



Effectiveness of BLS & ACLS workshop on Cognitive, Affective and Psychomotor Skills at Rural Medical College, Loni

Authors

Dr Manju Jha¹, Dr Prashant Rai², Dr Tushar Bhavar³

¹Professor & HOD, ²MD Scholar; ³Assistant Professor

Dept of Anaesthesia & Intensive Care Rural Medical College Loni

Corresponding Author

Dr Tushar Bhavar

Email: tganesh55555@gmail.com

Abstract

Background: The aim of our study was to know the effectiveness of Basic Life Support (BLS) & Advanced Cardiovascular Life Support (ACLS) Workshop conducted at Rural Medical College, Loni.

Methods: Delegates interested for the 3-day workshop were given BLS & ACLS manuals a month prior to workshop and instructed to attempt pretest. Pretest result, post course result and feedbacks were analyzed and comparison was done between interns, PG, Faculties and Physiotherapy students.

Results: In our study most of the participants were PG students and MBBS interns. There was significant difference of pretest results between groups, similarly post course test results were also significantly different. Comparing pre and post course performance it was found that there was highly significant difference when cognitive domain was considered and also significant improvement in the psychomotor skills.

Conclusions: ACLS and BLS workshop was found to be highly effective in improvement of knowledge and skill of the participants in managing cardiac emergencies in spite of variety of participants.

Keywords: AHA, ACLS, MBBS interns, PG students, Workshop, effectiveness, Literature, Questionnaire design, audiovisual, megacode.

Introduction

Despite important advances in prevention, cardiac arrest remains a substantial public health problem and a leading cause of death in many parts of the world.⁽¹⁾ Cardiopulmonary resuscitation (CPR) is a procedure to support and maintain breathing and circulation for an infant, child, or adults who has stopped breathing (respiratory arrest) and/or whose heart has stopped (cardiac arrest)⁽²⁾. The theoretical knowledge and practical skills of the Basic Life Support (BLS) and the Advanced

Cardiovascular Life Support (ACLS) are among the most important determining factors of the cardiopulmonary resuscitation (CPR) success rates⁽³⁾. Some studies have shown the presence of at least one professional trained in ACLS increase the survival of cardiac arrest victims⁽⁴⁾. A large number of literatures in recent years have assessed the efficacy of resuscitation training and pointed out that skills and knowledge declined over time^(5;6). In other words, ACLS scores significantly decreased in the first year after certification, so

more frequent refresher training is needed ⁽⁷⁾. Thereby, the American Heart Association (AHA) recommends that those whose daily work requires knowledge and skills in ACLS should not only be trained in ACLS, but also be given a refresher course at least every 2 years⁽⁸⁾.

The goal of ACLS course is to train participants to recognize the cardiac arrest and other cardiopulmonary emergencies and save their lives through interventions by high performance team. The effectiveness of the training program was assessed in the present study.

Materials and Method

BLS & ACLS workshops are regularly conducted at RMC, Ioni. 41 delegates attended the workshop in August 2017. This workshop was conducted by Department of Anesthesia and Critical Care in collaboration with International Training Centers (ITC) of American heart association (AHA) and was accredited by Maharashtra Medical Council (MMC). The workshop was conducted as per AHA 2015 guidelines. Preparation for the workshop took one month which included registration for workshop, manuals were handed over to delegates at least one month before. All participants were instructed to read the manuals and attempt pretest on AHA student website. The pretest was of 60 questions divided in 3 sections of rhythm analysis, pharmacology and practical application. The pass percentage for pretest was 70%. Students are instructed in which area they had scored less marks and asked to read the part again and attempt the pretest again. The result of 1st pretest was taken into account for analysis.

We had a course director who was a senior AHA instructor and 8 instructors under the course director, the student instructor ratio of 5:1 and student manikin ratio of 3:1 was maintained. This workshop was instructor led, video based self learning under direct observation in small groups. This was a 3 day training program with 1 day of BLS and 2 days of ACLS program.

The BLS workshop was conducted on 1st day as per the AHA guidelines. At the end of the course

the cognitive domain was assessed using quantitative MCQ pattern exam of 25 marks with passing percentage of 84% i.e. 21 and above right answers. Affective and psychomotor domains were assessed using checklist guided scenario based practical examination about adult and child CPR. Candidates not able to clear the exam were remediated by course director. Total course duration was 6 hrs including examination and remediation. Delegates were awarded with AHA BLS provider cards and certificates on successful completion of the course.

It was mandatory to complete BLS workshop before attending ACLS workshop. The ACLS workshop was also conducted according to AHA guidelines on 2nd and 3rd day. At the end of the course the cognitive domain was assessed using quantitative MCQ pattern exam of 50 marks with passing percentage of 84% i.e. 42 and above right answers. Affective and psychomotor domains were assessed using checklist guided scenario based skill test in which student must successfully pass High quality BLS skill test, Bag Mask ventilation skill test, learning station competencies and megacode test. Candidates not able to clear the exam were remediated by course director. Total course duration was 16 hrs including examination and remediation. Delegates were awarded with AHA ACLS provider cards and certificates on successful completion of the course. Feedback forms were collected from all the delegates before declaring the results.

Pretest results, BLS results, ACLS results and feedback forms were analyzed.

Results

Table 1. Educational distribution

	Male(%)	Female (%)	Total(%)
MBBS interns	5(12)	7(17)	12(29)
PG residents	19(46)	3(7.3)	22(53)
Faculty	3(7.3)	2(4.8)	5(12.1)
Physiotherapy	1(2.4)	1(2.4)	2(4.8)
Total	28(68)	13(31)	41

As in table 1 we had 41 participants varying from MBBS interns to faculty. 68% of them were male participants. Among the participants 29%

were MBBS interns, 53 % were PG students, 12.1% were faculties from designation of Registrar to Professors and 4.8% were from other specialties like Physiotherapy.

Table 2. Result analysis.

	Pretest score(%)	Post course score(%)	P value
MBBS interns	47.8(79.66)	69(92)	<0.0001
PG residents	36(60)	65.4(87.2)	<0.0001
Faculty	40.4(67.33)	66.4(88.5)	0.0005
Physiotherapy	49(81.66)	72(96)	0.029
P value(ANOVA)	<0.0001	<0.0074	<0.0001

As in table 2 Pretest result revealed only 17 participants scored >70% marks. The performance of interns was good and highly significant to that of PG students ($p < 0.001$) and Physiotherapy delegates also had a significantly good performance as compared to that of PG students (< 0.05), applying ANOVA test it showed the difference among different groups to be highly significant ($p < 0.0001$)

Post test score total of 75 marks (25BLS+ 50ACLS) before remediation was compiled and it showed that: 8 delegates required remediation in theory and practical; the performance of interns was significant better as compared to PG students; rest of the intergroup comparison was insignificant; applying ANOVA it showed the difference to be significant ($p < 0.0074$).

Comparing the pretest with post test results it showed the extremely significant difference in all groups of delegates. There was also significant difference in performance of CPR skills and managing a ACLS case scenarios which was assessed at the end of the workshop using a checklist based megacode practical evaluation.

At the end BLS and ACLS results were 100%.

Table 3. Analysis of feedback

Activity	Average(3-5)	Good (6-8)	Excellent (9-10)
Literature	0	4(9.7%)	37(90.2%)
Questionnaire designing	0	6 (14.6%)	35(85.3%)
Audiovisual quality	0	5 (12.1%)	36(87.8%)
Group activities/ workstation	0	4 (9.7%)	37(90.2%)
Practical evaluation	0	3 (7.3%)	38(92.6%)

Analyzing the feedbacks as shown in table 3 showed that all participants were satisfied with

literature, questionnaire design, AV quality, group activity, workstations and practical evaluation.

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⁽⁹⁾. Training in ACLS is a must for all doctors and staff working in a hospital setup and those involved in management of critically ill patients.

In our study most of the participants were young recently passed MBBS and PG students, this was because they were involved in active management of patients and awareness about the training was done during their orientation program.

The pretest results showed that there was significant difference among different groups this was because interns are the group of students who are more of involved in preparation for PG exams. This also depends on the interest one takes and reads the manuals. Similar results are demonstrated in multiples studies that the knowledge level of health professionals about cardiopulmonary resuscitation was insufficient and routine workshops should be arranged.^(10,11)

Post course testing showed that there was significant improvement in the knowledge and skills in all group of participants. This is because the AHA guidelines were followed completely and most of the delegates had came prepared theoretically so in this 3 days workshop there was more of development in psychomotor domain and revision of cognitive knowledge. There are studies showing that CPR training improves the knowledge and skills.⁽¹²⁾

There are many studies showing that this workshops are necessary and effective.^(10,11,12)

There is strong recommendation that this training has to be repeated at regular interval and revised

course should be taken every 2 years as skills decline over time.⁽¹²⁻¹⁴⁾

Feedbacks about Literature, questioner design, audiovisual, workstation and practical examination were of good to excellent by almost all participants as this workshop was conducted with best possible resources and senior and experienced instructors. Similar result about feedback was found in previous studies at our institute.^(15,16) There were comments for time, pass percentage, card renewal, ECG lecture to be added for which we had followed the AHA instructions and all candidates were explained importance of renewal, to come prepared with the study material thoroughly read and attempt pretest so that more of time is spent in acquiring the skills i.e. psychomotor domain.^(13,17-19)

We conclude that ACLS and BLS workshop was found to be highly effective in improvement of knowledge and skill of the participants in managing cardiac emergencies in spite of variety of participants.

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