

**Artificial Intelligence in Nursing Education: Preparing Future Nurses for a Digital
Healthcare Era"**

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Artificial intelligence (AI) is a fast-expanding discipline of computer science that seeks to develop machines capable of doing activities that would normally need human intelligence. AI encompasses various techniques, including machine learning (ML), deep learning (DL), and natural language processing. Large language models (LLMs) are AI algorithms that combine deep learning techniques and very large data sets to analyse, summarize, generate, and predict new text-based content. AI has the capability to transform the nursing profession and is already impacting healthcare. AI is already influencing nursing practice, including clinical care, nursing duties, and patient-nurse interactions (1).

AI-driven solutions, such as adaptive tutoring platforms and intelligent simulation systems, may tailored learning trajectories according to individual students' strengths, weaknesses, paces, and preferred learning styles. Experts suggested that AI "provides more customised and effective learning experiences" when included in higher education curriculum (2). Simulation is an essential component of nursing education, and AI can improve it by developing more realistic, engaging, and diverse clinical scenarios. AI solutions like virtual simulators and chat-bots improved students' learning experiences, communication skills, and clinical preparation. Moreover, AI solutions can help instructors by automating repetitive tasks (grading, feedback, simulation debriefing), freeing up time for more advanced mentoring and reflection. They also enable the saleable delivery of high-quality simulation or adaptive learning modules, which is especially beneficial in programmes with large students or limited faculty resources (3).

AI enhances nursing technology but should complement the human-centric essence of nursing rather than replace it. Over-reliance on AI may compromise empathy and ethical judgement, emphasizing the need

for educators to ensure AI supports nursing advocacy. Ethical concerns, such as algorithmic bias and data privacy, also require careful AI implementation. Institutions with limited resources, especially in low- and middle-income areas, may struggle with the infrastructural demands of AI, potentially increasing educational disparities (4). Gaps in nursing education, including uneven study populations and insufficient long-term evidence, persist, and faculty may lack the necessary digital skills. While many studies report positive short-term outcomes in terms of knowledge and attitudes, evidence linking AI-enhanced education to tangible practice outcomes in nursing remains limited (5). The implementation of AI into nursing education presents a transformative potential to better train future nurses for the digital healthcare era. However, this integration must be intentional, ethical, equitable, and consistent with nursing's human-centred ideals.

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Data Availability

The dataset supporting the conclusions of this article is included in the article text and Supplementary Material; further inquiries can be directed to the corresponding author.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

1. Sheraz, S., Shuaib , N., Khan, S., Sultan, A., Shahid, A., & Hussain, H. (2025). Nursing student's awareness, intention and perception towards the utilization of artificial intelligence (AI) in nursing practice. *Journal of the Pakistan Medical Association*, 75(10), 1598–1600. <https://doi.org/10.47391/JPMMA.21258>
2. Alharbi MK. A Review on Artificial Intelligence–Insights from Nursing Care and Implementation in Nursing Education. *Asian Journal of Pharmaceutics (AJP)*. 2024 Mar 15;18(01).
3. El Arab RA, Al Moosa OA, Abuadas FH, Somerville J. The Role of AI in Nursing Education and Practice: Umbrella Review. *Journal of medical Internet research*. 2025 Apr 4;27:e69881.
4. Ma J, Wen J, Qiu Y, Wang Y, Xiao Q, Liu T, Zhang D, Zhao Y, Lu Z, Sun Z. The role of artificial intelligence in shaping nursing education: A comprehensive systematic review. *Nurse Education in Practice*. 2025 Mar 28:104345.
5. Jembu JP, Lee S. The effectiveness of Artificial Intelligence (AI) in learning outcomes of nursing students: A meta-analysis of randomized controlled trials (RCTs). *STEM Education*. 2025;5(4):546-63.