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Effectiveness of Video-Assisted Teaching on Bag Technique in Terms of Knowledge Acquisition and Skill Proficiency among Nursing Students

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Abstract

The study evaluated the effectiveness of a video-assisted teaching (VAT) programme on bag technique in terms of knowledge acquisition and skill proficiency among fifth-semester Bachelor of Science in Nursing students. A quantitative, pre-experimental one-group pretest–post-test design was adopted. Sixty-seven students were selected by purposive sampling from KMCT College of Nursing, Kozhikode. Data were collected using a 30-item structured knowledge questionnaire and a 15-item observational checklist. Following the pretest, participants received a 20-minute video-assisted teaching session covering the theoretical aspects and demonstration of bag technique for blood pressure monitoring. The post-test was conducted after seven days. The mean knowledge score increased from 15.22 ± 2.01 to 25.87 ± 3.66 ($t = 25.413$, $p < 0.001$). The mean skill score increased from 1.96 ± 0.75 to 10.31 ± 1.91 ($t = 36.537$, $p < 0.001$). In the post-test, 91% of students had good knowledge and 44.78% demonstrated good skill proficiency. Previous university examination marks were significantly associated with pretest knowledge scores ($\chi^2 = 13.046$, $p = 0.001$), whereas age and gender were not. The findings indicate that the VAT programme was associated with improved knowledge and skill scores among the participants.

Keywords: Video-Assisted Teaching, Bag Technique, Knowledge Acquisition, Skill Proficiency, Nursing Students

1. Introduction

The integration of technology into education has expanded opportunities for interactive and learner-centred teaching. Video-assisted teaching (VAT) combines verbal explanations with visual demonstrations and can support the understanding of procedures that require both theoretical knowledge and practical performance. Mayer's cognitive theory of multimedia learning proposes that learners build meaningful connections between words and pictures and may learn more effectively when information is presented through complementary verbal and visual channels [1].

Bag technique is an essential procedure in community health nursing. During home visits, the community health bag carries equipment required for nursing assessment and care. Appropriate handling of the bag and its contents is important for maintaining infection prevention practices and reducing the possibility of cross-contamination between households [2–4]. Students therefore need to understand the principles of bag technique and demonstrate the procedure accurately.

Bag technique is commonly taught through classroom instruction and practical demonstration. These approaches provide foundational learning, but students may benefit from additional opportunities to observe a procedure in a structured, repeatable format. Video-assisted instruction can provide a step-by-step visual explanation and may complement hands-on demonstration. Previous studies have examined video-assisted methods in teaching bag technique and other nursing procedures [5–7]. The present study assessed changes in knowledge acquisition and skill proficiency following a video-assisted teaching programme among fifth-semester BSc Nursing students at KMCT College of Nursing, Kozhikode.

2. Objectives

1. To assess the pretest and post-test knowledge scores regarding bag technique among fifth-semester BSc Nursing students.
2. To assess the pretest and post-test skill proficiency scores regarding bag technique among fifth-semester BSc Nursing students.
3. To determine the effect of video-assisted teaching on knowledge acquisition and skill proficiency.
4. To examine the association between pretest knowledge scores and selected demographic variables.

3. Materials and Methods

3.1 Research Design and Setting

A quantitative research approach with a pre-experimental one-group pretest–post-test design was used. The study was conducted at KMCT College of Nursing, Kozhikode, Kerala. The design consisted of a pretest assessment (O1), the video-assisted teaching intervention (X), and a post-test assessment (O2) after seven days.

3.2 Participants and Sampling

The target population comprised BSc Nursing students, and the accessible population consisted of fifth-semester BSc Nursing students at KMCT College of Nursing. The study included 67 students selected through purposive sampling. Students enrolled in the fifth semester, of either gender, who provided informed consent were eligible. Students from other semesters and those who had received formal training in bag technique before the study were excluded.

3.3 Instruments

Three tools were used: a structured sociodemographic data sheet; a 30-item structured knowledge questionnaire covering the theory and procedure of bag technique, with a maximum score of 30; and a 15-item observational checklist to assess skill proficiency, with a maximum score of 15. Knowledge scores were categorised as poor (0–10), average (11–20) and good (21–30). Skill scores were categorised as poor (0–5), average (6–10) and good (11–15). The tools were reviewed by 11 experts from nursing, community medicine and statistics. Recommendations were incorporated before finalisation. Reliability was assessed using Cronbach's alpha, reported as 0.726.

3.4 Pilot Study and Data Collection

A pilot study was conducted in December 2024 among 10 fifth-semester BSc Nursing students at JDT Islamic College of Nursing, Kozhikode, after obtaining institutional permissions and informed consent. A 20-minute video-assisted teaching session was provided, and the post-test was conducted after seven days. The pilot study indicated statistically significant improvements in knowledge ($t = 8.875$, $p < 0.001$) and skill proficiency ($t = 7.520$, $p < 0.001$), and no practical obstacles were reported.

For the main study, institutional permissions and ethical approval were obtained before data collection. The thesis records the data collection period as 7–17 January 2025. After the purpose of the study was explained and informed consent was obtained, baseline knowledge was assessed using the structured questionnaire and baseline skill was assessed using the observation checklist. Participants then received a 20-minute video-assisted teaching programme covering theoretical content and a demonstration of bag technique during blood pressure monitoring. The same tools were administered seven days later.

3.5 Data Analysis

Frequency and percentage were used to describe sociodemographic characteristics and categorical levels of knowledge and skill. Mean and standard deviation were used to summarise pretest and post-test scores. Paired t-tests were used to compare pretest and post-test scores, and chi-square tests were used to examine associations between pretest knowledge and age, gender and previous university examination marks. Statistical significance was set at 0.05.

4. Results

A total of 67 fifth-semester BSc Nursing students participated. Most participants were aged 20–21 years (82.0%); 50 (74.6%) were female and 17 (25.4%) were male. Forty-five students (67.2%) had previous university examination marks between 63% and 75%.

Table 1. Pretest and Post-test Levels of Knowledge and Skill Proficiency

Outcome category	Pretest n (%)	Post-test n (%)
Knowledge – Good	0 (0.0)	61 (91.0)
Knowledge – Average	64 (95.5)	6 (9.0)
Knowledge – Poor	3 (4.5)	0 (0.0)
Skill – Good	0 (0.0)	30 (44.78)
Skill – Average	0 (0.0)	37 (55.22)
Skill – Poor	67 (100.0)	0 (0.0)

Before the intervention, 64 students (95.5%) had average knowledge and three (4.5%) had poor knowledge; none had good knowledge. After the intervention, 61 students (91.0%) achieved good knowledge and six (9.0%) had average knowledge. At baseline, all 67 students (100%) were classified as having poor skill proficiency. At post-test, 30 (44.78%) achieved good skill proficiency and 37 (55.22%) achieved average skill proficiency; none remained in the poor category.

Table 2. Comparison of Pretest and Post-test Knowledge and Skill Scores

Outcome	Pretest Mean ± SD	Post-test Mean ± SD	Mean difference	t value	p value
Knowledge (0–30)	15.22 ± 2.01	25.87 ± 3.66	10.64	25.413	<0.001
Skill (0–15)	1.96 ± 0.75	10.31 ± 1.91	8.36	36.537	<0.001

The mean knowledge score increased by 10.64 points, from 15.22 ± 2.01 before the intervention to 25.87 ± 3.66 after the intervention. The paired t-test showed a statistically significant difference (t =

25.413, $p < 0.001$). The mean skill score increased by 8.36 points, from 1.96 ± 0.75 to 10.31 ± 1.91, and the difference was statistically significant ($t = 36.537$, $p < 0.001$).

The chi-square analysis showed a statistically significant association between previous university examination marks and pretest knowledge scores ($\chi^2 = 13.046$, $p = 0.001$). No statistically significant association was found between pretest knowledge and age ($\chi^2 = 0.685$, $p = 0.877$) or gender ($\chi^2 = 2.828$, $p = 0.156$).

5. Discussion

The findings demonstrated an increase in both knowledge acquisition and skill proficiency after the video-assisted teaching programme. The proportion of students in the good knowledge category increased from 0% at pretest to 91.0% at post-test. Similarly, all participants were classified in the poor skill category before the intervention, whereas none remained in that category at post-test. These findings indicate an improvement in the measured learning outcomes during the study period.

The mean knowledge score increased from 15.22 to 25.87, with a statistically significant paired t-test result ($p < 0.001$). A significant increase was also observed in skill scores, from a mean of 1.96 to 10.31 ($p < 0.001$). The findings are consistent with earlier research on bag technique teaching. Gorde et al. reported improved practice scores following video-assisted teaching and lecture-cum-demonstration, with higher post-intervention practice scores in the video-assisted group [5]. Salfi and Qumer also reported improvement in knowledge following a video-assisted teaching programme with demonstration on bag technique [6].

The present findings are also in keeping with broader evidence on video-based teaching in nursing education. Clerkin et al. examined the impact of video as a teaching method on psychomotor skills in nursing [7]. Video-based instruction may provide learners with a consistent visual sequence of procedural steps; in the present study, it was delivered alongside a demonstration and followed by a practical skill assessment.

Previous university examination marks were significantly associated with pretest knowledge, whereas age and gender were not. This suggests that prior academic performance was related to baseline knowledge in this sample. The study design did not include a comparison group; therefore, improvements cannot be attributed to the video component alone, and other influences during the seven-day interval cannot be excluded.

6. Limitations

The study was conducted among 67 students in a single nursing college, which may limit generalisability. A control group was not included. The post-test was conducted seven days after the intervention and therefore did not assess long-term retention. Only selected demographic variables were examined. Skill assessment using an observation checklist may have been subject to observer bias, and participants may have altered their performance because they knew they were being observed.

7. Conclusion

The study found statistically significant improvements in knowledge acquisition and skill proficiency scores following a 20-minute video-assisted teaching programme on bag technique among fifth-semester BSc Nursing students. The findings support the use of video-assisted teaching as a supplementary strategy in nursing skills education, alongside supervised demonstration and opportunities for hands-on

practice. Further studies using larger samples, multiple institutions, control groups and longer follow-up periods are recommended.

8. Implications for Nursing Education

Video-assisted teaching may be incorporated as a supplementary resource in skill-based nursing courses to reinforce procedural knowledge and provide a visual sequence for practice. Nursing educators may combine video instruction with demonstration, supervised return-demonstration and periodic assessment to support the development and maintenance of clinical skills.

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