

Original Research Article

Knowledge, attitude, practice about awareness of basic life support facilities for medical emergencies among dental practitioners: a cross sectional questionnaire study

Anushree Ashish Fegade, Treville Pereira*, A. K. Anjali, Megha Lalai,
Christina Pereira, Ruchika Kallianpur

Department of Oral and Maxillofacial Pathology and Microbiology, Dr. D. Y Patil Deemed to be University, School of Dentistry, Navi Mumbai, Maharashtra, India

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*Correspondence:

Dr. Treville Pereira,

E-mail: trevillepereira@gmail.com

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ABSTRACT

Background: Healthcare professionals should be trained in basic life support (BLS), as it is a basic skill which can save lives if implemented timely. An ability to react immediately to the emergency at hand and having the proper equipment and drugs needed for the emergency, can mean the difference between successful management and failure. Objective of this study is to assess the knowledge, awareness and attitude of dental practitioners towards BLS facilities.

Methods: This is a cross sectional study conducted from January to March 2021 among 250 dental interns, BDS and MDS doctors by assessing responses to 10 selected questions pertaining to BLS among dental practitioners in Mumbai/Navi Mumbai. Inclusion criteria: BDS, MDS doctors.

Results: The results of my study showed that almost (77.5%) enquire about medical history. Only (32.2%) felt competent in responding to emergency situation at clinics. (46.6%) were confident about administering IV, I.M injections and performing cardiopulmonary resuscitation (CPR). They were also assessed for the emergency drugs and emergency kits, which were available with (49.5%).

Conclusions: The survey shows that there is substantial lack of BLS knowledge among dental practitioners. Prompt recognition & efficient management of medical emergencies can increase the likelihood of a satisfactory income. This is feasible by incorporating BLS in academic curriculum on regular basis and through hands on workshops.

Keywords: BLS, Medical emergency, Dental practitioners, Questionnaire

INTRODUCTION

'Preparedness; readiness; anticipation of possible issues, organised systematic planning and united efforts can thwart any unforeseen emergency situation. We cannot stop any emergency situation from occurring at dental clinic, but the best we can do is to arm ourselves with knowledge. Care shouldn't start in the emergency room. Emergency situations can occur in any patient, at any dental clinic at any time. The best possible way to tackle such situations is to be prepared in advance.

Unpreparedness and incompetence to handle such events might have tragic results or even legal repercussions.¹

Without the use of any instruments, BLS is maintaining an airway and assisting with breathing and circulation.² All the medical personnel should be well versed with the knowledge of BLS. Recognition, prevention and implementation of BLS facilities during life threatening emergencies are the major responsibilities of the health care personnel.

Until definitive treatment is given, the dentist's most significant contribution is to offer BLS.³ This is the most crucial step as it can differentiate between life and death. The dentist and staff of the dental clinic must be well trained to handle any emergency situation occurring at clinic. Although medical emergencies cannot be classified as everyday occurrence in dental clinical setups, they do occur with alarming lack of predictability, leaving highly experienced clinicians perplexed and concerned. Due to rarity of these situations, medical professionals over time tend to lose the abilities needed to handle and treat medical emergency in dental chair, which puts them in vulnerable, anxious and confused state.⁵

Dentists need to become knowledgeable about numerous pathological conditions and pharmacotherapy used to manage them. They must take into account the potential drug interactions as well as how fear and anxiety contribute to medical problems. Practitioners need to understand that even in healthy patients, no drug or administration method is without risk.⁶

Structured approach to assessment and reassessment in management of any medical emergency prevents any signs and symptoms from being missed and incorrect diagnosis being made. Sequence is best remembered as 'ABCDE' (airway, breathing, circulation, disability exposure).⁷

Emergency drugs and equipment must be accessible and up to date. Oxygen, epinephrine, nitro-glycerine, injectable diphenhydramine, chlorpheniramine, aspirin should be readily available in dental office. Other drugs such as glucagon, atropine, nitrous oxide, hydrocortisone, morphine, naloxone, midazolam or lorazepam, flumazenil should be considered.⁸

The most common medical emergencies occurring at the clinic are anaphylaxis, angina, status asthmaticus, cardiac arrest, foreign body obstruction, epilepsy, myocardial infarction, hypoglycaemia. Due to elevated levels of stress, which is most typical among patients visiting dental clinics, situations like this are more likely to occur within the limits of dental practice.⁵ When a patient is not breathing or has no pulse, the chain of survival principles comprise of following 4 stages: Early recognition and call for help, early CPR, early defibrillation and early advanced life support.⁷

Aim of this study was to assess knowledge and awareness of BLS facilities for medical emergencies among dental professionals and to evaluate availability and applicability of emergency drugs in their dental clinics.

METHOD

Study design

A cross sectional study was conducted from January to March 2021 among 250 dental interns, BDS and MDS doctors around Mumbai and Navi Mumbai.

Inclusion criteria included of dental interns, BDS and MDS doctors, while the exclusion criteria consisted of medical practitioners.

The study was conducted at Dr. D.Y Patil university, school of dentistry, Navi Mumbai.

Prior to the study, ethical clearance was obtained from institutional research and ethical board D. Y. Patil university, school of dentistry. The reporting of study is in accordance to strengthening reporting of observational studies in epidemiology (STROBE) guidelines.

Pilot study

A pilot study was conducted to check for the face and content validity of the developed questionnaire as well as to test its reliability and to derive the sample size. The questions were framed after thorough review of the literature and with the help of four experts the questions were reviewed for content validity. Cronbach's coefficient was found to be 0.76, which showed a good internal reliability of questionnaire. External reliability was established by test-re test method, among 30 dental practitioners who were not included in main study.

Sample size derivation

The sample size was determined by using single proportion formula ($n = [Z \alpha / 2]^2 p [1-p] / d^2$) at 95% confidence interval, where, $Z \alpha / 2 = 1.96$, $p = 60\%$ prevalence of knowledge of EBP from the pilot survey and $d = 5\%$ of marginal error was taken. By substituting the values in the formula, minimum sample size obtained was 239 which was rounded to a total 250 participants for the purpose of the study.

Designing and distribution of questionnaire

A 10-item pre-validated, pre-tested, close-ended, self-administered questionnaire in English language was developed and was circulated among the doctors. The purpose of the study was clarified to the participants and they were assured of confidentiality. Non-probability-based self-selection sampling technique, a combination of convenience sampling and snowball sampling was followed for distribution of the questionnaire to ensure maximal participation.

The study was conducted by assessing the responses to these 10 questions pertaining to BLS facilities. The aspects which the questions touched upon were about the assessment of resuscitation techniques, administration of intra muscular or intra venous injections, availability of emergency drugs and kits at their clinic, obtaining medical history and vital signs.

The participants were assessed according to their responses to the questionnaire.

Statistical analysis

The data was compiled, tabulated and analysed by using google docs. Statistical analysis was performed using the IBM statistical package for the social sciences (Statistics

for the Windows, version 21.0. Armonk, NY: IBM Corp.). The descriptive summary statistics included percentages, means and the standard deviations. A p value of ≤ 0.05 was considered as significant for all statistical analyses.

Table 1: Questionnaire.

Questionnaire	Answers	
Do you enquire about medical history including medication and allergy?	Yes	No
Do you obtain filled health history pro forma of the above from the patient?	Yes	No
Do you have a pulse oximeter/ BP machine at your clinic?	Yes	No
Do you obtain vital signs (bp, pulse, respiration, temperature) of patients before commencing any treatment?	Yes	No
Do you think you can handle any emergency condition at your dental office?	Yes	No
Can you give intramuscular/ intravenous injections and perform CPR?	Yes	No
Availability of emergency kits at dental office?	Yes	No
Availability of emergency drugs in the drug kit:	Adrenali	Hydrocortisone
	Yes/ No	Yes/ No
	Oral glucose	Epinephrine
	Yes/ No	Yes/ No
	Atropine	Bronchodilator (salbutamol)
	Yes/ No	Yes/ No
	Glyceryl trinitrate	--
	Yes/ No	
Oxygen availability at your clinic?	Yes	No
Do you take anaesthetist/physician's clearance for high-risk surgeries?	Yes	No

RESULTS

The dental professionals who enquire about medical history including medication and known allergy is depicted in (Figure 1). Out of all the responders, (77.5%) of the doctors asked about the medical history. Asking about patient allergies are crucial aspect of history gathering as this may have potentially life-threatening consequences. It is critical to always ask the patient about allergies and if they do, clarify the reaction they had to the medication. It helps in preventing the potential harm to the patient during treatment.

According to my study, only (40.9%) of the dentist's obtained filled health proforma from the patient, (60%) of the participants had a pulse oximeter and BP machine at their clinic and (55.5%) of the dentists obtain vital signs such as blood pressure, respiration, temperature of patients before commencing any treatment (Figure 2).

When asked whether they were confident of handling any emergency situation at their clinic, only (32.2%) of them were positive (Figure 3).

The next question is based upon whether they can administer intra muscular, intra venous injection and perform cardiopulmonary resuscitation (CPR), for which only (46.4%) of the dentist were confident (Figure 4).

In addition, as seen in Figure 5, only (49.5%) of the dentist had the emergency kits available at their clinics.

The most commonly available emergency drugs at their dental clinics were adrenaline (63.3%), oral glucose (50.5), atropine (40%) followed by hydrocortisone (35.3%), salbutamol (33.2%) and glyceryl trinitrate (20.8%) (Figure 6).

Very few respondents (19.5%) had oxygen availability at their clinics (58%) of the dentist's take physician's or anaesthetist's clearance before performing high risk surgeries (Figure 7).

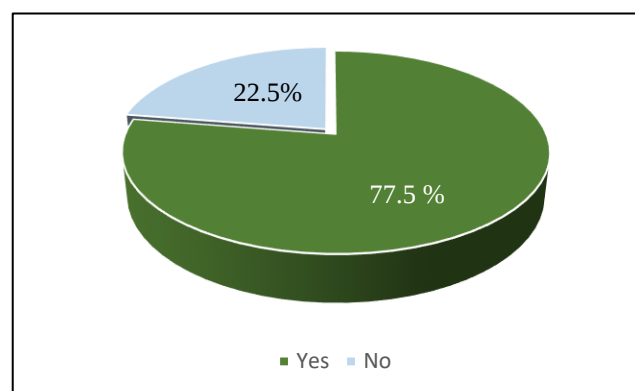


Figure 1: That 77.5% dentists enquired about the medical history.

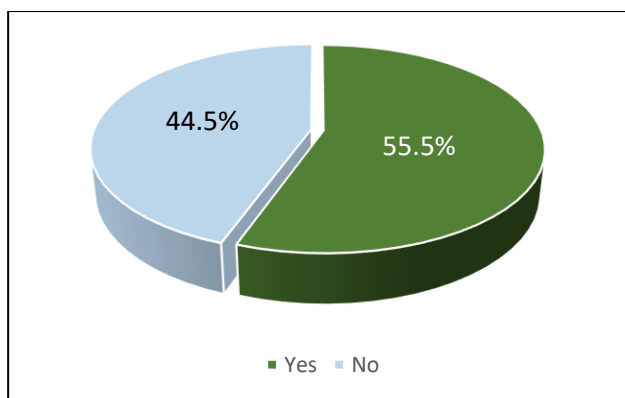


Figure 2: Depicts that (55.5%) of the dentists obtain vital signs such as blood pressure, respiration, temperature of patients before commencing any treatment.

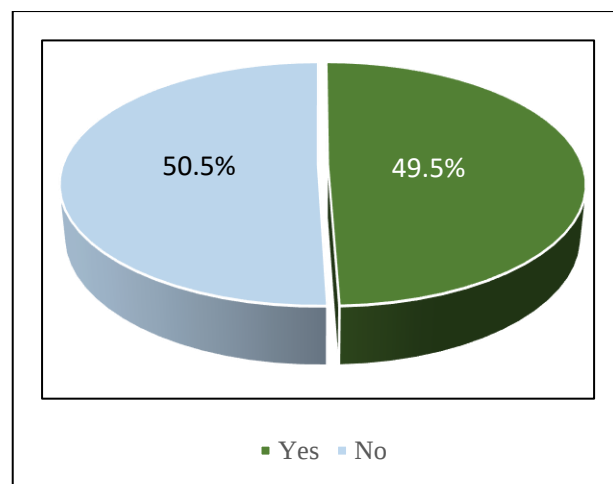


Figure 5: Implies that (49.5%) dentists have emergency kits on hand at their practice.

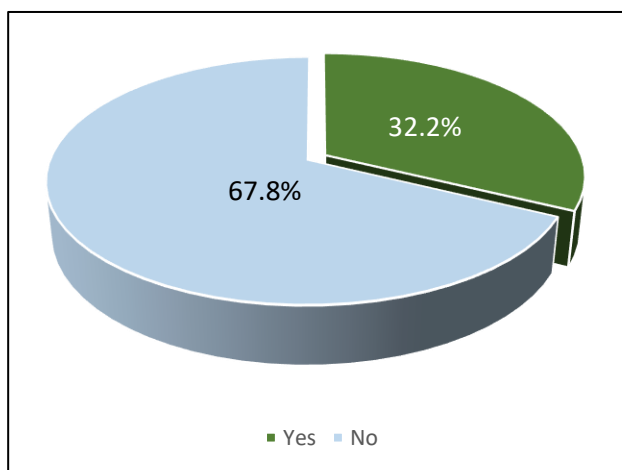


Figure 3: Points out that 32.2% of dentists felt confident in their ability to handle an emergency crisis in their office.

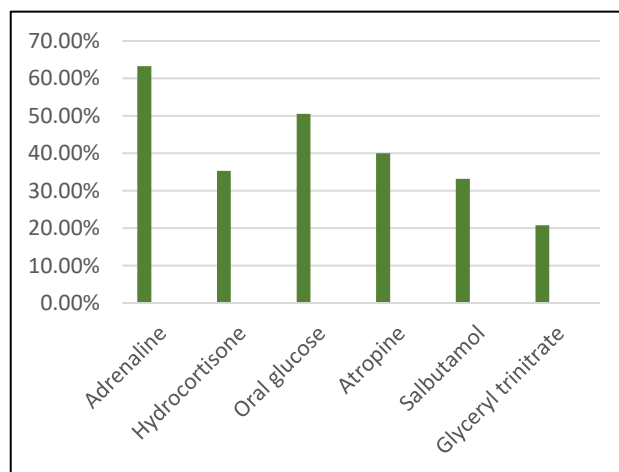


Figure 6: Clarifies that the most commonly available emergency drugs at their dental clinics were adrenaline (63.3%), oral glucose (50.5), atropine (40%) followed by hydrocortisone (35.3%), salbutamol (33.2%) and glyceryl trinitrate (20.8%).

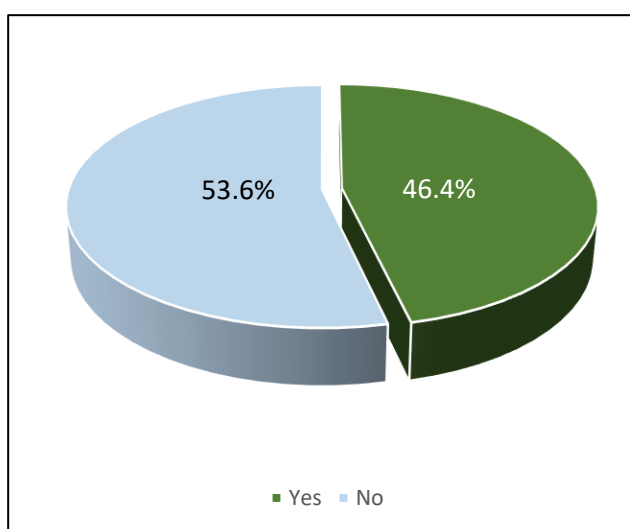


Figure 4: Reveals that (46.4%) dentists have received training in conducting CPR and administering intravenous and intramuscular injections.

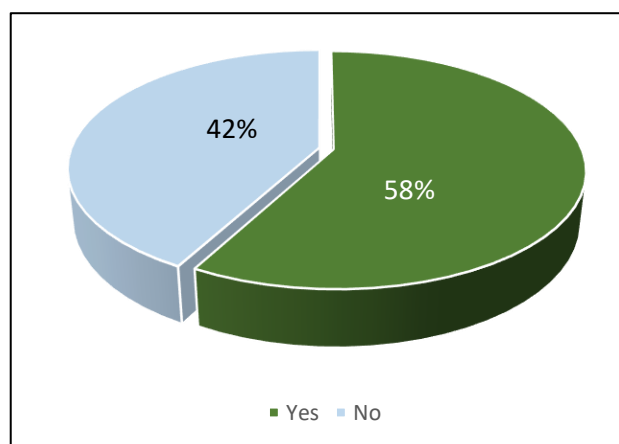


Figure 7: Shows that before performing high-risk operations, (58%) of dentists obtain approval from physician or an anaesthesiologist.

Table 2: Response of dental practitioners for the response of questionnaire on BLS facilities.

Questions	Yes (%)	No (%)
Do you enquire about medical history including medication and allergy?	77.5%	22.5%
Do you obtain filled health history pro forma of the above from the patient?	40.9%	59.1%
Do you have a pulse oximeter/ BP machine at your clinic?	60.0%	40.0%
Do you obtain vital signs (bp, pulse, respiration, temperature) of patients before commencing any treatment?	55.5%	44.5%
Do you think you can handle any emergency condition at your dental office?	32.2%	67.8%
Can you give intramuscular/ intravenous injections and perform CPR?	46.4%	53.6%
Availability of emergency kits at dental office?	49.5%	50.5%
Availability of emergency drugs in the drug kit		
Adrenaline	63.3%	36.7%
Hydrocortisone	35.3%	64.7%
Oral glucose	50.5%	49.5%
Atropine	40.0%	60.0%
Bronchodilator (salbutamol)	33.2%	66.8%
Glyceryl trinitrate	20.8%	79.2%
Oxygen availability at your clinic?	19.5%	80.5%
Do you take anaesthetist/ physician's clearance for high risk surgeries?	58.0%	42.0%

DISCUSSION

A medical emergency is a sudden, unanticipated condition that requires immediate attention and treatment. An emergency can occur anywhere and to anyone. It might happen to a person receiving the dental treatment or even someone who is accompanying the patient. While the slightest negligence could result in major morbidity or fatality, it is the dentist's job to manage these circumstances delicately. Thus, the dentist, along with the rest of dental office staff should be knowledgeable about the procedures for providing BLS. Various emergencies can occur at the clinic which can be summarized as episodes of hypoglycaemia, syncope, postural hypotension, epilepsy, status asthmaticus, foreign body obstruction, anaphylactic reaction, angina pectoris or myocardial infarction. A sudden medical emergency may arise during dental procedure due to number of risk factors, including mental stress, general

health conditions, medical therapy and the drug interactions.⁴

A comprehensive medical history and questions regarding drug use and sensitivity to medications are among the first and most crucial steps a dentist may take before beginning any treatment with the patient. The patient should undergo a thorough physical examination that includes taking their vital signs, including their pulse, blood pressure, breathing and temperature. Special care should be taken towards the patients suffering from anxiety or who are apprehensive.⁴

In the current study, (55.5%) of the dentists claim to obtain vital signs before commencing the treatment. The results concur with the study conducted by Hashim et al which showed (52.6%) dentist recorded vital signs only if they felt it was necessary.⁵ Whereas the study conducted by Albelaihi et al showed slightly higher percentage of the respondents (77%) claiming to the record the vital signs.⁹

According to our study, (46.4%) of the dentist were aware about how to perform CPR, comparable to the study conducted by Shenoy et al which showed (37.5%) young dental graduates from dental college and hospital in Mangalore knew how to perform CPR.¹⁰ There is also a similarity to a study conducted by Singh et al which showed (56.0%) had the knowledge on correct concept in performing CPR.¹¹

The (32.2%) of the dentist were confident of handling any medical emergency occurring at their clinic, which is compares to a study by Hashim et al which showed (44.8%) of respondents felt competent in tacking any medical emergency.⁵

In respect to availability of emergency drugs, the results of study conducted by Hashim et al were almost similar to our study showing presence of (61.8%) adrenaline, (33.1%) hydrocortisone and (29%) atropine and (40.6%) of antihistamines.⁵

Whereas, in the study by Jodalli et al the competency to administer IM and IV injections was (41.9%) and (30.5%) respectively, quite similar to our study which showed (46.4%) of the dentist were confident.¹²

This study has showed deficiency of knowledge and competency regarding management of emergency among dentists. More attention and effort are required to ensure that dentists and dental offices are ready to handle medical emergencies. Together with theoretical instruction in BLS, dentists should also acquire hands on experience. Comprehensive undergraduate and post graduate education covering BLS issues can address this. For enhancing knowledge and preparedness among dentists, educational programs, annual BLS seminars, simulated basic and advanced life support programs as

well as the mock emergency drills should be conducted often.¹³

Limitations

There are certain limitations of our study. Since it was a questionnaire study, knowledge and attitude among the respondents may or may not be predicted, reflecting the inherent limitation of the study. Secondly, due to the cross-sectional nature of the study and the employed sampling technique, the self-selection bias on the side of the respondents could have occurred. Another one being the social desirability bias. In order to eliminate it personal information of the participants was not asked and confidentiality was assured.

CONCLUSION

Every procedure elicits a stress response characterized by physiological changes accompanied by psychological reactions. The primary obligation and ultimate responsibility of oral health care personnel is timely delivery of quality, preventive, diagnostic and therapeutic services within the bounds of circumstances presented by the patient. Having medical personnel on call is very useful under such circumstances. However, one should always remember that the best form of managing a medical emergency is by prevention and preparation. Remember, when the disaster strikes, time to prepare is gone.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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