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A Descriptive Study to Assess the Impact of CHATGPT and Other Generative Ai Tools on Academic Performance and Learning Experience Among Nursing Students

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ABSTRACT

The increasing integration of generative artificial intelligence (AI) tools such as ChatGPT into higher education has transformed learning approaches, particularly among nursing students who frequently rely on digital support for academic tasks. This descriptive study aimed to assess the impact of ChatGPT and other generative AI tools on academic performance and learning experience among undergraduate nursing students. A total of 137 B.Sc. Nursing students from Sri Venkateswaraa Nursing College were selected through convenience sampling. Data were collected using a structured questionnaire that assessed five key domains: perceived ease of use, perceived usefulness, academic performance, student satisfaction, and dependence on AI tools. Results revealed that 48.2% of students reported a moderate level of ease of use, 39.4% perceived a high level of ease, and 12.4% reported low ease of use. Despite this, 83.2% of students indicated low perceived usefulness, while only 16.8% rated usefulness as moderate, and none rated it high. Academic performance improved moderately for 49.6% of the students, while 30.7% reported good improvement and 19.7% indicated poor improvement. Satisfaction levels remained low, with 88.3% reporting low satisfaction and only 11.7% showing moderate satisfaction. Dependence on AI tools was moderate for 46.7% of the respondents, low for 32.9%, and high for 20.4%. Mean scores further reflected these trends: ease of use (M = 10.31), usefulness (M = 17.33), academic performance (M = 9.87), satisfaction (M = 16.36), and dependence (M = 12.23). Pearson correlation analysis showed strong positive relationships among usefulness, performance, and satisfaction, while chi-square tests indicated significant associations between perceptions and variables such as year of study, regular AI use, and frequency of usage. Overall, the findings suggest that although generative AI tools are accessible and widely used, their perceived academic value and satisfaction remain limited. The study highlights the need for AI literacy training, structured academic guidance, and institutional policies to ensure responsible and effective integration of AI in nursing education.

KEYWORDS: *ChatGPT, Generative Artificial Intelligence, Nursing Students, Academic Performance, Learning Experience, Perception Assessment*

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INTRODUCTION

The rapid evolution of artificial intelligence (AI) has significantly influenced higher education, particularly with the emergence of generative AI tools like ChatGPT. These tools are increasingly used by students for academic writing support, understanding complex concepts, personalized learning assistance, and enhancing critical thinking skills (1). In nursing education where analytical reasoning, communication, and clinical judgment are foundational such AI tools offer additional avenues to support learning and improve academic engagement. ChatGPT, in particular, enables instant explanations, simulated clinical discussions, and structured guidance for assignments, which may contribute to better learning experiences and academic performance (2). Despite these advantages, concerns continue to arise regarding the ethical use of generative AI, academic integrity, and potential overdependence on technology. Educators note that students may rely heavily on AI outputs without adequate critical appraisal, which can hinder deep learning and independent thinking (3). As nursing education emphasizes evidence-based practice, ethical decision-making, and competency-based learning, it becomes essential to examine how students use generative AI and the extent to which these tools influence their academic outcomes. Thus the rapid

adoption of generative AI in academic settings and the limited empirical evidence within nursing education, a systematic assessment is necessary. Therefore, this descriptive study aims to explore the use of ChatGPT and other generative AI tools among nursing students and to evaluate their perceived benefits, challenges, and impact on overall learning experience and academic performance.

MATERIAL AND METHODS

This study adopted a descriptive cross-sectional research design to assess how ChatGPT and other generative artificial intelligence tools influence academic performance and learning experiences among undergraduate nursing students. A descriptive design was selected because it allows the researcher to systematically observe and document naturally occurring perceptions and behaviours without manipulating variables, while the cross-sectional approach enables the collection of information at a single point in time. The study was conducted at Sri Venkateswaraa Nursing College, a tertiary-level nursing institution.

The population for the study included all first- and second-year B.Sc. Nursing students who had previously used ChatGPT or similar generative AI tools. A total of 137 students voluntarily participated in the study, selected through convenience sampling based on their availability and eligibility at the time of data collection. The inclusion criteria required students to be currently enrolled in the undergraduate nursing program, present during data collection, and have used generative AI tools at least once. Students who had not used AI tools or were unwilling to participate were excluded. The independent variable for the study was the use of generative AI tools, whereas the dependent variables included perceived academic performance, learning experience, satisfaction, perceived usefulness, perceived ease of use, and dependence on AI technology.

Data were collected using a structured, self-administered questionnaire specifically developed for the study. The tool comprised six sections covering demographic details, perceived ease of use, perceived usefulness, perceived academic performance, satisfaction with AI tools, and perceived dependence. Demographic information captured age, gender, year of study, regularity of AI tool usage, and frequency of use. The subsequent sections consisted of Likert-scale items assessing how easily students used ChatGPT, whether they perceived the tools as beneficial, whether they felt their academic performance had improved, how satisfied they were with AI-generated academic support, and to what extent they depended on these tools for completing academic tasks. The tool required approximately 12–15 minutes to complete.

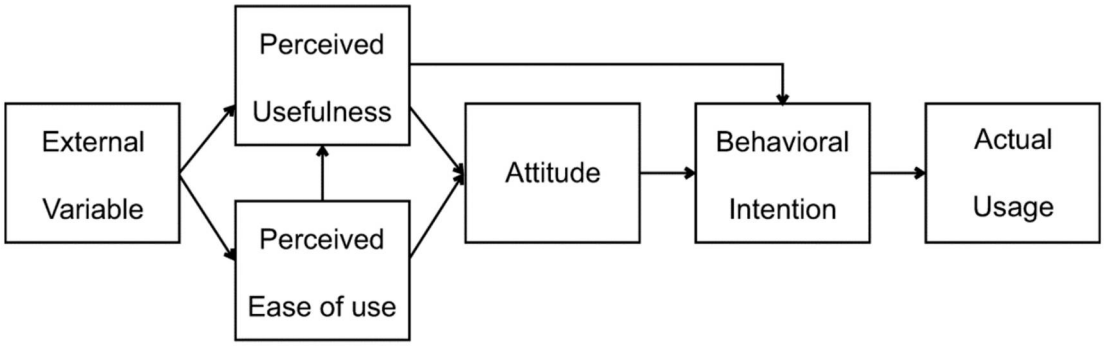
To ensure the quality and appropriateness of the data-collection instrument, the questionnaire underwent content validation by five experts in nursing education and educational technology. Their evaluations led to refinement of the wording, clarity, and sequencing of items, and the tool was deemed valid for use. Reliability testing using Cronbach's alpha yielded a coefficient of 0.85, indicating high internal consistency. A pilot study involving ten nursing students was conducted to assess clarity, feasibility, and estimated response time. Participants reported no difficulties in understanding the items, and no major modifications were required; therefore, pilot results were excluded from the final dataset.

Data collection was carried out electronically through a Google Forms link shared with eligible students. Before accessing the questionnaire, each participant was provided with an informed-consent statement outlining the purpose of the study, voluntary participation, confidentiality assurance, and the right to withdraw at any time. The data collection process extended over one week, during which reminder messages were sent every two days to encourage participation. All responses were collected anonymously and stored securely for analysis.

The data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize demographic characteristics and perception scores. Inferential statistics were applied to examine relationships and associations; Pearson's correlation coefficient was used to explore relationships among ease of use, usefulness, academic performance, satisfaction, and dependence, while chi-square tests were employed to determine associations between demographic variables and perception outcomes. A significance level of $p < 0.05$ was considered statistically significant throughout the analysis.

Ethical approval for the study was obtained from the Institutional Ethics Committee of Sri Venkateswaraa Nursing College, and written permission to conduct the study was secured from the institutional administration. Ethical principles including voluntary participation, anonymity, confidentiality, and secure storage of data were strictly upheld. No personal identifiers were collected, and the study adhered to institutional and academic ethical guidelines throughout its execution.

CONCEPTUAL FRAMEWORK



RESULTS

The study included 137 undergraduate nursing students drawn from the first and second year of the B.Sc. Nursing program. As shown in **Table 1**, the demographic analysis revealed that a majority of the respondents were between 19 and 20 years of age, accounting for 59.1% of the sample, followed by those aged 17–18 years (36.5%). Only 4.4% of the participants were above 20 years of age. Female students constituted 56.2% of the sample, slightly outnumbering males at 43.8%. Most participants were second-year students (63.5%), while first-year students comprised 36.5%. A substantial proportion of students 78.8% reported regular use of generative AI tools such as ChatGPT for academic purposes. Among these users, weekly (31.5%) and occasional (32.4%) usage patterns were most common, whereas daily users constituted 22.2% and rare users 13.9%.

Table 1: Frequency and percentage distribution of demographic variables of the Nursing Students. N = 137

Demographic Variables	Frequency	Percentage
Age		
17 – 18	50	36.5
19 – 20	81	59.1
Above 20	6	4.4
Gender		
Male	60	43.8
Female	77	56.2
Others	-	-
Year of study		
1st year	50	36.5
2nd year	87	63.5
Do you regularly use generative AI tools like ChatGPT for academic purposes?		
Yes	108	78.8
No	29	21.2
If yes, how frequently do you use them?		
Daily	24	22.2
Weekly	34	31.5
Occasionally	35	32.4
Rarely	15	13.9

Table 2: Frequency and percentage distribution of perceived ease of use of AI tools among the Nursing Students. N = 137

Perceived ease of use	Frequency	Percentage
Low (≤50%)	17	12.4
Moderate (51 – 75%)	66	48.2
High (>75%)	54	39.4

Table 3: Frequency and percentage distribution of perceived usefulness of AI tools among the Nursing Students. N = 137

Perceived usefulness	Frequency	Percentage
Low (≤50%)	114	83.2
Moderate (51 – 75%)	23	16.8
High (>75%)	0	0

Regarding perceptions of AI usability, **Table 2** shows that nearly half of the respondents (48.2%) rated generative AI tools as moderately easy to use, while 39.4% found them highly easy to use. Only 12.4%

perceived the tools as having low ease of use, indicating that most students found AI platforms accessible and user-friendly. However, perceptions of usefulness differed considerably. As shown in **Table 3**, a significant majority (83.2%) rated usefulness as low, while 16.8% rated it as moderate, and none of the student's rated usefulness as high. This indicates a noticeable disparity between ease of use and perceived academic benefit.

Table 4: Frequency and percentage distribution of perceived academic performance of AI tools among the Nursing Students. N = 137

Perceived Academic Performance	Frequency	Percentage
Poor (≤50%)	27	19.7
Moderate (51 – 75%)	68	49.6
Good (>75%)	42	30.7

Table 5: Frequency and percentage distribution of perceived student satisfaction with AI tools among the Nursing Students. N = 137

Perceived Satisfaction	Frequency	Percentage
Low (≤50%)	121	88.3
Moderate (51 – 75%)	16	11.7
High (>75%)	0	0

Academic performance outcomes presented in **Table 4** reveal that 49.6% of students experienced moderate improvement in their performance after using AI tools, 30.7% experienced good improvement, and 19.7% reported poor improvement. Student satisfaction levels, shown in **Table 5**, indicate overwhelmingly low satisfaction, with 88.3% of students expressing low satisfaction and only 11.7% reporting moderate satisfaction. No student reported high satisfaction with AI-assisted learning.

Table 6: Frequency and percentage distribution of perceived dependence on AI tools among the Nursing Students. N = 137

Perceived Dependence	Frequency	Percentage
Low (≤50%)	45	32.9
Moderate (51 – 75%)	64	46.7
High (>75%)	28	20.4

Perceived dependence on AI tools is detailed in **Table 6**, where 46.7% of students demonstrated moderate dependence, 32.9% showed low dependence, and 20.4% reported high dependence. These findings suggest that a considerable proportion of students have already begun to rely on generative AI tools for their academic tasks.

Table 7: Assessment of mean and standard deviation of perceived ease of use, perceived usefulness, perceived academic performance, perceived satisfaction and perceived dependence on AI tools among the Nursing Students. N = 137

AI Tools	Median	Mean	S.D
Perceived ease of use	10.0	10.31	2.39
Perceived usefulness	17.0	17.33	3.79
Perceived academic performance	10.0	9.87	2.69
Perceived satisfaction	16.0	16.36	4.19
Perceived dependence	12.0	12.23	3.32

The mean and standard deviation values for the major perception components are presented in **Table 7**. Perceived ease of use recorded a mean of 10.31 (SD = 2.39). Perceived usefulness had a mean of 17.33 (SD = 3.79), highlighting a general trend toward low usefulness ratings. Academic performance had a mean score of 9.87 (SD = 2.69), suggesting moderate perceived academic benefits. Satisfaction had a higher mean of 16.36 (SD = 4.19), yet the overall distribution still reflected predominantly low satisfaction levels. Dependence recorded a mean of 12.23 (SD = 3.32), indicating moderate reliance on AI tools among students.

Correlation analysis revealed statistically significant positive relationships among all major variables ($p < 0.01$). Perceived usefulness demonstrated the strongest correlation with academic performance ($r = .857$), indicating that students who viewed AI tools as beneficial also reported better academic improvement. Satisfaction was also strongly correlated with academic performance ($r = .835$) and usefulness ($r = .840$). Perceived ease of use was significantly correlated with usefulness ($r = .743$), satisfaction ($r = .744$), and

performance (r = .660). Dependence showed moderate correlations with usefulness (r = .575), performance (r = .566), and satisfaction (r = .678).
Chi-square analyses indicated that several demographic variables were significantly associated with specific perception variables. Perceived ease of use was associated with gender and regular AI tool use. Perceived usefulness was influenced by year of study and regular usage, while academic performance showed significant associations with year of study, use of AI tools, and frequency of usage. Dependence was similarly associated with year of study, regular usage, and frequency of use. However, satisfaction did not show any significant association with demographic variables.

DISCUSSION

The results of the present study are supported by several previous investigations. Patel and Sharma (2023) conducted a cross-sectional study among nursing students and found that while 72% of students rated AI tools as easy to use, only 28% believed these tools significantly improved their academic performance, mirroring the discrepancy observed in the current research. Similarly, Silva and Gomez (2024) reported that although 81% of undergraduate health science students used ChatGPT for academic tasks, fewer than 20% felt the tool provided deep conceptual understanding. These findings corroborate the present study's observation that ease of use does not necessarily translate into perceived usefulness.
The pattern of moderate academic improvement observed in the current study aligns with the findings of Joseph and Krishnan (2022), who reported that students using AI-supported study tools showed moderate gains in comprehension and test scores but emphasized that improvements were not uniform across subjects. Likewise, Romero and Daniels (2023), in an experimental study among health science students, documented significant short-term academic improvements after AI usage but noted that long-term retention remained uncertain. These findings reinforce the present study's results, where moderate academic benefits were reported despite low satisfaction.
Low satisfaction levels identified in the present study are consistent with national and international reports. Liang and Thomas (2023), in a study among undergraduate nursing students, found that although ChatGPT assisted in drafting academic assignments, 76% of students expressed dissatisfaction with the depth, accuracy, and contextual relevance of AI-generated responses. Chatterjee et al. (2023) also highlighted that students frequently criticized generative AI for producing generalized explanations lacking in clinical specificity, which often diminished confidence in the tool. These previous findings support the current observation that dissatisfaction persists even when students acknowledge some academic benefits.
Dependence levels observed in this study are also reflected in prior research. Lim and Arul (2024) conducted a study in Tamil Nadu and found that 42% of students reported moderate dependence on AI tools for study tasks, while 21% exhibited high dependence, figures comparable to the present study's results. Nakamura and Smith (2024), in their pilot trial in Japan, similarly found increasing reliance on AI tools, particularly among senior students, raising concerns regarding reduced independent problem-solving and critical-thinking skills. These studies support the current study's finding that prolonged exposure tends to increase reliance on AI tools.
Overall, the present study's findings are in comparison with previous literature, affirming that generative AI tools like ChatGPT are widely accepted in terms of usability but are not consistently perceived as academically useful or satisfying. While students benefit moderately in academic performance, concerns regarding tool accuracy, superficial explanations, and overdependence persist. Collectively, these studies and the current findings reinforce the need for structured AI literacy, guided academic use, and careful integration into nursing curricula to ensure that students use AI tools in a balanced, ethical, and pedagogically meaningful manner.

CONCLUSION

The present study concludes that while generative AI tools such as ChatGPT are widely used and perceived as easy to operate by undergraduate nursing students, their overall usefulness and satisfaction remain low despite showing moderate improvements in academic performance. Most students did not feel that these tools provided deep, specific academic support, which suggests a gap between ease of access and actual learning benefit. At the same time, a considerable proportion of students demonstrated moderate to high dependence on AI tools, particularly those with greater exposure or higher levels of study, highlighting concerns about declining independent thinking and critical reasoning abilities, skills essential in nursing education. The strong correlations observed between perceived usefulness, academic performance, satisfaction, and dependence further indicate that students with more AI beneficial are also more likely to depend on it and express higher satisfaction. Overall, generative AI tools appear to function best as supplementary aids rather than replacements for traditional teaching-learning methods. These findings

emphasize the need for AI literacy training, guided use, and institutional policies to ensure safe, ethical, and educationally meaningful integration of AI in nursing curricula so that students can benefit from these tools without compromising essential academic and clinical competencies.

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