

Artificial Intelligence Applications in Nursing

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INTRODUCTION

Artificial intelligence (AI) is considered as a technique to train computers to mimic human cognitive activities including reasoning, learning, decision making and real time communication. It is the new future and often regarded as super intelligence. While the world is rapidly transforming towards virtual spaces and global village theme and transforming our living mode, work cultures and interests, AI can be regarded as the driving force behind these major transformations. As per recent study conducted, global AI healthcare innovations would spike up with an estimated spending of about \$ 36.5 billion by 2025. (1) This research article will provide a brief overview of Artificial Intelligence and how it transforms the medical world. It focuses on major transformations in nursing field with the help of AI and the way its automating manual tiresome and recurring tasks performed by nurses to auto scheduled jobs. While AI based techniques are applied in nursing for enhanced patient care, decision making, and service delivery, it has brought advancements in health care outcomes.

The number of researches around AI in health and nursing is growing at a fast pace since last decade. Living in a world where amount of data is increasing exponentially has opened new avenues for AI researchers and developers to find new insights from given data extracted from rich healthcare systems and is offering various transformations towards the development of a reduced, cost efficient and reliable health care applications (2)

There are several studies focusing on improving nursing documentation and data standards. supporting nurses' decision-making and care delivery. Other studies employed AI to predict patient triage and enhance clinical diagnoses, with two focusing on monitoring patients and their environment. Some studies reported a mixture of potential benefits. However, as the AI approaches were not used by nurses or midwives in professional practice, their efficacy and impact on clinical decision-making and care delivery in real-world settings remain largely unknown (3,4)

APPLICATIONS OF AI IN NURSING

One of the very first step towards analyzing the impact of Artificial Intelligence techniques in nursing is the wider domain insights identification where its adding value in nursing field as studied in Booth et al. 2021. (5) For this we also need to assess the roles of nurses as an end user of AI models and as health care experts. This will enable better research and improvements identification in leading and defining the development of modern AI in nursing as stated by O'Connor et al. 2022, where clinical and professional care experiences of nurses will play a significant part in a well-designed automation yet human friendly patient care tools. However, as per recent research done by Kikuchi 2020 the participation of nurses is still below

the benchmark and needs more clarity with respect to the domain. Another major reason behind this is early-stage exclusion of nurses, where they are not added in development and design discussion. Another issue is terminology variations at a higher level due to lack of common understandable vocabulary amongst both domain experts which also results in a communication barrier for nurses to participate in a modernized research and architecture design. Reviewing recent researches published on AI in nursing, the knowledge gap, benchmark definitions, ideas, and theories for AI in nursing can be fruitful. (6,7)

Patient Safety and Healthcare Outcomes

The most report studies in areas of healthcare that utilizes AI application were critical care, general nursing care, wound care, falls, infection, older adult care, hospital readmissions, midwifery care, emergency care and hospital discharge. Dermody and Fritz 2019 suggested an automated behavioral detection technique that recognizes elopement attitudes in Alzheimer's patients by applying a Markov model. It has been observed that accurate predictions of detectors would ultimately reduce the elopement rate and its risk. This will also save the patient from severe consequences being faced by them. Similarly, another major AI application in nursing care is a personal data collector via real-time house monitoring sensors, electronic health records, human activity recognition trackers, and daily health care reports for nursing home care assistance evaluation as studied in Duan et al. 2022. Such applications are highly suggested in daycares, hospital settings, educational settings, for disabled among others. There are also scenarios where physical activity intervention record is required such as pressure ulcers, hand washing skills, length of stay, etc. (8,9)

Nursing Administration and Management

Application of AI in Nursing administration and management domains are addressed in recent researches focusing on nursing data and documentation by examining how AI can improve nursing ontologies, terminologies, data quality or written nursing notes. It also includes studying variables to predict nurse staffing in acute settings, burnout in nurses, variables affecting nurses' job performance and developing a model to predict sleep disturbances of nurses. (10,11,12)

Nursing Education

In the domain of Nursing Education, AI are utilized to predict student academic failure, graduation, and completion rates of undergraduate nursing students, or to learn how to use medical devices using AI-assisted software. In healthcare organizations, virtual reality training can improve knowledge in nursing education and be used in pediatric and adult populations as a treatment tool or clinical intervention (13,14,15)

CHALLENGES OF AI IN NURSING

In order to ensure that the outcomes of predictive models were clinically relevant and that models were built using retrospective datasets, which may or may not be useful for future needs, nurses should be knowledgeable about the concepts of AI in addition to their involvement in testing, implementing, and evaluating the AI system. Lack of AI expertise in nurses are among the challenges which could hinder AI development and application in healthcare. Special consideration should be provided pertaining to the lack of governance and regulation around the use of AI to help address some of the ethical and legal issues (16,17)

Several AI applications will be helpful for nursing, but this may cause some serious, legitimate concerns among nurses, who fear losing their jobs as a result of technology taking the place of people. Similarly, this also introduces another debate of neglecting health care ethics and principles, data breach and outsourcing risks and some other concerns towards ethical practices of health records. These apprehensions can be alleviated by sharing appropriate guidelines about artificial intelligence to end users, (18)

CONCLUSION

The use of artificial intelligence in nursing practice was depicted in this article, along with its benefits for enhancing the necessary practice. There are few studies on how nursing professionals can influence artificial intelligence framework and how to incorporate them into their daily practice.

The Nursing community should focus more AI applications in patient safety, promoting team communication and offering accurate care. they should support developing researches and regulation for the successful and widespread implementation of AI in healthcare setting.

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