Knowledge and Attitude of Nursing Students Regarding Artificial Intelligence

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I. INTRODUCTION

Artificial Intelligence (AI) is transforming healthcare systems worldwide by enhancing clinical decision-making, streamlining workflows, and improving patient outcomes. As the healthcare industry continues to adopt AI technologies, nursing students and nurses who are at the frontline of patient care must be equipped with the knowledge and a positive attitude toward these advancements. [1]

One definition of artificial intelligence (AI) is computers' ability to "perform cognitive tasks" that are normally associated with human thinking, in particular in problem-solving and learning.[2]

Students today are growing up in a digital environment where AI technologies—such as voice assistants, chatbots, recommendation systems, and facial recognition are widely used. They are particularly beneficial for use outside the normal classroom time, as students can employ them to gain answers to any questions that they may have [3].

In higher education, libraries and laboratories powered by AI can enhance the learning experiences of students by providing them with a personalized learning approach [4].

II. NEED OF THE STUDY

In nursing, AI technologies hold the potential to support patient assessment, care planning, education, and administrative activities. Nursing-specific AI tools are designed to address the unique aspects of nursing practice, focusing on functionalities such as patient education, care coordination, and holistic assessments and tailored to enhance nursing workflows and improve patient outcomes. As healthcare systems face increasing challenges, such as growing patient demands, complex care needs, and resource constraints, AI offers promising solutions to improve efficiency, accuracy, and patient outcomes. The COVID-19 pandemic has further accelerated the adoption of digital health technologies, highlighting both the opportunities presented by AI and the need for nursing professionals to actively engage with these innovations.

As technology advances rapidly, nurse leaders are at the forefront of navigating the complex landscape of AI implementation, ensuring that patient care remains at the forefront of these developments.

Today's nursing students are future leaders and healthcare professionals who play a critical role in this transition. Historically, nursing has been quick to adapt to technological changes from the use of electronic documentation to telemedicine. Understanding nursing students' knowledge and attitudes toward AI is essential for designing effective educational strategies and ensuring that the future nursing workforce is ready for an AI-integrated healthcare system.

The integration of AI in education promises a future brimming with exciting possibilities. One of the most significant benefits lies in its ability to improve learning outcomes. Personalized instruction tailored to individual strengths and weaknesses allows students to grasp concepts more effectively. AI can identify students who may need extra help, enabling teachers to provide targeted interventions and ensure everyone reaches their full potential. By thorough literature review and research personal experience motivated to undertake this study. [5]

III. REVIEW OF LITERATURE

An observational cross sectional study conducted in tertiary Care Teaching Hospital in South Gujarat in

2024 regarding Knowledge, Attitude and Practice of Artificial Intelligence among Healthcare Professionals. Total 290 health care professionals were recruited which including consultant doctors, medical faculty, residents, and interns. Findings revealed that, regarding AI knowledge, 80 (27.6%) of participants reported full awareness, while 182 (62.8%) were partially aware.[6]

Study undertaken by Khaled and et al on knowledge regarding artificial intelligence and attitudes toward artificial intelligence whose findings revealed that a total of 65.6% of the understudied nursing students had a moderate level of knowledge and 82.6% had positive attitudes toward total AI [7].

The systematic review examined healthcare students' attitudes, knowledge, and skill in Artificial Intelligence (AI) in Iran. Including 38 studies. Which revealed that 29 (76%) of healthcare students had a positive and promising attitude towards AI[8].

An International Nursing review conducted a study regarding the relationship between nursing students' attitudes towards artificial intelligence and their creative personality traits enrolling 492 nursing students. The result revealed that the nursing students' attitudes toward artificial intelligence and creative personality traits are above average[9].

STATEMENT OF THE PROBLEM

"Knowledge and attitude of nursing students regarding artificial intelligence".

IV. OBJECTIVES

The objectives of the study were:

1. to assess the level of knowledge and attitude of nursing students regarding artificial intelligence.
2. to ascertain the relationship between level of knowledge and attitude of nursing students regarding artificial intelligence.
3. to find the association between level of knowledge and attitude of nursing students regarding artificial intelligence with selected demographic variables.

V. METHODOLOGY

- RESEARCH APPROACH: In this study quantitative research approach was used.
- RESEARCH DESIGN: The cross sectional descriptive survey research design used.
- VARIABLES:
  a) Dependent variables: Knowledge and attitude regarding artificial intelligence.
  b) Demographic variables: Age, sex, semester studying, religion, monthly family income, whether any of parent working in IT and area of residence.
- RESEARCH SETTING: The study was conducted at selected nursing institutes having Basic B. Sc. (N) program affiliated to VNSGU, Surat.
- POPULATION: It refers to all the nursing students admitted to Basic B. Sc. (N) program.
  - Target population: It refers to all the nursing students admitted to Basic B. Sc. (N) program affiliated to VNSGU, Surat.
  - Accessible population: It refers to all the nursing students admitted to Basic B. Sc. (N) program affiliated to VNSGU from selected nursing institutions.
- SAMPLE AND SAMPLING TECHNIQUE:
  - Sample: Samples were the nursing students studying in Basic B. Sc. (N) program under selected affiliated nursing institutions.
  - Sample size: Online sample size calculator was used and it was found to be 400 samples.
  - Sampling technique: Random sampling technique (lottery method) was used to select nursing institutions whereas samples were selected using purposive sampling technique.
- Inclusion Criteria:
  - Nursing students who were present on the day of data collection.
  - Nursing students who were willing to participate in the study.
  - Nursing students who were having android mobiles with internet facility.
- Exclusion criteria: Students who attended any workshop, conference, seminar on artificial intelligence.
- Ethical consideration:
  - The permission was obtained from Institutional Ethical Committee.
  - Administrative permissions were obtained by respective head of the nursing institutions.
  - Written informed consent was obtained from the study participants.

- Description of the tool: The data collection tool has three parts:
  - Part A: Demographic variables: Age, sex, semester studying, religion, monthly family income, whether any of parent working in IT and area of residence were included.
  - Part B: Knowledge questionnaire: Total 20 questions were included related to the artificial intelligence. Each correct answer was given "1" mark and wrong answer was awarded "0".
  - Part C: Attitude rating scale: A standardize tool developed by Astrid and Paul to assess general attitude was used for the present study. The tool had total 20 items out of which 12 were positive and 8 were negative. Five point rating scale was used.
- Validity of the tool: The tool was validated by 10 nursing experts.
- Reliability of the tool: The reliability of the knowledge tool was 0.73 and attitude tool was 0.93. Hence the tools were found highly reliable.
- DATA COLLECTION PROCEDURE:
  - After obtaining ethical and administrative permission the data collection was done.
  - The participants were greeted and the topic, objectives and purpose of the research was explained to them.
  - The participants were selected as per inclusion and exclusion criteria and made to sit comfortably.
  - The Google form was shared with the participants and was asked to follow the instruction in it.
  - The queries raised participants were answered.
  - It took approximately 25-30 minutes to complete the data collection.
  - All participants were thanked for their participation and cooperation.
- Plan for data analysis: Data analysis was done as per objectives of the study by using descriptive (e.g. frequency, mean, mean percentage, standard deviation etc.) and inferential statistical test (e.g. correlation coefficient, chi square test etc.).
- INTERPRETATION OF FINDINGS:

Objective 1: to assess the level of knowledge and attitude of nursing students regarding artificial intelligence.

Tab. 1 Levels of Knowledge and attitude score

N=400

Levels of Knowledge	Scores	Frequency (n)	Mean	SD
Poor	<8	168	10.998	3.67
Average	8-13	133		
Good	>13	99		
Levels of attitude	Scores	Frequency (n)	Mean	SD
Positive attitude	>50	330	63.45	18.75
Negative attitude	<51	70		

Min. Knowledge Score =0

Max. Knowledge Score = 20

Min, Attitude Score = 20

Max. Attitude Score = 100

Table No. 1 depicted that, as per levels of knowledge majority (168) nursing students had poor knowledge followed by average (133) and poor (99). As per levels of attitude majority nursing students (330) had positive attitude followed by negative attitude (70).

Objective 2: To ascertain the relationship between level of knowledge and attitude of nursing students regarding artificial intelligence.

Table 2: Correlation between levels of knowledge score and attitude score.

N=400

	Mean	SD	'r' value	'*p*' value
Knowledge Score	10.998	3.67	0.019	0.0000492***

Attitude Score	63.46	18.75			

'***'=Highly significant at the level of 0.0001

Table No. 2 showed that there was weak positive correlation (r=0.019) between levels of knowledge and attitude scores. The calculated *p* value was 0.000492 which means there was significant relationship between level of knowledge and attitude among nursing students regarding artificial intelligence.

Objective 3: To find the association between level of knowledge and attitude scores of nursing students regarding artificial intelligence with selected demographic variables.

Table 3. Association between levels of knowledge and attitude score with selected demographic variables

N=400

Demographic variable	Levels of Knowledge			df	Chi sq cal.	*p* value	Levels of Attitude		df	Chi sq cal.	*p* value
	Poor (f)	Average (f)	Good (f)				Positive (f)	Negative (f)			
Age (in Years)											
18	21	53	18	10	15.9	0.102^{NS}	83	9	5	8.54	0.13 ^{NS}
19	11	55	20				66	20			
20	13	61	17				76	15			
21	15	36	23				61	13			
22	5	20	17				35	7			
23	3	8	4				10	5			
Sex											
Female	17	37	13	2	4.38	0.11 ^{NS}	278	55	1	1.33	0.25 ^{NS}
Male	51	196	86				52	15			
Semester studying											
2nd Semester	23	79	31	6	42.44	1.51 ^{NS}	112	21	3	1.13	0.77 ^{NS}
4th Semester	22	66	24				90	23			
5th Semester	21	67	13				83	18			
7th Semester	2	20	31				45	8			
Religion											
Hindu	61	217	91	4	3.92	0.42 ^{NS}	305	64	2	30.74	2.12 ^{NS}
Christian	4	14	6				0	7			
Muslim	3	2	2				18	6			
Monthly Family Income (in Rs.)											
<10,702	26	59	17	4	11.83	0.019*	86	16	2	0.72	0.7 ^{NS}
10,703-31,977	24	102	40				138	28			
31,978-53,360	18	72	42				106	26			
Any of Parent Working in IT											
No	62	226	97	2	6.29	0.04 ^{NS}	12	3	1	0.067	0.8 ^{NS}
Yes	6	7	2				318	67			
Area of Residence											
Urban	9	38	12	4	6.94	0.14 ^{NS}	48	11	2	0.72	0.69 ^{NS}
Rural	56	186	78				266	54			
Tribal	2	9	10				16	5			

'*'= Significant

'NS'= Non Significant

Table No. 3 illustrated that according to monthly family income per month in levels of knowledge score calculated chi square value was 11.83 at 4 df with '*p*' value 0.019. Hence it can be inferred that monthly family income had significant association with level of knowledge score. Whereas there were no any association between levels of knowledge scores and attitude score and selected demographic variables.

VI. DISCUSSION

As per objective 1, levels of knowledge majority (168) nursing students had poor and as per levels of attitude majority nursing students (330) had positive attitude. The findings of the study were supported by the study conducted by Pandya S, Patel C, Sojitra B, et al[6]. The findings of the study done by Khaled, Azza. EI. M., Elborai, Asmaa. S. A. also stated that 57% participants had knowledge regarding AI[7].

In coherence with objective 2, there was weak positive correlation between levels of knowledge and attitude scores. The findings of the study were supported by the study conducted by Pandya S, Patel C, Sojitra B, et al[6], Khaled, Azza. EI. M., Elborai, Asmaa. S. A. and Gülırmak Güler K, Şen Atasayar B., which concluded that there was positive correlation between knowledge and attitude regarding AI.

With respect to objective 3, monthly family income had significant association with level of knowledge score. Whereas there was no any association between levels of knowledge scores and attitude score and other selected demographic variables. There was no study to support this finding.

VII. RECOMMENDATIONS

Based on the above results, the following suggestions can be proposed:

- The integration of AI in the university nursing education curriculum makes them more exciting and motivating for students.
- Offering training programs, seminars, and webinars about AI for nursing students.
- The potential use of AI for social good should be emphasized.
- More resources are required for students to develop a better, more thorough understanding of AI with suitable expert mentorship.
- Further research is suggested to investigate the long-term knowledge and attitudes of students after academic graduation.

VIII. CONCLUSION

Evidence from this study showed that nursing students had average level of knowledge and positive attitude towards AI. There was weak positive correlation between level of knowledge and attitude scores. Face-to face instruction, training manuals, and detailed instructions are therefore crucial for implementing and comprehending how AI technology works to raise students' knowledge of the advantages.

REFERENCE

[1] Gökçearslan, S., Tosun, C., & Erdemir, Z. G. (2024). Benefits, challenges, and methods of artificial intelligence (AI) chatbots in education: A systematic literature review. International Journal of Technology in Education, 7(1), 19-39. https://eric.ed.gov/?id=EJ1415037

[2] Chen, L., Jiang, M., Jia, F. and Liu, G. (2022), "Artificial intelligence adoption in business-to-business marketing: toward a conceptual framework", Journal of Business & Industrial Marketing, Vol. 37 No. 5, pp. 1025-1044. https://doi.org/10.1108/JBIM-09-2020-0448

[3] (Bu, Q. (2022). Ethical risks in integrating artificial intelligence into education and potential countermeasures. Science Insights, 41(1), 561–566. https://doi.org/10.15354/si.22.re067

[4] Rahman, M., Ming, T.H., Baigh, T.A. and Sarker, M. (2021), "Adoption of artificial intelligence in banking services: an empirical analysis", International Journal of Emerging Markets, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJOEM-06-2020-0724

[5] Gökçearslan, S., Tosun, C., &Erdemir, Z. G. (2024). Benefits, challenges, and methods of artificial intelligence (AI) chatbots in education: A systematic literature review. International Journal of Technology in Education, 7(1), 19-39. https://eric.ed.gov/?id=EJ1415037

[6] Pandya S, Patel C, Sojitra B, Patel J, Shah P, Shah A. Knowledge, Attitude and Practice of Artificial Intelligence Among Healthcare Professionals at a Tertiary Care Teaching Hospital in South Gujarat.

Cureus. 2024 Nov 18;16(11):e73948. doi: 10.7759/cureus.73948. PMID: 39703321; PMCID: PMC11655412.

[7] Khaled, Azza. EI. M., Elborai, Asmaa. S. A. (2024, September 10). Knowledge and Attitude of Nursing Students Regarding Artificial Intelligence [Review of Knowledge and Attitude of Nursing Students Regarding Artificial Intelligence]. https://Ejhc.journals.ekb.eg.

[8] Mousavi Baigi SF, Sarbaz M, Ghaddaripouri K, Ghaddaripouri M, Mousavi AS, Kimiafar K. Attitudes, knowledge, and skills towards artificial intelligence among healthcare students: A systematic review. Health Sci Rep. 2023 Mar 12;6(3):e1138. doi: 10.1002/hsr2.1138. PMID: 36923372; PMCID: PMC10009305.

[9] Gülırmak Güler K, Şen Atasayar B. The relationship between nursing students' attitudes toward artificial intelligence and their creative personality traits. Int Nurs Rev. 2025 Mar;72(1):e70008. doi: 10.1111/inr.70008. PMID: 40070203; PMCID: PMC11897685.

[10] Schepman, A., & Rodway, P. (2023). The General Attitudes towards Artificial Intelligence Scale (GAAIS): Confirmatory validation and associations with personality, corporate distrust, and general trust. *International Journal of Human–Computer Interaction*, *39*(13), 2724-2741.https://doi.org/10.1080/10447318.2022.2085400.