

The Pearls and Perils of Using AI in Nursing Practice

Violeta Lopez ¹, Hongmei Hwang ²

Published: 22 December 2025
© The Author(s) 2025

Editorial

Artificial intelligence (AI) was first conceptualized in 1955 by McCarthy (1956) as the science and engineering of making intelligent machines, especially intelligent computer programs that could do things once done by men. AI uses various forms of computer technology that can learn from data to mimic human capabilities.^[1,2] AI is rapidly transforming the nursing profession in delivering care, making clinical decisions, and managing workloads by its presence at the bedside in various forms.^[3] AI technologies have been reported to enable nurses to provide more evidence-based and individualized care to their patients. Although AI is rapidly transforming nursing practice, there are numerous pearls and perils of using AI in nursing clinical practice, education, and research. These factors need to be considered, and nurses must be aware of when and how to use AI in their day-to-day encounters with patients.

What Are the Pearls of AI in Nursing Practice?

In the clinical context, AI technologies have influenced nurses' clinical decision-making. For example, wearable AI devices have improved monitoring accuracy, enabling early detection of anomalies and facilitating early interventions.^[4] The use of telemedicine was found useful for transmitting real-time health data from rural to urban healthcare settings and for delivering evidence-based interventions to patients with chronic diseases such as diabetes, cardiovascular conditions, and cancer.^[5] Nurses also use AI for patient monitoring, risk predictions, individualized care, and clinical decisions.^[6] In nursing administration, AI-driven automation and predictive staffing capabilities are used to streamline nursing workflows, reduce workload, mitigate burnout, and increase job satisfaction.^[7] In education, virtual reality and augmented reality platforms can be enhanced through AI. The scoping review by Lifshits and Rosenberg found that AI-based teaching methodology enhanced students' learning and motivation, and that they felt comfortable and safe when practicing virtual simulations.^[8] In nursing research, AI-based technologies can be used to examine the effectiveness of patient education delivered via smartphones to patients with chronic diseases at home or to determine the prevalence of falls or pressure injuries among patients.

What are the perils of AI in nursing practice?

AI integration in nursing has several pearls; however, several perils have been reported, including technical issues, ethical dilemmas, and workforce implementation and adaptation. One peril of AI is its lack of robustness, despite many of its successes in different settings.^[9] The key AI ethical issue is bias and discrimination, especially when implementing AI systems for technical purposes. Over- and under-representation of data may lead to minority bias and discrimination.^[10] Problems with AI algorithms also raised ethical concerns, as developers and users may not be able to detect errors in data produced or disseminated, compromising patient privacy.^[11,12] These further support Hassan and El-Ashry's qualitative study, which found that, despite real-time AI data's potential to strengthen decision-making, an over-reliance on automated alerts risks diminishing nurses' critical thinking and clinical judgment if not carefully balanced with human oversight.^[13]

✉ Violeta Lopez
violeta.lopez@iihsciences.edu.lk

1. School of Nursing and Midwifery, International Institute of Health Sciences, Wattala, Sri Lanka
2. School of Nursing, Hubei University of Medicine, Shiyan, Hubei, China

What now for nursing practice

As the current nursing program does not prepare nurses to work with AI technologies, it has been suggested that developing the nursing curriculum should include AI literacy in machine learning principles and nursing competencies.^[14] Continuing professional education of clinical nurses must also be supported to encourage the adoption of AI technologies in clinical environments. Nurses are being called upon to advocate for the use of AI technologies for nursing practice, the profession, and the patient population.^[15, 16] Nurses must become active key members of the AI development and implementation team^[17] as they have the knowledge of what needs to be integrated in AI-technologies for use in clinical practice. Nurses' involvement in developing AI-technologies will ensure that they are aligned with clinicians' values, respect patient dignity, and provide equitable care delivery. El Arab et al. recommend adopting the Nursing AI Integration Roadmap (NAIIR), a structured, ethically informed, user-centred framework, to support the successful integration of AI technologies across all aspects of nursing practice.^[8] In conclusion, AI technology is not a replacement for nursing critical skills or the compassionate human touch that only a human nurse can deliver.

Keywords Artificial Intelligence, Nursing, Ethics, Clinical Decision Support Systems

Declarations

Acknowledgments
None.

Artificial Intelligence Disclosure

The authors confirm that no artificial intelligence (AI) tools were used in the preparation of this manuscript.

Authors' Contributions

The author solely conceived the idea, developed the reflective content, drafted, critically revised, and approved the final version of the manuscript.

Availability of Data and Materials

No datasets were generated or analyzed during the current study.

Conflict of Interest

Not applicable.

Consent for Publication

Not applicable.

Ethical Considerations

Ethical approval was not required for this editorial, as it did not involve human participants, animals, or identifiable personal data.

Funding

This work received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Open Access

This article is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License, which permits any non-commercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give

appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <https://creativecommons.org/licenses/by-nc/4.0>.

References

1. Pepito JA, Locsin R. Can nurses remain relevant in a technologically advanced future? *Int J Nurs Sci*. 2018;6(1):106–10. doi:10.1016/j.ijnss.2018.09.013.
2. Robert N. How artificial intelligence is changing nursing. *Nurs Manage*. 2019;50(9):30–9. doi: 10.1097/01.NUMA.0000578988.56622.21.
3. El Arab RA, Al Moosa OA, Sagbakken M, Ghannam A, Abuadas FH, Somerville J, et al. Integrative review of artificial intelligence applications in nursing: education, clinical practice, workload management, and professional perceptions. *Front Public Health*. 2025;13:1619378. doi: 10.3389/fpubh.2025.1619378. eCollection 2025.
4. Liu Y, Liu C, Gao M, Wang Y, Bai Y, Xu R, et al. Evaluation of a wearable wireless device with artificial intelligence, iThermonitor WT705, for continuous temperature monitoring for patients in surgical wards: a prospective comparative study. *BMJ open*. 2020;10(11):e039474. doi: 10.1136/bmjopen-2020-039474.
5. Nwankwo EI, Emeihe EV, Ajegbile MD, Olaboye JA, Maha CC. Integrating telemedicine and AI to improve healthcare access in rural settings. *International Journal of Life Science Research Archive*. 2024;7(1):59–77. doi:10.53771/ijlsra.2024.7.1.0061.
6. Wei Q, Pan S, Liu X, Hong M, Nong C, Zhang W. The integration of AI in nursing: addressing current applications, challenges, and future directions. *Front Med (Lausanne)*. 2025;12:1545420. doi: 10.3389/fmed.2025.1545420.
7. Rosa NGd, Vaz TA, Lucena AdF. Nursing workload: use of artificial intelligence to develop a classifier model. *Rev Lat Am Enfermagem*. 2024;32:e4239. doi: 10.1590/1518-8345.7131.4239.
8. Lifshits I, Rosenberg D. Artificial intelligence in nursing education: A scoping review. *Nurse Educ Pract*. 2024;80:104148. doi: 10.1016/j.nepr.2024.104148.
9. Hornischer L. Robustness and trustworthiness in AI: a no-go result from formal epistemology. *Synthese*. 2026;207(1):22. doi:10.1007/s11229-025-05272-4.
10. Qian Y, Siau KL, Nah FF. Societal impacts of artificial intelligence: Ethical, legal, and governance issues. *Societal impacts*. 2024;3:100040. doi:10.1016/j.socimp.2024.100040.
11. Giovanola B, Tiribelli S. Beyond bias and discrimination: redefining the AI ethics principle of fairness in healthcare machine-learning algorithms. *AI Soc*. 2023;38(2):549–63. doi: 10.1007/s00146-022-01455-6.
12. Fernandes A, Figueiredo M, Carvalho F, Neves J, Vicente H. Threat artificial intelligence and cyber security in health care institutions. In: In: Misra S KTA, editor. *Artificial Intelligence for Cyber Security: Methods, Issues and Possible Horizons or Opportunities*. Cham: Springer. 2021; 972:319–42.
13. Hassan EA, El-Ashry AM. Leading with AI in critical care nursing: challenges, opportunities, and the human factor. *BMC Nurs*. 2024;23(1):752. doi: 10.1186/s12912-024-02363-4.

14. Pruinelli L, Johnson SG, Fesenmaier B, Winden TJ, Coviak C, Delaney CW. An applied healthcare data science roadmap for nursing leaders: A workshop development, conceptualization, and application. *Comput Inform Nurs*. 2020;38(10):484–9. doi: 10.1097/CIN.0000000000000607.
15. Buchanan C, Howitt ML, Wilson R, Booth RG, Risling T, Bamford M. Predicted influences of artificial intelligence on the domains of nursing: scoping review. *JMIR Nurs*. 2020;3(1):e23939. doi: 10.2196/23939.