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Original article

Prevalence of Medical Emergencies and Dentists' Knowledge of Their Management in Dental Clinics in Libya: A Cross-Sectional Study

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Abstract
Medical emergencies (MEs) are sudden and critical health conditions that may threaten patients 'lives or well-being if not immediately managed. Libya exhibits a significant deficiency in data about the preparedness of dental professionals to deal with medical emergencies. To evaluate the frequency of medical emergencies occurring in dentistry clinics in Libya. A cross-sectional study was conducted over 12-24 weeks among 148 licensed dentists practicing in public and private clinics across five major Libyan cities. Data were collected using a structured, self-administered electronic questionnaire covering demographic characteristics, history and types of medical emergencies encountered, knowledge of emergency management (including syncope, hypoglycemia, anaphylaxis, and cardiac arrest), and training and preparedness indicators, such as the availability of emergency kits. Data were analyzed utilizing SPSS version 26. Among the 148 dentists, 60.8% had received undergraduate training in medical emergency management, but only 20.3% had received recent training within the last year, and 45.3% had attended post-graduate workshops. Basic Life Support was the most common training (43.2%). A total of 70.9% expressed the need for further training, and 53.4% reported the absence of emergency protocol sheets in their clinics. Regarding confidence, 66.2% were either extremely (32.4%) or very confident (33.8%) in interpreting vital signs. For minor emergencies, 62.9% felt fully capable (20.3%) or capable enough (42.6%), whereas confidence declined for serious emergencies, with 60.2% reporting being not capable enough (48.0%) or not able at all (12.2%). Concerning emergency drugs, only 10.8% were extremely confident, while 68.3% were somewhat (41.2%) or not so confident (27. 1%). Emergency equipment was lacking in 42.6% of clinics, and 68.9% of dentists reported encountering 1–2 medical emergencies over the past five years. Medical emergencies are relatively common in Libyan dental clinics. Despite the high prevalence of emergency exposure, there is a significant lack of knowledge, preparedness, and confidence among dentists. Strengthening undergraduate curricula, implementing mandatory continuing professional development programs, and promoting regular hands-on BLS and simulation-based training are important to enhance emergency readiness and improve patient safety in dental practice in Libya.
Keywords. *Medical Emergencies, Dental Clinics, Preparedness, Libya.*

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Introduction

Medical emergencies (MEs) are immediate and critical health conditions that may threaten patients' lives or well-being if not immediately managed [1]. Medical emergencies may occur in any healthcare environment, including dental practices. These incidents may occur before, during, or following treatment. Each year, fifty percent to seventy percent of dental practitioners meet at least one medical emergency, with more than a quarter experiencing various emergencies annually. The literature identifies syncope, presyncope, seizures, anaphylaxis, hypoglycemia, orthostatic hypotension, and hypertensive disorder as the most prevalent MEs. Cardiac arrest is uncommon in dentistry offices; however, physicians should be prepared to deal with different medical crises and, among other interventions, administer cardiopulmonary resuscitation (CPR) via an automated external defibrillator (AED) [3,4].

MEs are problems worldwide due to dentists' and dental students' concerns over emergency preparation, practical experience, lifesaving instruments, and staff accessibility. The incidence of medical emergencies increases due to the aging of the population of dental cases, the rising incidence of chronic illnesses, and the increased administration of medications along with their possible adverse effects. Advancing age represents a risk factor for MEs occurring during and following dental procedures. MEs are believed to arise more frequently in conjunction with local anesthetics, and a case's mental stress might increase the possibility of such situations. The incidence of emergency disorders can also be affected by factors like systemic diseases, particularly cardiovascular conditions [6,7].

Numerous studies have emphasized the necessity of enhancing dentists' training in medical emergencies through sharing in BLS courses and specialized programs [8]. It has been highlighted that Advanced Life Support/Advanced Cardiovascular Life Support (ALS/ACLS) courses should focus more on dental-related

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concerns, practical skill development, and Basic Life Support (BLS) proficiency. International standards recommend that dentists consistently participate in annual practical training for the identification and management of MEs, including scenarios for CPR and AED utilization [9]. Nogami et al. [3] suggested that dentists should periodically refresh their BLS knowledge and abilities, at a minimum every two years, and ideally more often. The European and American Heart Association (AHA) and Resuscitation Council (ERC) recommend that dentists participate in Basic Life Support & Advanced Life Support courses annually. Preparation for MEs in dental practice involves the training of medical workers, the availability of suitable equipment, and the accurate updating of cases' medical histories [10]. A carefully recorded medical history, involving allergies, current health status, chronic conditions, and concomitant treatments, may decrease the possibility of MEs [11].

In Libya, there is a significant decrease in data on the preparedness of dental practitioners to manage medical emergencies. The country's healthcare infrastructure has faced challenges due to ongoing conflict and economic instability, which may impact the accessibility of emergency equipment, drugs, and access to continuing professional education [12]. Therefore, it's crucial to evaluate the incidence of MEs encountered in dental clinics in Libya and to evaluate dentists' knowledge, preparedness, and confidence in managing these emergencies. Understanding these issues is important for informing dental education curricula, developing targeted continuing professional development (CPD) programs, and ensuring that dentists across the country are equipped to handle emergencies safely and effectively. The main aim of this research was to assess the incidence of MEs encountered in dental clinics in Libya and to evaluate dentists' knowledge, preparedness, and confidence in managing these emergencies.

Methods

Study Design

This cross-sectional research has been conducted among 148 dentists practicing in Libya over a period of 12-24 weeks.

Study Setting and Population

The target population included general dental specialists and dental practitioners working in private and public dental clinics across Libya. To ensure geographic representation, participants were recruited from five major cities: Zawiya, Tripoli, Benghazi, Misrata, and Sabha.

Eligibility criteria

The study included licensed dentists who were actively practicing in Libya, whether in the public or private sector, and who voluntarily consented to participate. Dental students and interns who had not yet begun independent clinical practice were excluded, as were dentists not engaged in clinical work during the study period. Additionally, any questionnaires that were incomplete or improperly filled were not considered.

Data collection

Data have been recorded utilizing a structured, self-administered questionnaire developed based on a comprehensive review of the literature and expert consultation in dental public health and emergency medicine. The questionnaire contained several sections. The 1st section collected demographic data, involving gender, age, years of experience, type of practice (private, governmental, or both), and specialty. The second section assessed training and preparedness, including undergraduate training in medical emergency management, attendance at post-graduate workshops, recent training within the last 12 months, type of emergency training received (such as Basic Life Support or other programs), perceived need for further training, and availability of written emergency protocols in the clinic. The third section explored the prevalence of medically compromised patients encountered in dental practice over recent years, including diseases like DM, hypertension, cardiovascular disease, thyroid disorders, respiratory diseases, neurological disorders, renal diseases, bleeding disorders, infectious diseases, and patients receiving chemotherapy or radiotherapy.

Participants were also asked to report the incidence of specific MEs encountered during the last five years, such as syncope, hypoglycemia, asthma attacks, seizures, anaphylaxis, airway obstruction, myocardial infarction, and other related emergencies. The final section assessed dentists' self-reported confidence levels in interpreting vital signs, managing minor medical emergencies (e.g., vasovagal syncope and hypoglycemia), managing serious medical emergencies (e.g., asthma, seizures, and anaphylaxis), and administering emergency drugs. Additional questions addressed how emergencies were managed in clinical practice and the accessibility of emergency equipment in dental offices. The questionnaire link was disseminated through professional networks and dental associations. Participation was voluntary, and an electronic informed

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consent form was provided before accessing the survey. No personal identifiers were collected to ensure anonymity and confidentiality.

Statistical Analysis

Data were collected and analyzed utilizing the Statistical Package for the Social Sciences (SPSS) version 26. Categorical variables have been presented as frequencies and percentages. Descriptive statistics have been utilized to summarize demographic characteristics, incidence of medical conditions and emergencies, training background, and confidence levels. A p-value below 0.05 was considered statistically significant where applicable.

Ethical Considerations

Ethical approval was obtained from an institutional ethics review board in Libya before data collection. Participation was voluntary, informed consent was recorded, and all collected data were stored securely. No identifying information was collected, ensuring the confidentiality and anonymity of participants.

Results

The studied group consisted of 148 participants, with the main age group being 35–40 years (30.4%), followed by 40–50 years (28.4%), while the smallest group was 30–35 years (17.6%). Females constituted most of the sample (58.8%) compared to males (41.2%). Most participants had 5–10 years of experience (40.5%), whereas only 6.1% had more than 20 years of experience. Regarding practice type, more than half (54.1%) worked in both private and government sectors, followed by private practice alone (27%) and government practice alone (18.2%). Most respondents were general dentists (75%), while specialists represented 24.3%, with no dental hygienists included in the study.

Table 1. Distribution of Demographic Data in the examined Group (n=148).

Demographic Data	N(%)
Age	
25 - 30	35 (23.6%)
30 - 35	26 (17.6%)
35 - 40	45 (30.4%)
40 - 50	42 (28.4%)
Gender	
Male	61 (41.2%)
Female	87 (58.8%)
Years of experience	
5 - 10	60 (40.5%)
10 - 15	37 (25%)
15 - 20	42 (28.4%)
Above 20	9 (6.1%)
Type of practice	
Private	40 (27%)
Government	27 (18.2%)
Both	80 (54.1%)
Other	1 (0.7%)
Specialty	
General dentist	111 (75%)
Specialist	36 (24.3%)
Dental hygienist	0 (0%)
Other	1 (0.7%)

Among the 148 participants, 60.8% had received training in the treatment of MEs during their undergraduate dental studies, while 39.2% had not. Less than half (45.3%) had attended workshops after graduation, and only 20.3% had received training within the last 12 months, indicating limited recent updates. Basic Life Support (43.2%) was the most common type of training reported, followed by other forms (35.8%), workshop programs (16.9%), and graduate diplomas (4.1%). A large majority (70.9%) expressed the need for further training, and 26.4% stated they sometimes need it. More than half of the participants (53.4%) reported not having protocol sheets for managing medical emergencies in their practice.

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Table 2. Distribution of Medical Emergency Training and Preparedness in the examined Group (n=148).

Variables	N (%)
Have you received training in the management of MEs during your dental surgery studies?	
Yes	90 (60.8%)
No	58 (39.2%)
Have you participated in any workshops on medical emergency training after completing your dental surgery studies?	
Yes	67 (45.3%)
No	81 (54.7%)
Have you received training in the treatment of MEs in the past twelve months?	
Yes	30 (20.3%)
No	118 (79.7%)
That/which medical emergencies training did you receive?	
BLS training	64 (43.2%)
Workshops program	25 (16.9%)
Graduate Diploma in Emergencies	6 (4.1%)
Other	53 (35.8%)
Do you think you need training on the treatment of MEs?	
Yes	105 (70.9%)
No	4 (2.7%)
Sometimes	39 (26.4%)
Other	0 (0%)
In your practice, do you have any protocol sheets on the treatment of MEs?	
Yes	38 (25.7%)
No	79 (53.4%)
Sometimes	30 (20.3%)
Other	1 (0.7%)

Among the 148 participants, most reported encountering medical problems in dental practice over the last 5–10 years, with 42.5% seeing 1–5 cases and 23% reporting more than 15 cases. Diabetes mellitus (76.4%) and hypertension/heart disease (62.2%) were the most frequently encountered conditions, with the majority reporting more than three cases. Gastrointestinal disorders (42.6%) and respiratory problems (32.4%) were also commonly reported in more than three cases. Thyroid disorders showed moderate distribution, while bleeding disorders and neurological conditions were mostly reported as 1–2 cases. Renal disorders and infectious diseases were less frequently encountered, with a considerable proportion reporting no cases. Drug interactions were the least reported condition (60.8% none). Additionally, a notable proportion of participants managed patients undergoing chemotherapy or radiotherapy, mainly reporting 1–2 cases (41.2%).

Among the 148 participants, most reported moderate confidence in emergency drugs, with 41.2% being somewhat confident and 27.1% not so confident, while only 10.8% were extremely confident. In managing medical emergencies, 39.2% handled cases themselves, whereas others sought help from physicians (23.6%), another dentist (20.3%), or assistants (16.9%). CPR courses were generally rated as average (33.8%) or good (31.7%), with fewer rating them as excellent (29.3%). Regarding emergency equipment, 42.6% reported not having adequate equipment in their clinics, and only 27.7% confirmed full availability. Over the last five years, most participants (68.9%) encountered 1–2 medical emergencies in their practice.

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Table 3. Distribution of Medical Problems in the Studied Group.

Variables	N (%)
Prevalence of medical problems in patients referred to the dental clinic over the last 5 - 10 years	
1 - 5	63 (42.5%)
5 - 10	41 (27.7%)
10 - 15	10 (6.8%)
More than 15	34 (23%)
Diabetes mellitus	
None	6 (4.1%)
Cases 1 - 2	29 (19.6%)
More than 3	113 (76.4%)
Hyperthyroidism	
None	50 (33.8%)
Cases 1 - 2	50 (33.8%)
More than 3	48 (32.4%)
Hypothyroidism	
None	51 (34.5%)
Cases 1 - 2	59 (39.9%)
More than 3	38 (25.7%)
Hypertension and heart disease	
None	13 (8.8%)
Cases 1 - 2	43 (29.1%)
More than 3	92 (62.2%)
Bleeding disorder	
None	50 (33.8%)
Cases 1 - 2	70 (47.3%)
More than 3	28 (18.9%)
Renal system disorder	
None	66 (44.6%)
Cases 1 - 2	54 (36.5%)
More than 3	28 (18.9%)
GIT disorder	
None	45 (30.4%)
Cases 1 - 2	40 (27.0%)
More than 3	63 (42.6%)
Neurological disorders like epilepsy or others	
None	49 (33.1%)
Cases 1 - 2	66 (44.6%)
More than 3	33 (22.3%)
Respiratory problems	
None	34 (23%)
Cases 1 - 2	66 (44.6%)
More than 3	48 (32.4%)
Infectious disease	
None	68 (45.9%)
Cases 1 - 2	46 (32.1%)
More than 3	34 (23.0%)
Drug interactions	
None	90 (60.8%)
Cases 1 - 2	37 (25.0%)
More than 3	21 (14.2%)
Chemotherapy or radiotherapy drugs	
None	50 (33.8%)
Cases 1 - 2	61 (41.2%)
More than 3	37 (25.0%)

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Table 4. Distribution of Confidence Levels in the Studied Group

Variables	N (%)
Confidence levels in interpreting the following vital signs	
Extremely confident	26 (17.6%)
Very confident	48 (32.4%)
Somewhat confident	50 (33.8%)
Not so confident	24 (16.2%)
Do you feel able to handle a minor medical illness in your practice (vasovagal reaction, hypoglycemia, or orthostatic hypotension)	
Fully capable	30 (20.3%)
Capable enough	63 (42.6%)
Not enough capable	48 (32.4%)
Not able at all	7 (4.7%)
Do you feel able to handle a serious medical emergency in your practice (seizures, asthma, allergies, inhalation of foreign bodies ...) outside of cardiac arrest	
Fully capable	18 (12.2%)
Capable enough	41 (27.7%)
Not enough capable	71 (48.0%)
Not able at all	18 (12.2%)

Among the 148 participants, most demonstrated high confidence in interpreting vital signs, with 32.4% reporting being very confident and 17.6% extremely confident, while 16.2% were not so confident. Regarding the management of minor medical emergencies, the majority felt capable, with 42.6% reporting being capable enough and 20.3% fully capable, although 32.4% felt not capable enough. Confidence levels declined in managing serious medical emergencies, as nearly half (48.0%) reported being not capable enough and 12.2% not able at all, while only 12.2% felt fully capable.

Table 5. Prevalence of Certain Medical Emergencies in the Studied Group.

Variables	N (%)
Confidence in emergency drugs	
Extremely confident	16 (10.8%)
Very confident	31 (20.9%)
Somewhat confident	61 (41.2%)
Not so confident	40 (27.1%)
How dentists managed MEs in dental clinics (How do you deal with emergencies in your clinic)	
Themselves	58 (39.2%)
Assistant	25 (16.9%)
Another dentist	30 (20.3%)
Help from a physician	35 (23.6%)
Dentists' opinions about the CRP courses they had attended	
Excellent	33 (29.3%)
Good	47 (31.7%)
Average	50 (33.8%)
Below average	18 (12.7%)
Emergency instrument accessible in the dental office. Do you have emergency equipment in your office	
Yes	41 (27.7%)
No	63 (42.6%)
Not all	44 (29.7%)
Incidence of certain MEs within a work period in the last 5 years, including Addisonian crisis, Airway obstruction, Anaphylaxis, angina-related chest pain, Asthma, orthostatic hypotension, hypoglycemia, seizure, unsuspecting bleeding, M.I, syncope, other	
1 - 2	102 (68.9%)
2 - 3	17 (11.5%)
More than 3	21 (14.2%)
Others	8 (5.4%)

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Discussion

The present cross-sectional study evaluated the incidence of MEs and dentists' knowledge and preparation for their management in dental clinics in Libya. The findings demonstrated that medical emergencies were relatively common in dental practice, with most (68.9%) dentists encountering at least one or two emergencies over the past five years. Medical emergencies included airway obstruction, anaphylaxis, angina on the left chest, asthma, orthostatic hypotension, hypoglycemia, seizure, unsuspecting bleeding, MI, and syncope. In agreement with our results, Alhamad et al., [13] reported on the incidence of MEs in dental clinics and the self-assessed competence of dentists in the Eastern Province of the Kingdom of Saudi Arabia (KSA). Approximately sixty-seven percent of the participants indicated that they have experienced a medical emergency. Vasovagal syncope was the predominant medical emergency reported by 53.1percent of dentists, followed by hypoglycemia at 44.8 percent, while just 5.5 percent had foreign body aspiration. Our results aligned with the research conducted by Abdulrahman et al. [14], which aimed to evaluate the accessibility and necessity of dental emergency equipment in university hospitals in Saudi Arabia. The prevalence of medical emergencies (MEs) has been observed to be significant, with 49.4 percent of dentists experiencing such events. The most prevalent medical emergency seen was vasovagal syncope (32.6 percent), followed by hypoglycemia (29.5 percent). Sin et al. [15] examined the occurrence of MEs in UK 1st-year dental care and assessed the training requirements for medical emergencies among UK primary dental care providers. The most prevalent MEs recorded were vasovagal syncope, non-specific collapse, and hypoglycemia. The research conducted by Osayande et al. [16] revealed that vasovagal syncope was the predominant emergency, accounting for sixty-six percent of all reported cases, followed by hypoglycemia and foreign bodies, respectively. A cross-sectional study conducted by Marks et al. [6] indicated that fewer than half of the participating dentists (43.6 percent) had experienced a medical emergency in their careers, with 34.3 percent reporting vasovagal syncope, 16.1 percent reporting seizures, and 8.4 percent reporting incidents of hyperglycemia or hypoglycemia.

Regarding knowledge and preparedness, our results showed that 60.8% of participants had received undergraduate training in medical emergency management. Less than half (45.3%) had attended workshops after graduation, and only 20.3% had received training within the last 12 months. Basic Life Support was the most reported form of training. A majority (70.9%) expressed the need for additional training, and more than half (53.4%) reported the absence of written emergency protocols in their clinics. Most participants reported high confidence in interpreting vital signs and managing minor emergencies, but confidence declined markedly when addressing serious medical emergencies. Similarly, confidence in the use of emergency drugs was generally moderate to low. Emergency equipment was inadequately available in many clinics, as 42.6% stated not having adequate instruments in their clinics, while only 27.7% confirmed full availability.

These findings were parallel to Alhamad et al., [13], who reported that around forty-five percent of the participants perceived themselves as qualified to execute CPR. Most participants (74.3 percent) indicated availability of emergency equipment in their clinics; almost seventy percent of dentists-maintained oxygen, adrenaline, and glucose supplies. Likewise, the research conducted by Mahmood et al. [17] assesses the preparedness of Iraqi dental practitioners in addressing MEs. It was disclosed that 47.2% of participants expressed trust in handling MEs. Moreover, 86.4 percent exhibited moderate to low knowledge, and the majority had restricted clinical exposure. Formal BLS/CPR training has been reported by 35.2 percent, whereas 31.7 percent had participated in organized emergency management courses. They determined that significant deficiencies were observed in the emergency preparedness of Iraqi dentists, especially regarding clinical exposure and formal training. Their results underscored the imperative to integrate compulsory BLS certification, simulation-based training, and ongoing professional development into dental education and licensure systems, therefore aligning national practices with international norms and improving patient safety. A cross-sectional study conducted by Choufani et al. [18] sought to evaluate the preparedness of Lebanese dentists in handling medical emergencies. It has been discovered that 38.2 percent of dentists maintained an emergency kit at their clinics, and eighty-nine percent had some form of emergency equipment; however, hardly 5.9 percent had a defibrillator. While 71.3 percent obtained emergency training at university, 28.5 percent did not obtain it. Merely 18.8 percent indicated staff training in medical crises. Their results revealed substantial deficiencies in emergency planning among Lebanese dentists. A significant number lack sufficient resources and training, underscoring the pressing necessity for enhanced training and better-equipped clinics. Improving frameworks for policy and resource distribution is essential.

Conclusion

This cross-sectional study demonstrated that medical emergencies are relatively common in dental practice in Libya, with most dentists encountering at least one or two emergencies over the past five years. Chronic

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systemic conditions such as diabetes mellitus and hypertension were frequently reported among dental patients, underscoring the importance of adequate preparedness in dental settings. Although a considerable proportion of dentists had received undergraduate training in medical emergency treatment, recent training and continuing education remain insufficient. Most participants expressed a clear need for further training, particularly in managing serious medical emergencies. Confidence levels were generally acceptable for interpreting vital signs and handling minor emergencies; however, confidence significantly declined in managing serious emergencies and in the utilization of emergency drugs. Furthermore, the limited availability of protocol sheets and essential emergency equipment in many clinics indicates gaps in institutional preparedness. These findings revealed a discrepancy between the frequency of MEs encountered and the level of preparedness among dentists. Strengthening continuing professional development programs, promoting regular BLS and CPR training, and ensuring the accessibility of standardized emergency protocols and equipment in dental clinics are strongly recommended to enhance patient safety and improve emergency response outcomes in Libyan dental practice.

Conflict of interest. Nil

References

1. Malamed SF. Medical emergencies in the dental office. 8th ed. St. Louis (MO): Elsevier Health Sciences; 2022.
2. Assas M, Alshawi B, Aladwani A, Hazzazi A, Alutaibi A, Homeida L. Medical emergencies at teaching dental clinics in Saudi Arabia: a systematic review. Saudi Dent J. 2026 Jan;38(1):1.
3. Nogami K, Taniguchi S, Ichiyama T. Rapid deterioration of basic life support skills in dentists with basic life support healthcare provider. Anesth Prog. 2016 Summer;63(2):62-6.
4. Smereka J, Aluchna M, Aluchna A, Szarpak Ł. Preparedness and attitudes towards medical emergencies in the dental office among Polish dentists. Int Dent J. 2019 Aug;69(4):321-8.
5. McKernon SL, Kaura L, Taylor KH, Reid S, Balmer MC. An update on current resuscitation council (UK) guidelines. Dent Update. 2017 May;44(4):341-50.
6. Marks LA, Van Parys C, Coppens M, Herregods L. Awareness of dental practitioners to cope with a medical emergency: a survey in Belgium. Int Dent J. 2013 Dec;63(6):312-6.
7. Gray E, Hedayat-Kelishadi M, Rowe S, Dave M, Patel N. The medical profile of patients accessing emergency dental care: A comparative study. Oral Surg. 2022 Nov;15(4):515-22.
8. Truhlář A, Deakin CD, Soar J, Khalifa GE, Alfonzo A, Bierens JJ, et al. European Resuscitation Council Guidelines for Resuscitation 2015: Section 4. Cardiac arrest in special circumstances. Resuscitation. 2015 Oct;95:148-201.
9. Soar J, Nolan JP, Böttiger BW, Perkins GD, Lott C, Carli P, et al. European Resuscitation Council Guidelines for Resuscitation 2015: Section 3. Adult advanced life support. Resuscitation. 2015 Oct;95:100-47.
10. Chebra J. EMS—new challenges and new expectations. Disaster Emerg Med J. 2017;2(2):102-3.
11. Abraham-Inpijn L, Russell G, Abraham DA, Bäckman N, Baum E, Bullón-Fernández P, et al. A patient-administered Medical Risk Related History questionnaire (EMRRH) for use in 10 European countries (multicenter trial). Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2008 May;105(5):597-605.
12. World Health Organization. WHO country office Libya: annual report 2020. Geneva: World Health Organization; 2021.
13. Alhamad M, Alnahwi T, Alshayeb H, Alzayer A, Aldawood O, Almarzouq A, et al. Medical emergencies encountered in dental clinics: A study from the Eastern Province of Saudi Arabia. J Family Community Med. 2015 Sep-Dec;22(3):175-9.
14. Abdulrahman BI, Alasmari KM, Alratiq MN, Alherab FA, Alfantoukh MA, Alherab AA. Are dental professionals ready to deal with medical emergencies in their clinical office? A survey of university hospitals. J Med Life. 2022 Aug;15(8):979-85.
15. Sin M, Edwards D, Currie C, Corbett I. Prevalence of medical emergency events in primary dental care within the UK. Br Dent J. 2023 Nov;235(9):721-6.
16. Osayande E, Omorogbe OS, Azodo CC. Medical emergency preparedness in dental clinic among dentists in Benin City. Niger J Med Dent Educ. 2020;2(2):79-85.
17. Mahmood AS, Muneeb M. Gaps in Medical Emergency Preparedness Among Iraqi Dentists: A Nationwide Cross-Sectional Analysis. Dent 3000. 2025;13(1).
18. Choufani A, Moussallem M, Dib JB, Asmar MK, Yeretzian JS. Lebanese dentists' preparedness to deal with medical emergencies in their clinics: a National survey. Int Dent J. 2025 Feb;75(1):324-32.