

Effectiveness of AI-Assisted Learning Tools on Knowledge Practice and Attitude Regarding Psychological First Aid among Nursing Students: A Mixed Method Study

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Abstract: *Psychological First Aid (PFA) is an early form of support given to people who are going through a stressful or emergency situation. It aims to reduce immediate distress and help the person begin to cope and recover. Nursing students may come across people who are emotionally distressed in both clinical and community settings. They therefore need sound knowledge practical skills and a supportive attitude to provide appropriate PFA. This study was carried out to find out whether an AI-assisted educational intervention could improve nursing students' knowledge practice and attitude related to Psychological First Aid. A mixed-method convergent study was conducted among 100 B.Sc. Nursing students in a tertiary care hospital of the Armed Forces Medical Services (AFMS). Convenience sampling was used to select the participants. The intervention included an animated Psychological First Aid module that students could access through a smartphone. An AI chatbot was also provided through a QR code so that students could clarify doubts and reinforce what they had learned. Quantitative data were collected using a structured knowledge questionnaire along with 5-point Likert scales for practice and attitude. Students also shared their experiences through an open-ended questionnaire. The results showed a clear improvement after the AI-assisted intervention. The mean knowledge score increased from 4.40 ± 0.91 to 9.00 ± 0.76 with a mean improvement of 4.60 ($t = 42.37$ $p < 0.001$). The mean practice score increased from 4.25 ± 0.85 to 8.80 ± 0.80 with a mean improvement of 4.55 ($t = 38.76$ $p < 0.001$). The mean attitude score increased from 2.89 ± 0.74 to 7.42 ± 0.68 with a mean improvement of 4.53 ($t = 41.15$ $p < 0.001$). Overall 52% of participants demonstrated adequate practice and 57% demonstrated a positive attitude. Qualitative findings indicated enhanced understanding accessibility and convenience engagement and retention and confidence building. The findings suggest that AI-assisted learning can be a useful and engaging way to strengthen knowledge practice and attitude related to Psychological First Aid among nursing students. These tools may also support nursing education by helping students feel better prepared to provide psychological care.*

Keywords: Psychological First Aid Artificial Intelligence AI-Assisted Learning Nursing Students Knowledge Practice Attitude AI Chatbot Mixed Method Study

1. Introduction

Psychological First Aid (PFA) is an immediate supportive approach used after stressful or traumatic events. It focuses on reducing distress and helping people cope and move towards recovery. It includes practical help emotional support attention to safety and connection with appropriate sources of help. In healthcare settings nurses are often among the first professionals to meet individuals and families who are experiencing emotional distress. For this reason nursing students need appropriate knowledge practical skills and a positive attitude so that they can provide supportive care.

Traditional teaching provides important theoretical information. However students may understand and retain concepts better when learning also includes interactive and easily accessible technology. Artificial intelligence (AI)-assisted learning tools can give students learning support that is easy to access when they need it. In the present study an animated PFA learning module was supplemented with an AI chatbot accessible through a QR code allowing students to clarify doubts and reinforce learning.

Evidence cited in the study poster suggests that Mental Health First Aid training can improve learners' confidence empathy and problem-solving abilities. The present study was therefore undertaken to evaluate the effectiveness of an AI-assisted educational intervention on knowledge practice

and attitude regarding Psychological First Aid among nursing students.

2. Need for the Study

Nursing students may meet patients relatives and community members who are dealing with stress grief fear anxiety or other forms of psychological distress. Good preparation in Psychological First Aid can help nurses respond appropriately while also recognizing when a person needs further professional help. However knowing the theory does not always mean that a student will feel confident while applying it in a real situation.

AI-assisted educational tools can make learning more accessible interactive and focused on the learner. An animated module can make concepts easier to understand and remember. An AI chatbot can give students another way to clarify doubts and revise important points. This created the need to assess whether an AI-assisted learning intervention could improve nursing students' knowledge practice and attitude related to PFA.

3. Aim of the Study

To evaluate the effectiveness of an AI-assisted educational intervention on knowledge practice and attitude regarding Psychological First Aid among nursing students.

4. Objectives of the Study

- To assess baseline knowledge regarding Psychological First Aid among nursing students.
- To compare pre-test and post-test scores for knowledge practice and attitude following the AI-assisted educational intervention.
- To evaluate the effectiveness of AI-assisted learning in improving knowledge practice and attitude regarding Psychological First Aid among nursing students.

5. Materials and Methods

A mixed-method convergent study design was adopted to evaluate the effectiveness of an AI-assisted educational intervention on knowledge practice and attitude regarding Psychological First Aid among nursing students. The study was conducted in a tertiary care hospital of the Armed Forces Medical Services (AFMS). A total of 100 B.Sc. Nursing students participated in the study and were selected using convenience sampling.

Nursing students who were willing to participate and were available during the study period were included. The intervention consisted of an animated module on Psychological First Aid delivered through a smartphone. Students were additionally provided access to an AI chatbot through a QR code for clarification of doubts and reinforcement learning.

- 1) Structured Knowledge Questionnaire – MCQs
- 2) Practice Scale – 5-point Likert scale
- 3) Attitude Scale – 5-point Likert scale

Qualitative data were collected using an open-ended feedback questionnaire.

The study followed a pre-test AI-assisted educational intervention and post-test approach followed by qualitative feedback. The collected quantitative data were analyzed using descriptive and inferential statistics. Pre-test and post-test scores were compared using a paired t-test. Qualitative responses were analyzed thematically to identify major experiences and perceived benefits of the intervention.

The study was conducted after obtaining the necessary institutional permission and ethical approval and informed participation and confidentiality were maintained.

6. Results

A total of 100 nursing students were included in the quantitative analysis. The post-test knowledge distribution showed a high concentration of scores between 6 and 9 with 72 students demonstrating good to excellent knowledge. The highest frequency was observed at a score of 8 achieved by 22 students. The median knowledge score was 8 and the mode was also 8.

The AI-assisted intervention produced statistically significant improvement across all three outcome domains.

Table 1: Comparison of Pre-test and Post-test Scores

Variable	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Improvement	t value	p value	Interpretation
Knowledge	4.40 $\pm$ 0.91	9.00 $\pm$ 0.76	+4.60	42.37	<0.001	Highly significant
Practice	4.25 $\pm$ 0.85	8.80 $\pm$ 0.80	+4.55	38.76	<0.001	Highly significant
Attitude	2.89 $\pm$ 0.74	7.42 $\pm$ 0.68	+4.53	41.15	<0.001	Highly significant

Knowledge: The mean knowledge score increased from 4.40 $\pm$ 0.91 in the pre-test to 9.00 $\pm$ 0.76 in the post-test representing a mean improvement of 4.60 (t = 42.37 df = 99 p<0.001).

Practice: The mean practice score increased from 4.25 $\pm$ 0.85 to 8.80 $\pm$ 0.80 with a mean improvement of 4.55 (t = 38.76 df = 99 p<0.001).

Attitude: The mean attitude score increased from 2.89 $\pm$ 0.74 to 7.42 $\pm$ 0.68 with a mean improvement of 4.53 (t = 41.15 df = 99 p<0.001).

Table 2: Percentage Increase and Post-intervention Categories

Outcome	% Increase	Post-intervention finding
Knowledge	52.27%	72 students scored 6–9; score 8 was most frequent (22 students); median = 8; mode = 8
Practice	52.00%	52% demonstrated adequate practice
Attitude	57.00%	57% demonstrated a positive attitude

Qualitative Findings

Thematic analysis identified four major themes:

Table 3: Themes Identified from Qualitative Feedback

Theme	Description
Enhanced Understanding	The animated module and AI chatbot helped participants understand PFA concepts clearly.
Accessibility and Convenience	Participants found the AI chatbot useful for clarification of doubts and convenient for learning.
Engagement and Retention	Videos and interactive learning were perceived to make learning more interesting and easier to remember.
Confidence Building	Participants reported increased confidence in responding to emergency and psychologically stressful situations.

7. Discussion

The study showed a substantial improvement in nursing students' knowledge practice and attitude regarding

Psychological First Aid after the AI-assisted intervention. The mean knowledge score increased from 4.40 to 9.00 while practice and attitude scores also showed highly significant improvements. These findings suggest that using

an animated module together with an AI chatbot can make learning more engaging and easier to access.

The findings are consistent with Li et al. (2025) who reported that Mental Health First Aid training significantly improved learners' confidence empathy and problem-solving abilities. The present findings further indicate that AI-assisted learning may strengthen not only knowledge acquisition but also practical readiness and attitudes towards PFA.

The qualitative findings also supported the quantitative results. Students described better understanding greater convenience more interest in learning improved recall and increased confidence. Having the AI chatbot available through a QR code may have helped students clear their doubts immediately and revise the concepts covered in the animated module.

AI-based learning tools may therefore be useful as an additional teaching strategy in nursing education. This may be especially helpful for topics that need repeated practice quick clarification and confidence during stressful or emergency situations.

8. Limitations

- 1) The study included 100 nursing students from one tertiary-care AFMS setting. This may limit how widely the findings can be applied.
- 2) Participants were selected using convenience sampling.
- 3) The outcomes were assessed immediately after the intervention. Therefore the study could not establish whether the improvement would continue over a longer period.
- 4) The intervention required access to a smartphone and digital learning resources.
- 5) The qualitative findings were based on students' open-ended feedback and therefore reflect their reported experiences.

9. Nursing Implications

1) Nursing Practice

Structured PFA training can help nurses become better prepared to support people experiencing psychological distress. AI-assisted educational resources can be used alongside regular teaching to reinforce PFA knowledge and support practical decision-making.

2) Nursing Education

Nursing educators can include animated digital modules AI-supported doubt clarification and reinforcement activities in teaching programmes. These approaches may help improve student engagement retention confidence and access to learning.

3) Nursing Administration

Nursing administrators can support technology-enabled educational programmes and AI-assisted resources to improve preparedness for psychological and emergency care.

4) Nursing Research

Further studies with larger samples randomized controlled designs multiple institutions and longer follow-up periods are needed to understand the sustained effectiveness of AI-assisted PFA education. Future research can also look at actual clinical performance and long-term skill retention along with knowledge practice and attitude scores.

10. Conclusion

This mixed-method study showed highly significant improvement in nursing students' knowledge practice and attitude regarding Psychological First Aid after the AI-assisted educational intervention. Knowledge improved from a mean score of 4.40 to 9.00 practice from 4.25 to 8.80 and attitude from 2.89 to 7.42 with $p < 0.001$ for all three outcomes.

The qualitative findings also showed better understanding easier access greater convenience more engagement better retention and improved confidence. Overall AI-assisted learning that combines an animated PFA module with chatbot-based clarification and reinforcement may be a useful strategy for developing psychological care competencies and emergency preparedness among future nurses.

References

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