Araştırma Makalesi – Original Article

Medical Emergency Management in Dental Clinics: A Cross-Sectional Assessment of Knowledge, Attitudes, and Practices*

Diş Hekimliği Kliniklerinde Tıbbi Acil Durum Yönetimi: Bilgi, Tutum ve Uygulamaların Kesitsel Bir Değerlendirmesi

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ABSTRACT

Objective: This study aimed to assess dentists' knowledge, attitudes, practices, and self-confidence regarding medical emergencies, as well as to determine the frequency, types, and severity of such events encountered in dental settings. Additionally, the availability of essential emergency equipment and drugs, dentists' preparedness levels, and prior training experiences were evaluated.
Methods: A cross-sectional survey was conducted among 120 dentists using a previously validated and reliable questionnaire. The survey assessed demographic characteristics, clinical experience, prior encounters with medical emergencies, availability of equipment, and perceived self-efficacy. Frequency analyses and association tests were employed to examine the relationships between encountering medical emergencies, training background, and equipment availability.
Results: Within the past 12 months, hypoglycemia (32.5%) emerged as the most frequently reported emergency, surpassing vasovagal syncope (25.8%), which is commonly emphasized in the literature. Dentists who reported serious medical emergencies also indicated higher levels of equipment availability and prior exposure to minor emergencies. Among those who had witnessed cardiac arrest, the majority (80%) had not received postgraduate training, and none (100%) had used a defibrillator. Oxygen use (27.5%) showed a strong association with prior training during undergraduate education.
Conclusion: The findings highlight significant variability in emergency preparedness among dentists. Continuous, hands-on training and standardized emergency protocols are crucial for enhancing clinical competence and improving patient safety in dental practice.

Keywords: Medical emergencies, Emergency medical services, Education, Dental professional competence

ÖZ

Amaç: Bu çalışmanın amacı, diş hekimlerinin tıbbi acil durumlara ilişkin bilgi, tutum, uygulama ve öz güven düzeylerini değerlendirmek; diş hekimliği kliniklerinde karşılaşılan acil durumların sıklığını, türlerini ve ciddiyetini belirlemektir. Ayrıca hekimler arasında hazırlık düzeyleri, gerekli acil durum ekipman ve ilaçlarının bulunabilirliği ile eğitim geçmişleri incelenmiştir.
Gereç ve Yöntem: Geçerliliği ve güvenilirliği daha önce kanıtlanmış bir anket formu kullanılarak 120 diş hekimi arasında kesitsel bir araştırma yürütülmüştür. Anket; katılımcıların demografik özelliklerini, klinik deneyimlerini, geçmiş acil durum deneyimlerini, mevcut ekipman varlığını ve algılanan öz yeterlilik düzeylerini değerlendirmiştir. Acil durumlarla karşılaşma ile eğitim geçmişi veya ekipman bulunabilirliği arasındaki ilişkiler sıklık analizleri ve istatistiksel ilişki testleri ile incelenmiştir.
Bulgular: Son 12 ayda en sık bildirilen acil durum, literatürde yaygın olarak görülen vazovagal senkopun (%25,8) önüne geçerek hipoglisemi (%32,5) olmuştur. Ciddi acil durumlara tanık olan diş hekimleri, daha yüksek düzeyde ekipman bulunabilirliği ve daha önce küçük acil durumlara maruziyet bildirmiştir. Kalp durması vakasına tanık olanların önemli bir kısmı (%80) lisansüstü eğitim almamış, tamamı (%100) defibrilatör kullanmamıştır. Oksijen kullanım oranı (%27,5), özellikle lisans eğitimi sırasında alınan önceki eğitimle güçlü bir ilişki göstermiştir.
Sonuç: Bulgular, diş hekimleri arasında acil durum hazırlığında önemli farklılıklar olduğunu ortaya koymaktadır. Sürekli, uygulamalı eğitim ve standart acil durum protokolleri, klinik yeterliliği artırmak ve diş hekimliği pratiğinde hasta güvenliğini artırmak için olmazsa olmazdır.

Anahtar kelimeler: Tıbbi Acil Durumlar, Acil Tıbbi Hizmetler, Eğitim, Diş Hekimliği Mesleki Yeterliliği

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Introduction

Dentistry is a clinical discipline in which patients are at risk of medical emergencies due to the widespread application of invasive interventions. Such interventions include injection, surgical flap, devitalization, and tooth extraction. As indicated by extant literature, the risk is increased by stress caused by dental treatment, an ageing population and increasing systemic diseases.[1–3] While medical emergencies in dental practice are not generally life-threatening, it is imperative that physicians possess the requisite knowledge and skills for the diagnosis and management of such conditions, as they can lead to potentially serious complications.[4–7] This is a fundamental responsibility to minimise the risk of morbidity and mortality and to ensure that the patient maintains life functions until emergency medical assistance arrives.

The extant literature on the subject is inconclusive, with some studies indicating that it is common, while others state that it is rare or that there is an insufficient body of research to draw conclusions.[4–6,8] The effective management of such conditions is possible through the implementation of a multifaceted approach, encompassing meticulous patient anamnesis, comprehensive general health status evaluation, and a robust theoretical foundation.[7]

Recent literature has drawn attention to the prevalence of dentists who have not received basic life support training.[4,9–12] This situation has been identified as a significant contributing factor to their perceived inadequacy in recognising and responding to dental emergencies.[6] While the majority of complications are mild, the rate of serious cases cannot be disregarded. It is imperative that adequate patient evaluation is undertaken, that appropriate drugs and equipment are supplied, and that clinical personnel are regularly trained.[13–15] Current training models have been superseded by more effective methods, such as regular simulation applications and pre-prepared practical training. These novel approaches have been incorporated into training programmes with a view to preventing the use of incorrect drugs or equipment. Consequently, more efficacious approaches, such as regular simulation exercises and meticulously designed practical training sessions, have been incorporated into training programmes.[16–19]

In this context, it is imperative to comprehensively evaluate the knowledge, skills and preparedness of dentists with regard to the management of medical emergencies. The objective of this study is to evaluate the frequency of medical emergencies encountered in dental practice, the perceived competence of dentists to manage these situations and their training experiences.

Materials and Methods

The study protocol was reviewed and approved by the Research Ethics Committee of the Faculty of Dentistry, Atatürk University, on 25 August 2023 (Approval No. 08/23/44). Before participation, all subjects were informed about the purpose of the study, and verbal consent was obtained after they were assured of the confidentiality of the collected data.

In the course of this study, a questionnaire was administered to a cohort of practising dentists over a period of seven months, from December 2024 to June 2025. The questionnaire was conducted in the physical environment through printed forms, consisted of a total of 33 questions divided into seven sections, and could be completed in less than four minutes on average.

Demographic Data

A comprehensive set of demographic data was collated, encompassing various parameters such as age, gender, specialty, and the duration of the participants' tenure in the office. Participants were invited to categorise their practice as follows: a single practice, a group of offices comprising solely other dentists, a

group of offices with a specialty other than dentistry, a practice located within a hospital or a practice affiliated with a health centre.

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Emergency Situations

Participants were asked whether they had experienced a minor medical problem (e.g. a vasovagal reaction, orthostatic hypotension or hypoglycaemia) or a serious medical emergency (e.g. an acute asthma attack, seizure, allergic reaction, inhalation or ingestion of foreign bodies, acute coronary syndrome or cardiac arrest) in their office throughout their careers. In addition, the following questions were posed: the location of their residence and the frequency with which each occurrence transpired. Furthermore, in instances of foreign body inhalation, subjects were requested to furnish details regarding the nature of the inhaled object. In cases of foreign body ingestion, subjects were asked to provide information about the ingested foreign body.

Emergency equipment available in the dental office

The participants were asked to indicate whether there were five basic emergency response items in their practice. These items were: oxygen, defibrillator, blood pressure meter, artificial respiration equipment and medications used in emergency management. Furthermore, information has been obtained on the utilisation of such equipment or drugs in the past.

Education

The participants were invited to respond to a series of questions regarding their participation in training programmes designed to equip them with the necessary skills to manage medical emergencies during and after their initial dentistry training. In the event that they had undergone such training, the participants were asked to specify the programme in which they had participated, along with the date on which the training was completed. Furthermore, the necessity of supplementary training in the management of medical emergencies has been called into question, as has the existence of protocol sheets for such situations within their practice.

Evaluation of self-efficacy in the management of medical emergencies

Participants were invited to indicate their level of confidence in their ability to cope with a minor medical problem (e.g. vasovagal response, orthostatic hypotension, hypoglycaemia) or a serious medical emergency (e.g. acute asthma attack, seizures, inhalation or ingestion of foreign bodies, hyperventilation crisis, hypertensive crisis, severe allergic reaction, paralysis, acute coronary syndrome) or cardiac arrest using a 5-point Likert scale (fully capable, sufficiently skilled, not enough, not capable at all, no answer). The majority of the questions were of a closed-ended nature, with the intention of facilitating more straightforward analysis. The responses to the questionnaires were submitted anonymously, and the resulting data were collectively evaluated.

Statistical Analysis

The statistical analysis of the data was conducted using IBM SPSS Statistics 25.0 (IBM Corp., Armonk, NY, USA), used under license from our university. In descriptive statistics, participant demographics (age, gender, specialty, work experience, practice setting) and categorical variables such as medical emergency experience, equipment availability, and educational background were summarized using frequency (n) and percentage (%). Measures of central tendency and dispersion such as mean and standard deviation (SD) were reported

for continuous variables (e.g., mean age). For correlational analyses, the Pearson chi-square tests were used to assess the relationships between categorical variables such as emergency encounters (minor, major, cardiac arrest) and dentists' educational status (undergraduate, graduate, no training), equipment availability (yes/no), and practice background. The level of significance was set at $p < 0.05$.

Results

Demographic Data

Table 1 presents the demographic profile of participants (n=120). The sample comprised 60% female (n=72) and 40% male (n=48) dental professionals, with a mean age of 27.8 years (SD=3.07, range=23-47).

Table 1. Participant Demographic Characteristics

Variable	Category	n	%
Gender	Female	72	60.0
	Male	48	40.0
Work Experience	1-3 years	77	64.2
	4-6 years	32	26.7
	7+ years	11	9.2
Practice Setting	Individual	55	45.8
	Group (dental)	63	52.5
	Other	2	1.7
Speciality	Periodontology	33	27.5
	Oral surgery	16	13.3
	Orthodontics	7	5.8
	Prosthodontics	18	15.0
	Endodontics	13	10.8
	Pedodontics	13	10.8
	Restorative Dentistry	16	13.3
	Oral Diagnostics and Radiology	4	3.3

The rates of encountering minor, major emergencies and cardiac arrest, as well as the subjects' educational status, are shown in ***Table 2***. Furthermore, 95.8 % of the participants reported that they had emergency equipment. In response to the question regarding the availability of equipment in the office, the data indicated that 56.7% of the participants had access to oxygen, 55% had a blood pressure meter, 50.8% had emergency drugs, 16.7% had a defibrillator, and 18.3% had artificial ventilation equipment. The study revealed that 27.5% of the participants had previously used oxygen, while 72.5% had never used oxygen.

Table 2. Emergency Experiences and Training History

Variable		% (n)
Experienced Emergencies	Minor (vasovagal syncope, hypoglycemia or orthostatic hypotension)	76.7 (92)
	Major (asthma attack, seizures, allergies, inhalation of foreign bodies, acute coronary syndrome)	30.8 (37)
	Cardiac arrest witnessed	8.3 (10)
Training Received	During dental school	55.8 (67)
	Postgraduate training	45.0 (54)
	No formal training	44.2 (53)
	Training necessity	48.3 (58)

The 33-item survey was subjected to statistical analysis to determine whether any significant relationships existed between participant responses. A statistically significant relationship was found only between encountering a serious medical emergency at work and witnessing a cardiac arrest ($\chi^2 = 7.847$, df = 1, $p = 0.005$). No significant relationships were observed between other variable pairs.

When questioned about the timing of the previous oxygen change, 66.9% of respondents indicated that they were unaware of the specific date, while 30.5% stated that the oxygen had been updated within the past five years. When participants were asked to identify the type of defibrillator available, 69.5% responded with 'I do not know.' Similarly, regarding the last replacement of oxygen supplies, 66.9% reported uncertainty, while an additional 30.5% provided the same response. When asked whether they had ever administered emergency medication other than glucose, 42.9% of participants responded affirmatively. In response to a survey question regarding emergency medications previously utilized in their practice, participants reported the following: epinephrine 34.2%, nitroglycerin 10.0%, other unspecified medications 10.8%, corticosteroids 5.0%, glucagon 4.2%, and β_2-agonists 1.7%. The survey revealed that 61.6% of participants reported having protocol sheets for medical emergency management in their practice. Regarding recency of training, responses were distributed as follows: 8.3% had received training within the past year, 29.2% between 1-4 years prior, 33.3% more than 4 years ago, and 29.2% reported no prior training in medical emergency management. Table 3 presents the frequency distribution of participants' self-reported efficacy in managing medical emergencies.

Table 3. Self-Efficacy in Emergency Management

Emergency Type	Fully Capable %(n)	Capable Enough % (n)	Not Capable % (n)	Not able at all % (n)	No answer % (n)
Minor emergencies	2.5 (3)	30.0 (36)	41.7 (50)	23.3 (28)	2.5(3)
Major emergencies	-	20.0 (24)	30.8 (37)	43.3 (52)	5.8 (7)
Cardiac arrest	0.8 (1)	2.5 (3)	26.7 (32)	62.5 (75)	7.5(9)

Table 4. Multiple Response Analysis of Emergency Event Frequencies During the Previous 12-Month Period

Option	%	n
Hypoglycemia	32.5	39
Vasovagal syncope	25.8	31
Orthostatic hypotension	19.2	23
Ingestion of foreign bodies	10.8	13
Inhalation of foreign body	1.7	2
Hyperventilation crisis	6.7	8
Hypertensive crisis	5.0	6
Asthma attack	3.3	4
Minor allergic reaction	6.7	8
Major allergic reaction	2.5	3
Convulsions	8.3	10
Other	2.5	3

Ten percent of participants reported incidents of ingested dental objects, including post keys, posts, burs, discs, matrix bands, and healing caps. The frequencies and patterns of medical emergencies encountered in the previous 12 months were explored through multiple response analysis, as presented in ***Table 4***. Hypoglycemia emerged as the most commonly reported event, followed by vasovagal syncope and orthostatic hypotension. To further investigate the contextual factors related to emergency preparedness and experience, a series of association analyses were conducted. ***Table 5*** illustrates the relationship between encountering serious medical emergencies and other key study variables, indicating that individuals who reported such events also demonstrated higher rates of prior exposure to minor emergencies and greater access to emergency equipment. ***Table 6*** examines the association between having witnessed a cardiac arrest and factors such as post-graduate training and defibrillator availability, revealing notable gaps in both training and practical exposure. Additionally, ***Table 7*** presents the association between oxygen use in clinical settings and educational background, showing that participants who had received formal training during or after dental school were more likely to have used oxygen in real-life scenarios. These findings suggest that

both educational experience and clinical exposure significantly influence the preparedness and response capabilities of dental professionals when faced with medical emergencies.

Table 5. Association Analysis of Serious Medical Emergency Encounters with Other Study Variables

Variable	Serious Medical Emergency Encounters (n=37)	No Serious Medical Emergency Encounters (n=83)
Minor emergencies	Yes: 18.9%	Yes: 3.6%
	No: 81.1%	No: 96.4%
Emergency Equipment Availability	Yes: 94.6%	Yes: 96.4%
	No: 5.4%	No: 3.6%
Undergraduate Education	Yes: 62.2%	Yes: 53.0%
	No: 37.8%	No: 47.0%
Postgraduate Education	Yes: 40.5%	Yes: 47.0%
	No: 59.5%	No: 53.0%
Training necessity	Yes: 54.1%	Yes: 45.8%
	No: 45.9%	No: 54.2%
Emergency Event Frequencies During the Previous 12-Month Period	Yes: 45.9%	Yes: 44.6%
	No: 54.1%	No: 54.2%

Table 6. Association Analysis of Cardiac Arrest Witnessed with Other Study Variables

Variable	Cardiac Arrest Witnessed (n=10)	Not Cardiac Arrest Witnessed (n=110)
Emergency Equipment Availability	Yes: 100.0%	Yes: 95.5%
		No: 4.5%
Defibrillator Use	Yes: 0.0%	Yes: 1.8%
	No: 100.0%	No: 98.2%
Undergraduate Education	Yes: 50.0%	Yes: 56.4%
	No: 50.0%	No: 43.6%
Postgraduate Education	Yes: 20.0%	Yes: 47.3%
	No: 80.0%	No: 52.7%
Training necessity	Yes: 40.0%	Yes: 49.1%
	No: 60.0%	No: 50.9%
Emergency Event Frequencies During the Previous 12-Month Period	Yes: 50.0%	Yes: 44.5%
	No: 50.0%	No: 55.5%

Table 7. Association Analysis Between Oxygen Use Other Study Variables

Variable	Administered Oxygen (n=33)	No Oxygen Use (n=87)
Undergraduate Education	Yes: 51.5%	Yes: 57.5%
	No: 48.5%	No: 42.5%
Postgraduate Education	Yes: 54.5%	Yes: 41.4%
	No: 45.5%	No: 58.6%
Training necessity	Yes: 36.4%	Yes: 52.9%
	No: 63.6%	No: 47.1%
Emergency Event Frequencies During the Previous 12-Month Period	Yes: 45.5%	Yes: 44.8%
	No: 54.5%	No: 55.1%

Discussion

The objective of this study was to evaluate dentists' knowledge, attitudes, practices, and confidence levels regarding medical emergencies. In addition, the study sought to ascertain the frequency of emergencies encountered in clinical practice and the dentists' capacity to respond to these situations. The findings indicate that a significant proportion of participants have encountered both minor and serious medical emergencies and possess the necessary equipment to respond to such events. The findings of the study indicated that dentists with significant experience in emergency situations also exhibited a higher frequency of minor events and had undergone more undergraduate training in this particular group. Although the number of individuals who had observed life-threatening situations, such as cardiac arrest, was limited, it is noteworthy that the majority of this group had not undergone postgraduate training. Furthermore, participants who had

used emergency equipment such as oxygen had higher levels of both theoretical and practical training and felt more competent in emergency management. The findings demonstrate that the availability of training and equipment has a direct impact on practical response capacity and that continuous professional development plays a critical role in enhancing clinical competence in this area.

In the present study, 76.7% of participants experienced minor emergencies. Hypoglycaemia was reported as the most common emergency in the last 12 months. Vasovagal syncope was reported as the second most common emergency. However, research suggests that vasovagal syncope is the most common medical emergency encountered in dental practice. A national study conducted in Italy revealed that 65.2% of dentists reported having encountered at least one emergency during their professional careers. The most prevalent of these was vasovagal syncope, which occurred in 20% of cases.[20] Furthermore, syncope was identified as the most prevalent emergency condition in the United Kingdom, France, Belgium, and Germany.[21–23] In Brazil, presyncope and orthostatic hypotension were the most prevalent,[24] while in New Zealand, vasovagal events were reported at an average rate of 6.9 per 10,000 in patients receiving local anaesthesia or sedation.[25] The most prevalent emergency in the present study was reported as hypoglycaemia, which differs from the vasovagal syncope that is frequently documented in the extant literature.

The elevated incidence of hypoglycaemia observed in this study can be attributed to the restricted timeframe of minor emergencies experienced within the previous 12 months. The management of hypoglycaemia generally necessitates more concrete interventions (e.g., oral glucose administration). Consequently, it may have been more accurately documented by dentists as "experiencing an emergency." Alternatively, this may have been attributable to local factors, such as the regional prevalence of diabetes and the fasting of patients in clinical practice. Conversely, the misdiagnosis or underreporting of mild cases of vasovagal syncope, i.e. brief loss of consciousness or fainting, constitutes another possible explanation for this difference. This finding suggests that subjective perceptions and the clinical context may play a decisive role in both the diagnostic and reporting processes of medical emergencies.

Life-threatening conditions, including myocardial infarction, anaphylaxis, and cardiac arrest, categorised as major emergencies, occur at a significantly lower rate of 30.8%. A mere 8.3% of participants encountered cardiac arrest. According to the extant literature, a national survey conducted in Italy reported that only 7.1% of participating dentists experienced cardiac arrest.[22] In two surveys conducted in Australia, the incidence of cardiac arrest was estimated to affect one in thirteen dentists,[26] while the other estimated it to affect one in eleven.[27] These rates are consistent with the findings of our study.

In response to the question regarding the availability of emergency equipment, 95.8% of respondents indicated that they possessed such equipment. A mere 4.2% of participants reported not having it. As indicated by the extant literature, 84% of dentists in Germany reported having an emergency kit.[8] In France and Belgium, 18.7% of respondents reported having no emergency equipment.[22] In India, a survey revealed that more than 61% of dentists reported not having the necessary emergency equipment.[28] In New Zealand, a surprising 20% of respondents reported not having emergency kits.[29] In Iran, it was found that only four of the 12 necessary equipment and medication items (more than 50%) were available to dentists.[30] The findings of this study demonstrate that the availability of emergency equipment in our sample was significantly higher than that reported in the existing literature. This discrepancy may be attributable to the obsolescence of the referenced literature and variations in the health strategies employed by the respective nations. In the present study, 56.7% of the participants had access to oxygen. The study revealed that 27.5% of the participants had previously used oxygen, while 72.5% had never used oxygen. When questioned about the timing of the previous oxygen change, 66.9% of respondents indicated that they were unaware of the specific

date, while 30.5% stated that the oxygen had been updated within the past five years. In Australia, 63% of dentists have oxygen equipment, while in France and Belgium, 66.8% have oxygen tanks, though these are often outdated, with no replacement for more than five years[22]. The results obtained with the oxygen equipment are consistent with those reported in the literature. However, given these low rates, the importance of oxygen, which is critical to emergency equipment, must be considered.

In the present study, 16.7% of participants had a defibrillator. However, the extant literature indicates that only a small percentage of dentists in France and Belgium (7.7%) have one.[22] In Germany, 3% of respondents believe that very few dentists perform defibrillation.8 This phenomenon can be attributed to the prevailing perception that defibrillators are either unnecessary, expensive, or simply not a priority in healthcare settings.[22]

Furthermore, the survey revealed that 50.8% of participants had access to emergency drugs. When asked whether they had ever administered emergency medication other than glucose, 42.9% of participants responded in the affirmative. In response to a survey question regarding emergency medications previously used in their practice, participants reported the following: epinephrine (34.2%), nitroglycerin (10.0%), other unspecified medications (10.8%), corticosteroids (5.0%), glucagon (4.2%), and β_2-agonists (1.7%). Within India, oral glucose (82.2%) and adrenaline (65.8%) are the most commonly prescribed medications, while the availability of other essential medications is below 25%.[28] In Brazil, many dentists have never used emergency medications. While oral glucose is common, the availability of medications such as hydrocortisone, epinephrine, and atropine is low.[24] There is a discrepancy in the literature regarding the utilisation of emergency medications, which may be attributable to the fact that each clinic has its own unique standard procedure, or to dentists' reluctance to employ emergency medications.

The survey revealed that 55.8% of the participants received emergency training during their undergraduate studies, 45% had attended postgraduate training, and 42% had received no training at all. The data indicates that 8.3% of the participants had received training within the past year, 29.2% had received training between one and four years prior, 33.3% had received training more than four years ago, and 29.2% reported no prior training in medical emergency management. Furthermore, 48% of respondents reported a need for training. In France and Belgium, 57.1% of dentists reported receiving formal training during undergraduate studies, while 64.3% reported receiving postgraduate training; approximately one in ten reported no training in this field.

It was reported by approximately 40% of those with training that their last training was more than 4 years old.[22] In Brazil, 59.6% of participants had received CPR training, while 40% had never received any training. Furthermore, 70% of those trained had received only one training session since graduating.[24] A study conducted in Italy revealed that the majority of participants (98.6%) expressed a need to enhance their training and demonstrated an interest in theoretical and practical institutional courses.[31] In Gupta's study conducted in India, less than half of the dentists (42.1%) received practical training in medical emergency management during their undergraduate and graduate education.[28] In Gupta's current study, it was noted that knowledge, awareness, and confidence in treating medical emergencies increased with experience.[32] The findings of the training, which demonstrate congruence with the outcomes of our study, indicate the necessity for enhancements. It is recommended that training and workshops on the management of medical conditions be made compulsory at undergraduate and graduate levels. In contrast to the findings of our study, a New Zealand study revealed that 81.8% of participants reported receiving medical emergency training during their undergraduate education, with only 46.7% finding their training sufficient. Furthermore, 14.1% of participants reported feelings of inadequacy in regard to preparation for practical emergencies.[29] The vast majority of dentists (96.3%) reported being able to perform cardiopulmonary resuscitation (CPR).

However, 39.5% of respondents claimed that they lacked the competence to manage cardiac arrest. Furthermore, 88.7% of dentists requested further training in medical emergencies. The paucity of experience with emergency equipment and medication use, as well as the lack of access to emergency training, were cited as reasons for dentists' inability to manage certain emergencies.[21]

In Germany, the majority of dentists – 92%, to be precise – have participated in postgraduate emergency response training, with 68% of these attending more than once. Dentists who participated in multiple training sessions have reported a significant enhancement in their diagnostic and therapeutic competence in a range of conditions, including asthma, convulsions, cardiac arrest, acute coronary syndrome, hypertensive crisis, anaphylaxis, and stroke.[23] A study conducted in Australia found that the vast majority of participants (96%) expressed the opinion that dentists should possess the necessary competencies to perform cardiopulmonary resuscitation (CPR). Upon graduating, 55% of participants reported feeling competent in CPR, and 64% had attended postgraduate CPR courses.[27] The discrepancy in the rates of emergency preparedness training observed in our study may be attributable to the varying health policies that exist across different countries.

The present study evaluated the frequency with which dentists encountered medical emergencies and their capacity to respond to such situations, based on various variables. The findings indicated that dentists who encountered serious medical emergencies were also more likely to have minor emergency experience and emergency equipment. This finding suggests that levels of awareness and preparedness increase in parallel with the accumulation of clinical experience. Moreover, the observation that the majority of participants who had witnessed cardiac arrests lacked postgraduate training and had never used a defibrillator suggests a deficiency in the practical application of theoretical knowledge to interventions in life-threatening emergencies.

Moreover, the finding that a significant proportion of participants utilising oxygen received undergraduate or postgraduate training in emergency management underscores a substantial correlation between engagement in emergency response practice and educational attainment. The finding that these participants experienced a reduced sense of necessity for training in comparison to other groups lends further credence to the notion that practical experience fosters a sense of self-assurance. The findings of this study demonstrate that the mere transmission of theoretical knowledge is inadequate in itself; rather, continuous practical training is imperative for the development of clinical confidence and intervention competence.

The study's limitations can be attributed to two factors: firstly, the small sample size; and secondly, the single-centre nature of the study. New, comprehensive, national studies are required to address the vital importance of emergency response and competence, including dentists across a broader age range and practice area, at regular intervals.

Conclusion

Current literature highlights considerable variations and deficiencies in preparedness for medical emergencies across different countries, particularly concerning the availability of equipment and the frequency of ongoing training. While the majority of dentists feel adequately prepared to manage common emergencies, they often report a lack of confidence and practical competence in responding to rare and life-threatening situations. These discrepancies are especially evident in the utilisation of critical intervention equipment such as defibrillators, airway management devices, and medication administration systems.

In view of these findings, it is evident that the development of comprehensive strategies is imperative to enhance patient safety and service quality in dental practices. Firstly, it is essential to reinforce undergraduate and graduate-level dental education programmes with practical and ongoing training modules on medical emergency management. Programmes that incorporate theoretical knowledge,

simulations, hands-on training, and regular repetition have been shown to enhance skill retention. Secondly, it is imperative that every dental clinic is equipped with a comprehensive array of essential emergency equipment, that this equipment is maintained in optimal condition, and that all clinical staff are trained in its utilisation. Finally, it is recommended that national medical emergency recording systems be established and regularly updated. The implementation of such a system would facilitate the provision of more accurate and comprehensive data on the type and frequency of emergencies, thereby enabling evidence-based planning of training and preparedness strategies.

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Ethical Approval

Ethical approved by the Research Ethics Committee of the Faculty of Dentistry, Atatürk University on 25 August 2023 (Approval No. 08/23/44).

Author Contributions

Sema Nur Sevinç Gül: Supervision, analyses and interpretation, writing-review.

Alparslan Dilsiz: Concept, design, literature search, editing.

Edanur Diri: Data collection, literature search, materials.

İsmayıl Huseyinli: Data collection, references and fundings.

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