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Knowledge of Basic Life Support among Dental Surgeons: A Web-Based Cross-Sectional Study

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ABSTRACT

Introduction: Basic life support (BLS) refers to preserving an airway and promoting breathing and circulation without the use of any tools. It saves lives if given timely. The lack of training and knowledge of BLS might lead to tragic consequences.

Objective: To assess the knowledge regarding BLS among dental surgeons.

Methods: A web-based cross-sectional study was conducted among dentists in Haryana, during April-May 2020 using a semi-structured proforma. It consisted of sociodemographic data and 11 close-ended items on BLS. Score 1 was given for each correct answer. A google form was prepared via docs.google.com/forms and the link was sent to the participants via social media platforms like WhatsApp and Viber. The filled questionnaires were extracted from the Google Forms and exported to Microsoft Excel 2016. Descriptive statistics like mean, frequency and percentage were calculated to present the study findings using Statistical Package for the Social Sciences (SPSS) software (version 21).

Results: Out of 73 participants, 59 (80.8%) were male and 60 (82.2%) belonged to age group of 31-45 years. Forty one (56.2%) participants had completed a bachelor of dental surgery. Mean (±SD) knowledge score was 8.75±2.46. Thirty eight (52.1%) participants scored less than 50% of the maximum score. The knowledge score was high in male and aged 31-45 years and it was statistically significant (P-value<0.05).

Conclusion: The study shows sub-optimal knowledge among dental practitioners regarding BLS and showed the urgent need for continuous refreshing courses for this critical topic.

Keywords: Basic life support; Dentist; Knowledge.

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INTRODUCTION

Basic life support (BLS) refers to preserving an airway and promoting breathing and circulation without the use of any tools.[1] BLS is a part of emergency medical care and it saves lives given timely.[2] Every person in a community should be aware of the importance of BLS in saving lives and improving the quality of community health.[3] Training in medical emergency management is seen as an integral component of the undergraduate dental program. Dentist prescribes medications for numerous oral conditions, particularly oro-facial infection. They also provide invasive procedure that might lead to medical emergency. Therefore they must have the knowledge to manage such situations.[4] The lack of training and knowledge while dealing medical emergence might lead to tragic consequences and sometimes legal complications. Hence health practitioners like dentists also ought to be well trained to treat medical emergencies. BLS is therefore an effective tool before a medical emergency can be dealt with.[5]

To be better prepared for future dental practice, there is a need to ensure adequate undergraduate training is available regarding BLS to dentists. There are few studies on BLS have been conducted among dental surgeon. This cross sectional survey was carried out to assess the knowledge regarding BLS among dental surgeons.

MATERIALS AND METHODS

A web-based cross-sectional study was conducted among finite population of 100 dentists in Haryana, during April-May 2020. A semi-structured proforma was prepared based on relevant literature.[6,7] It consisted of sociodemographic data and 11 close-ended items on BLS. Items 1-10 had four options and item 11 had multiple response. For each correct response, score 1 was given while for wrong answers score 0 was given. The questionnaire was reviewed by the research team and the subject experts for confirming its relevance, simplicity and internal consistency. It was pretested in 10% of the study population to establish validity and reliability and the pretested sample was not used for the data analysis. The Cronbach's alpha reliability coefficient was 0.792 which was considered satisfactory for the study.

A google form was prepared via docs.google.com/forms and the link was sent to the enrolled participants via social media platforms like WhatsApp and Viber. Upon clicking on the link, it informed the participants of the study objective and stated that the study participation was purely voluntary. No incentive was given. Personal identifying information (e-mail address, phone number, name, etc.) were not collected to maintain the confidentiality of the participant. The study was performed following the Declaration of Helsinki as revised in 2013.[8] This study was conducted and reported according to the Checklist for Reporting Results of Internet E-Surveys guidelines.[9]

The filled questionnaires were extracted from the Google Forms and exported to Microsoft Excel 2016. Descriptive statistics like mean, frequency and percentage were calculated to present the study findings using Statistical Package for the Social Sciences (SPSS) software (version 21).

RESULTS

The link of Google form was sent to 100 dental surgeons and 73 responded giving the response rate of 73%. Majority were male 59 (80.8%) and aged 31-45 years 60 (82.2%). Out of 73, 41 (56.2%) participants had completed a bachelor of dental surgery and 48 (65.8%) had the experience of more than 5 years (**Table 1**).

Table 1: Sociodemographic profile of the participants (n=73)

Variable	Category	Frequency	Percentage
Gender	Male	59	80.8
	Female	14	19.2
Age Group in years	18 – 30	13	17.8
	31 – 45	60	82.2
Educational level	BDS	41	56.2
	MDS	32	43.8
Years of experience in years	Up to 5	25	34.2
	More than 5	48	65.8

The knowledge score of the participants ranged from 3 to 17. Mean (±SD) and median score was 8.75±2.46 and 8 respectively **(Figure 1)**.

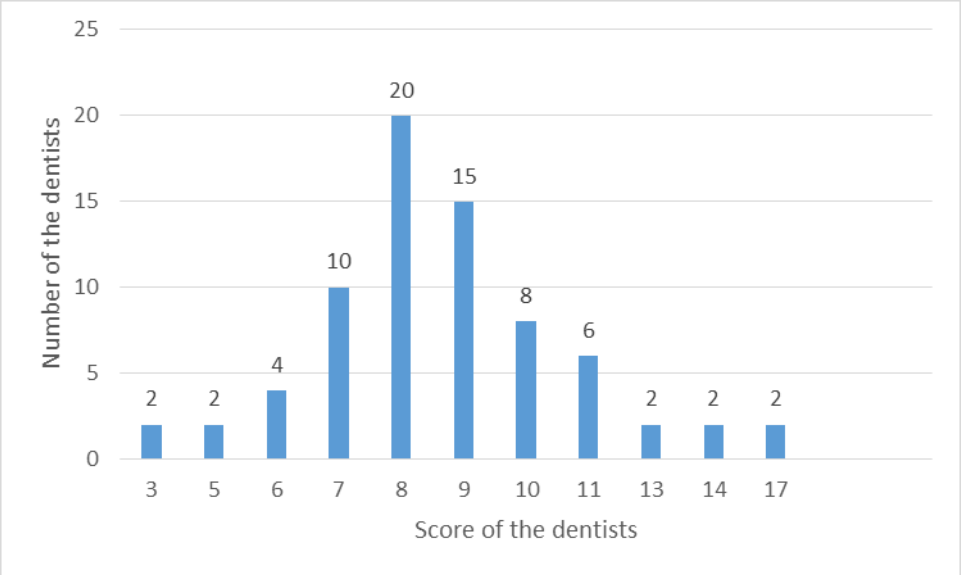

Figure 1: Knowledge score of basic life support among participants (n=73)

Out of 73, 38 (52.1%) participants scored less than 50% of the maximum score **(Figure 2).**

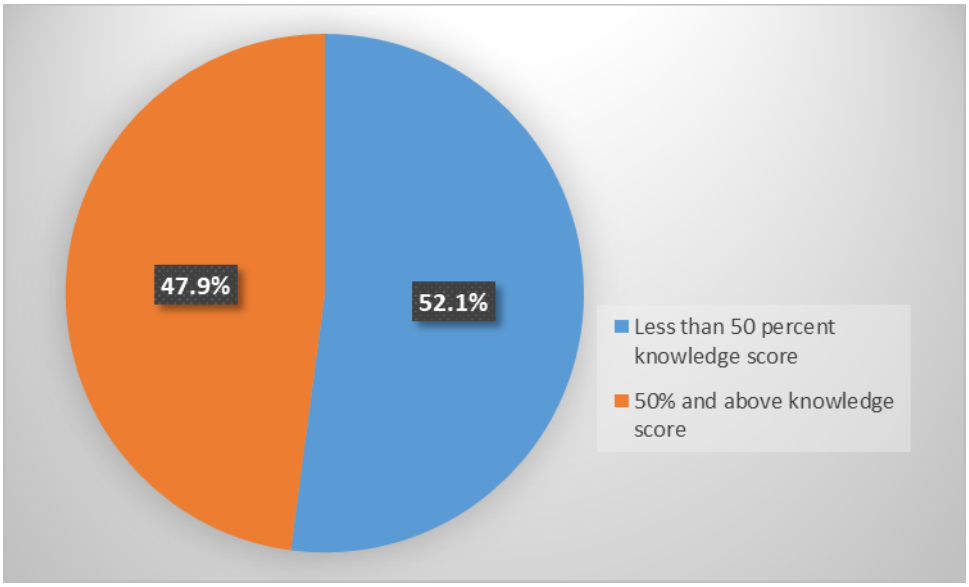

Figure 2: Category of knowledge score of basic life support among dentists (n=73)

Mean knowledge score was high in male and age group 31-45 years which was statistically significant (P-value<0.05). Mean knowledge score was also high in the participants having MDS than the participants having BDS; however, it was statistically not significant (**Table 2**)

Table 2: Factors affecting knowledge score of basic life support among dentists (n=73)

Variable	Category	Means score	P-value
Gender	Male	9.10 ± 2.52	0.012*
	Female	7.29 ± 1.54	
Age Group in years	18 – 30	7.15 ± 2.57	0.009*
	31 – 45	9.10 ± 2.31	
Marital status	Married	8.55 ± 2.49	0.092
	Unmarried	9.91 ± 2.02	
Educational level	BDS	8.37 ± 1.56	0.129
	MDS	9.25 ± 3.24	
Years of experience in years	Up to 5	8.04 ± 2.24	0.074
	More than 5	9.13 ± 2.51	

Table 3 shows the response of the participants towards basic life support. Out of 73 participants, only 36 (49.3%) knew the correct sequence for CPR in an adult in case of single rescuer as C-A-B (chest compressions, airway and breathing). Thirty four (46.6%) participants knew the correct site of chest compression during CPR. Only fourteen (19.2%) participants knew that how many chest compression and breathing should be given in CPR in case of single rescuer.

Table 3: Response of the participants towards questions on basic life support (n=73)

S.N.	Questions on basic life support	Correct answer	Correct response (%)
1.	The initial Basic Life Support (BLS) steps for adults are:	Assess the victim, activate Emergency medical services & get automated electrical defibrillator, check pulse, start CPR	58 (79.5)
2.	The 2015 AHA Guidelines for CPR recommended BLS sequence of steps in case of single rescuer:	Chest compressions, Airway, Breathing	36 (49.3)
3.	A patient suffered from syncope when you commenced a dental procedure. What would be your immediate action?	Place patient in Trendelenburg position	67 (91.8)
4.	What is the correct position (site) of chest compression during CPR?	Center of the chest	34 (46.6)
5.	How many chest compression and breathing should be given in CPR in case of single rescuer?	30 chest compressions and 2 rescue breaths	14 (19.2)
6.	Depth of chest compression in adults during CPR is:	At least 2 inches	49 (67.1)
7.	A patient is cited with airway obstruction during dental treatment due to aspiration of a foreign body. What would you do?	Attempt Heimlich maneuver	53 (72.6)
8.	In case of seizure attack on dental chair. What would you do?	Make the patient lie on the lateral position	20 (27.4)
9.	Which of the drugs should be given in case of angina pain in patients having history of heart attack during dental treatment?	Glyceryl Trinitrate through sublingual route	71 (97.3)
10.	Drug of choice in case of anaphylaxis is:	Adrenaline	61 (83.6)
11.	Which of the following drug(s) is/are used during Basic Life Support?	Adrenaline	70 (95.9)
		Diazepam	32 (43.8)
		Glyceryl Trinitrate	60 (82.2)
		Insulin	14 (19.2)
		Amiodarone	12 (16.4)
		Magnesium	8 (11.0)
		Bicarbonate	10 (13.7)

DISCUSSION

BLS techniques are easy and should be known even by a layman; however, it is as yet distant from reach in India. The vested benefit of CPR/BLS leads developed countries already recommended BLS training even for high school students nearly a decade ago.[10] The BLS skills and knowledge should be precise in health care professionals. Overall the dentists showed an inadequate level of knowledge of BLS in the current study and this result is in agreement with other previous studies done on dental students and doctors.[11-13] The present study showed a slight difference in the mean knowledge score between male (9.10±2.52) and female (7.29±1.54) with statistically significant difference. This finding was contradictory to the other studies.[12]

About half of the participants were known to the correct BLS sequence in case of single rescuer which was in line with other study in which 42.3% participants were known to the correct sequence of BLS.[14] In present study, only 46.6% respondents knew the correct position (site) of chest compression during CPR which was in line with the finding of Baduni et al. (43.27%).[14] However, it was lower than the finding of Al-Shamiri et al (56%).[15] Two third of the respondents (67.1%) knew the depth of chest compression in adults during CPR which was higher than the studies by Baduni et al (17.3%) and Al-Shamiri et al (10.8%).[14,15] Only one out of five (19.2%) respondents knew the rate of chest compression and breathing should be given in CPR in case of single rescuer which was lower compared to the findings of the Baduni et al (36.54%).[14] Less than one third (27.4%) respondents knew the management of seizure attack on dental chair. Management of medical emergency at dental office is utmost important and every dental surgeon must know it.

According to study done by Girdler et al. just 20.8% of dentists felt that they were able to identify the cause of collapse in a dental surgery. More than half of the dentist felt that they were unable to manage a patient of anaphylaxis or myocardial infarction and almost half (49.7%) did not know how to insert an oral airway or undertake an intravenous injection.[16]

Medical emergencies do occur in the dental clinics and the lack of knowledge regarding these could leads to insecurity and limited appreciation of responsibility of dentists. The incompetence to perform BLS in the dental clinics can lead to fatal consequence.[17] Therefore, all dental practitioners must know the guideline and management of medical

emergency. Dental professionals need to have hands-on practice regularly in order to retain and ameliorate their prowess regarding BLS. They must attend workshop and seminar on BLS time to time to update themselves to learn skills which ultimately lead to safe dental practice.

The study had some limitations. Being a cross-sectional, it did not determine the skills related to BLS. Recall bias may have affected the responses of the participants. The study had small sample size. The study findings could not be generalized as it was conducted at a single state; however, similar findings might be expected in dentists working in other areas also.

CONCLUSION

The findings of the present study demonstrates sub-optimal knowledge among dental practitioners regarding BLS and showed the urgent need for continuous refreshing courses for this critical topic. The skills related to BLS should also be assessed time to time to enhance safe dental practice.

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