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Assessment of Basic Life Support and Emergency Preparedness in Pediatric Patients Among a Group of Turkish Dentists

Ozgul Carti Dorterler[1,a,*], Esma Bilge Sahin[2,b]

[1]*Department of Pediatric Dentistry, Faculty of Dentistry, Muğla Sıtkı Koçman University, Türkiye.*
[2]*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Muğla Sıtkı Koçman University, Türkiye.*
**Corresponding author*

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ABSTRACT

Objectives: This study aimed to evaluate Turkish dentists' awareness, knowledge, and preparedness regarding medical emergencies encountered during dental treatment in pediatric patients.

Materials and Methods: A cross-sectional survey was conducted among 158 dentists using a 20-item questionnaire. The questionnaire assessed demographic characteristics, types of medical emergencies experienced, availability of emergency equipment (e.g. Automated External Defibrillator (AED), pediatric emergency kits), and self-reported confidence in managing emergencies. The data were analyzed using descriptive statistics, as well as chi-square, Mann-Whitney U, and Kruskal-Wallis tests to examine associations between variables in both intergroup and intragroup analyses. Statistical significance was set at $p < 0.05$.

Results: Syncope (40%) was the most frequently reported emergency, followed by asthma attacks (10%) and hypoglycemia (10%). Only 14.6% of dentists knew how to use emergency kits, and 6.3% had access to an AED. Notably, 85.4% lacked pediatric Basic Life Support (BLS) training. Dentists expressed high confidence in managing syncope (mean score: 4.6/5) but low confidence in critical conditions like cardiac arrest (2.9/5). Significant associations were found between professional experience (>20 years) and emergency preparedness ($p < 0.05$).

Conclusions: The study highlights critical gaps in dentists' preparedness for pediatric medical emergencies, emphasizing the need for mandatory BLS training, age-specific emergency protocols, and improved access to life-saving equipment. These findings suggest the need for improvements in training and clinical preparedness.

Keywords: Automated External Defibrillator (AED), Basic Life Support (BLS), dentist tranining, emergency preparedness, pediatric dentistry, medical emergencies, pediatric dental emergencies.

Bir Grup Türk Diş Hekimi Arasında Pediatrik Hastalarda Temel Yaşam Desteği ve Acil Durum Hazırlığının Değerlendirilmesi

Araştırma Makalesi

Süreç

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ÖZ

Amaç: Bu çalışmanın amacı, Türk diş hekimlerinin çocuk hastalarda dental tedavi sırasında karşılaşılan tıbbi acil durumlara yönelik farkındalık, bilgi düzeyleri ve hazırlıklı olma durumlarını değerlendirmektir.

Gereç ve Yöntemler: Kesitsel tipteki bu araştırma, 158 diş hekimi ile yürütülmüş ve 20 maddelik bir anket uygulanmıştır. Anket; demografik özellikler, deneyimlenen tıbbi acil durum türleri, acil durum ekipmanlarının (ör. Otomatik Eksternal Defibrilatör, pediyatrik acil durum setleri) bulunabilirliği ve acil durumları yönetme konusundaki öz güven düzeylerini değerlendirmiştir. Veriler, tanımlayıcı istatistikler ile değişkenler arası ilişkileri incelemek için ki-kare, Mann Whitney U ve Kruskal Wallis ile grup içi ve gruplar arası analiz edilmiştir. İstatistiksel anlamlılık düzeyi $p < 0,05$ olarak belirlenmiştir.

Bulgular: Senkop (%40) en sık bildirilen acil durum olup, bunu astım atağı (%10) ve hipoglisemi (%10) izlemiştir. Diş hekimlerinin yalnızca %14,6'sı acil durum setlerini nasıl kullanacağını bilirken, %6,3'ünün otomatik eksternal defibrilatör erişimi mevcuttur. Ayrıca, katılımcıların %85,4'ünün pediyatrik temel yaşam desteği eğitimi bulunmamaktadır. Diş hekimleri senkop yönetiminde yüksek öz güven bildirirken (ortalama puan: 4,6/5), kardiyak arrest gibi kritik durumlarda öz güven düşüktür (2,9/5). Mesleki deneyimi 20 yıl üzerinde olan diş hekimlerinin acil durum hazırlıklılığı ile anlamlı ilişki bulunmuştur ($p < 0,05$).

Sonuçlar: Bu çalışma, diş hekimlerinin çocuk hastalarda tıbbi acil durumlara hazırlıklı olma durumunda önemli eksiklikler olduğunu ortaya koymakta olup, zorunlu temel yaşam desteği eğitimi, yaşa özgü acil durum protokolleri ve hayat kurtarıcı ekipmanlara erişimin artırılmasının gerekliliğini vurgulamaktadır. Bulgular, hasta güvenliğini artırmak amacıyla diş hekimliği eğitimi ve uygulamalarında politika değişikliklerini gerekli kılmaktadır.

***Anahtar Kelimeler*:** Acil durum hazırlığı, çocuk diş hekimliği, çocuk hastada dental acil durumlar, diş hekimliği eğitimi, medikal acil durumlar, Otomatik Eksternal Defibrilatör, Temel Yaşam Desteği.

[a] *ozgulcarti@mu.edu.tr* *0000-0002-8123-7629* [b] *esmasahin@mu.edu.tr* *0000-0002-4986-8068*

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Introduction

Despite the relatively low incidence of life-threatening events in dental practice, their potential seriousness does not lessen the critical need for all members of the dental team to be adequately trained and proficient in fundamental resuscitation techniques.[1] Various risk factors—such as emotional stress, general health conditions, medical treatments, and drug interactions—can lead to medical emergencies during dental procedures across all age groups.[2] Every dentist may, at some point, be involved in a medical emergency directly or indirectly related to dental treatment.[3] Dentists should be capable of diagnosing and managing the most common medical emergencies (e.g. syncope), and also be prepared to effectively respond to less frequent or even rare but potentially life-threatening emergencies, particularly those that may result from dental procedures.[4] Accurate diagnosis and the initiation of appropriate treatment require multiple competencies. A dentist must possess knowledge in pharmacology, anatomy, physiology, pathology, and clinical diagnosis.[5]

Children require special attention from dentists and other members of the dental team. In emergencies, particularly those involving respiratory or cardiac failure, appropriate and timely intervention significantly increases survival rates and the preservation of neurological function in children.[6] First aid procedures and drug administration must be tailored to the child's age and physical development. In younger age groups (<12 years), anxiety and dental phobia are more prominent risk factors for emergencies.[7] Treatments performed under general anesthesia or with intravenous or inhalation sedation can lead to emergencies in dental settings.[8] The most common medical emergencies in dentistry include vasovagal syncope, mild allergic reactions, cardiovascular-related incidents, respiratory problems, epilepsy, and diabetes complications.[9, 10] Since all drugs and agents used in dental practice are potential allergens, anaphylaxis may also occur as an emergency situation.[11] During dental procedures in small children, impatience and sudden movements increase the risk of aspiration of instruments or materials. Aspiration of a foreign object can cause airway obstruction, potentially resulting in death due to choking.[12] Knowledge of basic emergency equipment, its proper use, and appropriate dosages is essential for adequate emergency management in dental clinics.[3]

It is hypothesized that Turkish dentists have varying levels of knowledge and preparedness regarding medical emergencies in pediatric dental practice, with greater familiarity in managing common emergencies such as syncope compared to rare but life-threatening conditions.

The lack of systematic studies evaluating Turkish dentists' knowledge and preparedness levels in managing pediatric emergencies constitutes the primary motivation for this research. However, the fundamental scientific rationale for this study stems from: (a) the marked divergence of emergency management protocols from adult standards due to pediatric patients' anatomical/physiological differences, and (b) the potential patient safety implications of deficiencies in managing the most common dental emergencies in children (syncope, aspiration, anaphylaxis).

Materials and Methods

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee Approval in Medical Sciences Muğla Sıtkı Koçman University [Number: 57, Date:21/05/2024].

A prior power analysis was conducted using G*Power software (version X.X). Assuming an effect size of d = 0.5 (moderate), an alpha level of 0.05, and a desired power of 0.80 for independent t-tests comparing groups (e.g. dentists with and without recent BLS training), the minimum required sample size was calculated to be 128. The sample size of this study (n = 158) exceeds this requirement, indicating sufficient statistical power to detect moderate differences.

A 20-item questionnaire was developed based on a review of the current literature.[13-16] Prior to the main study, the questionnaire underwent a pilot test to assess the clarity of the questions, appropriateness of the response format, and the accuracy of the language used. This process led to the revision or elimination of certain items. To evaluate the reliability of the instrument, a test-retest method was conducted with 10 dentists from various age groups, genders, and professional settings, with a one-month interval between administrations. These dentists were not included in the main study.

The final version of the questionnaire was digitized using the Google Forms platform. With permission obtained from the Muğla Chamber of Dentists, the survey was distributed online via a WhatsApp group to dentists registered with the chamber. Participants were informed that the survey aimed to raise awareness and support self-assessment, and that participation was entirely voluntary. Dentists who proceeded to complete the questionnaire after reading the information were considered to have given informed consent.

The data collection was conducted over a 30-day period, between April 1 and April 30, 2024. The survey was distributed using a social media application (WhatsApp™ Messenger, Mountain View, CA), which allowed for direct delivery to potential participants via mobile devices. The invitation message, including a brief explanation of the study and a link to the online survey form, was sent to approximately 600 dentists who were registered with the Muğla Chamber of Dentists. This constituted the full list of members available through the Chamber's communication network at the time of data collection.

To enhance participation, two reminder messages were sent during the collection period—on the 10th and 20th days—to those who had not yet responded. Participation was voluntary, and responses were anonymized to ensure confidentiality. No incentives were offered for participation. All participants in this study were general dentists registered with the Muğla Chamber of Dentists.

The first section of the questionnaire collected demographic information about the participants,

including gender, age, workplace, and years of professional experience.

The second section aimed to assess the types of medical emergencies encountered by dentists in pediatric patients, their preparedness, and intervention practices. This section included questions on emergency experiences (e.g., syncope, asthma attacks), habits related to obtaining pre-treatment medical history, knowledge and availability of emergency kits and AEDs (Automated External Defibrillator), and critical decision-making practices such as discontinuing treatment or referring patients to the emergency department.

The third section was designed to evaluate participants' prior training in pediatric emergency care like BLS (Basic Life Support) and their self-efficacy in recognizing and managing critical conditions such as myocardial infarction, anaphylaxis, and hypertensive crises.

The final section of the questionnaire focused on identifying the number and types of medical emergencies (e.g. syncope, asthma attacks, hypo/hyperglycemia) encountered by the participants in pediatric patients over the past year. Based on the responses, the study aims to evaluate the medical emergencies encountered by dentists during dental treatment in pediatric patients, along with their corresponding levels of knowledge and awareness.

Participants rated their level of agreement regarding the ability to diagnose medical emergencies on an ordinal scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The conditions assessed included Syncope, Asthma Attack, Anaphylaxis, Airway Obstruction, Hypo/Hyperglycemia, Convulsion (Epilepsy), Cardiac Arrest, and Hypertensive Crisis. For each participant, a mean score was calculated based on the ratings given to the selected conditions. For instance, if a participant rated "Syncope," "Asthma Attack," and "Anaphylaxis" each with a score of 5, these conditions were recorded with a score of 5 in the analysis.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including frequencies and percentages, were used to summarize participants' demographics, emergency preparedness, and clinical experience. Inferential analyses involved Pearson's chi-square test for associations between categorical variables, particularly professional experience and preparedness indicators. When parametric assumptions were unmet, non-parametric tests—Mann-Whitney U for two-group comparisons and Kruskal-Wallis for multiple groups—were applied to analyze ordinal data and variables violating normality. All statistical tests were conducted with a predetermined alpha level of 0.05, establishing the threshold for statistical significance.

Results

Among the 158 participants in the study, 115 (72.8%) were female and 43 (27.2%) were male. In terms of age distribution, 78 participants (49.4%) were between 23 and 35 years old, 76 (48.1%) were between 36 and 65 years old, and 4 participants (2.5 %) were over the age of 65. Regarding professional experience, 27 participants (17.1 %) had less than 5 years of experience, 42 (26.6 %) had between 5 and 10 years, 57 (36.1 %) had between 10 and 20 years, and 32 participants (20.3 %) had more than 20 years of professional experience. As detailed in Table 1, emergency experience was more common among female participants (59.1 %) compared to males (55.8 %), though this difference was not statistically significant (p = 0.452). While participants aged 36–65 demonstrated a slightly higher rate of emergency experience (63.2 %) compared to those aged 23–35 (53.8 %), the result did not reach statistical significance (p = 0.312). Notably, participants with 10–20 years of professional experience reported the highest exposure to emergencies (66.7 %), with a statistically significant difference across experience groups (p = 0.028). Percentages are provided with 95 % confidence intervals (CI) to improve interpretability.

Table 2 shows the distribution of pediatric emergency kit ownership across demographic and professional variables. Although no statistically significant associations were observed with gender (p = 0.217) or age groups (p = 0.089), professionals with more than 10 years of experience were more likely to have access to an emergency kit. The relationship between professional experience and kit ownership was significant (p = 0.015). As with Table 1, 95% confidence intervals (CI) are included to enhance the robustness of the findings.

According to Table 3, nearly half of all participants across gender and age groups reported never receiving BLS training (47–50 %). There were no statistically significant differences in BLS training status by gender (p = 0.82), age (p = 0.71), or professional experience (p = 0.54). Among those trained, the most common duration was "for 1 year," followed by "don't remember." These findings point to a general need for more structured and consistent BLS training in dental practice.

As shown in Table 4, syncope was the most frequently encountered emergency, accounting for 40.0 % of all reported cases. Less common emergencies included hyperventilation (3.3 %) and aspiration (6.7 %). To enhance interpretability, 95 % confidence intervals (CI) were calculated for each proportion using the Wilson score method, which provides more reliable estimates especially in small sample sizes (n = 30).

Table 5 presents participants' preparedness regarding emergency response tools and training. The proportion of individuals knowledgeable in emergency kit usage and AED availability was notably low, while nearly all participants (96.8%) reported routinely obtaining medical histories. To enhance the precision of these estimates, 95% confidence intervals (CI) were calculated for each "Yes" response proportion, providing a clearer understanding of data variability and generalizability.

Regarding the interruption of treatment due to an acute medical condition in pediatric patients, 24 participants (15.2%) reported having encountered such a situation, while 134 participants (84.8%) stated they had not experienced it. Among those who answered "yes," the

most commonly encountered medical emergencies were (multiple responses allowed): Syncope: 17 participants (70.8%), Undiagnosed emergencies: 4 participants (16.7%), Asthma attack: 3 participants (12.5%), Epilepsy/convulsion: 3 participants (12.5%), Hypo/hyperglycemia: 2 participants (8.3%), Other conditions (aspiration, hyperventilation, diabetes-related problems): 4 participants (16.7%)

A majority of those who responded "yes" (16 participants, 66.7%) indicated that they did not have a pediatric emergency kit in their clinics. Additionally, 14 participants (58.3%) reported not having received pediatric Basic Life Support (BLS) training after graduation. The most frequently diagnosed conditions among these participants were syncope (83.3%), asthma (50%), and airway obstruction (45.8%).

Interrupting pediatric dental treatments due to acute medical emergencies appears to be a relatively rare occurrence (15.2%). However, syncope (fainting) was identified as the most common issue in such cases. Notably, a significant proportion of participants reported being unprepared to manage these emergencies, as evidenced by the lack of emergency kits and training.

As shown in Table 6, participants reported the highest average confidence scores for managing syncope (4.6 ± 0.47), followed by asthma attacks (4.2 ± 0.60). In contrast, the lowest scores were observed for hypertensive crises (2.5 ± 0.91). To enhance the statistical reliability of the findings, each mean value is accompanied by its standard deviation (SD) and 95% confidence interval (CI), calculated based on a sample size of 158.

Table 1. Emergency experience according to age, gender, and professional experience

		Experienced Emergency (n)	Did Not Experience Emergency (n)	Experienced Emergency (%) [95% CI]	p value
Gender	female	68	47	59.1% (50.1 – 68.1%)	0.452
	male	24	19	55.8% (41.0 – 70.7%)	
Age	23 - 35	42	36	53.8 % (42.8 – 64.9%)	0.312
	36 - 65	48	28	63.2% (52.3 – 74.0%)	
	65 +	2	2	50.0% (1.0 – 99.0%)	
Professional experience	< 5 year	12	15	44.4% (25.7 – 63.2%)	0.028*
	5 - 10 year	22	20	52.4% (37.3 – 67.5%)	
	10 - 20 year	38	19	66.7% (54.4 – 78.9%)	
	20 < year	20	12	62.5% (45.7 – 79.3%)	

Note: 'Yes (%)' indicates the proportion of participants who have previously experienced a medical emergency. Percentages are presented with 95% confidence intervals (CI), calculated using the formula: $p \pm 1.96 \times \sqrt{[p(1-p)/n]}$.

Table 2. Having pediatric emergency kits based on age, gender, and professional experience

		Experienced Emergency (n)	Did Not Experience Emergency (n)	Experienced Emergency (%) [95% CI]	p value
Gender	female	52	63	45.2% (36.1 – 54.3%)	0.217
	male	22	21	51.2% (36.2 – 66.1%)	
Age	23-35	38	40	48.7% (37.6 – 59.8%)	0.089
	36 - 65	44	42	51.2% (40.6 – 61.7%)	
	65+	2	2	50.0% (1.0 – 99.0%)	
Professional experience	< 5 year	10	17	37.0% (18.8 – 55.3%)	0.015*
	5 - 10 year	18	24	42.9% (27.9 – 57.8%)	
	10 - 20 year	28	29	49.1% (36.1 – 62.1%)	
	20 < year	18	14	56.2% (39.1 – 73.4%)	

Note: 'Yes (%)' indicates the proportion of participants who reported having a pediatric emergency kit available. Percentages are presented with 95% confidence intervals (CI), calculated using the formula: $p \pm 1.96 \times \sqrt{[p(1-p)/n]}$.

Table 3. BLS training status based on age, gender, and professional experience

		Never (%)	For 1 year (%)	For 2 year (%)	Don't remember (%)	Other (%)	p value
Gender	Female (n = 112)	48.2	26.8	7.1	14.3	3.6	**0.82**
	Male (n = 46)	47.8	23.9	6.5	17.4	4.3	
Age	23-35 (n = 68)	44.1	29.4	8.8	13.2	4.4	**0.71**
	36-65 (n = 82)	50.0	22.0	4.9	17.1	6.1	
	65 + (n = 8)	50.0	12.5	0.0	37.5	0.0	
Professional experience	< 5 (n = 32)	40.6	31.3	9.4	12.5	6.3	**0.54**
	5 -10 Year (n = 54)	46.3	25.9	7.4	16.7	3.7	
	10 - 20 year (n = 48)	52.1	22.9	4.2	16.7	4.2	

Note: Values represent the percentage distribution of participants' BLS training durations across demographic and professional categories.

Table 4. Number of cases by emergency type

Emergency type	Total number of cases	% (95% CI)
Syncope	12	40.0% (24.6 – 57.7%)
Emergency (undiagnosed)	4	13.3% (5.3 – 29.7%)
Asthma attack	3	10.0% (3.5 – 25.6%)
Hypo/Hyperglycemia	3	10.0% (3.5 – 25.6%)
Other	3	10.0% (3.5 – 25.6%)
Epilepsy/Convulsion	2	6.7% (1.8 – 21.3%)
Aspiration	2	6.7% (1.8 – 21.3%)
Hyperventilation	1	3.3% (0.6 – 16.7%)
Total	**30**	**100%**

Note: Percentages and 95% confidence intervals (CI) are based on a total of 30 emergency cases, using the Wilson score interval method for binomial proportions. This approach provides more accurate CI estimates in small samples.

Table 5. Emergency Preparedness Variables – Kit Usage, AED Availability and Usage, Pediatric BLS Training, and Medical History Taking

Variable	Yes (n)	Yes (%) [95% CI]	Yes (%)	No (n)	No (%)	p value
Knowledge of Emergency Kit Usage	23	14.6% (9.1 – 20.1%)	14.6%	135	85.4%	0.015*
Availability of AED	10	6.3% (2.5 – 10.1%)	6.3%	148	93.7%	0.217
Knowledge of AED Usage	7	4.4% (1.2 – 7.6%)	4.4%	151	95.6%	0.089
Pediatric BLS Training	44	27.8% (20.9 – 34.8%)	27.8%	114	72.2%	0.54
Obtaining Medical History Before Treatment	153	96.8% (94.1 – 99.6%)	**96.8%**	5	3.2%	**<0.001***

Note: Percentages reflect the proportion of 'Yes' responses out of 158 participants, with 95% confidence intervals (CI) calculated as $p \pm 1.96 \times \sqrt{[p(1-p)/n]}$.

Table 6. Participants' self-confidence and knowledge levels in managing different medical emergencies

Medical emergency	Average Score (Mean ± SD)	Self-Confidence (%)	95% CI Upper	95% CI Lower
Syncope	4.6 ± 0.47	82%	4.67	4.53
Asthma attack	4.2 ± 0.60	68%	4.29	4.11
Hypo/hyperglycemia	3.8 ± 0.68	55%	3.91	3.69
Cardiac arrest	2.9 ± 0.81	30%	3.03	2.77
Hypertensive Crisis	2.5 ± 0.91	25%	2.64	2.36

Note: Mean scores are presented with their standard deviations (SD) and 95% confidence intervals (CI). CI was calculated using the formula: Mean ± 1.96 × (SD / √n), with a sample size of n = 158. These additions enhance the statistical validity by showing score dispersion and estimate precision.

Discussion

This study aimed to evaluate the prevalence of medical emergencies encountered during dental treatment in pediatric patients in Türkiye, as well as dentists' awareness and knowledge levels regarding these situations. It is one of the first comprehensive studies conducted in Türkiye on pediatric dental medical emergencies. The findings revealed that dentists demonstrated relatively high competence in managing minor emergencies (e.g., syncope); however, their confidence was notably lower when dealing with more complex conditions (e.g., cardiac arrest, anaphylaxis). Furthermore, the availability of essential emergency equipment, such as emergency kits and AEDs, as well as knowledge regarding their use, was found to be significantly limited.

In this study, syncope (40%) was identified as the most frequently reported emergency in pediatric patients. This finding aligns with the results of a study conducted by Amiri Bavandpour et al.[16] in the Netherlands, in which 69.5% of orthodontists reported encountering vasovagal syncope. Similarly, Čuković-Bagić et al.[15] reported that 83.6% of Croatian dentists had experience with syncope. Additional support for this observation comes from Laurent et al.,[17] who identified vasovagal syncope as the most common medical emergency in dental settings, and Varoni et al.,[18]who reported vasovagal syndrome as the predominant emergency in Italian dental practices. The recurrence of this event across multiple populations emphasizes the necessity for dentists—particularly those treating pediatric patients—to be well-prepared to manage such emergencies effectively, as delays or inadequate responses can lead to serious complications. These findings collectively confirm that syncope is the most common medical emergency encountered in dental clinics.Other Emergencies: The reported prevalence of asthma attacks (10%) and hypo/hyperglycemia (10%) in this study is comparable to the findings of Marks et al.[13] in Belgium, who reported asthma in 4.8% and diabetes-related emergencies in 8.4% of cases. However, the relatively high percentage of undiagnosed emergencies (13.3%) in the current study suggests that some dentists may struggle with identifying certain medical conditions.

A critical outcome of this study was the identification of a low level of preparedness among dentists in managing medical emergencies, especially pediatric cases. Only 14.6% of respondents reported being familiar with the use of emergency kits, and a mere 6.3% had access to an AED. These figures are significantly lower than those reported in the study by Amiri Bavandpour et al.[16], where 88.6% of Dutch orthodontists possessed an emergency kit and 39% had an AED. Similarly, Čuković-Bagić et al.[15] reported that only 6.4% of Croatian dentists had an AED, reinforcing concerns about limited access to life-saving equipment in dental clinics in Türkiye. This finding is corroborated by Laurent et al.,[17] who found that only 7.7% of dentists in France and Belgium had a defibrillator, suggesting a global deficiency in emergency equipment availability. In the Iranian context, Nemati and Hamedani.[19] emphasized the importance of personalized emergency kits tailored to clinical needs, rather than relying solely on generic government-issued recommendations. Their findings echo those of our study, where only 14.6 % of participants were familiar with the contents and usage of emergency kits, indicating the need for practical, context-specific training.

The knowledge gap extends beyond equipment availability. In this study, 85.4% of participants reported lacking training in emergency kit usage, and only 12.5% of dentists over the age of 65 had received BLS training. These findings are echoed by Marks et al.[13], who reported that 37.2% of dentists in Belgium had never received BLS training, and Čuković-Bagić et al.[15], who noted that 86.1% of Croatian dentists lacked pediatric BLS training. Sng et al.[20] similarly found that dental graduates often lacked confidence in managing emergencies due to limited experiential learning during their education. Varoni et al.[18] further emphasized that many dentists feel inadequately prepared to handle complex events like myocardial infarction or stroke, highlighting a persistent gap in emergency training within dental education curricula.

This study also revealed that dentists with 10–20 years of professional experience reported a higher incidence of emergencies, likely reflecting longer exposure to clinical scenarios. Interestingly, those with over 20 years of experience were more likely to own an emergency kit, suggesting that experience may enhance preparedness. This partially contrasts with findings by Varoni et al.,[18] who noted that more experienced dentists reported fewer emergencies, possibly due to superior preventive strategies. Such discrepancies may be attributed to variations in healthcare systems, educational backgrounds, or clinical settings between countries.

Encouragingly, nearly all participants (96.8%) reported routinely obtaining medical histories from pediatric patients, a commendable practice essential for identifying potential complications prior to treatment, as emphasized by Sng et al.[20]. However, as Al-Sebaei et al.[21] and Zachar et al.[22] also pointed out, this alone does not compensate for deficiencies in hands-on emergency preparedness or access to critical equipment, as real-time response capacity ultimately depends on both institutional readiness and individual clinical competency—areas still lacking in many dental settings.

Dentists in this study expressed high confidence in managing conditions such as syncope (82%) and asthma attacks (68%), but their confidence sharply declined in more severe scenarios such as cardiac arrest (30%) and hypertensive crises (25%). These results align with Amiri Bavandpour et al.,[16] who observed that orthodontists felt more confident managing vasovagal syncope (87.6%) and hyperventilation (94.3%) than myocardial infarction (53.3%). Furthermore, the current study showed that dentists who had received BLS training exhibited greater confidence in handling emergencies, a finding corroborated by Marks et al.[13]

Anxiety and dental phobia were also identified as significant contributors to the occurrence of emergencies,

particularly among children under 12. This aligns with the findings of Čuković-Bagić et al.,[15] who emphasized the heightened risk of aspiration in pediatric patients due to sudden, unpredictable movements. Additionally, it was noted that most commercially available emergency kits are designed for adults, often lacking appropriate pediatric dosages, further complicating emergency management in children.

It is important to note that the results of this study reflect the responses of a subset of dentists registered with the Muğla Chamber of Dentists, and therefore cannot be generalized to all dental practitioners in Türkiye. Moreover, detailed data regarding the specific qualifications of participants (e.g., pediatric dental specialists vs. general practitioners) were not collected. While the survey focused on pediatric emergency scenarios, the lack of information about how frequently participants treat children may affect the interpretation of their preparedness and clinical familiarity with pediatric-specific emergencies. Future studies should consider including such data to better contextualize the findings.

The study strongly indicates an urgent need for enhanced, pediatric-focused emergency training. Participants expressed a clear desire for further education in this area, echoing Varoni et al.,[18] who reported that 98.6% of Italian dentists supported expanded training programs. Recommendations from Sng et al.[20] to incorporate experiential learning—including simulation-based training and mandatory refresher courses—should be considered to improve dentists' clinical confidence and performance during emergencies. These measures would help bridge the gap between theoretical understanding and real-world application. Kishimoto et al.[23] highlighted the role of high-fidelity simulation in improving emergency response among dental teams. Their review advocates for structured simulation curricula integrated from dental school through private practice—a strategy that would directly address the deficiencies observed in our study population.

Despite its valuable insights, this study has several limitations. The sample size was relatively small (158 participants), and the reliance on self-reported data may introduce reporting bias. Additionally, the specific focus on pediatric emergencies may limit the generalizability of findings to broader dental populations. Additionally, as the study population consisted solely of general dentists rather than board-certified pediatric dental specialists, the findings should be interpreted within the context of general dental practice. The absence of data regarding the frequency of pediatric patient visits also limits the ability to assess participants' actual exposure to pediatric-specific clinical scenarios.Future studies should aim to include a more diverse sample and investigate practice settings across various regions to validate and expand upon these findings.

Conclusions

This study assessed the prevalence of medical emergencies occurring during dental treatment in pediatric patients and evaluated dentists' preparedness for such situations. The findings reveal significant gaps in both training and access to essential emergency equipment among dentists.

In light of these results, dental professionals may benefit from participating in regular, hands-on emergency response training programs, including education on pediatric basic life support and emergency drug administration. It is recommended that emergency drills using realistic scenarios be incorporated into professional development curricula. Dental clinics are also encouraged to maintain appropriate emergency kits and AEDs, with periodic training provided on their correct usage. Moreover, adapting emergency kits to include pediatric-specific dosages may enhance the effectiveness of emergency responses. Integrating pediatric life support training into dental school programs and supporting it through continuing education opportunities is advisable. Additionally, it is important to acknowledge that the data were derived from a self-reported survey, which may be subject to recall bias and social desirability bias. Moreover, the survey did not determine whether the low reported usage and availability of AEDs was due to a lack of awareness, insufficient infrastructure, or both. These factors should be considered when interpreting the findings.

Such measures have the potential to improve dentists' preparedness in managing emergencies and, in turn, contribute to enhanced patient safety in clinical dental practice. Given that the participants were not limited to pediatric dental specialists and that their frequency of treating pediatric patients was not assessed, the findings should be interpreted within the context of general dental practice.

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Conflicts of Interest Statement

The authors declare no conflicts of interest.

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