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EVALUATION OF DENTISTS PREPAREDNESS IN MANAGING MEDICAL EMERGENCIES AMONG DENTAL PRACTITIONER IN PESHAWAR, PAKISTAN

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Abstract

Aim: *To measure how much dentists know about medical emergencies, how ready they are to manage them, and whether emergency drugs are kept in dental clinics.*

Method: *208 dental practitioners received an online (Google Forms) survey with study information and a consent form. It collected demographics, experience, and specialty, plus 20 closed-ended questions: 10 on knowledge and 10 on competence and preparedness.*

Results. *205 of the 220 practitioners completed the survey (93.2%). About 77.5% felt confident handling emergencies, yet only 69% had an emergency kit in their clinic.*

Conclusion: *Dentists showed moderate knowledge and low-to-moderate perceived competence. Every clinic should have clearly communicated emergency protocols that are reviewed regularly.*

INTRODUCTION

Preventing unexpected harm to patients has become a priority in modern dental care. A medical or dental emergency is a sudden, serious event that needs prompt action, and some illnesses and treatments make such events more likely during dental procedures. Studies suggest most dentists face an emergency about once a year, and a French study found roughly one in twenty general dentists will need to perform cardiopulmonary resuscitation during their career. Dental clinics see a disproportionate share of emergencies, so staff must be skilled in handling them.

Knowledge gaps are well documented. A Saudi study found only 4% of participants knew the correct management for several emergencies, and an Indian study found 50.5% could not manage an emergency. Elderly patients with comorbidities are at higher risk. Emergencies most often occur during or after local anesthesia, especially tooth extraction, and are more frequent because of patient anxiety and stress. Other triggers include poor pain control, advanced age, long procedures (such as multiple implant

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placements), invasive surgery, and adverse reactions to drugs or anesthesia.

Emergencies are about 5.8 times more frequent in dental clinics than in medical clinics. Around 90% are mild, but about 8% are life-threatening. The most common are vasovagal syncope, angina, hypoglycemia, and hypertensive crisis. Prevention rests on a thorough history, vital-sign monitoring, and adjusting the treatment plan.

Few dentists have the expertise for these unpredictable events, and each needs a correct diagnosis for safe management. Dentists must know the warning signs, symptoms, and diagnosis, and how to coordinate with emergency physicians. Inadequate training can lead to disaster and legal consequences. Even though dentists receive formal emergency training during their degrees, many worldwide still struggle in real situations. Because emergencies endanger lives and stress the clinician, the whole dental team must be alert and prepared. Local data are scarce, and what exists suggests knowledge and readiness are insufficient.

This study therefore evaluates dentists' awareness of medical emergencies, the availability of emergency drugs in clinics, and dentists' skill and readiness to manage crises.

Methodology

This cross-sectional study was conducted in private dental clinics of peshawar between June and november 2025. Using the WHO calculator (50% expected proportion, 95% confidence, 5% margin of error, 80% power, population of 450 clinics), the minimum sample was 208. The HITEC-IMS Dental College IRB approved the study (Dental/HITEC/IRB/30), and participants gave consent.

Data came from a self-administered questionnaire adapted, with minor changes, from a Saudi Arabian study by S. AlQahtani. Sixteen dental professionals from different specialties, all assistant professors or higher, piloted it to check wording and clarity. They found the questions clear, and the questionnaire was revised from their feedback. They were not part of the main study. Internal consistency was acceptable (Cronbach's coefficient 0.7).

The survey went out via Google Forms, and 200 complete responses were received. It covered demographics, experience, and specialty, plus 20 closed questions (10 on knowledge, 10 on competence and preparedness, including training level and available drugs and equipment).

Data were analyzed in SPSS 26.0. Descriptive statistics summarized the sample, with counts and percentages for categorical variables. Chi-square tests assessed associations, with $p < 0.05$ considered significant.

Results

Figure 1. Study flow and design

Participants. 205 of the 220 sampled practitioners responded (93%). Most (49%) were under 30, 59% were female, and 69.5% held a DP.

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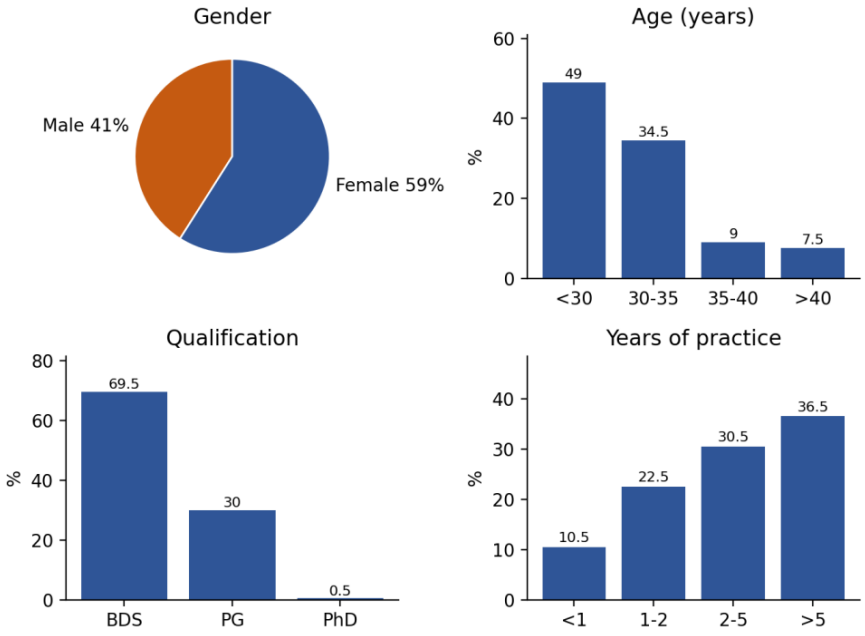


Figure 2. Demographic characteristics of participants (n=200)

Practice habits.

- 57.5% took a medical history, including allergies and medications.
- Only 40% obtained signed informed consent.
- 52.5% recorded vital signs.
- 73.5% felt competent treating pregnant patients.
- 97% knew how to measure blood pressure and blood glucose.

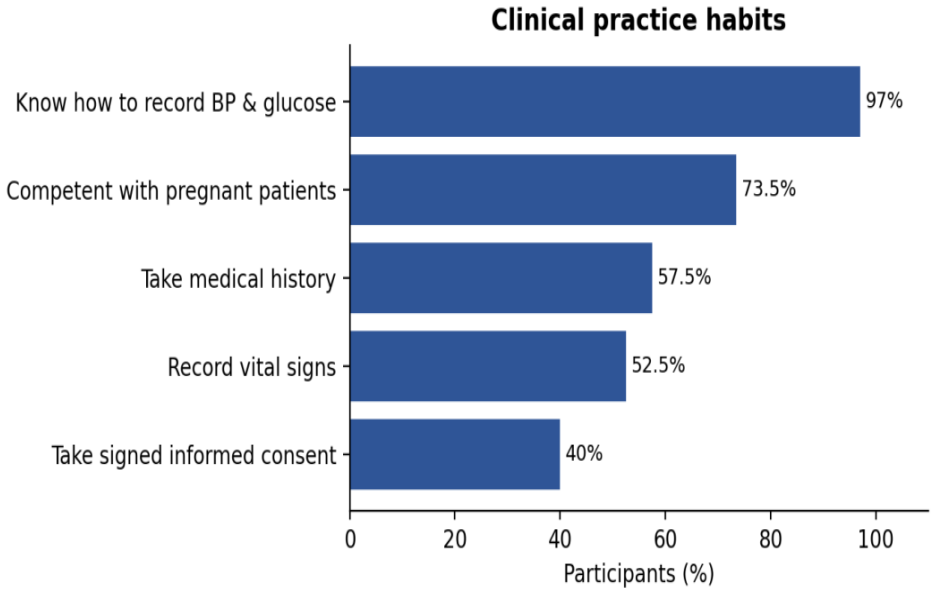


Figure 3. Clinical practice habits of participants

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Preparedness.

- 83% knew about CPR, and 64% were BLS certified.
- 69% had an emergency kit, and 77.5% felt confident handling emergencies.
- 64.5% were confident giving IM and IV injections.
- The drugs most often in kits were oral glucose, saline, adrenaline, aspirin, steroids, Avil, and diazepam.
- The most common emergency encountered was vasovagal syncope.

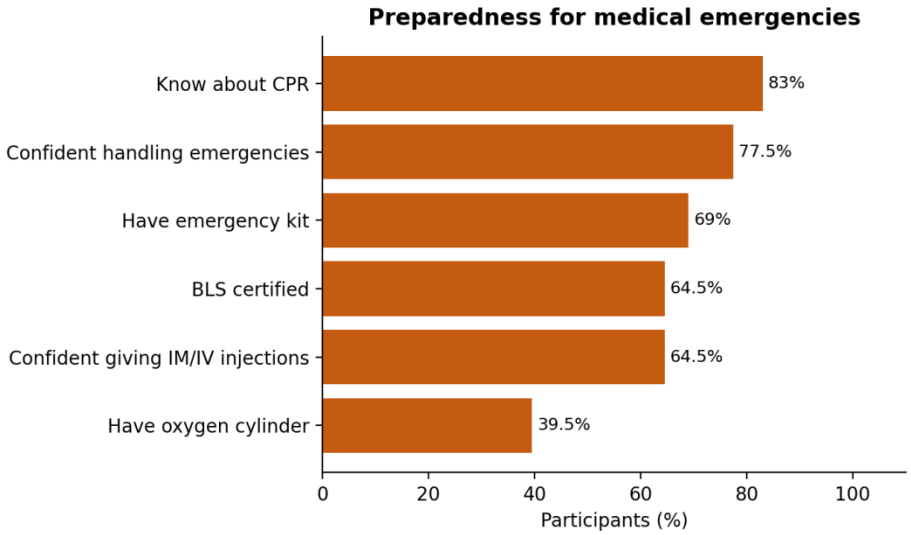


Figure 4. Preparedness for medical emergencies

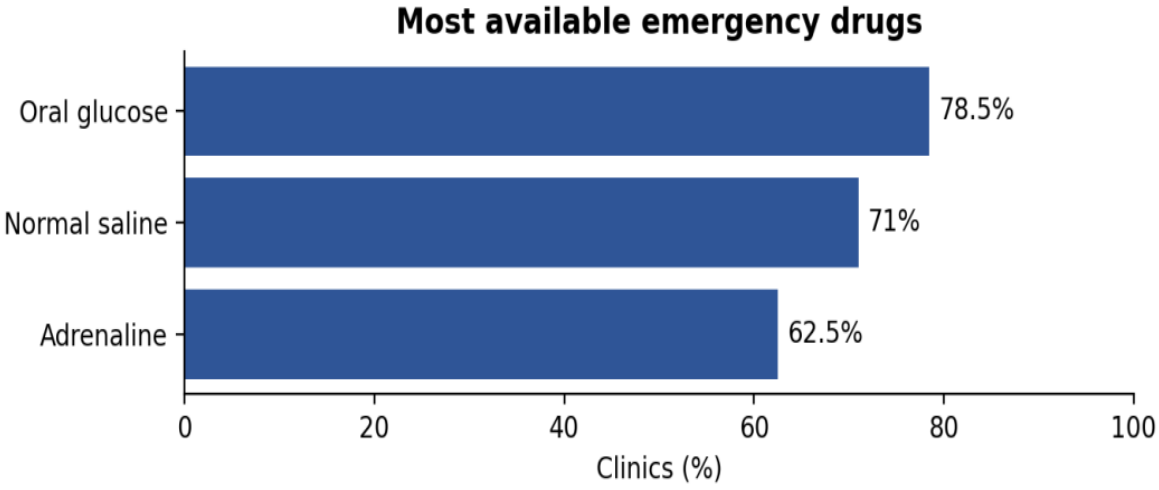


Figure 5. Emergency drugs most often available in clinics

Gender. Women were significantly more likely than men to take consent before treatment (61.0% vs 42.7%, p=0.011), to be trained for treating pregnant patients (84.7% vs 58.5%, p<0.001), and to be BLS certified (72.0% vs 52.4%, p=0.005).

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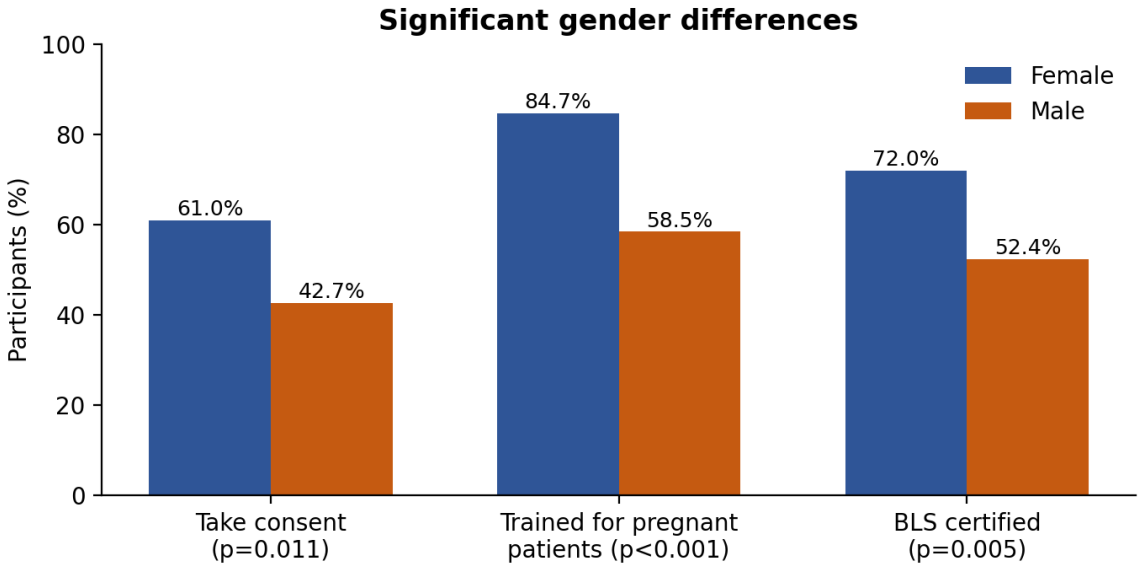


Figure 6. Gender differences in practice and training

Qualification. Higher qualification was significantly associated with:

- greater awareness of emergencies (p=0.001)
- having an oxygen cylinder (p<0.001) and knowing how to operate it (p=0.002)
- confidence with IM/IV injections (p=0.035)
- BLS certification (p=0.006)

Experience. Practitioners with more than one year of experience were significantly more likely to:

- consult a physician for medically compromised patients (p=0.023)
- have an oxygen cylinder (p=0.001)
- reposition the chair during emergencies (p=0.002)
- hold BLS certification (p=0.030)

Discussion

Emergencies are uncommon in general practice but can be fatal. Identifying at-risk patients and caring for them appropriately greatly lowers the risk, and accepting that any patient may have an emergency is the first step. This study examined whether dentists take histories, ask about drug allergies, and record vital signs, all of which can signal the likelihood of an emergency.

Sample. Of 220 participants, 82 (41%) were male and 118 (59%) female. Other studies had similar female majorities (294 of 501 in Gupta et al.; 70.6% in a Malaysian study). Gender was significantly linked to consent-taking, pregnancy training, and BLS certification.

Medical history. Only 57.5% documented patient history, well below Saudi (87%, 92%) and Egyptian (91.17%) studies. Taking a history needs only a little extra chair time. Patients should complete proper forms before treatment so precautions can be taken.

Vital signs. At 52.5%, our rate exceeded an Egyptian study (41.82%) and a Saudi study (38% at the first visit only, 50% never), but was lower than an Indian study (83.06%). Vital signs can reveal fever from illness, or raised pulse and respiration from anxiety. They should be checked before treatment alongside a full history, and histories updated at every visit. Medically complex patients should be referred to their physician.

Confidence. A dentist's confidence affects treatment success and patient cooperation, though the type of emergency also matters. Our 77.5% confidence matches several studies (82%, 61%, 69.9%, 66%) but contrasts with others reporting only 43.8% to 49.7%.

Experience with emergencies. 68.5% of our dentists had faced an emergency, consistent with

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an Italian study (65.2%). Vasovagal syncope was the most common, followed by hypoglycemia, as in Saudi, Polish, Italian, US, Jordanian, and Dutch studies.

Emergency kits. 69% had a kit, far more than in Egyptian (49.35%) and Jordanian (37.8%) studies, where reasons included lack of training, underestimating importance, cost, and absence of regulation. It was lower than Indian (82.72%) and Saudi (85%) figures.

Oxygen. Only 39.5% had an oxygen cylinder and could operate it, while 60.5% had none. This resembles Polish data (41%) but is much better than Jordan (9.4%).

Injections. 64.5% were comfortable giving IM/IV injections, similar to an Iranian study (72%) and far above other studies (as low as 6.6% to 34%).

Drugs. A recommended minimum kit contains aspirin, nitroglycerin, albuterol/salbutamol, an antihistamine, oxygen, and epinephrine. In our study the most available were oral glucose (78.5%), normal saline (71%), and adrenaline (62.5%), in line with other studies.

BLS. 64.5% were BLS certified and 35.5% were not, comparable to Malaysian and Indian studies but far below another Indian study (94.4%) and a Saudi study (100%). BLS training in our region needs strengthening, and national programs are needed to produce more trained responders.

Responsibility. The dentist is ultimately responsible for managing an emergency, and poor preparation can have disastrous and legal consequences. Laws and regulations requiring emergency kits that are regularly updated are urgently needed.

Limitations. The cross-sectional design and self-reported data limit analysis of why participants differed. The study covered only private clinics of peshawar, so results may not apply to dentists in tertiary hospitals across Pakistan.

Conclusion and Recommendations

Dentists showed moderate understanding of medical emergencies and low-to-moderate perceived competence and preparedness. After graduation, dentists should attend lectures and workshops twice a year. National standardized guidelines from governing bodies, covering the typical emergencies seen in dental settings, would help ensure all practicing dentists are prepared.

REFERENCES

Amiri Bavandpour M, Livas C, Jonkman RE. Management of medical emergencies in orthodontic practice. Progress in Orthodontics. 2020; 1-7. https://doi.org/10.1186/s40510-020-00327-3

Smereka J, Aluchna M, Aluchna A, Szarpak L. Preparedness and attitudes towards medical emergencies in the dental office among Polish dentists. Int Dent J. 2019;69:321-8. https://doi.org/10.1111/idj.12473

Tariq K, Wajahat M, Hassan M, Arif A. Experience and Preparedness of Medical Emergency among Dentists of Private Dental Teaching Hospitals of Lahore. Eur J Gen Dent. 2022;11:102-7. https://doi.org/10.1055/s-0042-1742644

Al-Hassan M, AlQahtani S. Preparedness of dental clinics for medical emergencies in Riyadh, Saudi Arabia. Saudi Dent J. 2019;31:115-21. https://doi.org/10.1016/j.sdentj.2018.11.006

Gupta S, Mishra S, Behl S, Srikant N, Mascarenhas R. Knowledge of handling medical emergencies among general dental practitioners pan India: a cross-sectional survey. BMC Res Notes. 2023;16:221. https://doi.org/10.1186/s13104-023-06477-x

Gazal G, Aljohani H, Al-Samadani KH, Nassani MZ. Measuring the Level of Medical-Emergency-Related Knowledge among Senior Dental Students and Clinical Trainers. Int J Environ Res Public Health. 2021;18:6889. https://doi.org/10.3390/ijerph18136889

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Raja KP, Pal A, Nayak SU, Pai K, Shenoy R. Teledentistry: a new oral care delivery tool among Indian Dental Professionals-A Questionnaire study. F1000Res. 2022;11:666. https://doi.org/10.12688/f1000research.122058.1

Kunaparaju K, Shetty K, Jathanna V, Nath K, Roma M. Endoscopic retrieval of an accidentally ingested bur during a dental procedure: a case report. Patient Saf Surg. 2021;15:1-4. https://doi.org/10.1186/s13037-020-00273-3

Nagarale R, Todkar M, Arman MM, Momin S, Khillare S, Rizvi Q. Assessment of preparedness of dental clinics for medical emergencies. Int J Applied Dent Sci. 2022;8:450-55. https://doi.org/10.22271/oral.2022.v8.i1g.1461

Fernandes AL, Malik JB, Ansari SR, Murali S, Thirupathii J. Knowledge, attitude, and practice of dentists in the management of medical emergencies in India: A cross-sectional study. J Oral Bio Craniofac Res. 2023;13:758-63. https://doi.org/10.1016/j.jobcr.2023.10.007

Gopinathan PA, Alammari FS, Alsulaim SA, Alotaibi FG, Alanazi AM, Khammash AW, et al. Assessment of Knowledge, Attitude, and Practices of Cardiovascular Medical Emergencies Among Dental Students: An Institutional-Based Cross-Sectional Study. Cureus. 2023;15(11). https://doi.org/10.7759/cureus.48568

Sopka S, Biermann H, Druener S, Skorning M, Knops A, Fitzner C, et al. Practical skills training influences knowledge and attitude of dental students towards emergency medical care. Eur J Dent Educ. 2012;16:179-86. https://doi.org/10.1111/j.1600-0579.2012.00740.x

Al Ghanam MA, Khawalde M. Preparedness of Dentists and Dental Clinics for Medical Emergencies in Jordan. Materia Socio-Medica. 2022;34:60. https://doi.org/10.5455/msm.2022.33.60-69

Greenwood M, Meechan J. Management of specific medical emergencies in dental practice. Br Dent J. 2023;235:789-95. https://doi.org/10.1038/s41415-023-6452-y

Obata K, Naito H, Yakushiji H, Obara T, Ono K, Nojima T, et al. Incidence and characteristics of medical emergencies related to dental treatment: a retrospective single-center study. Acute Med Surg. 2021;8:e651. https://doi.org/10.1002/ams2.651

Hussein H, Abdelbaqy MA, Ibrahim AA, Farid S, Ibrahim S. Awareness of medical emergencies among dental practitioners in three Egyptian dental schools: A cross-sectional study. Braz Dent Sci. 2021;24(4). https://doi.org/10.14295/bds.2021.v24i4.2621

Tarmidzi NA, Ramli NM, Amran N, Norazmi HN, Arifin NS. Knowledge, Attitude and Perception of Private Dental Practitioners Towards Medical Emergencies in Klang Valley, Malaysia. J Int Dent Med Res. 2022;15:649-55.

Al-Sebaei MO, Alkayyal MA, Alsulimani AH, Alsulaimani OS, Habib WT. The preparedness of private dental offices and polyclinics for medical emergencies: a survey in Western Saudi Arabia. Saudi Med J. 2015;36:335. https://doi.org/10.15537/smj.2015.3.10047

Varma LS, Pratap KV, Padma TM, Kalyan VS, Vineela P. Evaluation of preparedness for medical emergencies among dental practitioners in Khammam town: A cross-sectional study. J Ind Assoc Public Health Dent. 2015;13:422-8. https://doi.org/10.4103/2319-5932.171178

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Al-Iryani GM, Ali FM, Alnami NH, Almashhur SK, Adawi MA, Tairy AA. Knowledge and preparedness of dental practitioners on management of medical emergencies in Jazan province. Open Access Maced J Med Sci. 2018;6:402-405. https://doi.org/10.3889/oamjms.2018.072

Jyotsna S, Murali R, Shamala A, Yalamalli M, Ramachandran A, Rebello EC. Knowledge, attitude and practice related to management of medical emergencies in the dental office among dental practitioners in Chikkaballapur district, Karnataka. Int J Drug Res Dent Sci. 2021;9(3):46-53.

Stafuzza TC, Carrara CF, Oliveira FV, Santos CF, Oliveira TM. Evaluation of the dentists' knowledge on medical urgency and emergency. Braz Oral Res. 2014;28:1-5. https://doi.org/10.1590/1807-3107BOR-2014.vol28.0029

Sudeep C, Sequeira PS, Jain J, Jain V, Maliyil M. Awareness of basic life support among students and teaching faculty in a dental college in Coorg, Karnataka. Int Dent J Students Res. 2013;2:04-21.

Varoni EM, Rigoni M, Lodi G, Sardella A, Muti P, Vitello A, et al. Medical emergencies in dental practice: A nationwide web-based survey of Italian dentists. Heliyon. 2023;9(3). https://doi.org/10.1016/j.heliyon.2023.e13910

Sorenson AD, Marusko RM, Kennedy KS. Medical emergencies in the dental school setting. J Dent Educ. 2021;85:1223-7. https://doi.org/10.1002/jdd.12590

Azad A, Talattof Z, Deilami Z, Zahed M, Karimi A. Knowledge and attitude of general dentists regarding common emergencies in dental offices: A cross-sectional study in Shiraz, Iran. Ind J Dent Res. 2018;29:551-5. https://doi.org/10.4103/ijdr.IJDR_587_16

Gupta H, Bhaskar DJ, Kaur N, Sharma V, Bhalla M, Hans R. Knowledge, attitude, and practices among dental practitioners and postgraduate students on the preparedness of medical emergencies in Mathura City. J Ind Assoc Public Health Dent. 2018;16:318-21.