

Artificial Intelligence (AI) and the Future of Nursing

Susan Gennaro RN, PhD, FAAN

Professor, Boston College (Boston, Massachusetts, USA)

Editor, Journal of Nursing Scholarship (Sigma Theta Tau)

Limitations

- Not an AI researcher (although very grateful to Siobhan O'Connor, Kings College London for her insights and information) also grateful to Patty Dykes another AI researcher (Mass General Brigham) for her insights and expertise.
- My interaction is as an educator and as an editor and in both cases
 - 1) ethics
 - 2) best practice
- Refer you back to special issue in JNS on AI (57:1) transformative role of AI in nursing
 - My editorial on peer review (Artificial Intelligence and Peer Review (57:2)

AI Use Currently WITHIN Nursing

- Machine Learning
 - Use algorithms from past data to build predictive models and tools.
- Natural Language Processing
 - Computational linguistics to understand text or voice data

Contributions of AI Thus Far to nursing

- Voice recognition tools that make documentation easier
 - An example of this is ALVA a voice recognition tool that Cedars Sinai in LA is using <https://www.aivahealth.com/aiva-nurse-assistant> which helps with charting things like vital signs
- Systems to reduce administrative burden
 - Nurses document 600-800 data points in the EHR during a 12-hour shift. ¹
 - Gesner E, Dykes PC, Zhang L, Gazarian P. Documentation Burden in Nursing and Its Role in Clinician Burnout Syndrome. Appl Clin Inform. 2022 Oct;13(5):983-990. doi: 10.1055/s-0042-1757157. Epub 2022 Oct 19. PMID: 36261113; PMCID: PMC9581587.
 - US nurses spend 25% to as much as 41% of their shift on documentation. ²
 - De Groot K, De Veer AJE, Munster AM, Francke AL, Paans W. Nursing documentation and its relationship with perceived nursing workload: a mixed-methods study among community nurses. BMC Nurs. 2022 Jan 28;21(1):34. doi: 10.1186/s12912-022-00811-7. PMID: 35090442; PMCID: PMC8795724.
- Analytics that support real time decision making
 - Communicating Narrative Concerns Entered by RNs (CONCERN) (Nature Medicine, 2025)

Overview of Research Done on Impact of AI to Nursing

- Seibert et al. (2021) Application Scenarios for Artificial Intelligence in Nursing Care: Rapid Review. *Journal of Medical Internet Research*. vol. 23, issue 11, e26522
 - Machine learning most common AI used in nursing and most commonly used in hospital settings. Great promise for supporting clinical decision-making, care coordination, fall detection, and documentation processes.
- O'Connor et al. (2021). Artificial intelligence in nursing and midwifery. *Journal of Clinical Nursing*. vol. 32, issue 13
 - Found that 1/3 of studies reviewed (n=140) had nurses as main authors. Most used hospital data. Most studies done on patient care. Few on education.

Overview of Research Done on Impact of AI to Nursing

- Khatib & Malick. (2025). Examining the Role of AI in Changing the Role of Nurses in Patient Care: Systematic Review. JMIR Nursing. doi: *10.2196/63335*
 - This systematic review also included an examination of robots which are a form of AI not always examined but which have much promise
 - Examined studies that used virtual reality as a teaching tool.
 - Found 81% (13/16) of the AI applications within the nursing fields are in the proof-of-concept phase,
 - United States leading the way
 - Applications that would enhance or streamline the nurses' role seem to be focused on the treatment stage

Gaps in Research on AI

- MULTIMODAL TWINNING WITH HEALTH SENSORS WAVE OF THE FUTURE
- VIRTUAL ASSISTANTS
- NOT BEING USED AS MUCH IN PRIMARY CARE SO CONTINUE TO HAVE EMPHASIS ON ACUTE CARE NOT POPULATION HEALTH
- NOT SEEING USE IN EDUCATION
 - Do have research on immersive technology and learning but not on how to improve critical decision making, use of AI and patient outcomes etc.
- NEED MORE OUTCOME DATA
 - Need to look at cost of developing programs and success of programs when used

Concerns in Nursing with the Use of AI (Think Tank in 2021)

- Nurses must understand the relationship between the data they collect and AI technologies they use;
- Nurses need to be meaningfully involved in all stages of AI: from development to implementation; and
- There is a substantial untapped and an unexplored potential for nursing to contribute to the development of AI technologies for global health and humanitarian efforts.

International Think Tank Perspective (2025)

- Topaz et al. (2025) The Overlooked Dark Side of Generative AI in Nursing: An International Think Tanks Perspective. *Journal of Nursing Scholarship*,
 - Bias and hallucinations in data
 - Bias that exists in training data is easily amplified
 - Training data is uncurated and can contain hallucinations. Need clinical decision making.
 - Trust and transparency issues couple with need to ensure don't over rely on AI
 - Can make wrong decisions and don't know how decisions made. So questions of when clinical decision making has to over ride and if over reliance will lead to loss of critical thinking
 - Legal and ethical issues

SOME SPECIFIC EXAMPLES OF AI DEVELOPED BY NURSES AND USED IN NURSING

- Bagnasco, A. (2015) Applying artificial neural networks to predict communication risks in the emergency department. *JAN.* 71; 2293-2304.
- Guidi, G et al. (2015). A multi-layer monitoring system for clinical management of CHF *BMC Medical Informatics and Decision Making.* 15 (supplement).
- Song et al. (2023) Improved accuracy and efficiency of falls risk reduction screening ... *J Am Geriatr Soc.* 2024;72:1145-1154.

Future of AI in nursing

- Who help decides what models need to be built with AI
 - Need nursing voices and consumer voices?
 - What is truly useful
- Like nutritional labeling data sources used in AI need to be transparent
 - Diverse data has to be used
- AI be used to help consumers
 - Don't always need to see a provider
 - Need patient education and tools to help patients make best decisions
 - Consumers need to be able to opt out from having their data used in AI
 - Privacy has to be ensured