A Study to Assess Knowledge and Attitude of Non-Medical Students Regarding Basic Life Support Using Video Assisted Teaching Techniques

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Abstract: A quasi-experimental study was conducted at a non-medical college in Delhi to assess and compare the effectiveness of video-assisted teaching and simulation techniques on the knowledge and attitude of 95 non-medical students regarding Basic Life Support (BLS). Using purposive sampling, data were collected via a self-structured knowledge questionnaire and Attitude Likert Scale. Pre-test findings revealed average knowledge in most students—89.5% in the video-assisted group and 79.04% in the simulation group—with predominantly neutral attitudes in both groups. Post-test results showed significant improvement: 91.52% of students in the simulation group and 83.07% in the video-assisted group achieved good knowledge, while 100% and 93.72%, respectively, developed positive attitudes. Statistical analysis revealed that simulation was more effective, with a significant mean difference of 9.32 in knowledge and a Z-value of 2.91 (p<0.05). The Z-value for attitude was 1.96, indicating a slight significant difference between the groups. Hence, the study concluded that while both methods improved attitude, simulation was particularly effective in enhancing Basic Life Support knowledge among non-medical students.

INTRODUCTION

Cardiac arrest is an unanticipated loss of heart function in a person who may or may not have been diagnosed with heart disease. It can come on suddenly or in the wake of other symptoms. Blockage are the lead cause for heart attack as it stops blood flow to the heart. A heart attack also refers to necrosis of heart tissue due to the loss of blood supply. Cardiac arrest is caused when the heart's electrical system malfunctions. The heart stops beating properly. The pumping function of heart is arrested, or ceased.[1]

As defined by the American Heart Association and the American College of Cardiology, cardiac arrest is the sudden cessation of cardiac activity so that the victim becomes unresponsive, with no normal breathing and no signs of circulation. If corrective measures are not taken rapidly, this condition progresses to sudden death.[2]

Sudden Cardiac Death (SCD) in Denmark examined individuals in 2016 between aged 1-49 years from 2007 to 2009, revealing an overall sudden cardiac death incidence rate of 8.6 per 100,000 person-years. The incidence increased with age, peaking at 38.5 per 100,000 person-years in the 48-49 years age group. Coronary artery disease (CAD) was the leading cause of death in those aged 36-49 years, while sudden unexplained death was more prevalent in the 1-35 years age group and in children. Notably, 49% of sudden cardiac death in children were linked to inherited cardiac diseases[3].

Cardiac arrest prevalence in India is notably high, influenced by the growing burden of cardiovascular diseases (CVDs) across the country. According to recent studies, cardiovascular diseases, which include cardiac arrest, contribute to a significant portion of mortality, with cardiovascular diseases related deaths accounting for over 25% of all deaths in India. The rising prevalence is linked to factors like hypertension, diabetes, and lifestyle-related risks. Notably, the age-standardized mortality rate for cardiovascular diseases in India is increasing, with varying rates across different regions and populations. Collaborative efforts are underway to address these challenges through improved screening, awareness, and management strategies[4].

Basic Life Support (BLS) is a cornerstone in the care of individuals experiencing cardiac arrest, particularly in out-of-hospital cardiac arrest (OHCA) scenarios. The primary objective in these situations is to significantly increase the rate of bystander Cardio Pulmonary Resuscitation and ensure the rapid delivery of defibrillation, as these actions are critical components of the community Chain of Survival. Despite their importance, only a small fraction of cardiac arrest victims receives Cardio Pulmonary Resuscitation from bystanders. This is often due to several challenges that potential rescuers face, such as the overwhelming sense of panic in emergency situations, the fear of inadvertently causing harm to the victim, and concerns about their ability to perform Cardio Pulmonary Resuscitation correctly. These barriers highlight the need for greater public education and training to empower more individuals to confidently respond in such emergencies.[5]

NEED OF THE STUDY

According to the World Health Organization (WHO), cardiovascular diseases (CVDs) are the leading cause of global mortality, with approximately 17.9 million deaths reported in 2019, making up 32% of all deaths worldwide. A significant portion of these deaths, 85%, were due to heart attacks and strokes. The impact of cardiovascular diseases is especially pronounced in low- and middle-income countries, where more than 75% of these deaths occur. In 2019, cardiovascular diseases also accounted for 38% of the 17 million premature deaths (under age 70 years) from non-communicable diseases. Preventing and managing cardiovascular diseases requires addressing major risk factors such as tobacco use, poor dietary habits, obesity, physical inactivity, excessive alcohol consumption, and air pollution. Early detection is essential for initiating prompt management, which includes lifestyle changes, counseling, and medication. Such proactive measures can significantly improve patient outcomes and mitigate the broader public health impact of cardiovascular diseases.[6]

Basic Life Support encompasses a series of critical resuscitation techniques that can effectively save the lives of individuals experiencing cardiac arrest, respiratory arrest, airway obstruction, or drowning when performed correctly and in a timely manner. The term 'basic' highlights that these life-saving measures can be initiated immediately by any bystander, regardless of their medical background, using no specialized equipment beyond their own hands. This is particularly important in out-of-hospital settings where immediate intervention can be crucial. By initiating Bystander Cardiopulmonary Resuscitation, the likelihood of survival can be increased two to threefold, as it significantly enhances the chances of restoring spontaneous circulation. Early and effective application of Basic Life Support can greatly improve patient outcomes and is a vital component of emergency response in various critical scenarios.[7]

CONCEPTUAL FRAMEWORK

The conceptual framework of the present study is based on General System's Theory which was introduced by Ludwig Von Bertalanffy (1968) with input, process, output and feedback. According to System's Theory, a system is a group of elements that interact with one another in order to achieve the goal. An individual is a system because he/she receives input from the environment. This input when processed provides output[8].

The system is a cyclical nature and continues to be so, as long as the input, process, output and feedback keep interacting. If there are changes in any of the parts, there will be changes in all the parts. Feedback from within the systems or from the environment provides information, which helps the system to determine whether it meets its goal.

The study's objectives were accomplished utilizing quantitative research methodology and a qausi-experimental pre-test and post-test research design. This design was appropriate. Because it assesses the knowledge and attitude of Non-medical students of University of Delhi in Delhi.

The study was conducted at Daulat Ram College, University, Delhi. The participants in this study were NCC student enrolled in a selected Non-medical University. Purposive sampling had been employed as the sampling strategy for this study. This study included 95 participants in total as its sample size. The current study was carried out by the investigator to assess the knowledge and attitude of Non-medical students regarding Basic Life Support

The Objectives of the study were:
1) To assess the level of knowledge among non-medical university students regarding Basic Life Support
2) To assess the level of attitude among non-medical university students regarding Basic Life Support
3) To develop and administer video assisted teaching techniques and simulation on Basic Life Support among non-medical university students
4) To assess the effectiveness of video assisted teaching techniques and simulation on knowledge and attitude among non-medical university students regarding Basic Life Support

RESEARCH METHODOLOGY

The quantitative research approach was considered most appropriate for the present study as it allows for objective measurement and statistical analysis of the changes in knowledge and attitude following the intervention.

A two-group pre-test post-test only research design was adopted to achieve the stated objectives of this study. This design was suitable for assessing the effectiveness of a video-assisted teaching technique on the knowledge and attitude of non-medical students regarding Basic Life Support (BLS). The study was conducted in a selected educational institution, chosen for its accessibility, availability of an adequate number of non-medical students, feasibility for conducting the study, the investigator's familiarity with the setting, and anticipated cooperation from participants.

The study population comprised non-medical students enrolled in the selected institution. A purposive sampling technique was used to select participants, ensuring each student had an equal chance of being included in the study.

The total sample size for this study was 95 participants. A structured questionnaire and likert scale were developed to assess the knowledge and attitude of non-medical students towards Basic Life Support. The tool was developed, validated by experts in the field, and tested for reliability prior to data collection.

ANALYSIS AND INTERPRETATION

Table 1. Comparison of Pre-test and Post Test Knowledge Scores of Experimental Group Regarding Basic Life Support Using Video Assisted Teaching Technique by Computing the Mean, Mean Difference, Standard Deviation and "Z" Test

$n_1=47$

Group	Minimum score	Maximum score	Mean	Standard deviation	Mean difference	"Z" value	Critical 'Z' Value	p Value
Pre-test	9	16	13.04	1.82				
Post-test	17	29	22.36	2.50	9.32	25.66*	1.96	<0.05

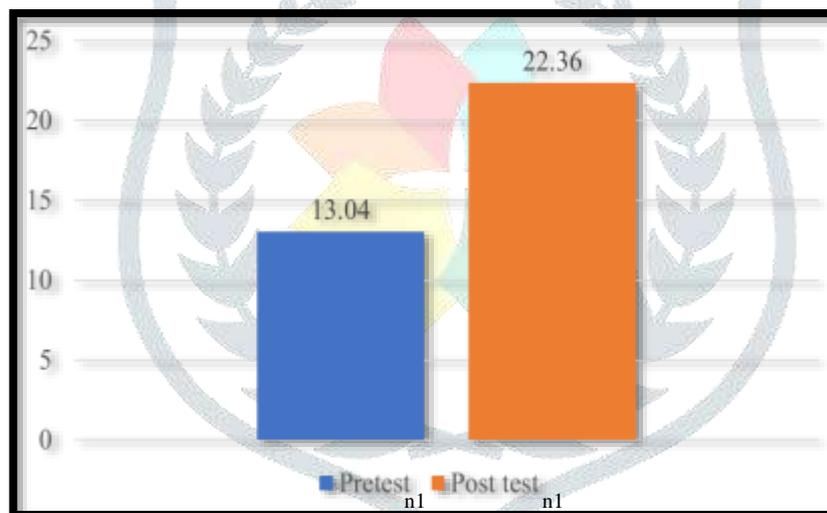**Maximum score = 30, Minimum score =0; *p≤0.05 level of significance**

Figure 1: Bar Graph Depicting the Comparison Between Pre-test and Post-test Mean Knowledge Scores of Experimental Group Regarding Basic Life Support Using Video Assisted Teaching Techniques

Data presented in Table 1 and Figure 1 depicts that:

- The calculated Z value (25.66) is greater than table value 1.96 at $p<0.05$ level of significance which indicates that research **H1 is accepted** and **null hypothesis 1 is rejected**. Hence, Video Assisted Teaching Technique was effective on knowledge regarding Basic Life Support among the students. Here n_1: Experimental group video assisted teaching technique.

Table 2. Comparison of Pre-test and Post Test Attitude Scores of Experimental Group Regarding Basic Life Support Using Video Assisted Teaching Technique by Computing the Mean, Mean Difference, Standard Deviation and "Z" Test

$n_1=47$

Group	Minimum score	Maximum score	Mean	Standard deviation	Mean difference	"Z" value	Critical 'Z' Value	p Value
Pre-test	33	56	43.28	6.53				
					32.66	31.27*	1.96	<0.05
Post-test	67	84	75.94	3.94				

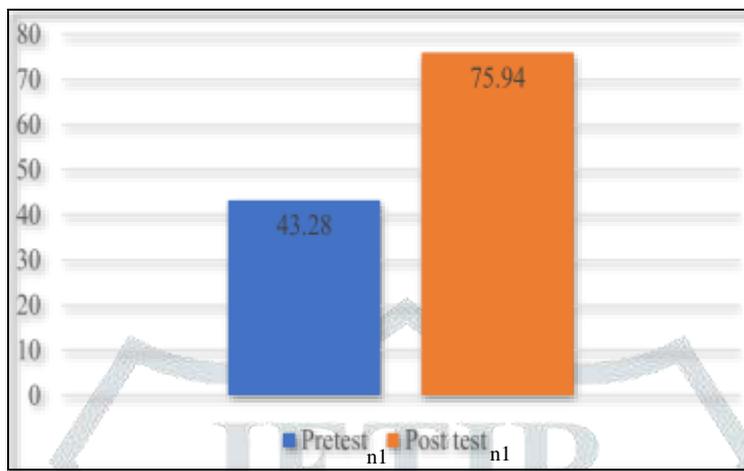**Maximum score = 100, Minimum score =20; *p≤0.05 level of significance**

Figure 2: Bar Graph Depicting the Comparison Between Pre-test and Post-test Mean Attitude Scores of Experimental Group Regarding Basic Life Support Using Video Assisted Teaching

Data presented in Table 2 and Figure 2 depicts that:

- The calculated Z value (31.27) is greater than table value 1.96 at $p<0.05$ level of significance which indicates that research **H2 is accepted and null hypothesis 2 is rejected**. Hence, Video Assisted Teaching Technique was effective on attitude regarding Basic Life Support among the students. Here n_1: Experimental group video assisted teaching technique.

Table 3: Comparison of Pre-test and Post Test Knowledge Scores of Control Group Regarding Basic Life Support Using Simulation by Computing the Mean, Mean Difference, Standard Deviation and "Z" Test

$n_2=48$

Group	Minimum score	Maximum score	Mean	Standard deviation	Mean difference	"Z" value	Critical 'Z' Value	p Value
Pre-test	7	16	12.06	1.89				
Post-test	18	29	23.89	2.63	11.83	24.25*	1.96	<0.05

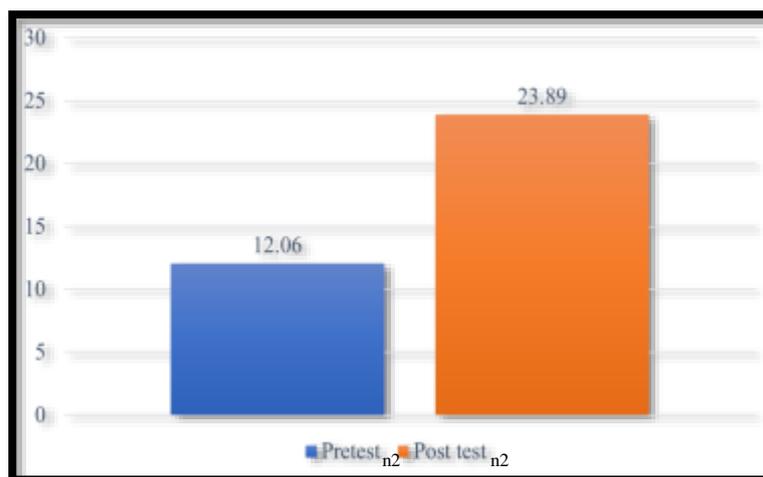**Maximum score = 30, Minimum score =0; *$p \leq 0.05$ level of significance**

Figure 3: Bar Graph Depicting the Comparison between Pre-test and Post-test Mean Knowledge Scores of Control Group Regarding Basic Life Support Using Simulation

Data presented in Table 3 and Figure 3 depicts that:

- The calculated Z value (24.25) is greater than table value 1.96 at $p<0.05$ level of significance which indicates that research **H3 is accepted and null hypothesis 3 is rejected**. Hence, Simulation was effective on knowledge regarding Basic Life Support among the students. Here n_2: Control group using Simulation.

Table 4: Comparison of Pre-test and Post Test Attitude Scores of Control Group Regarding Basic Life Support Using Simulation by Computing the Mean, Mean Difference, Standard Deviation and "Z" Test

$n_2 = 48$

Group	Minimum score	Maximum score	Mean	Standard deviation	Mean difference	"Z" value	Critical 'Z' Value	p Value
Pre-test	33	59	43.19	6.61				
Post-test	73	90	77.60	4.30	34.42	31.17*	1.96	<0.05

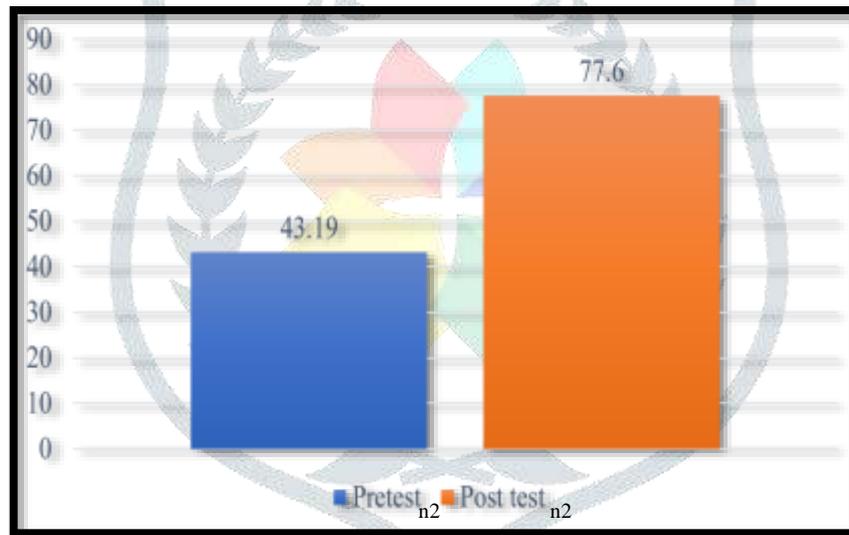**Maximum score = 100; Minimum score =20; *p≤0.05 level of significance**

Figure 4: Bar Graph Depicting the Comparison Between Pre-test and Post-test Mean Attitude Scores of Control Group Regarding Basic Life Support Using Simulation

Data presented in Table 4 and Figure 4 depicts that:

- The calculated Z value (31.17) is greater than table value 1.96 at $p<0.05$ level of significance which indicates that research **H4 is accepted and null hypothesis 4 is rejected**. Hence, Simulation was effective on attitude regarding Basic Life Support among the students. Here n_2: Control group using Simulation

Table 5: Comparison of Post Test Knowledge Scores between Experimental Group and Control Group Regarding Basic Life Support Using Video Assisted Teaching Technique and Simulation by Computing the Mean, Standard Deviation and "Z" Test

$(n_1\ 47+ n_2\ 48) = N=95$

Group	Minimum score	Maximum score	Mean	Standard deviation	"Z" value	Critical 'Z' Value	p Value
Experimental Group	17	29	22.36	2.50			
Control Group	18	29	23.89	2.63	2.91*	1.96	<0.05

Maximum score = 30; Minimum score= 0; *p≤0.05 level of significance
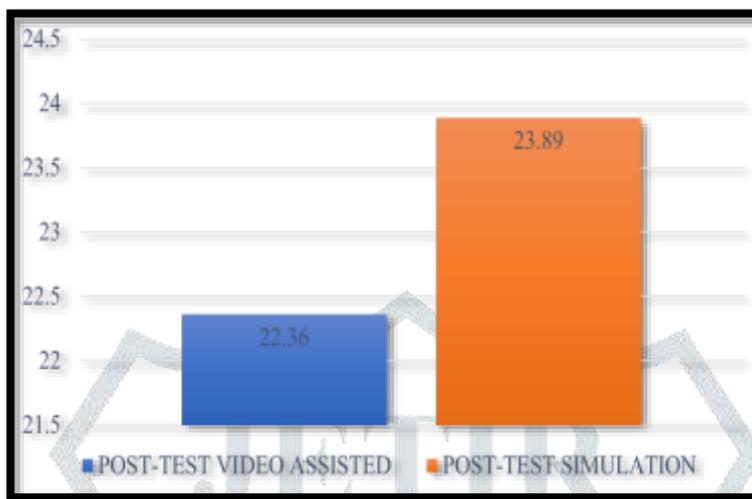
Figure 5: Bar Graph Depicting the Comparison of Post Test Knowledge Scores Between Experimental Group and Control Group Using Video Assisted Teaching and Simulation Regarding Basic Life Support

Data presented in Table 5 and Figure 5 depicts that:

- The calculated Z value (2.91) is more than table value 1.96 at $p<0.05$ level of significance which indicates that research **H5 is accepted and null hypothesis 5 is rejected**. Hence, there was significant difference between the post-test knowledge score between experimental group and control group. Hence, Simulation was more effective. Here n_1: Experimental group video assisted teaching, n_2: Control Group Simulation, N: refers total sample size.

Table 6: Comparison of Post Test Attitude Scores Between Experimental Group and Control Group Regarding Basic Life Support Using Video Assisted Teaching Technique and Simulation by Computing the Mean, Standard Deviation and "Z" Test

$(n_1\ 47+ n_2\ 48) =N=95$

Group	Minimum score	Maximum score	Mean	Standard deviation	"Z" value	Critical 'Z' Value	p Value
Experimental Group	67	84	75.94	3.94			
					1.96*	1.96	<0.05
Control Group	73	90	77.60	4.30			

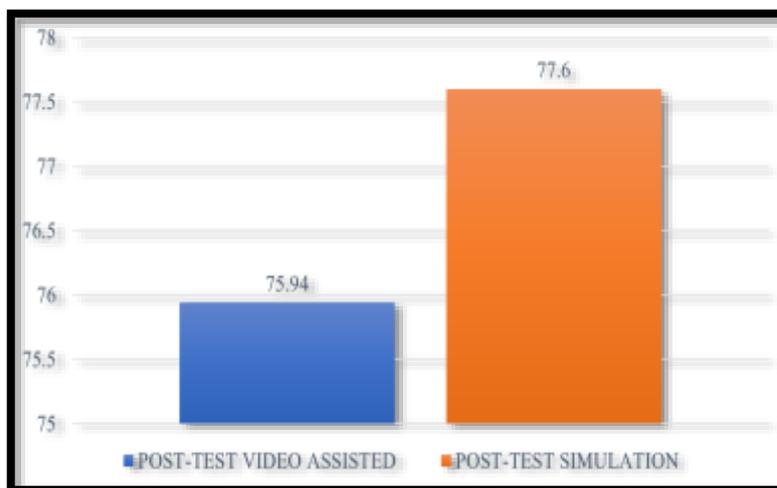**Maximum score = 100; Minimum score =20, *p≤0.05 level of significance**

Figure 6: Bar Graph Depicting the Comparison of Video Assisted Teaching and Simulation Regarding Basic Life Support in Terms of Post Test Attitude Mean Score

Data presented in Table 6 and Figure 6 depicts that:

- The calculated Z value (1.96) is equal to table value 1.96 at p<0.05 level of significance which indicates that research **H6 is accepted and null hypothesis is rejected.** Hence, there was slight significant difference between the post-test attitude score between experimental group and control group. Here n_1: Experimental group video assisted teaching, n_2: Control Group Simulation, N: refers total sample size.

SUMMER OF THE FINDINGS

1. In the Experimental group, most non-medical students (34; 72.3%) were aged 17–19 years, with 13 (27.7%) aged 20–22 years. In the Control group, 29 (60.4%) were aged 17–19 years and 19 (39.6%) were aged 20–22 years.
2. All participants in both groups were female (Experimental: 47; Control: 48), representing 100% of the sample.
3. All students (100%) in both groups were enrolled in the National Cadet Corps (NCC) course.
4. In the Experimental group, 33 (70.2%) reported no family history of cardiovascular disease, while 14 (29.8%) reported a positive history. In the Control group, 39 (81.3%) had no family history, and 9 (18.8%) reported one.
5. Lack of awareness regarding Basic Life Support (BLS) was noted in 36 (76.6%) Experimental group students and 40 (83.3%) Control group students; awareness was present in only 11 (23.4%) and 8 (16.7%) students, respectively.
6. Among students aware of BLS, 7 (63.6%) in the Experimental group had learned via mass media, while 4 (36.4%) learned through peers, family, or neighbors. In contrast, all aware students (8; 100%) in the Control group cited peers, family, or neighbors as their source.
7. None of the students (100% in both groups) had attended any BLS classes in the previous six months.
8. Overall, 87 (91.57%) students had a neutral attitude toward BLS, while 8 (8.42%) expressed a negative attitude; no positive attitudes were reported pre-intervention.
9. In the video-assisted teaching subgroup, pre-test knowledge was predominantly average (42; 89.5%) and below average in 5 (10.6%), with no "good" scores. Post-test, 39 (83.07%) achieved good knowledge and 8 (17.04%) had average knowledge; none scored below average.
10. Pre-test attitude in the video-assisted teaching subgroup was mainly neutral (43; 91.51%) and negative in 4 (8.52%), with no positives. Post-test, 44 (93.72%) had a positive attitude, and 3 (6.39%) remained neutral; no negatives persisted.
11. In the simulation subgroup, pre-test knowledge was average in 38 (79.04%) and below average in 10 (20.80%), with no "good" scores. Post-test, 44 (91.52%) achieved good knowledge, and 4 (8.32%) remained average; none scored below average.
12. Pre-test attitude in the simulation subgroup was neutral in 44 (91.52%) and negative in 4 (8.32%), with no positives. Post-test, all students (48; 100%) demonstrated a positive attitude.
13. The calculated Z value (25.66) is greater than table value 1.96 at p<0.05 level of significance which indicates that research **H1 is accepted and null hypothesis 1 is rejected**. **Hence, Video Assisted Teaching Technique was effective on knowledge regarding Basic Life Support among the students.**
14. The calculated Z value (31.27) is greater than table value 1.96 at p<0.05 level of significance which indicates that research **H2 is accepted and null hypothesis 2 is rejected. Hence, Video Assisted Teaching Technique was effective on attitude regarding Basic Life Support among the students**.
15. The calculated Z value (2.91) is more than table value 1.96 at p<0.05 level of significance which indicates that research **H3 is accepted and null hypothesis 5 is rejected**. Hence, there was significant difference between the post-test knowledge score between experimental group and control group. **Hence, Simulation was more effective**.
16. The calculated Z value (1.96) is equal to table value 1.96 at p<0.05 level of significance which indicates that research **H4 is accepted and null hypothesis is rejected**. **Hence, there was slight significant difference between the post-test attitude score between experimental group and control group.**

CONCLUSION

1. Video-assisted teaching and simulation significantly improved non-medical students' BLS knowledge and attitudes, with simulation yielding the highest knowledge gains.
2. Both methods were equally effective in fostering positive attitudes, with the simulation group achieving 100% positivity.
3. Findings support integrating simulation-based learning into non-medical education to enhance retention and understanding of life-saving skills.

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