

## Medical Emergencies in Dental Practices Part II: Preparedness and Readiness of Riyadh Dentists

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**Received:** February 12, 2018; **Published:** March 14, 2018

### Abstract

**Objectives:** To evaluate the overall training and preparation of dentists in performance of cardiopulmonary resuscitation (CPR) and their perceived competency to manage various medical episodes that may happen in their dental practice.

**Subjects and Methods:** In this cross-sectional study, a self-administered questionnaire was distributed to a random sample of 500 dentists working in hospitals, clinics as well as colleges of dentistry in Riyadh, Saudi Arabia.

**Results:** The response rate was 81.8% (409 dentist). The majority of the respondents, (95.8%), had undergone CPR training with 75.0% doing that on a two-year basis.

More than half (54.0%) stated that mock emergency drills were not carried out periodically, and more than one third (33.7%) stated no emergency kit was available in their practices. Disposable needles and suction were the most commonly highlighted (~88.0%) equipment as present in the dental practices, while electrocardiography (ECG) monitor, laryngoscope and intravenous cannula were the most commonly reported as not present. Almost half (49.9%) of the participants were not trained in the use of such emergency resources. Hypoglycaemia was the most common emergency subjects felt able to deal with, while myocardial infarction was the most common medical emergency (62.6%) participant felt not able to manage. CPR training, and the frequency with which dentists were enrolled in CPR training demonstrated no association in relation to gender, years' experience, dentists' rank and dental speciality ( $P = > 0.05$ ).

**Conclusion:** More than one third of the present investigation participants stated that there is no emergency kit available and almost half did not receive training on using the available emergency equipment. The present study's findings show that there is a need for dentists to undergo practical training in emergency management. Basic life support skills are important and need to be regularly revised.

**Keywords:** Medical Emergencies; CPR; Mock Drill; Dental Practice; Competency

### Abbreviations

BLS: Basic Life Support; CPR: Cardiopulmonary Resuscitation; KSA: Kingdom of Saudi Arabia; CDRC: College of Dentistry Research Center; ECG: Electrocardiography; IV: Intravenous

### Introduction

Any dental practice may face a medical emergency, with the majority of such emergencies potentially life-threatening [1,2]. It is estimated that average occurrence of medical emergencies is one in every 3.6 - 4.5 practice years among dental practitioners in UK [3]. Most

of the frequently occurring medical emergencies have the potential to cause serious consequences or be life-threatening if not properly and promptly managed [4]. In order to minimise morbidity and mortality, dentists and dental personnel must possess rich knowledge in medical emergencies, and be able to properly diagnose and quickly manage such a problem [1-3].

Atherton and coworkers (1999) reported a total of 20 deaths due to medical emergencies in general dental practice in Great Britain [3]. In Australia, 15% of dental practitioners resuscitated their patients through a course of one year [5]. Furthermore, 3% of treated patients had experienced cardiopulmonary arrest in a survey that was carried out across dentists in Brazil [6].

The increase of the frequency of medical episodes at the present time had been attributed to several factors including the increase in life expectancy, treating larger numbers of elderly and medically compromised patients, beside the improvement of the quality of health care and the frequent use of sedation [1,4,7].

Prevention of medical incidents is one of the most critical aims in the management of medical emergencies across the dentistry field. This could be achieved through out ensuring thorough patients' medical and dental histories, beside the completion of a number of tasks, including monitoring of vital signs before treatment, as standard, as well as patient monitoring and medical consultation whenever deemed necessary [2,3].

In the event that a medical emergency should arise, the key goal underpinning management is providing enough oxygenation to the brain and heart; this requires competence and skills in the completion of Basic Life Support (BLS) amongst dentists and dental auxiliaries, which involves airway maintenance, breathing and circulation support, and being properly trained in cardiopulmonary resuscitation (CPR). The appropriate management of medical emergencies is critical if morbidity and mortality rates in dental practice are to be reduced [1,2,4,7].

Despite the fact that the majority of dental practitioners are found to acknowledge the value of training in regards CPR and BLS, it remains, however, that a number of works conducted in this area have come to show that as many as half of all dentists across the globe are not proficient in CPR [7-9]. Moreover, in the specific context of Kuwait, an estimated one-third (36%) of surveyed practitioners were found to have a good knowledge of CPR [10], whilst in the Iranian setting, this figure was found to be as low as 3.73% [11]. In New Zealand, Broadbent and Thomson (2001) reported that more than half dentists were dissatisfied with their undergraduate training regarding medical emergencies, moreover, about 14% of them felt lacking in their competency in managing medical emergency in practice [12]. In a recent study in western part of Saudi Arabia (2015), it was found that there is a deficiency in preparedness of private dental clinics for medical emergencies in three main areas including: personnel preparedness and training, availability of drugs, and the availability of emergency equipment [13]. Another research conducted in eastern province of Saudi Arabia reported that approximately one-third of the surveyed dentists were either not confident or did not know how to use the emergency drugs [14]. Researches accomplished in various part of the world advocated thorough revision of formal training of dental practitioners in the management of medical emergencies [3,5,15,16].

When considering BLS certification, it is required that dentists and dental staff should be appropriately trained and therefore able to deal with acute medical emergencies; this can be accomplished through on-going education and training initiatives, regular mock drills, and adherence to medical emergency prevention and management protocols, as well as the availability of up-to-date emergency drug kits and equipment in practice offices [17,18].

In the Kingdom of Saudi Arabia (KSA), all dental students are required to complete a compulsory CPR training course before graduation, in addition to several lectures covering various types of medical emergencies that can occur in dental practices and the ways they should be prevented and managed. Furthermore, CPR training must be repeated on a two-yearly basis by all dental practitioners, which recently made as a prerequisite for renewing professional licence.

Several researches on the prevalence and types of medical emergencies in dental practices and the awareness of dentists in dealing with them have been conducted in various parts of the world [12,19-22]. However, in the KSA, only two such work were conducted notably in the western and eastern parts-in regards the overall vigilance of private dentists and poly clinics in dealing with such situations [13,14]. Accordingly, the present work is Part II of a larger study centred on assessing the overall prevalence and rate of medical emergencies incidence in dental practices in the capital of the KSA, notably Riyadh [23]. The objectives of the present study are to evaluate the overall training and preparation of dentists in performance of cardiopulmonary resuscitation and their perceived competency to manage various medical episodes that may happen in their practice offices.

**Subjects and Methods**

This cross sectional research was approved by College of Dentistry Research Center (CDRC) at King Saud University. It was prepared as a self-administered questionnaire and modified in line with other comparable studies [1,2,12]. A pilot testing of the questionnaire was made in a sample of 20 dentists to ensure the clarity of the questions. To encourage dentists to participate, and to make participation less time consuming, most of the questions were made close ended and require only ‘yes’ or ‘no’ answers. The questionnaire included covering letter explaining the purpose of the study. It was distributed amongst a random number of private and government hospitals, beside dental colleges located in Riyadh, Saudi Arabia. The participation was voluntary and the inclusion criteria is any dental practitioners that have worked for a period of at least one year in academic, private and/or governmental clinics In Riyadh city. The following sections were included in the questionnaire:

1. Demographic information Centred on dentist’s gender, number of years’ experience, rank, dental speciality, and place of work.
2. Emergency skills training: Questions centred on frequency of training, CPR training in particular, and any interest in resuscitation course attendance.
3. Dental practice preparedness for medical crises: Concerned with establishing the medical equipment present in the workplace, as well as the training level held by the dentist in the use of such equipment.
4. The ability of the dentist to identify and accordingly deal with particular crises.
5. Any factors of relevance explaining why certain procedures for the management of medical emergencies could not be carried out.

**Statistical Analysis**

Descriptive statistics were used spanning frequency, percentage, means, standard deviations and tables. The association between categorical variables was tested through Chi-square, with a 0.05 level of significance outlined.

**Results**

A total population of 409 dentists were involved in this research (81.8% response rate). The demographic data, as noted above, centred on gender, number of years’ experience, rank, speciality, and place of work are presented on table 1.

Gender	Years in practice	Rank	Specialty	Place of work
Male 200 (48.9%)	< 5 years 123(30.1%)	Consultant 113 (27.6%)	Surgery 24 (5.9%)	Governmental hospital 225 (55.0%)
Female 209 (51.1%)	5 - 10 years 125 (30.6%)	Specialist 105 (25.7%)	Endodontic 42 (10.3%)	Academic institution 144 (35.2%)
	> 10 years 158 (38.6%)	General practitioner 57 (13.9%)	Periodontic 54(13.2%)	Private clinic/hospital 15 (3.7%)
		Postgraduate student 134 (32.8%)	Pedodontic 71 (17.4%)	More than one place 24 (5.9%)
			Oral medicine 2 (0.5%)	
			Prosthetics 58 (14.2%)	
			Orthodontic 35 (8.6%)	
			Restorative 65 (15.9%)	
			Public Health 16 (3.9%)	
	No response 3 (0.7%)		No response 42 (10.3%)	No response 1 (0.2%)

**Table 1:** Sample distribution of dentists.

**Dental Training and Preparedness in Regards to Medical Crises**

The majority of the respondents, totalling 95.8%, had undergone CPR training, with 57.0% undergoing training on a two-year basis, 24.0% every four years, 6.6% on an annual basis, 5.6% trained at a lesser frequency, whilst 2.2% had never undergone training since graduating. Importantly, most of the subjects (79.2) were found to have an interest in becoming enrolled in resuscitation courses. When the respondents were asked about mock emergency drills and the presence of emergency kit in the practice, approximately 54.0% stated that mock emergency drills were not carried out periodically, with 33.7% stating no emergency kit was available. Amongst those who stated that emergency kit was available, almost half (42.2%) were commercial, whilst 16.3% were self-developed, whereas the remaining (41.5%) were both. In regards the presence of emergency equipment in the practice, the majority of the equipment detailed by the subjects were disposable needles, as highlighted by a large majority (88.8%) of the subjects, suction (equating 88.0%), blood pressure monitors (80.2%), oxygen equipment (71.6%), and paper bag and pulse oximeter (58.8%). Furthermore, the equipment most commonly cited, as not present in the clinic was electrocardiography (ECG) monitor and laryngoscope, as outlined by 37.9% of the respondents, whilst 24.2% stated intravenous (IV) cannula (Table 2). Upon being questioned on their training in the use of such emergency resources, a total of half (50.1%) stated they had been trained, whilst the remaining half (49.9%) answered otherwise.

Equipment	Yes (%)	No (%)	I don't know (%)	NA (%)
Suction	360 (88)	12 (2.9)	16 (3.9)	21 (5.1)
Disposable Needles	363 (88.8)	16 (3.9)	13 (3.2)	17 (4.2)
Oxygen Apparatus	293 (71.6)	53 (13)	33 (8.1)	30 (7.3)
Paper Bag	241 (58.9)	62 (15.2)	65 (15.9)	41 (10)
Blood Pressure Monitor	328 (80.2)	37 (9)	17 (4.2)	27 (6.6)
Intravenous Cannula	166 (40.6)	99 (24.2)	84 (20.5)	60 (14.7)
Pulse Oximeter	240 (58.7)	74 (18.1)	48 (11.7)	47 (11.5)
Laryngoscope	96 (23.5)	155 (37.9)	99 (24.2)	59 (14.4)
ECG Monitor	123 (30.1)	155 (37.9)	76 (18.6)	55 (13.4)

**Table 2:** Knowledge about Presence of emergency equipment in the clinic.

\*NA = No answer

**Ability to Manage Medical Emergencies and Use Emergency Skills**

When questioned on the most common emergency subjects felt able to deal with, the results were detailed as follows: 78.2% stated hypoglycaemia, 74.6% stated syncope, 64.3% asthma, 55.7% convulsion, and 54.3% epileptic fit. The most commonly stated medical emergencies to arise to which the professionals did not feel able to manage included myocardial infarction (62.6%), cardiac arrest (58.4%), angina (51.1%) and anaphylaxis (46.9%) (Table 3). CPR, however, was noted by 86.1% of the subjects as simple to manage, followed by 78.0% stating blood pressure measurement, 59.4% with self-inflating bag, and then 53.8% with intramuscular injection. Notably, however, in terms of what the professionals felt they could not carry out, the most common medical emergencies were cricothyroidotomy (73.6%), insert an intravenous butterfly or cannula (67.0%), followed by the injecting of an intravenous drug (64.4%), and then the insertion of an oral airway (57.7%) (Table 4).

Medical emergency	Competent (%)	Not Competent (%)	NA (%)
Syncope	305 (74.6)	63 (15.4)	41 (10.0)
Epileptic fit	222 (54.3)	130 (31.8)	57 (13.9)
Angina	124 (30.3)	209 (51.1)	76 (18.6)
Asthma	263 (64.3)	87 (21.3)	59 (14.4)
Hypoglycemia	320 (78.2)	46 (11.2)	43 (10.5)
Convulsion	228 (55.7)	122 (29.8)	59 (14.4)
Cardiac arrest	99 (24.2)	239 (58.4)	71 (17.4)
Myocardial infarction	67 (16.4)	256 (62.6)	86 (21.0)
Anaphylaxis	145 (35.5)	192 (46.9)	72 (17.6)

**Table 3:** Competency to provide initial management for medical emergencies.

\*NA = No answer

Emergency skill	Yes (%)	No (%)	NA (%)
Perform CPR	352 (86.1)	37 (9)	20 (4.9)
Use self-inflating bag	243 (59.4)	117 (28.6)	49 (12.0)
Give an intramuscular injection	220 (53.8)	144 (35.2)	45 (11.0)
Give a subcutaneous injection	189 (46.2)	170 (41.6)	50 (12.2)
Check and draw-up a drug for injection	151 (36.9)	189 (46.2)	69 (16.9)
Use a pocket resuscitation mask	196 (47.9)	147 (35.9)	66 (16.1)
Measure blood pressure	319 (78)	62 (15.2)	28 (6.8)
Insert an oral airway	106 (25.9)	236 (57.7)	67 (16.4)
Insert an intravenous butterfly or cannula	68 (16.6)	274 (67)	67 (16.4)
Inject an intravenous drug	73 (17.8)	263 (64.4)	73 (17.8)
Perform a cricothyroidotomy	28 (6.8)	301 (73.6)	80 (19.6)

**Table 4:** The ability to carry out emergency skills.

\*NA = No answer

### Factors Underpinning the Inability to Manage Medical Emergencies

One of the most commonly cited factors underpinning the inability of the dental professionals to carry out particular medical emergency crises management was a lack of training, which was noted by almost half (46.2%) of the sample. Other factors stated included a lack of practice, the rare occurrence of emergency, and the fact that emergency management was not the speciality of the dentist, with 8.6%, 3.7% and 3.4% stating such reasons, respectively. A total of 38.1% of the subjects did not provide an answer to this question.

### Cross-Tabulation concerning Gender, Years' Experience, Dentists' Rank and Dental Speciality

CPR training, and the frequency with which dentists were enrolled in CPR training demonstrated no association in relation to any of these variables (P = > 0.05).

### Cross-Tabulation in Terms of Workplace

When examining the link between workplace and whether or not there had been CRP training, no association was identified (P = > 0.05).

Furthermore, in regards workplace and the frequency with which the professionals were enrolled on CPR training, the statistical association was found to equate to  $P = 0.017$ . Importantly, most of the professionals were found to undergo CPR training on a two- or four-year basis, with a larger number of dentists from government hospitals (67.0%) undergoing CPR training on a two-yearly basis, followed by 60.9% of dentists working in more than one location. Furthermore, 53.3% were seen to work in private hospitals or clinics, whilst 49.3% held roles in academic locations. Across the four years spent in training, figures equalled 33.3% for private hospital/clinic dentists, 28.7% for academic locations, 26.1% for dentists working in more than one location, and 21.9% in governmental hospitals.

## Discussion

This paper is the second part of a larger study aimed at evaluating the medical emergencies occurrence in different dental practices in the capital city of Saudi Arabia, Riyadh. The study also had the aim of evaluating the readiness of working dentists in dealing with emergency situation, in addition to their related skills in the management of emergency. Despite the fact that many studies have been published in the field, minimal numbers of studies were concerned about medical emergencies in the Middle East. The present study is the first of its type to be carried out in the largest city of Saudi Arabia.

Fortunately, the present study's response rate (81.8%) made the results generalizable, in addition, to the random sampling procedures. A total number of 739 medical emergency cases counting for 0.18% of total treated patients" were encountered by participant dentists throughout the past 12 months. Almost half (47.4%) of the study population reported that they have been involved in at least one medical emergency situation whilst practicing dentistry in their place of work through the last 12- month period [23].

The survey's tool was piloted and validated before data collection process. In an attempt to encourage participation, the questions were minimized while maintaining reliability. The survey included both genders and yielded almost equal distribution amongst them (209 females and 200 males). Additionally, the study reached practitioners from different work places as well as various specialties and years of experience. All these variations would give the sample an increased interpretive value of the Saudi dental practitioners.

It is essential to highlight that all dental practitioners should have appropriate skills in emergency patient care [24]. More than 95% of the respondents claimed that they have at least one CPR training pre-and/or post-qualification. This percentage is far greater than numbers found in published studies. In another national study of the eastern region, almost half (45%) of the participants said that they have had CPR training [14]. Other international studies also reported smaller percentages of dentists with CPR training, equal to 56% in India, 60% in Brazil, 67% in the UK and 47.5% in Belgium [1,2,19,25].

In Saudi Arabia, all practicing dentists are requested to perform CPR training in order to be licensed by the Saudi Commission for Health Specialties this will then be certified, with this certification needing to undergo updates every two years. This could be the reason as for why a large number of participants have undergone CPR training when compared to other populations. Another possible reason is that the question did not specify whether or not the training in question is centered on pre-or post-qualification, as almost all dental schools in the country provide CPR training in their curriculum immediately prior to graduation; therefore, almost all the sample surveyed replied to this question positively.

Given the above finding, it was surprising that most of the participants stated that they are interested in attending resuscitation courses. This may indicate that they do not feel that they have the necessary skills, despite being certified and having attended courses before.

In regards the frequency of updating their CPR training, almost two-thirds of the participants get a CPR training every two years, which could be associated with renewing their practice license. Interestingly, there was a statistically significant association between the place of work and the frequency of CPR training, with dentists working in governmental hospitals found to be more likely to update their CPR training every two years (67%).

The fact that governmental hospitals are stricter in following the rules of the Saudi Commission for Health Specialties when compared to private clinics could be an explanation for this finding.

A number of different elements are included in basic life support, including airway maintenance, breathing support, and circulation. When considering the need to perform CPR effectively in any medical emergency situation, practical training is fundamental [1].

The prevalence of medical emergencies and the incidence of such in dental office environments is showing an increase, potentially as a result of the larger populations of medically compromised patients, as well as elderly patients; this suggests that there is a need for dental surgeons to demonstrate preparedness in the effective management of an emergency.

In this regard, it would be valuable to recognize that, regardless of dental surgeons being CPR-certified, they might not have the skillset or experience to carry out effective CPR. It may be that the professionals in charge would derive value from undergoing continuous practical training in this regard, as opposed to only focusing on theoretical learning [6,12].

Markedly, in the past, CPR refresher courses conducted on an annual basis have been suggested as being made available to dentists when deemed necessary [12]. This could also be applied in Saudi Arabia.

Further, it is recognized that emergency kits should be available in all dental offices and hospitals, with mock drills carried out regularly so as to ensure staff can manage instances of medical emergency. It is surprising to note that more than one-third of the subjects involved stated that, in their place of work, there was no emergency kit. Such a finding is well aligned with what has been established in other works [13,14,19,24].

However, the point should be raised that subjects may not be aware of the presence of emergency kits at their place of work; however, if this is the case and could explain the above finding, it would still be an unpleasing revelation.

It is recognized that practitioners should hold a good degree of knowledge in regards emergency kits and where they can be found. In mind of establishing further insight into emergency kits and their availability, subjects were questioned on the presence of particular emergency equipment in the kits.

When asked about which equipment is available in their clinics, the surveyed participants stated most commonly blood pressure monitors, disposable needles, oxygen apparatus and suction. This may be seen to correspond with what has been determined in other studies [5,12,13,14,24].

In contrast, however, the most commonly mentioned equipment highlighted, as not being available were the ECG monitor, laryngoscope, and IV cannulas. This provides further support for what was established in the work of Broadbent and Thomson [12]. Moreover, in a work carried out in Australia, the equipment and/or drugs cited as being least widely available included aromatic ammonia, pocket mask, and sphygmomanometer [5].

A basic emergency concept for a general practitioner is a concept seen to vary significantly from one authority to the next. Notably, however, throughout recent years, this pattern has been recognized as focused on limiting the items to a minimum in mind of common sense and safety, in addition, the value of a suitable medical history that is thorough and continuously updated cannot be overstated in consideration to emergencies and their prevention [5].

Regarding a basic emergency kit, most authorities make the following recommendations:

1. Adrenaline 1:1000.
2. An oxygen source and a positive pressure ventilation capacity.
3. A source of oral glucose.
4. Glyceryl trinitrate spray, specifically concerned for anginal episodes and any myocardial infarctions.
5. Injectable antihistamine [26,27].

There is also the potential to add further items depending on the expertise, type of practice and preference of the professional. Moreover, medical aid proximity could further affect the choice of emergency kits: those that are pre-packed are available in the market but tend to be overstocked when considering a dental practitioner's requirements, and therefore could potentially be misleading as it gives a false sense of security [5].

Almost 50% of the present work's subject sample emphasized a lack of skills and experience in the use of emergency equipment. When considering the study by Alhamad., *et al.* this percentage is recognized as much higher, with the researchers establishing that approximately 30% considered themselves to be lacking in the suitable skills required in the use of emergency equipment [14].

In a comparable vein, it was stated by Atherton., *et al.* that only one-fifth of all British practitioners demonstrate some degree of uncertainty in regards their emergency management abilities [19]. In the KSA, dental professionals come from a wide range of educational backgrounds. When taking into account the fact that the country has available more than 25 different educational institutions providing dental education, in addition to the international dental schools available, which offer different curricula, practitioners are very likely going to deal with emergencies depending on their experience and educational backgrounds.

The self-perceptions of participants regarding particular emergency cases underwent evaluation. The most common conditions cited as easily managed by the sample included asthmatic attacks, hypoglycemia and syncope, with these findings recognized as aligned with those garnered by Marks., *et al* [25]. This may be further rationalized when recognizing asthma and diabetes as being prevalent medical conditions in Saudi Arabia, with the majority of dentists therefore well positioned in handling such circumstances [28,29].

Syncope is not seen to be life threatening, meaning the dental professionals were more likely to view themselves as able to deal with patients experiencing fainting.

In contrast, demonstrating some similarity with previous reports, angina, anaphylactic shock, cardiac arrest and myocardial infarction were seen to be the most widely identified conditions noted by the subjects as areas in which they felt incapable of treating or providing initial management [2,25,30]. Such findings need to be afforded consideration owing to the fact that, when drawing a contrast with other emergencies, all of these conditions may be significantly life-threatening.

When turning attention to emergency skills, most of the subjects in this study, totaling 86.1%, suggested that they would be able to deal with cardiopulmonary resuscitation. This statement was made despite almost two-thirds of the subjects stating a lack of confidence when it comes to managing myocardial infarction or cardiac arrest. This finding is seen to be aligned with the report presented by Gridler and Smith [30].

It is possible that CPR, as a technical procedure, is more easily managed when compared with the identification and management of the condition overall. Furthermore, a large portion (78%) of the sample stated that they would be able to take blood pressure, with more than half (60%) also stating that they were able to use a self-inflating bag. Importantly, however, only half of the subjects stated that they believed they could administer an intramuscular injection.



When it came to addressing which skills could not be carried out by the participants, the most commonly cited were cricothyroidotomy, IV butterfly insertion, IV drug insertion, and oral tube insertion. It should be recognized as concerning that a number of dental professionals feel unable to insert a tube into the oral airways.

It is also of note that a significant number of the participants were not comfortable in carrying out a cricothyroidotomy, which is recognized as being a complex procedure to perform, even by experts, with emergency situations making the process more complicated. However, whether or not such a skill should be taught to dental practitioners is still an issue up for debate [30].

In regards the utilization of emergency equipment, a lack of training was cited as being the main reason (46.2%) explaining why dentists hold the view that they are not able to deal with particular emergency situations. This suggests that there is a need for ongoing practical training specifically focused on dental practitioners.

On the other hand, (46%) of the subjects stated that they do complete emergency drills in their place of work. Despite the fact that this is not recognized as optimal, this is much better than what has been established in a research conducted previously, with only a small minority (6%) of the participants stating that mock emergency drills were carried out [22]. It is also important to mention that 38% of the respondents did not provide answers to this part of the questionnaire asking why dentists hold the view that they are not able to deal with particular emergency situations.

There has been the suggestion that dental professionals ensure all dental office personnel undergo appropriate training in regards emergencies, and their recognition and management. This needs to encompass regular emergency drills to be carried out in the workplace. Moreover, office staff should be given particular tasks to ensure that, if an emergency arises, everyone is aware of their role to play and what they need to do [22,31].

Currently, dentistry in Saudi Arabia is experiencing tremendous improvements across all levels and specialties. To ensure that the population centered care is part of the improvement; stakeholders must consider the medical emergency field and pay special attention to the practical training for dental offices personnel. The researchers of the present study believe that it is critical to highlight the medical emergency education with specific attention to practical and evidence-based training at undergraduate, postgraduate and continues education levels [23].

### Conclusion

Within the limitation of the present study, the following conclusions can be drawn:

1. The majority of the respondents had undergone CPR training with two third of them doing that on a two-year basis.
2. More than half of participants do not do periodic emergency mock drills.
3. More than one third of the sample said that they don't have emergency kits in their practices.
4. Almost half of the participated dentists stated that they are not familiar with the use of emergency resources in their practices.
5. The present study's findings show that there is a need for dentists to undergo practical training in emergency management.
6. Basic life support skills are important and need to be regularly revised; additionally, dentists need to learn and be competent in carrying out the actions required of them should medical emergencies arise.

### Acknowledgements

Authors would like to thank Mr. Nasser Al Moflehi, for his statistical contribution.

### Conflict of Interest

Authors have no conflict of interest to declare.

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