

Effectiveness Of Video-Assisted Teaching on Critical Care Knowledge Among Nursing Students

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Abstract—Background: Critical care requires nurses to possess adequate knowledge for continuous assessment, early recognition of deterioration, emergency interventions, infection prevention, medication safety, and use of advanced equipment. Video-assisted teaching may help nursing students understand and retain complex critical care concepts. **Objective:** To evaluate the effectiveness of a Video-Assisted Teaching Programme (VATP) on knowledge regarding management of critical care among nursing students in a selected nursing college in Bangalore. **Methods:** An evaluative approach with a pre-experimental one-group pre-test and post-test design was used. Sixty nursing students were selected by non-probability convenience sampling. Knowledge was assessed using a structured 25-item multiple-choice questionnaire. The Video-Assisted Teaching Programme (VATP) covered introduction and principles of critical care, airway management and oxygen therapy, monitoring and emergency care, drugs used in critical care, and nursing responsibilities in the ICU. Pre-test and post-test scores were compared using descriptive statistics and a paired t-test; chi-square testing was used to examine associations with selected demographic variables. **Results:** The pre-test mean knowledge score was 19.45 ± 3.16 (77.8%), compared with 23.88 ± 1.22 (95.52%) after the intervention. The mean enhancement was 4.43 points (17.72%). In the pre-test, 38 (63.3%) students had adequate, 18 (30%) moderate, and 4 (6.7%) inadequate knowledge; in the post-test, all 60 (100%) had adequate knowledge. The paired t-test showed a statistically significant improvement ($t = 10.60$, $p < 0.001$). A significant association was reported between pre-test knowledge and duration of critical care unit training ($\chi^2 = 18.21$, $p = 0.020$). **Conclusion:** The findings indicate that the Video-Assisted Teaching Programme (VATP) was effective in improving critical care knowledge among the participating nursing students. Larger controlled studies are recommended to confirm these findings.

Index Terms—Critical care; Nursing students; Video-assisted teaching; Knowledge; Nursing education; Intensive care unit

I. INTRODUCTION

Critical care is a specialized area of healthcare concerned with patients who have life-threatening illnesses or injuries and require continuous monitoring, advanced therapeutic interventions, and multidisciplinary care. Nurses are central to critical care delivery because they provide continuous assessment, medication administration, airway and ventilation support, infection prevention, fluid and electrolyte management, pain assessment, communication, and emergency response.

Nursing students require adequate theoretical knowledge and clinical preparedness before entering professional practice. Limited clinical exposure, restricted opportunities to perform procedures, patient-safety concerns, and the complexity of intensive care can create learning gaps. Video-assisted teaching provides visual and auditory learning experiences and can allow learners to repeatedly review complex concepts and procedures.

The present study evaluated a Video-Assisted Teaching Programme (VATP) on management of critical care among nursing students in a selected nursing college in Bangalore. The conceptual framework was based on Richard E. Mayer's Cognitive Theory of Multimedia Learning, which emphasizes active processing of information through visual and auditory channels.

II. OBJECTIVES

- To assess the level of knowledge regarding management of critical care among nursing students.
- To evaluate the effectiveness of the Video-Assisted Teaching Programme (VATP) on knowledge regarding management of critical care among nursing students.
- To determine the association between pre-test knowledge regarding management of critical care and selected demographic variables.

III. METHODS

3.1 Research design and approach

An evaluative research approach was adopted with a pre-experimental one-group pre-test and post-test design (O1–X–O2). O1 represented the pre-test assessment, X represented administration of the Video-Assisted Teaching Programme (VATP), and O2 represented the post-test assessment.

3.2 Setting, population and sample

The study was conducted among nursing students at a selected nursing college in Bangalore. The sample consisted of 60 nursing students selected by non-probability convenience sampling. Participants had completed Adult Health Nursing as specified in the study protocol.

3.3 Research instrument

A structured knowledge questionnaire was used. Part I contained demographic variables including age, gender, nationality, state, previous exposure to critical care units, duration of critical care training, completion of Adult Health Nursing, and academic grade/percentage. Part II consisted of multiple-choice questions covering introduction to critical care, principles of critical care management, airway management and oxygen therapy, monitoring and emergency care, drugs used in critical care, and nursing responsibilities in the ICU. The questionnaire contained 25 scored items; each correct answer received one mark.

Knowledge was categorized as adequate (>75%), moderate (51–74%), and inadequate (<50%). The tool was content-validated by five experts (four nursing

faculty members specializing in Medical-Surgical Nursing and one physician experienced in critical care). Reliability was assessed using the split-half method. A pilot study was conducted among six nursing students and was reported as feasible.

3.4 Intervention and data collection

Formal permission was obtained from the Principal of Sri Ramakrishna College of Nursing, Bangalore. The study data were collected over two weeks. A pre-test was administered to 60 students, followed immediately by the 45-minute Video-Assisted Teaching Programme (VATP). A post-test using the same structured questionnaire was conducted on the same day.

3.5 Ethical considerations

The thesis contains an institutional ethical clearance certificate from Sri Ramakrishna College of Nursing dated 21 July 2026 and describes voluntary participation, informed consent, confidentiality, and the right to withdraw. The exact ethics committee reference number should be copied from the original certificate into the manuscript before submission if the journal requires it.

3.6 Data analysis

Frequency and percentage were used for demographic variables and knowledge categories. Mean and standard deviation were used for knowledge scores. A paired t-test was used to compare pre-test and post-test scores. Chi-square testing was used to examine associations between pre-test knowledge and selected demographic variables. The level of significance was set at 0.05.

IV. RESULTS

4.1 Demographic characteristics

Among the 60 participants, 40 (66.7%) were aged 21–22 years, 14 (23.3%) were below 20 years, and 6 (10%) were above 22 years.

Thirty-two (53.3%) were female and 28 (46.7%) were male. Forty-eight (80%) were from Kerala, 11 (18.3%) from Tamil Nadu, and 1 (1.7%) from Karnataka. Thirty-two (53.4%) had previous exposure to a critical care unit. All participants had completed Adult Health Nursing.

Knowledge level	Pre-test n (%)	Post-test n (%)	Change
Adequate	38 (63.3%)	60 (100%)	+36.7 percentage points
Moderate	18 (30.0%)	0 (0%)	-30.0 percentage points
Inadequate	4 (6.7%)	0 (0%)	-6.7 percentage points

4.2 Pre-test and post-test knowledge

The pre-test mean knowledge score was 19.45 ± 3.16 (77.8%). The post-test mean score increased to 23.88 ± 1.22 (95.52%). The mean enhancement was 4.43 points, corresponding to 17.72% mean percentage enhancement. All 60 students had adequate knowledge in the post-test.

Assessment	Mean	SD	Mean %	Statistical result
Pre-test	19.45	3.16	77.8%	
Post-test	23.88	1.22	95.52%	
Enhancement	4.43	1.94	17.72%	$t = 10.60$; $p < 0.001$

4.3 Association with demographic variables

A statistically significant association was reported between pre-test knowledge level and duration of training in the Critical Care Unit ($\chi^2 = 18.21$, $p = 0.020$). No statistically significant association was reported with age ($\chi^2 = 4.72$), gender ($\chi^2 = 1.65$), or grade/percentage in Adult Health Nursing ($\chi^2 = 12.44$, $p = 0.133$).

V. DISCUSSION

The study demonstrated a substantial improvement in knowledge after the Video-Assisted Teaching Programme (VATP). The mean score increased from 19.45 to 23.88, and all participants achieved an adequate knowledge category in the post-test. The paired t-test result ($t = 10.60$, $p < 0.001$) supports a statistically significant difference between the two measurements. The finding is consistent with the rationale of multimedia learning used in the study, where visual and auditory presentation can support understanding of complex clinical concepts. The significant association between pre-test knowledge and duration of critical care training

suggests that clinical exposure may contribute to baseline knowledge. However, because the study used a one-group design without a control group and assessed the post-test on the same day as the intervention, the results should be interpreted as evidence of an observed improvement rather than definitive proof that the Video-Assisted Teaching Programme (VATP) alone caused the improvement.

VI. CONCLUSION

The Video-Assisted Teaching Programme (VATP) was associated with a statistically significant improvement in knowledge regarding management of critical care among the 60 nursing students who participated.

The intervention increased the mean knowledge score from 19.45 to 23.88, with a mean enhancement of 4.43 points and a paired t-test result of $t = 10.60$, $p < 0.001$. The findings support the use of structured video-assisted learning as an educational strategy for critical care topics, while larger controlled studies are needed to establish effectiveness more robustly.

VII. LIMITATIONS

- The study was limited to 60 nursing students from a selected nursing college in Bangalore.
- The pre-experimental one-group design limits attribution of improvement solely to the Video-Assisted Teaching Programme (VATP).
- The data-collection period was limited to two weeks and did not assess long-term retention.
- Individual differences such as prior knowledge, learning ability, and interest may have influenced the intervention outcome.

VIII. RECOMMENDATIONS

- Conduct true experimental or controlled studies comparing video-assisted teaching with conventional teaching or other educational strategies.
- Replicate the study with larger and more diverse samples and in different nursing institutions.
- Evaluate longer-term retention of critical care knowledge and, where feasible, clinical or psychomotor outcomes.

- Compare Video-Assisted Teaching Programme (VATP) with simulation, e-learning, structured teaching programmes, and other multimedia approaches.

DECLARATIONS

Ethics approval: The study was approved by the Ethical Clearance Committee, Sri Ramakrishna College of Nursing, Bangalore, India (Ref. No. AES/SRCN/ECL/26; approval date: 21 July 2026).

Informed consent: Written informed consent was obtained from all participants before data collection. Participation was voluntary, and participants were informed of their right to withdraw without penalty.

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Trial registration: Not applicable. This was a one-group pre-experimental educational study and was not a prospective clinical trial involving allocation to intervention groups.

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