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

Suchita Narayan Kawale¹, Manjusha A. Shinde², Prashant Satwaji Shinde³

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.¹ In 1966 the American heart association (AHA) developed the first CPR (cardio-pulmonary resuscitation) guidelines which have been followed by regular updates.² 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).³

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.⁴ 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.⁵⁻⁷

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

International Journal of Community Medicine and Public Health | September 2020 | Vol 7 | Issue 9 | Page 3582
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 adult 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.5 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.10 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. Alarming, 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.12

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.

ACKNOWLEDGEMENTS

We sincerely appreciate the support and co-ordination of the undergraduate first to final year medical students of the government medical college and tertiary care hospital.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Sharma R, Attar N. Adult BLS awareness and knowledge among medical and dental interns, NITTE university. J Health Sci. 2012;2(3):6-13.
2. Reddy S, Doshi D, Reddy P, Kulkarini S. Awareness of BLS among staff and students in dental school. J Contemp Dent Pract. 2013;14(3):511-7.
3. Saiyad SM, Saiyad M, Pandya CJ. Implementation of cardiopulmonary resuscitation workshop in first MBBS. Int J Appl Basic Med Res. 2015;5(1):11-3.
4. Aroor AR, Saya RP, Attar NR, Saya GK, Ravinathanan M. Awareness about basic life support and emergency medical services and its associated factors among students in a tertiary care hospital in South India. J Emerg Trauma Shock. 2014;7(3):166.
5. Pantazopoulos I, Aggelina A, Barouxis D, Papapanagiotou P, Troupis G, Kotsiomitis E, et al. Cardiologists’ knowledge of the 2005 American Heart Association resuscitation guidelines: the Athens study. Heart Lung. 2011;40(4):278-84.
6. Chaudhari MS, Panchal NN, Kamat HV, Ganjiwale J. Knowledge of 2015 basic life support (BLS) guidelines among doctors and nursing staff of a rural based tertiary care hospital, in western India: current status and requirement. Indian J Anaesth. 2017;4:193-7.
7. Osinaike B, Aderinto D, Oyebamiji E, Dairo M, Diya K. Evaluation of knowledge of doctors in a Nigerian tertiary hospital of CPR. Niger Med Pract. 2007;52:16-8.
8. Elif AA, Zeynep K. Knowledge of basic life support: a pilot study of the Turkish population by Baskent University in Ankara. Resuscitation. 2003;58:187-92.
9. Abid M, Shahzad S, Abid A, Shahzadi H, Akhtar J Awais H. Basic life support: knowledge and attitude of medical students. World J Pharm Med Res. 2019;5(3):316-24.
10. Roshana S, Batajoo KH, Piryani RM, Sharma MW. Basic life support: knowledge and attitude of medical/paramedical professionals, World J Emerg Med. 2012;3(2)141-5.
11. Majid A, Jamali M, Ashrafi MM, Haq Z, Irfan R, Rehan A, et al. Knowledge and attitude towards cardiopulmonary resuscitation among doctors of a tertiary care hospital in Karachi. Cureus. 2019;11(3):e4182.
12. Kumar HHN, Upadhya SP, Ashok SP, Chowdari AG, Niranjan GM, Dinesh B. 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 Health. 2013;3(3):146-50.

Cite this article as: Kawale SN, Shinde MA, Shinde PS. Basic life support: a cross-sectional study of knowledge in undergraduate medical students of Maharashtra. Int J Community Med Public Health 2020;7:3581-4.