Original Article

Assessment of knowledge and attitude about basic life support among dental interns and postgraduate students in Bangalore city, India

Dhage Pundalika Rao Narayan, Suvarna V Biradar, Mayurnath T Reddy, Sujatha BK

Department of Public Health Dentistry, Vydehi Institute of Dental Sciences and Research Center, Bangalore, India

Corresponding Author: Suvarna V Biradar, Email: suvarna13gulbarga@gmail.com

BACKGROUND: Life-threatening emergencies can occur at anytime, at anywhere and in anyone. Effective management of an emergency situation in the dental office is ultimately the dentist's responsibility. The lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal complications. Therefore, health professionals including dentists must be well prepared to deal with medical emergencies. This study was undertaken to assess the knowledge about and attitude towards basic life support (BLS) among dental interns and postgraduate students in Bangalore city, India.

METHODS: A cross sectional survey was conducted among dental interns and postgraduate students from May 2014 to June 2014 since few studies have been conducted in Bangalore city. A questionnaire with 17 questions regarding the knowledge about and attitude towards BLS was distributed to 202 study participants.

RESULTS: The data analyzed using the Chi-square test showed that dental interns and postgraduate students had average knowledge about BLS. In the 201 participants, 121 (59.9%) had a positive attitude and 81 (40.1%) had a negative attitude towards BLS.

CONCLUSIONS: Cardiopulmonary resuscitation should be considered as part of the dental curriculum. Workshops on a regular basis should be focused on skills of cardiopulmonary resuscitation for dental students.

KEY WORDS: Basic life support; Cardiopulmonary resuscitation; Knowledge; Attitude

World J Emerg Med 2015;6(2):118–122
DOI: 10.5847/wjem.j.1920–8642.2015.02.006

INTRODUCTION

The life of an individual is influenced by various factors including the condition of health, education, occupation, and socioeconomic status. Among the various factors, the condition of health influences the life of an individual to a greater extent. There are various systemic conditions of health like myocardial infarction, congestive cardiac failure, and stroke which may cause even death of an individual. There are different ways by which the occurrence of death of an individual may be prevented. They include the instructions given and medications

prescribed by health professionals, diet, and physical exercises. In addition to these ways, basic life support (BLS) in case of medical emergencies is most important.

BLS refers to maintaining an airway and supporting breathing and circulation without using any equipment.^[1] Each individual in a community should know the importance of BLS in saving lives and improving the quality of community health.^[2]

Life-threatening emergencies can occur at anytime, at anywhere and in anyone. Such emergencies are somewhat more likely to occur within the confines of

the dental office due to the increased level of stress which is often present. Effective management of an emergency in the dental office is ultimately the dentist's responsibility. The lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal complications. Therefore, health professionals including dentists must be well prepared to manage medical emergencies. Hence, BLS is an important tool until a medical emergency can be treated.^[3]

Studies on BLS have been rarely conducted among dental students. This cross sectional survey was carried out to assess the knowledge about and attitude towards BLS among dental interns and postgraduate students in Bangalore city. The objectives of this survey were to assess the knowledge about BLS among dental interns and postgraduate students and the attitude of dental interns and postgraduate students towards BLS.

METHODS

Study design

A cross sectional survey was conducted from May 2014 to June 2014 in Bangalore city in India.

Study participants

The study population included dental interns and postgraduate students. The study was conducted at Dental Colleges in Bangalore city. Simple randomized sampling method was used in the selection of dental colleges.

Sample size calculation

Calculation of the sample size was based on the data collected from previous studies.^[1,5-8]

Sample size formula

$$n = \frac{2\sigma^2 (Z_{\beta} + Z_{\alpha/2})^2}{(\bar{x}_2 - \bar{x}_1)^2}$$

Where n = sample size

σ^2 = standard deviation of outcome variables

Z_{β} = 0.84 for 80% power

$Z_{\alpha/2}$ = level of statistical difference 1.96

$(\bar{x}_2 - \bar{x}_1)^2$ = effect size (difference between means)

Using the above formula and similar studies conducted previously, we calculated the sample size as 100 per group.

Ethical considerations

The study proposal was approved by the Institutional Review Board of Vydehi Institute of Dental Sciences and Research Center, Bangalore city. Before the start of the study,

the permission to carry out the study was obtained from the institutional heads of the dental colleges in Bangalore city.

Data collection

A cross-sectional survey assessed the knowledge about and attitude towards BLS among dental interns and postgraduate students in Bangalore city. Six dental colleges were selected randomly from the list of dental colleges in Bangalore city. From each college, interns and the postgraduate students from all specialities were included in the study. In 202 study participants included in the study, 102 were interns and 100 were postgraduate students. A pre-tested self administered questionnaire was given to all the participants. A pilot study was conducted to know the feasibility of the study and also for pre-testing the questionnaire. Written informed consent was obtained from the interns and the postgraduate students.

A closed ended questionnaire was developed by referring to previous studies and the questionnaire contained 17 questions concerning the knowledge about and attitude towards BLS. The variables included BLS, AED, CPR, EMS, assessment and resuscitation techniques regarding airway, breathing, circulation in unresponsive victims, emergency equipments in the dental office and knowledge about drugs used in emergencies in dental practice. The participants were assessed according to their responses to the questionnaire.

In all departments of the 6 dental colleges, informed consent was obtained from the participants, of whom each was asked to fill in the questionnaire in the presence of the investigator to avoid any malpractice.

The participants who were unwilling to take part in the study were excluded. The interns and postgraduate students of all the departments of the 6 dental colleges were included in the study.

Data processing and analysis

The data were entered in Microsoft Office Excel 2007, and descriptive and inferential statistical analyses were made. The Chi-square test and Fisher's exact test were used to detect the significance of parameters on categorical scale between the two groups. The statistical software SPSS 15.0 was used to analyze the data.

RESULTS

Socio-demographic characteristics of the study subjects

The age of the subjects ranged from 22 to 40 years (mean 25.45±3.03 years) (Table 1). Of the 102 interns,

Table 1. Distribution of the subjects based on age (n, %)

Age (year)	Interns	PG students	Total	P value
22–30	102 (100)	93 (93)	195 (96.5)	$P<0.001$
31–40	0 (0)	7 (7)	7 (3.5)	
Total	102 (100)	100 (100)	202 (100)	
Mean±SD	23.69±1.20	27.25±3.26	25.45±3.03	

Table 2. Distribution of the subjects based on gender (n, %)

Gender	Interns	PG students	Total
Female	70 (68.6)	68 (68)	138 (68.3)
Male	32 (31.4)	32 (32)	64 (31.7)
Total	102 (100)	100 (100)	202 (100)

Gender distribution was not statistically significant, $P>0.001$.

Table 3. Distribution of the subjects based on knowledge (n, %)

Knowledge score	Interns (n=102)	PG students (n=100)	Total (n=202)	P value
Poor	18 (17.6)	13 (13)	31 (15.3)	$P>0.001$
Average	64 (62.7)	75 (75)	139 (68.8)	
Good	20 (19.6)	12 (12)	32 (15.8)	

70 (68.9%) were female and 32 (31.4%) were male. Among the 100 postgraduate students, 68 (68%) were female and 32 (32%) were male (Table 2).

Dental interns' knowledge about BLS

The knowledge scores of interns were marked as poor, average, and good. Among the 102 interns, 18 (17.6%) had poor knowledge, 64 (62.7%) had average knowledge, and 20 (19.6%) had good knowledge about BLS (Table 3).

Dental postgraduate students' knowledge about BLS

Among the 100 postgraduate students, 13 (13%) had poor knowledge, 75 (75%) had average knowledge, and 12 (12%) had good knowledge about BLS (Table 3).

In all of the participants, 139 (68.8%) had average knowledge about BLS. There was no significant difference in knowledge scores between interns and postgraduate students ($P>0.001$) (Table 3).

Attitude of dental interns towards BLS

The attitude of interns was classified as positive and negative respectively. Of all the interns, 69 (67.6%) had a positive attitude towards BLS and 33 (32.4%) had a negative attitude towards BLS (Table 4).

Attitude of dental postgraduate students towards BLS

Of the 100 postgraduate students, 52 (52.0%) had

Table 4. Distribution of the subjects based on their attitude (n, %)

Attitude	Interns (n=102)	PG students (n=100)	Total (n=202)	P value
Negative	33 (32.4)	48 (48.0)	81 (40.1)	$P>0.001$
Positive	69 (67.6)	52 (52.0)	121 (59.9)	

Table 5. Distribution of the subjects based on their knowledge and attitude scores

Score	Interns	PG students	Total	P value
Knowledge score	8.12±1.67	7.90±1.38	8.01±1.54	$P>0.001$
Attitude	3.51±0.79	3.42±0.71	3.47±0.75	
Mean±SD	11.64±2.06	11.32±1.67	11.48±1.97	

a positive attitude towards BLS and 48 (48.0%) had a negative attitude towards BLS (Table 4).

Comparison of knowledge scores about BLS between dental interns and postgraduate students

The total scores about the knowledge among interns and postgraduate students are shown in Table 5. The knowledge score among the 102 interns was 8.12±1.67 and among the 100 postgraduate students was 7.90±1.38 ($P>0.001$). Of all participants, 139 (68.8%) had average knowledge about BLS. There was no significant difference in knowledge scores between interns and postgraduate students ($P>0.001$) (Table 3).

Comparison of attitude towards BLS between dental interns and postgraduate students

The total scores about attitude between dental interns and postgraduate students are shown in (Table 5). The attitude score of the dental interns was 3.51±0.79 and that of the postgraduate students was 3.42±0.71. Of the participants, 121 (59.9%) had a positive attitude towards BLS and 81 (40.1%) had a negative attitude towards BLS. There was a moderate significant difference ($P>0.001$) in the attitude towards BLS between dental interns and postgraduate students (Table 4).

Student's *t* test was not used since the present study was not to compare the knowledge and attitude about BLS between dental interns and postgraduate students. But ANOVA with Scheffe's test was used since there were two groups for comparison.

DISCUSSION

Health professionals should have sound knowledge and skills regarding BLS. This study revealed that the 202 participants had average knowledge on BLS and 121

(59.9%) of them had a positive attitude towards BLS. The results of the present study were consistent with those of the study conducted by Roshana et al.^[6] Other studies^[7] also demonstrated inadequate knowledge about CPR in healthcare professionals, which was due to lack of training.

Akritia et al.^[10] reported the inadequacy of knowledge about BLS and advanced cardiac life support in undergraduate medical students, but we found the average knowledge about BLS in dental interns and postgraduate students in the present study. Sharma et al.^[8] found that medical and dental interns who had completed their internship had poor knowledge about BLS. In the present study, however, dental interns had average knowledge about BLS. A similar study^[3] on dentists demonstrated that the preparation of dentists for the management of medical emergencies was not satisfactory.

Emergencies do occur in the dental office. Minimal knowledge about these incidents leads to feelings of insecurity, dissatisfaction or limited appreciation of responsibility of dentists. The inability to perform proper BLS in the dental office will be the ultimate consequence.^[3]

Sudeep et al.^[7] demonstrated the improvement of knowledge and skills of CPR after a BLS training. But the training of resuscitation skills is difficult because of busy schedules and lack of teachers and resources in India.

Because the updating of the guidelines every 5 years, repetitive training is needed to ensure the changes. The Medical Council of India has already incorporated emergency medicine as a separate speciality. The awareness and basics of ACLS of the medical and paramedical team and BLS as the first aid will be the prime responsibility of this new emergency specialty.^[2,10]

The knowledge about BLS among dental interns and postgraduate students was average and most of the students had a positive attitude towards BLS. This suggests the necessity of BLS programmes in our society.

Dental students must be familiar with the treatment protocol if a cardiac emergency occurs in the dental office. An AED in a dental office or a dental educational setting may be regarded as the standard of care to handle cardiac medical emergencies.

Educational institutions should be involved in the training of students and professionals for CPR and other emergencies that can occur in the dental office. CPR should be considered as part of dental curriculum. Hence, regular workshops are necessary for dental students to know the practical aspects of CPR on dummies. CPR courses and workshops are usually suitable for junior and senior doctors.

ACKNOWLEDGEMENT

The authors would like to thank the principal and the head of the department, department of Public health Dentistry, Vydehi Institute of Dental Sciences and Research Centre, Bangalore and also the institutional heads of dental colleges for permitting us to carry out this study.

Funding: None.

Ethical approval: The study proposal was approved by the Institutional Review Board of Vydehi Institute of Dental Sciences and Research centre, Bangalore, India.

Conflicts of interest: The authors declare that no competing interest and no personal relationships with other people or organizations that could inappropriately influence their work.

Contributors: Narayan DP and Suvarna VB designed the study. Suvarna VB analyzed the literatures and drafted the manuscript. All authors have each made a substantial contribution to the study.

REFERENCES

- 1 Zamir Q, Nadeem A, Rizvi AH. Awareness of cardiopulmonary resuscitation in medical-students and doctors in Rawalpindi-Islamabad, Pakistan. *J Pak Med Assoc* 2012; 62: 1361–1364.
- 2 Kandray DP, Pieren JA, Benner RW. Attitudes of Ohio dentists and dental hygienists on the use of automated external defibrillators. *J Dent Educ* 2007; 71: 480–486.
- 3 Marsden AK. Guidelines for Cardiopulmonary Resuscitation Basic Life Support Revised recommendations of the Resuscitation Council (UK). *BMJ* 1989; 299: 442–445.
- 4 Fisher JM. Recognising a cardiac arrest and providing basic life support. *BMJ* 1986; 292: 1002–1004.
- 5 Chandrasekaran S, Kumar S, Bhat SA, Saravanakumar, Shabbir PM, Chandrasekaran VP. Awareness of basic life support among medical, dental, nursing students and doctors. *Indian J Anaes* 2010; 54: 121–126.
- 6 Roshana S, Batajoo KH, Piryani RM, Sharma MW. Basic life support: knowledge and attitude of medical/paramedical professionals. *World J Emerg Med* 2012; 3: 141–145.
- 7 Sudeep CB, Sequeira PS, Jain J, Jain V, Maliyil M. Awareness of basic life support among students and teaching faculty in a dental college in Coorg, Karnataka. *International Dental Journal of Student's Research* 2013; 2: 4–9.
- 8 Sharma R, Attar NR. Adult basic life support (BLS) awareness and knowledge among medical and dental interns completing internship from Deemed University. *NUJHS* 2012; 2: 6–13.
- 9 Jodalli PS, Ankola AV. Evaluation of knowledge, experience and perceptions about medical emergencies amongst dental graduates (Interns) of Belgaum City. *India J Clin Exp Dent* 2012; 4: e14–18.
- 10 Akritia S, Mayankb M, Arushic D. Basic life support and advanced cardiac life support: knowledge of medical students in New Delhi. *Journal of Young Medical Researchers* 2014; 1: 1–9.
- 11 Arsati F, Montalli VA, Flório FM, Ramacciato JC, Lopes da Cunha F, Cechinho R, et al. Brazilian dentists' attitudes about medical emergencies during dental treatment. *J Dent Educ* 2010; 74: 661–666.
- 12 Gonzaga HFS, Buso L, Jorge MA, Gonzaga LHS, Chaves MD,

- Almeida OP. Evaluation of knowledge and experience of dentists of São Paulo State, Brazil about cardiopulmonary resuscitation. *Braz Dent J* 2003; 14: 220–222.
- 13 Ong MEH, Yap S, Chan KP, Sultana P, Anantharaman V. Knowledge and attitudes towards cardiopulmonary resuscitation and defibrillation amongst Asian primary health care physicians. *Open Access Emergency Medicine* 2009; 1: 11–20.
- 14 Elanchezhian S, Elavarasu S, Vennila K, Renukadevi R, Mahabob MN, Sentilkumar B, et al. Awareness of dental office medical emergencies among dental interns in Southern India: An analytical study. *J Dent Educ* 2013; 77: 364–369.
- 15 Parajulee S, Selvaraj V. Knowledge of nurses towards cardiopulmonary resuscitation in a tertiary care teaching hospital in Nepal. *Journal of Clinical and Diagnostic Research* 2011; 5: 1585–1588.
- 16 Morgan R, Westmoreland C. Survey of junior hospital doctors' attitudes to cardiopulmonary resuscitation. *Postgrad Med J* 2002; 78: 413–415.
- 17 Delavar MA, Gholami G, Ahmadi L, Moshtaghian R. Knowledge, attitude and practices of relief workers regarding first aid measures. *J Pak Med Assoc* 2012; 62: 218–221.
- 18 Alanazi A, Bin-Hotan, ALqahtani M, Alhalyabah H, Alanazi A, Al-oraibi S. Community awareness about cardiopulmonary resuscitation among secondary school students in Riyadh. *World Journal of Medical Sciences* 2013; 8: 186–189.
- 19 Zaheer H, Haque Z. Awareness about BLS (CPR) among medical students: status and requirements. *J Pak Med Assoc* 2009; 59: 57–59.
- 20 Abbas A, Bukhari SI, Ahmad F. Knowledge of first aid and basic life support amongst medical students: a comparison between trained and un-trained students. *J Pak Med Assoc* 2011; 61: 613–616.
- 21 Chaudhary A, Parikh H, Dave V. Current Scenario: knowledge of basic life support in medical college. *National Journal of Medical Research* 2011; 1: 80–82.
- 22 Khan A, Shaikh S, Shuaib F, Sattar A, Samani SA, Shabbir Q, et al. Knowledge attitude and practices of undergraduate students regarding first aid measures. *J Pak Med Assoc* 2010; 60: 68–72.

Received May 16, 2014

Accepted after revision December 20, 2014