

Dental emergencies Cases in Dental Clinics In Kingdome of Saudi Arabia: Review

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1 General Dentist Al Hijrah PHCC Madinah Saudi Arabia

2 Dentist Al Dowaimah PHCC Madinah Saudi Arabia

3 General Dentist Financial Affairs, Revenue Growth, and Health Insurance at Al Salam Endowment Madinah Saudi Arabia

4 General Dentist Al-Hijrah PHCC Madinah Saudi Arabia

5 Dentist Faisaliyah PHCC Madinah Saudi Arabia

6 General Dentist Al-Awali PHCC Madinah Saudi Arabia

7 Dental Assistant Al-dowaimah PHCC Madinah Saudi Arabia

8 General Dentist Al-Hijrah PHCC Madinah Saudi Arabia

ABSTRACT

Background:

patients, In although the reports course have of indicated performing that dental such procedures, events dentists are may not experience very unexpected frequent. health Therefore, conditions the of aim the of the study was to determine the rate of medical emergencies in dental clinics in Saudi Arabia and to assess the readiness of cities the in dentists Saudi in Arabia managing in the medical year emergencies 2024

Methodology:

This The research study was participants conducted were in dentists different who major were residing in Saudi Arabia whether they are Saudi or non-Saudi nationals. To collect data, a pretested e-questionnaire sampling was and used the in data data were collection. collected The from data 404 collection participants.

Results:

was Out made of through the (51.5%) a total, were non-probability 208 males and 196 (48.5%) were females. The frequency of the medical emergencies in the dental clinics was observed to be 74.8%. The most common emergency reported was vasovagal syncope (43.8%). The study also revealed that most of the dentists (85.6%) always 5% obtained of medical the history dentists of always the took patient vital while signs 95. of the patient with prior medical history. Concerning the availability of a written emergency protocol in the clinics, 64.6% of the participants responded affirmatively while 46.8% indicated that they had a periodic mock emergency drill. Only 21% of the clinics had no emergency equipment while 18.3% of the clinics had no essential emergency drugs in their dental clinic.

Conclusion: The review of the preparedness of the dentists for the management of the medical emergencies showed that the overall preparedness was good. fairly A slight positive change was also seen in the tendency of practicing a periodic mock emergency drill in the dental clinics.

Keywords: Dental clinics, medical emergency, dentists, preparedness.

Introduction

Dental procedures are commonly performed for management of oral and maxillofacial conditions in almost all the regions of the world. During such procedures, the patient may develop an emergency health status which may be as a result of many factors such as stress, anxiety, general health status, type of medical treatment, and drug interaction [1]. Such emergencies are usually minor; however, severe and potentially fatal ones can be observed. Although the probability of such occurrences has been estimated to be relatively low, it is imperative that dental professionals are prepared to manage an emergency at any given time during the course of the procedure. For this reason, it is recommended by General Dental Council that dental practitioners must have at least 10 hours of medical emergency and cardi pulmonary resuscitation (CPR) training in a period of 5 years. Moreover, it is further recommended that 2 hours training should be given every year to keep the dentists in practice of emergency medical care and CPR training [2].

Most commonly encountered medical emergencies in dental clinics may include allergic reactions, syncope,

respiratory problems, cardiac arrest, epileptic seizures, or diabetes related complications [3]. Besides, it is noteworthy that almost all dental drugs are considered as possible allergens that may lead to anaphylaxis. Also, some emergency conditions may directly relate to the age of patients. For instance, young patients are more prone to obstruction of airways by foreign objects due to aspiration of instruments caused by sudden movement of patient during procedure [4]. Moreover, some patients have preliminary anxiety issues that may lead to hyperventilation, cardiac arrest, or syncope if stress relieving protocols are not followed by dentist prior to the procedure [5]. Besides, many of the emergencies in dental clinics may be avoided if detailed patient history is obtained with particular focus on vital signs including blood pressure, pulse rate, oxygen saturation level, blood glucose level, eye movement, respiration, body temperature, etc. These vital signs can also be used to analyze general health status of patients to get hold of any clue about underlying anxiety, stress, cardiac, respiratory, or nervous system involvement [6].

For medical emergency management, the use of emergency kits is usually recommended. These emergency kits should be available in dental care centers and clinics containing drugs that can be classified into two groups; basic essential drugs and secondary helpful drugs. The essential emergency drugs include oxygen, epinephrine, antihistamines, nitroglycerine, aspirin, and albuterol/salbutamol. Other drugs that can also be helpful in management of emergencies encountered in dental clinics include ephedrine, atropine, glucagon, hydrocortisone, lorazepam/midazolam, naloxone, flumazenil, and morphine [7].

Alongside, emergency kits should be equipped with some basic instruments such as oxygen delivery system, blood pressure measurement instrument, blood glucose measuring device, stethoscope, syringes, and other basic tools to administer emergency drugs. Moreover, presence of automated external defibrillator in emergency kit is highly recommended. This instrument is easy to use with a little training along with basic CPR and, thus, can greatly help to overcome cardiovascular complications encountered during dental procedures. However, precise composition of emergency kits and type of additional emergency drugs may vary depending upon the type of dental procedures and individual requirements of the dental practitioner [8].

Furthermore, the guidelines provided by American Dental Association are recommended to be followed in all dental facilities. In addition, local regulatory authorities shall formulate and provide the guidelines based on recommendations by local research centers and should be applied all over the country for better medical emergency management in dental facilities in Saudi Arabia [9]. The aims of this study were to investigate the prevalence of medical emergency in dental clinics of Saudi Arabia, to evaluate the

preparedness of the dentists to manage these medical emergencies, and to investigate the availability of the protocols and equipment for management of these medical emergencies.

Subjects and Methods

A cross sectional study was undertaken by e-questionnaire in several cities of Saudi Arabia between August to November 2024. All the dentists both male and female who are residing in Saudi Arabia whether Saudi or non-Saudi were included in the study. Other health care providers apart from dentists and non-Saudi Arabian citizens were excluded from the study.

The size of the sample was calculated based on an estimated population size, level of confidence and confidence interval that was set. Data collection was done through pretested online questionnaires. The questionnaire comprised of questions that aimed at eliciting information on the socio-demographic characteristics of the dentists and their perception on the availability of the emergency protocol in dental clinics in Saudi Arabia. Convenience sampling was used to collect the data from the participants..

Results

This study also involved 404 dentists out of which 208 (51.5%) were men and 196 (48.5%) were women. Age wise, one third of them characteristic (35.1%) the had participants more is than summarized 5 in years Table of 1 experience below; in

dentistry. The various specialties of the dentists are as shown in figure 1 below. Other specialty included general dentists (50, 12.4%), General Practitioner (GP) (47, 11.6%), implant (1.0, 0.2%), intern (5, 1.2%), oral and maxillofacial surgeon (3, 0.7%), Situation, Background, Assessment, Recommendation (SBARD) (2, 0.5%).

Table 1. Socio-demographic characteristics of the participants (n = 404).

Variable		Frequency	
		Percent (n)	(%)
Gender	Male	208	51.5%
	Female	196	48.5%
Experience (Years)	Less than 2	107	26.5%
	2-5	155	38.4%
	More than 5	142	35.1%
Job Title	Consultant	100	24.8%
	General dentist	203	50.2%
	Specialist	101	25%
Type of dental office	Hospital/specialized center	106	26.2%
	Primary healthcare	81	20%
	Private	121	30%
	University	96	23.8%

Total 302 (74.8%) of the dentists in this study reported experiencing a type of medical emergency in their dental office. The details are summarized in Table 2.

The preparedness of dentists for emergencies was analyzed and results are summarized in Table 3.

Availability of protocols and equipment for management of the medical emergencies in dental clinics is shown in Table 4.

Discussion

In the recent past, there have been some articles on medical emergencies in dental clinics in different countries. These are the publications that have been identified below. Fortunately, the majority of the medical emergencies reported by the dentists are not fatal and can be well handled by competent persons [10-12]. [13]. In fact, almost 90% of all those emergency episodes were considered mild and

Table 2. Prevalence of the medical emergency in dental clinics of Saudi Arabia.

Medical emergency	N (%)
Vasovagal syncope	177 (43.8%)
Orthostatic hypotension	146 (36.1%)
Asthmatic attack	91 (22.5%)
Heart related problem	44 (10.9%)
Adverse drug reaction	32 (7.9%)
Fits or seizures	47 (11.6%)
Foreign body aspiration	41 (10.1%)
Other	93 (23%)

only 8% were regarded as serious [7]. Dentists have the responsibility to recognize medical emergencies when they arise, in addition to their role in dealing with it in a competent and professional way [7]. In this study, the prevalence of medical emergencies in dental clinics of Saudi Arabia and the preparedness of Saudi dentists for those medical emergencies were explored, and the availability of protocols and equipment for managing those conditions was inquired.

The present results revealed that 74.8% of dentists have encountered at least one type of medical emergency in their dental practice. This result was in line with a study done in France, Collange et al. [14] followed 1,504 dentists for three years and found out that 74.4% of the dentists included in the study had encountered some form of medical emergency during their practice and only 3% of them stated that they had performed CPR in their instance, dental in practice. The UK, frequency Atherton of et medical al. emergencies [12] in found dental that clinics 70. in other countries also varied; for 2% of the dentists encountered at least one medical emergency in the course of 10 years. In 2015, Alhamad et al. surveyed the dentists in the Eastern province of Saudi Arabia and it was revealed that 67% of the dentists had experienced medical emergency which was quite high. The differences in the results of the present study and those studies could be due to the population samples used. The present result showed that the most frequently reported medical emergency in dental clinics of Saudi Arabia was vasovagal syncope (43.8%). This

Table 3. Preparedness of the dentists to manage the medical emergency in dental clinics of Saudi Arabia.

Yes		Sometimes	No
1. Do you routinely take medical history for your patient?	346 (85.6%)	52 (12.9%)	6 (1.5%)
2. Do you obtain the vital signs for all your patients before any treatment?	172 (42.6%)	131 (32.4%)	101 (25%)
3. Do you take vital signs for patients with a relevant medical history?	325 (80.4%)	61 (15.1%)	18 (4.5%)
	< 2 years	> 2 years	Never had one
4. When was your last BLS (Basic life support) course?	264 (65.3%)	110 (27.2%)	30 (7.4%)
5. When was your last ACLS (Advanced cardiac life support) course?	96 (23.8%)	90 (22.3%)	218 (54%)
6. When was your last ALS (Advanced life support) course?	95 (23.5%)	83 (20.5%)	226 (55.9%)

Table 4. Availability of the protocols and equipment for management of the medical Emergency in Dental Clinics of Saudi Arabia.

Yes		No	Not sure
1. Is there a written emergency protocol available and clearly posted in your clinic?	261 (64.6%)	89(22%)	54 (13.4%)
2. Are you aware of the emergency protocol in your clinic?	309 (76.5%)	34 (8.4%)	61 (15.1%)
3. Does the office have and implement a periodic mock emergency drill?	189 (46.8%)	125 (30.9%)	90 (22.3%)
4. Is there a healthcare professional team or personnel in your institute who is responsible for monitoring and management of the emergencies and equipment?	274 (67.8%)	58 (14.4%)	72 (17.8%)
5. Do you have any equipment for emergency in your dental clinic?	246 (60.9%)	85(21%)	73 (18.1%)
6. Do you have the essential emergency drugs in your dental clinic?	276 (68.3%)	74 (18.3%)	54 (13.4%)

was followed by orthostatic hypotension (36.1%), asthmatic attack (22.5%), fits or seizures (11.6%), heart-related problem (10.9%), and foreign body aspiration (10.1%). This result was in concordance with a Polish study, in which Smereka et al. [10] reported that the most common medical emergencies in Polish dental offices were vasovagal syncope (46.30%), followed by orthostatic hypotension (18.8%) and hyperventilation crisis (18.61%). Overall, the prevalence of medical emergencies encountered by dentists varied from country to country, which may be due to the lack of a clear definition of medical emergencies, but syncope predominated in most countries and some medical emergencies, including hypotension, anaphylaxis, and hypoglycemia were among the most prevalent ones. For example, a study in Germany by Muller et al. [13] reported that vasovagal syncope, hypertension, epilepsy, and hypoglycemia were the most common medical emergencies encountered in dental clinics. In addition, in Belgium, the most frequent emergencies were vasovagal syncope, followed by epilepsy and diabetic problems [15].

Taking a thorough medical history of patients and updating it before the initiation of medical treatment, as well as assessing the basic vital signs, is important to identify people at higher risk of requiring emergency medical treatment [10]. Taking all these variables into consideration will enable the dentists to modify their treatment plan accordingly, and even make use of specialist consultations and refer those at higher risk to a more specialized clinic or hospital. The result of the present study showed that 85.6% of the dentists reported that they routinely took medical history of their patients, 84% said they took the vital signs of all patients before treatment (42.6% did it all the times and 32.4% did it sometimes) and 95.5% said they took the vital signs of patients with a relevant medical history (80.4% did it all the times and 15.1% did it sometimes). A study conducted in Saudi Arabia in Jazan Province reported similar results in terms of taking full medical history [16]. Al-Iryani et al. [16] reported that 96% of the interviewed dentists in his study claimed they took detailed medical history, while only 4% did not. Al-Sebaei et al. also reported similar result in 2015 [17]. Lack of medical history of each patient can lead to a higher number of medical emergencies, which could have been avoided in a safe way. Improvement in this area could lead to better patients' outcomes.

Continuous education is important for all medical professionals, including dentists. The present results showed that most of the dentists (65.3%) had received Basic Life Support (BLS) course within the past 2 years and 27.2% had received it more than 2 years ago. More than half of the participants did not receive any Advanced life support (ALS) or Advanced Cardiac Life Support (ACLS) courses at all. It has been argued that the preparedness for medical emergencies in dental practice depends mainly on continuous educational programs.

. [16] in 2018 who also conducted the study in Saudi Arabia. Al-Iryani et al. [16] showed that most of the dentists (95%) reported having training in BLS.

In the present study, the implementation of a periodic mock emergency drill was reported by 46.8%. A slight improvement on this area was noticed when the present results were compared with Al-Sebaei et al. [17] and Al-Hassan et al. [18] studies, which reported that only a small minority of dental clinics in Saudi Arabia performed periodic office emergency drills.

Furthermore, about two thirds of the dentists in the current study reported that there was a healthcare professional team or personnel in their institute who was responsible for monitoring and managing emergencies and equipment. Although it is mandatory to have a medical emergency kit in all dental offices in Saudi Arabia, 21% of the participant dentists reported not having any equipment for emergency in their dental clinics, while 18.3% reported not having the essential emergency drugs in their dental clinic. This result was also similar to what was reported by Al-Hassan et al. [18] who found that 22% of dentists in Jazan Province did not have emergency kits in their offices.

Conclusion

The frequency of medical emergencies in dental offices in Saudi Arabia is similar to that seen in other countries. The present results revealed that a large number of dentists have encountered at least one form of medical emergency in their dental practice with vasovagal syncope and orthostatic hypotension as the most frequent medical presentations. The respondents' preparedness in managing medical emergencies was assessed to be reasonable. Regarding the certification of the dentists in BL, S, ALS and AED, more than half of the dentists had BLS certification within the past two years and only 31.6% of the dentists had ALS certification and 42.9% of them had ACLS certification. A slight change in the trend of the conduct of a periodic mock emergency drill in dental clinics was also observed.

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