

# Assessment of Knowledge about Basic Life Support among Medical Undergraduates of Central India: A Cross Sectional Study

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**Abstract:** ***Introduction:** Basic life support (BLS) is defined as medical procedures and skills that can be utilized in case of emergency to save lives. It is something that should be known, and the people can do it at time of need. The current study was carried out to study the knowledge of BLS among the medical undergraduates of central India. **Methods:** A cross-sectional study among undergraduate medical students from first to final year MBBS of Central India was conducted in January 2022. After getting informed consent, a predesigned, pre-tested, self-administered questionnaire was used to collect socio-demographic details and to assess awareness about basic life support in them. **Results:** Out of the total 336 students, 48.5% were females and 51.5% were males. 45.2% were from first MBBS, 33.3% from second, 11.9% from third and 9.5% from final MBBS. While 39.9% had previous training of BLS and 22% had performed CPR before. 95.2% knew abbreviation of BLS, 74.4% students could identify location for chest compression in adults, and 63.4% knew the compression rate in adults. While 78.9% and 40% had the knowledge on depth of chest compression in adults and infants respectively, 75.9% and only 55.9% knew that the recommended chest compression to ventilation ratio in adults and infants respectively. **Conclusion:** The study highlights that majority of students were lacking the knowledge of BLS. It is the need of the hour to provide BLS training to all the medical students.*

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

## 1. 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. (1) BLS is a level of medical care which is used for patients with life threatening illness until the patient can be given full medical care. CPR is the technique of providing BLS until advanced life support (ALS) can be provided or spontaneous circulation or ventilation is restored. (2) The components of BLS include initial assessment, airway maintenance, breathing (rescue breathing; mouth-to-mouth ventilation) and chest compression; together, it is called cardiopulmonary resuscitation (CPR). Cardiac arrest can occur both inside and outside the hospital setting, which necessitates the need for early recognition and treatment. It is possible to reduce the high mortality rate associated with cardiac emergencies by ensuring adequate knowledge and practice of basic life support (BLS) skills. (3) A fast and structured patient management algorithm is crucial for the outcome of acutely ill and injured patients.

The American Heart Association (AHA) has issued comprehensive guidelines for both in and out of hospital management, adult cardiac arrest chain of survival, immediate recognition of cardiac arrest, early activation of emergency medical services (EMS), early cardiopulmonary resuscitation (CPR), and defibrillation. (3) The ERC (European Resuscitation Council) has also produced guidance on cardiac arrest for patients with corona virus

disease 2019 (COVID-19), which is based on an ILCOR CoSTR and systematic review. (4)

CPR, in particular, is a simple maneuver which if performed correctly can greatly increase the likelihood of return of spontaneous circulation (ROSC) and survival. As healthcare professionals encounter several life-threatening emergencies on a daily basis, they are expected to have a profound knowledge of the CPR guidelines. However, many junior doctors are not capable of performing CPR effectively. The inadequate knowledge of resuscitation has been reported globally. (5) It has been observed that fresh medical students had lack of proper knowledge, skills, and attitude (KSA) regarding CPR. However, studies conducted among medical personnel and students all over the world report less satisfactory knowledge. Hence this study was conducted among undergraduate medical students to assess their knowledge about Basic life support.

## 2. Material and Methods

The present cross-sectional study was undertaken in a tertiary care centre of central India during the month of January 2022. Sample size calculated was 338. Undergraduate medical students from first to fourth professional years were contacted. Those willing to participate in the study were included. After explaining the purpose of study and obtaining verbal informed consent from the students, a predesigned, pretested structured questionnaire was administered to all 338 students. Throughout the study anonymity of all students was

maintained and privacy as well as confidentiality of the data was assured.

The questionnaire comprised of 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 fourteen questions regarding BLS. Questions were based on the AHA 2015 guidelines, with a maximum score of eleven. After briefing about the study objectives, the medical students were asked to tick the most appropriate option. Questionnaire was collected back and data regarding their knowledge on Basic life support was analyzed. Data was entered in Microsoft excel sheet and analysed using SPSS Software v26. All the correct responses were given one score and wrong responses were given zero.

### 3. Results

The present cross - sectional study was carried out among 338 first to final professional year undergraduate medical students in the tertiary care centre of central India during the month of January 2022. Out of 338 students, 48.5% were females and 51.5% were males. 45% were from first professional year, 33.1% from Second professional year, 11.8% from Third professional year and 9.5% from final professional year. Only 33.9% had performed CPR before.

**Table 1:** Basic Socio - Demographic Features

Demographic Profile	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	173	51.5
Female	163	48.5
<b>Years of MBBS</b>		
First Year	152	45
Second Year	112	33.1
Third Year	40	11.8
Final Year	32	9.5
<b>Performed CPR Before</b>		
Yes	134	33.9
No	202	61.1

Table 2 shows knowledge of students about basic life support (BLS). Almost (93.8%) of the students knew the abbreviation of BLS. When asked about knowledge on chest compression in adults, nearly (74%) of the students could identify the right location of the hands for chest compression in adults, (63%) knew the compression rate is 100/minute, (78.1%) and (41.4%) knew the depth of chest compression in adults and infants respectively, (75.4%) and (55.6%) of the participants knew that the recommended chest compression to ventilation ratio in adult and infants respectively. While (77.8%) students knew the manoeuvre can use to open the airway.

Table 3 shows the (41.7%) and (15.1%) student had excellent and poor knowledge respectively. Table no 4 shows the (55.3%) student not confident for initiating CPR while (44.1%) are confident. Table 5 shows the confidence in initiating CPR with previously attended BLS is significant ( $X^2= 7.956$  (1), P Value 0.005), Table 6 shows the confidence in initiating CPR with CPR done previously is

significant ( $X^2= 16.190$  (1), P Value 0.000), Table 7 shows the level of knowledge with previous BLS training attended is significant ( $X^2=19.560$  (3), P Value 0.000), Table 8 shows the level of Knowledge with previous CPR given is significant ( $X^2= 9.926$  (3), P Value 0.019).

**Table 2:** Knowledge of Student About Basic Life Support (BLS)

Knowledge of BLS	Frequency (n)	Percentage (%)
BLS Stand For	317	93.8
Location of Chest Compression in Adult CPR	250	74
Rate of Chest Compression Per Minute in Adult CPR	213	63
Depth of Chest Compression in Adult CPR	264	78.1
Depth of Chest Compression in Infant CPR	140	41.4
Ratio of Chest Compression to Ventilation in Adult	255	75.4
Ratio of Chest Compression to Ventilation in Infant	188	55.6
Check for Pulse	206	60.9
Manoeuvre Can Used to Open the Airway	263	77.8
If No Pulse Present Next Appropriate Step	228	67.5
If Pulse Present Next Appropriate Step	189	55.9

**Table 3:** Level of Knowledge

Level of knowledge	Frequency (n)	Percentage (%)
Poor (>3)	51	15.1
Average (3 - 5)	63	18.6
Good (6 - 9)	81	24.0
Excellent (>9)	141	41.7

**Table 4:** Level of Confidence for Initiating CPR

Level of Confidence	Frequency (n)	Percentage (%)
Not Confident	187	55.3
Confident	36	99.4
Missing	2	6
Total	338	100.0

**Table 5:** Confidence in Initiating CPR with Previously Attended BLS

Whether Attended BLS?	Confidence in initiating CPR		Total
	Not confident	Confident	
Not attended	125	77	202
Attended	62	72	134
Total	187	149	336

Chi Square Value 7.956 (1), P Value 0.005

**Table 6:** Confidence in Initiating CPR with CPR done Previously

CPR done before	Confidence In Initiating CPR		Total
	Not confident	Confident	
Not done	161	101	262
Done	26	48	74
Total	187	149	336

Chi Square Value 16.190 (1), P Value 0.000

**Table 7:** Level of Knowledge with previous BLS Training Attended

Attended BLS	Knowledge Level				
	Poor	Average	Good	Excellent	Total
Not Attended	43	42	46	71	202
Attended	8	21	35	70	134
Total	51	63	81	141	336

Chi Square Value 19.560 (3), P Value 0.000

**Table 8:** Level of Knowledge with Previous CPR Given

CPR Done	Knowledge Level				
	Poor	Average	Good	Excellent	Total
Before	48	48	58	108	262
Not Done	3	15	23	33	74
Done	51	63	81	141	336

Chi Square Value 9.926 (3), P Value 0.019

#### 4. Discussion

The present cross - sectional study was carried out among 338 first year to final year undergraduate medical students in the Department of Community Medicine during the month of January 2022.

In our study sex wise distribution of students showed that out of 338 students, 48.5% were females and 51.5% were males. 45% were from first MBBS, 33.1% from Second MBBS, 11.8% from Third MBBS and 9.5% from fourth year. The study by Kawale SN et al. (1) found that 59.34% students were females and 40.66% were males. 42% were from first MBBS, 38% from Second MBBS and 20% from final MBBS.

In the present study, almost 93.8% of the students knew the abbreviation of BLS. When asked about knowledge on chest compression in adults, nearly 74% of the students could identify the right location of the hands for chest compression in adults, 63% knew the compression rate is 100/minute, 78.1% and 41.4% knew the depth of chest compression in adults and infants respectively, 75.4% and 55.6% of the participants knew that the recommended chest compression to ventilation ratio in adult and infants respectively. While 77.8% students knew the manoeuvre can use to open the airway. Kawale SN et al. (1) found that Almost 91% of the students knew the abbreviation of BLS. 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. 30% had the knowledge on depth of chest compression during CPR in adults and 21% in infants. However, 31% of the participants knew that the recommended chest compression and ventilation ratio in adults and 29% in infants.

In the present study 33.9% of study subjects were performed CPR before. Similar study by Kawale SN et al. (1) found that 38% students had performed CPR before. Sharma R et al. (6) found that 85% of study participants performed CPR before and 15% had not performed.

In the present study (41.7%) student had excellent knowledge and (15.1%) poor. Avabratha KS et al. (2) noted

that 11.33% study participants had good knowledge and 41.11 had poor.

#### 5. Conclusion

The study highlights that majority of the students were lacking the knowledge of basic life support, while those with prior BLS Course and CPR trial had better knowledge & confidence in initiating CPR. It is the need of 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.

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