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## Assessment of awareness about BLS among college going students and effectiveness of BLS training

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### Abstract

**Introduction:** Basic life support includes series of techniques in chain of survival, provided to patients during cardiopulmonary arrest. All these techniques are focused on helping patients to sustain life until more precise medical treatment can begin. Proper training is a prerequisite and only those who have basic knowledge and training in BLS can provide CPR more effectively. Creating awareness, training and sensitizing common people for OHCA is the need of hour.

**Aim and Objectives:** To assess interest and background knowledge about BLS, to evaluate effectiveness of hands-on BLS training and feedback analysis among students of different educational background.

**Methodology:** This was a cross sectional study carried out in colleges during free BLS training camps. Participation was on voluntary basis, routine working days were selected, a pretest followed by brief introduction and 3 hours of video-based demonstration, hands on training of hands only CPR for adult, child & infant, and relieving of choking was conducted. After the training post-test and feedback was taken.

**Result:** It was observed that students from medical profession were most interested for the workshop with 100% attendance. There was a statistically significant increase in post-workshop mean scores for all the study groups compared to pretest scores. 94% of the students said they think BLS training is life saving and 77% of the students gave preference of regional language over English as a medium of course.

**Conclusion:** BLS training is useful for all the college going students and improves their knowledge. Students are interested and know the importance of the training and would prefer regional language over English for training.

**Keywords:** awareness, bls, college students, cpr, knowledge, language

### Introduction

Over 700,000 cardiac arrests occur every year only in Europe and about 80% of these occur at home. In India, SCD rate in those >35 years of age was estimated at 39.7/100,000 with male/female ratio of 4.6 [1]. Various studies using questionnaire and verbal autopsies have reported SCD as the contributor of overall mortality in 10.3% to 17% of the patients [2, 3]. Incidence of out-of-hospital cardiac arrest (OHCA) in developed countries is up to 200 per 100,000 persons per year [4]. Low survival rate has been observed for OHCA for non-traumatic arrest patients and a 100% mortality rate in traumatic arrests [5]. Bystander-initiated CPR is associated with greater likelihood of survival with favorable neurological outcome in OHCA [6, 7]. Thus, a BLS trained bystander can play a vital role in improving the outcome in OHCA. However, bystander initiated CPR amounts less than 50 percent of witnessed OHCA cases, and lack of training being the most common cause [4]. Less than 1% of general population in UK knows how to assess and manage someone who has collapsed [8]. The situation in a developing country like India is much poor owing to poor literacy and ignorance about health.

Basic life support includes series of techniques in chain of survival, provided to patients during cardiopulmonary arrest. All these techniques are focused on helping patients to sustain life until more precise medical treatment can begin. BLS does not include extensive medical supervision/ treatment/ invasive procedures or drugs, making it possible for a common people to provide it, but proper training is a prerequisite and only those who have basic knowledge and training in BLS can provide CPR more effectively. Creating awareness, training and sensitizing common people for OHCA is the need of hour.

Following study was conducted to assess interest and background knowledge about BLS,

willingness to pay for BLS training and evaluate results of hands-on BLS training in educated class of rural population of Maharashtra.

### Aim and Objectives

To assess interest and background knowledge about BLS, to evaluate effectiveness of hands-on BLS training and feedback analysis among students of different educational background.

### Methodology

This was a cross sectional study carried out in the month of march 2017 at Pravara Public School, Arts-Science & Commerce College, Nursing College in Loni, Maharashtra after obtaining ethical committee clearance from Pravara Institute of Medical Sciences (PIMS), Loni. Free BLS training camps were organized at the mentioned places by Department of Anesthesiology and Critical Care, PIMS Loni. The camp was conducted in a span of two days. Information regarding the same was conveyed to all students through proper channel 10 days prior to the camp. Participation was on voluntary basis, routine working days were selected so that students did not have to compromise on holidays, and the time schedule was adjusted to complete the camp within the working hours of school / college. All

these arrangements were made to assess interest level of students.

All participants were put through a Pretest (a one best type MCQs test containing 10 questions with one mark each), of 10 marks to assess their background knowledge about BLS. A brief introduction (10 minutes) of course objectives and terminology of the subject was conducted for all participants. This was followed by a 3 hours of video based demonstration, hands on training of hands only CPR for adult, child & infant, and relieving of choking was also demonstrated in small groups of 6-8 students using resuscitation manikin Little Anne (Laerdal). CPR skills were taught by AHA instructors individually to each participant according to American Heart Association Guidelines 2015. All participants were allowed to do hands on practice till their satisfaction and their doubts cleared by the instructors. After the training, cognitive domain of all participants was assessed using test that comprised the same questions of pretest.

After completion of the camp we took feedback from participants using a form containing 5 questions of yes/no format.

### Observation and Results

**Table 1:** Assessment of interest level in BLS

Educational Background	Total Attendance on day of camp			Interested in BLS Training Camp			% Participation		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
High School	64	47	111	49	36	85	75.38	76.59	76.57
Undergraduates	77	59	136	38	33	71	49.35	55.93	60.16
Post-graduates	61	33	94	31	18	49	50.81	54.54	52.12
Nursing Students (Undergraduates)	43	41	84	43	41	84	100.00	100.00	100.00
Total	245	180	425	161	128	289	65.71	71.11	68.00

It was observed that students from medical profession were most interested for the workshop with 100% attendance.

**Table 2:** Pretest and post-workshop test Evaluation

Educational Background	Pretest (Mean $\pm$ SD)	Post-workshop test (Mean $\pm$ SD)	P Value
High School	3.97 $\pm$ 1.26	7.06 $\pm$ 1.98	P < 0.05
Undergraduates	4.81 $\pm$ 2.01	7.94 $\pm$ 2.11	P < 0.05
Postgraduates	4.67 $\pm$ 1.86	7.43 $\pm$ 1.78	P < 0.05
Nursing Students (Undergraduates)	6.11 $\pm$ 2.03	9.16 $\pm$ 1.16	P < 0.05

After applying one-way ANOVA, no statistically significant difference ( $p > 0.05$ ) was observed in mean pretest scores between high school, undergraduates and post-graduates. Mean pretest score was observed highest in nursing students with mean of 6.11 and the difference was statistically significant ( $p < 0.05$ ) compared to other groups.

There was statistically significant increase in post-workshop mean scores for all the study groups compared to pretest scores.

On applying one-way ANOVA, mean score for high school, undergraduate and post-graduate was above 7 and were comparable in all these groups. Post-workshop mean score for nursing students was highest with mean of 9.16 and the difference was statistically significant compared to other groups.

On analyzing the feedback of the students, 94% of the students said they think BLS training is lifesaving. 71% said

their school/ college should have such kind of training regularly. 76% of the students gave feedback that the training was useful. Only 33% of the students showed their willingness to pay for such kind of course. 77% of the students gave preference of regional language over English as a medium of course. Overall feedback from students was that they were satisfied with the workshop.

### Discussion

In spite of many advances in prevention, sudden cardiac arrest remains leading cause of death. Seventy percent of out of hospital cardiac arrest occurs in the home, 50% of them are unwitnessed and outcome is poor. Only 10% of adult patients with non-traumatic cardiac arrest who are treated by emergency medical services (EMS) survive to hospital discharge<sup>[9]</sup>. Training in Basic life support is very useful not only for doctors and staff working in a hospital setup and those involved in management of critically ill patients but also to each and every individual. It has been found that activation of EMS and early initiation of CPR even by bystander improves the patient outcome significantly<sup>[10]</sup>. This requires basic training. In our study it was observed that students from medical profession were most interested for the workshop as they know its importance and is part of curriculum and need to know as professionals. Rest of the students need to be sensitized about the importance of the training. Similar finding was found in study conducted by Kuramoto N *et al.* in which it was determined that the ratio of the bystanders desire to

apply CPR was high in individuals with a high level of education and individuals who work in offices or jobs in which such skills are required<sup>[11]</sup>.

In our study pretest score was better in students from medical field as they have some knowledge about BLS. There was significant increase in post-test scores in all participants. Students from medical field had post-test score around 92%, which was significantly high as compared to other students. The course not only increases knowledge but also psychomotor skills. It has been found in multiple studies that this course improves knowledge and skills<sup>[12-15]</sup>. The feedback from most of participants was that BLS training is life saving and useful. They were confident in recognizing cardiac arrest and giving CPR and mouth to mouth breathing. Similar findings were observed in many other studies<sup>[16-23]</sup>.

Most of the students felt the need for such kind of training regularly at their institute, but only 33% were willing to pay for the workshop contrary to 56.1% in a study by Meng Chen et.al<sup>[24]</sup>.

Given the option for the medium of course most of the students gave feedback for regional language over English. Similar findings were observed in other studies<sup>[25]</sup>. This may be because regional language would help in better understanding of the concept and retention of knowledge.

Overall, students liked the workshop the way it is conducted, and similar finding was observed in most of other studies<sup>[16, 17, 20]</sup>.

Conclusion: BLS training is useful for all the college going students and improves their knowledge. Students are interested and know the importance of the training and would prefer regional language over English for training.

Limitation: Our study had the limitation that we could not take follow up of the participants about how much knowledge and skills they have retained.

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