

Knowledge and Attitudes Regarding Artificial Intelligence and Its Application in Healthcare Among Nursing Staff at a Tertiary Care Teaching Hospital in North India: A Cross-Sectional Correlational Study

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ABSTRACT

Background

Artificial intelligence (AI) is increasingly transforming healthcare delivery, and nursing staff, being the largest healthcare workforce, play a critical role in its successful integration. However, studies consistently show that nurses have limited knowledge of AI despite holding generally favourable attitudes toward it. This study aimed to assess the knowledge and attitude regarding AI and its application in the healthcare system among nursing staff, and to determine the correlation between knowledge and attitude, along with their association with selected socio-demographic variables.

Objective

To assess the Knowledge and Attitudes regarding Artificial Intelligence and its Applications in Healthcare among Nursing Staff and to examine the Relationship between Knowledge and Attitudes.

Materials and Methods

A non-experimental, descriptive correlational study was conducted among 100 nursing staff at SGT Medical College, Hospital and Research Institute, Gurugram, Haryana, using a non-probability purposive sampling technique. Data were collected using a self-structured, three-section tool comprising socio-demographic variables, a 20-item knowledge questionnaire, and a 12-item, 5-point Likert attitude scale. Data were analysed using descriptive statistics, Pearson's correlation coefficient, and inferential tests (t-test, F-test, Fisher's exact test).

Results

The majority of participants, 52% (n = 52), had moderate knowledge of AI, while 30% had adequate and 18% had poor knowledge (mean score 12.8 ± 3.2). Regarding attitude, 46% (n = 46) had a neutral attitude, 40% a positive attitude, and 14% a negative attitude toward AI (mean score 41.5 ± 6.4). A statistically significant moderate positive correlation was found between knowledge and attitude scores ($r = 0.62$, $p < 0.01$), indicating that nursing staff with higher knowledge levels tended to hold more favourable attitudes toward AI. Educational qualification, prior exposure to AI, and AI-related training showed statistically significant associations with both knowledge ($p = 0.047$, $p = 0.017$, $p = 0.006$, respectively) and attitude ($p = 0.038$, $p = 0.014$, $p = 0.004$, respectively) scores.

Conclusion

The study highlights that nursing staff possess a moderate level of AI knowledge and a neutral-to-positive attitude, with a significant positive correlation between the two. Education, training, and prior exposure emerged as key factors influencing AI readiness. There is a pressing need to integrate AI content into nursing curricula and to conduct structured in-service training to strengthen AI literacy and foster positive attitudes among nursing staff, supporting safer and more effective AI integration in healthcare.

Keywords: Artificial Intelligence, Attitude, Correlation, Healthcare, Knowledge, Nursing Staff.

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Introduction

In 1956, a conference was held at Dartmouth College in the United States, where the term "artificial intelligence" (AI) was first used. The concept and its application have changed significantly since then.¹

AI was initially limited to computer science, but it eventually made its way into the health sciences, too. The quality of health services and systems for people is really important, so a lot of people have looked at using Artificial Intelligence in diagnosis, care and treatment. People want to make health services better for individuals. Artificial Intelligence is used

to help with diagnosis, patient care and patient treatment. The integration of AI and medicine has had a significant impact on nursing and healthcare systems due to the Internet's and AI's rapid development. Clinical care, nursing education, nursing management, and various other domains also rely significantly on AI.²

For the healthcare system to reach the goals of "quadruple aim," which are improving the health of the population, improving patient experience, improving caregivers' satisfaction, and decreasing healthcare costs, the healthcare system faces many challenges. Healthcare systems also face the difficulty of coordinating significant changes and providing efficient, high-quality care. This calls for the immediate integration of data-driven insights from the real world into patient care procedures. These supply-and-demand issues may be resolved by incorporating technology and artificial intelligence (AI) in healthcare. A high-performance computer system that can carry out activities comparable to those of humans more successfully is referred to as "AI." They involve carrying out research, gathering data, gaining new information, making predictions, and aiding in decision-making. Through a purposeful, intelligent, and flexible process, AI-enabled systems can predict potential problems and proactively work towards solving them. The ability of such systems to find relationships and correlations through large amounts of data is one of their key strengths. They remain dynamic and autonomous too, evolving as more data is gathered.³

However, AI is not a new term in the healthcare industry since it is widely used there. The benefits that can be brought to patients' treatment and diagnostics by adopting AI technology are numerous; therefore, its implementation is becoming more popular. The use of AI in clinics and hospitals indicates a paradigm shift in the administration and provision of healthcare. One area where AI is currently being used in healthcare is the development of diagnostic tools. For example, medical imaging such as X-rays and CT scans can be analysed by AI algorithms to identify signs of illness or injury. This will enable the doctors to diagnose the disease better, find the problem early on, and treat it less forcefully. One other area where the technology of AI is being implemented in the healthcare sector is in customized medicines. AI has the capacity to analyse huge amounts of data to understand the impact of one's genetic structure, surroundings, and lifestyle on his/her body.⁴

Healthcare is one of the four most important industries where artificial intelligence (AI) has emerged as a transformational force in recent years.⁵ Notably, AI has been used to revolutionise the way healthcare processes are handled, apart from just aiding in the diagnostic process, such as in robotic surgeries, virtual consultations, and the management

of health records. Chatbots powered by artificial intelligence can assist in offering continuous assistance to patients, as they can help answer medical questions and ensure compliance with medication. AI enhances the precision of robotic surgeries, thus reducing the possibility of complications, which results in better recovery rates for patients. Use of AI in nursing is unique in its advantages.²

Data privacy concerns, bias in AI algorithms, and the interpretability of AI-driven conclusions are some of the challenges associated with integrating AI into medicine. However, it is anticipated that AI will transform healthcare, leading to better diagnosis, more efficient treatment options, and overall better patient care, with further technology advancements and increased cooperation between medical professionals and AI researchers.⁶

Materials and Methods

A quantitative survey approach with non-experimental, descriptive, correlational design was employed to assess the knowledge and attitudes regarding artificial intelligence and its applications in the health care system among nursing staff in SGT Medical College, Hospital and Research Institute, Gurugram, Haryana. The study was conducted from 16 March to 31 March 2026 after obtaining approval from the Institutional Ethics Committee (IEC-SGTDCHRI/M.Sc. Nursing/FNUR/2026/03) of SGT University and administrative permission from the participating hospitals. A total of 100 Nursing Staff working in SGT Hospital were selected using a Non probability purposive sampling technique. Nurses who were willing to participate and provided informed consent were included, whereas Student nurses and interns deployed at the hospital for clinical training were excluded. Knowledge was assessed using a 20-item structured multiple-choice questionnaire, while attitude was evaluated using a 12-item 5-point Likert scale. The content validity of the knowledge questionnaire and attitude scale was established by seven of Nursing and Medical Education experts, yielding Content Validity Index (CVI) values of 0.71 and 0.86, respectively, and internal consistency was confirmed using Cronbach's alpha ($\alpha = 0.71$). Data were analysed using SPSS software. Descriptive statistics (frequency, percentage, mean and standard deviation) were used to summarize the data, while inferential statistics, including the one-way ANOVA and independent t-test, were applied to determine the association between the scores of knowledge and attitude and sociodemographic variables. A p-value <0.05 was considered statistically significant.

Results

A total of 100 nursing staff completed both the knowledge questionnaire and attitude scale were included in the final analysis. Findings are presented according to socio-demographic characteristics, knowledge and attitude distributions, the correlation

between knowledge and attitude, and associations with selected demographic variables.

The study population consisted of nursing staff working in SGT Hospital. Demographic characteristics, including age, gender, educational qualification, designation, total clinical experience, previous exposure to AI, training related to AI, availability of AI technology at workplace, frequency of AI tool use, were comparable across the study population and educational qualification, previous exposure to AI and training related to AI showed statistically significant relation with knowledge and attitude scores.

Table 1. Distribution of Knowledge levels Regarding Artificial Intelligence in Healthcare (N=100)

Knowledge Level	Score Range	N (%)
Poor	0–7	18
Moderate	8–14	52
Adequate	15–20	30
Total		100

Just over half of the nursing staff (52%) demonstrated moderate knowledge of AI in healthcare, 30% demonstrated adequate knowledge, and 18% demonstrated poor knowledge, indicating that a substantial proportion of the workforce has yet to acquire a sound understanding of the technology.

Table 2. Distribution of Attitude Toward Artificial Intelligence in Healthcare (N=100)

Attitude Level	Score Range	N (%)
Negative	12–28	14
Neutral	29–44	46
Positive	45–60	40
Total		100

Nearly half of the respondents (46%) held a neutral attitude toward AI in healthcare, 40% held a positive attitude, and 14% held a negative attitude, reflecting an overall neutral-to-positive disposition among nursing staff.

Table 3. Correlation Between Knowledge and Attitude Regarding AI among Nursing Staff (N=100%)

Variables	Mean ± SD	r-value	p-value	Interpretation
Knowledge Score	12.8 ± 3.2	0.62	<0.01	Significant

Attitude Score	41.5 ± 6.4	(moderate positive correlation)
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The mean knowledge score was 12.8 ± 3.2 and the mean attitude score was 41.5 ± 6.4 . Pearson's correlation analysis revealed a moderate, positive, and statistically significant relationship between knowledge and attitude scores ($r = 0.62$, $p < 0.01$), indicating that nursing staff with greater knowledge of AI tended to hold more favourable attitudes toward its use in healthcare.

Table 4. Association Between Mean and Knowledge Score and Selected Socio-Demographic Variables (N=100)

Variable	Statistical Test	p-value	Interpretation
Age	ANOVA	0.275	Not Significant
Gender	t-test	0.398	Not Significant
Educational qualification	ANOVA	0.047	Significant*
Designation	ANOVA	0.708	Not Significant
Area of work	ANOVA	0.703	Not Significant
Total clinical experience	ANOVA	0.142	Not Significant
Experience in current Department	ANOVA	0.554	Not Significant
Previous exposure to AI	t-test	0.017	Significant*
Training related to AI	t-test	0.006	Significant*
Availability of AI technology	ANOVA	0.109	Not Significant
Frequency of AI tool use	ANOVA	0.058	Not Significant

Knowledge scores showed a statistically significant association with educational qualification ($p=0.047$), previous exposure to AI ($p=0.017$), and training related to AI ($p=0.006$), nurses with higher qualifications, prior AI exposure, or AI-specific training scored higher. No significant association was found between knowledge and age, gender,

designation, area of work, clinical experience, workplace availability of AI technology, or frequency of AI tool use (all $p > 0.05$).

Table 5. Association Between Mean Attitude Score and Selected Socio-Demographic Variables (N=100)

Variable	Statistical Test	p-value	Interpretation
Age	ANOVA	0.214	Not Significant
Gender	t-test	0.452	Not Significant
Educational qualification	ANOVA	0.038	Significant*
Designation	ANOVA	0.642	Not Significant
Area of work	ANOVA	0.588	Not Significant
Total clinical experience	ANOVA	0.164	Not Significant
Experience in current Department	ANOVA	0.501	Not Significant
Previous exposure to AI	t-test	0.014	Significant*
Training related to AI	t-test	0.004	Significant*
Availability of AI technology	ANOVA	0.096	Not Significant
Frequency of AI tool use	ANOVA	0.051	Not Significant

A parallel pattern was observed for attitude scores, which were significantly associated with educational qualification ($p=0.038$), previous exposure to AI ($p=0.014$), and training related to AI ($p=0.004$). No significant association emerged with age, gender, designation, area of work, clinical experience, availability of AI technology, or frequency of AI tool use (all $p > 0.05$).

Discussion

The present study assessed the knowledge and attitude regarding artificial intelligence in healthcare among 100 nursing staff at a tertiary care teaching hospital in Gurugram, and examined the correlation between the two constructs along with their association with selected socio-demographic variables. The sample was predominantly young (50% aged 26-30 years) and female (66%), broadly reflecting the demographic composition of the nursing workforce internationally.

The mean knowledge score of 12.8 ± 3.2 , with over half of participants (52%) falling in the moderate category, is consistent with international evidence describing an overall moderate level of AI literacy among nurses. Khalil and Yasir reported that 85.6% of nurses demonstrated a moderate level of understanding, and Hamedani et al. similarly found a moderate mean score of 14.66 ± 4.53 among Tehran-based physicians and nurses.^{7,8} A multi-study systematic review by Sandanasamy et al. likewise reported an average knowledge score equivalent to only 21.93 out of 100 across five international studies, describing overall AI literacy among nurses as poor to moderate.⁹ The comparatively modest knowledge levels observed here are consistent with the fact that 85% of participants had no prior exposure to AI and 72% had received no formal training - and echo Kaur et al.'s finding of below-average knowledge (mean 13.36 ± 6.73) among healthcare professionals in Punjab.¹⁰

Attitude scores in the present study were predominantly neutral to positive (46% neutral, 40% positive, mean 41.5 ± 6.4), aligning with Khaled and Elborai's finding that 82.6% of nursing students held a positive attitude toward AI, and with Abdelhakam Ahmed et al.'s observation that Egyptian staff nurses generally viewed AI as complementary rather than threatening to their profession.^{11,12} The neutral-to-positive tendency reported here also parallels findings among Turkish nurses, whose GAAIS-based attitude scores likewise clustered in a comparable range.¹³ The 14% of nurses expressing negative attitudes in this study is broadly consistent with recurring international concerns around job displacement, ethical uncertainty, and unfamiliarity with the technology.

A moderate, positive, and statistically significant correlation was observed between knowledge and attitude scores ($r = 0.62$, $p < 0.01$), indicating that nurses with greater AI knowledge tended to view the technology more favourably, and vice-versa. This finding is consistent with the broader literature demonstrating that AI literacy and favourable disposition toward the technology reinforce one another, and supports Roy Adaptation Model's premise that cognitive processing of a novel stimulus (AI) shapes the resulting adaptive attitudinal response.

Educational qualification, prior exposure to AI, and AI-related training emerged as the only socio-demographic variables significantly associated with both knowledge and attitude ($p < 0.05$), while age, gender, designation, area of work, clinical experience, workplace availability of AI technology, and frequency of AI tool use showed no significant association. This pattern reinforces the conclusion that structured education and hands-on exposure, rather than demographic characteristics, are the

principal modifiable factors for improving nurses' readiness to engage with AI in clinical practice.

Conclusion

The present study demonstrated that nursing staff possess a predominantly moderate level of knowledge and neutral-to-positive attitude toward artificial intelligence and its application in healthcare. Knowledge and attitude were significantly and positively correlated, and educational qualification, prior exposure to AI, and AI-related training were the key factors associated with higher scores on both dimensions. These findings underscore the need to integrate structured, competency-based AI education into nursing curricula and to institute regular in-service training programmes for practising nurses, thereby strengthening informed, ethical, and confident adoption of AI-enabled tools in patient care.

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Conflict of Interest

The authors declare that **there are no conflicts of interest** regarding the publication of this manuscript.

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