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"A Study to Assess the Effectiveness of an Integrated Teaching Program on Knowledge Regarding Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) Among Nursing Officers"

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Abstract

Background: Sudden cardiac arrest is one of the leading causes of inpatient mortality worldwide. Nursing officers serve as the immediate responders during life-threatening emergencies and therefore must be competent in Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS). Evidence suggests that Integrated Teaching Programs (ITP)—combining lectures, demonstrations, audiovisual aids, and hands-on practice—are more effective than traditional teaching alone in improving emergency. **Methods:** A quantitative pre-experimental one-group pre-test post-test design was used among 40 nursing officers selected through purposive sampling. A structured knowledge questionnaire was administered before and after the ITP, which included lectures, demonstrations, video sessions, and return demonstrations. Data were analyzed using descriptive statistics, paired t-test, and chi-square test. **Results:** In the pre-test, 35% of participants had inadequate knowledge and 65% had moderate knowledge. After the intervention, 82.5% demonstrated adequate knowledge, while 17.5% had moderate knowledge. The mean knowledge score increased from 14.2 to 24.9, with a significant paired t-value of 18.62 ($p < 0.001$). No demographic variable showed significant association with post-test scores. **Conclusion:** The Integrated Teaching Program was highly effective in enhancing knowledge regarding BLS and ACLS among nursing officers. Regular CPR training and competency-based reinforcement programs are essential to strengthen emergency response preparedness in clinical settings.

Keywords- Effectiveness, Assess, Knowledge, BLS, ACLS.

Introduction

Cardiopulmonary arrest remains a major cause of preventable mortality in both hospital and community settings. The survival rate of cardiac arrest largely depends on the immediate initiation of high-quality CPR and rapid advanced intervention. Nursing

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officers, who are often the first to identify and respond to deteriorating patients, must demonstrate proficiency in BLS and ACLS protocols.

Despite continuous revision of international guidelines by the American Heart Association (AHA), studies indicate that knowledge and skill retention in CPR declines within months if not reinforced. Traditional teaching methods alone are insufficient; therefore, Integrated Teaching Programs that unite theory with demonstration, audiovisual teaching, simulation practice, and supervised return demonstration offer a more comprehensive learning environment.

This study was undertaken to evaluate the effectiveness of such an Integrated Teaching Program in improving BLS and ACLS knowledge among nursing officers in a tertiary care hospital.

Problem Statement

"A Study to Assess the Effectiveness of an Integrated Teaching Program on Knowledge Regarding Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) Among Nursing Officers"

Objectives

1. To assess the baseline knowledge regarding BLS and ACLS among nursing officers.
2. To evaluate the effectiveness of an Integrated Teaching Program on post-test knowledge levels.
3. To determine the association between post-test knowledge scores and selected demographic variables.

Research Methodology

A quantitative research approach with a pre-experimental one-group pre-test post-test design was adopted to evaluate the effectiveness of an Integrated Teaching Program among 40 nursing officers working in a selected tertiary care hospital. Participants were recruited using a non-probability purposive sampling technique based

on availability and willingness to participate. A validated structured knowledge questionnaire comprising 40 multiple-choice items related to BLS and an ACLS guideline (AHA 2020 updates) was used for data collection. The pre-test was administered on Day 1, followed by the Integrated Teaching Program, which included a 60-minute lecture session, demonstration of CPR and defibrillator use, video-assisted teaching, and supervised return demonstration. After seven days, a post-test was conducted using the same tool to assess knowledge retention. Data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics such as paired t-test to assess the effectiveness of the intervention, and chi-square test to examine the association between post-test scores and demographic variables.

Results

Table 1: Distribution of Participants According to Demographic Variables (N=40)

S.N.	Variable	Category	Frequency (n)	Percentage (%)
1	**Age (years)**			
	A	21–30	18	45%
	B	31–40	14	35%
	C	>40	8	20%
2	**Gender**			
	A	Male	12	30%
	B	Female	28	70%
3	**Years of Experience**			
	A	1–5 years	15	37.50%
	B	6–10 years	13	32.50%
	C	>10 years	12	30%
4	**Previous CPR Training**			
	A	Yes	10	25%
	B	No	30	75%

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Table 1. represents the demographic profile of the 40 nursing officers revealed that nearly half of the participants (45%) were in the age group of 21–30 years, followed by 35% in the 31–40 years range, and 20% above 40 years. The majority were females (70%), while males accounted for 30%. Regarding professional experience, 37.5% had 1–5 years of experience, 32.5% had 6–10 years, and 30% had more than 10 years of experience, indicating a balanced distribution across experience levels. Only one-fourth of the participants (25%) reported having undergone previous CPR training, whereas the remaining 75% had no prior exposure, highlighting the need for structured educational interventions such as the Integrated Teaching Program.

Table 2: Pre-test and Post-test Knowledge Levels (N=40)

Knowledge Level	Pre-test n (%)	Post-test n (%)
Inadequate	14 (35%)	0 (0%)
Moderate	26 (65%)	7 (17.5%)
Adequate	0 (0%)	33 (82.5%)

Table 2. Represents the distribution of knowledge levels among nursing officers showed a marked improvement following the Integrated Teaching Program on BLS and ACLS. In the pre-test, 35% of participant's demonstrated inadequate knowledge and 65% had moderate knowledge, with none achieving an adequate level. After the intervention, no participants remained in the inadequate category, while the proportion with moderate knowledge decreased to 17.5%, and a substantial 82.5% attained adequate knowledge. This shift clearly indicates the strong effectiveness of the teaching program in enhancing participants' understanding of life-support procedures.

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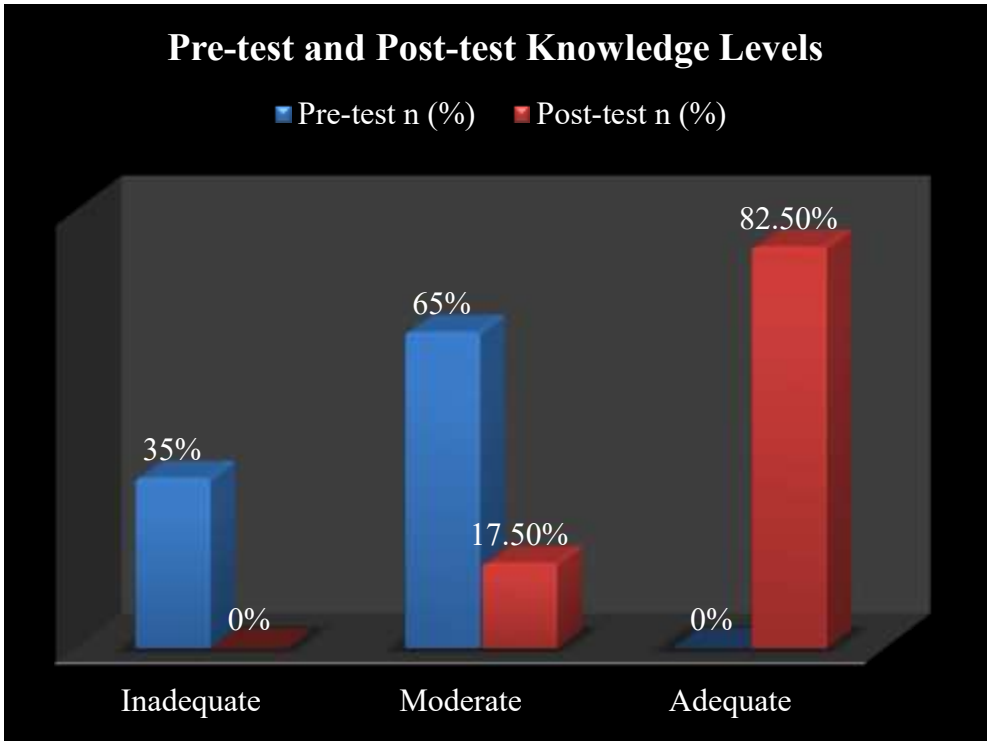

Figure 1. Comparison of Knowledge Levels Between Pre-test and Post-test

Fig.-1. the comparison of knowledge levels between the pre-test and post-test revealed a substantial improvement following the Integrated Teaching Program. In the pre-test, 35% of nursing officers demonstrated inadequate knowledge, while 65% had moderate knowledge and none achieved an adequate level. However, the post-test results showed a marked shift, with 82.5% of participants attaining an adequate level of knowledge and 17.5% retaining moderate knowledge, while no participants remained in the inadequate category. This progression clearly indicates the positive impact of the Integrated Teaching Program in enhancing the cognitive competencies of nursing officers regarding BLS and ACLS.

Table 3: Comparison of Mean Knowledge Scores (Paired t-test)

Test	Mean	SD	Mean Difference	t-value	p-value
Pre-test	14.2	3.4	**10.7**	**18.62**	**< 0.001***

Post-test	24.9	4.1			

Table 3. Represents the comparison of mean knowledge scores of nursing officers regarding Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) before and after the Integrated Teaching Program. The pre-test mean score was 14.2 ± 3.4, while the post-test mean score significantly increased to 24.9 ± 4.1. The mean difference of 10.7 reflects a substantial improvement in knowledge following the intervention. The calculated paired *t*-value of 18.62 with a *p*-value < 0.001* indicates that the increase in post-test scores was statistically highly significant, confirming the effectiveness of the Integrated Teaching Program.

Association between Post-test Knowledge and Demographic Variables

The chi-square (χ^2) test results used to examine the association between selected demographic variables and the pre-test knowledge scores of nursing officers regarding BLS and ACLS. The demographic variables included age, gender, years of experience, and previous CPR training. The χ^2 values for age (2.11, df = 2), gender (1.84, df = 1), experience (2.98, df = 2), and previous CPR training (3.41, df = 1) were all found to be statistically non-significant, with p-values greater than 0.05. This indicates that none of the demographic factors had a significant association with the improvement in pre-test knowledge. Regardless of age group, gender, years of experience, or prior CPR training status, all participants benefitted similarly from the Integrated Teaching Program. The remark "NS" (Not Significant) confirms that the teaching intervention was equally effective across all demographic subgroups.

Discussion

The present study demonstrated that the Integrated Teaching Program (ITP) produced a significant improvement in the knowledge of nursing officers regarding Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS). The post-test mean score (24.9) was substantially higher than the pre-test mean score (14.2), indicating that the comprehensive teaching intervention—combining lectures, demonstrations, and video-assisted learning—was effective in enhancing CPR-related

knowledge. This finding aligns with numerous national and international studies supporting multimodal teaching strategies for life-saving skills.

A similar study by Raju et al. (2021) found that a structured BLS training program significantly improved knowledge and skills among nursing staff, with post-test scores showing marked improvement compared to baseline. Their study emphasized that repeated exposure to hands-on training improves retention, which is consistent with the current study's outcome. Likewise, Sharma & Thomas (2020) reported that an integrated teaching module combining demonstration and simulation increased competency levels among nursing students in emergency care. The authors highlighted that active learning strategies such as return demonstration and supervised practice are more effective than lecture-only approaches.

Further supporting evidence comes from Mohaissen (2017), who reported that healthcare providers' CPR knowledge improved significantly after receiving structured ACLS and BLS training. The study emphasized the importance of regular refresher courses due to rapid skill decay, reinforcing the necessity of periodic updates like the ITP employed in the present study. In addition, Nambiar et al. (2019) found that nurses who received a combined BLS–ACLS training package demonstrated better preparedness for cardiac emergencies than those who received traditional training.

The current study also found no significant association between demographic variables (age, gender, years of experience, prior CPR training) and post-test knowledge scores, indicating that the ITP was effective across all subgroups. This observation resonates with the findings of Kumar et al. (2018), who reported that CPR training interventions significantly improved knowledge irrespective of participants' demographic characteristics. This suggests that high-quality teaching programs benefit all learners, regardless of baseline differences.

Overall, the findings reinforce prior research and highlight the effectiveness of integrated teaching strategies in improving CPR knowledge among nursing officers. Regular incorporation of such programs, supported by simulation and refresher sessions,

is essential to maintain competency and ultimately enhance patient safety during cardiac emergencies.

Conclusion

The Integrated Teaching Program significantly improved the knowledge of nursing officers regarding BLS and ACLS. The findings suggest that combining lecture, demonstration, audiovisual aids, and practical sessions is an effective method for CPR training. To ensure sustained knowledge and enhanced patient survival rates, hospitals should integrate regular refresher courses, simulation-based practice, and mandatory CPR certification updates for all nursing staff.

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