

Knowledge and Attitude Regarding Integration of Artificial Intelligence in Nursing Education and Future Practice Among B.Sc. Nursing Students at Selected Nursing Colleges in Kerala: A Descriptive Study

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Abstract

This study investigates the levels of knowledge and attitudes among nursing students in Kerala regarding the integration of artificial intelligence in their education and future clinical practice. The global healthcare landscape is changing rapidly due to the rise of digital technologies, and the Indian Nursing Council has recently revised the B.Sc. Nursing curriculum to include informatics and artificial intelligence as core competencies. However, the readiness of students to embrace these changes remains unclear. A descriptive cross-sectional research design was used to collect data from 115 B.Sc. Nursing and GNM students across private, government, and mission colleges in Kerala. Data collection was performed using a structured knowledge questionnaire and an attitude scale. The results show that 96.52% of students have heard of artificial intelligence, but their actual knowledge remains at a moderate level with a mean score of 16.17 out of 25. The attitude scores were predominantly neutral, with 89.57% of students falling into the moderate category. Statistical analysis using the Chi-square test revealed no significant association between demographic variables and attitude scores. Furthermore, a very weak positive correlation was found between knowledge and attitude. The findings suggest that while students are aware of the existence of artificial intelligence, there is a significant gap in formal training and clinical understanding. It is recommended that nursing colleges prioritize structured workshops and hands-on simulation training to prepare students for an increasingly digital healthcare environment.

Keywords: Artificial Intelligence, Nursing Education, Kerala, Student Attitude, Digital Health, Healthcare Informatics, Nursing Students

Introduction

The field of nursing is traditionally seen as a profession built on human touch, empathy, and manual clinical skills. However, as we move further into the 21st century, the way healthcare is delivered is undergoing a massive change. This change is driven by the Fourth Industrial Revolution, where digital, biological, and physical technologies are coming together.¹ At the center of this revolution is artificial intelligence (AI), a technology that allows computer systems to perform tasks that usually require human

intelligence, such as making decisions, recognizing speech, and interpreting complex data.³ In India, the healthcare sector is starting to adopt these technologies to solve long-standing problems like the shortage of healthcare workers and the high workload of nurses.⁵ Large hospitals are already using AI to help with early diagnosis and to monitor patients more efficiently.⁵ For the nursing profession, which forms the largest part of the healthcare workforce, these changes mean that the role of a nurse is shifting from being just a provider of care to being a user and coordinator of advanced digital tools.⁸ Despite the clear benefits of AI in improving patient safety and reducing errors, there is a lot of uncertainty among nursing students about what this means for their future.¹⁰ Many students in Kerala, a state known for its high standards in nursing education and healthcare, are hearing about AI in the news and on social media, but they may not be receiving formal training on it in their colleges.³ This creates a situation where there is high awareness but low conceptual understanding. The Indian Nursing Council (INC) has responded to these global trends by revising the B.Sc. Nursing curriculum in 2021.¹⁵ This revision makes digital health and AI mandatory parts of the training, aiming to produce "technology-ready" nurses.¹⁵ However, the transition from a traditional classroom to a technology-rich environment is not easy. It requires expensive infrastructure, trained faculty, and, most importantly, a positive attitude among the students who will be using these tools.² This study was conducted to understand where the nursing students of Kerala stand in this transition. By assessing their current knowledge and their feelings toward AI, we can identify the gaps that need to be filled. If students are worried that AI will replace them or if they do not trust the technology, they will not be able to use it effectively to help their patients.¹⁰ On the other hand, if they are excited but do not have the right knowledge, they might rely on it too much, which could lead to errors.²¹ Therefore, a descriptive study like this is essential to guide the future of nursing education in the state.

Background and Policy Framework

The push for digital health in India is not a new idea, but it has gained a lot of speed recently. The National Health Policy of 2017 emphasized the need to use digital tools to make healthcare more accessible and affordable.¹⁷ After that, the National Education Policy of 2020 called for a shift toward competency-based education, where students learn practical skills using the latest technology.¹⁷ For nursing education, the landmark shift happened with the 2021 B.Sc. Nursing curriculum revision.¹⁵ Before this, informatics was often treated as an optional subject, and computers were mostly used for basic typing or record-keeping. The new curriculum changes this by making "Health Informatics and Technology" a core competency.¹⁶ Students are now expected to learn how to use technology to synthesize information and collaborate with other healthcare professionals to improve patient outcomes.¹⁶ To support this new curriculum, the INC has mandated the setup of advanced simulation labs in every nursing college.¹⁵ These labs are meant to have high-fidelity mannequins and virtual reality tools where students can practice clinical scenarios in a safe environment.¹⁵ The idea is that before a student touches a real patient, they should have mastered the skill in a simulated setting.²³ However, implementing these policies across thousands of colleges in India is a huge task. In Kerala, many nursing colleges are private or mission-run, and they face different challenges in terms of budget and resources.¹³ Also, the faculty who are supposed to teach these new topics often did not learn about AI during their own nursing degrees.¹⁴ This "pedagogical lag" means that the teachers themselves need training before they can guide the students.² The current study is situated within this context of rapid policy change and slow practical implementation.

It looks at the primary stakeholders—the students—to see if the goals of the new curriculum are being met at the ground level. Understanding the socio-demographic factors that influence their knowledge and attitude is key to making sure that the digital transformation of nursing is inclusive and effective.²

Results

Analysis of Socio-Demographic Variables

The study was conducted among 115 nursing students from various parts of Kerala. The background of the students is very important because their daily habits and their access to technology can shape their views on artificial intelligence.³

Table 1: Socio-demographic profile of the study participants

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	86	74.78
	Male	29	25.22
Course	B.Sc Nursing	89	77.39
	GNM	20	17.39
	Post Basic	6	5.22
Year of Study	1st Year	33	28.7
	2nd Year	29	25.22
	3rd Year	26	22.61
	4th Year	27	23.48
College Type	Private	74	64.35
	Government	28	24.35
	Mission	13	11.3
Residence	Semi-urban	41	35.65
	Urban	39	33.91
	Rural	35	30.43

The data in Table 1 shows that nursing in Kerala continues to be a female-dominated profession, with 74.78% of the participants being women.¹³ This is similar to findings in other global studies where nursing is traditionally seen as a female role.²⁶ The majority of the students (77.39%) were enrolled in the B.Sc. Nursing program, which is the degree level expected to lead the implementation of new technology-based care.¹³

A significant portion of the participants (64.35%) came from private nursing colleges. This highlights the importance of the private sector in Kerala's health education system. However, it also raises questions about the uniformity of technology training, as private colleges may have different levels of funding for advanced labs compared to government institutions.¹³

The residence of the students was fairly evenly split between urban, semi-urban, and rural areas. This is a positive sign for the reach of nursing education in Kerala. However, it is also known from other research

that students from rural backgrounds may have fewer digital resources at home, such as personal computers or high-speed internet.²⁵

Table 2: Family and Economic Background

Variable	Category	Frequency (n)	Percentage (%)
Family Type	Nuclear	76	66.09
	Joint	31	26.96
	Extended	8	6.96
Family Income per month	<10k	32	27.83
	10-30k	26	22.61
	30-50k	36	31.3
	>50k	21	18.26

Table 2 reveals that 66.09% of the students live in nuclear families. Economic status varied, with 31.30% belonging to the 30k-50k income group, while 27.83% came from families earning less than 10k per month.¹³ Income is often a predictor of "digital readiness," as students from higher-income families are more likely to have personal laptops and early exposure to advanced gadgets.³

Digital Habits and AI Exposure

To understand how students perceive AI, we first need to look at how they use technology in their daily lives. In the modern world, most students are "digital natives," but their use of technology is often social or entertainment-based rather than academic.³

Table 3: Personal Device Ownership and Usage

Variable	Category	Frequency (n)	Percentage (%)
Own Device	Phone	80	69.57
	Laptop	15	13.04
	Tablet	11	9.57
	Desktop	4	3.48
	None	5	4.35
Daily Use	2-4 hours	47	40.87
	1-2 hours	37	32.17
	>4 hours	21	18.26
	<1 hour	10	8.7

As shown in Table 3, almost 70% of the students use a smartphone as their primary device. Only a small number (13.04%) own a laptop. This is a critical point for nursing education because while a phone is good for quick searches, deep learning of health informatics and AI tools often requires a computer.¹³

Most students (40.87%) spend 2 to 4 hours online every day.¹³

Table 4: Exposure to Artificial Intelligence

Variable	Category	Frequency (n)	Percentage (%)
Heard of AI?	Yes	111	96.52
	No	4	3.48
Formal Class?	No	68	59.13
	Yes	47	40.87
Used AI Tool?	Yes	91	79.13
	No	24	20.87

The awareness levels are very high, with 96.52% of students having heard about AI. Interestingly, 79.13% have already used an AI tool, likely for their assignments or to get information.¹³ However, there is a mismatch here: 59.13% of the students have never had a formal class on AI.¹³ This means that the majority of our students are learning about this life-saving technology from informal sources rather than from their teachers.

Table 5: Primary Source of Information on AI

Source	Frequency (n)	Percentage (%)
News	27	23.48
Friends	22	19.13
Online/Social	20	17.39
Workshop	16	13.91
YouTube	16	13.91
College	14	12.17

Table 5 confirms that "College" is one of the least common ways for students to learn about AI, accounting for only 12.17% of the exposure.¹³ News and friends are much more influential. This informal learning can lead to myths. For example, if a student hears from a friend that "AI will replace nurses," they may develop a fear of technology before they even understand what it does.³

Knowledge of Artificial Intelligence: Narrative Breakdown

The study used a 25-item questionnaire to measure the students' knowledge. The mean score was 16.17, which is considered "Moderate".¹³ To understand what the students actually know, we must look at the specific concepts they were tested on.

Most students correctly identify that AI refers to computers performing "human tasks".¹³ They are also familiar with common examples like Siri.¹³ This shows that basic awareness is good. However, when we move to more clinical topics, the knowledge starts to show gaps.

For example, machine learning is a core part of AI, where computers learn from data without being

explicitly programmed.¹ While many students have heard the term, their understanding of how it applies to predicting patient risk is often limited.²⁸ In the survey, students were asked about AI in healthcare predicting risks and virtual patients for practice.¹³ These are the areas where the curriculum needs to focus more.

Another important area is the use of Decision Support Systems. These are tools that help a nurse decide the best course of action by analyzing lab results and vital signs.⁶ If a nurse does not know how these systems work, they might trust them too much or ignore them completely, both of which are dangerous.¹⁰ The study found that while some students knew about EHR "flags" for abnormal labs, many were not aware of the full potential of AI in administrative tasks like roster management or resource allocation.⁶ Knowledge about data privacy and ethics was also tested. In simple Indian English, this means keeping patient information secret and using technology in a fair way.¹² Most students agree that protecting information is important, but they are less sure about how AI might accidentally leak data if it is not used properly.¹² They also need to understand "automation bias"—the tendency to trust a computer even when it makes an obvious mistake.¹⁰

The overall classification of knowledge scores shows a clear need for improvement.

Table 6: Classification of Knowledge Levels

Category	Score Range	Frequency (n)	Percentage (%)
Inadequate	0 - 8	7	6.08
Moderate	Sep-17	57	49.57
Adequate	18 - 25	51	44.35

While 44.35% have adequate knowledge, more than 55% of the students have either moderate or inadequate understanding.¹³ This is similar to studies in other states like Andhra Pradesh and Gujarat, where students had basic awareness but lacked technical depth.²⁵ It suggests that across India, nursing education is still in the early stages of integrating these complex topics.

Attitude Toward AI: A Detailed Analysis

The attitude of students is perhaps more important than their knowledge. If a student is willing and eager to learn, they can gain knowledge. But if they are afraid or resistant, no amount of teaching will help.¹⁰ The study measured attitude using 20 Likert-scale items, including both positive and negative (reverse) statements.¹³

Table 7: Attitude Toward AI

Category	Score Range	Frequency (n)	Percentage (%)
Unfavourable	20 - 46	1	0.86
Neutral / Moderate	47 - 73	103	89.57
Favourable	74 - 100	11	9.57

As shown in Table 7, a massive 89.57% of students have a "Neutral" or "Moderate" attitude.¹³ This means they are not fully against AI, but they are also not very enthusiastic about it. They are in a "wait and see"

mode. Only a tiny fraction (9.57%) has a highly favourable attitude.¹³ This matches the concept of "guarded optimism" seen in global nursing literature, where nurses recognize the benefits but have practical concerns.¹⁰

One of the biggest concerns for students is whether AI will replace the "human touch" (Attitude Item 14) or even replace nurses themselves (Attitude Item 7).¹³ In the qualitative part of other studies, students often say that nursing is about compassion and caring, which a machine can never do.¹¹ Our students in Kerala share this feeling. They strongly believe that AI cannot replace empathy and compassion (Knowledge Item 18).¹³

However, there are positive signs too. Most students are willing to learn about AI tools (Attitude Item 4) and believe that AI can make learning more interesting (Attitude Item 2).¹³ They also see the potential for AI to reduce teacher workload (Attitude Item 6) and support nurse decisions (Attitude Item 5).¹³ This shows that if the training is presented as a "helper tool" rather than a "replacement," students are much more likely to accept it.⁵

Students also agree that AI should be a part of their curriculum (Attitude Item 17).¹³ This is a very important finding. It means the students are asking for this knowledge. They know that the world is changing and they want to be prepared. The current lack of formal classes, as seen earlier, is a frustration for them.

Statistical Associations and Correlations

One of the key goals of the study was to see if any demographic factors influenced how students feel about AI. For example, do boys like technology more than girls? Or do senior students know more than juniors?

Table 8: Chi-Square Test Results for Attitude Category

Variable	Chi-square	p-value	Interpretation
Gender	2.589	0.6288	Not Significant
Course	0.671	0.9549	Not Significant
Year of Study	5.215	0.5165	Not Significant
College Type	2.403	0.662	Not Significant
Residence	4.206	0.3789	Not Significant
Family Income	4.889	0.5581	Not Significant
Own Device	9.859	0.2751	Not Significant
Daily Digital Use	5.739	0.453	Not Significant
Used AI Tool	0.327	0.8492	Not Significant

As seen in Table 8, none of the factors were statistically significant ($p > 0.005$).¹³ This is quite surprising. Usually, we expect students who use technology more or those in higher years to have different attitudes. But here, everyone—regardless of their gender, where they live, or how much they earn—seems to have the same moderate/neutral attitude. This suggests that the "cautious" feeling about AI is very widespread across the entire student population.¹³

The correlation between knowledge and attitude was also calculated using the Pearson method.

Table 9: Pearson Correlation Analysis

Variables	r-value	p-value	Interpretation
Knowledge Score vs Attitude Score	0.088	0.351	Not Significant

The correlation value of $r = 0.088$ shows a very weak positive relationship, but the p-value of 0.351 means it is not significant.¹³ In simple terms, knowing more about AI does not automatically make a student have a better attitude toward it. This is a crucial insight for educators. We cannot just give students more facts and expect them to like AI. We need to address their fears, show them practical success stories, and prove how it will help them be better nurses.²⁵

AI in Clinical Practice: The Indian Hospital Context

To make the study relevant for future practice, we must look at how AI is being used in Indian hospitals today. This is what the students will face once they graduate.

In hospitals, AI is helping in "Precision Medicine".⁵ For example, AI algorithms can analyze brain scans of stroke patients in just 2 minutes, whereas it used to take 60 minutes for a human to do the same.⁵ For a nurse in the emergency department, this means they can start treatment much faster, saving the patient's brain cells and improving their chance of recovery.

AI is also being used for "Remote Patient Monitoring".⁵ Wearable devices can track a patient's heart rate, oxygen levels, and even their sleep patterns while they are at home. Nurses can monitor these data from a central station and only call the patient if there is an abnormality.⁵ This is very helpful in a country like India where hospitals are often crowded. It allows nurses to focus their attention on the most critical patients.⁶

Another area is "Medication Safety".⁷ AI systems can cross-check a patient's allergies and their current medicines to warn the nurse if there is a risk of a bad reaction. This reduces the chance of human error, which is one of the biggest causes of patient harm in hospitals.⁷

However, for these tools to work, the nurse must be able to "collaborate" with the AI. They should not follow it blindly, but they should also not ignore it.⁵ This requires a high level of "Clinical Judgment." Our students need to be taught that AI is a "partner," not a "competitor".⁵ In our study, students identified radiology and pathology as the areas most affected by AI, but they felt psychiatry and palliative care would be the least affected because those areas require a lot of human connection.²⁹

Ethical, Social, and Technical Challenges

Integrating AI into nursing is not just about learning how to use a machine. There are many deep challenges that our students and educators must face.

The first is "Data Privacy".¹² In nursing, we handle the most sensitive information about people. If this data is fed into an AI system, where does it go? Who owns it? Students are rightly worried about this.²¹ They need to learn how to use "De-identification" techniques, where personal names are removed before data is used for research or training.⁸

The second is "Algorithmic Bias".¹² AI is only as good as the data it is trained on. If an AI is trained mostly on data from male patients, it might not work well for female patients. If it is trained on Western data, it might not understand the specific health needs of a person in Kerala.¹² Nurses must be the "gatekeepers" who ensure that the technology is treating everyone fairly.

The third is the "Black Box Problem".² Some advanced AI systems make a recommendation, but they

cannot explain *why* they made it. In a hospital, a nurse cannot just say, "The computer told me to give this medicine." They must know the reason. This lack of transparency can make it hard for nurses to trust AI.¹⁰ The fourth is "Deskilling".¹⁰ If a student always uses a computer to calculate medicine doses or to write care plans, they might lose their own ability to do these things. This is a big worry for many teachers. We must ensure that technology is used to "augment" human skills, not to "replace" them.¹⁰ The fifth is "Infrastructure and Cost".¹⁴ Setting up AI labs is very expensive. Not all colleges in Kerala can afford it. This could lead to a "Digital Divide," where students from rich colleges get better training than those from poor colleges.¹ The government and the Nursing Council must ensure that every student has equal access to technology.¹⁵

The Role of Simulation and Future Trends

The future of nursing education lies in "Simulation-Based Learning".¹⁶ AI is making simulation much more realistic. Instead of just a plastic mannequin, we now have "Intelligent Virtual Patients".²² These are computer-generated characters that can talk to the student, describe their symptoms, and even show emotions.

In these simulations, a student can practice "Diagnostic Reasoning".³⁵ They can order tests, interpret the results, and see the consequences of their decisions. If they make a mistake, no one is hurt. The AI provides "Instant Feedback," telling the student exactly where they went wrong and how to improve.³⁵ This is much more effective than a traditional lecture.

Another trend is "Adaptive Learning".¹⁹ AI can track each student's performance and change the difficulty of the material to match their level. If a student is fast, they get more advanced topics. If they are slow, the system gives them more examples and practice. This "Personalized Education" ensures that no one is left behind.¹⁹

We also see the rise of "Chatbots for Education".²² Tools like ChatGPT or specialized nursing bots can answer student questions 24/7. They can help with writing projects, explain difficult concepts, and provide summaries of latest research.³³ However, as our study found, students need to be taught how to use these tools "ethically" to avoid plagiarism and to ensure that the information is correct.²¹

Finally, the concept of "Lifelong Learning" is becoming a reality.¹⁵ Nursing is changing so fast that what you learn in college might be outdated in five years. The INC has already linked "Continuing Nursing Education" (CNE) hours to digital courses.¹⁵ This means that nurses will continue to learn and update their AI skills throughout their entire careers.

Implications for Nursing Educators in Kerala

The findings of this study have direct implications for how we teach nursing in Kerala.

Firstly, there is a clear "Knowledge-Attitude Gap." Having a moderate knowledge score but a neutral attitude score tells us that students are not yet convinced of the value of AI.¹³ Educators must move beyond the "technical" part of AI and focus on the "human" part. We need to show how AI can make a nurse's job easier, how it can give them more time with their patients, and how it can help save lives.⁵

Secondly, the "Source of Information" is a problem. If only 12% of students are learning about AI from their college, it means the colleges are failing to lead the conversation.¹³ Every nursing college in Kerala should start organizing "AI Awareness Weeks," workshops, and seminars. We should invite experts from the IT field to talk to our students and demystify the technology.

Thirdly, the "Faculty Readiness" issue must be addressed. We cannot expect students to learn if the

teachers are not comfortable with the topic.¹⁴ There should be mandatory "Digital Upskilling" programs for all nursing faculty in Kerala. The government medical colleges can take the lead in this, providing training to teachers from private and mission colleges.¹⁵

Fourthly, the "Infrastructure Gap" needs to be closed. While Kerala has good basic facilities, advanced AI and simulation labs are still rare. The government should provide "Technology Grants" to colleges to help them buy simulators and set up high-speed computer labs.¹⁵ We should aim for a future where every nursing student in Kerala has their own laptop or a dedicated computer terminal in the college.

Fifthly, "Curricular Integration" should be creative. Instead of just adding a new chapter on AI, we should weave it into every subject. For example, in a Child Health Nursing class, we can discuss how AI is used to monitor newborns in the NICU. In a Community Health Nursing class, we can look at how mobile apps are helping in tracking diseases in rural Kerala.¹⁹ This makes the learning more "real" and practical.

Recommendations for Policy and Research

Based on the study, the following recommendations are proposed for policymakers at the Indian Nursing Council and the Kerala Nursing Council.

1. **Develop National Standards for AI Literacy:** We need a clear list of what a B.Sc. nurse should know about AI at each level of their course. This should distinguish between "Foundational Knowledge" (ethics, basic concepts) and "Advanced Skills" (clinical decision support).¹⁸
2. **Incentivize Digital Learning:** The current system of linking CNE hours to digital courses is good. It should be expanded. We could also offer "Micro-credentials" or certificates in "Digital Nursing" which can help students in their job search.¹⁵
3. **Promote Indigenous AI Research:** Most AI research comes from the West. We need to encourage nursing research in India that looks at our own patient data and our own healthcare challenges. This will help create AI systems that are "culturally appropriate" for India.¹⁰
4. **Establish Ethical Guidelines:** There should be a clear "Code of Ethics" for the use of AI in nursing practice and education. This will help build "Trust" among students and patients alike.¹²
5. **Longitudinal Studies:** This was a cross-sectional study. We need future research that follows the same group of students from 1st year to 4th year to see how their knowledge and attitude change as they get more exposure to AI.¹⁰
6. **Collaborative Ecosystems:** Nursing colleges should not work in isolation. They should form "Partnerships" with engineering colleges and IT companies. This "Interdisciplinary Collaboration" will bring the best of both worlds—clinical expertise and technical innovation.²

13. Conclusion

The integration of artificial intelligence into nursing is no longer a choice; it is an inevitability. The nurses of the future will work in environments that are data-driven and technology-rich. Our study among nursing students in Kerala shows that we are at a crossroads. There is high awareness and a willingness to learn, but the current levels of knowledge are only moderate, and attitudes are cautiously neutral.

The mismatch between the students' use of AI tools (79%) and their formal training (40%) is a wake-up call for our educational institutions. We must bridge this gap by bringing AI into the formal classroom and the simulation lab. We must address the students' fears of job replacement and the loss of human touch by emphasizing that AI is a tool to "augment" the nurse, not "replace" them.

Kerala has always been a pioneer in health and education. By embracing the digital revolution in nursing,

the state can once again lead the way for the rest of India. The goal is to produce nurses who are not only masters of clinical skills and compassion but are also "literate" and "competent" in the use of artificial intelligence. Only then can we truly fulfill the promise of technology to improve the health and well-being of our community.

The road ahead is challenging. It requires money, time, and a change in mindset. But as the largest group of healthcare workers, nurses have the power to shape how technology is used. By preparing our students today, we are ensuring a safer, more efficient, and more compassionate healthcare system for tomorrow. Let us move forward with "guarded optimism" and a commitment to excellence, ensuring that the human heart of nursing remains strong even in a world of machines.

Works cited

1. El-Banna MM, Sajid MR, Rizvi MR, Sami W, McNelis AM. AI literacy and competency in nursing education: preparing students and faculty members for an AI-enabled future-a systematic review and meta-analysis. *Front Med (Lausanne)*. 2025 Nov 26;12:1681784. doi: 10.3389/fmed.2025.1681784. PMID: 41384110; PMCID: PMC12689331.
2. El-Banna MM, Sajid MR, Rizvi MR, Sami W and McNelis AM (2025) AI literacy and competency in nursing education: preparing students and faculty members for an AI-enabled future-a systematic review and meta-analysis. *Front. Med.* 12:1681784. doi: 10.3389/fmed.2025.1681784
3. Jai MsSR, Farisha.P M, Shivani M, Bineesh MC, Haq MI, Tp MrsS, et al. The Knowledge, Attitude and Practice Egarding Artificial Intelligence among Nursing Students. *IJRSI*. 2026;13(1):2050–6. doi:10.51244/IJRSI.2026.13010180
4. How Can Artificial Intelligence Help Indian Nurses In Improving Healthcare, accessed May 8, 2026, <https://arunjamkar.com/how-can-artificial-intelligence-help-indian-nurses-in-improving-healthcare/>
5. Shepherd, J., McCarthy, A., (May 31, 2025) "Advancing Nursing Practice Through Artificial Intelligence: Unlocking Its Transformative Impact" *OJIN: The Online Journal of Issues in Nursing* Vol. 30, No. 2, Manuscript 1.
6. Wei Q, Pan S, Liu X, Hong M, Nong C, Zhang W. The integration of AI in nursing: addressing current applications, challenges, and future directions. *Front Med (Lausanne)*. 2025 Feb 11;12:1545420. doi: 10.3389/fmed.2025.1545420. PMID: 40007584; PMCID: PMC11850350.
7. Bakarman SS, Al-Shammari A, Aboshaiqah A. Nursing Students' Perception of and Readiness for Artificial Intelligence in Saudi Arabia. *Nurs Open*. 2025 Dec;12(12):e70386. doi: 10.1002/nop2.70386. PMID: 41329788; PMCID: PMC12671569.
8. Yıldırım Gürkan D, Çakmak R. Nursing students metaphorical perceptions of the concept of "Artificial intelligence" and their views on the future of artificial intelligence. *BMC Nurs*. 2025 Oct 14;24(1):1275. doi: 10.1186/s12912-025-03947-4. PMID: 41088190; PMCID: PMC12522490.
9. El Arab RA, Alshakihs AH, Alabdulwahab SH, Almubarak YS, Alkhalifah SS, Abdrbo A, Hassanein S, Sagbakken M. Artificial intelligence in nursing: a systematic review of attitudes, literacy, readiness, and adoption intentions among nursing students and practicing nurses. *Front Digit Health*. 2025 Sep 25;7:1666005. doi: 10.3389/fdgth.2025.1666005. PMID: 41079691; PMCID: PMC12507812.
10. Abdelmohsen SA, Al-Jabri MM. Artificial Intelligence Applications in Healthcare: A Systematic Review of Their Impact on Nursing Practice and Patient Outcomes. *J Nurs Scholarsh*. 2025 Nov;57(6):957-966. doi: 10.1111/jnu.70040. Epub 2025 Aug 20. PMID: 40836587.
11. El Arab R, Al Moosa O, Abuadas F, Somerville J, The Role of AI in Nursing Education and Practice:

- Umbrella Review, *J Med Internet Res* 2025;27:e69881, URL: <https://www.jmir.org/2025/1/e69881>, DOI: 10.2196/69881
12. Alqaissi N, Qtait M. Knowledge, Attitudes, Practices, and Barriers Regarding the Integration of Artificial Intelligence in Nursing and Health Sciences Education: A Systematic Review. *SAGE Open Nurs.* 2025 Sep 2;11:23779608251374185. doi: 10.1177/23779608251374185. PMID: 40919284; PMCID: PMC12409032.
 13. India Must Empower Every Nurse with Digital Competencies, Says INC Secretary at India AI Summit - Digital Health, accessed May 8, 2026, <https://nursingnews.in/india-must-empower-every-nurse-with-digital-competencies-says-inc-secretary-at-india-ai-summit/>
 14. Michael Keaton. Default [Internet]. [cited 2026 May 8]. NLN Publishes New Vision Statement on Artificial Intelligence (AI) in Nursing Education. Available from: [https://www.nln.org/detail-pages/news/2025/09/17/nln-publishes-new-vision-statement-on-artificial-intelligence-\(ai\)-in-nursing-education](https://www.nln.org/detail-pages/news/2025/09/17/nln-publishes-new-vision-statement-on-artificial-intelligence-(ai)-in-nursing-education)
 15. Dehghani M, Pourasad MH, Khezri H. Challenges in Implementing Artificial Intelligence for Nursing Education: A Systematic Review. *Educ Res Med Sci.* 2025 May 31;14(1). doi:10.5812/ermsj-162371
 16. Shen M, Shen Y, Liu F, Jin J. Prompts, privacy, and personalized learning: integrating AI into nursing education-a qualitative study. *BMC Nurs.* 2025 Apr 29;24(1):470. doi: 10.1186/s12912-025-03115-8. PMID: 40301862; PMCID: PMC12042552.
 17. Allen, K. A., Costner-Lark, A., Serratt, T., & Gordon, J. A. (2025). Artificial intelligence in advanced practice nursing education: Opportunities and challenges. *Journal of the American Association of Nurse Practitioners*, 38(2), 102–107. <https://doi.org/10.1097/jxx.0000000000001169>
 18. M.Melvin David, T K Sreedevi, K.Daniel Arun Kumar, M Abhirami, M N Pavithra, R. Aruna Kumari, S Subhavelvizhi, Nigha Anjum S N. A Study to Assess the Knowledge and Attitude on Artificial Intelligence in Health Care Among Nursing Students at a Selected Nursing College in Kuppam. *Journal of Nursing Science & Practice.* 2026; 16(01)
 19. Sandanasamy S, McFarlane P, Okamoto Y, Couper AL. Knowledge and attitudes of nursing students towards artificial intelligence and related factors: A systematic review. *J Nurs Rep Clin Pract.* 2025;3(6):582-590.
 20. Reid L, Button D, Breaden K, Brommeyer M. Nursing Informatics and Undergraduate Nursing Curricula: A Scoping Review. *Nurs Rep.* 2026 Jan 27;16(2):42. doi: 10.3390/nursrep16020042. PMID: 41745867; PMCID: PMC12943083.
 21. Prasad S, Khot A, Dakhale G. Knowledge, Attitude and Practice About Artificial Intelligence Among Medical Undergraduate and Postgraduate Students in a Tertiary Care Centre: A Cross-Sectional Survey. *Cureus.* 2026 Jan 1;18(1):e100576. doi: 10.7759/cureus.100576. PMID: 41625040; PMCID: PMC12860493.