

Knowledge about Basic Life Support (BLS) in Pediatric Patient among Dental Students.

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Abstract:

Background: Providing BLS to a victim by dentist for initial stabilization is a great contribution until definitive medical care is provided. Knowledge of BLS and practice of simple CPR techniques increase the chances of survival of the patient until experienced medical help arrives and, in most cases, is sufficient for survival in itself.

Aim: The aim of the study is to assess the dental students knowledge about basic life support in pediatric patient.

Material And Method: A cross-sectional descriptive study was conducted among students of Private Dental College in Chennai. The survey was done on 150 dental students. Pre-tested structured closed-ended questionnaire, comprising of multiple-choice questions, was self-administered to assess their knowledge towards basic life support in pediatric patient. The data obtained was analyzed by using statistical Software.

Result: Surprisingly none of the responders of 150 had the complete knowledge of BLS. 76% of the responders were aware of the abbreviation of BLS stands, 53.3% of the responder look for safety, 69.3% were unaware about the technique when somebody collapse, 62% were aware of the location of chest compressions unresponsive adult and 56% knew the location of chest compression in infant.

Conclusion: The survey suggests that presently the dental community students are not adequately prepared to handle such a situation. Hence the need to update knowledge and skills pertaining not only to BLS among pediatrics, but also to other commonly possible medical emergencies as well.

Keyword: Automated External Defibrillator (AED), Basic Life Support (BLS), Cardiopulmonary Resuscitation (CPR).

INTRODUCTION

Basic life support (BLS) includes recognition of signs of sudden cardiac arrest, heart attack, stroke, and foreign body airway obstruction, and the performance of cardiopulmonary resuscitation (CPR) and defibrillation with an automated external defibrillator [1-2]. Main purpose of Basic life support (BLS) is to maintain adequate ventilation and circulation till resources can be obtained to reverse the underlying cause of arrest. Cardiac arrests and accidents are the most common type of emergencies with grave consequences, but simple maneuvers and skills can improve the outcome, and immediate CPR can double or triple the chances of survival [3-4]. Life-threatening emergencies can occur anytime in the dental office. In dental practice the most common emergency occurs after drug administration most often local anesthetics, parenteral administration of antibiotics, analgesics and sedatives. The most likely scenario of drug-related emergency like anaphylactic shock can occur in the dental office. Aspiration and swallowing of endodontic instruments can occur mostly in children and mentally retarded patients during dental treatment leading to life-threatening emergency [5]. Emergency can also occur due to anxiety of dental treatment and fear of pain during treatment or while administering anesthesia. The dentist to be familiar with emergency interventions occurring in dental office which includes at least basic life support (BLS) requirements and if required advanced methods including administering specific drugs, use of manual/automated external defibrillator (AED), use of advanced airway devices, etc.

Every dentist must be aware of the method for initial stabilization in a patient with risk arising in the dental office, which implies dental surgeon. Providing BLS to a victim by dentist for initial stabilization is a great contribution until definitive medical care is provided [6-9]. Knowledge of BLS and practice of simple CPR techniques increase the chances of survival of the patient until experienced medical help arrives and, in most cases, is sufficient for survival in itself.

MATERIAL AND METHOD

A cross-sectional descriptive study was conducted among 150 students of Private Dental College. Ethical approval was sought and obtained from the institutional ethics committee. The study was conducted by assessing responses to 15 selected multiple choice questions regarding BLS in paediatric patients among dental students of private dental college. All participants were given a printed questionnaire of 15 multiple choice questions regarding awareness, knowledge and attitude towards BLS in pediatric patient. The aspects on which they were interrogated 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 age groups, location of chest compressions, depth of compression for children and neonates, ventilation ratio for adults and children, recognition of early signs of stroke [Table I]. The questionnaire was designed based on American Heart Association (AHA) guidelines and the answer keys for the core questions on knowledge of BLS

were generated using Basic life support manual from American Heart Association.

RESULT

In this study 150 responders were requested to fill the form of which 50 are male and 100 are female. Surprisingly none of our responders of 150 had the complete knowledge of BLS. 76% of the responders were aware of the abbreviation of BLS stands, 53.3% of the responder look for safety, 69.3% are unaware about the technique when somebody collapse, 62% were aware of the location of chest

compressions unresponsive adult and 56% knew the location of chest compression in infant (by 2 fingers technique). Only 28%-47.3% knew the depth of compressions during CPR in child and neonates, 24% knew the rate of chest compressions in adult. 76% were aware of the abbreviation AED stands for and 65.3% were aware of the abbreviation of EMS, 24 %knew what the first step on the spots should be if they noticed the sign of choking in an pediatrics (Figures 1-3).

Table I: Number of correct and incorrect responses to each question on the basic life support survey

S.no	Question	Number Of Correct Responses	Number Of Incorrect Responses
1.	Abbreviation of BLS	114	36
2.	Safety in BLS	80	70
3.	Activating EMS	46	104
4.	Location for chest Compressions	93	57
5.	Location of chest Compression in infants	84	66
6.	Awareness of CPR without Mouth-to-mouth	72	78
7.	Rescue breathing in infants	98	52
8.	Depth of chest compression In children	42	108
9.	Depth of compression for Neonates	71	79
10.	Rate of chest compression in Adults and children	60	90
11.	CPR single rescuer	36	114
12.	Chest compression-Ventilation ratio in newborns	52	98
13.	Meaning of AED	114	36
14.	Meaning of EMS	98	52
15.	Recognition of stroke and Appropriate immediate action	36	112

Figure 1: Questionnaires Responses on abbreviation of BLS, Safety in BLS, Activating EMS, Location of chest compression in infants.

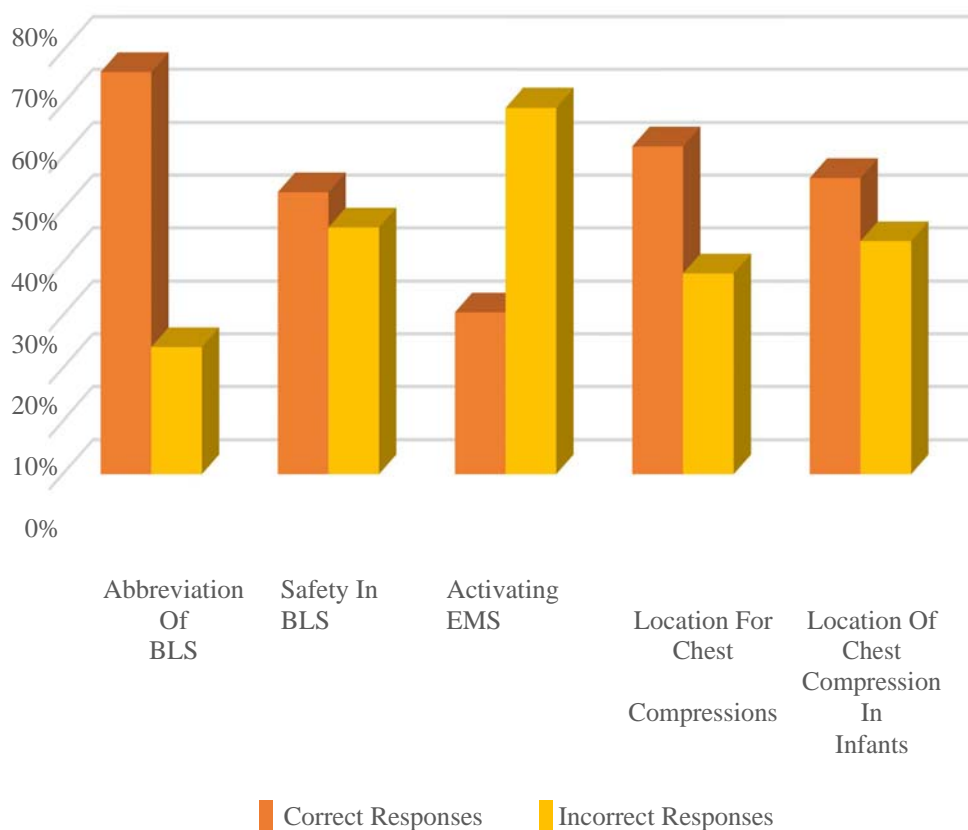


Figure 2: Questionnaires Responses on Awareness of CPR, Rescue breathing, Depth and Rate of compression in children, neonates and adults.

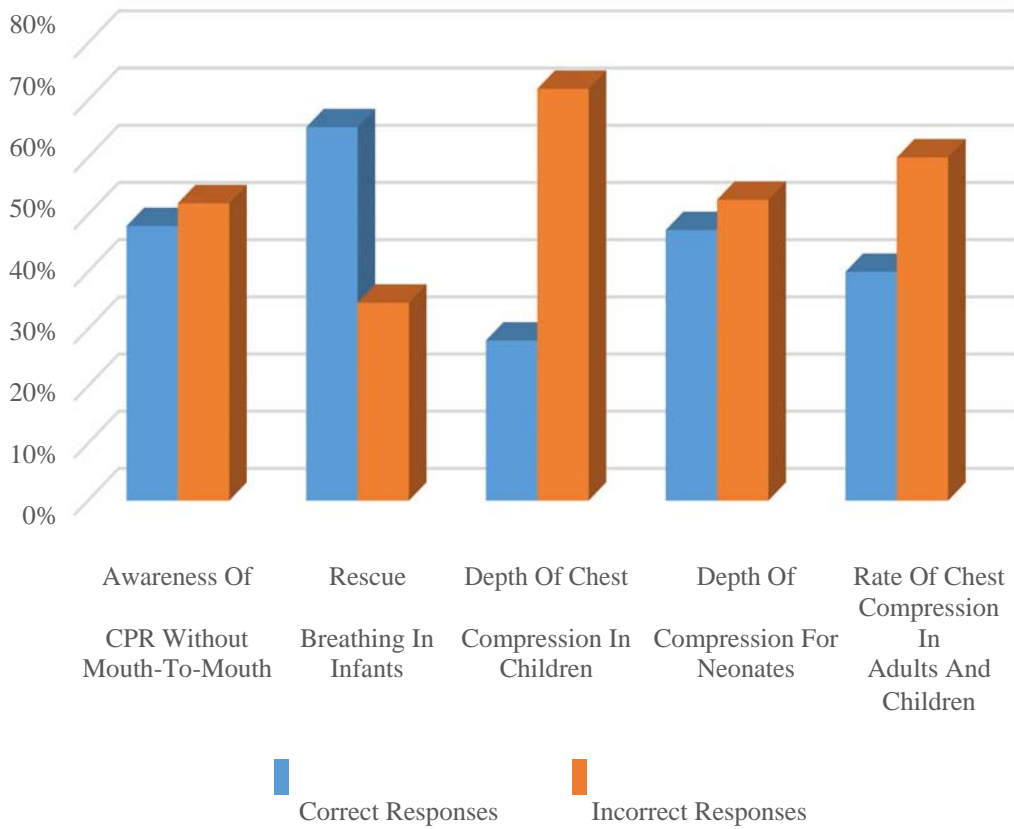
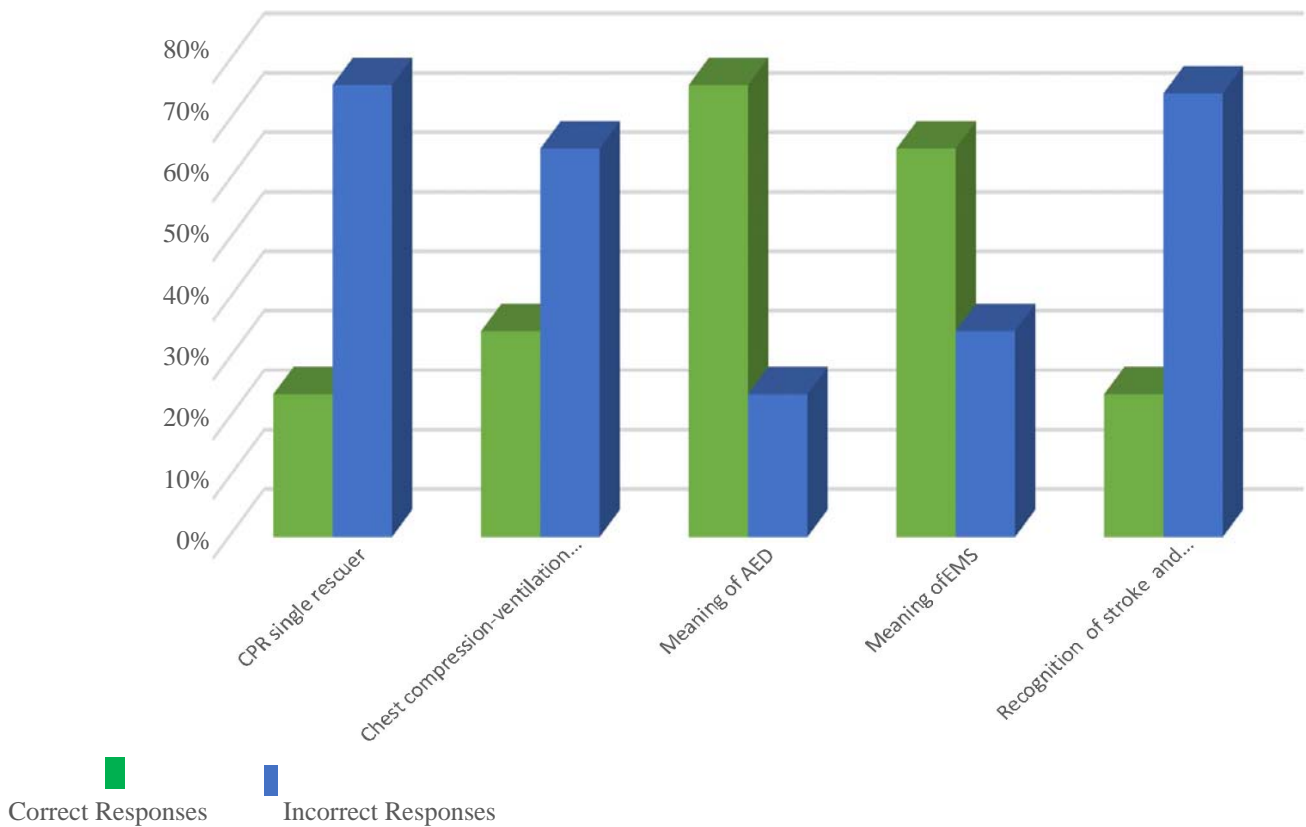


Figure 3: Questionnaires Responses on Awareness of CPR Rescue, Ventilation, AED, EMS, Stroke.



DISCUSSION

Life threatening Emergencies can occur at anywhere and anytime. Cardiac arrest or Cardiopulmonary Arrest is the most common medical crisis that occurs and can leave the victims with severe morbidities or can lead to death if not attended instantly. Cardiac arrest begins as abrupt cessation of normal circulation of blood due to ineffective contraction of heart. This leads to decreased circulation and decreased oxygen supply to all organs of the body. Lack of oxygen supply to brain may lead to respiratory depression progresses to ischemia; the lack of training and incompetence to deal with such emergencies can have legal consequences and tragic outcomes. Our study shows that there was a lack of awareness of BLS knowledge among all dental students and dental practitioners. It is now important to standardize training in BLS and make it a mandatory component for all dental undergraduate curriculums [9-13]. A BLS provider must be familiar with certain abbreviations to save time at the scene. 76% of the responders know the abbreviation BLS meant 'basic life support', while 76% of the responders know that the abbreviation AED meant 'automated external defibrillator', and only 69% knew that the abbreviation EMS meant 'Emergency Medical Service'. Failing to look for safety in BLS can put the victim and the rescuer in unsafe situations; therefore, the fact that a high proportion of the responders has identify this correctly as at the first step in BLS is concerning. Furthermore, an even higher proportion of the responders failed to identify activating EMS as the appropriate action to take immediately after confirming the unresponsiveness, yet this is necessary to provide the critical advanced life support equipment in a crucial time. Performing chest compressions at the correct location increases the likelihood of enhancing coronary circulation and lessens the risks of accompanying complications such as rib fractures. Also the depth, rate and interruption duration of the compressions directly influence the outcome of cardiac arrest [11-14]. However, only two thirds of the responders identified the correct location of chest compressions for an adult, and less proportion identified the incorrect location for an infant. Mouth-to-mouth resuscitation is not optimal in all situations, and there are situations in which the use of an advanced ventilation techniques would provide a better outcome [15-18]. However, a high proportion of the responders did not correctly identify alternative techniques of resuscitation. In infants, the narrow space between the mouth and nose means that the correct rescue breathing technique is mouth to-mouth and nose; however, less proportion of the responders only identified this. Performing chest compressions of incorrect depth can be either useless or harmful to the victim; however, the results of the survey indicated that high proportion of the responders did not know the proper depth of chest compressions for a Child and neonate. Knowing the exact compression-ventilation ratio is extremely important, as it

ensures that the proper time is allowed for coronary arteries to circulate blood. Less proportion of the responders identified the ratio for a child and an adult when there is a single rescuer, and less proportion has not identified the correct ratio for a neonate.

CONCLUSION

The general public expects and demands that the dentists be able to manage the common medical emergencies that may occur in dental practice, particularly those related to dental treatment and procedures. These emergencies ironically, can occur anytime and can happen to anyone. This survey suggests that presently the dental community students are not adequately prepared to handle such a crisis. Hence the need to update knowledge and skills pertaining not only to BLS among pediatrics but other commonly possible medical emergencies as well.

REFERENCE

1. Shanta Chandrasekaran, Sathish Kumar, Shamim Ahamed Bhat, Saravana Kumar, P Mohammed Shabbir, VP Chandrasekaran. Awareness of basic life support among medical, dental, nursing students and doctors. *India Journal of Anaesth* 2010; 54:121-6.
2. Steen P A, Kramer-Johansen J. Improving cardiopulmonary resuscitation quality to ensure survival *Curr Opin Crit Care*. 2008; 14:299-304.
3. Gerein RB, Osmond MH, Stiell IG, et al. What are the etiology and epidemiology of out-of-hospital pediatric cardiopulmonary arrest in Ontario, Canada? *Acad Emerg Med*. 2006;13:653-8.
4. Kuisma M, Suominen P, Korpela R. Paediatric out-of-hospital cardiac arrest – epidemiology and outcome. *Resuscitation*. 1995;30:141-50.
5. Sirbaugh PE, Pepe PE, Shook JE, et al. A prospective, population-based study of the demographics, epidemiology, management and outcome of out-of-the-hospital pediatric cardiopulmonary arrest. *Ann Emerg Med*. 1999;33:174-84.
6. Tress EE, Kochanek PM, Saladin RA, Manole MD. Cardiac arrest in children. *J Emerg Trauma Shock*. 2010;3:267-72.
7. Atkins DL, Everson-Stewart S, Sears GK, et al. Epidemiology and outcomes from out-of-hospital cardiac arrest in children: the Resuscitation Outcomes Consortium Epistry-Cardiac Arrest. *Circulation*. 2009;119:1484-91.
8. Bardai A, Berdowski J, van der Werf C, et al. Incidence, causes and outcomes of out-of-hospital cardiac arrest in children: A comprehensive, prospective, population-based study in the Netherlands. *J Am Coll Cardiol*. 2011;57:1822-8.
9. Tham LP, Chan I. Paediatric out-of-hospital cardiac arrests: epidemiology and outcome. *Singapore Med J*. 2005;46:289-96.
10. Swor R, Khan I, Domeier R, et al. CPR training and CPR performance: do CPR-trained bystanders perform CPR? *Acad Emerg Med*. 2006; 13:596-601.
11. Lim SH. Basic Cardiac Life Support: 2011 Singapore Guidelines. *Singapore Med J*. 2011; 52:538-43.
12. Cu J, Phan P, O'Leary FM. Knowledge and attitudes towards paediatrics cardiopulmonary resuscitation among carers of patients attending the Emergency Department of the Children's Hospital at Westmead. *Emerg Med Australas*. 2009; 21:401-6.
13. Moran K, Stanley T. Toddler parents training, understanding and perceptions of CPR. *Resuscitation*. 2011; 82:572-6.
14. Topjian AA, Berg RA, Nadkarni VM. Pediatric cardiopulmonary resuscitation: advances in science, techniques and outcomes. *Pediatrics*. 2008; 122:1086-98.
15. Larsen MP, Eisenberg MS, Cummins RO, Hallstrom AP. Predicting survival from out-of-hospital cardiac arrest: a graphic model. *Ann Emerg Med*. 1993; 22(11): 1652-8.
16. Holmberg M, Holmberg S, Herlitz J, Gardelov B. Survival after cardiac arrest outside hospital in Sweden. *Swedish Cardiac Arrest Registry*. *Resuscitation*. 1998; 36(1): 29-36
17. Valenzuela TD, RoeDJ, Cretin S, Spaite DW, Larsen MP. Estimating effectiveness of cardiac arrest interventions: a logistic regression survival model. *Circulation*. 1997; 96 (3):308-13.
18. Neha Baduni, Prem Prakash, Dharendra Srivastava, Manoj Kumar Sanwal, Bijender Pal Singh. Awareness of Basic life Support among Dental Practitioners *National Journal of Maxillofacial Surgery* 2014; 5:19-22.