"EFFECTIVENESS OF VIDEO SIMULATION TRAINING ON KNOWLEDGE AND PERCEPTION OF ARTIFICIAL INTELLIGENCE IN NURSING PEDAGOGY: A NON-RANDOMIZED TRIAL AMONG NURSING STUDENTS IN SELECTED COLLEGES, KANPUR, UTTAR PRADESH"

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ABSTRACT

The integration of Artificial Intelligence (AI) into nursing education is transforming the training of future healthcare professionals by enhancing clinical skills, critical thinking, and adaptability in a technology-driven healthcare environment. Video simulation training, an AI-supported pedagogical approach, utilizes interactive digital videos to replicate real-world clinical scenarios, enabling nursing students to practice skills, observe procedures, and engage in experiential learning. A quantitative research approach with a non-randomized one-group pre-test and post-test design was adopted for the study. Power analysis was used to determine the sample size, and 350 participants were selected using purposive sampling technique based on the inclusion criteria. Structured knowledge questionnaires and Likert scale questionnaires were used to assess knowledge and perception. The findings revealed that in the post-test, 60.9% of participants demonstrated adequate knowledge, 36.6% had moderate knowledge, and only 2.6% showed inadequate knowledge regarding AI in nursing pedagogy. Regarding perception scores, 98.8% of participants demonstrated good perception after the intervention. The study also showed a significant association between knowledge and perception scores with selected demographic variables at $p < 0.001$.The findings indicate that video simulation training is effective in improving nursing students' knowledge and perception regarding Artificial Intelligence in Nursing Pedagogy.

Keywords: Video simulation training, Artificial Intelligence, Nursing Pedagogy, Knowledge, Perception, Nursing students.

INTRODUCTION

The integration of Artificial Intelligence (AI) into nursing education is rapidly transforming healthcare training by introducing innovative teaching-learning strategies. AI-based educational technologies improve critical thinking, clinical reasoning, and decision-making skills among nursing students[1]. Video simulation training is one such AI-supported educational strategy that enables students to engage in realistic clinical learning experiences through digital and virtual scenarios[3]. Video simulation promotes experiential learning, enhances engagement, and improves retention of knowledge. It is especially beneficial for Generation Z learners who are highly familiar with digital technologies. Research studies have shown that video-based learning methods are equally effective as traditional teaching methods while improving student satisfaction and confidence in clinical performance.[5]

NEED AND SIGNIFICANCE OF THE STUDY

Artificial Intelligence in nursing education has become increasingly important due to the growing adoption of technology in healthcare settings. In semi-urban and rural regions like Kanpur, Uttar Pradesh, there is limited exposure to advanced educational technologies and simulation-based learning. The shortage of trained nursing professionals and limited AI literacy among students necessitate innovative educational interventions[2].The use of AI-driven video simulation training provides a cost-effective and scalable learning strategy that can improve accessibility to advanced nursing education. Nursing students need adequate knowledge and positive perceptions toward AI to effectively adapt to future healthcare systems.[3] Therefore, the present study was undertaken to evaluate the effectiveness of video simulation training on knowledge and perception regarding Artificial Intelligence in Nursing Pedagogy among nursing students in selected colleges of Kanpur.[6]

STATEMENT OF THE PROBLEM

"Effectiveness of Video Simulation Training on Knowledge and Perception of Artificial Intelligence in Nursing Pedagogy: A Non-Randomized Trial among Nursing Students in Selected Colleges, Kanpur, Uttar Pradesh."

OBJECTIVES OF THE STUDY

1. To assess the existing knowledge and perception of nursing students regarding Artificial Intelligence in Nursing Pedagogy.
2. To determine the effectiveness of video simulation training on knowledge regarding Artificial Intelligence in Nursing Pedagogy among nursing students.
3. To evaluate the effectiveness of video simulation training on perception regarding Artificial Intelligence in Nursing Pedagogy among nursing students.
4. To determine the relationship between knowledge and perception scores of nursing students regarding Artificial Intelligence in Nursing Pedagogy after the intervention.
5. To associate the knowledge and perception scores of nursing students with selected demographic variables.

RESEARCH HYPOTHESES

H_1: There will be a significant increase in the knowledge scores of nursing students regarding Artificial Intelligence in Nursing Pedagogy after video simulation training.

H_2: There will be a significant improvement in the perception scores of nursing students regarding Artificial Intelligence in Nursing Pedagogy after video simulation training.

H_3: There will be a significant relationship between nursing students' knowledge and perceptions regarding Artificial Intelligence in Nursing Pedagogy after the intervention.

H_4: There will be a significant association between the knowledge and perception scores of nursing students regarding Artificial Intelligence in Nursing Pedagogy and their selected demographic variables.

NULL HYPOTHESES

H_{01}: There will be no significant difference in the knowledge scores of nursing students regarding Artificial Intelligence in Nursing Pedagogy before and after video simulation training.

H_{02}: There will be no significant difference in the perception scores of nursing students regarding Artificial Intelligence in Nursing Pedagogy before and after video simulation training.

H_{03}: There will be no significant relationship between nursing students' knowledge and perceptions regarding Artificial Intelligence in Nursing Pedagogy after the intervention.

H_{04}: There will be no significant association between the knowledge and perception scores of nursing students regarding Artificial Intelligence in Nursing Pedagogy and their selected demographic variables.

METHODOLOGY

Research Approach

A quantitative research approach was adopted for the study.

Research Design

A one-group pre-test and post-test non-randomized research design was used.

Setting of the Study

The study was conducted in selected colleges of Kanpur, Uttar Pradesh.

Population

Nursing students studying in B.Sc. Nursing and Post Basic B.Sc. Nursing programs.

Sample Size

The sample consisted of 350 nursing students.

Sampling Technique

Purposive sampling technique was used.

Research Variables

Independent Variable

Video simulation training on Artificial Intelligence in Nursing Pedagogy.

Dependent Variables

Knowledge and perception regarding Artificial Intelligence in Nursing Pedagogy among nursing students.

INCLUSION CRITERIA

1. Nursing students available during data collection.
2. Students who understood Hindi and English.
3. Students studying in B.Sc. Nursing and P.B.B.Sc. Nursing programs.

EXCLUSION CRITERIA

1. Students unwilling to participate in the study.
2. Students already exposed to AI-related teaching in nursing education.

TOOL AND TECHNIQUES

Part-I: Demographic factors including age, place of residence, monthly family income, course of study, year of study, usage of artificial intelligence in clinical decision-making education, and information source are included in this section.

Part-II: To evaluate the knowledge, a structured knowledge questionnaire was employed.to assess the knowledge on artificial intelligence for nursing education.

Part-III: Likert scale to assess the perception on integration of artificial intelligence for nursing education into clinical practice.

DATA COLLECTION PROCEDURE

Formal permission was obtained from the principals of selected nursing colleges in Kanpur. Written informed consent was obtained from participants before data collection. A purposive sampling technique was used to select 350 nursing students. Data were collected using a structured questionnaire and Likert scale. All participants were cooperative during data collection.

INTERPRETATION OF FINDINGS

The frequency and percentage of demographic variables of Nursing Students to assess the effectiveness of artificial Intelligence in education.

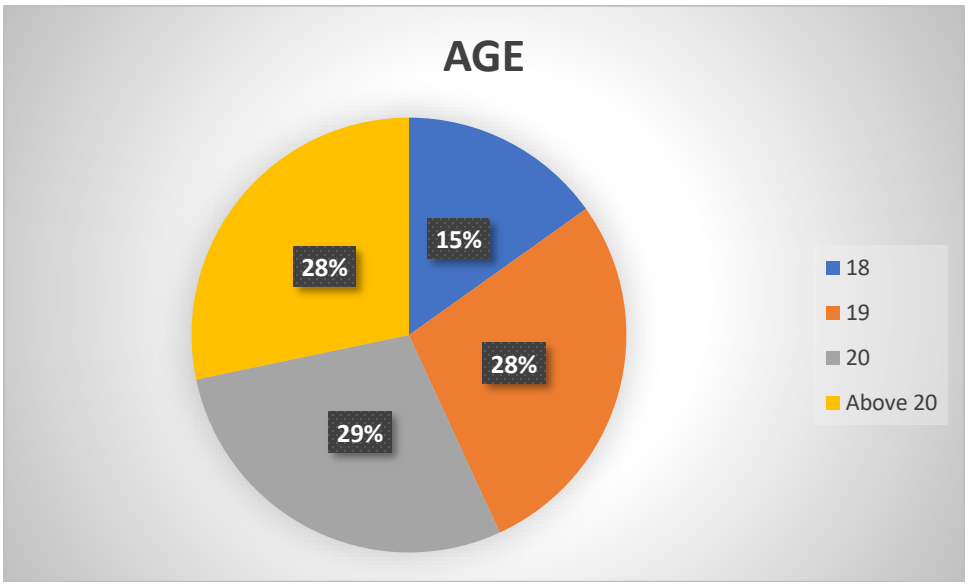

Fig1: Age distribution

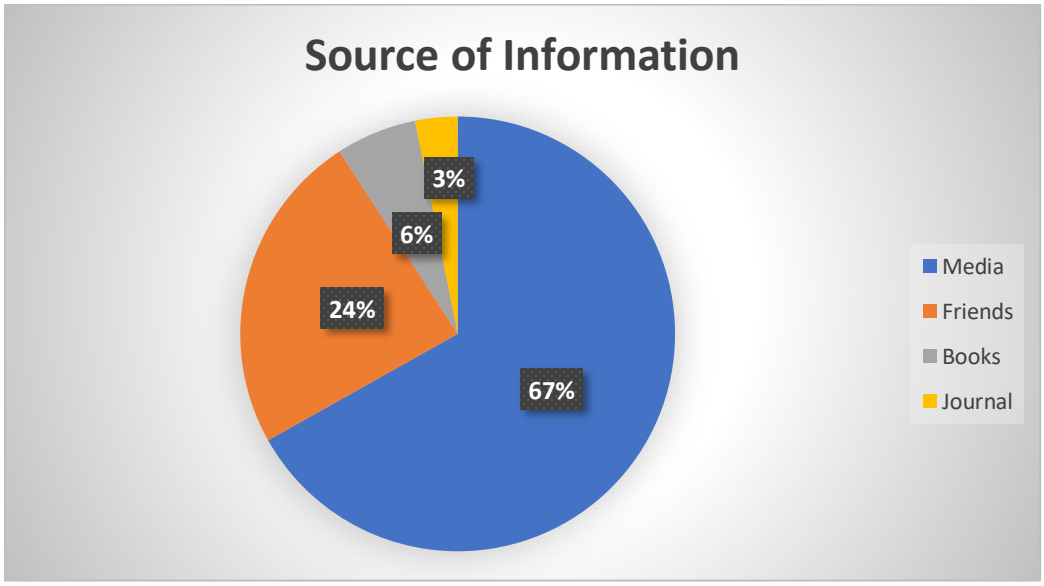

Fig2: Source of Information about AI in teaching

Fig 1-2 revealed that age of the students, 29 % belongs to20 years ,28%belong to more than 20 years, and 15% are in the age group 18 years, 28% belongs to 19 years. Based on the Previous

source of information 67% by media and only 24% got information from their friends. Maximum 69% of students already received AI training.

Table-1Assessthelevelof knowledge in pre and post-test regarding adapting AIinnursing education.

n=350

LEVELOFKNOWLEDGE	PRETEST		POSTTEST	
	N	%	N	%
Inadequate Knowledge	294	84.0	9	3
Moderate Knowledge	55	15.7	128	37
adequate Knowledge	1	0.3	213	60

Thetable.1. study findings revealed that in post- test While 36.6% of individuals had a moderate level of knowledge and a minor percentage had poor knowledge, most participants60.9% exhibited adequate knowledge.

Table-2 Assess level of perception in pre and posttest regarding adapting AI in nursing educationn=350

LEVELOFPERCEPTION	PRETEST		POSTTEST	
	N	%	N	%
Poor perception	155	45	0	0
Moderate perception	99	28	2	0.6
Good perception	96	27	346	98.8
Excellent perception	0	0	2	0.6

Thetable.2. studyfindingsrevealedthatinpost-test98.8%studyparticipantshadgood perception adapting AI in nursing education**.**

Table-3Toexploretherelationshipbetweennursingstudents'knowledgeandperceptions of AI in education post-intervention.n=350

Post Perception	Post Knowledge			Total	p-value
	adequate	Moderate	Inadequate		
Moderate	1(50%)	1(50%)	0(0%)	2(100%)	0.83
Good	210(60.7%)	127(36.7%)	9(2.6%)	346(100%)	
Excellent	2(100%)	0(0%)	0(0%)	2(100%)	
Total	213(60.9%)	128(36.6%)	9(2.6%)	350(100%)	

AssociationbetweenAptitudeandKnowledgethroughChi-squaretestwithp-value<0.001

The table .3. The results of the study showed that using AI in nursing Pedagogy had a p value of 0.83 for the association between nursing students' perceptions and knowledge.

DISCUSSION

The study's results showed that 29% of participants were 20 years old, 28% were above 20, 28% were 19, and 15% were 18 years old. Out of 350 participants. According to family income, most of them are 21% family monthly income between 15754-131506, maximum participants from B.sc Nursing program (69%)[7]. Based on the Previous sourceofinformation67% by mediaandonly24%got information from their friends. Maximum 69% of students already received AI training. The study findings revealed that in Pre -test84%%study participants had inadequate knowledge, and 15.7% study participants had moderate knowledge in pre-test where as in post-test Just 2.6% of respondents received insufficient information, while 36.6% of survey participants had moderate understanding. respondents gained inadequate knowledge. Based on the perception score in pretest maximum 45% had poor perception whereas in posttest 98.9% had good perception and only 0.6%had moderate and excellent perception about adopting AI in nursing education. According to findings knowledge and perception level associated with their socio demographic variables with p –value <0.001 by adopting Artificial Intelligence in Education.[8]

RECOMMENDATION

- ✓ A sample with varied demographic characteristics can be used to duplicate the study.
- ✓ A similar study can be repeated with a control group.
- ✓ For broad generality, a similar study could be repeated on a large sample.

CONCLUSION

Artificial Intelligence -powered tools can adapt to individual student needs, provide immediate feedback, and simulate real-world scenarios, preparing students for practice while freeing up educators for more focused interactions. This study findings‘p ‘value (0.83) showed

that,thereisimprovement ofknowledgeregardingPerception ofAdoptingArtificialIntelligence in Nursing Pedagogy.The findings of this study highlight the need for appropriate interventions to enhance nursing students' knowledge and perceptions regarding the adoption of artificial intelligence in Nursing Pedagogy.[9]

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