

Content available at: <https://www.ipinnovative.com/open-access-journals>

Indian Journal of Clinical Anaesthesia

Journal homepage: [www.ijca.in](http://www.ijca.in)

## Original Research Article

## To assess knowledge and awareness of basic life support among final year medical students in tertiary care teaching centre: A cross sectional study

G Uma<sup>1</sup>, K Sahithya<sup>1,\*</sup>, M Murali Manoj<sup>1</sup><sup>1</sup>Dept. of Anaesthesiology, Karpaga Vinayaga Institute of Medical Sciences & Research Center, Chengalpattu, Tamil Nadu, India

## ARTICLE INFO

## Article history:

Received 21-12-2020

Accepted 17-03-2021

Available online 10-09-2021

## Keywords:

Automated external defibrillator

Basic life support

Cardiac arrest

Cardiovascular stroke

Cardiopulmonary resuscitation

## ABSTRACT

**Introduction:** Successful cardiopulmonary resuscitation (CPR) relies upon the information and aptitudes of basic life support (BLS). Knowledge of basic life support is needed for budding medical students as they will encounter such situation on a daily basis. The study aimed to evaluate the knowledge of basic life support (BLS) among undergraduate final year students.

**Materials and Methods:** A descriptive, cross-sectional study was led in a tertiary care medical college from July 2019 to August 2019. The study participants were final year MBBS students. 100 final year students were given questionnaire about basic life support according to the guidelines laid down by the American Heart Association Guidelines for BLS. The outcome variables knowledge and awareness were analysed in terms of frequencies and percentages. (yes/no). IBM SPSS version 22 was used for statistical analysis.

**Results:** Self-grading of BLS knowledge level was assessed and the results showed that 62(62%) had average knowledge and 38(38%) had poor knowledge. In Self-assessment question, the reason for lack of BLS knowledge was, 7(7%) due to busy curriculum, 7(7%) lack of interest, 65(65%) non-availability of training and 21(21%) responded as combination of all three factors.

**Conclusion:** Awareness and knowledge about basic life support (BLS) is certainly required for medical care experts as they experience such circumstance consistently, and will help them a long way in saving lives. Proper training and workshops are mandatory on BLS/CPR in our undergraduate medical curriculum.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

One of the most common life-threatening event that accounts for 15% of mortality worldwide is cardiac arrest, seen mainly in individuals with a pre-existing cardiovascular condition.<sup>1</sup> When the heart ceases beating there is a lack of oxygenated blood, which may cause irreversible damage to the brain.<sup>2</sup> These crises can be effectively forestalled by basic moves and abilities with the information on basic life support (BLS), thereby ensuring safety of the patient's life.<sup>3</sup> Care providers should be

capable in providing necessary measures within the initial 3 minutes of cardiac crisis and inside the principal 'brilliant' hour in injury cases.<sup>4</sup>

Basic Life Support (BLS) incorporates acknowledgment of indications of Sudden Cardiac Arrest (SCA) normally known as heart attack, cardiovascular stroke, airway obstruction due to foreign body and Automated External Defibrillator (AED).<sup>5</sup> Knowledge about BLS has been appeared to impact essential evaluation, treatment decisions, decline the deferral in conclusion and improve results in cardiac arrest.<sup>6</sup>

Studies conducted among clinical faculties and undergraduates worldwide does not provide satisfactory

\* Corresponding author.

E-mail address: [sahithyakathiresan1997@gmail.com](mailto:sahithyakathiresan1997@gmail.com) (K. Sahithya).

information among this community. It has been found that the knowledge and awareness on BLS was exceptionally poor among wellbeing experts like doctors and attendants of medical, dental, homeopathy and nursing universities.<sup>7</sup> In another study, a low prevalence of current training on BLS and lack of basic CPR knowledge was reported, therefore a widespread CPR program was recommended by the authors.<sup>8</sup> Various studies reported that the maintenance of information and abilities identified with BLS is essential, as the knowledge tends to be forgotten with expanding length without occasional training.<sup>9–11</sup>

It is imperative that all the adults above 18 years recognize and practice BLS skills to save lives and improve the quality of public life. It is important for the health care professionals to be aware and be trained in the basic life support measures, as they encounter such situation often. Hence, the aim of the present study was to evaluate the knowledge and awareness related to Basic Life Support among final year medical students in a tertiary care medical college Hospital.

## 2. Objectives

The objective of the present study was to assess knowledge and awareness about BLS among final year MBBS students who have not undergone training.

## 3. Materials and Methods

### 3.1. Study design and study setting

A descriptive, cross-sectional study was conducted in a tertiary care medical college in Tamil Nadu from July 2019 to August 2019.

### 3.2. Study population and sample size

The study participants were final year MBBS students. The study was approved by Institutional Ethics Committee. Sample size was calculated assuming the proportion of knowledge of MBBS students. The BLS knowledge was observed to be 14.4% as per the study by Bindhu Vausedvan et al.<sup>12</sup> The other parameters considered for sample size calculation were 7% absolute precision and 95% confidence level.

Where  $n$  = Sample size

$Z$  = Z statistic for a level of confidence level = 1.960

$P$  = Expected prevalence/proportion of outcome = 0.144

$d$  = Precision = 0.07

The required sample size as per the above-mentioned calculation was 97. To account for a non-participation rate of about 3%, another 3 subjects will be added to the sample size. Hence the final required sample size was 100.

### 3.3. Data collection

According to the guidelines laid down by the American Heart Association Guidelines for BLS and CPR 2015<sup>12</sup> a structured questionnaire was made. The first part consists of 18 questions eliciting knowledge and awareness of participants about basic life support. The second part contains a question on self-grading of BLS Knowledge level. The third part contain four item questionnaire on self-assessment for lack of BLS knowledge.

The feasibility of the study was determined by a pilot study among 10 students. Internal reliability of the questionnaire was assessed and cronbach's coefficient was found to be 0.79 which was acceptable. Item-rated content validity indices were used to calculate content validity ratio. This was achieved by taking the responses on the dichotomous scales. The academicians indicated whether an item is favourable (score of + 1) or unfavourable (score of 0). The panel of four academicians rated content validity ratio as 0.86. In addition, there were no changes required in the questionnaire as a result of pretest. Descriptive analysis was carried out by frequency and proportion for categorical variables. IBM SPSS version 22 was used for statistical analysis.<sup>13</sup>

## 4. Results

A total of 100 subjects were included in the final analysis. Out of the 100 participants 62(62%) were able to expand the term BLS while 64(64%) had awareness about the usefulness of BLS. 91(91%) thinking that BLS training should be included in academic curriculum. 99(99%) had knowledge of setups where BLS can be performed. 40(40%) observed or performed BLS at least once. Only 1(1%) had the knowledge of individual components of BLS and 31(31%) had knowledge of rate of chest compressions per minute. 53(53%) and 43(43%) had knowledge of rate of chest compressions to breaths during BLS and knowledge of correct location for chest compression respectively. 24(24%) had knowledge of BLS sequence to be followed and correct response for depth of chest compressions during CPR for an adult was given by 13(13%). 24(24%) didn't want to give mouth to mouth respiration, 15 (15%) know the abbreviation CAB stands for compressions, airway, breathing and 22 (22%) responded correctly that CABD-D stands for defibrillation. 15(15%) previously performed BLS by self and 60(60%) performed BLS at training Workshops. (Table 1)

Self-grading of BLS knowledge level was assessed using a questionnaire in which participants were asked to rate their knowledge on BLS as average or poor. The results showed that 62(62%) had rated as average knowledge BLS and 38(38%) had rated as poor knowledge on BLS. (Table 2)

In self-assessment the reason for lack of BLS knowledge was due to busy curriculum 7(7%), lack of interest 7(7%),

non-availability of training and 65(65%) were combination of above factors 21(21%). (Table 3)

**Table 1:** Knowledge of BLS among study population (N=100)

Parameter	Rightly answered
Are you able to expand the term BLS?	62(62%)
Are you aware about the usefulness of BLS?	64(64%)
Do you think BLS training should be included in the academic curriculum?	91(91%)
Do you have knowledge on the setups where BLS can be performed?	99(99%)
Have you ever observed BLS being performed?	40(40%)
Do you have knowledge on individual components of BLS?	1(1%)
Do you have knowledge on rate of chest compressions per minute?	31(31%)
Do you have the knowledge on rate of chest compressions to breaths during BLS?	53(53%)
Do you have knowledge on correct location for chest compression?	43(43%)
Do you have knowledge on the BLS sequence to be followed?	24(24%)
Do you know the depth of chest compressions during CPR for an adult?	13(13%)
Are you willing to give mouth to mouth respiration?	24(24%)
Do you know what CAB stands for in the sequence?	15(15%)
Do you know what D stands for in CABD-D?	22(22%)
How long pulse should be checked in a victim?	4(4%)
Do you know how to operate an AED (Automated External Defibrillator) ?	5(5%)
Have you ever performed BLS by yourself?	15(15%)
Have you ever performed BLS training at workshops?	60(60%)

**Table 2:** Self-grading of BLS knowledge level among final year MBBS students (N=100)

Self-grading of BLS Knowledge level	% responded
Average	62(62%)
Poor	38(38%)

**Table 3:** Self-assessment for BLS knowledge level among final year MBBS students(N=100)

Self-assessment for lack of BLS knowledge	% responded
Busy Curriculum	7(7%)
Lack of Interest	7(7%)
Non availability of training	65(65%)
Combination of above factors	21(21%)

## 5. Discussion

It is essential for all medical and paramedical personnel to have adequate knowledge on cardiopulmonary resuscitation skills, a necessary lifesaving skill that must be interpreted and correctly practiced. These lifesaving skills should be updated in the medical curriculum.<sup>14</sup>

Out of 100 participants, self-graded BLS Knowledge was found to be average for 62% and poor for 38%. 62% of students were able to expand the term BLS in the present study while in a study by Vasudevan B et al, 76.3% answered correctly.<sup>12</sup> Some MBBS batches got a two hour session on BLS by community medicine department in the study done by Vasudevan B et al. This may be the reason of slight increase in the knowledge of students.

A study done on Egyptian medical students by Ghanem et al showed that more than 70% of participants could not identify the proper location of chest compression in adults. In the present study 43% of participants knew the correct position of chest compression, while 62.8% of students from Vausedvan B et al study knew the correct position of chest compression.<sup>12,15</sup>

Knowledge on performing BLS sequence in our present study was 24% and similar studies showed 18.3% knowledge on sequence of procedures for doing BLS.<sup>12</sup> Only 13% responded correctly to the depth of chest compression and knowledge of rate of chest compressions to breaths was 53% in the present study, while an improved knowledge (40.8%) on the depth of chest compression was reported by a similar study on medical, dental and nursing interns, but showed less percentage of knowledge on rate of chest compressions to breaths (42%).<sup>16</sup> Similar percentage of students responded correctly to sequence to be followed for BLS in our study and a study done in interns of Saudi Arabia (24% and 25.5% respectively).<sup>16</sup>

Only 12.9% ever practised resuscitation in a real-life setting, inside or outside hospital in a study done by Mani G while in our study 15% performed BLS atleast once.<sup>17</sup> Another study from south India showed very few had undergone training when compared to our study.<sup>18</sup>

Those who got training and involved in resuscitation frequently secured higher knowledge in comparison to those who were seldom involved or not involved at all.<sup>19,20</sup>

Self-grading of BLS Knowledge level was found to be poor in 38% while 49.3% showed poor knowledge, in a study done by Gebremedhn EG et al. on final year students.<sup>21</sup> 65% students of the present study self-assessed as the lack of knowledge was due to the nonavailability of training in curriculum. Similar outcomes were reported in a study, in which 58% insisted that BLS should be included in the curriculum.<sup>22</sup>

## 6. Limitation

This study was done on final year MBBS students of a single medical college, who have not undergone BLS training and there was no comparison done between those who got training or who attended workshops. The study did not assess the practices and practical skills of the participants but help to insist a positive attitude to acquire knowledge on BLS.

## 7. Recommendation

However now from 2019 curriculum onwards it is recommended to impart BLS training at the foundation course level itself. All health institutions should, therefore, focus on the need to train BLS and can conduct frequent workshops to all students and interns there by students learn and practice the skills to become life savers.

## 8. Conclusion

From this study, we infer that proper training and workshops are mandatory on BLS/CPR in our undergraduate medical students. Awareness and knowledge about basic life support is certainly required for medical care experts as they experience such circumstance consistently, and will help them a long way in saving lives. Such situations not only occur at hospital settings but can also occur at outdoor settings, thus knowledge in basic life support is very essential.

**Key Messages:** Knowledge of basic life support is needed for budding medical students as they will encounter such situation on a daily basis, and will help them a long way in saving lives.

## 9. List of Abbreviations

AED: Automated External Defibrillator, BLS: Basic Life Support, CPR: Cardiopulmonary Resuscitation.

## 10. Source of Funding

None.

## 11. Conflict of Interest

The author declares no conflict of interest.

## References

- Bogle BM, Ning H, Mehrotra S, Goldberger JJ, Lloyd-Jones DM. Lifetime Risk for Sudden Cardiac Death in the Community. *J Am Heart Assoc.* 2016;5(7):e002398. doi:10.1161/JAHA.115.002398.
- John-Nwankwo J. BLS For Healthcare Providers Student Manual: Basic Life Support Handbook. vol. 36. 1st ed. CreateSpace Independent Publishing Platform; 2017. p. 36.
- Narayan DPR, Biradar SV, Reddy MT, Sujatha BK. Assessment of knowledge and attitude about basic life support among dental interns and postgraduate students in Bangalore city, India. *World J Emerg Med.* 2015;6(2):118–22.
- Eisenberg M, Bergner L, Hallstrom A. Paramedic programs and out-of-hospital cardiac arrest: I. Factors associated with successful resuscitation. *Am J Public Health.* 1979;69(1):30–8.
- American Heart Association. 2005 American Heart Association (AHA) guidelines for cardiopulmonary resuscitation (CPR) and emergency cardiovascular care (ECC) of pediatric and neonatal patients: neonatal resuscitation guidelines. *Pediatrics.* 2006;117(5):1029–38.
- Niemi-Murola L, Mäkinen M, Castren M. Medical and nursing students' attitudes toward cardiopulmonary resuscitation and current practice guidelines. *Resuscitation.* 2007;72(2):257–63.
- Chandrasekaran S, Kumar S, Bhat SA, Kumar S, Shabbir PM, Chandrasekaran VP. Awareness of basic life support among medical, dental, nursing students and doctors. *Indian J Anaesth.* 2010;54(2):121–6.
- Papadima A, Papas AB, Lagoudianakis EE, Kotzadimitriou A, Markogiannakis H, Filis K. Cardiopulmonary resuscitation by chest compression alone: A reality check. *Hell J Cardiol.* 2010;51(1):55–61.
- Kaye W, Wynne G, Marteau T, Dubin HG, Rallis SF, Simons RS. An advanced resuscitation training course for preregistration house officers. *J R Coll Physicians Lond.* 1990;24(1):51–4.
- Govender K, Rangiah C, Ross A, Campbell L. Retention of knowledge of and skills in cardiopulmonary resuscitation among healthcare providers after training. *South African Fam Pract.* 2010;52(5):459–62.
- Chew KS, Hashairi FM, Zarina ZI, Farid AWS, Yazid MNA, Hisamuddin N, et al. A survey on the knowledge, attitude and confidence level of adult cardiopulmonary resuscitation among junior doctors in hospital Universiti Sains Malaysia and hospital raja Perempuan Zainab ii, Kota Bharu, Kelantan, Malaysia. *Med J Malaysia.* 2011;66(1):56–9.
- Vausedvan B, Lucas A, Geetha DM, Bhaskar A, Areekal B. Assessment of level of knowledge of basic life support algorithm among medical and nursing students in a tertiary care teaching hospital. *Int J Community Med Public Heal.* 2016;3(12):3520–5.
- IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.
- Alzahrani H, Alghamdi A, Alzahrani A, Alzahrani S, Alghamdi M, Minqash A. Awareness and interpretation of basic life support and emergency medical services and its associated factors among students. *Int J Med Dev Ctries.* 2019;3:681–5.
- Ghanem E, Elgazar M, Oweda K, Tarek H, Assaf F, El-Husseny MA, et al. Awareness of Basic Life Support among Egyptian Medical Students; a Cross-Sectional Study. *Emerg.* 2018;6(1):e36.
- Saqib SA, Al-Harhi HM, Khoshhal AA, Shaher AA, Al-Shammari AB, Khan A. Knowledge and Attitude about Basic Life Support and Emergency Medical Services amongst Healthcare Interns in University Hospitals: A Cross-Sectional Study. *Emerg Med Int.* 2019;2019:1–8.
- Mani G, Annadurai K, Danasekaran R, Ramasamy JD. A cross-sectional study to assess knowledge and attitudes related to Basic Life Support among undergraduate medical students in Tamil Nadu, India. *Prog Health Sci.* 2014;4(1):47–52.
- Kumar HH, Upadhy PS, Ashok PS, Chowdari GA, Niranjana G, Dinesh B, et al. A cross-sectional study on awareness and perception about basic life support/cardio-pulmonary resuscitation among undergraduate medical students from coastal South India. *Int J Med Public Heal.* 2013;3(3):146.
- Elif AA, Zeynep K. Knowledge of basic life support: A pilot study of the Turkish population by Baskent University in Ankara. *Resuscitation.* 2003;58(2):187–92.
- Seraj MA, Naguib M. Cardiopulmonary resuscitation skills of medical professionals. *Resuscitation.* 1990;20(1):31–9.
- Gebremedhn EG, Gebregergs GB, Anderson BB. The knowledge level of final year undergraduate health science students and medical interns about cardiopulmonary resuscitation at a university teaching hospital of Northwest Ethiopia. *World J Emerg Med.* 2014;5(1):29–34.

22. Alhakamy NA, Zamzami AM, Bukhari FA, Bukhari FA, Almash OA, Madkhali MA. Knowledge and attitude about basic life support and emergency medical services among pharmacy students at King Abdulaziz University. *SJEMed*. 2020;1(2):70–4.

**K Sahithya**, Resident

**M Murali Manoj**, Associate Professor

### Author biography

**G Uma**, Assistant Professor

**Cite this article:** Uma G, Sahithya K, Manoj MM. To assess knowledge and awareness of basic life support among final year medical students in tertiary care teaching centre: A cross sectional study. *Indian J Clin Anaesth* 2021;8(3):436-440.