

Knowledge and awareness of medical emergencies and management among dental students in Davangere - A cross sectional study

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Abstract

Medical emergencies can be encountered anytime and anywhere. A Medical emergency may range from syncope to anaphylactic shock which can be life threatening. Efficient management of an emergency situation in the dental office ultimately the dental surgeon’s responsibility. Minimal knowledge about medical emergencies and their Etiology primary protocol of management must be known amongst the dental surgeons to avoid potential life threatening consequences.

Keywords: Awareness, Dental students, Management, Medical emergencies.

Introduction

Medical emergency can be encountered anytime and anywhere. A medical emergency or complication may

range from syncope to an acute anaphylactic shock which have been proven to be life threatening. Medical emergencies in dental practice are generally recognized as being rare. Nonetheless, recent studies have shown incidents occur on a regular basis. The average incidence of emergencies in dental practice is 7.5 per dentist over a period of 10 years and this warrant for the need of basic knowledge to identify, access and manage situation in one’s practice¹. Any medical emergency in the dental office can cause for anxiety for the dental surgeon. A medical emergency occurring in dental office is usually a result of an acute deterioration of a known medical condition. Stressful environment that the patient has to go through, may be considered as one of the reasons for medical emergency. The lack of training and inability to cope up with medical emergencies in the

dental office can sometimes lead to medico legal consequences for the patient and dentist respectively². The dental professional 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 management³.

The objective of this study was to assess the knowledge on medical emergencies and their management among the dental students in Davanagere.

Material And Methods

The current cross-sectional study used a model of the self-administered and structured questionnaire comprising twenty-three closed-ended multiple-choice questions and complemented by 200 final-year students and interns, postgraduates given the assurance of confidentiality of their responses. The questionnaire form's reliability established using a pilot test and validity assessed by expertise check. This type of convenience sampling was used to select the study participants. Out of overall forms, filled were 200 forms. The remaining questionnaires were incomplete or filled by either an obligation/uninterested in revealing information, and few had not returned it. Hence, we did not include the study's incomplete forms, and the response rate was 96%. The answers were compiled with Microsoft Office Excel software. The descriptive analysis of the data was exhibited in graphs (1-5). The questionnaire consisted two sections of questions. One section consisted questions about knowledge of participants related to medical emergencies (8 questions) and the other section consists of ability of the participants to manage medical emergencies (15 questions) (Figure 1)

Results

The survey was conducted on 200 dental students, which 60% participants were interns and final year under graduates and 40 % were post graduates students. The age of the participants and demographic data indicated in Table 1. Out of 200 participants 48 had undergone regular basic life support training and 152 were who did not receive the training. The questionnaire consisted of 23 questions with 8 among them being about knowledge and the 15 questions about the management of medical emergencies.

Knowledge of vital signs and measurement: Among the 200 participants about 40%(undergraduates)50% (postgraduates) preferred to check carotid artery pulse during an emergency (graph 1). Among them, only 50% of participants would choose to check and record patient's respiratory rate when they were not attentive. About 80% of the participants had knowledge about the normal vital measurement for adults.

Knowledge of diagnosing medical emergencies: Nearly 82% of the participants stated that syncope to be most frequently occurring medical emergency(graph2).Still only 40% among the undergraduates and 60% of the postgraduates could pick up the signs of transient ischemic attack(graph3).The identification of medical emergencies such as asthma, hypoglycaemia ,anaphylaxis was appreciable .It was around 60%-70%in the present study.

Management of medical emergencies: Around 50% are only aware of respiratory obstruction and breathing difficulty management during the dental procedure .Few participants about30% of undergraduates and 40% postgraduates knew about coaching techniques for managing hyperventilation(graph4).Very few nearly 37% of the participants were aware of the management of epilepsy during dental treatment .About 50% of

participants were aware of CPR and about 47% undergraduates and 60% postgraduates were educated about the position of hands during CPR (graph 5).

Preparedness to avoid medical emergencies : Only 37% agreed that the best office emergency kit should be prepared by themselves. Roughly 60-80% participants were aware about the ethical issues and about 88% were aware about the equipment's to be present in the dental clinic to manage emergency.

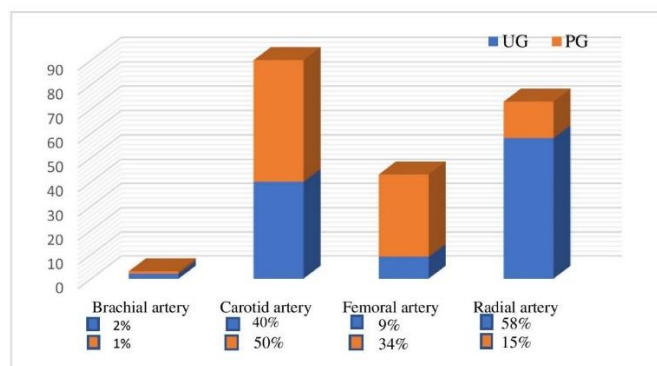
Discussion

The results of our study revealed several remarkable facts regarding the knowledge and ability of dental graduates to manage medical emergencies. Our study showed an overall good knowledge of the students about medical emergencies. Out of 200 circulated questionnaires, 110 included interns and final year and 90 responses were obtained from the post graduate dental students of Davanagere belonging to age group of 21-30 years. On comparison of knowledge percentage between the trained and untrained students, the trained students showed excellent knowledge as compared to the untrained students in the present study 48% of the responders answered the rate of chest compression as 100/minute, Chandrasekaran et al³ and Bindu A Set al noted 35% and 23.2% of the participants with similar response respectively. The majority of the dental students in this study were aware of syncope as the maximum occurring medical crisis management and Trendelenburg (64%) position but were not aware of stimulating factor and syncope prevention. Very few possessed the knowledge of breathing coaching in case of hyperventilation occurring during the dental treatment (37%) (graph no 3) and less number of respondents were aware of performing CPR to handle the emergency situation (50%). Based on the studies conducted

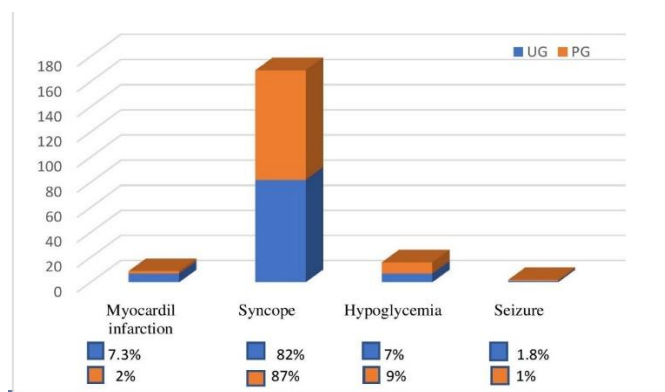
worldwide the risk of medical emergency occurrence in dental offices is 0.08–2.5 percent with syncope being known as the most prevalent.^{9–11} Although inevitable emergencies occur in dental office, the dentists should be aware of such incidents in terms of patient assessment and management. Hence all the medical and dental academic institutions should give an immense value in training all the students and faculties in the simple procedures collectively known as BLS.

Table 1-Age and gender distribution among study subjects

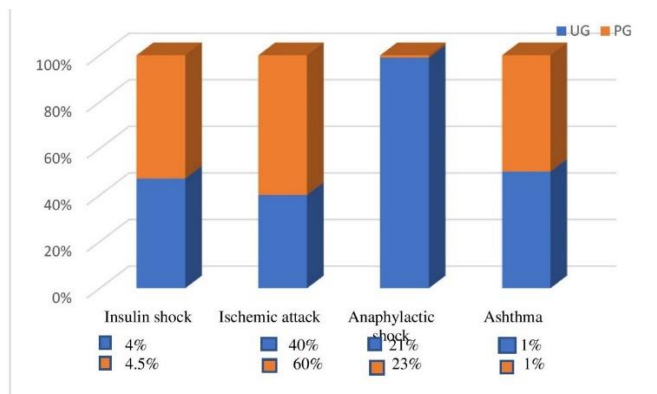
| Variables | Category | n | % | Range (21-30 yrs) | |
|-----------|-------------|-----|------|-------------------|-----|
| Age | 21-25 years | 110 | 110% | | |
| | 26-30 years | 90 | 90% | Mean | SD |
| Sex | Males | 45 | 45% | 25.87 | 1.9 |
| | Females | 65 | 65% | | |



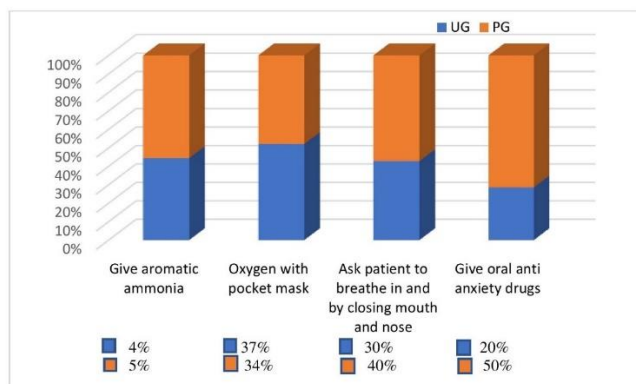
Graph 1- Knowledge about artery to determine patient's pulse rate in emergency



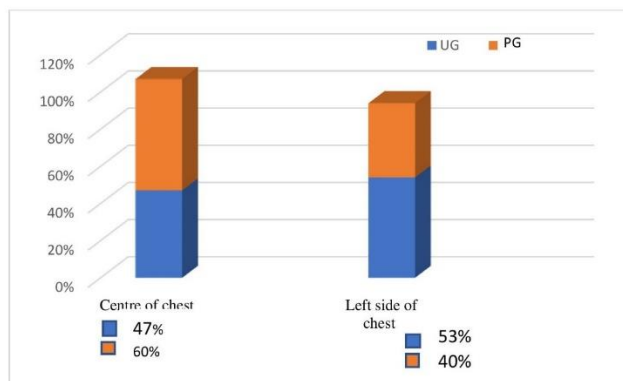
Graph 2- Knowledge about most commonly encountered emergency in dental practice



Graph 3: Knowledge about the signs of the ischemic attack



Graph 4 :Knowledge about the treatment for hyperventilation



Graph 5-Knowledge about the position of hands during CPR

1. Name of the student -

2. Year of Studying – 1) Final Year BDS 2) House surgeon 3) Post graduate

3. Name of the institute of under graduation-

1. BDCH

2. CODS

4. HAVE YOU UNDERGONE ANY MEDICAL EMERGENCY AND/OR BASIC LIFE SUPPORT TRAINING?

1. Yes

2. No

5. Which artery do you check to determine patient's pulse rate in emergency?

1. Brachial artery

2. Carotid artery

3. Femoral artery

4. Radial artery

6. Which one illustrates the best normal vital measurement for an adult patient?

1. Pulse 100, BP 160/40, respirations 22, temperature 100 F

2. Pulse 70, BP 100/80, respirations 20, temperature 98.6 F

3. Pulse 80, BP 120/80, respirations 22, temperature 98.6 F

4. Pulse 90, BP 140/120, respiration 18, temperature 96 F

7. When will you measure the patient's respiration?

1. Before Anaesthesia and after explaining the treatment

2. When they are relaxed and unaware of the measurement

3. After the administration of local anaesthesia

4. After the treatment procedure in the waiting room

8. Which is the most commonly encountered medical emergency in dental practice?

1. Myocardial infarction

2. Syncope

3. Hypoglycaemia

4. Seizures

9. A patient suddenly develops dyspnoea, wheezing, sweating and perioral cyanosis. Condition is probably

1. Anaphylactic reaction

2. Angina

3. Asthma

4. Acute myocardial infarction

10. A diabetic patient suddenly feels sweaty, tired, trembling, disorientation and headache. Condition is probably

1. Anaphylactic reaction

2. Hypoglycaemia

3. Angina

4. Acute myocardial infarction

11. A patient suddenly develops a severe erythematous rash with burning sensation of skin, cyanosis, swelling of face, tongue and lips, along with dyspnoea and rapid pulse. Condition is probably

1. Convulsions

2. Myocardial infarction

3. Anaphylaxis

4. Transient ischemia

12. The patient feels dizziness and sweating, has burning feeling in chest, and experiences pain down the left arm, neck, and into the left mandible. Condition is probably

1. Insulin shock

2. Ischemic angina pectoris

3. Anaphylactic shock

4. Asthmatic

13. When a patient experiences syncope during dental treatment, what would be your immediate action?

1. Make the patient sit in upright position and give water

2. Place patient in Trendelenburg position give and aromatic ammonia

3. On their side and splatter water

4. Reclined position and give oral glucose

14. A conscious adult patient complains of difficulty in breathing and speech, and he holds the neck with hands and coughing frequently. What is the probable condition? What would you do?

1. Acute myocardial infarction; fifteen chest compressions
2. Asthma; use ibutanol inhaler
3. Angina; oxygen
4. Airway obstruction due to aspiration of a foreign body; five abdominal thrusts and ask patient to cough.

15. Which is the best treatment for anxiety hyperventilation?

1. Give aromatic ammonia inhalant
2. Give oxygen with pocket mask
3. Ask the patient to breathe in and out by closing the mouth and nose
4. Give oral anti-anxiety drugs

16. What will be your immediate management in case of epilepsy in the dental chair?

1. Seat the patient upright position in the dental chair
2. Hold the patient still
3. Makes the patient lie on the lateral side and wait for seizures to end
4. Inject IV diazepam

17. CPR should be given when you suspect?

1. Angina
2. M.I
3. Cardiac arrest
4. Syncope

18. During C.P.R, what is the rate of chest compression every minute?

1. 100
2. 60
3. 30
4. 15

19. Where do you place your hands while doing chest compressions on a patient?

1. Centre of the chest over xyphoid between nipples
2. Left side of the chest

20. IFA =AIRWAY, B =BREATHING, C =CIRCULATION, D =DEFINITIVECARE, P =POSITION

What should be the order of your approach to handle an emergency situation?

1. B □ A □ C □ D □ P
2. A □ B □ C □ D □ P
3. P □ A □ B □ C □ D
4. D □ P □ A □ B □ C

21. Which is the best dental office emergency kit?

1. purchased as a readily available
2. set up by a physician
3. prepared by dentist based on personal needs
4. composed of medications and equipment to handle emergencies

22. Which all equipment should be present in the dental clinic to manage an emergency?

1. Blood sugar measuring device
2. Portable oxygen cylinder
3. Oxygen face mask with reservoir and tubing
4. All of the above

23. Ethical issues are best will be avoided

1. by knowing the patient's health history and vital signs
2. by being aware of the Dental Practice Act
3. by referring patients to medical professionals when necessary
4. all of the above

Conclusion

The survey shows that the dental graduates are not adequately prepared to handle medical emergency situations arising during the dental treatment. Hence this study found deficiencies in the knowledge and ability of untrained graduates to deal with such medical emergencies as compared to trained ones. As they say “Be prepared for the emergency and the emergency

seizes to exist”. Hence, we suggest that all the dental students should be regularly exposed to the practical sessions in dealing with medical emergency situations. Hence, every dental institution should incorporate in their curriculum a skill laboratory for such learning purpose and updating the knowledge.

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