

Knowledge and Attitude of Nursing Students Regarding Artificial Intelligence

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Abstract

Background: A massive growing of AI products crossways all views of healthcare. Nursing practice is grave where AI technology will enrich practice and patient outcomes **Aim of the study:** to investigate the level of knowledge and attitude of nursing students regarding artificial intelligence. **Design:** A descriptive cross-sectional model was employed in this study. **Setting:** The faculty of nursing Ain Shams University served as the research site. **Subjects:** For the study, 222 nursing students were selected. **Data collection Tools:** Knowledge regarding artificial intelligence questionnaires and the student attitudes toward artificial intelligence (SATAI) were the two tools used. **Results:** A total of 65.6% of the understudied nursing students had a moderate level of total AI knowledge. In addition, 82.6% of the participants had positive attitudes toward total AI. **Conclusion:** there is a very statistically significant positive association between nursing students' total knowledge and their attitude toward AI. **Recommendations** providing nursing students with AI-related training courses, webinars, and seminars. It's important to highlight how AI may be used for societal good. Students are more likely to be more motivated to study AI if they do this.

KEYWORDS: Artificial Intelligence, Knowledge, Attitude, Nursing Students

Introduction:

Artificial intelligence (AI) is a rapidly evolving field that permeates modern media such as television, movies, books, and graphic novels. It is also seen as a major factor in the domains of technology, economics, and politics. Furthermore, AI is now an essential component of both our daily lives and the "fourth" digital industrial revolution. It is altering the way we look for information, interact with others, and schedule daily activities (Lin *et al.*, 2021).

AI education is growing in importance, and many nations are discovering traditions to actually incorporate AI edification into their school course (Ng *et al.*, 2023; Pinski & Benlian, 2024). Thus, it has impacted the domain of education, which can be used for a series of drives, comprising managerial provision structures, gifted teaching systems, adaptive learning systems and social assistive robots, and can be used to make learning more engaging for preschool children (Castro & Faria Araújo, 2020).

In addition, artificial intelligence has the capacity to analyze and interpret large volumes of data and make more accurate intelligent decisions than humans do, making it a future gold standard for teaching and learning. Additionally, advances in inexpensive storage, faster networks, and increased computer power have enabled the integration of AI into different services, which presents unique opportunities to enhance the services provided (Abioye *et al.*, 2021). As a result, the variety of AI applications will only increase, and the technology will probably spur the development of innovative teaching methods (So *et al.*, 2020).

The founding father of AI defines this discipline as the science and engineering of making intelligent machines, doing things that would require intelligence if done by humans. Additionally, machines can adapt to new situations, address emerging circumstances, answer questions, and devise device plans that require some level of intelligence, which is typically evident in human beings (Chai *et al.*, 2021).

AI can be defined as the extension of computer systems capable of performing tasks that require human intelligence. These tasks include image insight, speech identification and transformation concerning speeches. Likewise, it is a software system that attempts to simulate human intellect using data sources to make independent decisions or help people make decisions (Hashimoto *et al.*, 2020).

AI is generally designed to match the intelligence of individual team members with computer systems in completing tasks or solving problems faced in teaching and automating numerous courses, including education and decision-making (He *et al.*, 2019; Ahmad *et al.*, 2023). Finally, it is a broad term that takes many forms, including machine learning, which refers to a set of numerical methods for problem solving technique; bottomless learning, which refers to a type of machine learning approach and an expansion of neural networks; and natural language processing, which includes the intelligent analysis of printed language (Dash *et al.*, 2019).

Expert systems, heuristic problem solving, natural language processing and vision are the four main gears of AI. Expert systems monitor the situation as an expert and provide performance. Heuristic problem solving is intended to evaluate a small range of solutions and may involve some guesswork to find near-optimal solutions. Natural language processing facilitates human-machine communication. Vision is the capacity to recognize shapes and features automatically (Ali *et al.*, 2023).

As a key to student success in higher education, student knowledge and attitudes regarding artificial intelligence have received much attention over the past decade from administrators, practitioners, and researchers (Adam, 2019; Ahmed *et al.*, 2022). Thus, in prevailing times, attitude is expressed as a “psychological tendency, expressed by the evaluation of a certain entity with some degree of favor or disfavor.” It consists of three complementary components: the emotional component means constructive–undesirable emotional relationships or moods that a person experiences towards an thing or action; the cognitive component represent the satisfaction

of our thoughts, such as our beliefs about what founds a fact, while the behavioral component shows the action patterns to which we must respond while performing an object in a particular way (Suh, & Ahn, 2022).

Nursing students can remotely monitor patients' conditions in the clinical area via AI-enabled wearable devices, ensuring that these programs help AI-powered chatbots and virtual assistants communicate with patients and provide information and support, enhancing patient engagement and education. Overall, AI offers valuable tools for continuous learning and improvement in the learning field. As AI continues to evolve, its integration into education and practice is expected to become increasingly vital for the delivery of efficient and effective teaching processes (Matheny *et al.*, 2020; McCall, 2020).

Significance of the Study:

The AI-powered future that awaits today's students is anticipated to call for increased creativity, critical thinking, and technological proficiency (Hwang and Fu, 2020). Acquiring knowledge about AI can improve these. Nonetheless, remarkably little study has been done on students' acquisition of AI (Zawacki-Richter *et al.*, 2019). The majority of earlier research on AI has concentrated on using AI systems in education (Matsuda *et al.*, 2020).

Although these systems have proven their effectiveness, the role of the computer has evolved from that of the teacher to that of the learning agent. Regardless of the educational model used, students used AI to learn something; they rarely learned about the AI itself. In addition, the need to develop study programs on AI so that young students can acquire knowledge on the subject is beginning to emerge (Chai *et al.*, 2020).

In general, AI degree programs cover the following areas: everyday applications of AI, how AI can solve problems (such as the early diagnosis of diseases), the fundamental concepts behind AI (e.g., data representation, machine learning, visual recognition, and algorithms),

and how to write code (Bellini *et al.*, 2019). Therefore, this study was conducted to assess the nursing student's knowledge and attitudes toward artificial intelligence.

Aim of the Study:

This research aimed to investigate the knowledge and attitudes of nursing students regarding artificial intelligence.

Research Questions

What is the level of knowledge and attitudes of nursing students regarding artificial intelligence?

Subjects and Methods

Design:

A descriptive cross-sectional design was used in this study.

Setting:

The research was conducted at the Faculty of Nursing Ain Shams University. It contains nine scientific departments, namely, medical surgical nursing departments one & two, critical nursing departments, maternity and gynecology nursing departments, pediatric nursing departments, community health nursing departments, psychiatric/mental health nursing departments, geriatric nursing departments and nursing administration departments.

Subjects:

The subject of this study included nursing students enrolled in the fourth academic year (2023-2024).

Sample size

The sample size was 222 out of 520 nurse students selected to participate in the research, which was calculated via the following equation: (Thompson, 2012).

$$n = \frac{N \times p(1-p)}{[(N-1) \times (d^2 \div z^2)] + p(1-p)}$$

n: Sample size

N: Population size

p: the percentage of the phenomenon in the research population, which is assumed to be 50%.

q: (1-p) = 50%

d: Estimated error level = 5%

z: The standard value corresponding to the 95% confidence level, which is 1.9.

Sample technique:

A simple random sample technique was used in this research.

Data collection tools

Two tools were used to collect the study data:

Tool I: Knowledge regarding Artificial Intelligence Questionnaire: developed by researchers based on a review of the literature (Maddox *et al.*, 2019; Abdullah, & Fakieh, 2020; Swan, 2021; Abuzaid *et al.*, 2022). It consists of two parts:

Part 1: Nursing student characteristics such as age, sex, marital status, preuniversity education, educational level of parents, and place of birth.

Part 2: This part consisted of eight items to assess nursing students' knowledge level regarding artificial intelligence ex" I know about AI, but I don't apply this knowledge with great sureness".

Scoring system:

The responses of the nursing students were measured on a 5-point Likert scale ranging

from strongly agree (5) to strongly disagree (1). All the items are summed, and the total is divided by the number of statements, resulting in a mean score, which is converted into percent scores. The study subjects had a low level of knowledge if the total score was less than 60%. A score ranging from 60-75% is considered moderate, whereas a total score greater than 75% is considered high (Abdullah & Fakieh, 2020).

Tool II: Student Attitude toward Artificial Intelligence scale (SATAI): This tool was developed by (Suh, & Ahn, 2022), aims to measure nursing students' attitudes toward artificial intelligence and twenty-six elements comprising three component factors: 4 cognitive items, i.e. (I reason that it is vital to acquire about AI in college), 10 affective items, ex (I will need AI in my life in the future), and 12 behavioral items, ex (I desire to continue learning about AI).

Scoring system

The response of each statement was measured on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1), the items were summed, and the total was divided by the number of items to calculate. A low score $\leq 75\%$ reveals a negative attitude toward AI, whereas a high score $\geq 75\%$ reveals a positive attitude toward artificial intelligence (Suh, & Ahn, 2022).

Tools Validity:

Validity presented to a jury group for face and content validation. Five experts from jury groups in the field of the nursing administration department. One Assistant Professor and two Professors, Faculty of Nursing, Ain Shams University. In addition, two professors, from the Faculty of Nursing, Cairo University, were involved. The tool was assessed for its clarity, comprehensiveness, simplicity, understanding and applicability. According to the jury opinions, modifications such as rephrasing and adding or omitting statements were performed.

Reliability of the tools:

The tools used for data collection were examined by assessing their internal consistency via Cronbach's alpha. It represents an artificial intelligence knowledge questionnaire (0.832) and student attitudes toward artificial intelligence (0.87).

Pilot study:

The pilot study was performed on twenty-two nursing students, representing ten percent of the study sample at the beginning of February 2024, to examine the feasibility, practicability and clarity of tools and the time needed to complete the study tools. The questionnaires were completed in 20–30 minutes. Based on the results of the pilot study, no modifications were made. Subjects included in the pilot study were excluded from the main study sample.

Field work

After securing official approvals for conducting the study, the field work started at the beginning of March. At the end of April 2024, the researchers met the head of each department to determine the suitable time for collecting the data. Additionally, the researchers met the nursing students and explained the purpose of the study, and the tools sheet was distributed to the participants individually. Data was collected every day for 3 days/week on 10–15 sheets. The tools were subsequently collected and checked for completeness.

Ethical considerations:

Prior to the study, ethical approval was obtained from the scientific research and ethical committee of the Faculty of Nursing-Ain Shams University. The researchers explained the aim and objectives of the study to the nursing students included in the study before starting. Informed consent was obtained from the participants to participate in the study after the purpose of the study was explained. Confidentiality and anonymity for the participants were guaranteed through a coding questionnaire, as was the right of the participant

to voluntarily participate and/or extract at any time during the data collection period without any harm, and their collected response was used by a scientific researcher only.

Statistical design:

The gathered information were orderly, grouped, computerized, tabulated, and investigated via the Excel program and SPSS software version 26. For quantitative data, the mean and standard deviation were calculated. For qualitative data, the number and percentage were calculated, and t tests and chi-square tests were used. Correlations between variables were determined via Pearson correlation for parametric data. For all the abovementioned statistical tests, the threshold of significance is fixed at the 5% level (p value). A p value of ≤ 0.05 indicates a significant result.

Results:

Table (1) shows that 71.2% of the participants ranged in age from 20-22 years, with M+SD values of 20.88 ± 0.63 ; 69.4% of them were female, and 78.4% were single. Additionally, 90.9% of the nursing students had a general preuniversity education, 98.6% of them were from Egypt, and 65.2% had educated parents. Additionally, 68.5% of the nursing students were from urban areas.

Table (2) shows that 90.9% of the studied nursing students had a moderate level of knowledge with respect to the item "AI should be educated in the undergraduate program", followed by 88.7% and 84.7% with respect to the items "I am excited about what AI means,

and I would like it to be present in all nursing practices and "I knowledgeable about artificial intelligence through the news, posters, media, and social networking sites". However, 34% of them had a low level for the item "I have been trained and educated about AI".

Figure 1, 65.6% of the understudied nursing students had a moderate level of total AI knowledge. Additionally, 29.7% of them had an elevated level, whereas only 4.7% of them had a low level.

Table (3): (4.1 ± 0.7) of the understudied sample had the highest mean score of the cognitive components, followed by the behavioral component (3.3 ± 0.4) and the affective component (3.2 ± 0.5).

Figure (2) shows that 82.6% of the understudied nursing students had positive attitudes toward total AI, whereas 17.4% had negative attitudes toward total AI.

Table (4) shows that there was a highly significant positive correlation between nursing students' total knowledge of AI and their total attitudes toward AI ($P \leq 0.01$).

Table (5) presented that there was a statistically significant positive predictor effect of the nursing students' age, place of birth and education level on their total AI knowledge ($p = < 0.01$).

Corresponding to **Table (6)** there were highly significant positive effects of nursing students' age, nationality, and place of birth on their total AI attitudes ($p = < 0.01$).

Table (1): Nursing students' personal characteristics in the study sample (n =222).

Personal characteristic	N	%
Age		
≤ 20	39	17.6
>20- <22	158	71.2
≥ 22	25	11.3
Mean ± SD.	20.88±0.63	
Median	21	
Sex		
Male	68	30.6
Female	154	69.4
Marital status		
Single	174	78.4
Married	48	21.6
Pre university education		
General	202	90.9
Institute	20	9.1
Nationality		
Egyptian	219	98.6
Other	3	1.4
Educational level of parents		
Educated	147	65.2
Illiterate	75	33.8
Place of birth		
urban	152	68.5
Rural	70	31.5

Table (2): Nursing students' knowledge of AI (n= 222).

Items	High		Moderate		Low	
	No.	%	No.	%	No.	%
The syllabus should include some basic knowledge of AI	40	18.1	169	76.1	13	5.8
AI should be educated in the undergraduate program	17	7.7	202	90.9	3	1.4
I have some knowledge about AI	35	15.8	178	80.2	9	4
I was trained and educated on AI	23	10.4	165	74.3	34	15.3
I knowledgeable about artificial intelligence through the news, posters, media, and social networking sites	30	13.5	188	84.7	4	1.8
I know about AI, but I don't apply this knowledge with great sureness.	55	24.8	146	65.8	21	9.4
I am excited about what AI means and I would like it to be present in all nursing practices.	12	5.4	197	88.7	13	5.8
The use of artificial intelligence will change the nature of healthcare practices.	22	9.9	175	78.8	25	11.2

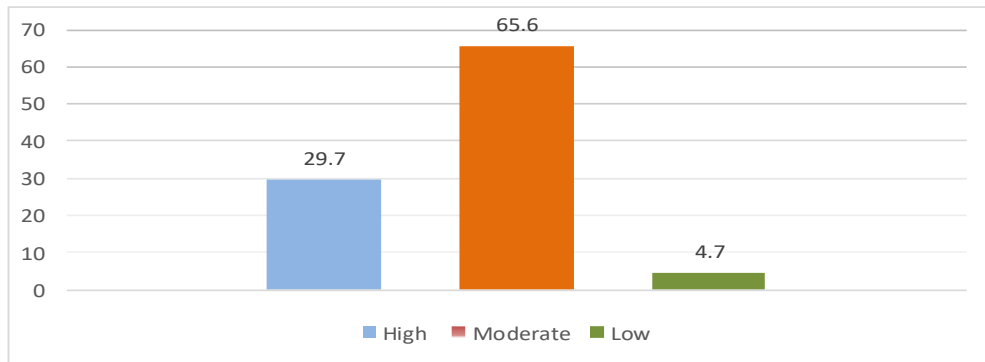


Figure (1): Total artificial intelligence knowledge among nursing students (n= 222).

Table (3): Nursing students' attitudes toward AI (n= 222).

Components	Mean ± S D	Rang
Cognitive components	4.1 ± 0.7	1.0-5.0
Affective components	3.2 ± 0.5	1.0 -4.2
Behavioral components	3.3± 0.4	1.0 -3.7

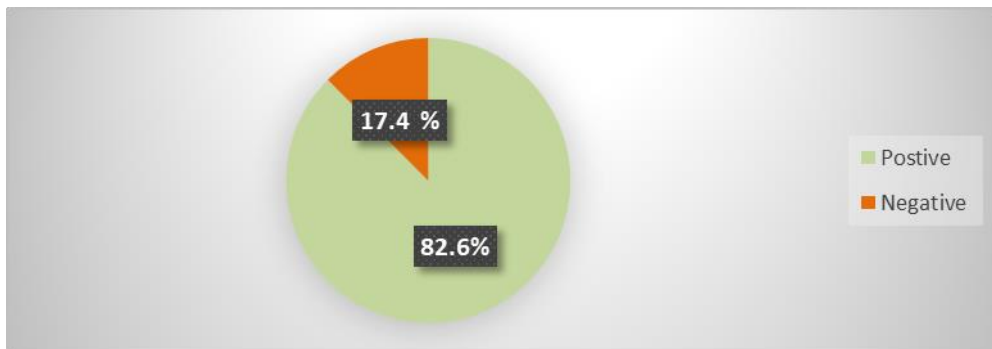


Figure (2): Total artificial intelligence attitudes among nursing students (n=222).

Table (4): Correlation between nursing students' total knowledge regarding AI and their total attitude toward AI.

Variable	Total AI knowledge
Total AI attitude	r = 0.640 P = 0.000**

r= correlation coefficient test. P= p value **highly significant at p < 0.01.

Table (5) Best-fitting multiple linear regression for nursing students' total AI knowledge.

	Unstandardized Coefficients		Standardized Coefficients	t. test	P value
	B	SE	Beta		
(Constant)					
Age	0.245	0.097	0.463	4.066	<0.001*
Place of birth	6.033	1.710		5.121	<0.001*
Educational level of parents	0.257	0.070	0.319	3.698	<0.001*

Dependent Variable: Total nursing students' knowledge regarding AI

r-square = 0.529 f= 11.189 P value <0.001*

Table (6) Best-fitting multiple linear regression for nursing students' total AI attitudes.

	Unstandardized Coefficients		Standardized Coefficients	t. test	P value
	B	SE	Beta		
(Constant)					
Age	4.803	.251	0.463	4.983	.000**
Nationality	3.015	.458	.329	8.800	.000**
Place of birth	.540	.194	0.319	9.049	.000**
Dependent Variable: Total nursing students' attitude toward AI					

r-square = 0.529 f= 11.189 P value <0.001*

Discussion:

Nowadays, Artificial intelligence (AI) is developing quickly and has suit an intact split of our daily survives (*Suh and Ahn, 2022*). Thus, the field education and practice is transformed by this technological advance. i.e. artificial intelligence, which is universally accepted in many computers' science, changes the way to search for information, to communicate with others, and to make daily arrangements (*Lin et al., 2021*). Since nursing students are an integral part of teaching, practice, and care delivery, they must identify the knowledge, skills, and competencies needed to practice with AI (*Swan, 2021*).

The artificial intelligence knowledge level of the nursing students was determined. This present study show that the elements "I am excited about what AI means, and I would like it to be present in all nursing practices" and "I am knowledgeable about artificial intelligence through the news, posters, media, and social networking sites" came in second place, with the second highest level, and the item "AI should be educated in the undergraduate program had the topmost moderate level. On the other hand, the element "I have been trained and educated about the AI" had the lowest mean percentage.

From the investigators' perspective, this may be because the sources of knowledge about artificial intelligence were self-taught, and a portion of the students in the sample took the initiative to learn about AI, through online resources, books, or other self-study methods. Additionally, this may be because of the easy accessibility of the internet and smartphones at hand, university workshops and training for the students' sources of knowledge acquired through

formal education within their university curriculum.

According to the investigators, this result could be attributed to our results by *Abuzaid et al. (2022)*. *Jindal & Bansal (2020)* reported that most students' sources of knowledge about applying AI in health care were moderate through the internet and social media. Similarly, a study on the knowledge and attitudes of nursing students' regarding the integration of artificial intelligence in health care by *Abd El-Maksoud (2024)* reported that more than forty per hanged of the students described their knowledge of artificial intelligence as a "basic understanding".

Furthermore, these results corroborate those of *Zawacki-Richter et al. (2019)*, which examined the practice of artificial intelligence in higher education. They found a decrease in thinking about the challenges and risks of AI in education, a lack of ethical approaches, the use of AI in theoretical perspectives, and the need for more research in higher education. These conclusions contrast with those of *Sheela (2022)*, who reported that participants had prior knowledge of AI in more than half of the sample.

In addition to the total knowledge level of artificial intelligence, the present study's results indicate that over half possessed a moderate level of total AI knowledge. However, just twenty-nine percent demonstrated a prominent level. Furthermore, just four-point seven percent of them exhibited a low level. From the investigators' perspective, these findings may be attributed to a range of factors, feared that artificial intelligence would replace employees, and acknowledged the potential benefits of AI in the education process. In addition, AI is unable to provide opinions in unexpected situations, lacks

sufficient knowledge or training and is unaware of the most shared challenges to fully leveraging AI in practice.

This conclusion was consistent with research by *Elsayed & Sleem (2021)*, who reported that more than three-quarters of the studied sample had moderate perceptions of using AI, whereas a minority of them had high perceptions. Similarly, *Swed et al. (2022)*. The authors conducted a study entitled “Knowledge, attitudes, and practices of artificial intelligence among doctors and medical students in Syria: A cross-sectional online survey,” which reported that 70% of the participants had previous knowledge about AI. Additionally, *Abdullah & Fakieh (2020)*, who referred to “Health Care Employees’ Perceptions of the Use of Artificial Intelligence Applications: Survey Study”, reported that the overall perception of health care subjects toward AI was moderate.

In contrast, employees typically reported that two-thirds had a prominent level of perception of artificial intelligence technology, as demonstrated in research conducted by *Abd El-Monem et al. (2023)*. Similarly, the findings presented by *Kumari & Hemalatha (2021)* demonstrated that employees do not view AI systems as a treat for them and that they have an exceptionally good image of the technology. Furthermore, a study by *Yüzbaşıoğlu (2020)* reported that less than half of the respondents had basic knowledge of AI technologies.

With respect to students’ attitudes toward AI, the findings of existing studies indicate that the highest mean score for cognitive components is followed by those for behavioral components and affective components. From the researchers’ point of view, this result may be attributed to nursing students exerting how AI can help them in learning and their classroom studies. Additionally, since they have yet to accept the reality of integrating AI into their daily lives, they need more time to accept and use AI in their daily activities.

This result is in line with *Asio and Gadia (2024)*, who looked at “Predictors of student attitudes toward artificial intelligence: Implications and relevance to the higher

education institutions” and discovered that the overall mean for the student attitudes toward AI regarding cognitive components reflects a general agreement, while a moderate level of agreement of the affective component and the behavioral component.

Similarly, *Aoun, (2017)* and *Seldon & Abidoye (2018)* reported equivalent results. Pointed out that students must be prepared to learn AI from the beginning of their education, and individuals incline to think about their actions when faced with a new condition, from which the appearance of AI is on; the consequence of such a discussion, in turn, forms the intellectual basis for further choices. Conversely, *Obenza et al. (2024)* reported that participants had high agreement for all components of attitudes toward AI.

In terms of overall artificial intelligence attitudes, the outcomes indicate that most of the nursing students demonstrated positive attitudes toward AI. According to the researchers’ perspectives, this outcome may be because the nursing students confirmed that AI was successfully incorporated into clinical practice and that the support of teaching professionals was essential. Furthermore, there is a need for clear regulatory frameworks and improved education.

Additionally, AI can help head nurses understand complex situations by simulating thinking processes and human reasoning approaches and successfully responding to them; learning and the ability to acquire knowledge, critical thinking, and problem-solving abilities; decision-making assistance; and providing more evidence-based information, long-term planning, and management.

This conclusion agreed with studies conducted by *Mehdipour (2019) and Castagno & Khalifa (2020)*, who reported that most respondents had positive attitudes toward AI. Similarly, *Al-Sabawy (2023)* reported that participants had a moderate perception of AI utilization. Similarly, *Swed et al. (2022)*, who conducted a study entitled “Knowledge, attitudes, and practices of artificial intelligence among doctors and medical students in Syria: A cross-sectional online survey, reported that most have shown positive attitudes toward the necessity of

AI. Similarly, research by *Valerio (2024)* indicated that elevated levels of subjects' awareness of AI, with significant positive attitudes.

Opposing to this, researchers typically reported that most respondents never encountered AI applications in education or the workplace and were unaware of the differences between machine learning and deep learning, as demonstrated in research conducted by *Castagno & Khalifa (2020)*, who investigated "perceptions of artificial intelligence among healthcare staff: A qualitative survey study". Similarly, *Sheela (2022)* reported that "Attitude of Nursing Students Toward Artificial Intelligence" had an unfavorable attitude, and 37% had a favorable attitude toward artificial intelligence.

In terms of the correlation between total knowledge and attitudes toward AI, the findings revealed that there was a highly significant positive correlation between nursing students' total AI knowledge and their total AI attitudes. According to the investigators' perspective, this outcome might result from the emergence of AI, which has changed society and technology, and education must reform itself.

This conclusion was supported by *Elsayed & Sleem (2021)*, who reported that there is a highly significant positive correlation between nurse managers' perceptions and attitudes toward the use of AI in nursing settings.— Similarly, *Sheela (2022)* reported that most nursing students who had adequate knowledge of AI and whose main sources were self-taught that their understanding of AI was basic and that they had a positive attitude toward integrating AI in health care.

The results of the present study revealed that there was a statistically significant positive effect of the nursing students' age, place of birth and education level on their total AI knowledge ($p = <0.01$). This conclusion was distinct from that of a study by *Swed et al., (2022)*, who reported significant differences in the knowledge score as a continuous dependent variable for gender ($P < 0.001$) and qualification level ($P < 0.001$), in which females and graduate doctors had greater knowledge than others did but not for

the other age groups did ($P = 0.297$). Additionally, knowledge of AI can differ depending on different baseline variables. Qualification level, undergraduate year, graduate status, and postgraduate rank significantly differ in the proportion of good knowledge. The proportion of good knowledge was 183 (12.1%), compared with 65 (4.4%) among undergraduates and graduates.

The findings highlight that there was a highly significant positive effect of nursing students' age, nationality, and place of birth on their total AI attitudes ($p = < 0.01$). This outcome was dissimilar from that of a study by *Swed et al. (2022)*, which examined significant differences in the attitude score as a continuous dependent variable for gender ($P < 0.001$), qualification level ($P = 0.003$), and age group ($P < 0.001$), in which males, undergraduates, and 21–30-year-old individuals had higher attitude scores than did the other individuals.

Conclusions:

According to the study's results, over half of the nursing students possessed a moderate level of AI knowledge. Most of them had a positive attitude toward AI. Furthermore, there was a highly significant positive correlation between total AI knowledge and total AI attitudes among the nursing students. Therefore, the study's results effectively addressed the research question concerning the association between the level of knowledge and attitudes of nursing students regarding artificial practices.

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 to develop a good understanding of AI to understand its uses in their daily practice and include more comprehensive and up-to-date AI courses.
- It promotes the responsible use of AI, addresses ethical issues, and concerns, and provides equitable access to AI for education and

opportunities.

- Offering training programs, seminars, and webinars about AI for nursing students.

- The potential use of AI for social good should be emphasized. In doing so, students are more likely to have greater intentions to learn AI.

- 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.

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