Original Article

Knowledge, Awareness And Practice About Basic Life Support In Pediatric Patient Among Pediatric Dentists

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Abstract

Background: Cardiovascular diseases are the major public health concern worldwide. Survival after cardiopulmonary arrest is usually low and depends on early intervention, quality of cardiopulmonary resuscitation (CPR) and time of initiation of defibrillation post cardiac arrest. Basic life support (BLS) is a key component of chain of survival. It is important for the pediatric dentist to treat the paediatric child in dental chair to know about the basic life support techniques to deal with the emergency during dental treatment. Therefore, the aim of the present study was to assess the knowledge, awareness and practice about basic life support in pediatric patient among pediatric dentists in Tamil Nadu.

Methods: A online based study was conducted among 150 pediatric dentists in Tamil Nadu by creating google form which consists of 20 questionnaires with multiple choice answers regarding the knowledge, awareness and practice about basic life support in children among paediatric dentists

Result: Among 150 participants, 59% of pediatric dentists had a good knowledge regarding basic life support, 42% of them were having good awareness regarding Basic Life Support. But, only a very limited pediatic dentists had performed a CPR on pediatric patients.

Conclusion: An update in dental educational program is mandatory to develop the skills of dental professional to face the emergency situation that happens in the dental chair office.

Key words: Basic life support, children, pediatric dentists

INTRODUCTION

Basic life support (BLS) is the foundation for saving life following cardiac arrest[1].Fundamental aspects of BLS includes acknowledgment of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardio pulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED)[2]. Basic life support (BLS) also includes supporting breathing, circulation and maintaining an airway without using any equipment other than a simple airway device or protective shield. Initial recognition and response to heart attack and stroke are also considered as a part of BLS[3].

Life-threatening emergencies can occur anytime and anywhere. Knowledge of BLS and skill in CPR techniques ensures the survival of the patient long enough till experienced medical help arrives and in most of the cases is itself sufficient for survival[4]. Speculative knowledge with sensible demonstrations and regular practice with up-to-date recommendations is vital in maintaining the basic life support (BLS) and advanced life support (ALS) providers[5].

The everyday administration of local anaesthetics and other drugs, usage of dental materials with high sensitise potential, the dental care of medically compromised patients, the fear of unknown surgical operations in many patients are frequent causes of emergency situations in the dental office[6].Every dental practitioner must be able to diagnose and treat common emergency problem like syncope, hyperventilation syndrome or rare potentially life-threatening emergencies like anaphylactic reaction[7].

Providing BLS in medical emergency situations is the most necessary involvement until definitive medical care can be provided till the victim is stabilized. For this reason, it becomes essential for every dentist to be well versed with prevention and management of such emergencies in the dental office[8].

The basic life support technique varies from adult to an infant. So, the paediatric dentist dealing with a paediatric patient in the dental chair should be aware of the technique to perform in the child to rescue the

child from the critical situation.

AIMS AND OBJECTIVES

To assess the knowledge, awareness and practice about basic life support in paediatric patient among paediatric dentists in Tamilnadu.

MATERIALS AND METHODS

The sample size is calculated based on the formula of $N = 4pq/d^2$, at confidence level 95%(R.A Devishree et al, 2018)[9]. The minimum sample required for the study is 149.For better precision and power of the study the sample size is estimated as 150.

A cross sectional study was conducted among 150 pediatric dentist in Tamil Nadu. An online based survey was conducted by creating google form which consists of 20 questionnaires. The questionnaire was designed based on American Heart Association (AHA) guidelines. with multiple choice answers regarding knowledge, awareness and practice about basic life support in pediatric patient among pediatric dentists. Questions including abbreviation of BLS, AED (automated external defibrillator) and sequential steps in BLS, assessment and resuscitation techniques with regard to airway, breathing, circulation in unresponsive victims of pediaric population.

Statistical analysis:

The data was compiled and analysed using Microsoft (MS) Excel work sheet. Correct response was coded as 1 and wrong response was coded as 0. The statistical analysis wa done using SPSS 21.0 for windiws. Descriptive analysis was done in the collected data.

OBSERVATION AND RESULTS

Out of 150 participants the response for each questions with the percentage are listed in the table1, table2, table3.

Table1: Knowledge about basic life support in pediatric dentist among pediatric patient

SL.NO	QUESTIONS	OPTIONS	FREQUENCY	PERCENT
1	According to 2010 AHA guidelines what is the sequence of resuscitation in BLS?	Airway, Breathing, Compression	33	22.0
		Breathing, Compression, Airway	10	6.7
		Compression, Airway, Breathing	103	68.7
		Compression, Breathing, Airway	4	2.7
2	Compression during CPR is located at	Left side of the chest	11	7.3
		Mid chest (upper half of sternum)	59	39.3
		Xiphisternum	12	8
		Mid chest (lower half of sternum)	68	45.3
3	According to 2015 AHA guidelines the rate of compression per minute is	Atleast 120	14	9.3
		100 to 120	91	60.7
		Atleast 80	10	6.7
		80 to 100	35	23.3
4	According to AHA guidelines the depth of compression for child is	1-1.4 inch	32	21.3
		1.5 inch	64	42.7
		2-2.4 inch	8	5.3
		2 inch	46	30.7
5	To check pulse which artery should be used?	Femoral	22	14.6
		Carotid	29	19.3
		Radial	10	0.6
		Brachial	89	59.3
6	In child, a single rescuer CPR ratio is	10.2	35	23.3
		15.2	42	28
		20.2	20	13.3
		30.2	53	35.3
7	What is the abbreviation of AED?	Automated Electronic Device	2	1.3

		Automated External Defibrillator	146	97.3
		Academy For Educational Development	2	1.3
		Arab Emirates Dirham	0	0
8	How to rescue breaths in child?	Mouth to mouth	97	64.6
		Mouth to mouth and nose	44	29.3
		Mouth to nose	3	2
		Mouth to mouth without nose pinched	6	4
9	CPR in child is performed by	Two hand	26	17.3
		Single hand	100	66.7
		Two finger	24	16.0
		Single finger	0	0

Table2: Awareness about basic life support in ediatric dentist among pediatric patient

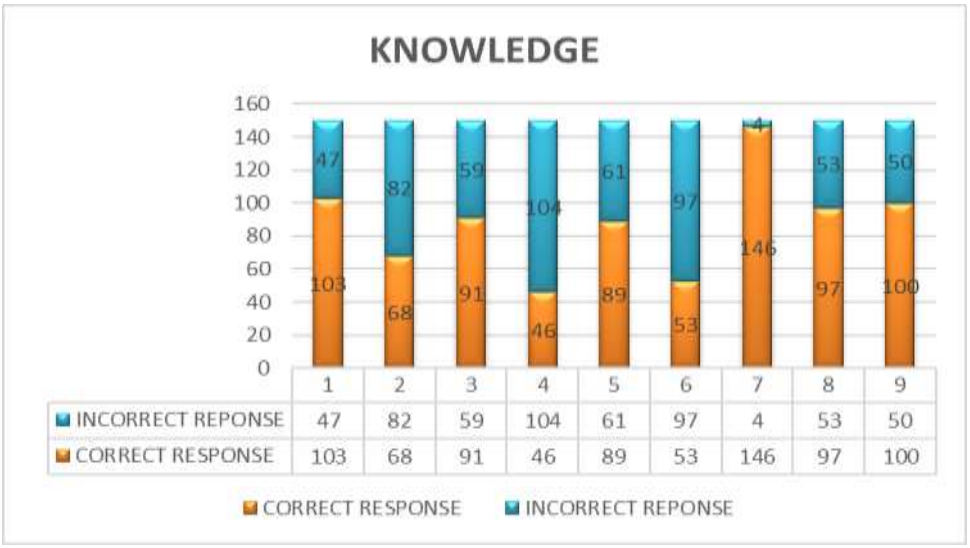
SL.NO	QUESTIONS	OPTIONS	FREQUENCY	PERCENT
1	During CPR how many seconds apart each breath of air given?	1 seconds	25	16.7
		2 seconds	68	45.3
		3 seconds	30	20.0
		4 seconds	27	18
2	If a child is not breathing how many breaths should be given?	10-20 breaths/min	44	29.3
		12-20 breaths/min	70	46.7
		14-20 breaths/min	14	9.3
		16-20 breaths/min	22	14.7
3	A child has a pulse rate of 50 per minute but is not breathing	Do nothing the child is not in distress	18	12
		Start CPR beginning with compression	72	48
		Give 1 breath every 2 to 4 seconds	50	33.3
		Give 2 breath every 3 to 6 seconds	10	6.7
4	A child gasping for breath but as a pulse rate of 100/min the rescuer should	Give 2 breath every 3 to 5 seconds	39	26.0
		Give 1 breath every 3 to 5 seconds	43	28.7
		Give 2 breath every 2 to 4 seconds	30	20.0
		Give 1 breath every 2 to 4 seconds	38	25.3
5	A pediatric patient suddenly chokes while under a dental treatment you found that he /she is unable to cry or cough. What will be your action?	Perform a blind finger sweep to attempt to remove the obstruction	12	8
		Attempt to dislodge the obstruction using abdominal thrust	20	13.3
		Begin CPR	78	52
		Back blows and chest compression of 5 cycles each then open the mouth and remove foreign body only when it is visible	40	26.6
6	In infant how is the head held during recovery position	Lower than the body	45	30.0
		Higher than the body	23	15.3
		At the level of the body	49	32.7
		Placed at an inclined position	33	22.0

Table3: Practice about basic life support in pediatric dentist among pediatric patient

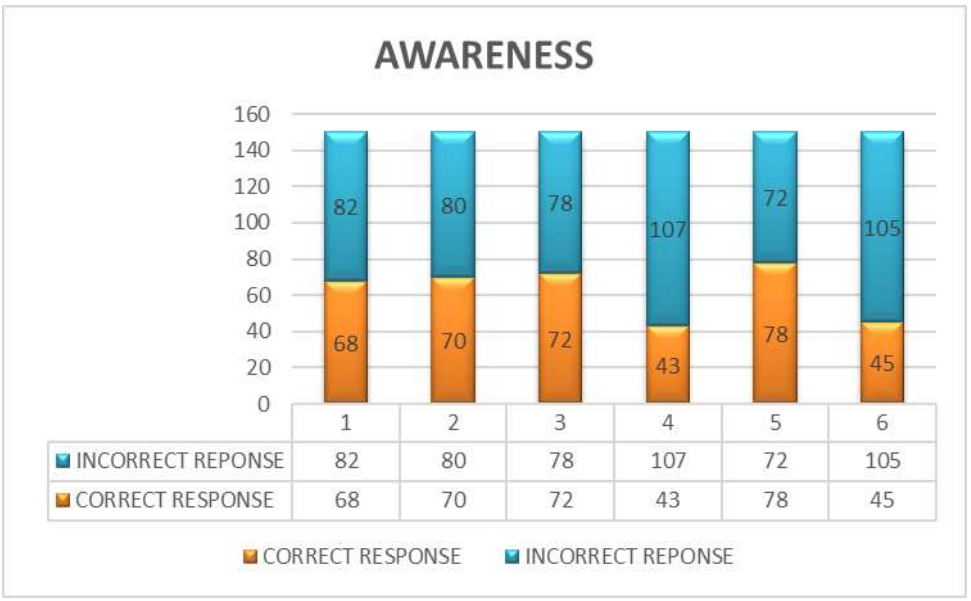
SL.NO	QUESTIONS	OPTIONS	FREQUENCY	PERCENT
1	Have you attended a BLS workshop	Yes	123	82
		No	27	18
2	Have you ever seen someone performing CPR?	Yes	32	21.3
		No	118	78.6
3	Have you done a CPR on a paediatric patient?	Yes	2	1.3
		No	148	98.6
4	Do you think BLS training should be apart of regular dental curriculum?	Yes	132	88
		No	18	12
5	Have you ever seen someone performing heimlich maneuver	Yes	34	22.6
		No	116	77.3

Graph 1,2,3 represent the total no of correct and wrong responses given by pediatric dentists regarding knowledge, awareness and practice of basic life support in children.

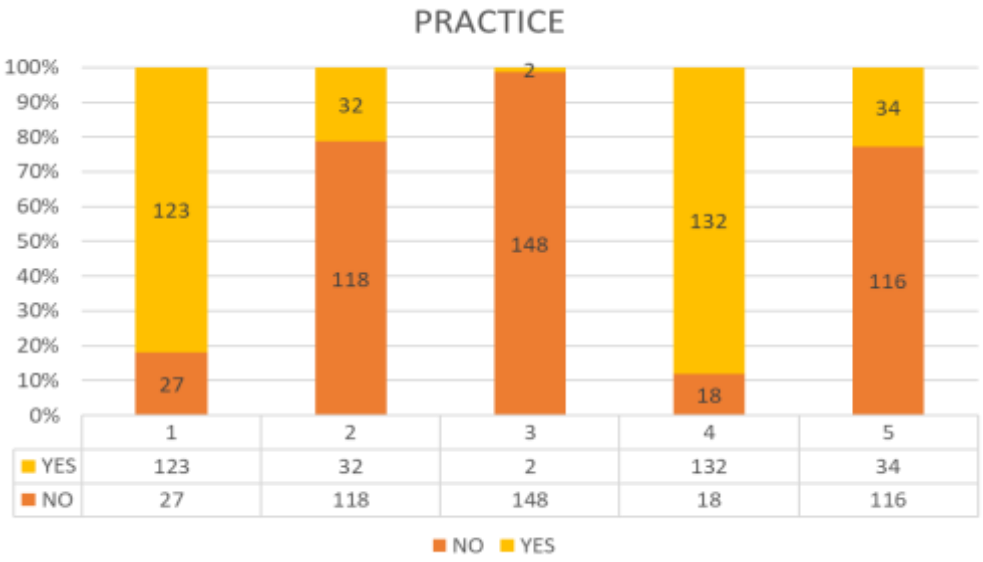
Graph 1: Knowledge about basic life support among pediatric dentist in pediatric patient



Graph 2: Awareness about basic life support among pediatric dentist in pediatric patient



Graph 3: Practice regarding Basic life support among pediatric dentist



Among knowledge about basic life support 68.7% of pediatric dentists gave correct response for the sequence of resuscitation in BLS. 104 pediatric dentists opted wrong response for depth of compression in child . Only 4 pediatric dentists had picked wrong answer for the abbreviation of AED. CPR performed by single hand in child is answered by 100 pediatric dentists (graph1).
107 pediatric dentists were not aware that what to do if a child is gasping for breath. 105 pediatric dentists were not aware about the head position during recovery position (graph2). 132 thinks BLS training should be a part of dental curriculum (graph3).

DISCUSSION

Completely many efforts have been made to save children's lives. Timely, the children's death decreased nowadays. The huge causes of mortality were anomalies and non-infectious diseases associated with cardiac and respiratory systems[16].Cardiac arrest begins as unexpected cessation of normal circulation of blood due to futile heart contraction. This reduced blood circulation and oxygen transport to all organs of the body and need of oxygen supply to brain may direct to respiratory depression, ischemia and exit the patient with less than 10 min to survive[4,10].
Aspiration and swallowing in a dental office by a young child and mentally retarded patient had been leaded to life-threatening conditions was reported by many dentists[12,15]. Pediatric emergencies due to pain, anxiety, fear and the effectual managing of these incidents will decrease the risk of life-threatening situation[13,15].Aptly, the frequency of pediatric cardiopulmonary arrest is tremendously low in the dental office. Since most cardiopulmonary arrests in children due to a continuous deterioration in respiratory function, quick diagnosis and evaluation for the need of ventilation and pediatric airway[14,15].
In comparison with other studies, 29% of dental professionals responded correctly for the sequence of resuscitation in the study done by Muhammad Ityas et al in 2020[18] whereas in our study 68.7% of pediatric dentists responded correctly. R.A Devishree et al in 2018[9] revealed that 93 dental students gave correct response for the location of chest compression but we got 68 correct response for children among pediatric dentists. 60% gave wrong response for rate of compression per minute in the study done by MP Santhosh kumar among undergraduates dental students in 2017, but 91 pediatric dentists responded correctly in our study[11]. 42 dental professionals gave correct response for the depth of compression in the study done by Devishree et al[9] whereas 46 pediatric dentists gave correct response for the depth of compression in child in our study. In Muhammad Ityas et al study, 80% of dental professionals were not aware of checking pulse in brachial artery[18] but 89 pediatric dentists identified the correct artery used to check pulse in our study. Only 4 pediatric dentist gave wrong response for the abbreviation of AED in the study done by MP Santhoshkumar, meanwhile, we got the same response in our study[11]. In Devishree et al study, 98 dental students gave correct response to rescue breath in infant[9] whereas 97 pediatric dentists gave correct response in our study. 93% of dental professionals were not aware of what to do if a child is unconscious in the study done by Muhammad Ityas et al [18], 78 pediatric dentists gave correct response for what to do if a child chokes under a dental treatment in our study. 98% had attended a BLS workshop in the study done by MP Santhoshkumar[11], in our study123 pediatric dentists have attented BLS program. 2 pediatric dentist had done a CPR in child in our study, while same response were got in the study done by MP Santhosh kumar[11]. 96% heard of Heimlich maneuver in the study done by MP Santhosh kumar [11].In our study 34 pediatric dentist have seen someone performing Heimlich maneuver. The reconsideration of this study waved that, the results in our study were reliable with already existing study.
Educating the students at an early stage will not only have a stronger impact in decreasing the morbidity and mortality

but also enhance the student's self-confidence to handle the emergengy situations and act instantaneously and precisely .To make this happen there should be sufficient practical skills should be added in the educational system so that students will alongside each other learn the basics of BLS and CPR. Execution of practical sessions where the students are taught about common medial emergency which happens in a dental chair and how to apply the skills and techniques learnt is of maximum significance to make sure there is no indecision in the event of an emergency. Working on models to practice and master their skills is highly needed for the professionals[4].

The qualified professional can convey their knowledge in situations where healthcare amenities are not obtainable . All the people should be made aware by campaigns, public messages, and media forums about CPR and emergency medical services[4, 17].

CONCLUSION

Most of the pediatric dentists were willing to opt for practical BLS training program as a part of dental curriculum. So an update in dental educational program is mandatory to develop the skills of dental professional to face the emergency situation that happens in the dental chair or office.

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REFERENCES

1. Somarouthu R. Knowledge of basic life support among health care professionals in a tertiary care hospital in chitradurga. Int J Community Med Public Health. 2018; 3969-3975
2. Chandrasekaran S, Kumar S,AhamedBhatS,Kumar S, ShabbirPM,Chandrasekaran VP. Awareness of basic life support among medical, dental, nursing students and doctors. Indian J of Anaesth 2010; 54:121-6.
3. Handley AJ.Guidelines for basic life support. BMJ 1993; 306:1587-9.
4. Srinivas HT, Kotekar N, Rao SR. A survey of basic life support awareness among final year undergraduate medical, dental, and nursing students. IJHAS 2014; 3:91-94.
5. Kharsan V. The Ability of Oral & Maxillofacial Surgeons to Perform Basic Life Resuscitation in Chattisgarh. JCDR. 2015;9(2):58–60
6. Sahithi R, Dolar D. Awareness of basic life support among staff and dental students in a dental school. JCDP 2013; 511-517
7. Stoeva I. The assess of dental students knowledge and skills in management of medical emergencies in dental office. IMAB 2011;17:132-133.
8. Gupta T, Aradhya MR, Nagaraj A. Preparedness for management of medical emergencies among dentists in Udupi and Mangalore, India. JCDP 2008;9(5):92-99.
9. Devishree RA, Mahesh R. Knowledge about basic life support (BLS) in pediatric patient among dental students. J. Pharm. Sci. & Res. 2018; 278-281
10. Mohan M, Awareness of basic life support (BLS) among dental interns and dental practioners. NUJHS 2015; 14-18.
11. Santhoshkumar MP, Knowledge and attitude regarding basic life support among undergraduates dental students. Int.J.Pharm.Sci.Rev.Res 2017; 188-193.
12. Hodges ED, Durham TM, Stanley RT. Management of aspiration and swallowing incidents: A review of the literature and report of case. ASDC J Dent Child 1992;59(6):413-19.
13. Malamed SF. Emergency medicine in pediatric dentistry: Preparation and management. J Calif Dent Assoc 2003; 31(10):749-55
14. Rosenberg MB, Phero JC. Resuscitation of the pediatric patient. Dent Clin North Am 1995 Jul;39(3):663-76.
15. Chunawalla YK, Pediatric Basic Resuscitation in Dental Office. World Journal of Dentistry 2010; 99-102
16. Kasem A, Pediatric Basic life support among Nursing students in Jordan: Stimulation base education.The Open Nursing Journal 2022; volume 16:1-7
17. Zamir Q, Nadeem A, Rizvi AH. Awareness of cardiopulmonary resuscitation in medical-students and doctors in Rawalpindi-Islamabad, Pakistan. J Pak Med Assoc 2012;62:1361-4.
18. Muhammad Ityas, Knowledge and Attitude of Dental professionals towards Basic life support. Saudi J Oral Dent Res 2020; 291-294