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ASSESSING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON NURSING STUDENT'S EDUCATION.

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Abstract

Background: *The rapid integration of Generative Artificial Intelligence (GAI), particularly ChatGPT, is transforming nursing education by providing personalized learning and simulated clinical scenarios. While AI offers opportunities for innovation, concerns remain regarding data accuracy, ethical implications, and potential over-reliance.*

Objective: *This study aimed to evaluate the impact of AI on the education, clinical skills, and academic performance of nursing students.*

Methodology: *A descriptive cross-sectional study was conducted at the Aligarh College of Nursing and Allied Health Sciences, Lahore. Data were collected from 80 undergraduate nursing students (2nd to 4th year) using a structured demographic form and a knowledge-based questionnaire. Statistical analysis was performed using SPSS version 27.*

Results: *The study found high AI adoption, with **70%** of participants having used tools similar to GPT. Most students (**92.5%**) belonged to the 21–25 age group. Approximately **80%** of respondents considered GPT useful for understanding management concepts, and **76.3%** reported significant or moderate academic improvement. Furthermore, **80.1%** indicated that AI helped relate theoretical concepts to professional practice. Key skills improved included time management (**40%**) and patient communication (**33.8%**). Despite high satisfaction, **15–20%** remained neutral or dissatisfied, citing ethical and accuracy concerns.*

Conclusion: *AI has become a critical collaborator in nursing education, significantly enhancing motivation and clinical reasoning. The study recommends integrating AI literacy into curricula and establishing ethical frameworks to ensure responsible use in healthcare.*

INTRODUCTION

The ability of computer systems and computers to carry out tasks that often require human intelligence, such as learning, reasoning, problem solving, planning, decision making, and creativity, is referred to as artificial intelligence (AI). AI has

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rapidly advanced, with more computing power and a wealth of digital data allowing it to be developed and adopted in a variety of fields, such as healthcare and nursing education. AI is evolving beyond a mere technological advancement in nursing education. It is transforming the learning and development of nursing students, their clinical competency, decision making and preparation for more complex health care environments.

For educational institutions, education is constantly changing to meet changing societal and professional needs, which is why innovation is a key factor in successful teaching and learning. In higher education, innovation is characterized by the emergence of new concepts, techniques, and technological advances that enhance learning outcomes and educational processes. One of the most significant advances of recent years is the rise of Generative Artificial Intelligence (GAI), which has revolutionized human interactions, communications and information. Consequently, students today have spontaneously embraced GAI in numerous aspects of their daily existence, particularly in their intellectual and educational activities. The use of these AI powered tools is gaining traction as vital contributors to innovation in education and modern pedagogy with direct implications for the advancement of knowledge.

The growing impact of AI is expected to shape various aspects of nursing, such as patient care, education, management, and research. Generative AI (GenAI) can be used in nursing education in various ways, such as in coursework, assignments, simulated experiences, training, and clinical placements, providing opportunities to enhance student engagement and motivation, and encourage self-directed learning. As health systems evolve, AI is increasingly playing a vital role in supporting nursing students during their medical education.As health systems evolve, AI is playing an increasing important role in supporting the nursing student throughout their medical education, offering opportunities for hands-on learning and continued medical education. AI can serve as a valuable learning assistant supporting the nursing student's academic and professional growth as they simultaneously develop their professional identity, strengthen their values and become independent professionals (Djokic et al., 2024).

Nursing education is in a rapid change period, and with the development of AI, the teaching method is no longer limited to traditional teaching methods, but has gradually entered a new era. It is anticipated that nursing professionals would actively participate in the future development and application of AI technology inside healthcare systems, especially educators and students. AI-powered gadgets that students can wear can, for instance, help nursing students to assess the health status of patients remotely during their clinical training, leading to enhanced patient monitoring and hands-on experience. Further, AI-powered chatbots and virtual assistants positively impact student engagement, communication, and timely academic support, as well as the provision of valuable educational content that can be utilized in both classroom and clinical settings (Derakhshanian et al., 2024; Khaled & Elborai, 2024).

Artificial Intelligence presents a wealth of opportunities to transform nursing education by providing expanded learning opportunities and training future healthcare professionals with up-to-date information and practical skills. Nursing education has benefited greatly from applications like self-directed learning platforms, high fidelity simulation systems, automated assessment techniques, personalized feedback mechanisms, and AI-assisted creation of instructional materials and clinical case scenarios (Baashar et al., 2022; Irwin et al., 2023; Siecki et al., 2022). Previous studies indicate that most nursing students have a basic understanding of AI technologies, with some being familiar with more advanced applications (Qin et al., 2024). To ensure that future nurses have access to AI-related knowledge and skills within their nursing practice, the curricula of nursing education programs should be updated with AI-related content (Buchanan et al., 2021). The adoption and integration of these technologies into nursing practice in the future will largely depend on the attitudes and perceptions of students towards AI.

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AI also plays a crucial role in promoting the education and skill development of healthcare students (Kimiafar et al., 2023), enabling continuous learning and skill enhancement. Students' attitudes toward AI are often manifested by their level of interest, willingness to engage with AI technologies, and views on their applications and effectiveness in healthcare education and clinical practice (Dai et al., 2020). In order to address students' concerns and promote wider acceptance and acceptable use of AI in nursing practice, educators, curriculum developers, and policymakers can provide focused instructional activities, training programs, and institutional support by taking into account these attitudes. The use of AI in nursing education and the allied health professions is becoming increasingly prevalent and complex as it is being integrated into the teaching and learning of these professions (Villarino, 2025).

Although extensive studies around the globe have been conducted on AI in nursing education, there is limited information available regarding the attitudes and perceptions of nursing students in the local higher education context. This gap is particularly evident in Pakistan where AI research integration in nursing education is still in its early stages. As students increasingly rely on AI-powered tools and technologies, their exposure to digital ethics, responsible use of AI, and critical thinking skills is declining. Overreliance on AI could potentially negatively impact students' independent study, critical thinking, and academic decision-making abilities without proper academic guidance and support (Rehman et al., 2024). Therefore, the aim of this study is to explore the status quo of the use of AI in nursing education and assess the attitudes, perspectives, and preparedness of nursing students to adapt to these ongoing technological developments.

Problem statement:

While GAI is increasingly used in higher education, currently there is a lack of empirical evidence about the impact of GAI on nursing curricula. Specifically, there is limited knowledge of how the perceived value of these tools, such as ChatGPT, relates to the consequences that follow, including on academic outcomes and the ways in which clinical critical thinking skills are developed. This ignorance is troubling in the field of health care education, where clinical skills should be easily learned as students develop their technical literacy. If the technology is not fully understood and utilized, there is a strong possibility that there will be a lack of linking the technology to the nurse workforce needed to be able to implement the technology successfully and ethically in nursing programs. This may threaten the nursing workforce's capacity to acquire skills that may be unique in the high-stakes health care setting.

Even though there is a new found respect and admiration for data, there continue to be several concerns: data inaccuracy, ethical responsibility, and job displacement in the nursing profession. Attitudes developed during undergraduate are the most important factors determining success with implementing AI tools in the clinical environment. Resistance is typically caused by the fact that AI is not trained in this manner, as well as worries about the reliability of AI in the clinical setting. Although AI has the ability to introduce students to the changing healthcare landscape (Buchanan et al., 2021), issues with over-reliance, plagiarism, and confidentiality violations still exist (Glauberman et al., 2023). Thus, the preparation, and attitude of the nursing students toward AI is essential, and their acceptance continues to be an important prerequisite for the educational reform and ethical use of AI in clinical practice (Alruwaili et al., 2025; Amin et al., 2024; Chikhaoui et al., 2022).

Significance of Study:

The study has significance in raising awareness about the impact of artificial intelligence (AI) technologies, like Chat GPT, on nursing student learning experiences. According to earlier studies, nursing students' academic performance significantly improved as a result of the use of AI technologies. The findings in this study illustrate that the application of AI in nursing education is not just about the technology but also about the educational benefits it provides. The outcomes hold special significance for the field of education because they indicate the potential of AI

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technology to enhance personalized teaching, facilitate understanding of complex nursing concepts, and enhance the ability of students to apply theoretical knowledge to practical scenarios. The ability to reflect is an important skill for nursing students which cannot be effectively cultivated through traditional teaching methods

Objective:

- To evaluate the impact of artificial intelligence (AI) on education, and academic performance of nursing students.

Hypotheses for the topic:

- **Null hypothesis (H0):**

The Artifical intelligence (AI) has no significant impact on nursing student's education, and academic performance.

- **Alternative hypothesis (H1):**

The Artifical intelligence (AI) significantly enhances nursing student's eduction, and academic performance.

METHODOLOGY

3.1 Study design:

A descriptive cross-sectional study design was used.

3.2 Study setting:

The study was carried out on undergraduate nursing students from Aligarh Nursing College Lahore.

3.3 Study variables:

The study variables include different variables:

Independent variable:

- Artificial intelligence (AI).

Dependent variable:

- Nursing student's education.

3.4 Study tool:

Tool 1: (Demographic Form)

Sociodemographic information on the students, that includes age, gender, academic performance GPA, and weekly study hours.

Tool 2: (Questionnaire)

Students' understanding of AI. This section tests prior experience of using ChatGPT-type tools and knowledge of other content-generating AI tools. Knowledge of AI technology ("I have used it" or "I do not know these tools") and particular use of ChatGPT ("Support with academic tasks" or "Content generation" etc.), as well as the responses "I have not used it" and "I am not familiar with these tools.

3.5 Sampling technique:

A simple random sampling technique was used to collect the sample from the total population.

3.6 Study Population:

The study population was 100 calculated with the help of solvins formula.

3.7 Sample Size:

SOLVIN'S FORMULA is used to calculate sample size when the population size is known.

Formula:

Where, n = N/1 + N(e2)

Whereas:

n = sample size

N = population

e = margin of error which is constant (0.05)

n =100/1 + 100(0.05)2

n =100/1 + 100(0.0025)

n = 100/1 + 0.25

n = 100/1.25

n = 80

3.8 Selection criteria

Inclusion criteria:

- Undergraduate nursing students
- Currently in 2nd year to 4th year

Exclusion criteria:

- Students those are currently on leave or absent.
- Studies that did not address AI tool in an educational context

RESULTS

Table 1: Demographic Profile of Participants (N=80)

The following merged table presents the demographic characteristics of all 80 nursing students who participated in this study, covering five variables: age, gender, academic year, GPA range, and weekly study hours.

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Table 1. Frequency distribution of demographic variables among nursing students (n=80).

Variable	Category	Frequency	Percent (%)	Cumulative %
Section 1: Demographic Variables				
Age (years)	18–20	4	5.0%	5.0%
	21–25	74	92.5%	97.5%
	26–30	2	2.5%	100.0%
Gender	Male	39	48.8%	48.8%
	Female	41	51.2%	100.0%
Academic Year	2nd Year	30	37.5%	37.5%
	3rd Year	25	31.3%	68.8%
	4th Year	25	31.3%	100.0%
GPA Range	1.0–1.7	2	2.5%	2.5%
	2.0–2.7	4	5.0%	7.5%
	3.0–3.7	62	77.5%	85.0%
	4.0	12	15.0%	100.0%
Weekly Study Hours	<5 hours	26	32.5%	32.5%
	5–10 hours	25	31.3%	63.7%
	10–15 hours	12	15.0%	78.8%
	>15 hours	17	21.3%	100.0%

Interpretation of Table 1: Demographic Variables
The demographic data reveal a relatively homogeneous yet educationally diverse sample of undergraduate nursing students at Aligarh College of Nursing, Lahore.

Age Distribution:
The overwhelming majority of participants (92.5%, n=74) were between 21 and 25 years of age, reflecting the typical age bracket of final-year undergraduate nursing students. Only 5% (n=4) were in the 18–20 age group and 2.5% (n=2) were 26–30 years old. This age concentration suggests a consistent academic intake pattern at the institution, and the homogeneity of the age group limits age-related confounding in the results.

Gender Distribution:
The sample was nearly evenly split between males (48.8%, n=39) and females (51.2%, n=41). This near-parity is noteworthy in the context of nursing, which has historically been female-dominated, and indicates a shifting gender dynamic in nursing education in Pakistan. It also allows for meaningful gender-based comparisons in future analyses.

Academic Year:
Students from the 2nd year constituted the largest group (37.5%, n=30), while 3rd and 4th year students each accounted for 31.3% (n=25). The inclusion of all three senior years provides a cross-sectional view of AI exposure at different stages of clinical and theoretical development, enhancing

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the generalizability of the findings within the institution.

Academic Performance (GPA):

A large majority of students (77.5%, n=62) reported GPAs in the 3.0–3.7 range, suggesting a predominantly high-performing cohort. An additional 15% (n=12) achieved a perfect GPA of 4.0, while only 7.5% fell below 3.0. This distribution indicates that AI adoption is predominantly occurring among academically strong students, which may partly explain the positive academic outcomes reported elsewhere in this study.

Weekly Study Hours:

Study time was distributed across all categories, with 32.5% (n=26) studying fewer than 5 hours per week, 31.3% (n=25) studying 5–10 hours, 15% (n=12) studying 10–15 hours, and 21.3% (n=17) studying more than 15 hours. The bimodal tendency — clustering at both the low end (< 5 hrs) and the high end (> 15 hrs) — suggests heterogeneity in study commitment that may interact with AI use patterns.

Figure 1: Bar Chart — Demographic Variables

The bar charts below visually display the percentage distribution for each of the five demographic variables, enabling rapid comparison across categories.

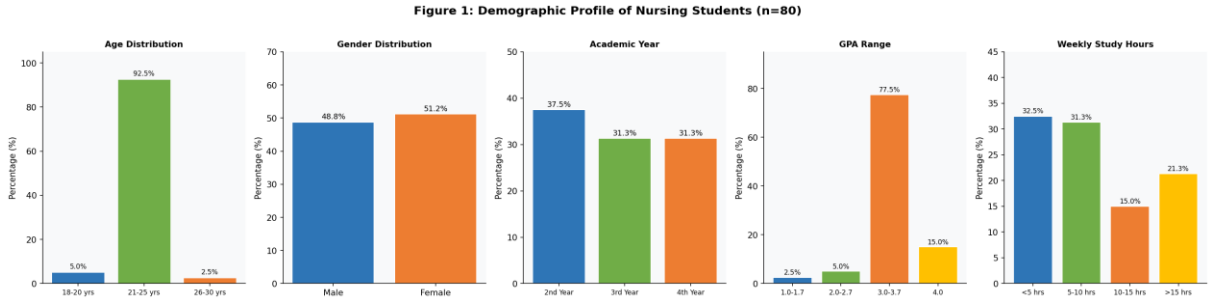


Figure 1. Bar chart representations of demographic variable distributions (n=80).

As illustrated in Figure 1, the 21–25 age group dominates overwhelmingly, signalling a concentrated demographic. Gender balance is near-equal. The 2nd year has the highest enrolment. Most students fall in the 3.0–3.7 GPA range, and study hours are relatively spread across the four categories with a slight lean towards fewer hours per week.

Table 2: Responses to Questionnaire Items (Q6–Q36)

The following merged table consolidates all 31 questionnaire items (Questions 6 through 36) across five thematic sections: Experience with ChatGPT, Usefulness in Management Course, Skill Development and Professional Use, General Satisfaction, and Knowledge and Use at Home.

Table 2. Merged frequency distribution table for all questionnaire items (Q6–Q36, n=80).

Q#	Question / Variable	Response Category	Frequency	Percent (%)	Cumulative %
Section 2: Experience with ChatGPT (Q6–Q8)					
6	Ever used GPT-like tools?	Yes	56	70.0%	70.0%
		No	24	30.0%	100.0%
7		Academic tasks	40	50.0%	50.0%

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Q#	Question / Variable	Response Category	Frequency	Percent (%)	Cumulative %
	Primary usage of GPT	General information	19	23.8%	73.8%
		Content generation	14	17.5%	91.3%
		Problem solving	7	8.8%	100.0%
8	Other AI tools used	Image generators	32	40.0%	40.0%
		Video generators	21	26.3%	66.3%
		None	16	20.0%	86.3%
		Music generators	10	12.5%	98.8%
		Others	1	1.3%	100.0%
Section 3: Usefulness of GPT in Management Course (Q9–Q19)					
9	GPT useful for understanding management concepts?	Very useful	42	52.5%	52.5%
		Useful	23	28.7%	81.3%
		Neutral	9	11.3%	92.5%
		Not very useful	4	5.0%	97.5%
		Not useful at all	2	2.5%	100.0%
10	Which aspects of management course have you used GPT?	Understanding theoretical concepts	31	38.8%	38.8%
		Solving practical cases	19	23.8%	62.5%
		Exam preparation	16	20.0%	82.5%
		Academic assignments	13	16.3%	98.8%
		Other	1	1.3%	100.0%
11	ChatGPT improved academic performance?	Yes significantly	25	31.3%	31.3%
		Yes to some extent	36	45.0%	76.3%
		No changes	13	16.3%	92.5%
		Hindered performance	5	6.3%	98.8%
		Not sure	1	1.3%	100.0%
12	GPT helped relate concepts to professional practice?	Yes significantly	35	43.8%	43.8%
		Yes to some extent	29	36.3%	80.0%
		No changes	12	15.0%	95.0%
		Hindered relationship	2	2.5%	97.5%
		Not sure	2	2.5%	100.0%
13		Yes	68	85.0%	85.0%

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Q#	Question / Variable	Response Category	Frequency	Percent (%)	Cumulative %
	Used GPT for other courses besides management?	No	12	15.0%	100.0%
14	For which courses used GPT?	Pharmacology	31	38.8%	38.8%
		Pediatrics	16	20.0%	58.8%
		Adult Nursing	13	16.3%	75.0%
		CHN	12	15.0%	90.0%
		CCN	7	8.8%	98.8%
		Others	1	1.3%	100.0%
15	GPT useful for understanding other courses?	Very useful	34	42.5%	42.5%
		Useful	29	36.3%	78.8%
		Neutral	10	12.5%	91.3%
		Not very useful	3	3.8%	95.0%
		Not useful at all	3	3.8%	98.8%
		Other	1	1.3%	100.0%
16	GPT will be useful during nursing practicum?	Very useful	43	53.8%	53.8%
		Useful	19	23.8%	77.5%
		Neutral	11	13.8%	91.3%
		Not very useful	4	5.0%	96.3%
		Not useful at all	3	3.8%	100.0%
17	GPT most useful for which practicum aspect?	Resolving clinical doubts	24	30.0%	30.0%
		Quick access to medical info	24	30.0%	60.0%
		Improving patient communication	23	28.7%	88.8%
		Support in decision making	5	6.3%	95.0%
		Clinical documentation	2	2.5%	97.5%
		Other	2	2.5%	100.0%
18	GPT useful in future professional nursing practice?	Very useful	29	36.3%	36.3%
		Useful	32	40.0%	76.3%
		Neutral	10	12.5%	88.8%

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Q#	Question / Variable	Response Category	Frequency	Percent (%)	Cumulative %
		Not very useful	8	10.0%	98.8%
		Not useful at all	1	1.3%	100.0%
19	Most beneficial GPT aspect for professional practice?	Quick access to medical info	39	48.8%	48.8%
		Support in clinical decision making	17	21.3%	70.0%
		Improving documentation efficiency	13	16.3%	86.3%
		Training and continuous education	8	10.0%	96.3%
		Patient education/communication	2	2.5%	98.8%
		Other	1	1.3%	100.0%
Section 3 (cont.): Skill Development & Professional Use (Q20–Q23)					
20	Used ChatGPT to improve specific professional skills?	Yes	56	69.8%	69.8%
		No	24	30.0%	100.0%
21	Which skills improved using ChatGPT?	Time management	32	40.0%	40.0%
		Patient communication	27	33.8%	73.8%
		Clinical documentation	15	18.8%	92.5%
		Clinical decision making	5	6.3%	98.8%
		Other	1	1.3%	100.0%
22	Consider ChatGPT useful for continuing in nursing?	Yes	58	72.5%	72.5%
		No	11	13.8%	86.3%
		Not sure	11	13.8%	100.0%
23	Recommended GPT to colleagues or professionals?	Yes, already recommended	46	57.5%	57.5%
		Yes, would recommend	28	35.0%	92.5%
		No, would not recommend	6	7.5%	100.0%
Section 4: General Satisfaction (Q24–Q30)					
24	Overall satisfaction with use of GPT	Very dissatisfied	15	18.8%	18.8%
		Dissatisfied	11	13.8%	32.5%
		Neutral	10	12.5%	45.0%
		Satisfied	35	43.8%	88.8%

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Q#	Question / Variable	Response Category	Frequency	Percent (%)	Cumulative %
		Very satisfied	9	11.3%	100.0%
25	Would recommend GPT to other nursing students?	Yes	68	85.0%	85.0%
		No	12	15.0%	100.0%
26	Did you enjoy using GPT in management course?	Yes, liked it a lot	20	25.0%	25.0%
		Yes, liked it	34	42.5%	67.5%
		Neutral	19	23.8%	91.3%
		No, did not like it	6	7.5%	98.8%
		No, did not like it at all	1	1.3%	100.0%
27	GPT made management course more enjoyable?	Yes, much more enjoyable	24	30.0%	30.0%
		Yes, more enjoyable	33	41.3%	71.3%
		Neutral	16	20.0%	91.3%
		No difference	6	7.5%	98.8%
		No, less enjoyable	1	1.3%	100.0%
28	GPT helped face challenges of management course?	Yes significantly	20	25.0%	25.0%
		Yes to some extent	41	51.2%	76.3%
		No changes	14	17.5%	93.8%
		Made it more difficult	1	1.3%	95.0%
		Not sure	4	5.0%	100.0%
29	GPT facilitated understanding vs. traditional methods?	Yes significantly	35	43.8%	43.8%
		Yes to some extent	32	40.0%	83.8%
		Neutral	9	11.3%	95.0%
		No difference	2	2.5%	97.5%
		More difficult	2	2.5%	100.0%
30	GPT improved motivation to study management course?	Yes significantly	29	36.3%	36.3%
		Yes to some extent	33	41.3%	77.5%
		No changes	13	16.3%	93.8%
		Decreased motivation	4	5.0%	98.8%
		Not sure	1	1.3%	100.0%
Section 5: Knowledge and Use at Home (Q31–Q36)					
31		Yes	59	73.8%	73.8%

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Q#	Question / Variable	Response Category	Frequency	Percent (%)	Cumulative %
	Do family members know about ChatGPT?	No	14	17.5%	91.3%
		Not sure	7	8.8%	100.0%
32	Have family members used AI tools?	Yes	62	77.5%	77.5%
		No	11	13.8%	91.3%
		Not sure	7	8.8%	100.0%
33	Have you talked to family about these tools?	Yes	63	78.8%	78.8%
		No	17	21.3%	100.0%
34	Family interest in learning more about ChatGPT?	Yes, a lot of interest	28	35.0%	35.0%
		Yes, some interest	31	38.8%	73.8%
		Neutral	12	15.0%	88.8%
		Little interest	5	6.3%	95.0%
		No interest	4	5.0%	100.0%
35	Have you taught family members to use ChatGPT?	Yes	58	72.5%	72.5%
		No	22	27.5%	100.0%
36	Family members use ChatGPT for work or study?	Yes	61	76.3%	76.3%
		No	8	10.0%	86.3%
		Not sure	11	13.8%	100.0%

Interpretation of Table 2: Questionnaire Items

Section 2: Experience with ChatGPT (Q6–Q8)

A substantial 70% (n=56) of students reported prior use of GPT-like tools, indicating high baseline AI adoption within this cohort. Primary purposes for use included academic task support (50%), general information gathering (23.8%), content generation (17.5%), and problem solving (8.8%), confirming that academic utility is the primary driver of AI adoption among nursing students. Beyond ChatGPT, 40% used image generators and 26.3% used video generators, suggesting broad AI literacy extending beyond text-based tools. Only 20% reported not using any other AI tools, highlighting a digitally engaged student population.

Section 3: Usefulness in Management Course (Q9–Q19)

The perception of GPT as useful for management concepts was very high, with 52.5% rating it "very useful" and 28.7% rating it "useful," yielding a combined positive rating of 81.2%. Students primarily used GPT for understanding theoretical concepts (38.8%), solving practical cases (23.8%), and exam preparation (20%). Academic performance improvement was reported by 76.3% (significantly: 31.3%; to some extent: 45%), with only 6.3% indicating it hindered their performance. Theory-to-practice linkage was strongly supported, with 80.1% reporting GPT helped connect management concepts to professional practice.

For other courses, 85% of students extended GPT use beyond management, with pharmacology

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being the most common subject (38.8%), followed by pediatrics (20%) and adult nursing (16.3%). Usefulness for other courses was confirmed by 78.8% of respondents. Regarding practicum, 77.6% felt GPT would be very useful or useful in hospital settings, mainly for resolving clinical doubts (30%), quick access to medical information (30%), and improving patient communication (28.7%). Future professional utility was also strongly endorsed, with 76.3% affirming it would be useful in their careers, primarily for quick access to updated medical information (48.8%).

Skill Development & Professional Use (Q20–Q23)

Nearly 70% of students used ChatGPT to improve specific professional skills. The most improved skills were time management (40%) and patient communication (33.8%), followed by clinical documentation (18.8%). The strong endorsement (72.5%) of GPT as useful for continuing in nursing suggests sustained professional confidence in this tool. Furthermore, 92.5% of respondents either had already recommended GPT to colleagues or said they would do so, reflecting a culture of peer-to-peer AI adoption within nursing cohorts.

Section 4: General Satisfaction (Q24–Q30)

Overall satisfaction was positive: 43.8% were satisfied and 11.3% were very satisfied, while 18.8% were very dissatisfied and 13.8% dissatisfied. The dissatisfaction likely reflects concerns about accuracy, ethical issues, or over-reliance as documented elsewhere in the literature. An overwhelming 85% said they would recommend GPT to other nursing students. Enjoyment was also high, with 67.5% reporting they liked using GPT in the management course. When asked whether GPT improved their motivation to study, 77.6% affirmed this positively (36.3% significantly; 41.3% to some extent), and 83.8% felt it facilitated understanding compared to traditional methods.

Section 5: Knowledge and Use at Home (Q31–Q36)

AI awareness extended well beyond the classroom into students' home environments. A remarkable 73.8% of students reported that their family members were aware of ChatGPT, and 77.5% indicated their families had used AI tools. Discussions about AI tools within families were also prevalent (78.8%). Family interest in learning more was noted by 73.8% of participants, and 72.5% had personally taught family members to use ChatGPT. Furthermore, 76.3% confirmed that their family members actively use ChatGPT for work or study. This dissemination of AI knowledge within households underscores the broad societal penetration of these tools and the role nursing students play as informal technology ambassadors in their communities.

Figure 2: Bar Chart

The horizontal bar charts below illustrate the response distributions for eight representative questionnaire items selected to capture the key themes: AI adoption, academic utility, satisfaction, and professional relevance.

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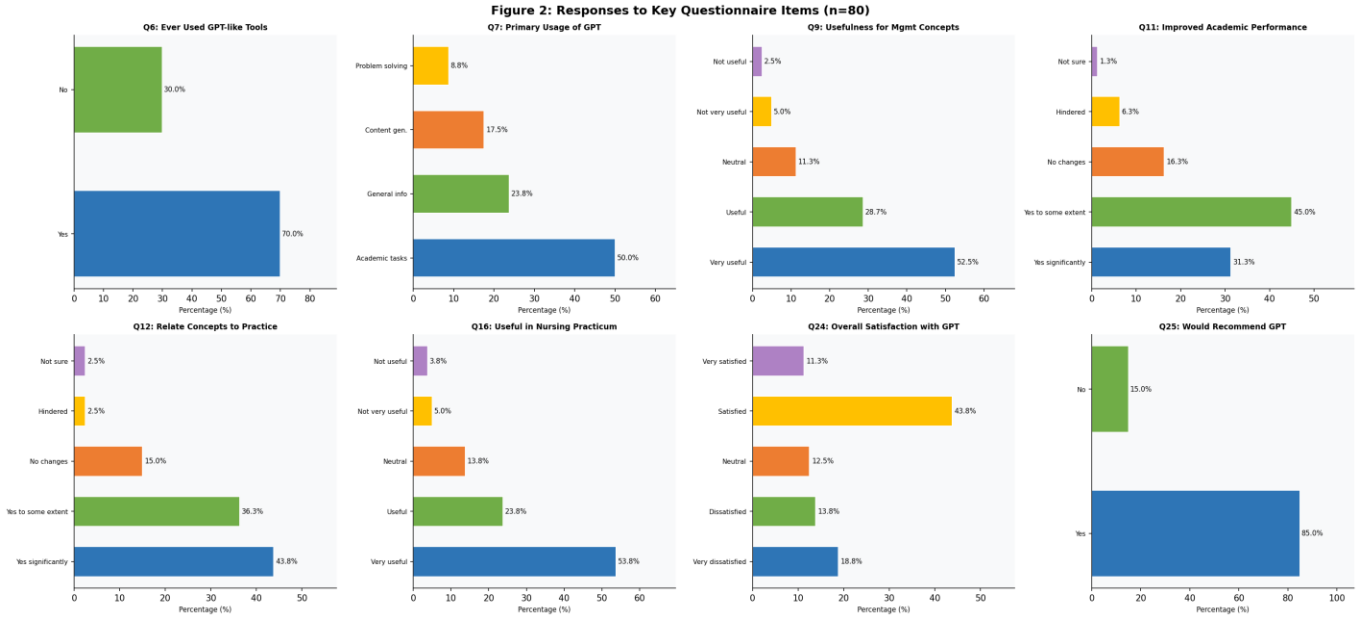


Figure 2. Bar chart representations of responses to key questionnaire items (Q6, Q7, Q9, Q11, Q12, Q16, Q24, Q25; n=80).

Figure 2 visually confirms the predominantly positive attitudes and perceptions found in the survey data. The high AI adoption rate (Q6: 70% Yes) sets the context. Academic task support dominates usage patterns (Q7). Management concept utility is rated positively by over 80% (Q9), and academic performance improvement is acknowledged by 76.3% (Q11). The theory-to-practice connection (Q12) and practicum utility (Q16) both show over 75% positive response rates. Satisfaction (Q24), while mostly positive, also reveals that 32.5% of students expressed dissatisfaction, highlighting the need for institutional support and ethical guidance. The near-unanimous recommendation rate (Q25: 85%) is the strongest single endorsement of ChatGPT's role in nursing education.

Discussion

The results of the current study show that the adoption and acceptance of ChatGPT among nursing students is high and in line with recent global studies. The proportion of participants in this study who reported using AI tools in the past is 70% which is consistent with that of Gonzalez-Garcia et al. (2024) where around 65-85% of nursing students were actively using ChatGPT or other AI assistants in their studies.

Similarly, Han et al. (2025) documented usage rates of between 70-80 and Habib et al. (2024) established that more than 60 percent of the healthcare students in Pakistan were conversant with AI tools. All these results point to the fact that the extent of AI exposure in the present study corresponds to global and regional trends, validating the pervasive nature of the use of AI in nursing education.

This study also found that perceived usefulness of ChatGPT was quite high with over 80 percent of the students rating it useful or very useful in comprehending management and nursing concepts. This observation is highly consistent with those of Cucci et al. (2025) and Bozkurt et al. (2025), whose reviews found that 75-90 percent of nursing students believe that AI is helpful with learning.

Equally, Wafa et al. (2025) and Asio et al. (2025) recorded positive perceptions of AI among a significant number of the students (78 and 80 per cent respectively). These percentages remain the same across studies, which makes the existing results reliable and emphasizes a high level of

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global agreement as to the educational quality of AI tools.

In regard to academic performance, 76.3% of learners in this study said that their performance had improved significantly or to an extent. This aligns with the findings of Bashir (2025) who discovered that approximately 70-75 percent of nursing learners had better learning outcomes after using ChatGPT. Moreover, El-Ashry et al. (2025) showed that over 70 percent of students who expressed positive attitudes toward AI, exhibited increased motivation and critical thinking, which substantiates the gains in academic performance and motivation to study found in this study.

The capacity of ChatGPT to fill the gap between theory and practice was also highly endorsed, and about 80 percent of the participants claimed that it assisted them in connecting the concepts with the practice. It aligns with Lei et al. (2025) in which three-fourths of students reported that AI helped in translating theoretical knowledge in clinical settings.

Equally, the results of the current research were corroborated when Arab et al. (2025) indicated that approximately 7080 percent of nursing students and professionals were of the view that AI improves clinical knowledge and aids decision-making.

Future clinical and professional use: 77.6% of the participants (including those who replied Yes very useful and Yes useful) felt ChatGPT would be useful in their nursing practicum. Similar results were cited by Almalki et al. (2025), who stated that 72-88 percent of students in various countries were willing to adopt AI in the workplace. Also, Arab et al. (2025) have discovered that over 75 percent of the respondents rated AI as useful in enhancing efficiency and patient care, which reinforces the high positive views that have been determined in this study.

One more valuable outcome was skill development as around 70% of students said that they had improved their professional competencies. The results obtained are highly consistent with those of Habib et al. (2024) who found that about 65-70 percent of healthcare students had improved productivity and efficiency due to the use of AI. Such consistency means that AI tools can not only support academic learning but also help to develop the necessary professional skills, such as documentation and time management.

Acceptance and recommendation of ChatGPT were also quite high as 72.5% of respondents taught their families how to use the tool and 85% recommended it to others. These findings are consistent with Asio et al. (2025) and Wafa et al. (2025), who achieved acceptance rates of 7085% and 8090% of students reported readiness to recommend AI tools respectively. These findings suggest that there is a great deal of trust and satisfaction among the students with the use of AI in education.

Though the overall perception is positive, the study found that a percentage of students were dissatisfied or neutral (around 15-20) with ChatGPT. The same tendencies have been observed in the literature sources, where around 20-35 percent of students expressed concerns regarding ethical concerns, accuracy, and over-reliance on AI, as pointed out by Sajja et al. (2025) and Kwak et al. (2022). These issues indicate that AI is being embraced but some proper guidance, training, and ethical principles are still required to guarantee responsible application in the nursing field.

All in all, the results of the study are largely in line with the existing body of research published, which confirms that ChatGPT is a well-utilized, well-perceived, and effective tool in improving academic achievement, clinical knowledge, and skills among nursing students. The fact that the percentages are close to several studies only enhances the validity of the results and indicates the increased role of artificial intelligence as a part of contemporary nursing education.

Conclusion:

This study summarizes that ChatGPT and other generative AI tools have permeated the academic and pre-professional experiences of nursing students. A high adoption (70%), and a massive positive attitude towards its usefulness (over 80) indicate a paradigm shift in nursing education where AI is regarded as a critical collaborator in

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the process of comprehending complex clinical concepts and enhancing motivation towards studies.

The consistency of these results with the latest studies in the world, including those conducted by Almalki et al. (2025) and Bashir (2025) confirms that AI has a significant positive impact on academic performance and clinical reasoning. Moreover, the recommendation rate among the students is high, which implies that AI is not a passing fad but an essential skill of future medical workers. Finally, the shift of academic assistance to clinical tool, although acknowledged with its efficiency and helpfulness by the students, needs to be approached with a moderate balance and human-centered care kept in the priority list.

Limitations:

Though this study has been substantial in its findings, it is limited to a number of things. First, the sample size 80 respondents represent a given geographic or institutional area and hence the generalizability of the findings to the general population of nursing students in the world may be constrained. Second, the data is self-reported mainly, which opens the possibility of social desirability bias, where the students may exaggerate their academic gains or the usefulness of the tool.

Third, perception of ChatGPT was in the center of the study, yet there was no objective assessment of clinical skills in a controlled setting, so the so-called skill development is a perceived, not a clinically proven phenomenon. Lastly, the development of AI technology is so fast that the perceptions of the students will change as more advanced and medical-specific versions of AI come out.

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