

Evaluation of Preparedness at Dental Clinics for Medical Emergency: A Survey

Vijayendra Pandey^{1*}, Rohit Singh², Sushma KN³, Ashok Kumar⁴,
Rajeev Ranjan⁴, Amitu Singh⁴

¹*Reader, Department of Periodontology, ²Senior Lecturer, ⁴PG Student,
Department of Pedodontics & Preventive Dentistry,

³Senior Lecturer, Department of Oral & Maxillofacial Surgery,
Vananchal dental college & hospital, Garhwa, Jharkhand, INDIA.

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*Correspondence to:

Vijayendra Pandey
Reader,
Department of
Periodontology
Vananchal dental
college & hospital,
Garhwa, Jharkhand,
INDIA.

ABSTRACT

Introduction: Dentists must be well equipped with emergency equipments and medicines to manage medical emergencies which may arise during dental practice. Thus, the present study was undertaken to assess the preparedness of dentists practicing in Jharkhand state of India for emergency situations in their dental clinics.

Materials and Methods: A descriptive cross-sectional study was carried out in tricity of Ranchi, Garhwa and Daltonganj in among 100 dentists who agreed to participate in the study. The questionnaire comprised of mainly objective questions, requiring a simple yes or no reply. Chi-square test was used for the analysis and *p* value of less than or equal to 0.05 was considered statistically significant.

Results: The present study found that 97% of the dentists surveyed, obtain medical history including medication and allergy history, but only 8% of them obtain filled medical and dental history proforma from patients at their dental clinic. 25% measured the vital signs before initiation of any treatment. The availability of medicines revealed that oxygen was available at only 2% dental clinics. The most commonly available emergency drugs were oral glucose, antihistamine, diazepam and hydrocortisone. 21% of dentists attended CPR workshop and 16 of them were confident to perform CPR with insignificant *p* value. Only 28% surveyed dentists felt that they have adequate knowledge to manage medical emergency at their dental clinic.

Conclusion: The present study concludes that dentists are not confident and lack adequate knowledge in handling medical emergencies. Dentists, being a part of the healthcare profession, should be prepared to deal with medical emergencies, which can take place at their workplace.

KEYWORDS: CPR, Dentists, Medical emergency, Urgency.

INTRODUCTION

Dentists must be well equipped with emergency equipments and medicines to manage medical emergencies which may arise during dental practice.¹ Moreover, patients with medical conditions are more likely to experience emergency situations during dental treatment. Usually, medical emergencies occur during and after the injection of the local anesthesia. The other frequent emergency situations can be allergic reaction due to certain dental materials i.e. resins, latex etc.²

These emergencies demand immediate treatment, and cannot be avoided or referred, because they put the health and life of patients at risk. The occurrence of emergency and urgency episodes during out-patient treatment is unpredictable and does not always follow

set patterns, however data available shows that only few dentists are prepared to face these episodes, because they lack the required knowledge and skills to deal with emergency situations.³ Evaluation of patient's at-risk and further appropriate management is of utmost importance in reducing the probability of these adverse events. Acknowledgement of the fact that any dental patient may have a medical emergency during dental treatment is a key start point. A thorough medical and drug history is mandatory and should be undertaken by the dentist in person.⁴

The main emergency situations may be summarized as: drug allergy, acute myocardial infarction, cardiac arrest, respiratory arrest and anaphylactic shock. In regard to

the urgencies during dentistry practice, these may include syncope (fainting), hyperventilation, asthma attacks, hypertensive crises, seizure and angina pectoris.³ Thus, the present study was undertaken to assess the preparedness of dentists practicing in Daltonganj, Ranchi and Garhwa areas of India for medical emergency situations in their dental clinics.

MATERIALS AND METHODS

A descriptive cross-sectional study was carried out in tricity of Ranchi, Garhwa and Daltonganj in India to evaluate the knowledge and preparedness of dentists to manage medical urgencies and emergencies arising in the dental clinic and availability of emergency medicines at dental clinics.

The study comprised of 100 dentists who agreed to participate in the study. Ethical clearance was obtained

from the institutional ethical committee to conduct the study. Informed consent was taken from all the study participants and they were assured to keep their identity confidential. Demographic details included qualification of the dentist i.e. graduate or post-graduate. The questionnaire comprised of mainly objective questions, requiring a simple yes or no reply, and each filled questionnaire was assigned code to keep the identity confidential. A pilot study was conducted on 20 dental clinics that were selected randomly; based on their doubts related to the questions, the questionnaire was modified. Data obtained were entered into a computer and analyzed using Statistical Package for Social Science (SPSS) Version-16 data analysis software. Chi-square test was used for the analysis and p value of less than or equal to 0.05 was considered statistically significant.

Table 1: Questionnaire regarding evaluation of knowledge and attitude among dentists towards medical emergencies at dental clinics

Questions	Reply (N=100)	Graduate (BDS) (N=74)	Postgraduate (MDS) (N=26)	P value
Do you ask medical history including medication and allergy history?	97%	71	26	0.492
Do you ask patients to fill medical and dental history Performa at your dental clinic?	8%	4%	4%	2.13
Do you enquire about the vital signs (temperature, pulse, blood pressure and respiration rate) of all the patients before initiation of any treatment?	91%	70	21	0.413
Do you measure the vital signs (temperature, pulse, blood pressure and respiration rate) of all the patients before initiation of any treatment?	25%	7	18	0.234
Do you measure the blood pressure of the patients with any cardiopulmonary disorder before initiation of treatment?	79%	59	20	0.007
Have you ever attended any CPR workshop?	21%	12	9	0.003
If attended, are you confident to perform CPR?	16 (76%, N=21 p=0.284)	9	7	2.95
Do you think you have adequate knowledge to manage medical emergency at your dental clinic?	28%	9	19	0.04

RESULTS

The present study surveyed 100 dentists among which 74 were Postgraduate (MDS) and 26 were Graduate (BDS). 97% of the dentists surveyed obtain medical history including medication and allergy history, but only 8% of them obtain filled medical and dental history performa from patients at their dental clinic. 91% enquired about the vital signs (temperature, pulse, blood pressure and respiration rate) of all the patients before initiation of any treatment but 25% measured the vital signs before initiation of any treatment. 79% measured

the blood pressure of the patients with any cardiopulmonary disorder before initiation of treatment. 21% of dentists attended CPR workshop and 16 of them (76%, N=21 p=0.284) were confident to perform CPR with insignificant p value. Only 28% surveyed dentists felt that they have adequate knowledge to manage medical emergency at their dental clinic (table 1). Significant difference was found in the knowledge of graduates and postgraduates in relation to recording of the blood pressure of the patients with cardiopulmonary

disorder before initiation of treatment and in relation to confident to manage medical emergency at dental clinic. The availability of medicines revealed that oxygen was available at only 2% dental clinics, ammonia inhalant at 21%, salbutamol at 9%, diazepam at 48%, epinephrine at 21%, hydrocortisone at 59%, nitroglycerin at 21%, antihistamine at 57%, atropine at 14%, aspirin at 16% and oral glucose was available at 61% of dental clinics (table 2).

Table 2: Availability of emergency medicines

Emergency medicines	N=100
Oxygen	2%
Ammonia inhalant	51%
Salbutamol	9%
Diazepam	48%
Epinephrine	21%
Hydrocortisone	59%
Nitroglycerin	21%
Antihistamine (diphenhydramine or chlorpheniramine)	57%
Atropine	14%
Aspirin	16%
Oral Glucose	61%

DISCUSSION

The life-threatening emergencies can occur any time, any- where and to anyone. Such situations are somewhat more likely to occur within the confines of the dental office due to the increased level of stress which is so often present. For example, Fear and anxiety may make these patients prone to medical emergencies such as syncope and hyperventilation. Dentists must be prepared to manage medical emergencies which may arise in practice.⁴

Dentist should be aware of the accepted treatments and protocols for medical emergencies and must be familiar with circumstances that the prudent person with the same level of training and experience would have done in the same or similar type of situation. According to dental negligent act, if a patient is given local anesthesia without test dose and the patient develops anaphylaxis and dies, the dentist will be held liable.⁵

The present study found that 91% enquired about the vital signs (temperature, pulse, blood pressure and respiration rate) of all the patients before initiation of any treatment but 25% measured the vital signs before initiation of any treatment. Similarly, Kumarswami S et al.⁵ found that 98% dentists enquired but only 12% get proformas filled by the patient and only 38.4% obtained the vital signs from the patient. An oral temperature in excess of 99.6°F (37.5°C) indicates the presence of a viral or bacterial infection. Thus, it is important to measure vital signs and obtain proformas filled by patients containing previous medical history including fever, cough, hepatitis, hypertension, diabetes, etc.,

before commencing of any treatment, so that required precautions can be taken to prevent the occurrence of such emergency situations.⁶

The present study found that only 28% of surveyed dentists felt that they have adequate knowledge to manage medical emergency at their dental clinic. Chandrasekaran S et al.⁷ evaluated awareness of Basic Life Support among students, doctors and nurses of medical, dental, homeopathy and nursing colleges and found poor awareness among them. Jodali SP et al⁸ assessed dental graduates knowledge, skills and competency regarding dentistry-medical emergency interface among Interns of two dental colleges of Belgaum City and reported that dental graduates had a superficial knowledge of medical emergencies, drugs and equipments. Arsati et al.⁹ evaluated attitude of Brazilian dentists about Medical Emergencies During Dental Treatment and revealed that Brazilian dentists were not fully prepared to manage medical emergencies and have insufficient experience training in CPR.

The present study found that the most commonly available emergency drugs were oral glucose, antihistamine, diazepam and hydrocortisone. Varma L et al⁶ found that the most commonly available emergency drugs were Adrenaline, oral glucose and ammonia inhalant and less commonly available were hydrocortisone and atropine. Kumarswami S et al.⁵ found most commonly available emergency drugs in emergency kits were adrenaline, diazepam, oral glucose, ammonia inhalant and epinephrine. The present study found oxygen at only 2% clinics which is very critical point to be addressed. However, Amirchaghmaghi M et al.¹⁰ conducted study in Iran and found that oxygen was available at 62.5% dental clinics. Kumaraswami S et al.⁵ found pocket oxygen mask at 18.3% clinics.

Diazepam is a useful premedication for relief of anxiety and tension in patients who are to undergo surgical procedures. Intravenously, prior to cardioversion for the relief of anxiety and tension and to diminish the patient's recall of the procedure.¹¹ An antihistamine is indicated for the management of allergic reactions. Administration of a corticosteroid such as hydrocortisone may be indicated for the prevention of recurrent anaphylaxis. Hydrocortisone may also play a role in the management of an adrenal crisis.¹ Atropine, epinephrine, and dopamine may be used to treat bradycardia, with dosages depending on the acuity and severity of hemodynamic instability. Epinephrine causes cardiac stimulation, which in turn increases the heart rate. Dopamine also may be used to support hemodynamic status by correcting hypotension. It enhances cardiac output, minimally increasing oxygen consumption and causing peripheral vasoconstriction.¹²

Medical emergencies in a dental clinic can be alarming to any dental practitioner; however these incidents can be managed with adequate precautions and necessary

knowledge. Serious medical emergencies in dental practice are rare but a dentist must be well-equipped to manage such incidents as an effective management of such emergencies at dental clinic is ultimately the dentist's responsibility.¹³

CONCLUSION

The present study concludes that dentists are not confident and lack adequate knowledge in handling medical emergencies. The best measure to manage an emergency is to prepare in advance. Dentists, being a part of the healthcare profession, should be prepared to deal with medical emergencies, which can take place at their workplace. Emphasis should be laid on the need for more medical emergencies training to be offered and to attend CPR workshops to increase knowledge and confidence among dental graduates in the management of medical emergencies.

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