

Role of Structured Orientation Program to Increase the Awareness of BLS in Health Care Providers. A Cross Sectional Study

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Abstract

Background: Basic Life Support (BLS) is a life-saving procedure which can increase the chances of survival after cardiac arrest. But poor knowledge and awareness of BLS is still challenging. The objective of this study was to assess the efficacy of a structured orientation program to increase the awareness and knowledge of BLS among healthcare providers of a Tertiary care teaching hospital. **Material and Methods:** A cross sectional observational study was done in the Department of Anaesthesiology of tertiary care teaching hospital from January to April 2025. Attending and completing a structured BLS training program were included in the health care providers attended. Participants were surveyed before and after training using a 15-question multiple-choice test that was created based on the American Heart Association (AHA) 2020 BLS guidelines. The intervention included a 90-minute audiovisual presentation followed by a 90-minute hands-on training session on adult and paediatric CPR, as well as how to use an automated external defibrillator (AED). Student's t-test was used to compare pre and post test scores. **Results:** A total of 700 healthcare providers were analysed. The mean age was 41.14 ± 9.17 years, and 58% were male. The mean knowledge score increased significantly from 7.36 ± 2.67 before training to 12.02 ± 2.27 after training, with a mean improvement of 4.66 points (95% CI: 4.48–4.85; $p < 0.001$). Knowledge improvement was observed across all professional categories. No significant differences were found based on gender or age group, whereas differences among professional designations were significant ($p = 0.006$). Participant feedback indicated high satisfaction with the training. **Conclusion:** Structured BLS orientation programs significantly improve BLS knowledge and awareness among healthcare providers.

Keywords: Basic Life Support, Cardiopulmonary Resuscitation, Healthcare Providers, Training Program, Knowledge Assessment.

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INTRODUCTION

Cardiovascular diseases are still playing a significant role in deaths across the globe and form a significant percentage of deaths globally. This topic of sudden cardiac death is also of concern in recent years especially since the COVID-19 pandemic, and this accounts for a large proportion of deaths.^[1,2]

Basic life support (BLS) is the first course of emergency treatment that can be administered to a person who is having cardiac arrest, respiratory arrest or trouble breathing. Effective response to an emergency situation includes early recognition, rapid activation of emergency medical services, initiation of good cardiopulmonary resuscitation (CPR) and timely defibrillation BLS.^[3-6] These interventions allow to maintain vital organ perfusion until the medical interventions are implemented.

Additionally, the availability of becomes and greatly increases chances of survival.

There are times when the healthcare professional is faced with emergency situations both in clinical practice where they are expected to respond in a quick and suitable manner. Resuscitative efforts may need to be taken by nurses, doctors, students, and allied health professionals in inpatient wards, outpatient areas, emergency departments and in the

community. Thus, sufficient knowledge and skills with BLS are vital to patient safety and clinical success.^[6]

While it is known that resuscitation training is important, several studies have reported that it Poor knowledge and skills related to BLS by health care workers.^[1,4,8] Limited exposure to some of these gaps in knowledge may be due to: In addition, some people may not be comfortable with CPR and will not want to provide it.

Some sketchy emergency responders may be reluctant to take lifesaving actions during emergencies.^[8]

Learning that involves a mix of theory instruction and hands-on practice has been proven to increase learning and retention of resuscitation skills. Participants acquire cognitive knowledge, as well as psychomotor skills, through simulation, presentations by

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the trainer, audiovisual presentations and guided practice sessions.

These types of strategies are becoming more common as a means of incorporating competence in BLS procedures.^[2,7]

The healthcare training sector to boost the capability of healthcare providers to prepare for emergencies.

Evaluation of BLS awareness and BLS training outcomes is essential to ascertain the educational needs and keep healthcare workers up-to-date on current resuscitation guidelines. Assessing the effectiveness of structured training programs can provide valuable information for planning future educational interventions and improving institutional preparedness for medical emergencies.

Therefore, the present study was undertaken to evaluate the effectiveness of a structured orientation program in improving awareness and knowledge of Basic Life Support among healthcare providers among healthcare providers working at a tertiary care teaching hospital.

MATERIALS AND METHODS

Source of Data: All healthcare providers who attended and successfully completed the Basic Life Support (BLS) training program conducted by the Department of Anaesthesia, at a tertiary teaching hospital between January 2025 and April 2025 were included in the study.

Study Design: Cross-sectional observational study.

Study Period: January 2025 to April 2025.

Methodology

The study was conducted after obtaining scientific and ethical clearance from the Institutional Ethics Committee.

Before the commencement of the training program, participants were administered a pre-test comprising 15 multiple-choice questions based on the American Heart Association (AHA) 2020 Basic Life Support guidelines. The questionnaire was displayed using a PowerPoint presentation, and participants were asked to record their responses individually.

Following the pre-test, an introductory session was conducted by experienced anaesthesiologists trained in BLS instruction. This was followed by a 90-minute lecture on the latest AHA 2020 BLS guidelines using audiovisual teaching aids.

After completion of the lecture, participants were divided into four subgroups for hands-on skills training. Practical sessions were conducted at four skill stations: adult CPR (chest compressions and ventilation), paediatric CPR (chest compressions and ventilation), choking management, and automated external defibrillator (AED) use. Training was conducted using CPR mannequins and followed Peyton's four-step approach. Each participant underwent approximately 90 minutes of hands-on training.

At the end of the training program, participants completed a post-test consisting of the same 15 multiple-choice questions administered before the training session. One mark was awarded for each correct response. Pre-test and post-test scores were compared to evaluate the effectiveness of the structured BLS training program in improving awareness and knowledge of Basic Life Support among healthcare

providers. At the end of the session QR code was displayed on the screen to review the training program from which the satisfaction level among the participants was assessed.

Data analysis: Data written on paper was entered into the excel sheet manually including name, age, sex, designation, pre test and post test score. SPSS version 20 was used for data analysis. The demographic data described by using descriptive statistics such as mean, standard deviation, and percentages. Student T-Test was used to compare pre and post test assessment scores. All tests were conducted at the 0.05 level of statistical significance.

RESULTS

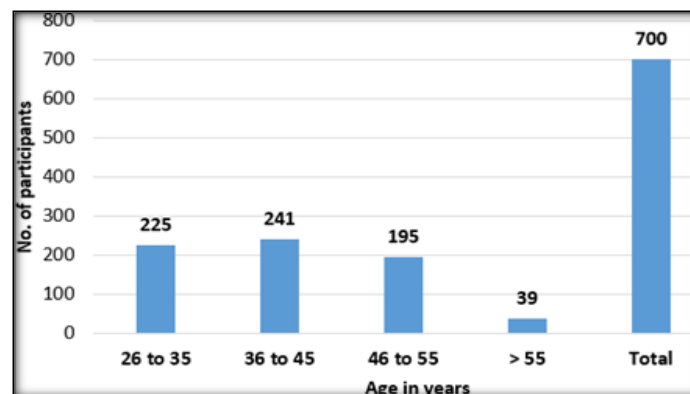
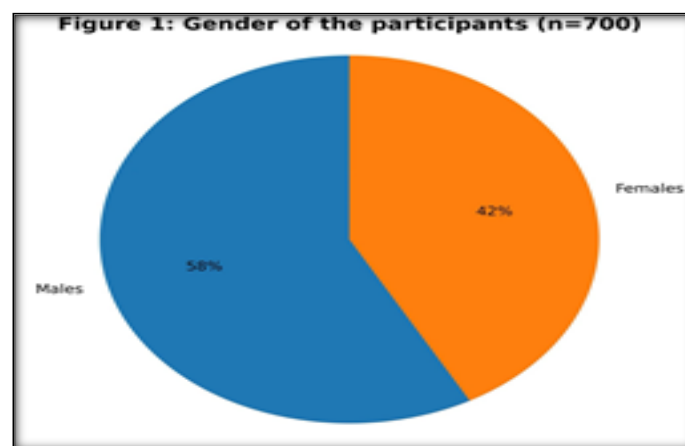


Figure 2: Age distribution of the participants (n= 700)

Mean age: 41.14 ± 9.17 years Minimum age: 26 years Maximum age: 57 years.

Demographic Characteristics: Between January 2025 and April 2025, a total of 726 healthcare providers attended the Basic Life Support (BLS) training program. Of these, 700 participants were included in the final analysis. Among the study participants, 406 (58%) were males and 294 (42%) were females.

The majority of participants were Nursing Officers (48.6%), followed by Nursing Students (23.0%), Nursing Orderlies (13.3%), Senior Nursing Officers (11.1%), MBBS students (1.3%), Faculty members (0.7%), and others, including security personnel and office staff (1.9%). The distribution of participants according to designation is presented in [Table 1].

The age distribution of the participants is shown in [Figure 2]. The mean age of the study population was 41.14 ± 9.17 years.

Table 1: Designation of participants (n= 700)

Designation	Frequency	Percent
Nursing Officer	340	48.6
Senior Nursing Officer	78	11.1
Nursing Student	161	23.0
MBBS student	9	1.3
Nursing Orderly	93	13.3
Faculty	5	.7
Others	13	1.9
Total	700	100.0

Table 2: Comparison of overall pre-test and post-test scores

Variable	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Difference (95% CI)	t	p
Knowledge score of participants	7.36 $\pm$ 2.67	12.02 $\pm$ 2.27	4.66 (4.48–4.85)	48.73	<0.001*

*statistically significant

Table 3: Comparison of improvement in scores among different categories

Variable	Category	n	Improvement in scores (Mean $\pm$ SD)	t/ ANOVA (F)	p
1. Gender	Male	640	4.6 $\pm$ 2.5	t = -1.079	0.281
	Female	60	5 $\pm$ 2.4		
2. Designation	Nursing Officer	341	4.31 $\pm$ 2.48	F = 3.056	0.006*
	Senior Nursing Officer	78	4.97 $\pm$ 2.47		
	Nursing Student	161	4.78 $\pm$ 2.47		
	MBBS student	9	5 $\pm$ 1.94		
	Nursing Orderly	93	5.38 $\pm$ 2.55		
	Faculty	5	3.8 $\pm$ 2.49		
	Others	13	5.62 $\pm$ 2.43		
3. Age group (in years)	26 to 35	225		F = 0.824	0.481
	36 to 45	241			
	46 to 55	195			
	>55	39			

DISCUSSION

Good cardiopulmonary resuscitation (CPR) skills and Basic Life Support (BLS) competencies are essential to successful rescue from cardiac arrest and other life-threatening emergencies among healthcare providers. This present study aimed to assess the effect of a structured BLS orientation programme on the healthcare providers knowledge and awareness working in a tertiary care teaching hospital. Results showed that after the training program, there was a significant increase in knowledge about BLS among the participants, which indicated that structured education could be effective in improving participants' BLS awareness.

In the present study, the mean pre-test score was 7.36 $\pm$ 2.67, which increased significantly to 12.02 $\pm$ 2.27 after the training program, with a mean improvement of 4.66 points (95% CI: 4.48–4.85, p < 0.001). The questions that are used are written in Annexure 1. This marked a significant jump, indicating a lack of knowledge about BLS by healthcare providers even with providing patient care and structured training was able to help bridge this knowledge gap. This has been the case in past studies 1,2 that implemented educational programs based on the American Heart Association (AHA) recommendations and found great improvements in the knowledge of CPR and BLS among healthcare workers, nursing staff and medical students.

Our study showed the baseline level of knowledge to be deficient, consistent with previous studies in India that identified healthcare professionals to have low levels of awareness and practical knowledge of CPR 4,8,9. This may be due to frequent changes in resuscitation guidelines, and a

lack of facilities for formal training. In our study, the marked improvement after training has been found and it shows significance, thus regular orientation training and refresher training is important to keep competency up to mark lifesaving skills.

More than 95% of the subjects of the present study consist of nursing officers, senior nursing officers, students and nursing orderlies. These staff members are often the first persons on the scene in hospital environments making BLS knowledge have direct implications for patient safety and emergency preparedness. The positive overall results for all professional groups suggest that this training program was successful regardless of the participants' education or clinical status.

The gender analysis did not find statistically significant difference between the knowledge gained by both genders (p = 0.281). This finding indicates that the orientation programme had a similar effect on the two genders.

In the present study, age had no significant effect on the knowledge improvement (p = 0.481) indicating that age was not a factor that affected the performance of the training program for participants. This finding would help make it easier to establish institution-level BLS training programs, regardless of age, and support the need for ongoing medical education throughout professional careers.

Upon comparing the improvement in knowledge scores by professional designation by analysis, there was a statistically significant difference among the different groups (table 3, p = 0.006). However, the post test scores of all groups of subjects proved to be significantly higher after the structured BLS training program. All nursing officers, senior nursing officers, nursing students, MBBS students,

The training intervention positively impacted the knowledge of nursing orderlies, faculty, and hospital staff of various roles, demonstrating its effectiveness in improving knowledge across different healthcare professions. The biggest improvements were seen with nursing orderlies and other support staff, which may be attributed to their limited knowledge and openness to learning. While faculty members experienced comparatively less score improvement, this could be attributed to their relatively higher background knowledge of resuscitation practices. The results of these studies indicate that structured BLS orientation programs may be beneficial for healthcare personnel regardless of their professional position or education.

Participants at the training session were asked to give their feedback about the BLS orientation program using QR code-based survey at the end of the training session. 578 people responded to the feedback. The overall responses were very positive with majority of the respondents scoring the program as "Excellent" or "Very Good" in various domains (Annexure 2). For the professionalism of the facilitator, 382 (66.1%) rated it excellent and 158 (27.3%) rated it very good. Likewise, 390 (67.5%) participants gave excellent ratings and 155 (26.8%) gave a very good rating to the knowledge of the facilitator. 343 (59.3%) participants rated the quality of educational content very highly and 185 (32.0%) rated it extremely highly. After the session, 277 (47.9%) participants said they had an excellent understanding of BLS; 42.7% (247) said they knew it very well. In addition, 567 participants (98.1%) agreed that sufficient hands on training time was allocated, and 566 participants (97.9%) agreed that the assessment was useful. Some of the proposed recommendations were to organise more such trainings, give more time for practical implementation and demonstrations, and organise meet-up sessions in the future for such practices.

The good results of this training can be explained by its extensive design, which included didactic lectures and audiovisual learning and hands-on skill stations with the use of Peyton's four-step teaching method. Interactive skill-based learning has been found to enhance knowledge of resuscitation concepts over lecture based teaching alone and retention is enhanced. The significant improvement noticed in the post-test scores may have been a result of the practical sessions on Adult C.P.R., Paediatric C.P.R., Choking Management, and AED use.

The large sample size of 700 health care providers is a strong point of this study and leads to more realistic conclusions about the awareness of BLS among health care workers in a tertiary care facility. But there are some restrictions to be noted. This study measured knowledge acquisition immediately after the training, and knowledge retention and practical skills were not assessed. Furthermore, this questionnaire was administered for pre-test and post-test, which could have caused a testing effect. Further research should focus on retention and BLS knowledge as well as measure skills in a practical setting using ASA scores.

The present study has shown that overall, there is an enhanced awareness and knowledge of BLS among health

care providers following a structured BLS orientation programme. Through regular and compulsory BLS training sessions, it may be possible to keep BLS skills at a competent level, build confidence in dealing with cardiac arrest, and ultimately enhance the outcomes of the patients.

CONCLUSION

Structured BLS orientation program is effective to enhance the knowledge and awareness of Basic Life Support in healthcare providers and was positively associated with high level of satisfaction. There should be regular training and periodic refresher courses as part of institutional training to maintain the patient's resuscitation competence on emergency patient care.

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Conflicts of interest

There are no conflicts of interest.

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