# **Original Research Article**

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# Basic life support: a cross-sectional study of knowledge in undergraduate medical students of Maharashtra

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## **ABSTRACT**

**Background:** Basic life support (BLS) is defined as medical procedures and skills that can be utilized in case of emergency to save lives. Objective was to study the knowledge of basic life support in undergraduate medical students of Maharashtra.

**Methods:** A cross-sectional study on undergraduate medical students from first to final year MBBS in July 2018 in the Community Medicine department, Government medical college, Maharashtra.

**Results:** Out of the total 300 students, 59.34% were females and 40.66% were males. 42% were from first MBBS, 38% from second and 20% from final MBBS. While 67% had previous training of BLS and 38% had performed CPR before. (91%) knew abbreviation of BLS (32%) students could identify location for chest compression in adults, (31%) knew the compression rate and (19%) knew about rescue breathing in infants. While (30%) and (21%) had the knowledge on depth of chest compression in adults and infants respectively. However, only (31%) and (29%) knew that the recommended chest compression to ventilation ratio in adult and infants respectively.

**Conclusions:** The study highlights that majority of students were lacking the knowledge of basic life support. It is the need of the hour to provide BLS training to all the medical students.

**Keywords:** Basic life support, Knowledge, Undergraduate medical students

# INTRODUCTION

Basic life support (BLS) is defined as medical procedures and skills that can be utilized in case of emergency to save lives. Knowledge of BLS is absolute necessity for medical professionals to face acute medical emergencies. In 1966 the American heart association (AHA) developed the first CPR (cardio-pulmonary resuscitation) guidelines which have been followed by regular updates. According to American Heart Association, each and everyone should learn CPR. It has been observed that fresh medical students lack proper knowledge, skills, and attitude (KSA) regarding CPR (unconscious incompetence).

Globally, about 92% out-of-hospital cardiac arrest subjects lose their lives due to limited availability of CPR facilities. One of the leading causes of death and disability worldwide is out-of-hospital cardiac arrest (OHCA) and it contributes to as high as 10% of total mortality in developing countries.<sup>4</sup> The inadequate knowledge of resuscitation has been reported globally. Studies from India, Turkey, Greece, Nigeria, and Nepal also cite a lack of knowledge regarding CPR among healthcare professionals.<sup>5-8</sup>

Hence this study was conducted on the undergraduate medical students to assess their knowledge about Basic

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life support as it is a life saving measure in case of emergencies and all the health professionals should have adequate knowledge about Basic life support.

Aim and objective was to study the knowledge of basic life support in undergraduate medical students of Maharashtra.

#### **METHODS**

#### Study design

This was a cross-sectional study undertaken in the department of Community Medicine in Government medical college in Maharashtra.

## Study duration

The study was conducted in the month of July 2018. It was a duration based study.

# Sample size

As it was a duration based study, all the undergraduate medical students which were posted for lectures and practicals in the department of community medicine and the students posted for clinical posting in urban health centre under the community medicine department, tertiary care hospital in the 4 weeks duration of July 2018 were considered for the study. The sample was reached upto 300 completely filled questionnaire in the said duration.

#### Inclusion criterion

First to Final year MBBS undergraduate medical students posted under the community medicine department in the month of July 2018 willing to participate in the study were included.

# Exclusion criterion

Those who were on leave, unwilling to participate in and incomplete questionnaires were excluded from the study.

# Operational definition

Basic life support was defined as knowledge and attitude about basic first aid, cardiopulmonary resuscitation, bleeding control, artificial ventilation, stabilization of injuries or wounds, treatment of shock and basic airway management.

# Data collection

After explaining the purpose of study and obtaining verbal informed consent from the students, a preformed structured questionnaire was distributed to all 300 students at the time of their posting in community medicine department. The questionnaire was divided into

two sections: demographics and knowledge. The demographics included the background characteristics of the students including their age, sex, year of MBBS, level of training and the number of times they had witnessed or performed CPR etc. In the knowledge section, students were asked to answer eight questions regarding BLS. Questions were based on the AHA 2015 guidelines, with a maximum score of eight.

After briefing about the study objectives, the medical students were asked to tick the most appropriate answer in the given list of options. Questionnaire was collected back, and data regarding their knowledge on Basic life support was analyzed. Data was entered in Microsoft excel sheet and it was analyzed with Epi info software. All the correct responses were given one point and wrong responses were given zero point. Throughout the study anonymity of all students was maintained and privacy as well as confidentiality of the data was assured.

#### **RESULTS**

The present cross-sectional study was carried out among 300 first to final year undergraduate medical students in the Department of Community Medicine during the month of July 2018.

Table 1: Distribution of students according to demographic profile (n=300).

Demographic profile	N	%			
Sex		•			
Male	122	40.66			
Female	178	59.34			
Year of MBBS					
First MBBS	126	42			
Second MBBS	114	38			
Final MBBS	60	20			
Previous training in BLS					
Yes	201	67			
No	99	33			
Performed CPR before					
Yes	114	38			
No	186	62			

Table 1 shows distribution of students according to their demographic profile. Sex wise distribution of students showed that out of the total 300 students, 59.34% were females and 40.66% were males.42% were from first MBBS, 38% from Second MBBS and 20% from final MBBS. While 67% had previous training of BLS and only 38% had performed CPR before.

Table 2 shows knowledge of students about basic life support (BLS). Almost (91%) of the students knew the abbreviation of BLS. When asked about knowledge on chest compression in adults, nearly (32%) of the students could identify the right location of the hands for chest

compression in adults, (31%) knew the compression rate is 100/minute, and (19%) knew about rescue breathing in infants. While (30%) and (21%) had the knowledge on depth of chest compression during CPR in adults and infants respectively. However, only (31%) and (29%) of the participants knew that the recommended chest compression to ventilation ratio in adult and infants respectively.

Table 2: Knowledge of students about basic life support (BLS).

Knowledge of BLS	N	%
BLS stand for	273	91
Location of chest compression in adult CPR	96	32
Rate of chest compression per minute in adult CPR	93	31
Rescue breathing in infants	57	19
Depth of chest compression in adults during CPR	90	30
Depth of chest compression in infants	63	21
Ratio of chest compression to ventilation in adult	93	31
Ratio of chest compression to ventilation in infants	87	29

Table 3 shows distribution of students according to knowledge of indication of basic life support (BLS). With respect to knowledge of BLS in various conditions, 86% and 78% were knowing that BLS is indicated in cases of drowning and unconscious person with no palpable pulse and respiration. This was followed by 56% knowing BLS is indicated in cases of choking and 41% knew it is indicated in unresponsive person with normal palpable pulse and respiration, while only 32% and 24% were knowing it is indicated in road traffic accident and burn.

Table 3. Distribution of students according to knowledge of indication of basic life support (BLS).

Indication	Yes (%)	No (%)	Don't know (%)
Burn	72 (24)	177 (59)	51 (17)
Unconscious person with no palpable pulse and respiration	234 (78)	27 (09)	39 (13)
Choking	168 (56)	99 (33)	33 (11)
Road traffic accident	96 (32)	174 (58)	30 (10)
Unresponsive person with normal pulse and respiration	123 (41)	135 (45)	42 (14)
Drowning	258 (86)	15 (05)	27 (09)

#### **DISCUSSION**

The present cross-sectional study was carried out among 300 first year to final year undergraduate medical students in the Department of Community Medicine during the month of July 2018.

Table 1 shows distribution of students according to their demographic profile. Sex wise distribution of students showed that out of the total 300 students, 59.34% were females and 40.66% were males. 42% were from first MBBS, 38% from Second MBBS and 20% from final MBBS. The study findings were parallel to a study done by Abid et al.<sup>9</sup> The study was done on 300 medical students among them 38.67% were male, and 61.33% were female, 35.67% from first MBBS, 20.67% from second MBBS and 43.66% from final MBBS.

In our study 67% students had previous training of BLS and 38% had performed CPR before. The study done by Roshana et al found that the mean knowledge score was significantly higher in those who had received CPR training within 5 years than in those who had training more than 5 years ago and those had no training at all. <sup>10</sup> Those participants who were involved in resuscitation frequently had a significantly higher median score than those who were seldom involved or not involved at all (p<0.001).

Table 2 shows Knowledge of students about Basic life support (BLS). Almost (91%) of the students knew the abbreviation of BLS. When asked about knowledge on chest compression in adults, nearly (32%) of the students could identify that the right location of the hands for chest compression in adults, (31%) knew the compression rate is 100/minute, and (19%) knew about rescue breathing in infants. While (30%) and (21%) had the knowledge on depth of chest compression during CPR in adults and infants respectively. However, only (31%) and (29%) of the participants knew that the recommended chest compression to ventilation ratio in adult and infants respectively. Parallel findings were found in a study done by Majid et al.11 This study revealed that the rate and depth of chest compressions revised in the 2015 AHA guidelines were incorrectly answered by majority of the doctors. Two-thirds were not aware of the revised rate of chest compressions (n=187, 65.6%). Similarly, only a quarter of the study group knew the correct depth of chest compressions (n=69, 24.2%). This information is essential for delivering high-quality CPR. Alarmingly, 60% had not updated themselves with the 2015 AHA guidelines (n=171).

With respect to knowledge of BLS in various conditions as shown in Table 3, 86% and 78% were knowing that BLS is indicated in cases of drowning and unconscious person with no palpable pulse and respiration. This was followed by 56% knowing BLS is indicated in cases of choking and 41% knew it is indicated in unresponsive person with normal palpable pulse and respiration. While

only 32% and 24% were knowing it is indicated in road traffic accident and burn. The study findings are parallel to a study done by Kumar et al.<sup>12</sup>

This study has few limitations. As it was a study involving only the first to final year undergraduate students of one medical college, the study findings cannot be generalised to all medical students.

#### CONCLUSION

The study highlights that majority of the students were lacking the knowledge of basic life support. It is the need of the hour to provide BLS training to all the medical students. Early exposure of such trainings in the medical career will make them confident to perform CPR independently.

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