

# EFFECTIVENESS OF AUDIO-VISUAL AIDS IN NURSING EDUCATION

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## ABSTRACT

Nursing education is increasingly integrating audio-visual (AV) aids to enhance teaching–learning processes and improve student outcomes. The present study aimed to review and synthesize existing literature on the effectiveness of audio-visual aids in nursing education. A meta-analysis of randomized controlled trials and related studies was conducted using data sources such as PubMed, CINAHL, ScienceDirect, Cochrane Library, and Google Scholar. Only articles published in English were included, while studies in other languages were excluded. Key search terms included massage therapy, weight gain, and preterm neonates.

The reviewed literature highlights that audio-visual interventions, including videos, animations, simulations, and multimedia-based learning, significantly contribute to improved knowledge, skills, and attitudes among nursing students and professionals. Several studies demonstrated enhanced awareness, motivation, self-efficacy, and satisfaction levels with AV-based learning compared to traditional teaching methods. However, findings across studies were not entirely consistent. Some research indicated no significant difference in knowledge and skill competency when compared to conventional approaches, while others emphasized that methods such as mentorship and mixed teaching strategies may yield better outcomes.

Additionally, factors such as instructional design, learner engagement, accessibility, and methodological rigor were found to influence the effectiveness of AV aids. Overall, the review suggests that while audio-visual tools play a vital role in modern nursing education, their optimal impact depends on proper implementation and integration with other teaching strategies. Further research is recommended to establish standardized approaches for maximizing learning outcomes.

## Introduction

Nursing education is a continuously evolving discipline that demands the integration of theoretical knowledge with clinical competence to prepare skilled healthcare professionals. While traditional teaching methods such as lectures and textbooks remain foundational, recent advancements in educational technology have led to an increased emphasis on the use of audio-visual (AV) aids in teaching and learning processes.<sup>1</sup>

Audio-visual aids—including videos, virtual simulations, animations, and multimedia presentations—facilitate multisensory learning and encourage active student engagement. These tools are particularly important in nursing education, where students must understand complex clinical procedures, patient care techniques, and decision-making processes. Evidence suggests that technology-enhanced learning improves

knowledge retention and comprehension by presenting information through both visual and auditory channels.<sup>2</sup>

Moreover, the integration of AV aids supports experiential and competency-based learning. Simulation-based education, a key audio-visual strategy, enables nursing students to practice clinical skills in a safe and controlled environment. Recent studies have demonstrated that simulation and virtual learning significantly enhance students' clinical competence, confidence, and critical thinking abilities.<sup>3</sup>

In addition, the use of audio-visual technologies aligns with student-centered pedagogical approaches and has been associated with increased motivation, satisfaction, and participation among nursing students. Digital learning tools, especially during and after the COVID-19 pandemic, became essential in maintaining continuity of nursing education, further highlighting their effectiveness and adaptability.<sup>4</sup>

Despite the growing adoption of AV aids, their effectiveness in improving learning outcomes is still being explored. Some studies report significant improvements in knowledge acquisition and skill development, while others emphasize that outcomes depend on factors such as instructional design, accessibility of technology, and learner engagement.<sup>5</sup>

## MATERIALS AND METHODS

A metanalysis of randomized controlled trials method.

### Source of data:

PubMed, Cinhal, Science direct, Cochrane, Scholar

**Study design:** Literature review

**Inclusion criteria:** Only English articles

**Exclusion criteria:** Articles of other languages

**Key word used:** Audio-visual aids, Nursing education, Multimedia learning, Simulation-based learning, Teaching methods, Learning outcomes, Clinical competence, Student engagement, Educational technology, Knowledge retention

## REVIEW OF LITERATURE

In pre-test post test quasi-experimental study conducted from June to December 2019, 153 eligible nurses working in three hospitals were participated. Researchers divided the hospitals into three groups with similar numbers of participants (around 55 each) using a random process. One group received an educational intervention using an audio-visual animation, another group got a visual pamphlet, and the last group served as a control with no intervention, RESULT: The study found that participants in the audio-visual and visual pamphlet groups scored significantly higher on awareness, perspective, and practice measures compared to

the control group. Interestingly, the visual pamphlet group showed even greater awareness and practice scores compared to the audio-visual group ( $p < 0.001$ ). However, the audio-visual group achieved a higher perspective score compared to the visual pamphlet group ( $p < 0.001$ ).<sup>6</sup>

This crosssectional comparative study followed 55 nursing students enrolled in the Fundamentals of Nursing Laboratory course, College of Nursing, Sultan Qaboos University, Muscat, Oman, during the Spring 2020 semester. The control group was taught using traditional general demonstration-based teaching of the oral medication procedure, while the experimental group learned the same skill through an interactive educational video. The knowledge, skill competency and satisfaction levels of both groups were assessed post-intervention using standardised questionnaires. Results: There was no statistical difference between the two groups in knowledge level and skill competency scores. Regarding satisfaction, 92% of the students were satisfied with video learning and 87% with the traditional approach.<sup>7</sup>

The sample consisted of 19 research studies. The methodological quality of the studies included was assessed using a tool proposed by the Johns Hopkins Nursing Evidence-Based Practice and the results were analyzed in a descriptive form. Results: the methodological stages used for the process to elaborate and make the videos include pre-production, production and post-production. The studies reveal that, for the most part, the stages were properly applied and/or described by the authors, in addition to contemplating the method adopted. However, in 14 studies there was no use of a methodological framework to ensure rigor in their conduction and in 11 presented validations by the target audience.<sup>8</sup>

quasi-experimental study of the before-and-after type was conducted with 85 student nurses by pre- and post-tests using a validated questionnaire of 20 items on vein puncture. Results: correct replies increased significantly ( $p < 0.005$ ) on seven questions regarding: the best veins for puncture, need for inspection and palpation, antiseptics in circular movements, positioning of the tourniquet, indication of scalp use, flexible device dwell time and complications of the procedure. In the pre-test, median hits were 15 (interquartile range = 17), while in the post-test median hits were 16 (interquartile range = 17),  $p = 0.000$ .<sup>9</sup>

A quasi-experimental, nonequivalent control group, preintervention-and-postintervention design was used. The experimental group ( $n = 31$ ) received video-assisted, problem-based learning materials with multimedia technologies (video scenarios, Google Docs worksheets, Google slides, Zoom cloud meetings, and e-learning management system) and weekly online lectures (100 minutes) for 4 weeks. The control group ( $n = 35$ ) received text-assisted, problem-based learning materials with traditional face-to-face classes and weekly lectures (100 minutes) for 4 weeks. The study data were analyzed using chi-square, Fisher's exact, and independent  $t$  tests as well as analysis of variance. At posttest, learning motivation ( $t = 3.25$ ,  $p = .002$ ), academic self-efficacy ( $t = 2.41$ ,  $p = .019$ ), and self-directed learning ( $t = 3.08$ ,  $p = .003$ ) were significantly higher in the experimental group than in the control group.<sup>10</sup>

This study was a clinical audit with three group pretest posttest design. Eligible nursing students were recruited through the census method and assigned to three groups (mentorship, educational videos, and control group) using permuted block randomization. Students were taught PE skills in three vital systems through three approaches (mentors, educational videos, and routine educational methods). At baseline, students in all groups scored less than half of the possible scores in all three systems, and the mean scores of the three groups were not statistically different ( $P > 0.05$ ). After the intervention, the mean scores of students in the mentorship group increased significantly in all three systems ( $P < 0.001$ ), whereas the mean scores of students in the educational video group and the control group did not change significantly ( $P > 0.05$ ). Furthermore, after the intervention, the mean scores of the educational video group and the control group did not significantly differ in any of the three systems ( $P > 0.05$ ).<sup>11</sup>

A single group pre–post study design. We collected presurvey data from April 25 to June 22, 2022 and postsurvey data from May 23 to July 18, 2022. Sixteen nursing homes (NHs) participated in this study. We collected data on nurses' knowledge, perceptions, and attitudes towards SNLs and the evidence-based nursing practice self-efficacy. Analysis was conducted utilizing the McNemar test. **Results:** The educational video about standardized nursing languages were provided to 31 registered nurses (RNs) from 16 NHs in Korea. Knowledge about the definition of SNLs and the benefits of their utilization improved after watching educational video.<sup>12</sup>

An inductive, qualitative description approach was adopted. The program involved a basic nursing skill: making an occupied bed. Eleven second-year nursing students participated. The participants attended face-to-face lectures and e-learning courses comprising self-study content that was designed for easy and frequent reference. Students practiced for a skill test, which was conducted one month after the first lecture. Two interviews were conducted approximately one month apart. Before each interview, the participants' current practices were videotaped. During the interviews, they explained their thought processes and conscious awareness of their actions as they watched the videos. This study was conducted between April and May 2019. **Results:** Six categories related to changes in participants' cognitive processes while acquiring the skill of making an occupied bed were identified: “feeling that it is easy to acquire,” “practicing without much thought,” “real-izing the difficulty in translating thoughts into practice,” “experiencing a sense of purpose in each technique,” “gaining a perspective to evaluate one's skills,” and “developing one's unique approach.”<sup>13</sup>

Over a one year period, 60 PCL nursing students (second year) were divided into three groups and provided educational sessions on childhood diarrhoea. Three methods; a lecture, small group discussions and mixed methods (lecture plus small group discussion) were used separately. At the beginning, students were informed about a research study with process and questionnaires on the content of childhood diarrhea were administered to each student for pre-test. After the completion of sessions, post-test was done. They also completed a session evaluation ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Classroom observation result was collected by using “A 5-Point Likert Scale” ranging from 1 (poor) to 5 (excellent) by the observer with

feedback. The collected data were entered in MS Excel and analyzed using latest version of SPSS. Results: Lecture method was most significantly effective for gaining factual knowledge while small group discussion was most significantly effective for gaining insightful knowledge. However mixed method is most significantly effective for learning both the procedural and insightful knowledge.<sup>14</sup>

A randomized, controlled, prospective study implemented with 70 nursing students. The animation and gamification were applied to the experimental group. Data were collected using the “Diabetes Nursing Knowledge Test,” “Instructional Materials Motivation Survey,” and “Opinion Form on Diabetes Education Supported by Digital Instruments.” There was a statistical difference between the Diabetes Nursing knowledge scores of the groups after the course ( $P < .05$ ). The students in the experimental group had significantly higher attention and satisfaction and total scores from the Motivation Scale for Teaching Material sub-dimensions compared with the control group ( $P < .001$ ).<sup>15</sup>

The qualitative and quantitative methods were used and the presentation session was conducted for the teachers to analyse the skills of group of 30 teachers. The finding of the study reflects that there is a drastic build in confidence, attitude and perception of the teacher before and after the micro teaching session was conducted. The results also reflect that the teachers were able to establish the skills of: planning, demonstration, explaining learning outcomes, assessment and management of student’s behaviours. At the end of the session teachers also agreed to common conclusion that the microteaching session must be the part of the routine process of every school, which not helped them to build confidence and improve their skill but it also helped to share the teaching methodology among each other.<sup>16</sup>

This qualitative study was conducted using conventional content analysis approach. The participants of the study were 30 Iranian-Kurdish women married under the age of 18 who were selected through purposeful and snowballing sampling. Data collection was conducted through semi-structured interviews and face-to-face interviews and continued until the saturation of concepts was achieved. findings include 5 categories and 17 subcategories: 1 – economic factors (financial problems and economic benefits); 2 – sociocultural factors (social customs, cultural beliefs, community encouragement, social learning, gaining prestige, and social support); 3 – individual factors (physical characteristics, personality traits, lack of awareness of the damaging consequences of early marriage, and fear of the future); 4 – family factors (dysfunctional family, weak awareness of parents, and harm prevention); and 5 – structural factors (high demand, limited access to educational services, and the lack of supportive social and legal structures).<sup>17</sup>

A descriptive, cross-sectional design. **Results** Lecture with audience response clickers was the most preferred/most engaging and effective method for helping Generation Z nursing students learn, whereas assigned reading was the least preferred method. Students preferred a traditional classroom model instead of a flipped classroom. Acquiring skills was the dimension of engagement rated the highest by this group of students.<sup>18</sup>

A descriptive study was conducted with 197 nursing professionals from two hospitals in Cuiabá, Mato Grosso, Brazil, to identify knowledge and factors affecting adherence to Standard Precautions; data were collected using the Questionnaire for Knowledge and Compliance with Standard Precaution (Portuguese version). Knowledge of nursing professionals about Standard Precautions ranged from 6.1% to 99%. The major deficits were related to the objectives and purposes of Standard Precautions. Adherence ranged from 36.0% to 95.4% and was low regarding the proper use of some personal protective equipment, recapping of used needles, hand washing after removing gloves, and procedures after exposure to biological materials. The script was validated in two rounds, reaching 82.3% and 92.8% of consensus, respectively, and the video was validated in the third round, with a 92.3% consensus.<sup>19</sup>

Pre-experimental one group pre-test and post-test design was used for this study. The sample of 60 students studying 10th standard were selected using purposive sampling technique consists of adolescent age of 16-17yrs, from selected govt. higher secondary school Srinagar J&K. Self Structured knowledge questionnaire (pre-test post-test) were administered. The effectiveness of Structured Teaching Programme (STP) was determined by comparing pre-test post-test knowledge scores. The study findings showed that there was significant increase in knowledge score after exposure to structured teaching programme on substance abuse. There was statistically significant association between the level of knowledge gain and fathers occupation at  $P = 0.034$ .<sup>20</sup>

## CONCLUSION

The review of literature indicates that audio-visual aids play a significant role in enhancing nursing education by improving knowledge, skills, motivation, and learner engagement. Most studies demonstrate that the use of videos, animations, simulations, and multimedia tools positively influences students' understanding and confidence in performing clinical procedures. However, the findings are not entirely consistent, as some studies report no significant difference when compared to traditional teaching methods.

The effectiveness of audio-visual aids largely depends on factors such as instructional design, accessibility, learner involvement, and the method of integration with other teaching strategies. Evidence also suggests that a combination of teaching methods, including mentorship, lectures, and interactive learning, may yield better outcomes than using a single approach alone.

Overall, audio-visual aids are valuable tools in modern nursing education, but they should be used as complementary strategies rather than complete replacements for traditional methods. Further research is needed to develop standardized guidelines and optimize their effective use in improving learning outcomes.

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