

Knowledge and Attitude toward “Basic Life Support” in Dental College

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Abstract

Aims: The aim of the study was to assess and compare the level of knowledge and attitude toward “basic life support (BLS)” among BDS students (3rd prof., final prof., and interns). **Materials and Methods:** The questionnaire was distributed among 190 students of the dental college. It had three sections that included demographic data and qualification, knowledge of participants regarding BLS, and attitude toward BLS. **Statistical Analysis Used:** ANOVA test (to compare knowledge score of students at various academic levels) and Student’s *t*-test (to compare knowledge score of males and females) were used for statistical analysis. **Results:** One hundred and ninety students completed the survey with a response rate of 77.9%. We found that the mean knowledge score of males (7.09) was significantly higher than the mean knowledge score of females (6.07) ($P = 0.02$). We also deduced that the knowledge score was relatively higher among interns than the final and third prof. students. Nearly 96.8% volunteers were of the view that all dental students and clinicians must know about BLS and the training for the same must be given to them. **Conclusions:** We concluded that dental students had a positive attitude toward BLS while they were severely lacking in the knowledge of it.

Keywords: Attitude, basic life support, cardiopulmonary resuscitation, dental students, knowledge

INTRODUCTION

Ronald Reagan said, “Failing to prepare is preparing to fail.” This philosophy is nowhere more evident than during a medical crisis when minutes can be the difference between life and death.

When a patient experiences a respiratory arrest, cardiac arrest, or obstructed airway, you need to act swiftly and promptly starting with basic life support (BLS) skills. Invented in 1960, cardiopulmonary resuscitation (CPR) is a simple lifesaving protocol following a life-threatening medical emergency. It includes psychomotor skills for performing high-quality CPR, using an automated external defibrillator (AED), and relieving an obstructed airway for patients of all ages.^[1]

A study by Müller *et al.*^[2] found that medical emergencies are not rare in dental practice, as about two-thirds of dentists faced at least one emergency during the 12-month study period. The combined findings of surveys by Fast *et al.* and Malamed^[3,4] showed 30,602 emergencies occurring over a 10-year period in the offices of the 4309 dentists reporting. The gravity of these situations justifies the need for every dental practitioner to be

at least able to perform the basics of CPR: chest compression and rescue breath.^[5]

Indeed, during a cardiac arrest, in the absence of CPR, chances of survival are reduced by 7%–10% every minute after the event begins.^[6] Hence, in the United States, BLS training has been recommended for all health-care professionals since 1966.^[7]

Different reports have described the knowledge of BLS among dentists in India, but a little research regarding this has been carried out in North India. Chandrasekaran *et al.*^[8] evaluated the knowledge of BLS among health-care students and professionals in Tamil Nadu and found that the study participants were severely lacking in BLS knowledge. Another study by Reddy *et al.*^[9] concluded poor knowledge regarding BLS among dental students in dental school of India. A study

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Access this article online

Quick Response Code:



Website:
www.ijds.in

DOI:
10.4103/IJDS.IJDS_13_17

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How to cite this article: Goel S, Chaudhary G, Kaura S, Marria G. Knowledge and attitude toward “basic life support” in dental college. Indian J Dent Sci 2017;9:73-8.

by Gonzaga *et al.*^[10] found that 86% of the interviewed dentists had received information about CPR; however, most of them had not received practical training for it. Another study by Raghava and Attar Nazir^[11] showed poor knowledge of BLS among dental interns in dental college of Mangalore.

The aim of the present study was to assess and compare the level of knowledge and attitude toward "BLS" among BDS students (3rd prof., final prof., and interns).

MATERIALS AND METHODS

This survey-based study enrolled 190 students of 3rd prof., final prof., and interns of the dental college who were randomly selected. The questionnaire was prepared. It was composed of three sections which included: (1) Demographic data and qualification, (2) knowledge of participants regarding BLS (15 multiple choice questions [MCQs]), and (3) attitude toward BLS. In the first section, the respondents had to provide information regarding gender and academic level.

The second section comprised 15 MCQs prepared from Guidelines for CPR 2015 by American Heart Association and Handbook for Basic Life Support by American Red Cross. An answer key was also prepared for the same. Finally, in the third section, the information was obtained about training in CPR. The volunteers were also given the opportunity to explain why they thought themselves to be reluctant to perform CPR and the reasons for lack of knowledge about BLS.

The questionnaire was reviewed and distributed among the students. The students were advised to answer the questions without resorting to literary material or other professionals. To avoid any malpractice while answering the questionnaire, the participants were asked to fill up the details in front of the investigator. Every precaution was taken to protect the privacy of the research subject and the confidentiality of their personal

information. The knowledge score for every participant was calculated where 15 was maximum score possible and 0 was the minimum score. More the score, the better the knowledge regarding BLS [Questionnaire].

The data were compiled, tabulated, and statistically analyzed using ANOVA test (to compare knowledge score of students at various academic levels) and Student's *t*-test (to compare knowledge score of males and females). A critical *P* = 0.05 was considered statistically significant.

RESULTS

We distributed a total of 244 questionnaires among the students (3rd prof., final prof., and interns) of the college. Out of all, only 190 students returned the form with a response rate of 77.9%. Of all the participants included, 32 (16.8%) were males and 158 (83.2%) were females. The study group comprised 44 (23.2%) third prof. students, 71 (37.4%) final prof. students, and 75 (39.4%) interns. The data listed in Table 1 showed that the mean knowledge score of males (7.09) was significantly higher than the mean knowledge score of females (6.07) (*P* = 0.02).

When evaluated on individual basis, the lowest score obtained by males was 3 out of a total score of 15 and the highest score being 12. On the other hand, a lowest score of 1 and a highest score of 14 were fetched by females. A highly statistically significant difference was detected among the three different academic levels (ANOVA test, *P* < 0.04). The analysis showed that the mean score of the interns was significantly higher than third prof. and final prof.

As shown in Table 1, only 4 (2.1%) respondents had previously attended BLS workshop. Of 190 study participants, only 14 (7.4%) had done/seen CPR on patients while remaining 176 (92.6%) had never witnessed any. Despite the lack of awareness regarding BLS, only 41 (21.6%) participants were

Table 1: Comparison of the knowledge score in relation to different characteristics of the participants

Variable	Number of students	Lowest score	Highest score	Mean score	<i>P</i>
Gender					
Male	32	3	12	7.09	0.02
Female	158	1	14	6.07	
Academic level					
3 rd Prof	44	1	10	5.38	<0.04
Final Prof	71	2	11	6.09	
Interns	75	3	14	6.89	
BLS workshop attended					
Yes	4	4	8	5.75	0.6
No	186	1	14	6.25	
Practically done/seen CPR on patients					
Yes	14	3	11	6.07	0.77
No	176	1	14	6.26	
Reluctance to perform CPR					
Yes	41	3	11	6.41	0.56
No	149	1	14	6.20	

BLS: Basic life support, CPR: Cardiopulmonary resuscitation

reluctant to perform CPR in comparison to 149 (78.4%) others who had no such reluctance. The cause for disinclination reported was the lack of knowledge regarding the field.

The pie charts in Figure 1 delineate the opinion of the participants toward BLS. Volunteers of the view that all dental students and clinicians must know about BLS were 184 (96.8%). Furthermore, they were of perspective that BLS training must be given to all dental students and clinicians.

As shown in Table 2, around 78.9% participants were able to correctly answer whether BLS includes the use of drugs or not. Nearly 57.4% volunteers were able to identify the correct maneuver for maintaining the airway. When asked about the method of providing ventilation, only 32.6% were able to answer correctly while majority (57.4%) gave an incorrect answer. Only 22.2% students were able to recognize the correct site and time for checking pulse in a patient who is not breathing. As for the question on chest compression in adults, 45.8% students were able to give an accurate reply for the

location of hands for chest compression. In addition, only 40% could tell the correct depth of compression and 27.4% gave an unerring reply to compression: breath ratio in adults. About 34.7% participants failed to tell the depth of compression in children and 27.4% lacked the knowledge of compression to ventilation ratio in children. Very few respondents (19.5%) knew the correct compression rate. Only 40% participants knew about the use of AED in cardiopulmonary resuscitation. Nevertheless, 54.2% could correctly identify the critical characteristics of high-quality CPR.

DISCUSSION

Medical emergencies may occur with any person, at any time and place, as well as during and after any dental procedure. An emergency may be defined as a situation occurring mostly due to disease, anxiety, or complications during treatment, all of which may put the patient's life at risk. The emergency situations may be summarized as drug allergy, acute myocardial infarction, cardiac arrest, respiratory arrest, and anaphylactic shock.^[12] Immediate management is of utmost importance in these cases. Three letters imperative for a dental office to know to initiate patient rescue are (in correct sequence): C-A-B where C = compression, A = airway, B = breathing.^[13]

Compression provides an adequate blood supply to the body, especially the heart and brain, by delivering oxygen to all cells and removing carbon dioxide, throughout the perfusion of blood throughout the body.^[13] Chest compression must be performed at a rate of 100–120/min to a depth of at least 2 inches (5 cm) keeping the compression to ventilation ratio of 30:2 for adults.^[13]

The second step is the maintenance of an airway, i.e., the protection and continuity of a clear passage for oxygen and carbon dioxide to pass between the lungs and the outside of the body. Remember, if the patient is alert and talking, the airway is open. If the patient is unresponsive and his/her airway is not open, hence you need to open the airway by either head tilt/chin lift technique or by modified jaw-thrust maneuver, if a head, neck, or spinal injury is suspected.^[1]

The third step breathing refers to the inflation and deflation of the lungs (respiration) through the airway. When checking for breathing, look to see if the patient's chest rises and falls, listen for escaping air, and feel for it against the side of your cheek. Normal breathing is quiet, regular, and effortless. Isolated or infrequent gasping in the absence of normal breathing in a patient who is unresponsive may be agonal breaths.^[1]

Knowledge about chain of survival (that includes BLS) is an efficient strategy which influences the course of sudden cardiac arrest. However, limited knowledge regarding BLS hinders the skills to perform CPR. Hence, the present study was designed to investigate the knowledge of dental students. To the best of our knowledge, this is the first study in North India that addresses the detailed knowledge and attitude toward BLS among dental students.

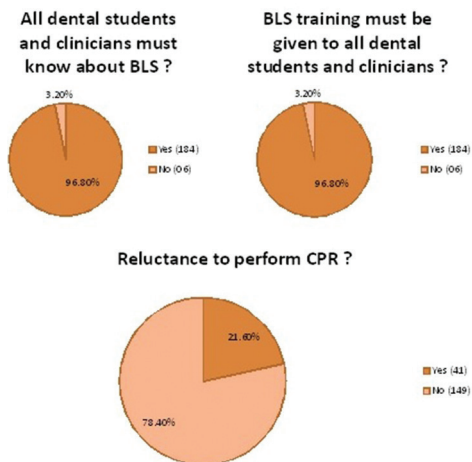


Figure 1: Opinion of participants toward basic life support.

Table 2: Knowledge of the participants

Question number	Correct number (%)	Incorrect number (%)	Don't know number (%)
1	150 (78.9)	35 (18.4)	5 (2.7)
2	109 (57.4)	74 (38.9)	7 (3.7)
3	62 (32.6)	109 (57.4)	19 (10.0)
4	136 (71.6)	46 (24.2)	8 (4.2)
5	42 (22.2)	131 (68.9)	17 (8.9)
6	52 (27.4)	110 (57.9)	28 (14.7)
7	95 (50.0)	52 (27.4)	43 (22.6)
8	42 (22.2)	147 (77.4)	1 (0.5)
9	76 (40.0)	94 (49.5)	20 (10.5)
10	83 (43.7)	66 (34.7)	41 (21.6)
11	87 (45.8)	91 (47.9)	12 (6.3)
12	37 (19.5)	136 (71.6)	17 (8.9)
13	76 (40.0)	72 (37.9)	42 (22.1)
14	37 (19.5)	141 (74.2)	12 (6.3)
15	103 (54.2)	62 (32.6)	25 (13.2)

The results of our study showed that dental students were severely lacking in the knowledge of BLS. Our findings are in accordance with previous studies that found similar results and concluded that awareness and knowledge of BLS need to be improved and updated.^[7-9] The study results depicted that there were more of female respondents (83.2%) than males (16.8%) indicating more number of females enrolling for survey. This was in concordance with a study conducted in Hyderabad, India by Reddy *et al.*^[9] which also had more number of female respondents.

Our study concluded that the interns had the highest knowledge mean score (6.89), whereas 3rd-year students had the lowest 1 (5.38). This result is in contrast with the findings of Reddy *et al.*,^[8] which concluded that a greater percentage of 3rd-year students have adequate knowledge (91.5%).

In our study, we found that 21.6% of the participants were reluctant to perform resuscitation. This result supports the finding of Roshana *et al.*^[14] which found that 17.4% were reluctant to perform resuscitation. In contrast, about two-thirds of the respondents were reluctant to perform CPR in a study by Alotaibi *et al.*^[15] in Saudi Arabia. In the present study, the most common cause of reluctance was the lack of knowledge regarding BLS. On the other hand, Roshana *et al.*^[14] found that the most commonly cited anxiety for the performance of resuscitation was the fear of being ineffective followed by the fear of further harm to the victim.

Our study established that only 2.1% volunteers had previously attended BLS workshop, whereas 7.4% of respondents had previously done/seen CPR on patients. In contrast, a study by Alotaibi *et al.*^[15] found that almost all the participants (99.1%) had attended previous BLS workshops and most of them (86.8%) had not been involved in any patient resuscitation experience.

This study inferred that two factors might have an effect on the knowledge scores of the respondents, which were gender and academic level. The knowledge score was significantly higher among males (7.09) when compared to females (6.07). In contrast, Reddy *et al.*^[8] concluded that mean knowledge score of females was higher than mean score of males. The participants with higher academic level had relatively higher knowledge scores in comparison to those with lower academic level although all the participants had an inadequate knowledge. This finding can be explained by the notion that longer clinical experience increases the likelihood of participants being involved with medical emergencies; these previous experiences likely impact the retention of knowledge. The most common justification indicated by the participants for their lack of knowledge and skills was the lack of professional training available. Arsati *et al.*^[16] found that the lack of training and updates in an undergraduate program was the common cause for the lack of the knowledge. Almost all of our participants expressed the need for improved knowledge of BLS and 96.8% participants agreed that BLS training must be given to all dental students and clinicians.

Every study has certain limitations, and our study is not an exception in this regard. Practical skills of BLS could not be assessed in this study. Awareness on BLS among practicing doctors was unknown as they were not included in the study.

In India, the undergraduate curriculum as proposed by the Dental Council of India includes medical emergency management under the subjects of general medicine and oral and maxillofacial surgery.^[17] Despite this, the participants included in the study showed a lack of knowledge. Some more changes need to be brought about at the administrative level. Further surveys with greater sample size including dental students as well as the practicing dentists need to be carried out to evaluate the knowledge of the dentists.

CONCLUSIONS

Our findings demonstrate that dental students had inadequate BLS knowledge. However, they had a positive attitude toward it. Dentistry is a health profession that should provide complete medical care and treat the whole patient rather than focusing on the oral cavity. We believe that undergraduate courses in dentistry must be revised to ensure proper BLS training. Furthermore, the dentists should regularly take theoretical and practical courses on BLS.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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QUESTIONNAIRE

- 1) American Red Cross Basic Life Support For Healthcare Providers Handbook
- 2) American Heart Association, Guidelines 2015, CPR & ECC

The questionnaire that was distributed among students:^[1,13]

Survey about knowledge regarding "basic life support" fill in the following details

Demographics:

- Gender:
- Your Academic level: 3rd prof./final prof./intern

Tick mark the correct answer. Leave it blank in case you don't know the answer.

1. BLS includes the use of drugs.
 - a) true b) false
2. If the patient is unresponsive and not breathing, airway can be maintained by _____.
 - a) head tilt/chin lift b) sweep finger in mouth c) chin tilt/head lift
3. Ventilations can be given by:
 - a) hyperbaric oxygen therapy b) bag-valve mask (BVM) resuscitation c) neither a nor b
4. Unconscious patient's circulation can be maintained by:
 - a) Trendelenburg sign b) blood thinners/anticoagulants c) cardiopulmonary resuscitation
5. If the patient is not breathing, pulse must be checked for:
 - a) 30 seconds b) 20 seconds c) 10 seconds
6. For Cardiopulmonary resuscitation, the compressions: breaths ratio in adults is _____.
 - a. 10:2 b) 20:2 c) 30:2
7. Chest compression to ventilation ratio in children is _____.
 - a) 10:2 b) 15:2 c) 20:2
8. Pulse should be checked at:
 - a) radial artery b) carotid artery c) radial vein
9. The depth of the compression should be _____ in adults.
 - a) 2 inches b) 3 inches c) 4 inches
10. The depth of the compression should be _____ in children.
 - a) ½ anteroposterior diameter of chest
 - b) 1/3 anteroposterior diameter of chest
 - c) ¼ anteroposterior diameter of chest

11. What is the location for chest compression in adults?
 - a) 2 hands on the lower half of the sternum
 - b) 1 hand on the lower half of the sternum
 - c) 2 hands on the upper half of the sternum
12. Compression rate must be _____.
 - a) 100/min b) 75/min c) 50/min
13. The use of the following enhances cardiopulmonary resuscitation.
 - a. heart-lung machine b) automated external defibrillator c) medical ventilator
14. The preferred sequence of BLS in children is _____.
 - a) A-B-C b) A-C-B c) C-A-B (A: airway, B: breathing, C: compression)
15. The critical characteristics of high-quality cardiopulmonary resuscitation include which of the following?
 - a. minimize interruptions b) push hard and fast c) both a and b

Also mention

- Have you attended any BLS (basic life support) workshop (if YES, when)?
- Have you practically done/seen CPR on patient? Yes/No

What is your opinion about BLS?

- All the dental students and clinicians must know about BLS. Yes/No
- BLS training must be given to the dental students and the clinicians. Yes/No
- Are you reluctant to perform CPR (if YES, why)?

What are the reasons for the lack of knowledge about BLS?

Date

Signature

Disclaimer

Every precaution will be taken to protect the privacy of the research subject and the confidentiality of their personal information.