Original

Knowledge about Medical Emergencies among Interns in Dental Colleges in Chennai

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Abstract

Background: A Medical emergency is a sudden and unexpected onset of an illness or injury that is acute and poses an immediate risk to patient's life. Although the incidence is not high, such emergencies can and do arise in dental setups. Effective management of an emergency situation is the responsibility of each dentist. **Methodology**: This Cross sectional and descriptive questionnaire study was conducted among 130 interns from 13 dental colleges of Chennai, selected using a stratified random sampling. The questionnaire consisted of 5 closed and 1 open ended questions. Experience and perceptions regarding medical emergency and its management was evaluated. **Result**: Out of 130 participants, 52% were males and 78% were females. 54.6% of interns showed an excellent preparedness, 35.4% had a good preparedness and 10% had moderate preparedness, regarding usage of emergency drugs. 94.6% felt the need for a proper medical emergency training in their curriculum. **Conclusion**: Dental interns had a minimal knowledge of medical emergencies, drugs and equipments. It was found that their overall preparedness was not up to the mark. A transformation in the existing conventional system and continuing education program in this perspective is the need of the hour.

Key words: Chennai, Confidence, Dental College, Equipments, Emergencies, Interns, Knowledge, Perception, Preparedness, Questionnaire, Training.

Introduction

Medical emergencies can be alarming to any clinician but these situations can be less alarming if proper preparations are made [1]. A medical emergency is a sudden and unexpected onset of an illness or injury that is acute and poses an immediate risk to patient life. Fortunately, serious medical emergencies in dental practice are not common but they are all the more alarming when they occur. Life threatening emergencies can occur any time, any-where and to anyone which confines in dental office due to the increased level of stress which can induce syncope and sometime hyperventilation. Hence every dentist must be prepared to manage medical emergencies which may arise in practice.

So far studies about the preparedness and experience of dentist in dealing with medical emergencies have been conducted in various countries. Unfortunately these countries have dental education programs different from those in India. Within the limits of the literature review done for the current study there is only one study [1] have reported the Indian dental graduate's preparedness and competency towards a medical emergency. Against this background of limited information with doubts over perceived competency among fresh dental graduates in management of an emergency, the present study is done to investigate

a) Experience of handling medical emergency
b) To evaluate the perceptions about medical emergencies among interns in dental colleges in Chennai.

Methodology

This Cross sectional and descriptive questionnaire study was conducted among 130 interns from 13 dental colleges in Chennai. Sampling was done by 90% power @ 5% Alpha. Sample size were calculated based on studies by [1,2]. Level of statistical significant was set as $p<0.05$ using Chi square test. Ten participants were selected randomly from 13 dental colleges from Tamilnadu. Participants who have cleared the final year BDS exam and currently a CRRI and those who were willing and present during the time of survey were included. Ethical approval was obtained from the scientific review board of Saveetha University. A written informed consent was obtained from all the participants.

Participants were given a 7 item pretested questionnaire adapted from the study by Praveen et al[1]. The questionnaire was used to gather information on the frequency and type of medical emergencies encountered by interns in the past 4 years. It also analyzed their knowledge, attitude and perceptions regarding dental emergencies in dental practice. On the basis of answers to preparedness based questions, we calculated a preparedness score, with 0.5 – 2 marks given for each correct answer (based on the importance of the question)

The final score was 26 for preparedness regarding emergency drug usage and it was 16 for preparedness regarding emergency equipment usage. The total score was given ranges to classify the preparedness as poor, moderate, good and excellent. Descriptive statistics using mean and standard deviation and percentages were used. Chi square test was used to check the significance in difference in association.

Result

Hundred and thirty interns participated in the study. The mean age of the participating interns were 23.5. Out of the 130, 52 (40%) were males and 78 (60%) were females. About 31% of interns had experienced a medical emergency during their four years of study. The difference in encountering medical emergencies between 13 dental colleges was found to be statistically significant. Less than 15% of the students experienced conditions like hypoglycemic attack and syncope, less than 10% of them experienced conditions like allergy and asthmatic attack, less than 5% of them experienced

conditions like angina, anaphylactic reaction, epileptic fit, hyperglycemic attack, myocardial infarction and stroke in their patients.

Table 1 describes the recommended emergency drugs and confidence in using them. 69.2% of the interns were aware of adrenaline, 72.3% were aware of aspirin, 50.8% were aware of glucagon, 40% were aware of Glyceryitrinitrate, 43.8% were aware of Prednisolone, 48.5% were aware of Chlorpheniramine, 48.5% were aware of Salbutamol, 65.4% were aware of glucose, 67.7% were aware of Hydrocortisone, 40% were aware of midazolam, 46.2% were aware of Dextrose, 61.5% were aware of Oxygen and 56.9% were aware of Atropine as essential drugs in their emergency kit. Figure 1 depicts the preparedness regarding usage of emergency drugs. 54.6% of interns showed an excellent preparedness about usage of emergency drugs, 35.4% had a good preparedness and 10% had moderate preparedness.

Drug	Yes (%)	No (%)	Unsure (%)	Confident (%)	Not Confident (%)
Adrenaline	69.2	23.8	6.9	60	40
Aspirin	72.3	22.3	5.4	60.8	39.2
Glucagon	50.8	40.0	9.2	41.5	58.5
Glyceryltrinitrate	40.0	49.1	10.9	35	65
Prednisolone	43.8	46.2	10.0	36.2	63.8
Chlorpheniramine	48.5	42.3	9.2	36.2	63.8
Salbutamol	48.5	43.1	8.5	38.5	61.5
Glucose	65.4	27.7	6.9	60.8	39.2
Hydrocortisone	67.7	26.2	6.2	57.7	42.3
Midazolam	40.0	49.2	10.8	28.5	71.5
Dextrose	46.2	43.8	10.0	38.5	61.5
Oxygen	61.5	30.8	7.7	56.2	43.8
Atropine	56.9	34.6	8.5	44.6	55.4

Table 1-Knowledge about Emergency drugs and confidence in using them

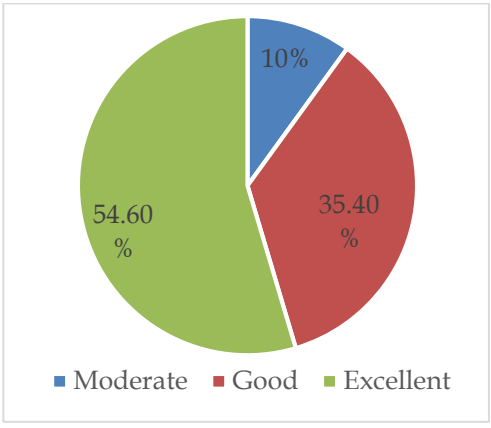

Figure 1 Preparation in Recognizing Emergency Drugs

Table 2 describes the knowledge regarding emergency equipments and confidence in using them. 56.9% had knowledge on Oxygen face mask, 70.8% on single use syringe, 44.6% on Oropharyngeal airway, 53.8% on Pocket mask, 45.4% on Self inflaing child and adult BVM, 47.7% on Portable suction, 57.7% on Blood glucose measurement device and 43.1% on automated external defibrillator. Figure 2 depicts 46.2% had excellent preparedness, 46.9% had good preparedness and 6.9% had moderate preparedness. According to hours of training received for basic life support, 4.6% of interns had spent 75-100% of time, 36.2% had spent 50-75% of time, 24.6% had spent 25-50% of time and 34.6% had spent 0-25% of time training in basic life support.

Equipment	Yes (%)	No (%)	Unsure (%)	Confident (%)	Not Confident (%)
Oxygen face mask	56.9	41.5	1.6	70.8	29.2
Single use syringe	70.8	20.8	8.4	63.1	36.9
Oropharyngeal airway	44.6	45.4	10	36.9	63.1
Pocket mask	53.8	38.5	7.7	43.8	56.2
Self inflating child and adult BVM	45.4	43.8	10.8	43.1	56.9
Portable suction	47.7	43.1	9.2	40.8	59.2
Blood glucose measurement device	57.7	36.2	6.2	50.8	49.2
Automated external defibrillator	43.1	48.5	8.5	31.5	68.5

Table 2 -Knowledge about Emergency equipments and confidence in using them

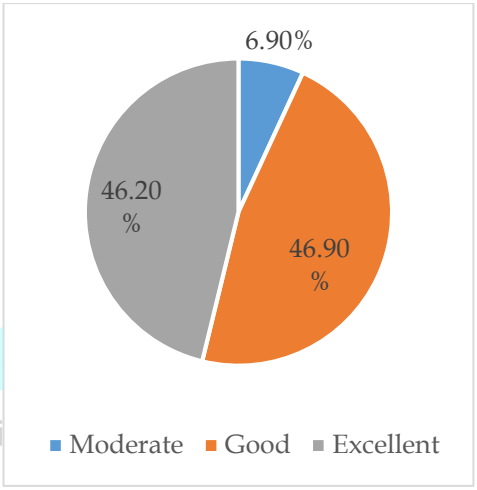

Figure 1 Preparation in Recognizing Emergency Drugs

Table 3 describes the competency regarding performing emergency procedures. 51.5% were competent in administering intravenous drug, 49.2% competent in intramuscular injections, 60% competent in maintaining airway, 70% competent in using the ambu bag, 59.2% competent in using the glucose meter, 78.5% competent in using defibrillator and 70.8% competent in administering oxygen. Out of one hundred and thirty interns, 94.6% felt the need for more medical emergency training. From an open ended question, it was observed that the knowledge of the dental interns was at an acceptable level as majority of them expressed to terminate the treatment and activate emergency services when any emergency situation occurs.

AREA	YES (%)	NO (%)
Administration of intravenous drug	48.5	51.5
Intramuscular injections	50.8	49.2
Maintaining airway	40.0	60.0
Using an ambu bag/bag valve mask	30.0	70.0
Using a glucose meter	40.8	59.2
Using a defibrillator	21.5	78.5
Administering oxygen	29.2	70.8

Table 3-Competence level in emergency management

Discussion

The most important step in management of medical emergencies is the recognition of emergency situation .Dentist must be prepared to manage medical emergencies in their practice. Several studies have assessed dental interns on management of medical emergencies [1,2,3] .There are many studies carried out on dental surgeons about perception in medical emergencies [2,3]. The current study is first of its kind to be carried out in all dental colleges in Chennai. The sampling methodology allows the sample to be representation of interns from all dental colleges in Chennai.

The mean age of the participating interns were 23.5. Out of the 130, 52 (40%) were males and 78 (60%) were females. In the current study 23.8% of the interns had faced life threatening situation, this was lower when compared to 58% in the study by Praveen et al [1]. Syncope / hypoglycemic attack was the most common type of emergency encountered by the interns in the current study, this result was in accordance with the study Praveen et al. The most commonly encountered emergencies seen by the interns in thirteen colleges of Chennai were hypoglycemic attack and syncope, followed by allergy and asthmatic attacks which indicate that the training for these emergencies will make them more competent.

Interns feedback for the management of emergency drugs in the study had an excellent preparedness (54.6%), good preparedness (35.4%) and moderate preparedness (10%). These interns had a good knowledge in identifying drugs like adrenaline, glucose and oxygen. The knowledge was not in an acceptable level, particularly in drugs like midazolam, prednisolone and chlorpheniramine and very few interns recognized that these are essential drugs [4]. In the study of Amirchaghmaghi et al (2010) and Chapman P.J. 1997 [2,5], the most recognized drugs were oxygen and adrenalin and nitroglycerin where as in the study of Gupta.T. (2008) [6], oxygen and bronchodilator spray were most common and in Atherton, G.J., 2000 et al., the most common drugs used were oxygen and adrenalin. Hence it is perceived that interns are to be educated on the usage of every single drug in their practices which will improve the knowledge of the drugs for the wellbeing of the patients.

Single use syringe, pocket mask and blood glucose measurement device was eminent to some extent and lower knowledge was seen regarding equipment like portable suction , self-inflating child and adult bag valve mask [4,7]. The confidence in the use of drugs and equipments mentioned were at a low level than the knowledge for all the drugs and equipments mentioned (Table2). This emphasizes that due to inadequate awareness of medical emergency, the interns lack confidence. From the responses regarding the number of hours of medical emergency training undertaken in undergraduate curriculum, only 34.8% have received more than 10 hours where 25.4% have completely not received any training. In the study of Praveen et al. [1], 57% of dental graduates have undergone medical emergency and basic life support training for less than 5 hours which was very low. The result may be due to lack of definitive guidelines about the training with medical emergencies in the dental curriculum [7]

Overall in this study, 94.6% have felt that they need more medical emergency trainings. However the result indicates a pathetic level of competence in dental interns during emergencies. The medical emergency training should be assessed and improved to ensure the safety and wellbeing of the patient at all times. The result confirms that the dental interns are not well trained to manage the medical emergencies and perceived that there is an utmost need for vibrant education [8,9].

Conclusion

The study shows Syncope and hypoglycemic attack are commonly encountered medical emergency situation. Interns had a good knowledge on medical emergency, drugs and equipments and they expect this topic to be a part of their curriculum. It is perceived that many interns need further training as well has hands on courses. By increasing the volume and quality of training, the capability to recognize and manage medical emergency can be enhanced.

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