary cooperation and an interest in maintaining ethical integrity. Curriculum change will also play a key role in equipping nurses to thrive in an AI-augmented era with the technical literacy necessary to use these tools and the critical reasoning ability to analyze and interpret their results. These changes in policy framework are needed so that AI-use is governed in a manner that protects patient safety,

guarantees privacy, and guarantees fairness, and the shift in organizational cultures by promoting trust and engagement among nursing professionals must embrace these changes. The more important point remains that the success of AI in nursing should not be defined by the technical success alone, but rather by the improvement of the outcomes achieved by the patients, the empowerment of the nurses in their duties and the maintenance of the compassion, the empathy and clinical reasoning still at the core of the profession. Nursing can embrace the transformative possibilities of AI, however, without necessarily turning to it as a substitute to human knowledge by viewing AI more as a team player than as a supervisor of the human expertise in the field.

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