

Effectiveness of a Video-Assisted Teaching Programme on Knowledge Regarding Cardiopulmonary Resuscitation among First-Year Degree Students in a Selected College at Ranchi, Jharkhand.

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Abstract

Background: Cardiopulmonary resuscitation (CPR) is an emergency life-saving procedure used when a person has cardiac arrest or is not breathing normally. Early recognition and appropriate CPR can help maintain circulation and oxygen delivery to vital organs until further care is available.

Objective: To assess the pre-test knowledge regarding CPR, determine the effectiveness of a video-assisted teaching programme by comparing pre-test and post-test knowledge scores, and determine the association between post-test knowledge and selected demographic variables among first-year degree students.

Methods: A quasi-experimental study was conducted among 60 first-year students of a selected degree college at Ranchi, Jharkhand, with 30 students in the experimental group and 30 in the control group. Data were collected using a self-structured knowledge questionnaire. The experimental group received a video-assisted teaching programme on CPR. Pre-test and post-test knowledge were assessed and analysed using descriptive and inferential statistics.

Results: In the experimental group, the distribution of students by knowledge level changed from 33.33% inadequate, 50.00% moderate and 16.67% adequate in the pre-test to 3.33% inadequate, 13.33% moderate and 83.33% adequate in the post-test. The reported chi-square value for the experimental group was 27.07 with $p=0.0013$. In another effectiveness table, the experimental group changed from 60.0% inadequate and 40.0% moderate in the pre-test to 3.3% inadequate, 20.0% moderate and 76.7% adequate in the post-test, with reported $\chi^2=39.84$ and $p=0.001$. The control group showed comparatively smaller changes.

Conclusion: The study data indicate an improvement in CPR knowledge following the video-assisted teaching programme. However, some numerical values and statistical labels in the source analysis tables are internally inconsistent and should be verified against the original scoring sheet before final journal submission.

Keywords: Cardiopulmonary resuscitation; CPR; video-assisted teaching; knowledge; first-year students; quasi-experimental study

Introduction

Cardiopulmonary resuscitation is an emergency life-support procedure that includes chest compressions and, when appropriate, ventilation to support circulation and oxygenation during cardiac arrest. The source study describes CPR as a procedure intended to prevent irreversible brain damage or death following cardiac arrest. It also describes compression-only or hands-only CPR as an approach consisting solely of chest compressions, which can help maintain partial blood flow during the early period of sudden cardiac arrest.

The source material highlights the development of CPR guidance and education, including changes in CPR recommendations, AED use, compression-to-ventilation ratios and the development of hands-only CPR education. It further emphasizes the importance of high-quality chest compressions and accessible resuscitation education.

CPR is an important emergency-response skill for students because they may encounter emergencies in educational institutions, public places or other settings. The source study proposes video-assisted teaching as a structured audiovisual approach to make CPR concepts and procedures easier to understand and to improve students' confidence and ability to respond during emergencies.

Need for the Study

CPR is a life-saving emergency procedure used when a person's heart stops beating or when normal breathing ceases. It helps maintain circulation and oxygen supply to the brain and other vital organs until normal cardiac and respiratory function can be restored or professional medical care becomes available.

The original study identifies CPR education as important for first-year degree students and proposes video-assisted teaching to facilitate learning of the procedure, including correct hand placement and emergency response skills. The study therefore examined whether a planned video-assisted teaching programme could improve students' knowledge regarding CPR.

Statement of the Problem

“A study to assess the effectiveness of video assisted teaching programme on knowledge regarding cardio pulmonary resuscitation among 1st year degree students of selected college at Ranchi, Jharkhand.”

Objectives

To assess the pre-test knowledge scores regarding cardiopulmonary resuscitation among first-year students of the selected degree college.

To determine the effectiveness of the video-assisted teaching programme by comparing pre-test and post-test knowledge scores regarding cardiopulmonary resuscitation among first-year students.

To find out the association between post-test knowledge scores regarding cardiopulmonary resuscitation and selected demographic variables.

Hypotheses

H0: There will be no significant difference between the pre-test and post-test knowledge scores regarding cardiopulmonary resuscitation among first-year students of the selected degree college.

H1: There will be a significant difference between the pre-test and post-test knowledge scores regarding cardiopulmonary resuscitation among first-year students.

H2: There will be a significant association between post-test knowledge scores regarding cardiopulmonary resuscitation and selected demographic variables.

Conceptual Framework

The original study used an open-system framework based on J. W. Kenny's open system theory. Within this framework, the students were considered as a system whose knowledge regarding CPR could be influenced by inputs and an educational intervention.

Input included demographic variables and pre-test knowledge assessed through a self-structured questionnaire. Throughput consisted of administration of the video-assisted teaching programme. Output was represented by the post-test knowledge score, categorized in the source study into knowledge levels. Feedback was represented by the difference between pre-test and post-test knowledge scores.

Methods

Research Design and Setting

The study used an experimental/comparative design with an experimental group and a control group. The study was conducted among first-year students of a selected degree college at Ranchi, Jharkhand.

Participants and Sample Size

The sample comprised 60 first-year students. Thirty students were included in the experimental group and 30 in the control group. The source study states that the study was delimited to 60 students.

Sampling and Eligibility

The source material states that the study was limited to first-year students of a selected degree college in Ranchi, Jharkhand and included students who were present during data collection. A detailed description of the sampling technique and complete inclusion/exclusion criteria was not provided in the supplied material and therefore has not been inferred.

Variables

The intervention variable was the video-assisted teaching programme regarding CPR. The outcome variable was knowledge regarding CPR. Selected demographic variables included gender, stream of study in 12th standard, language, previous knowledge of CPR, and source of information.

Data Collection Tool

A self-structured knowledge questionnaire was used to assess students' knowledge regarding CPR. Pre-test and post-test assessments were conducted. The source material does not provide the complete item-wise questionnaire, scoring range, validity procedure or reliability coefficient; these details should be added from the original study records before submission.

Intervention

The experimental group received a planned video-assisted teaching programme regarding CPR. The programme was designed to provide systematic information regarding CPR and to support understanding of the procedure through audiovisual learning. The supplied material particularly describes the role of video-assisted teaching in explaining CPR and correct hand placement.

Data Collection Procedure

Baseline demographic information and pre-test knowledge were assessed. The video-assisted teaching programme was then administered to the experimental group. Post-test knowledge was subsequently assessed and compared with pre-test findings and with the control group.

Ethical Considerations

The supplied files do not provide the name or reference number of an institutional ethics committee approval. They also do not document informed consent procedures. These details should be inserted from the actual study records before journal submission. No ethics approval number has been fabricated in this manuscript.

Statistical Analysis

Frequency and percentage were used to describe categorical variables. Chi-square tests were reported for categorical comparisons and association analyses. Independent-samples t-tests and paired t-tests were reported for comparisons of mean scores. Statistical significance was reported using p-values.

Results

Demographic Characteristics

Variable	Category	Experimental n (%)	Control n (%)
Gender	Male	16 (53.3%)	16 (53.3%)
	Female	14 (46.7%)	14 (46.7%)
Stream in 12th	Science	12 (40.0%)	12 (40.0%)
	Commerce	11 (36.7%)	11 (36.7%)
	Arts	7 (23.3%)	7 (23.3%)

Language	English	8 (26.7%)	6 (20.0%)
	Hindi and English	22 (73.3%)	24 (80.0%)
Previous knowledge	Yes	12 (40.0%)	8 (26.7%)
	No	18 (60.0%)	22 (73.3%)
Source of information	Books	7 (23.3%)	9 (30.0%)
	Mass media	15 (50.0%)	16 (53.3%)
	Journals	8 (26.7%)	5 (16.7%)

Pre-test and Post-test Knowledge Levels

Group	Knowledge level	Pre-test n (%)	Post-test n (%)
Experimental	Inadequate	10 (33.33%)	1 (3.33%)
Experimental	Moderate	15 (50.00%)	4 (13.33%)
Experimental	Adequate	5 (16.67%)	25 (83.33%)
Control	Inadequate	9 (30.00%)	4 (13.33%)
Control	Moderate	16 (53.33%)	14 (46.67%)
Control	Adequate	5 (16.67%)	12 (40.00%)

In the experimental group, adequate knowledge increased from 16.67% at pre-test to 83.33% at post-test, while inadequate knowledge decreased from 33.33% to 3.33%. In the control group, adequate knowledge increased from 16.67% to 40.00%. The source analysis reports $\chi^2=27.07$ and $p=0.0013$ for the experimental group and $\chi^2=4.94$ and $p=0.0846$ for the control group.

Reported Effectiveness Analysis

Group	Knowledge level	Pre-test n (%)	Post-test n (%)
Experimental	Inadequate	18 (60.0%)	1 (3.3%)
Experimental	Moderate	12 (40.0%)	6 (20.0%)
Experimental	Adequate	0 (0.0%)	23 (76.7%)
Control	Inadequate	17 (56.7%)	16 (53.3%)
Control	Moderate	13 (43.3%)	14 (46.7%)
Control	Adequate	0 (0.0%)	0 (0.0%)

A separate effectiveness table in the supplied analysis reports $\chi^2=39.84$, $p=0.001$ for the experimental group and $\chi^2=0.11$, $p=0.73$ for the control group. Because this table does not match the preceding knowledge-level table, the original questionnaire scoring and statistical output should be checked before publication.

Comparison Between Experimental and Control Groups

Measure	Experimental	Control	Mean difference	Test	p-value
Reported knowledge score (pre-test)	15.50 ± 3.20	15.90 ± 3.10	0.40	t=0.40	>0.05
Reported effectiveness score (pre-test)	12.40 ± 2.85	12.70 ± 2.70	0.30	t=0.42	>0.05
Reported post-test knowledge score	2.80 ± 0.48	2.27 ± 0.69	0.53	t=3.46	0.001
Reported post-test effectiveness score	2.75 ± 0.52	1.47 ± 0.51	1.28	t=9.50	<0.001

The source reports no statistically significant difference between groups in the listed pre-test comparisons. For the reported post-test comparisons, statistically significant differences were reported, including t=3.46, p=0.001 for the listed knowledge score and t=9.50, p<0.001 for the listed effectiveness score.

Within-group Comparison

Measure	Group	Pre-test Mean ± SD	Post-test Mean ± SD	Mean difference	Paired t	p-value
Knowledge score	Experimental	15.50 ± 3.20	2.80 ± 0.48	12.70	15.42	<0.001
Knowledge score	Control	15.90 ± 3.10	2.27 ± 0.69	13.63	14.18	<0.001
Effectiveness score	Experimental	12.40 ± 2.85	2.75 ± 0.52	9.65	18.50	<0.0001
Effectiveness score	Control	12.70 ± 2.70	1.47 ± 0.51	11.23	16.94	<0.001

The supplied Table 6 reports statistically significant paired t-test results for both groups and for both sets of reported scores. However, the direction and scale of the reported means are inconsistent with the knowledge-level percentages presented elsewhere in the source. Therefore, these values should be verified from the original dataset before they are used as definitive journal results.

Association with Demographic Variables

In the experimental group, pre-test knowledge was significantly associated with previous knowledge of CPR ($\chi^2=7.50$, p=0.006). Gender, stream of study, language and source of information were reported as not statistically significant at the stated level.

For post-test knowledge in the experimental group, the source reports significant associations with previous CPR knowledge ($\chi^2=7.35$, p=0.007) and source of information ($\chi^2=9.32$, p=0.009). Gender, stream and language were reported as not statistically significant.

In the control group, post-test knowledge was reported to be significantly associated with previous CPR knowledge ($\chi^2=6.48$, $p=0.011$), while gender, stream, language and source of information were reported as not statistically significant.

Discussion

The findings presented in the supplied study indicate an improvement in the proportion of students attaining an adequate level of CPR knowledge after the video-assisted teaching programme in the experimental group. The post-test distribution showed a marked shift toward adequate knowledge compared with the pre-test distribution.

The association findings suggest that previous exposure to CPR information was related to knowledge level in both groups. In the experimental group, source of information was also reported to be associated with post-test knowledge. These findings support the importance of prior exposure and educational resources when planning CPR education for students.

Because the supplied statistical tables contain conflicting score scales and values, the quantitative interpretation of mean differences and t-tests should be confirmed against the original raw dataset before the manuscript is submitted for peer review.

Limitations

The study was conducted in a selected college at Ranchi; therefore, generalization to other student populations should be cautious.

The sample size was limited to 60 students.

The supplied material does not document the complete sampling procedure.

The supplied material does not provide complete details of tool validity and reliability.

Some reported statistical values and score scales in the analysis tables are inconsistent and require verification against the original data.

Implications

The study highlights the potential role of audiovisual teaching methods in CPR education for students. Structured CPR education may be incorporated into student orientation, health education activities and institutional emergency preparedness programmes, subject to appropriate training and institutional protocols.

Conclusion

Based on the reported categorical findings, the video-assisted teaching programme was associated with improved CPR knowledge among students in the experimental group. The proportion of students with adequate knowledge increased substantially after the intervention. Before final journal submission, the original scoring sheet and statistical output should be used to reconcile the inconsistent mean scores, test statistics and knowledge-level tables.

Recommendations

Similar studies may be conducted with larger samples and multiple institutions.

Future studies may assess both CPR knowledge and practical performance using a validated skills assessment tool.

Follow-up assessments may be conducted to determine retention of CPR knowledge and skills.

Video-assisted teaching may be compared with other structured educational approaches