

A Survey on Knowledge of Medical Emergencies and Its Management among the Under-Graduate (UG) Clinical Students of a Dental College in Pondicherry, India

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Abstract

Introduction: Dentist can encounter a medical emergency during any phase of the dental treatment. It is essential for the clinician to accurately identify and manage a life threatening situation in patients undergoing dental treatment. The aim of the present study is to assess the knowledge on medical emergencies and its management among dental clinical students of a dental college in Pondicherry.

Materials and Methods: A retrospective questionnaire study was conducted among 135 under-graduate (UG) students to assess their knowledge on various medical emergency conditions and its management from their level of perception in clinical postings.

Results: The overall knowledge regarding identification and management of medical emergencies among the study population was found to be inadequate.

Conclusion: Every dentist must be prepared for an emergency and believing it can be a real possibility is of paramount importance. It cannot be completely prevented but efficiently managed with appropriate knowledge of signs, symptoms and management techniques.

Keywords: Medical Emergency, Dental practice, Basic life support, Emergency medicine, Health care provider

Introduction

The knowledge of medicine has extended and effective newer technologies as well as drugs are being developed. Any medical emergency in the dental office can cause for anxiety for the dental surgeon. A medical emergency occurring in the dental office is usually a result of an acute deterioration of a known medical condition. Sometimes it may pose an immediate threat to an individual's life but with rapid intervention it is

best prevented. The lack of training and inability to cope up with medical emergencies in the dental office can sometimes lead to tragic and medico-legal consequences for the patient and dentist respectively. The dental professionals should develop sufficient knowledge and skills for identifying patients at potential risk of medical emergencies, to assess the severity, recognize the need to seek advice from a colleague with special competence in the relevant field for uneventful management.^{1,2}

In this study, we have assessed the knowledge on medical emergencies in dental office and its management among the dental clinical students of Indira Gandhi Institute of Dental Sciences (IGIDS), Pondicherry.

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Materials and Methods

A retrospective questionnaire survey was conducted among 135 under-graduate (UG) dental clinical students in Indira Gandhi Institute of Dental Sciences, Pondicherry to evaluate the knowledge on commonly encountered medical emergencies in the dental office and their management. The study was conducted by

providing a set of 15 pre-formed structured questions that the students were instructed to respond with appropriate answers. [Table 1] The student population included the UG clinical students comprising of third/final years and interns involving both the genders from age range of 20 – 25 years. The personal identity of the students such as name was not disclosed.

Table 1: Pre-formed Questionnaire Performa which was distributed to the clinical students

1.	Have you ever faced any medical emergency in your clinical postings?	<ul style="list-style-type: none"> a) Faced an emergency once b) Faced an emergency twice c) Faced an emergency more than two times d) Never encountered a medical emergency
2.	If yes, what is/are the medical emergency you have faced in the clinical department?	<ul style="list-style-type: none"> a) b) c) d)
3.	What are the cardinal signs of syncope?	<ul style="list-style-type: none"> a) Transient loss of consciousness b) Slow pulse initially c) Weakness and nausea d) All the above
4.	Are you aware of an emergency medical kit containing various drugs that is present in the Oral and Maxillofacial surgery clinics of your institution?	<ul style="list-style-type: none"> a) Yes b) No
5.	If yes, then mention the name of an emergency drug along with the appropriate dosage and its route of administration.	<ul style="list-style-type: none"> a) Name of the drug: b) Dosage of the drug: c) Route of administration:
6.	How do you manage when a patient goes into syncope during a dental procedure?	<ul style="list-style-type: none"> a) Stop the dental procedure immediately b) Patient to be placed in supine position with legs elevated until recovered c) Call the patient by his/her name to get a reply and reassure them once recovered d) All the above
7.	What are the measures to be taken when you suspect a seizure attack during the dental procedure?	<ul style="list-style-type: none"> a) Call for an ambulance and shift the patient to hospital b) Stop dental treatment immediately and any dental prosthesis or instruments from oral cavity should be removed and monitor for airway clearance c) Wait till the seizure subsides d) Administer anti-epileptic drug before any dental procedure to prevent an attack

Cont... Table 1: Pre-formed Questionnaire Performa which was distributed to the clinical students

8.	Do you give a test dose of Local anesthesia before administering a regional nerve block?	a) Yes b) No
9.	Cold and clammy hands is the cardinal signs of	a) Syncope b) Epilepsy c) Myocardial Infarction d) Asthma
10.	What is the safe blood pressure range in patients who are known hypertensive to undergo dental extraction?	a) 90-100 mm Hg – Diastolic, 110-140 mm Hg – Systolic b) 90-100 mm Hg – Diastolic, 130 – 190 mm Hg – Systolic c) >110 mm Hg – Diastolic, 110-140 mm Hg – Systolic d) >110 mm Hg – Diastolic, 130-190 mm Hg - Systolic
11.	What measures to be considered when administering Local anesthesia for patients who are known hypertensive whose blood pressure is under/near normal range?	a) Restrict the use of Local anesthesia with vasoconstrictors b) Will not perform the dental procedure c) Get a General Physician reference d) Can administer Local anesthesia without any restrictions
12.	Which of the following blood sugar level is within the normal range where a dental extraction can be performed safely?	a)
13.	A 45 years male patient with known history of diabetes and hypertension since 5 years and under medications for the same requires extraction of maxillary third molar tooth. No documentation of his recent medical reports available. What are the precautions to be taken before dental extraction?	a) Can proceed to perform tooth extraction safely b) RBS and BP value, if within normal limits followed by tooth extraction c) Refer the patient to a General Physician d) None of the above
14.	Are you trained in BLS or any other hands on course to manage emergency?	a) Yes b) No
15.	Do you feel it is necessary to incorporate a practical training to handle such situations by courses like BLS or other hands-on courses in your curriculum?	a) Yes b) No

All the students who were willing to participate in the study were included. Any student who did not complete the survey was excluded. They were instructed that at any point of the study they can withdraw from participation without any negative consequences.

Only the UG clinical students were involved in this study considering the fact that they will be exposed to perform several dental procedures comprising from oral prophylaxis to exodontias in patients. It can also create an awareness to assess their standards and enhance their

confidence in private practice after graduation when such situation arises sensibly.

= 23 (17.2%). Majority of study population belonged to the age of 22 years, n = 41 (30.6%)

Results

A total of 135 clinical students participated in this questionnaire study and the respondents were between the age group of 20-25 years. The demographic data includes gender, age range and year of study. N = 104 (77 %) were female and n = 31 (23%) were male. Among all the respondents majority were the interns n = 57 (41.8%) followed by final years n = 55 (41%) and third years, n

Among the 135 respondents, n= 65 (48.1%) reported to have not faced any medical emergency in their clinical department. N= 42 (31.1%) reported that they have faced one medical emergency which is commonly Syncope, n = 70 (51.8%). The cardinal signs of syncope were correctly identified by n = 102 (76.1%). N = 116 (86.6%) respondents were aware of the management if syncope is encountered. The other reported emergencies encountered by the students were hypertension, hyperventilation and less commonly epilepsy. [Table 2]

Table 2: Respondents who faced medical emergencies in the clinics

Medical Emergencies	Number of respondents, n
Did not face any	65 (48.1%)
Faced once	42 (31.1%)
Faced twice	18 (13.33%)
More than twice	10 (7.41%)
Common Emergencies encountered	
Syncope	70 (51.8%)
Hypertension	33 (24.4%)
Hyperventilation	22 (16.3%)
Seizure	10 (7.4 %)

Few respondents, n = 71 (52.2%) claimed to be aware of the emergency medical drug kit in the clinical departments of which only n = 9 (6.6%) respondents gave the name of a drug with correct dosage and route of administration from the kit. Majority of the respondents who gave correct drug name with dosage were interns. N = 12 (8.9%) respondents gave an inappropriate response by providing a drug name which is not present in the emergency medical kit. [Table 3]

Table 3: Respondents knowledge regarding the drugs present in the emergency medicine kit, their dosage and routes of administration

Emergency Medicine Kit	Number of Respondents, n
Aware of the kit in department	71 (52.6%)
Not aware about the kit	64 (47.4%)
Drug in the emergency medicine kit with dosage and route of administration	
Name of a drug with dosage and administration route	9 (6.67%)

Majority of the students, n = 132 (97.7%) accepted that they do not give a test dose before administering Local Anesthesia (LA). N= 71(53%) respondents were aware that cold and clammy hands are cardinal signs of syncope, whereas n = 58 (43.3%) answered it as myocardial infarction and asthma. Few n=74 (55.2%) respondents answered the normal range of blood pressure level for tooth extraction in a hypertensive patient and n = 91(67.9%) told that they would restrict the use of LA with vasoconstrictor in hypertensive patients. N = 99(73.9%) provided the safe blood sugar range within which extraction can be done safely. n = 87 (64.9%) respondents were aware of the precautions to be carried out for patient who has to undergo tooth extraction with history of diabetes and hypertension.

Among the study population, n = 60 (44.4%) respondents were trained in Basic Life Support (BLS) course whereas the others have never had an experience on BLS or other such hands-on course. N = 90 (66.6%) respondents strongly recommended that courses like BLS or other hands-on course should be incorporated in to their study curriculum.

Discussion

The importance of obtaining knowledge and awareness regarding management of medical emergencies is always emphasized during dental practice. Life threatening emergencies tend to occur irrespective of the situation. Such situations are more likely to occur within the confines of dental office owing to the increased level of stress and anxiety of the patient towards dental procedure. Dentists should obtain a proper medical history of the patient and also adhere to stress reduction protocol before treating the patients which helps preventing medical emergencies.

Haas DA reported that the occurrence of a medical emergency in dental practice was most likely after administration of LA for tooth extraction and endodontics. It was also observed that 60% of the emergencies were syncope followed by hyperventilation. The dental practitioners should definitely be trained in BLS if not Advanced Cardiac Life Support (ACLS). He also opined that essential and supplementary emergency

drugs should be available to the dentist in the operating room.¹ Albelaihi HF et al. in their cross sectional survey involving the dental students observed that students were lacking confidence in handling medical emergencies even after obtaining an adequate medical history from the patient thus emphasizing emergency management courses should be incorporated in the dental teaching curriculum in order to enhance the confidence of undergraduate students.² Rafee LA et al. concluded similarly when they evaluated the dental UG final year students and strongly emphasized incorporating practical training in the teaching curriculum.³

In the study conducted by Ahamed A et al. among the undergraduate students found that they had a good knowledge about the various medical emergencies and their management but they lacked confidence in the practical aspect of the same concluding that it is essential to incorporate hands-on courses to improve the confidence of the UG students which was similar to the results observed by Albelaihi HF et al.², Akbari N et al.⁴ Similar conclusions were given by Azad A et al.⁵ and Sheikho MA et al.⁶ among general dental practitioner's knowledge regarding medical emergency situations was average as compared to those who had attended emergency workshops and it is essential to conduct training courses and workshops more often for graduated dental practitioners.^{5,7}

An analytical survey study conducted among dental interns provided various observations including a lack of knowledge on medical emergencies in southern India dental schools. They did not receive BLS training during their course. Majority of the study participants agreed that BLS should be made mandatory in UG curriculum. These findings emphasize the need for intense practical training as it will help them to acquire a deeper knowledge along with periodical assessment and training for managing emergencies.⁸ Another study involving the dental interns of dental college from Mangalore observed similar results.⁹

Leelavati L et al. in their cross-sectional study across dental colleges in Chennai observed that the incidence of encountering syncope in their daily practice

was reported by the students which are similar to the present study. But the student's overall knowledge was inadequate.¹⁰ Similar observations were made by Mohan M et al. among the general dental practitioners of a group of Indian population from Dakshina Kannada.¹¹ Various studies across the globe have enlightened the fact that it is extremely necessary to incorporate practical training methods and hands-on courses to increase the confidence among the UG dental students and general dental practitioners to handle such emergency situations when it arises in day to day practice.^{12, 13, 14}

The result of the present study confirmed that the knowledge on management of medical emergencies among the UG clinical students was inadequate which is supported by the above mentioned literature evidence.

Conclusion

From the present study, the clinical students overall had superficial knowledge about the medical emergency management, emergency drugs, their dose and routes of administration. Strong emphasis should be made such that the knowledge on managing various medical emergencies, and drugs relating to the same should be an integral part of dental curriculum. Clinical students do have a gap in knowledge and awareness relating to this topic. To bridge this issue, a curriculum related to handling such situations should be enforced in dentistry to provide safe healthcare.

Compliance with Ethical Standards

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Conflict of Interest: None

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