

Insight into basic life support awareness among dental graduates: A cross-sectional study

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Abstract

Introduction: It is imperative for every community member, especially healthcare professionals, to undergo training in effective Basic Life Support (BLS) techniques. CPR, being a fundamental medical skill, holds the potential to save numerous lives when administered promptly. Therefore, equipping medical, dental, and paramedical staff with proficient BLS skills becomes crucial. BLS serves as a critical intervention before medical assistance arrives, underscoring the

necessity for healthcare students to possess adequate knowledge and awareness about BLS and CPR.

Objectives: To assess the knowledge, awareness, and attitude toward the BLS among dental graduates.

Material and Method: This cross-sectional study was conducted to evaluate the knowledge and attitudes toward Basic Life Support (BLS) among dental graduates, including interns and postgraduates, in Madhya Pradesh, India, between December 2023 and February 2024.

Result: In this study two hundred and twelve responders were included, 89(42%) were interns (Bachelor in dental surgery) and the remaining 123(58%) were postgraduates. Surprisingly none out of two hundred and twelve had the complete knowledge of BLS.

Conclusion: According to this study, dental graduates are well-prepared to respond to emergencies, and we can significantly enhance the chances of survival for individuals affected by such incidents.

Keywords: Cardiac Arrest, Cardio Pulmonary Resuscitation, Basic Life Support, Automated External Defibrillators.

Introduction

A heart attack or myocardial infarction is not the same as a sudden cardiac arrest (SCA). Sudden cardiac arrest is called abrupt halting or stopping of an efficient heartbeat, which stops the blood supply to the body's organs. Unresponsiveness is caused by the brain's lack of oxygen and other nutritional substrates due to a stop in blood flow. In certain cases, automated external defibrillators (AEDs) can correct the heart's electrical activity or advanced care may be provided. Until then, CPR is the only temporary method of keeping blood flowing to the brain and heart ^[1].

Basic life support (BLS) encompasses the vital actions of maintaining an open airway, facilitating breathing, and supporting circulation using minimal equipment such as a basic airway device or protective shield. Prompt initiation of BLS is crucial in scenarios like cardiac arrest, particularly when ventricular fibrillation is present, as timely intervention significantly improves the chances of survival ^[2]. For dental professionals, being proficient in BLS is paramount. It enables them to swiftly respond to emergencies within their practice, potentially saving lives while awaiting the arrival of

emergency medical services. Through BLS training, dentists and students can effectively manage critical situations, ensuring the safety and well-being of their patients.

Furthermore, BLS skills not only enhance patient care but also contribute to the professional growth of dental practitioners. By staying abreast of BLS protocols and techniques, dentists demonstrate their commitment to ongoing education and preparedness. Moreover, this expertise allows dental professionals to play a vital role in the broader community by providing immediate assistance during emergencies.

This article aims to discuss the importance of BLS proficiency in dental practice and assess the current state of knowledge and awareness among recent dental graduates.

Aim

To assess and evaluate the knowledge and awareness of Basic Life Support among dental graduates.

Objectives

- 1) To assess the knowledge of basic life support among graduates
- 2) To assess the consideration of BLS courses within the curriculum.
- 3) To create awareness among dental graduates regarding the importance of BLS.

Material and Method

This cross-sectional study was conducted to evaluate the knowledge and attitudes toward Basic Life Support (BLS) among dental graduates, including interns and postgraduates, in Madhya Pradesh, India, between December 2023 and February 2024. Participants were provided with an online questionnaire consisting of 17 multiple-choice questions covering BLS awareness, knowledge, attitude, and skills. The questionnaire design

was informed by the guidelines of the American Heart Association (AHA), with answer keys for the core knowledge questions derived from the Basic Life Support manual published by the AHA. Questions encompassed various topics including abbreviations, resuscitation techniques focusing on circulation, airway, and breathing for unresponsive victims across different age groups, as well as emergency response protocols [3].

The inclusion criteria for this study encompassed dental graduates, specifically interns and postgraduates, primarily located within the state of Madhya Pradesh. Conversely, exclusion criteria encompassed other dental students and individuals studying in states other than Madhya Pradesh.

Results

The present study included 212 participants. The responses of the participants to various questions have been presented in the table below.

Students' Knowledge of Basic Life Support

The majority (94.3%) of the participants knew the correct full form of BLS. Only 36.3% of the participants knew that looking for safety is the first thing to do on finding someone unresponsive in the middle of the road.

The correct sequence of resuscitation in BLS was known to 39.2% of the participants. Nearly 62% of the participants were aware that in case of emergency, 108 numbers are to be called on.

Pulse is assessed through the Carotid artery; it was known to 86.8% of the participants. Around 46% of the participants knew that 12-14 breaths per minute should be delivered while performing BLS. Thirty-three percent of participants knew that pulse should be checked for 5-10 seconds before initiating BLS.

The correct compression depth of 5-6 cm and a compression ratio of 30:2 for adults was known to

56.1% and 71.2% of the participants. The correct rate of compression (i.e., 100-120/min) was known to 52.4% of participants.

Out of 212, 67.5% of the participants knew that in an adult, compressions should be given at the center of the chest on the breastbone. Nearly 50% of the participants had information about the full form of AED.

Head Tilt-Chin Lift was the correct manoeuvre used to open up the airway and was known to 77.4% of the participants. When 2 rescuers perform the BLS, the rescuers should switch the roles after every 5 cycles of CPR, 42.0% of the subjects had this information.

Eighty-one percent of the participants knew that EMS is an abbreviated form for Emergency Medical Services.

Only 8.5% and 22.6% of the participants considered their BLS performing skills as excellent and good respectively, and 13.7% reported that they could not perform BLS. More than half (53.8%) of the participants had never attended any workshop on BLS. [Table 1]

The correct response to each question (from questions 1 to 15) was scored '1' and the incorrect response was scored '0'. The mean total score of the participants was 8.97 ± 2.353 . (fig.3) The scores of the participants who had and had not attended the workshop were compared and it was found that the score of the participants who had attended within the last 2 years was significantly more than those who did not attend the workshop or had attended the workshop 3-5 years back (p-value <.05). [Table 2] This difference in score emphasized the need to attend BLS workshops at regular intervals.

Figure 1: Knowledge score.

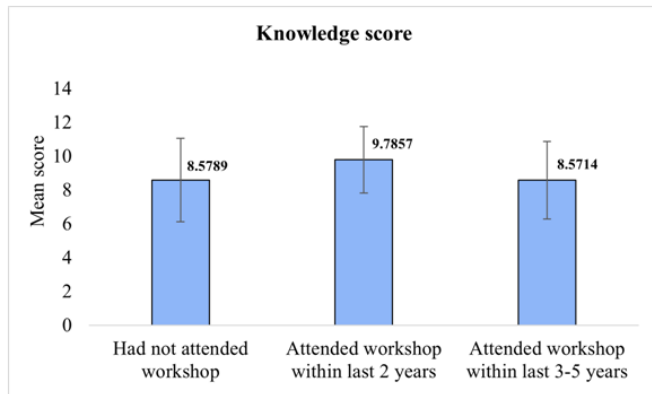


Figure 2: Distribution of study subjects based on educational level

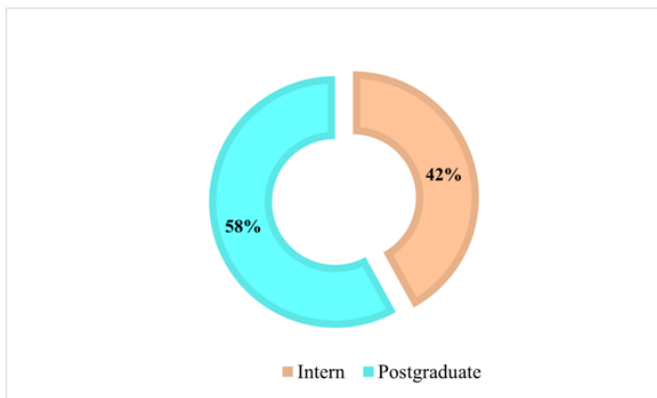
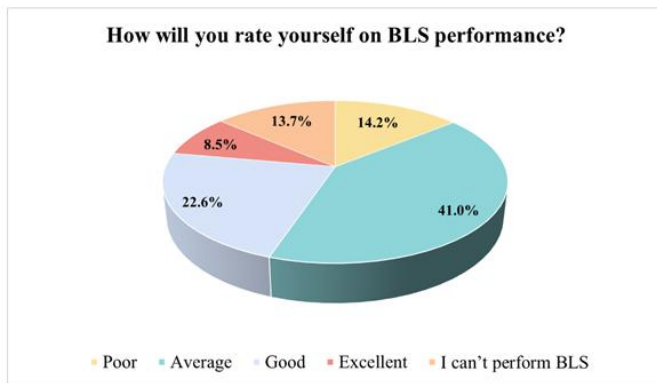


Figure 3: Response to the question “How will you rate yourself on BLS performance?”



Discussion

The World Health Organization estimates that in 2008, around 17.3 million people passed away from cardiovascular diseases (CVDs). This accounted for 30% of all fatalities worldwide. The majority of these were

caused by stroke and coronary heart disease. The neurologic symptoms and survival rates of persons experiencing a cardiac arrest are severe. Early defibrillation and cardiopulmonary resuscitation (CPR) may be helpful in several situations to increase survival and improve neurologic outcomes. When someone has sudden cardiac arrest, they should recognize it, ask for assistance, maintain their airway, and support their breathing and circulation without the use of any equipment other than what they need to stay safe [4].

Life-threatening emergencies can arise unexpectedly in various settings, including dental practices [3]. Basic life support (BLS) is an essential skill set for dentists, serving as a cornerstone for patient safety, professional development, and community service. While the Dental Council of India has included BLS knowledge and certification courses in the curriculum, further efforts are needed to raise awareness and make it compulsory for dental graduates. As professionals bearing the "doctor" title, dentists have a responsibility to ensure they are adequately trained to handle emergencies, thus positively impacting the community. Moreover, this expertise enables dental professionals to play a crucial role in providing immediate assistance during emergencies beyond the confines of their practice.

In this study two hundred and twelve responders participated, 89(42%) were interns and the remaining 123(58%) were postgraduates (table 3). Surprisingly none out of two hundred and twelve had the complete knowledge of BLS. Looking closely at the individual group's postgraduates scored 61.5%, as being aware of the BLS knowledge and skills but need to be updated with changes in protocols done by the American Heart Association after every period, and sadly dental interns scored 41.2% which shows that BLS course should be

considered for inclusion in the Bachelor in dental surgery curriculum(fig.2).

In the present study, the mean total score of the participants was 8.97 ± 2.353 . The scores of the participants who had and had not attended the workshop were compared and it was found that the score of the participants who had attended within the last 2 years was significantly more than those who did not attend the workshop or had attended the workshop 3-5 years back (p-value $<.05$). [Table 2] This difference in score emphasized the need to attend BLS workshops at regular intervals.

Limitations

Practical skills of BLS could not be assessed in this study as only theoretical knowledge was assessed.

Conclusion

The study conducted on basic life support (BLS) awareness in Madhya Pradesh utilizing online questionnaires provides valuable insights into the population's level of knowledge and preparedness. Through the data collected, it becomes evident that there is a significant gap in BLS awareness and skills among the respondents. This highlights the urgent need for widespread education and training programs to enhance BLS proficiency among individuals in Madhya Pradesh. By addressing these gaps, we can save countless lives by ensuring more people are equipped to respond effectively in emergencies. Further research and interventions are necessary to develop targeted strategies

Legend Tables

Table 1: Responses to various questions.

Question	Response	Number of subjects [N=212]	Percentage (%)
What is the full form of BLS?	Best Life Support	10	4.7%
	Basic Lung Support	2	0.9%
	Basic Life Support*	200	94.3%

for improving BLS awareness and implementation throughout the region.

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Abbreviations: Sudden Cardiac Arrest (SCA), Cardio Pulmonary Resuscitation (CPR), Basic Life Support (BLS), Automated External Defibrillators (AED), American Heart Association (AHA), Emergency Medical Services (EMS), Cardiovascular Diseases (CVDs).

	Basic Life Services	0	0.0%
The correct sequence of resuscitation in BLS is:	Compression, Airway, Breathing*	83	39.2%
	Airway, Breathing, Compression	120	56.6%
	Breathing, Airway, Compression	9	4.2%
What is the number to be called in case of an emergency?	100	34	16.0%
	121	5	2.4%
	108*	132	62.3%
	104	41	19.3%
When you find someone unresponsive in the middle of the road, what will be your first response?	Open airway	57	26.9%
	Start chest compression	12	5.7%
	Look for safety*	77	36.3%
	Give two breathings	2	0.9%
	Call for help	64	30.2%
Which artery to be felt for a pulse in an adult?	Carotid Artery*	184	86.8%
	Femoral Artery	6	2.8%
	Brachial Artery	22	10.4%
What should be the number of breaths/minute while performing the BLS?	10-12	77	36.3%
	12-14*	98	46.2%
	16-18	31	14.6%
	20-25	6	2.8%
How long should you check for a pulse in adults before initiating BLS?	At least 30 second	58	27.4%
	Less than 5 second	31	14.6%
	10-15 second	53	25.0%
	5-10 second*	70	33.0%
What is the correct compression depth for adults during BLS?	5-6 cm*	119	56.1%
	4-5 cm	75	35.4%
	6-7cm	7	3.3%
	2-4 cm	11	5.2%
During BLS, what is the correct chest compression ratio for adults when performed by a single rescuer in CPR?	30: 2*	151	71.2%
	15: 2	42	19.8%
	30: 1	19	9.0%
	25: 2	0	0.0%
Rate of chest compression in adult during CPR?	100/min	62	29.2%
	100-120/min*	111	52.4%

	90/min	22	10.4%
	70/min	17	8.0%
What is the location for chest compression in adults?	Right side of chest	5	2.4%
	Left side of chest	62	29.2%
	Centre of the chest on breastbone*	143	67.5%
	Anywhere on chest region	2	0.9%
Abbreviation AED stands for:	Automated External Defibrillator*	108	50.9%
	Automated Electrical Defibrillator	79	37.3%
	Advanced Electrical Defibrillator	19	9.0%
	Advanced External Defibrillator	6	2.8%
The correct manoeuvre used to open up the airway is:	Open The Mouth	35	16.5%
	Sweep Finger in mouth	1	0.5%
	Head Tilt-Chin Lift*	164	77.4%
	Head Lift – Chin Tilt	12	5.7%
When performing two-rescuer CPR, how often should you switch roles?	After every cycle of CPR	28	13.2%
	After every 2 cycles of CPR	75	35.4%
	After every 5 cycles of CPR*	89	42.0%
	After every 10 cycles of CPR	20	9.4%
What does the abbreviation EMS stand for?	Effective Medical Support	7	3.3%
	Emergency Management Services	33	15.6%
	Emergency Medical Services*	172	81.1%
	External Medical Services	0	0.0%
How will you rate yourself on BLS performance?	Poor	30	14.2%
	Average	87	41.0%
	Good	48	22.6%
	Excellent	18	8.5%
	I can't perform BLS	29	13.7%
Have you attended the BLS workshop?	No	114	53.8%
	Yes, within the last 2 years	70	33.0%
	Yes, within the last 3-5 years	28	13.2%

*Correct response.

Table 2: Comparison of knowledge score between participants who had and had not attended the BLS workshop.

Group	N	Mean	Standard deviation	Minimum	Maximum
Had not attended workshop	114	8.5789	2.47427	3.00	13.00
Attended workshop within last 2 years	70	9.7857	1.96264	2.00	14.00
Attended workshop within last 3-5 years	28	8.5714	2.30022	3.00	12.00
All subjects	212	8.9764	2.35366	2.00	14.00

Table 3: Distribution of study subjects based on educational level.

Education	Number of subjects	Percentage
Intern	89	42.0
Postgraduate	123	58.0
Total	212	100.0