

APPLICATION OF ARTIFICIAL INTELLIGENCE IN NURSING CARE IN HEALTH FACILITIES AT VADODARA, GUJARAT

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ABSTRACT:

Background of the study:

The integration of Artificial Intelligence (AI) in nursing care has emerged as a transformative approach to improving healthcare delivery and patient outcomes. AI technologies, including machine learning, natural language processing, and predictive analytics, assist nurses in clinical decision-making, patient monitoring, and early detection of complications. By automating routine tasks such as documentation, scheduling, and medication management, AI enables nurses to devote more time to direct patient care and holistic support. Furthermore, AI-driven systems enhance accuracy in diagnosis, promote personalized care plans, and strengthen patient safety through continuous monitoring and alerts. Despite its immense potential, the application of AI in nursing faces challenges such as ethical concerns, data privacy, cost, and the need for proper training of healthcare professionals. Overall, AI represents a vital tool in advancing nursing practice, improving efficiency, and fostering patient-centered care in modern health facilities.

Objectives: To assess the nurses' knowledge of artificial intelligence in patient care.

Methods: A descriptive research design was adopted for this study. The samples were selected using a purposive sampling technique. The sample consisted of 60 staff nurses. The instruments used for data collection were demographic characteristics and a structured knowledge questionnaire.

Results: The level of knowledge regarding the application of artificial intelligence in nursing care among staff nurses is as follows: pretest level, good knowledge 0.00 percent, average knowledge 19 (32%), and poor knowledge 41 (68%).

The demographic variable, the educational status of staff nurses, had a statistically significant association with the level of knowledge regarding the application of artificial intelligence in nursing care. Age, religion, work experience, source of information, and Training attended on Artificial Intelligence had shown no statistically significant association with the levels of knowledge regarding the application of artificial intelligence in nursing care. $P < 0.05$. Hence, H₂ is accepted.

Conclusion:

The integration of Artificial Intelligence in nursing care holds great potential to transform healthcare delivery by improving clinical decision-making, enhancing patient monitoring, reducing workload, and ensuring timely interventions. While AI cannot replace the critical role of nurses, it serves as a powerful tool to support their practice, increase efficiency, and promote patient-centered care. For effective implementation, emphasis must be placed on ethical considerations, continuous training, and collaboration between technology and nursing professionals.

KEYWORDS: Assess, Knowledge, Artificial intelligence, Staff Nurses

INTRODUCTION

Artificial Intelligence (AI) is rapidly transforming the healthcare industry, and nursing is no exception. AI refers to the use of computer systems and algorithms to simulate human intelligence, enabling machines to learn, reason, and make decisions. In nursing, AI is being applied to support clinical decision-making, enhance patient care, reduce workload, and improve efficiency. From predictive analytics that help identify patients at risk of complications, to virtual nursing assistants that provide 24/7 guidance, AI technologies are reshaping the traditional roles of nurses.¹

The integration of AI in nursing practice offers numerous benefits, including accurate diagnosis support, personalized care plans, early detection of health deterioration, and streamlined documentation. It also allows nurses to devote more time to direct patient care by automating routine administrative tasks. However, alongside these opportunities, challenges such as ethical concerns, data privacy, training needs, and the risk of over-reliance on technology must also be considered.²

Overall, the application of AI in nursing is not meant to replace nurses but to empower them, enhancing their capabilities and ensuring safer, more efficient, and patient-centered care. Nursing professionals play a vital role in

patient care, and AI technologies are now assisting them by providing predictive analytics for early disease detection, automating routine tasks, improving accuracy in medication administration, and supporting evidence-based practice. For example, AI-powered monitoring systems can alert nurses to critical changes in patients' conditions in real time, thereby preventing complications and improving patient safety. Similarly, natural language processing tools are helping nurses reduce the burden of documentation and focus more on direct patient care.³

The application of AI in nursing care not only improves efficiency and accuracy but also enhances the overall quality of healthcare delivery. By integrating AI into daily nursing practice, health facilities can optimize workflow, minimize medical errors, ensure timely interventions, and ultimately promote better patient outcomes.⁴

The purpose of this article is to assess the current use of AI technology systems in nursing and healthcare settings to provide an overview or stimulate further research useful for the development of AI technology systems that are perfectly suited for application in healthcare.

MATERIAL AND METHODS:

Research Area

A study was conducted at selected hospitals in Noida. Patients had access to every facility in this hospital.

Research design: A Descriptive research design was used

Population

Study population: All nurses available during data collection were the source of the population.

Inclusion Criteria: Available during data collection

Exclusion Criteria: Those not interested in the study were excluded from the study.

Sample Size

60 nurses were selected.

Data analysis:

In this study, descriptive and inferential statistics were used, frequency and percentage, and to see the association between dependent and independent variables chi-squared test was used

RESULTS

Table 1: Frequency and percentage distribution of nurses, N=60

Demographic variables		frequency	Percentage (%)
Age in years	20-30	10	17
	31-40	20	33
	41-50	14	23
	>51	16	27
Religion	Hindu	36	60
	Muslim	14	23
	Christian	10	17
Education status	G.N.M	37	62
	B.Sc/P.Bsc nursing	17	28
	MSc Nursing and above	6	10
Source of information	Yes	40	67
	No	20	33
Work experience	1-2	23	39
	3-4	14	23
	4-5	11	18
	>6 years	12	20
Training attended on	No	37	62

Artificial Intelligence	Yes	23	38
Total		60	100

Table -1. Reveals the frequency and Percentage distribution of students according to their sociodemographic data. Result shows that the majority of staff nurses, 16(27%) were between >51 years and 20(33%) of staff nurses were found between the age group between 31-40 years, 14(23%) between 41-50 years and 10(17%) were 20-30 years of age.

According to religion maximum number of staff nurses 36(60%) were Hindu, only 14(23%) were Muslim and 10(17%) of were Christians. Regarding educational status maximum numbers of students 37(62%) were General nursing and midwifery, 17(28%) was B.Sc. and P.Bsc and only 6(10%) were M.Sc. nursing and above

Regarding the source of information maximum use of artificial intelligence in nursing is 20(33%), and 40(67%) were not know. With regards work experience majority of staff nurses 23(39%) were 1–2-year, 14(23%) were 3-4 years, 11(18%) were 4-5 years and 12(20%) were more than 12 years.

Regarding Training attended on Artificial Intelligence of staff majority of staff, 37(62%) were no, and 23(38%) were yes.

Table 2: Description of the level of knowledge regarding the application of artificial intelligence in nursing care in health facilities

Levels of knowledge	Pretest levels	
	Number	Percentage
Poor knowledge	41	68
Average knowledge	19	32
Good knowledge	0	0.0
Total	60	100.00

P<0.05

The above table shows that the level of knowledge regarding the application of artificial intelligence in nursing care among staff nurses is as follows: pretest level, good knowledge 0.00 percent, average knowledge 19 (32%), and poor knowledge 41 (68%).

Table 3: Association between the level of knowledge score with selected demographic variables, N=60

variables		Knowledge level			Total	Chi square df	P value
		Poor	Average	Good			
Age in years	20-30	10	3	0	13	2.148 2	0.342 NS
	31-40	16	3	0	19		
	41-50	9	2	0	11		
	>51	6	1	0	7		
Religion	Hindu	24	12	0	36	0.781 2	0.677 NS
	Muslim	9	5	0	14		
	Christian	8	2	0	10		
Education status	G.N.M	23	10	0	33	0.391 1	0.004* S
	B.Sc./P. B.Sc. Nursing	11	3	0	14		
	MSc Nursing and above	7	6	0	13		
Work experience	1-2	14	10	0	24	0.216 2	0.158 NS
	3-4	7	3	0	10		
	4-5	8	4	0	12		
	>6 years	12	2	0	14		
Source of information	Yes	14	6	0	20	0.921 3	0.732
	No	27	13	0	40		
Training attended on Artificial Intelligence	Yes	24	6	0	30	0.537 1	0.464
	No	17	13	0	30		

*p<0.05 S- significant, NS-Not-significant.

The above table showed that the demographic variable, the educational status of staff nurses, had a statistically significant association with the level of knowledge regarding the application of artificial intelligence in nursing care. Age, religion, work experience, source of information, and Training attended on Artificial Intelligence had shown no statistically significant association with the levels of knowledge regarding the application of artificial intelligence in nursing care. P<0.05. Hence, H2 is accepted.

DISCUSSION

Assessing the application of artificial intelligence in nursing care in health facilities at Noida

Across recent reviews and empirical implementations, AI is consistently shown to support nurses by (a) reducing documentation and administrative burden, (b) augmenting clinical decision-making, (c) optimizing staffing and patient flow, and (d) enabling remote and continuous monitoring. These gains are reported without displacing the central, relational role of the nurse; rather, AI serves as a “second set of eyes” that surfaces patterns and predictions faster than humans can, allowing nurses to spend more time in direct care and safety-critical work. Evidence for AI improving measurable educational outcomes in health professions is still limited and methodologically heterogeneous. The implication is to pair AI-enhanced simulations and tutoring with robust evaluation designs and explicit learning objectives, rather than assuming benefits.⁵

CONCLUSION:

The poor use of Artificial Intelligence in patient care undermines the potential benefits it can offer in improving diagnosis, treatment, and patient outcomes. Inadequate training of healthcare providers, lack of proper infrastructure, limited integration with existing systems, and ethical concerns such as data privacy and bias often result in underutilization or misuse of AI tools. Consequently, rather than enhancing efficiency, such shortcomings may increase errors, reduce patient trust, and compromise the quality of care. To address these challenges, there is a need for structured implementation strategies, continuous training, strong ethical guidelines, and robust monitoring systems. Only through responsible and effective utilization can AI be transformed from a missed opportunity into a powerful instrument that advances patient care.

Competing interest:

The authors report no conflicts of interest for this work.

Authors' contributions

Each author helped prepare the text and participated in the data interpretation process. The final draft of the manuscript has been read and approved by all writers.

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