

To Study and Assess the Awareness of and Knowledge About Basic Life Support (BLS) Among Doctors Practising in Government Medical College and Attached Hospitals, Bharatpur, Rajasthan

Jigyasa Shahani¹, Pallavi Sharma², Meera Kumari³

¹Associate Professor, Department of Anesthesiology, Govt. Medical College, Bharatpur, Rajasthan, India.

²Assistant Professor, Department of Anesthesiology, Govt. Medical College, Bharatpur, Rajasthan, India.

³Assistant Professor, Department of Anesthesiology, Govt. Medical College, Bharatpur, Rajasthan, India.

Abstract

Background: Basic life support (BLS) is a life-saving method that includes instant recognition of cardiac arrest, initiation of the emergency response systems, adopting adequate cardiopulmonary resuscitation (CPR), and implementing rapid defibrillation. Aim: To assess the knowledge and awareness about basic life support (BLS), among doctors practicing at government medical college Bharatpur and attached hospitals. **Material and Methods:** A questionnaire comprising of 20 questions regarding the awareness and skills involved in BLS was circulated to 200 doctors to assess the levels of awareness to BLS and its practical knowledge. **Results:** Out of 180 responders, only 18 doctors (20%) scored above 70 percent. 81 doctors (45 %) scored between 50-59 %, 45 doctors (25%) scored between 60-69% and 18 doctors (10 %) scored less than 50%. **Conclusion:** Awareness and knowledge about BLS was not satisfactory and needs to be improved.

Keywords: BLS, cardiopulmonary resuscitation, AED, EMS, doctors.

Corresponding Author: Dr. Pallavi Sharma, Assistant Professor, Govt. Medical College, Bharatpur, Rajasthan, India.

Email: pals3004@gmail.com

Introduction

Basic life support (BLS) is a life-saving method that includes instant recognition of cardiac arrest, initiation of the emergency response systems, adopting adequate cardiopulmonary resuscitation (CPR), and implementing rapid defibrillation.^[1] It can be effective in reducing mortality and morbidity in several medical emergencies. Hence it is very important that every person in the community know about Basic Life Support to save lives and improve the quality of community health. The American Heart Association (AHA) initiated a program named Basic Life Support (BLS) which is the foundation for saving the person's life in response to cardiac and respiratory arrest.^[2] As per the survey conducted by Lybrate around 98 per cent Indians are not trained in the basic life-saving technique of cardiopulmonary resuscitation (CPR) during sudden cardiac arrest. At least the doctors, nursing and paramedical staff are expected to know about it, as they are frequently facing life threatening situations and the knowledge of BLS will be definitely useful. Studies conducted among clinical faculties and undergraduates worldwide does not provide satisfactory 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.^[1] In this context, we sought to measure the level of knowledge and awareness towards BLS among doctors working in government medical college Bharatpur and attached hospitals.

Materials and Methods

A cross-sectional study was conducted by assessing the responses to 20 selected basic questions regarding BLS among doctors practicing at government medical college Bharatpur and attached hospitals. After approval from institutional Ethical Review Committee a questionnaire (annexure 1) comprising of 20 questions regarding the awareness and skills involved in BLS was used to assess the levels of awareness to BLS and its practical knowledge. We used a structured questionnaire which was adapted from pretested questionnaires that have been used previously in similar studies in India. The questionnaire was then assessed by carrying out a pilot study among the experienced medical fraternity and the necessary corrections were made accordingly after consultation.

Incomplete questionnaire responses were excluded from the study. Those with equal to or more than 80% score were considered to have adequate satisfactory knowledge. The aspects on which they were interrogated were about the abbreviation of BLS, AED and EMS (Emergency Medical Service), sequential steps in BLS, assessment and resuscitation techniques with regard to airway, breathing, circulation in unresponsive victims of different age groups, recognition and technique regarding removal of foreign body obstruction and recognition of early signs of acute coronary syndrome.

Results

200 questionnaires were given to doctors practicing in govt. medical college and hospital. Out of which 180 were complete and so included in the study. It was seen that all the doctors knew the abbreviation of BLS as Basic life support. Eighty percent doctors (144 doctors) could correctly expand AED as automated external defibrillator. Around eighty seven percent doctors knew what was EMS (Emergency medical services) [Figure 1].

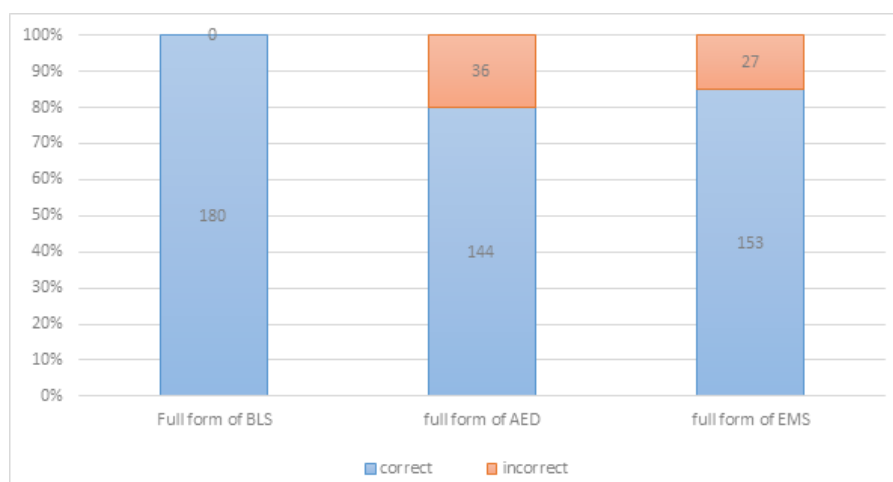


Figure 1: Awareness About BLS

Fifty percent doctors failed to insist on looking for safety as the first step in BLS. Thirty-five percent doctors (63 doctors) failed to insist on activating EMS immediately after confirming the unresponsiveness in an adult. Fifty per cent did not know that the right location of chest compression was the mid chest. Sixty five percent (117) doctors did not know that the depth of chest compression in an adult was 1.5 to 2 inches. All the doctors i.e 100 percent knew that carotid pulse is to be palpated for in an unresponsive person. But only 25 percent knew for how long to palpate for the pulse.

Fifty-five percent did not know that the depth of chest compression in a child was one-third to one-half the depth of the chest. Seventy five per cent did not know that the correct location

of chest compression in an infant was one finger breadth just below the nipple line. Only ten per cent knew that the ratio of compression ventilation in a new born was 3:1 [Figure 2].

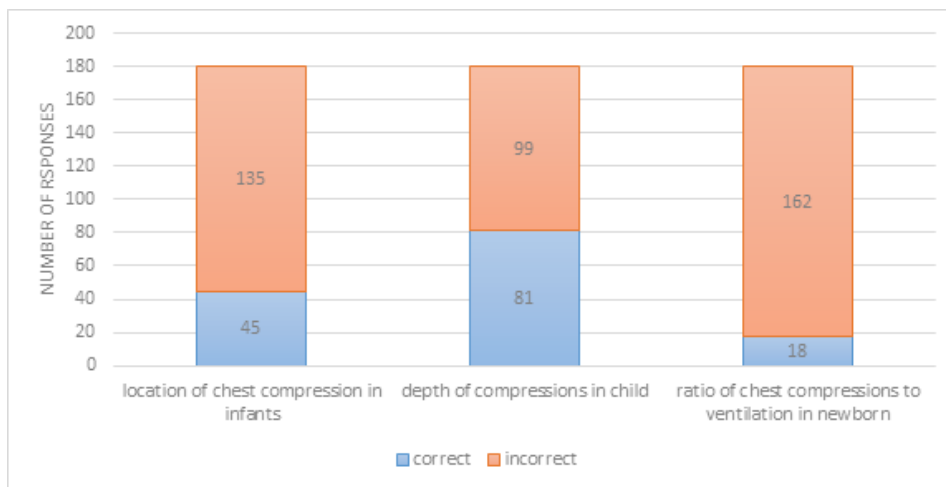


Figure 2: Knowledge Regarding BLS In Pediatric Age Group

Sixty per cent of the responders answered the rate of chest compression as 100/minute in adults and children CPR. But only forty-five percent of the responders had correctly answered that the compression ventilation ratio in a child and adult single rescuer CPR was 30:2. Eighty percent doctors could correctly define first rate CPR as to start chest compressions within 10 seconds of recognition of cardiac arrest, push hard push fast and with minimal interruptions. Regarding switching roles when performing two rescuer CPR, sixty-five percent knew that it is to be changed after every 5 cycles. Ninety-five percent responders could correctly identify and recognise a patient with symptoms of coronary artery disease to be MI (myocardial infarction) and help accordingly. Eighty per cent did not know that the first step in helping a suspected foreign body obstruction victim is to confirm the severity of obstruction by talking to him. Only 10 percent doctors had satisfactory knowledge about BLS (taking 80 percent as the cut off score) [Figure 3].

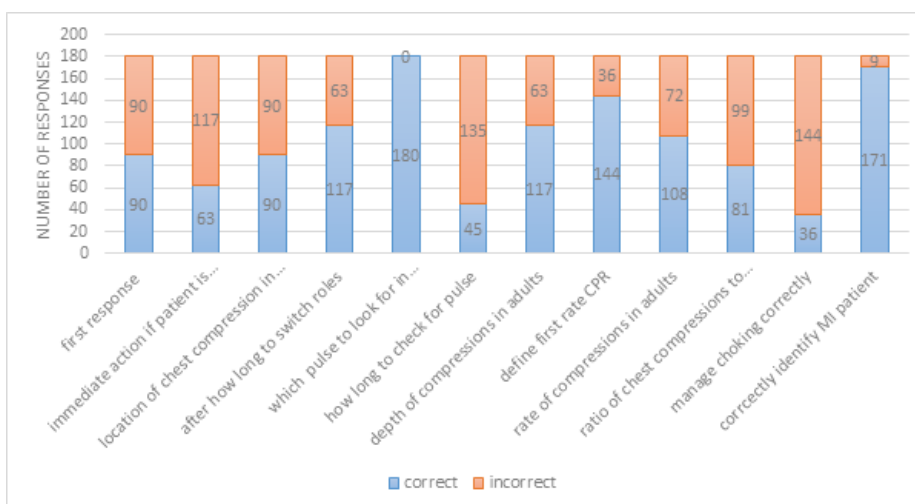


Figure 3: Knowledge Of BLS

Sixty-five percent doctors said that they were lagging behind in the knowledge of BLS because of busy job profile, 25 percent said they didn't have professional training while 10 percent lacked interest [Chart 1].

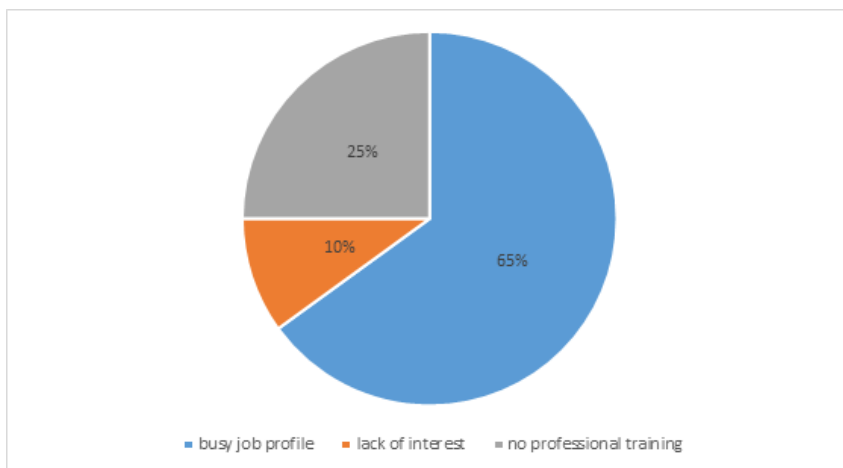


Chart 1: Reasons for Lack of Knowledge

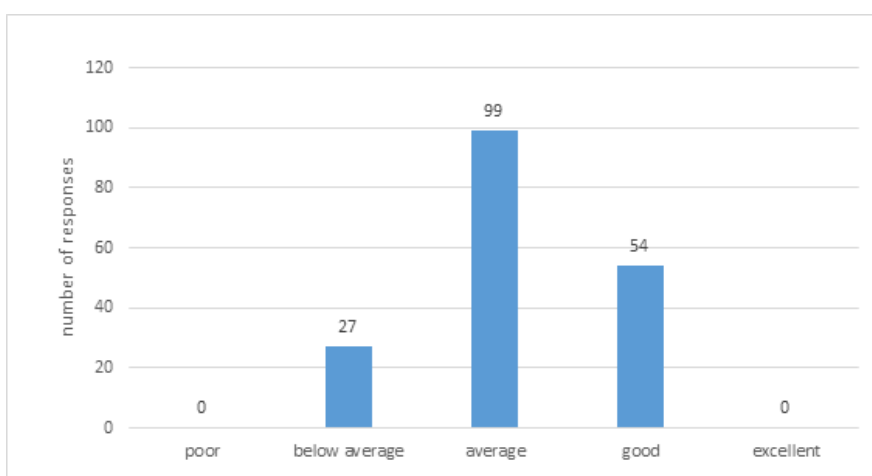


Figure 4: BLS self-grading

Statistical analysis

The collected data was summarized by using frequency, percentage, mean & S.D. To compare the qualitative outcome measures Chi-square test or Fisher’s exact test was used. To compare the quantitative outcome measures Independent t test was used. If data was not following normal distribution, Mann Whitney U test was used. SPSS version 22 software was used to analyse the collected data. p value of <0.05 was considered to be statistically significant.

Discussion

According to the World Health Organization, about 17.3 million people died from Cardio Vascular Diseases (CVDs) in 2008. This represented 30% of all the global deaths. Out of these most were due to coronary heart disease and stroke. For patients who have a cardiac arrest, survival rates and neurologic symptoms are grave. In these conditions, early Cardio Pulmonary Resuscitation (CPR) and early defibrillation might be useful to improve the survival and neurologic outcomes. Basic Cardiac Life Support (BCLS) refers to recognition of sudden cardiac arrest, call for help, maintenance of the airway, and supporting breathing and the circulation without using any equipment other than for personal protection. Considering these facts, the guidelines for BLS are updated every 5 years by the leading resuscitation councils, including the American Heart Association (AHA) and the European resuscitation council since the year 2000. It is important that every member of our community should be trained in effective BLS technique to save lives. At least doctors and medical and

paramedical staff should be trained in high quality CPR, as it is a basic medical skill which can save many lives if implemented timely.

Our study was conducted to identify the awareness regarding basic life support among doctors working in tertiary care hospital. The study was conducted on a total sample of 180 doctors. A similar study was conducted by Rajashekhar et al to evaluate knowledge of basic life support among 388 health care professionals. In our study almost more than 80 percent doctors were aware about BLS, AED and EMS. About half of the individuals were able to correctly identify the location (50.0%), depth of compressions, (45 %) and number of chest compressions (60%) required in an adult per minute and their ratio to breaths (45%). This was corroborated by the findings of a study conducted in South India and Pakistan.^[3-5]

The study by Sharma R, Attar NR et al was aimed to assess the awareness, knowledge, and attitude towards basic life support (BLS) among the interns completing their internship from both medical and dental streams of the Nitte university (a deemed university at Mangalore, Karnataka) and also to identify the areas to be addressed for improving the standards of BLS among the interns at their crucial juncture of moving out to the community, society as health care providers. A descriptive study was conducted by using a Questionnaire comprising of 19 questions to collect the data pertaining to demographic details, awareness and knowledge of BLS, attitude towards BLS among all the medical and dental interns completing their internship. Knowledge of BLS was assessed as per the data contained in the Basic life support manual from American Heart Association. Medical interns scored better in comparison to dental interns. Resuscitation experience (performing BLS) and Training (attending BLS workshop) resulted in better BLS knowledge and better scoring pattern among the medical interns thus boosting the confidence. Present study highlights the need for a structured training of BLS and inclusion of BLS in the Medical and Dental academic curriculum.^[6-9]

Knowledge about basic life support (BLS) is mandatory for healthcare professionals. This study by Chandran KV, Abraham SV et al on Basic life support, aims to evaluate the knowledge among medical students who have completed their MBBS course and have enrolled for internship. A questionnaire pertaining to BLS before and after the BLS workshop (pretest and posttest 1) was distributed among the 50 participants consented for the study. The questionnaire was again given to the same participants at the end of their 1 year of internship (posttest 2) and were analyzed. Knowledge about the essential components of effective cardiopulmonary resuscitation (CPR) was poor among students, which improved to near 100% in posttest 1. Awareness about cervical spine stabilization, log rolling, and management of choking was poor among the students, which improved after the class.^[10]

Baduni N et al raised awareness of basic life support among dental practitioners in New Delhi. This cross sectional study was conducted by giving all participants a printed questionnaire where they had to mention their qualifications and clinical experience, apart from answering 20 questions. To ensure better and safer healthcare, it is essential for all dental practitioners to be well versed with BLS. Similar study was done by Ghanem E et al on Egyptian students. The level of BLS awareness among Egyptian medical students is generally poor. Introduction of regular BLS courses into the undergraduate curriculum is a must to increase the level of BLS knowledge among Egyptian future physicians.^[11,12]

A study on awareness, attitude, and knowledge of basic life support among medical, dental, and nursing faculties and students in the university hospital was done by Sangamesh NC et al. Recognition, prevention, and effective management of life-threatening emergencies are the responsibility of health-care professionals. These situations can be successfully managed by proper knowledge and training of the BLS skills. These life-saving maneuvers can be given through the structured resuscitation programs, which are lacking in the academic curriculum. After collecting the data, the values were statistically analyzed and tabulated. Statistical analysis was performed using Mann-Whitney U-test. The results with $P < 0.05$

were considered statistically significant. Our participants were aware of BLS, showed positive attitude toward it, whereas the knowledge about BLS was lacking, with the statistically significant P value. By introducing BLS regularly in the academic curriculum and by routine hands on workshops, all the health-care providers should be well versed with the BLS skills for effectively managing the life-threatening emergencies.^[13]

The objective of study by Ruben R, Zareen N et al was to determine the level of awareness of BLS among doctors, its practice in hospital settings and also to make them aware about the recent 2010 AHA guidelines. Data analyzed through SPSS 16. Among the trained doctors for BLS, 60.4% of the doctors were aware significantly while 39.6% had forgotten what they were trained for BLS. 45.46% of the untrained for BLS doctors had awareness the rest 54.54% had no awareness. It is now essential to standardize training in Basic life support and make it a mandatory component of all medical, nursing and para-medical school undergraduate curricula. Practicing doctors should be updated regularly for new guide lines to early Cardio Pulmonary Resuscitation (CPR/BLS) and early defibrillation that might be useful to improve the survival and neurologic outcomes with cardiac arrests.^[14]

Chowdari A et al did a cross-sectional study on awareness and perception about basic life support/cardio-pulmonary resuscitation among undergraduate medical students from coastal South India. This study was done to know their knowledge and perceptions about BLS, as they are going to face such situations in future, as doctors. The components of knowledge and perception-based questions were scored. Nearly half (50.2%) were not confident of performing BLS/CPR. Comparison of the students revealed that students who had training had higher mean scores for 'response to a situation needing BLS/CPR' and 'signs of successful resuscitation', though there was little difference in their knowledge of 'indications for BLS/CPR'. Overall perception was not favourable and the students were not confident of performing BLS/CPR. It was concluded that the students need to be taught and trained in the CPR/BLS early in the curriculum to improve their knowledge. Repeated training would increase their confidence.^[15]

None of the doctors had complete knowledge about BLS. It is noteworthy that ten percent of our participants were able to exceed the 80% mark set by AHA, while fifty-five percent scored less than 60%. In a study by Babar Irfan et al also the doctors, nurses and dentists did not perform well when their knowledge regarding BLS was tested: with only 67.1% of the doctors, 35% dentists and 22.9% of the nurses having an adequate amount of knowledge regarding BLS (score \geq 50%). A similar study from South India observed similar orderliness when adjusted according to scores, another study from Nepal found the mean score of nurses to be greater than that of the dentists. The former study had only 15.2% of the participants scoring greater than 50%. Our findings are in line with several studies which observed poor knowledge among health care professionals.^[8-15]

The reasons attributed for lack of awareness about BLS in this study included lack of available professional training 25%, busy curriculum 65% and lack of interest 10%. In a similar study; lack of available professional training (61.9%), busy curriculum (26%), and lack of interest (12.1%) were the reason attributed.^[4] BLS training should be made compulsory and should be a part of CMEs at regular intervals for faculty members as appropriate training of BLS improves survival rates following resuscitation of cardiac arrest patients and such courses with hands on practice are essential for the betterment of CPR outcomes. It has been shown in many studies that knowledge and skills of CPR performance decrease following 6 months after training. The limitation of this study was its sample size and the fact that it was a questionnaire-based study and not a skill based one.

Conclusion

Awareness of BLS amongst doctors is quite satisfactory with nearly 80 to 100 percent doctors aware about BLS, EMS and AED. BUT knowledge about Basic Life Support (BLS) is very poor and needs to be improved by regular and continuous evaluation and BLS workshops. The BLS knowledge among young doctors in India is very low as evidenced by poor performance in the pretest. Regular BLS courses are necessary to improve the knowledge among them and to prepare them to respond to a medical emergency.

Annexure 1

Questionnaire

1. What is the abbreviation of “BLS”?
 - a. Best Life Support
 - b. Basic Life Support
 - c. Basic Lung Support
 - d. Basic Life Services
2. When you find someone unresponsive in the middle of the road, what will be your first response? (Note: You are alone there)
 - a. Open airway
 - b. Start chest compression
 - c. Look for safety
 - d. Give two breathings
3. If you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action?
 - a. Start CPR
 - b. Activate EMS
 - c. Put him in recovery position
 - d. Observe
4. What is the location for chest compression?
 - a. Left side of the chest
 - b. Right side of the chest
 - c. Mid chest
 - d. Xiphisternum
5. What is the location for chest compression in infants?
 - a. One finger breadth below the nipple line
 - b. One finger breadth above the nipple line
 - c. At the intermammary line
 - d. At Xiphisternum
6. When performing two-rescuer CPR, how often should you switch roles?
 - a. After every cycle of CPR
 - b. After every 2 cycle of CPR
 - c. After every 5 cycle of CPR
 - d. After every 10 cycle of CPR
7. A 50-year-old man with retrosternal chest discomfort, profuse sweating and vomiting. What is next?

- a. Probably myocardial infarction, so activates EMS, give an aspirin tablet & allow him to rest
 - b. Probably acid peptic disease, give antacid and Ranitidine
 - c. Probably indigestion, hence give soda
 - d. Take him by walk to the nearest clinic.
8. Depth of compression in adults during CPR
- a. 1½ – 2 inches
 - b. 2½ – 3 inches
 - c. 1 – 1½ inches
 - d. ½ – 1 inch
9. Depth of compression in Children during CPR
- a. 1½ – 2 inches
 - b. 2½ – 3 inches
 - c. One-half to one-third depth of chest
 - d. ½ – 1 CM
10. What are the vital characteristics of first rate CPR
- a. Start chest compressions within 10 seconds of recognition of cardiac arrest
 - b. Push hard push fast
 - c. Minimize interruptions
 - d. All of the above
11. Rate of chest compression in adult and Children during CPR
- a. 100 / min b. 120/min c. 80/min d. 70/min
12. Ratio of CPR, single rescuer in adult is
- a. 15:2 b. 5:1 c. 30:2 d. 15:1
13. In a new born the chest compression and ventilation ratio is
- a. 15:2 b. 5:1 c. 30:2 d. 3:1
14. What does abbreviation AED stand for?
- a. Automated External Defibrillator
 - b. Automated Electrical Defibrillator
 - c. Advanced Electrical Defibrillator
 - d. Advanced External Defibrillator
15. What does abbreviation EMS stand for?
- a. Effective Medical Services
 - b. Emergency Management Services
 - c. Emergency Medical Services
 - d. External Medical Support
16. If you and your friend are having food in a canteen and suddenly your friend starts expressing symptoms of choking, what will be your first response?
- a. Give abdominal thrusts
 - b. Give chest compression
 - c. Confirm foreign body aspiration by talking to him
 - d. Give back blows
17. Where should you palpate for pulse in a unconscious adult during CPR ?

- a. Carotid pulseb. Radial pulsec. Brachial pulsed. . Femoral pulse
18. For how long should you check for pulse in an adult?
- a. At least 30 seconds
 - b. At least one full minute
 - c. 10 – 15seconds
 - d. 5 – 10 seconds
19. Please rate yourself on BLS knowledge?
- a. Poorb. below average c. average d. goode. excellant
- 20.Please indicate the reason for lack of knowledge about BLS.
- a. Busy job profile
 - b. Lack of interest
 - c. No professional training

References

1. 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;
2. Berg RA, Hemphill R, Abella BS, Aufderheide TP, Cave DM, Hazinski MF, et al. Part 5: Adult basic life support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation.* 2010.
3. Rajashekar S, M. R. NG, Anthony A. Knowledge of basic life support among health care professionals in a tertiary care hospital in Chitradurga. *Int J Community Med Public Heal.* 2018;
4. Aroor AR, Saya RP, Attar NR, Saya GK, Ravinanthanan 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 Emergencies, Trauma Shock.* 2014;
5. Irfan B, Zahid I, Khan MS, Khan OAA, Zaidi S, Awan S, et al. Current state of knowledge of basic life support in health professionals of the largest city in Pakistan: A cross-sectional study. *BMC Health Serv Res.* 2019;
6. Roshana S, KH B, RM P, MW S. Basic life support: knowledge and attitude of medical/paramedical professionals. *World J Emerg Med.* 2012;
7. Arjyal B, Rajbanshi LK, Khanal K, Bajracharya A. Knowledge and Awareness of Basic Life Support among Medical Staffs of Birat Medical College and Teaching Hospital. *Birat J Heal Sci.* 2019;
8. Harsha Kumar H, Upadhya Ps, Ashok Ps, Chowdari Ga, Niranjana G, 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 Heal.* 2013
9. Sharma R, Attar NR. Adult basic life support (BLS) awareness and knowledge among medical and dental interns completing internship from deemed university. *Journal of Health and Allied Sciences NU.* 2012 Sep;2(03):06-13.
10. Chandran KV, Abraham SV. Basic life support: Need of the hour—a study on the knowledge of basic life support among young doctors in india. *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine.* 2020 May;24(5):332.
11. Baduni N, Prakash P, Srivastava D, Sanwal MK, Singh BP. Awareness of basic life support among dental practitioners. *National journal of maxillofacial surgery.* 2014 Jan;5(1):19.

12. Ghanem E, Elgazar M, Oweda K, Tarek H, Assaf F, El-Husseny MW, Elgebaly A, Abushouk AI. Awareness of basic life support among Egyptian medical students; a cross-sectional study. *Emergency*. 2018;6(1).
13. Sangamesh NC, Vidya KC, Pathi J, Singh A. Awareness, attitude, and knowledge of basic life support among medical, dental, and nursing faculties and students in the university hospital. *Journal of International Society of Preventive & Community Dentistry*. 2017 Jul;7(4):161.
14. RUBEEN R, ZAREEN N, KHAN F, RATTAN S, MOIZ M, NOUSHEEN N. AWARENESS AND PRACTICE OF BASIC LIFE SUPPORT AMONG DOCTORS IN CIVIL HOSPITAL KARACHI. *Medical channel*. 2013 Jan 1;19(1).
15. Chowdari A, Niranjana 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. *International Journal of Medicine and Public Health*. 2013;3(3).