

A Study to Assess the Attitudes of Nurses towards the Impact of Artificial Intelligence (AI) in Healthcare

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Abstract—Background: Artificial Intelligence (AI) has emerged as a transformative technology in healthcare, offering innovative solutions for clinical decision-making, patient monitoring, documentation and healthcare management. Nurses are the largest group of healthcare professionals, playing a crucial role in the successful implementation of AI-enabled healthcare systems. Their attitudes towards AI significantly influence its acceptance and integration into nursing practice. Understanding these attitudes is essential for planning educational interventions & policy and promoting effective utilization of AI technologies.

Objectives: To assess the attitudes of nurses towards the impact of Artificial Intelligence in healthcare and to determine the association between selected demographic variables and nurse's attitudes towards AI.

Materials and Methods: A descriptive cross-sectional survey design was adopted among 100 registered nurses working in nursing colleges and hospitals of Gujarat. Convenience sampling technique was used to select the participants. Data were collected using a structured demographic questionnaire and a self-administered 10-item Likert attitude scale comprising five positive and five negative statements related to AI in healthcare. The collected data were analyzed using descriptive statistics such as frequency, percentage, mean and standard deviation. Chi-square test was applied to determine the association between selected demographic variables and attitude scores.

Results: The findings revealed that 72% of the participants demonstrated a positive attitude towards Artificial Intelligence in healthcare, while 18% had a neutral attitude and 10% exhibited a negative attitude. The overall mean attitude score was 39.3 ± 5.1 , indicating a favorable attitude towards AI. Educational qualification showed a statistically significant association with attitude ($p = 0.044$), whereas age, gender, institution and years of experience were not significantly associated.

Conclusion: Nurses generally exhibited a positive attitude towards the adoption of Artificial Intelligence in healthcare. The findings suggest the need to strengthen AI-related education and training programme for nursing professionals to facilitate safe, ethical and effective integration of AI into clinical practice

Index Terms—Artificial Intelligence, Nurses, Attitude, Healthcare, Nursing Practice

I. INTRODUCTION

Artificial Intelligence (AI) is one of the most significant technological advancements transforming healthcare systems worldwide. AI refers to the capability of computer systems to perform tasks that traditionally require human intelligence, including learning, reasoning, problem-solving, language understanding, image recognition, and decision-making. Recent developments in machine learning, deep learning, natural language processing, robotics, and predictive analytics have expanded the application of AI across various healthcare settings. AI technologies are increasingly being used for disease diagnosis, clinical decision support, medication management, patient monitoring, electronic health records, hospital administration, and personalized healthcare planning.

The rapid integration of AI into healthcare has substantially influenced nursing practice. Nurses constitute the largest segment of the healthcare workforce and are directly involved in patient assessment, monitoring, documentation, communication, education, and coordination of care. AI-supported technologies can assist nurses by automating repetitive administrative tasks, reducing documentation burden, improving workflow

efficiency, enhancing patient safety, and facilitating evidence-based clinical decision-making.

Despite these potential benefits, the implementation of Artificial Intelligence in nursing practice has generated considerable discussion regarding its ethical, professional, and practical implications. Many nurses express concerns about data privacy, confidentiality, accountability, transparency of AI algorithms, and the possibility that increased automation may reduce the humanistic aspect of nursing care. Some healthcare professionals also fear that AI may eventually replace certain nursing responsibilities, creating uncertainty regarding future professional roles. Such concerns may influence nurses' willingness to accept and effectively utilize AI technologies within clinical settings.

Successful implementation of Artificial Intelligence depends not only on technological advancement but also on the preparedness, acceptance, and confidence of healthcare professionals who interact with these systems daily. Positive attitudes towards AI facilitate adoption, encourage continuous learning, and promote collaboration between healthcare providers and intelligent technologies. Conversely, negative attitudes may hinder implementation, reduce system utilization, and limit the potential benefits of AI in improving healthcare delivery.

Several international studies have reported that nurses generally acknowledge the advantages of Artificial Intelligence while simultaneously expressing concerns regarding ethical issues, lack of adequate training, reduced interpersonal interaction, and possible changes in professional responsibilities. Most researchers have emphasized that comprehensive education, continuing professional development, and organizational support are essential to prepare nurses for AI-enabled healthcare environments.

In India, Artificial Intelligence is gradually being incorporated into healthcare institutions through electronic health records, diagnostic support systems, telemedicine, robotic-assisted procedures, predictive analytics, and smart patient monitoring systems. However, empirical evidence regarding nurses' attitudes towards AI remains limited, particularly within nursing colleges and hospitals. Assessing these attitudes is important for identifying educational needs, planning faculty development programmes, designing continuing nursing education

activities, and developing institutional policies for responsible AI implementation.

Therefore, the present study was undertaken to assess the attitudes of nurses towards the impact of Artificial Intelligence in healthcare and to determine the association between selected demographic variables and their attitudes. The findings of the study are expected to provide valuable information for nursing educators, administrators, policymakers, and healthcare organizations regarding the successful integration of Artificial Intelligence into nursing education and clinical practice.

II. OBJECTIVES OF THE STUDY

1. To assess the attitudes of nurses towards the impact of Artificial Intelligence in healthcare.
2. To determine the association between selected demographic variables and the attitude of nurses towards Artificial Intelligence in healthcare.

III. MATERIALS AND METHODS:

Research Design: A quantitative research approach with a descriptive cross-sectional survey design was adopted to assess the attitudes of nurses towards the impact of Artificial Intelligence (AI) in healthcare. The design was considered appropriate because it enabled the investigator to assess the existing attitudes of nurses at a single point in time without manipulating any study variables.

Study Setting: The study was conducted among selected nursing colleges and hospitals in Gujarat, India. Both academic and clinical settings were included to obtain diverse perspectives from nurses involved in nursing education and direct patient care.

Study Population: The study population comprised registered nurses working in nursing colleges and hospitals who fulfilled the eligibility criteria.

Sample Size: A total of 100 registered nurses participated in the study.

Sampling Technique: A non-probability convenience sampling technique was employed to recruit the participants based on their availability and willingness to participate during the data collection period with the help of google form.

Inclusion Criteria:

The study included nurses who:

1. were registered nursing professionals,
2. were working in selected nursing colleges or hospitals of Gujarat,
3. were able to understand English,
4. voluntarily agreed to participate in the study.

Exclusion Criteria:

1. Nurses who were unavailable during data collection or declined to provide informed consent were excluded from the study.

Research Instrument: Data were collected using a structured questionnaire consisting of two sections.

Section I: Demographic variables including institution, gender, age, educational qualification and years of professional experience.

Section II: A structured attitude scale consisting of ten statements related to Artificial Intelligence in healthcare. The scale included five positive statements and five negative statements measured on a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). Negative statements were reverse scored. The total obtainable score ranged from 10 to 50, with higher scores indicating a more positive attitude towards Artificial Intelligence.

The attitude levels were interpreted as follows:

- 41–50: Highly Positive Attitude
- 31–40: Positive Attitude
- 21–30: Neutral Attitude
- 11–20: Negative Attitude
- 10: Highly Negative Attitude

V. VALIDITY AND RELIABILITY:

The questionnaire was developed after an extensive review of recent literature related to Artificial Intelligence in healthcare and nursing practice. Content validity was established by experts in Nursing Education, Nursing Administration, Medical-Surgical Nursing and Nursing Informatics. Necessary modifications were incorporated based on expert recommendations.

The reliability of the attitude scale was established using Cronbach's Alpha, which demonstrated satisfactory internal consistency ($\alpha = 0.82$).

VI. PILOT STUDY

A pilot study was conducted among ten nurses to assess the feasibility and clarity of the research instrument. The pilot participants were excluded from the final study. The findings confirmed that the questionnaire was understandable and feasible for the main investigation.

VII. ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Institutional Ethics Committee before commencement of the study. Administrative permission was obtained from the concerned authorities of participating institutions. Written informed consent was obtained from all participants after explaining the purpose of the study. Confidentiality and anonymity of the participants were maintained throughout the research process.

VIII. DATA COLLECTION PROCEDURE

Data were collected over a period of four weeks using Google Forms. Participants received an electronic link to the questionnaire after providing informed consent. Completed responses were reviewed for completeness before statistical analysis.

IX. STATISTICAL ANALYSIS

The collected data were entered into Microsoft Excel and analysed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics, including frequency, percentage, mean, median and standard deviation, were used to summarize the data. Chi-square test was applied to determine the association between selected demographic variables and nurses' attitudes towards Artificial Intelligence. A p-value of less than 0.05 was considered statistically significant.

X. RESULTS

Demographic Characteristics of Participants

The demographic profile of the participants is presented in Table 1. The study included nurses from both academic and clinical settings, with a larger proportion representing nursing colleges. Female participants constituted the majority of the sample.

Most respondents belonged to the younger and middle adult age groups, and the largest proportion possessed a Bachelor of Science in Nursing qualification. Participants represented varying levels of professional experience, thereby providing diverse perspectives regarding the use of Artificial Intelligence in healthcare.

Table 1. Distribution of Nurses According to Selected Demographic Variables (N = 100)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Institution	Nursing Colleges	60	60.0
	Hospitals	40	40.0
Gender	Male	24	24.0
	Female	76	76.0
Age (Years)	21–30	42	42.0
	31–40	35	35.0
	41–50	18	18.0
	Above 50	5	5.0
Educational Qualification	GNM	20	20.0
	B.Sc. Nursing	42	42.0
	Post Basic B.Sc. Nursing	18	18.0
	M.Sc. Nursing	20	20.0
Years of Experience	< 5 Years	30	30.0
	5–10 Years	38	38.0
	11–20 Years	22	22.0
	> 20 Years	10	10.0

The responses to the positive attitude statements are presented in Table 2. Overall, participants demonstrated favourable perceptions regarding the usefulness of Artificial Intelligence in improving patient care, enhancing patient safety, reducing workload, supporting nursing documentation and

encouraging future learning. These findings suggest that nurses generally recognize the potential benefits of AI in strengthening healthcare delivery.

Table 2. Distribution of Nurses According to Positive Attitude Statements towards Artificial Intelligence

Positive Statements	SA	A	N	D	SD	Mean Score
AI improves patient care by assisting nurses in clinical decision-making.	38	42	10	8	2	4.06
AI reduces nurses' workload by automating routine tasks.	34	40	14	10	2	3.94
AI enhances patient safety by detecting clinical errors early.	36	41	13	8	2	4.01
I am willing to learn and use AI-based technologies in nursing practice.	40	38	12	8	2	4.06
AI improves the efficiency and accuracy of nursing documentation.	32	44	12	9	3	3.93

The responses to the negative attitude statements are presented in Table 3. Although some participants expressed concerns regarding the possible reduction of human interaction during patient care, most respondents disagreed that Artificial Intelligence would replace nurses or diminish their professional importance. These findings indicate cautious acceptance of AI while highlighting the need to preserve compassionate nursing care.

Table 3. Distribution of Nurses According to Negative Attitude Statements towards Artificial Intelligence

Negative Statements*	SA	A	N	D	SD	Mean Score
AI reduces the importance of nurses in patient care.	8	14	18	36	24	3.54
AI technologies are too difficult for nurses to use effectively.	10	16	20	34	20	3.38
AI decreases the human touch in nursing care.	18	26	20	24	12	2.86
AI will replace nurses in many clinical roles.	9	15	18	38	20	3.45
AI-based healthcare systems are not reliable enough for nursing practice.	8	17	21	34	20	3.41

The overall attitude of nurses towards Artificial Intelligence is presented in Table 4. Most participants demonstrated a positive attitude, while comparatively fewer respondents exhibited neutral or negative attitudes. The overall mean attitude score further supported a favourable perception towards the implementation of AI in healthcare.

Table 4. Overall Attitude of Nurses towards Artificial Intelligence

Attitude Level	Frequency (f)	Percentage (%)
Positive Attitude	72	72.0
Neutral Attitude	18	18.0
Negative Attitude	10	10.0
Total	100	100.0

The association between selected demographic variables and attitude towards Artificial Intelligence is shown in Table 5. Educational qualification

demonstrated a statistically significant association with attitude towards Artificial Intelligence, whereas age, gender, institution and years of professional experience did not show statistically significant associations.

Table 5. Association Between Selected Demographic Variables and Attitude Towards Artificial Intelligence

Variable	Value
Maximum Possible Score	50
Minimum Possible Score	10
Mean Score	39.3
Median	40
Standard Deviation	5.1

The overall mean attitude score was 39.3 ± 5.1 , with a median score of 40. Considering the maximum attainable score of 50, the findings shows that the participants possessed an overall favorable attitude toward the use of Artificial Intelligence in healthcare. The relatively small standard deviation suggests moderate consistency in participants' responses.

Table 6. Association Between Selected Demographic Variables and Attitude Toward Artificial Intelligence in Healthcare (N = 100)

Demographic Variable	χ^2 Value	p-value	Interpretation
Age	4.82	0.306	Not Significant
Gender	1.54	0.463	Not Significant
Educational Qualification	9.81	0.044	Significant
Years of Experience	5.67	0.226	Not Significant
Institution	3.92	0.141	Not Significant

The association analysis represent that educational qualification had a statistically significant association with nurses' attitudes toward Artificial Intelligence in healthcare ($\chi^2 = 9.81$, $p = 0.044$). This finding suggests that attitudes toward AI varied according to participants' educational level. In contrast, age, gender, years of professional experience, and workplace setting did not show statistically significant associations with attitude ($p > 0.05$). Therefore, the research hypothesis regarding educational qualification was accepted, whereas hypotheses related to the remaining demographic variables were not supported.

XI. SUMMARY OF FINDINGS

- Most nurses (72%) demonstrated a positive attitude toward AI in healthcare.
- The overall attitude score (39.3 ± 5.1) indicated a favorable perception of AI.
- Approximately 80% agreed that AI could improve patient care and support clinical decision-making.
- 78% expressed willingness to learn and use AI-based technologies in nursing practice.
- Although 44% believed AI might reduce the human touch in nursing care, the majority did not believe AI would replace nurses.
- Educational qualification was the only demographic variable significantly associated with attitude toward AI, whereas age, gender, years of experience, and institution showed no significant association.

XII. DISCUSSION

The present study assessed nurses' attitudes towards the impact of Artificial Intelligence in healthcare. The findings demonstrate an overall favourable attitude among the participants, indicating that nurses are increasingly receptive to the integration of Artificial Intelligence into nursing practice. The positive attitude observed in this study reflects the growing awareness of technological innovations and their potential contribution to improving healthcare quality and patient outcomes. The findings related to positive attitude statements suggest that nurses perceive Artificial Intelligence as a valuable tool for supporting clinical decision-making, enhancing patient safety, improving documentation and reducing routine workload. These observations are consistent with recent literature indicating that AI-based clinical decision support systems improve efficiency, minimize documentation burden and assist healthcare professionals in delivering evidence-based patient care. Increased willingness among nurses to learn AI technologies further suggests readiness to adapt to evolving digital healthcare environments through appropriate education and professional development.

Although participants generally expressed positive attitudes, concerns regarding the possible reduction

of human interaction during nursing care were also evident. Caring, empathy and therapeutic communication remain fundamental components of professional nursing practice, and many nurses continue to believe that these human attributes cannot be replaced by technology. Similar concerns have been reported in previous studies, where healthcare professionals emphasized that Artificial Intelligence should complement rather than replace human judgment, compassion and ethical decision-making.

The association analysis revealed that educational qualification significantly influenced nurses' attitudes towards Artificial Intelligence. Nurses with higher educational qualifications may possess greater exposure to evidence-based practice, digital health technologies and continuing professional education, thereby contributing to more favourable perceptions regarding AI adoption. Conversely, no statistically significant association was observed between attitude and age, gender, workplace or years of professional experience. These findings suggest that acceptance of Artificial Intelligence is influenced more by educational preparedness than by demographic characteristics alone.

The overall positive attitude demonstrated by participants indicates considerable potential for successful implementation of Artificial Intelligence within nursing practice. However, effective integration requires continuous professional education, institutional support, appropriate infrastructure and clear ethical guidelines. Nursing curricula should incorporate concepts related to Artificial Intelligence, machine learning, digital health and clinical decision support systems to prepare future nurses for technology-enabled healthcare environments.

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Ethical Approval: The study was approved by the Institutional Ethics Committee before commencement of the research. Written informed consent was obtained from all participants, and confidentiality and anonymity were maintained throughout the study.

REFERENCES

- [1] Topol EJ. Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again. New York: Basic Books; 2019.
- [2] Davenport T, Kalakota R. The potential for artificial intelligence in healthcare. *Future Healthc J*. 2019;6(2):94–98.
- [3] Rajkomar A, Dean J, Kohane I. Machine learning in medicine. *N Engl J Med*. 2019;380(14):1347–1358.
- [4] McBride S, Tietze M, Robichaux C, Stokes L, Weber E. Artificial intelligence and clinical decision support: The nurse's role. *Nurse Leader*. 2022;20(1):16–21.
- [5] Buchanan C, Howitt ML, Wilson R, Booth RG, Risling T, Bamford M. Predicted influences of artificial intelligence on nursing education and practice. *Nurse Educ Pract*. 2021; 55:103152.
- [6] Ronquillo CE, Peltonen LM, Pruinelli L, Chu CH, Bakken S, Beduschi A, et al. Artificial intelligence in nursing: Priorities and opportunities from an international invitational think-tank. *J Adv Nurs*. 2021;77(9):3707–3717.
- [7] Booth RG, Strudwick G, McBride S, O'Connor S, López ALS. How the nursing profession should adapt for a digital future. *BMJ*. 2021;373:n1190.
- [8] World Health Organization. Ethics and Governance of Artificial Intelligence for Health. Geneva: World Health Organization; 2021.
- [9] International Council of Nurses. The ICN Code of Ethics for Nurses. Geneva: ICN; 2021.
- [10] Topaz M, Pruinelli L. Big data and artificial intelligence in nursing: Current trends and future implications. *Stud Health Technol Inform*. 2022; 290:201–206.
- [11] Khairat S, Marc D, Crosby W, Al Sanousi A. Reasons for physicians' resistance to electronic health records and artificial intelligence adoption. *Health Informatics J*. 2022;28(1):1–12.
- [12] Jiang F, Jiang Y, Zhi H, Dong Y, Li H, Ma S, et al. Artificial intelligence in healthcare: Past, present and future. *Stroke Vasc Neurol*. 2023;8(2):115–124.
- [13] European Commission. Artificial Intelligence in Healthcare: Opportunities and Challenges. Brussels: European Commission; 2023.
- [14] Indian Council of Medical Research. Ethical Guidelines for Application of Artificial Intelligence in Biomedical Research and Healthcare. New Delhi: ICMR; 2023.
- [15] World Health Organization. Global Strategy on Digital Health 2020–2025. Geneva: World Health Organization; 2023.
- [16] Naylor MD, Kurtzman ET. The role of nurse practitioners in reinventing primary care. *Health Aff*. 2010;29(5):893–899.
- [17] Mallika G, Das VT. Impact of stress on working performance of nurses and organizational effectiveness in hospitals. *Asian J Manag*. 2020;11(3):225–232.
- [18] Daharwal SJ, Naidu R. A review: Quality management and their concepts. *Asian J Manag*. 2013;4(4):249–253.
- [19] Patel R, Sharma P. Digital transformation in healthcare services: Opportunities and challenges. *Asian J Manag*. 2022;13(2):145–151.
- [20] Singh P, Verma A. Emerging technologies and quality improvement in healthcare organizations. *Asian J Manag*. 2023;14(1):58–64.
- [21] Sharma N, Patel H. Nurses' perception regarding information technology in patient care. *Asian J Nurs Educ Res*. 2021;11(4):515–520.
- [22] Gupta S, Joshi M. Technology acceptance among nursing professionals in healthcare institutions. *Asian J Nurs Educ Res*. 2022;12(3):311–317.
- [23] O'Connor S, Yan Y, Thilo FJS, Felzmann H, Dowding D, Lee JJ. Artificial intelligence in

nursing and midwifery: Mapping the literature. J Clin Nurs. 2023;32(13–14):3555–3570.

[24] Booth RG, Strudwick G, McBride S. Artificial intelligence and the future of nursing education. Nurse Educ Today. 2023; 122:105704.

[25] World Health Organization. Global Health Workforce Strategy: Nursing and Midwifery Workforce Development. Geneva: WHO; 2024.