



Awareness of Emergency Drugs and Their Usage among Dental Professionals

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Authors' contributions

This work was carried out in collaboration among all authors. Author RT designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SP and NM managed the analyses of the study. Author NM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Effective management of an emergency in the dental office is ultimately the dentist's responsibility. The lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal action. Around 126 responses were collected from different dental professionals including graduates and clinicians through questionnaire surveys regarding emergency medications and their usage. The extent of treatment by the dentist requires preparation, prevention, and then management, as necessary. Prevention is accomplished by conducting a thorough medical history with appropriate alterations to dental treatment as required. The most important aspect of nearly all medical emergencies in the dental office is to prevent, or correct, insufficient oxygenation of the brain and heart. For which the dental professionals should be with a thorough understanding of the medical emergencies. Life-threatening emergencies can occur anytime, anywhere, 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. Awareness of emergency drug use among dental professionals needs to be improved and updated.

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1. INTRODUCTION

Situations such as life-threatening emergencies may occur anytime, anywhere, and to anyone. Such situations are somehow more likely to occur within the premises of the dental office due to the increased level of stress which is commonly present [1]. For example, Fear and anxiety may make these patients prone to medical emergencies such as syncope and hyperventilation [2]. Effective management of an emergency situation in the dental office is ultimately the dentist's responsibility. The lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal action. For this reason, all health professionals including dentists must be well prepared to attend to medical emergencies. The extent of treatment by the dentist requires preparation, prevention, and then management, as necessary. Prevention is accomplished by conducting a thorough medical history with appropriate alterations to dental treatment as required. The most important aspect of nearly all medical emergencies in the dental office is to prevent, or correct, insufficient oxygenation of the brain and heart [3].

Drugs that should be promptly available to the dentist can be divided into two categories. The first category represents those that may be considered essential. The essential category of emergency drugs includes oxygen, epinephrine, nitroglycerine, antihistamine, albuterol/ salbutamol, and aspirin [4,5]. The second category contains drugs that are also very helpful and should be considered as part of the emergency kit. These additional drugs present within the operator are glucagon, atropine, ephedrine, hydrocortisone, morphine/ nitrous oxide, naloxone, lorazepam/midazolam, flumazenil. The precise composition of the drug kit can vary as the presence of the drugs in this latter group may depend on the individual dentist's needs and the nature of the dental practice.

Those with training in advanced cardiac life support would also have additional drugs. Medical professionals who are trained to administer general anesthesia or intravenous sedation would be expected to have additional drugs [6]. It may be assumed that dentists without advanced training may not be proficient in venipuncture. In this case, the intramuscular

route of administration, which can include the intralingual injection, would be appropriate. The intralingual intramuscular injection should provide a more rapid onset of action compared with the more traditional sites although not as rapid as intravenous. Bearing in mind that dental students have little understanding of medical emergency management and that there is very little in-depth data about the importance dental students place on acquiring competence in this area of patient care, the purpose of this study was to assess the awareness of emergency drugs used among dental professionals. With a rich case bank established over 3 decades we have been able to publish extensively in our domain [7–17]. Based on this inspiration we aim to assess the awareness of emergency drugs and their usage among dental professionals.

2. MATERIALS AND METHODS

A questionnaire was designed to obtain relevant information on the list of emergency drugs dentists are supposed to know and of the situation they may encounter in their dental clinic with their patients. Questions were concerned with the drugs used in medical emergencies like angina pectoris, grand mal seizures, severe asthma, insulin shock, stroke, adverse drug reactions, and resuscitation events. Specific questions were directed to these aspects.

Questions asked in survey:

1. Need for oxygen delivery system in dental office
2. Emergency Drug of choice in patients with syncope and respiratory depression
3. Emergency Drug of choice in patients with angina pectoris
4. Emergency Drug of choice in opioid overdose
5. Drug of choice in patients with acute allergic reactions
6. Drug of choice in acute myocardial infarction
7. Drug of choice for management of hypotension
8. Drug of choice in management of epileptic seizures
9. Choice of supplement for patients with hypoglycemia
10. Drug of choice in management of unconsciousness

11. Drug of choice in patients with asthma or breathlessness
12. Necessity of drugs for the immediate management of medical emergencies
13. Primary management of all emergency situations involves
14. When in doubt of emergency situation what should be done
15. Usual dose administered to adult patient

insecurity, dissatisfaction, and a limited appreciation of the dentist's responsibility, and the inability to respond positively and administer the drugs during an emergency in the dental office is the ultimate consequence.

Every dentist should have the basic knowledge to recognize, access, and manage a potentially life-threatening situation until the patient can be transported to a medical facility. Successful patient management relies on understanding the pathophysiologic processes and how to deal with them. Dealing with medical emergencies is not as difficult as most dentists perceive. Prevention of a medical emergency begins as soon as the patient enters your office and fills out the medical questionnaire. An accurate medical history is extremely important for the dentist to identify any predisposing factors that could give rise to an unforeseen event.

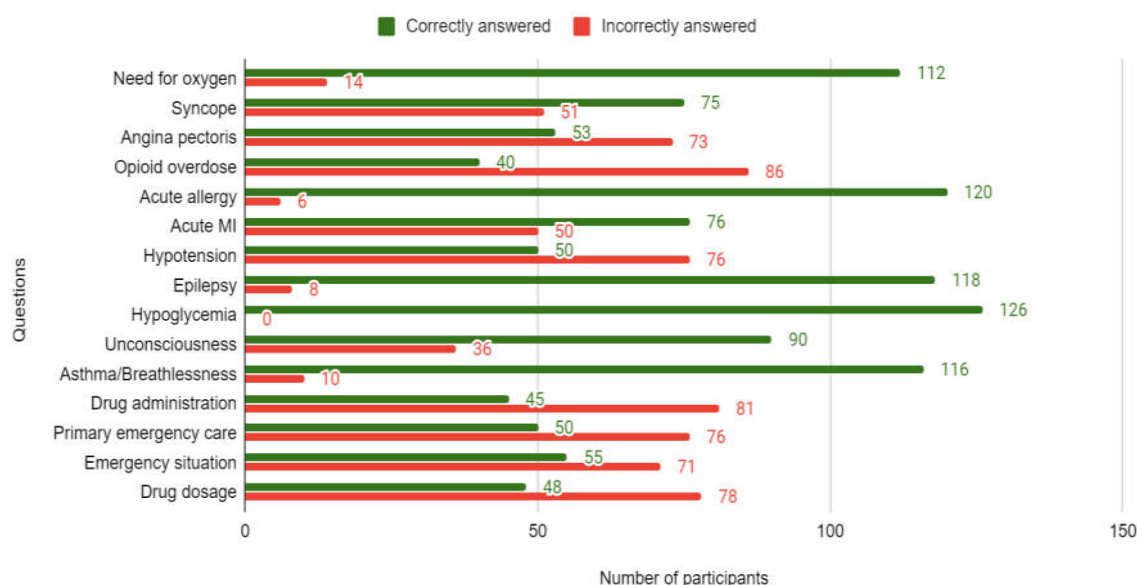
3. RESULTS AND DISCUSSION

The results showed that many dental professionals perceive a need for a more intensive education in medical emergency drugs as more than 70% of dentists were not aware of most of the emergency drugs of choice required in situations like hypotension, anaphylactic shock, allergic reaction, etc.

The bar Graph 1 shows comparison between correctly answered and incorrectly answered for the survey questions. It shows that almost all the questions have incorrect responses from many of the participants indicating ill knowledge of dental practitioners regarding emergency drugs and their usage.

Dentistry is a health science profession that should focus on the whole patient instead of being limited to the oral cavity, medical emergencies do occur in the dental office, but a student's minimal knowledge about these incidents and their etiology causes feelings of

Emergencies do occur in dental offices suggesting that fear, anxiety, pain, or discomfort may predispose some patients to an emergency situation. If the dentist is able to alleviate the patient's concerns and use adequate pain-control techniques, then a major step has been taken in preventing an emergency. Preparation for emergencies includes training all members of the office staff in recognizing and managing life-threatening situations; developing a team approach with the individual responsibilities; conducting simulated emergency events; availability of emergency drugs in the dental



Graph 1. Awareness of emergency drugs among dental professionals

office; and, most importantly, the knowledge of those drugs with the mode of administration [18]. The drugs that should be promptly available to the dentist can be divided into two categories. The 1st category represents those that may be considered essential. The 2nd category contains drugs that are also very helpful and should be considered as part of the emergency kit. The precise composition of the drug kit can vary as the presence of the drugs in this latter group may depend on the nature of the dental practice [19].

Effective management of an emergency situation in the dental office is ultimately the dentist's responsibility [20]. Lack of good training and the inability to cope with these medical emergencies can lead to tragic consequences and sometimes legal action. Hence, it becomes essential to all the health professionals including dentists to be well prepared to attend to these medical emergencies [21]. The frequency of these medical emergencies appears to be increasing because dental practices are seeing an increasing number of elderly and medically compromised patients and are performing more sedation procedures.

The results of this study confirm that undergraduate dental professionals perceive a need for a more intensive education in medical emergencies. Awareness on basic life support and emergency drugs among dental professionals should be assessed regularly. The authors suggest for assessment the practical skills of the dental professionals and their attitude toward basic life support and emergency situations regularly. As always said, prevention is the best medicine. Hence, being prepared for an emergency and believing that emergency is a real possibility in a dental clinic is very important. Preparedness for emergencies involves personal, staff, and office preparation wherein personal and staff preparedness include an in depth knowledge of signs, symptoms, and management of emergencies, basic life support measures, and cardiopulmonary resuscitation. Office preparation involves maintaining emergency equipment, emergency drugs, and backup medical assistance. Dental professionals should always remember that administration of drugs is not an immediate management technique for management of emergencies and primary management always involves BLS measures. Regular training should be given for the dental professionals and the staff working in the clinics regarding management of emergency

situations from certified specialists. Regular mock emergency management is to be performed to ensure their knowledge regarding situation management is perfect and upto date.

4. CONCLUSION

Knowledge about the management of medical emergencies was found to be inadequate among undergraduate students. The results of the study emphasize the need for improvement of the training of dentists in the management of medical emergencies at the undergraduate, postgraduate, and continuing education levels as well as the need for organization of the dental workplace to handle such emergencies.

DISCLAIMER

The products used for this research are commonly and predominantly used in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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