

# IMPACT OF AI TOOLS AND CHATGPT ON NURSING STUDENTS' LEARNING OUTCOMES: A STUDY AT CIMS NURSING COLLEGE, CMH MULTAN

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## **Abstract**

### **Background**

*ChatGPT and other applications based on Artificial Intelligence (AI) are changing the education industry in the sense that it gives immediate feedback, generates content, and clarifies concepts. Nevertheless, their impact on the academic performance of the nursing students in Pakistan is not well reported.*

### **Objective**

*To determine the role of AI tools (particularly ChatGPT) in influencing the learning outcomes of female nursing students in CIMS Nursing College, CMH Multan.*

### **Methods**

*A descriptive cross-sectional study was done in all the 198 female students enrolled in the four years BSc Nursing program. A validated self-administered questionnaire was used to collect the data that measured the frequency of AI use, its purpose, perceived academic impact, and perceived disadvantages. The SPSS v26 was used to analyze the data through descriptive statistics and Pearson correlation tests.*

### **Results**

*The majority of participants (72) actively used AI tools, mostly ChatGPT (68%). Perceived academic improvement was also found to have a significant positive correlation with the AI usage ( $r = 0.61$ ,  $p < 0.01$ ). Nevertheless, 39% said that they had less independent learning and 32% said that they had problems checking information generated by AI. Among the pitfalls, there were overreliance on AI and institutional direction.*

### **Conclusion**

*The application of AI tools can improve learning, motivation, and understanding, provided that they are used properly. In order to achieve the maximum benefits and reduce the risks, including dependence and misinformation, structured guidelines, ethical education, and digital literacy programs are suggested in Pakistani nursing education.*

**Keywords:** *Artificial intelligence, ChatGPT, nursing education, learning outcomes, Pakistan, CIMS Multan.*

## **1. Introduction**

### **1.1 Background**

The fast development of Artificial Intelligence (AI) technologies has revolutionized the healthcare and education industries. Interactive and personalized learning opportunities are provided by the tools of ChatGPT, Grammarly, and AI-based simulations that assist nursing students in explaining difficult concepts, summarizing information, and getting feedback immediately.

### **1.2 Nursing Education and AI**

Nursing education is a mixture of theoretical, psychomotor, and clinical judgement. Limited clinical exposure, huge classes, and time pressure are some of the limitations that are associated with traditional teaching methods. The AIs offer possibilities of self-directed learning, virtual simulations, and concept reinforcement to complement traditional methods of teaching.

### 1.3 Global and Local Context

The academic performance and confidence of AI-assisted learning are improved with the help of international studies (Li and Chen, 2022; Zhang et al., 2023). In Pakistan, there is a lack of research, yet there is preliminary evidence that students are becoming more dependent on AI tools with no official instructions, which is concerning ethics, accuracy, and academic honesty.

### 1.4 Research Gap

There exist no empirical studies in the Pakistani context on the effect of AI on the academic performance, motivation, and critical thinking of nursing students.

### 1.5 Study Objectives

- To determine the level and rate of AI tool adoption by nursing students.
- To assess the perception of students regarding the effect of AI on learning and motivation.
- To establish the prevalence of the use of AI tools and the perceived academic improvement.
- To investigate the perceived drawbacks and ethical issues with AI.

## 2. Literature Review

### 2.1 AI in Global Nursing Education

Research has shown that AI increases the level of understanding, interest, and motivation (Zhang et al., 2023; Huang and Chen, 2022). It has demonstrated that AI-based simulations assist in enhancing clinical decision-making and reflective abilities (Kumar & Lee, 2022).

### 2.2 AI in Pakistani Context

Pakistan has limited research on the matter. Rehman et al. (2024) have indicated the increasing reliance of students on AI in the absence of adequate training in digital ethics or critical assessment, which can be risky.

### 2.3 Advantages and Disadvantages

**Advantages:** individualized learning, immediate feedback, better learning, greater incentive.

**Disadvantages:** excessive dependency, misinformation threat, plagiarism, lack of faculty support and inequitable access to the internet.

## 3. Methodology

### 3.1 Study Design

The study was a descriptive cross-sectional one.

### 3.2 Study Setting and Population

The research was done at CIMS Nursing College, CMH Multan. The sample consisted of 198 nursing students who were of all four years in the institution. The census sampling technique was used.

### 3.3 Data Collection Instrument

#### 3.3.1 Questionnaire Design

The self-administered questionnaire contained four parts:

1. **Demographics** - year of study, age, previous exposure to digital learning.
2. **Use of AI Tools** - AI tool types, frequency, purpose.
3. **Perceived Impact on Learning**- 5-point Likert scale of comprehension, motivation, critical thinking.
4. **Challenges and Disadvantages** - overreliance and misinformation and ethical concerns items.

#### 3.3.2 Validity

1. Content validity: Five experts have reviewed it; CVI = 0.89.
2. Face validity: Pre-tested on 15 students to make it clear.

### 3.3.3 Reliability

1. Cronbach's Alpha: 0.86 overall
2. Subscales 0.82 (learning outcomes) 0.79 (challenges/disadvantages).

### 3.4 Data Collection Procedure

Upon receiving the ethical approval, the questionnaire was given in the classroom sessions. The involvement was anonymous and voluntary. It required about 20-25 minutes to collect the data on each student.

### 3.5 Data Analysis

1. **Descriptive statistics:** Frequencies, percentages, means.
2. **Inferential statistics:** t-test, ANOVA, Pearson correlation.
3. **Qualitative analysis:** thematic analysis of open-ended answers.

## 4. Results

### 4.1 Demographics

- All the 198 respondents were females, between the age of 18-25 (Mean = 21.4 ±1.8).

### 4.2 AI Usage Patterns

- Three-quarters (72 percent) of people used AI tools on a regular basis, and 68 percent used ChatGPT.
- Primary reasons: assignments (71%), clarification of concepts (65%), preparation of exams (52%).

### 4.3 Perceived Academic Impact

- 81% of them said that their comprehension was better.
- 74% said that confidence and motivation improved.
- 64 percent said that they had improved writing in their academics.

### 4.4 Challenges and Disadvantages

- 39% had reduced independent thinking.
- 32% experienced the problem in the validation of AI-generated content.
- Others issues: overdependence (60 per cent), institutional direction (38 per cent), barriers to internet access (40 per cent).

### 4.5 Correlation

- Strong positive association between the perceived academic improvement and the frequency of AI use ( $r = 0.61$ ,  $p < 0.01$ ).

## 5. Discussion

### 5.1 Interpretation of Findings

The AI devices positively affected understanding, motivation, and engagement, in line with the international research (Huang and Chen, 2022; Zhang et al., 2023).

### 5.2 Contextual Challenges

In Pakistan, overdependence and misinformation are only some of the risks that can be aggravated by limited digital literacy, unreliable internet access, and no official policies on AI.

### 5.3 Implications for Nursing Education

The use of AI should not be used to substitute conventional education. Responsible adoption of digital literacy is essential through faculty development.

## 6. Conclusion

Intelligent applications such as ChatGPT can improve the learning outcomes of nursing students, and they should be incorporated carefully. Nevertheless, overreliance, misinformation, and

ethical issues suggest that organization of institutional policies, faculty education, and digital literacy programs should be provided in Pakistani nursing education.

### 7. Recommendations

1. Establish organizational procedures of responsible AI use.
2. Organize faculty educational sessions about AI-assisted instruction.
3. Introduce digital literacy and ethics courses in the curriculum.
4. Encourage the integration of learning to equalize AI and instructor-delivered instruction.
5. Carry out multi-institutional research of the long-term academic and clinical effects of AI.

### 8. Limitations

1. There could be a bias towards self-reported data.
2. Single-institution study has limitations of generalizability.
3. Causality cannot be assessed on a cross-sectional design.

### 9. References

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