

APPRAISAL OF AWARENESS ON MEDICAL EMERGENCIES AND ITS MANAGEMENT AMONG DENTISTS IN BHUBANESWAR, INDIA*

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ABSTRACT

Background. Medical emergencies can be distressing for any dental professional, whether in a dental practice, hospital or other sites.

Objectives. To assess the knowledge and awareness of dental practitioners towards medical emergencies and its management in Bhubaneswar.

Material and Methods. In this cross-sectional investigation, a self-administered questionnaire which included demographic details and 19 questions regarding knowledge about medical emergencies, was disseminated to a random sample of 183 dentists working in their private dental clinic set up in Bhubaneswar. Chi-square test was used for statistical analysis.

Results. Total sample size was 183, out of which 79 (43.17%) were males and 104 (56.83%) were females. The mean age was found out to be 30.7 ± 5.38 years. Practically 96% of the practitioners were not certain enough to deal with the emergency conditions at dental office. Around 67% had not attended any workshop on emergency training. It was amazing to observe that larger part (90%) of the experts didn't possess first aid kit at their dental office. In instances of handling emergency situation at the dental chair no statistical significance ($p > 0.05$) with respect to age and gender was found.

Conclusion. This investigation showed that hypothetically dental professionals had better knowledge on medical emergencies yet at the same time they were not equipped efficiently to manage the same at their workplace.

Key words: dentist, medical emergencies, management, questionnaire

INTRODUCTION

Confronting medical emergencies in everyday dental practice is an unavoidable circumstance which can be hazardous. Obviously, a thorough and vivid knowledge about handling these situations is an unquestionable requirement for each dental specialist for their smooth practice. Dental professionals must be aware of the signs and challenges of the frequently occurring medical emergencies and effects of their interaction with various drugs [5]. Based on the study conducted by Malamed, the most frequent emergencies before, during, and right after the treatment include hyperventilation, convulsion, and hypoglycemia, followed by vasovagal syncope, angina pectoris, hypotension, hypersensitivity reactions, and adverse drug reactions [16]. Some other emergencies include cardiac arrest, fits and seizures, diabetic emergency, asthmatic assault, hypertensive emergency, and ingestion of a foreign body.

Local anaesthesia being a dental therapeutic intervention, when in addition to stress caused by dental treatment can result in clinical signs, various emergencies, or exacerbated systemic disease in patients [25]. Furthermore, it may also happen because of reaction with certain dental materials (resins, latex), or due to any invasive dental procedure [15]. With expanding age, presence of systemic diseases as well as increased drug consumption, there is pervasiveness of medical emergencies now a days. Through an itemized and intensive case history, a cautious assessment and altering some treatment strategies, dentists can manage to prevent medical emergencies in their everyday practice. In United Kingdom (UK), the Resuscitation Council has made it vital for all the dental clinics to have minimal emergency equipment that incorporates portable oxygen cylinder, oxygen face mask, set of oropharyngeal airways, device for inhaled bronchodilators, blood glucose measuring apparatus, defibrillator, suction and sterile syringes

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and needles [2]. Basic medications like oxygen, epinephrine, diphenhydramine, bronchodilators, glucose, aspirin and aromatic ammonia should be accessible in dental clinics.

It is critical for dental specialists to stay up to date with the most recent knowledge and information, and successfully practice the clinical abilities to oversee life-threatening circumstances in dental practices, in order to reduce the adverse medical emergency outcomes. Information on the predominance of medical emergencies and the competence of dentists in adequately managing medical emergencies in India is scarce. To our knowledge, this is the first study conducted in Bhubaneswar, Odisha that evaluates the awareness and knowledge about medical emergencies, the preparedness and competence of dentists to manage such situations, and compare medical emergencies encountered between dentists in relation to their gender, age group and qualification. Accordingly, the objective of this study was to assess the knowledge and awareness about medical emergencies and its management among the dentists in Bhubaneswar.

MATERIAL AND METHODS

A cross-sectional study was conducted from January to March 2019 among the dental practitioners of Bhubaneswar, India. The survey protocol was approved by Institutional Ethical Committee. Dentists having their own dental practice set up and also provided an informed consent were included in the study. Those who did not respond to the questionnaire after two successive attempts were excluded. Convenient sampling technique was used to contact the dental practitioners and a total of 200 questionnaires were distributed amongst them.

A self-administered structured questionnaire was developed in English and pretested on a group of ten dentists to assess the face validity that was detected to be 90%. Based on the thoughts stated by a panel of four academicians, mean content validity ratio was intended as 0.85. Test of reliability encompassed two components: Question-question reliability, which was calculated by percentage of agreement (89%) and internal reliability for the responses to questions, which was evaluated using Cronbach's alpha coefficient (0.86).

The final questionnaire consisted of two sections, the first of which included demographic information (age, sex and qualification). The second part included 19 questions regarding the dentists' knowledge and awareness about handling medical emergencies in the dental office.

The nature and purpose of study were explained to the dentists. Questionnaire (Annex 1) was distributed to dental practitioners by a single investigator, offered

adequate time to fill it and attempt was made to collect the filled questionnaires within three days. The investigator simultaneously requested the respondents to answer every question sincerely without any access to other sources. Voluntary nature was accentuated and confidentiality was guaranteed to the respondents.

For the purpose of analysis, proportion of scores was used to assess the level of knowledge and awareness among the participants. Correct responses of <40%, 40-60%, 60-80% and >80% were categorized as having poor, average, good and very good knowledge scores respectively. Descriptive statistics were used to summarize the data. Chi-square (χ^2) test was used to assess the relationship between categorical variables. For all tests, confidence interval and 'p' value were fixed at 95% and < 0.05 correspondingly.

RESULTS

Of the total 200 questionnaires distributed, 183 returned the completed questionnaires yielding a response rate of 91.5%. The age of the respondents ranged from 24 to 50 years (mean 30.7 ± 5.38). The sample comprised of 79 (43.2%) males and 104 (56.8%) females; 110 (60.1%) undergraduates and 73 (39.9%) postgraduates (Table 1).

Almost 96.2% dentists enquire about patient's medical history including medication and allergy. About 129 (70.5%) recorded filled history performa of the patient and 124 (67.8%) obtained the vital signs of the patient before commencing any treatment. When asked about attending any workshop on emergency training and management, 67.2% gave a positive response. Meanwhile 60.1% were confident enough to handle emergency situations while 39.9% lacked confidence. Higher confidence was reported in giving intramuscular injections (99.4%) in comparison with intravenous injections (56.8%) which were found to be statistically significant ($p < 0.001$). Meanwhile 110 (60.1%) dentists mentioned that they could handle any emergency situation at their office. About 56.8% had emergency kit handy at their office and the most available drugs in the dentist's office were oral glucose (97.8%, $p > 0.05$), followed by adrenaline (95.1%, $p < 0.03$) and hydrocortisone (68.9%, $p < 0.004$). It was motivating to note that all the dentists found it necessary to attend workshops on management of medical emergencies (Table 2).

Table 3 provides the responses for all the knowledge-based questions. It was appreciable to note that 94.5%, majority females (96.2%) and MDS graduates (95.9%) dentists were conscious about placing a patient in Trendelburg position and administering ammonia inhalant in case of syncope, but this was not found to be statistically significant ($p > 0.05$). Poor knowledge (30.6%) is reported for management of airway

Table 1. Demographic characteristics of the participants (n=183)

Characteristics	n (%)
Age groups (in years)	
≤25	10 (5.5)
26-30	101 (55.2)
31-35	37 (20.2)
36-40	25 (13.6)
>40	10 (5.5)
Gender	
Male	79 (43.2)
Female	104 (56.8)
Qualification	
BDS	110 (39.9)
MDS	73 (60.1)

obstruction during treatment due to aspiration which is not significant ($p>0.05$). In response to providing immediate action under emergency, nearly 40% only responded correctly demonstrating a poor to average knowledge which was found to be statistically significant ($p<0.001$).

In response to the question on extraction of tooth in patients with prosthetic heart valve 88.6% males and 75% females gave correct response which was found to be statistically significant ($p<0.019$). In addition to this, significance ($p<0.014$) was also found between the age groups where elderly persons gave more correct responses. Similarly, the next question about dental procedures in patients with prosthetic heart valve was answered correctly by more males (86.1%) than females (83.7%) but this association was not found statistically significant ($p>0.05$). Whereas, significance ($p<0.001$) was found between the age group in which a higher number of dentists from all the age groups gave correct responses.

More than 95% of dentists were aware about the full form of BLS which was not significant ($p>0.05$). Hardly 50% of the subjects responded correctly in regard to location of chest compression and males (59.5%) provided more correct response in comparison to females (42.3%) which was significant only in relation to gender ($p<0.035$). There were mixed responses about the knowledge on ratio of Cardiopulmonary Resuscitation (CPR) for a single rescuer in adult. Here, female dentists and elderly age group (>36 years and above) gave more correct responses and it was statistically significant ($p<0.05$). It was observed that the knowledge was poor (21.3%) in relation to rescue breathing in infants which was statistically significant only among age groups ($p<0.012$).

DISCUSSION

Consequently, being alert and ready for an emergency and realizing that facing an emergency can be a real possibility in a dental clinic is of utmost importance. Although medical emergencies incidence in dental clinics is less, but when it occurs it can be life threatening [24]. Hence recognition of “at-risk” patients and subsequent appropriate management is vital [25].

Our study also focussed on enquiring about the key points such as medical history, vital signs of the patients, and availability of emergency drug kits at their dental office. About 96.2% dentists enquired about the medical history of the patients, but only 70.5% dentists recorded a filled case history performa and 67.8% recorded vital signs. This was similar to the findings of *Varma et al* [24]. The above observations were high in comparison to studies of *Kumarswami et al* [14] and *Pandey et al* [20]. This may mainly be due to increase in the awareness regarding medical emergencies among dentists.

In our study around 67.2% of the practitioners recalled having received training in the management of medical emergencies during their course. This was almost similar to the results by *Varma et al* (74.1%) at Khammam [24] and *Atherton et al* [4] in Great Britain (75.2%) but was very high in comparison to *Kumarswami et al* (7.6%) [14] and *Gupta et al* (42.1%) [13]. Instructions on the management of medical emergencies in teaching institutions should be standardized in terms of course content, allocation of teaching hours, faculty members responsible, and the method of training which may enable the graduates to develop an orderly and confident approach to the diagnosis and handling of emergencies encountered in dental practice. However, it was surprising to note that 90.7% dental practitioners had attended workshops on

Table 2. Distribution of responses to questions on awareness in handling emergencies at dental office

Variables	Total n=183 n (%)	Gender n (%)		P value	Age groups (in years) n (%)						P value	Qualification n (%)		P value
		Male (n=79)	Female (n=104)		≤25 n=10	26-30 n=101	31-35 n=37	36-40 n=25	>40 n=10	MDS n=73		BDS n=110		
Q1.	Y - 176 (96.2) N - 7 (3.8)	74 (93.7) 5 (6.3)	102 (98.1) 2 (1.9)	0.1	10 (100) 0 (0)	99 (98.1) 2 (1.9)	37 (100) 0 (0)	22 (88) 3 (12)	8 (80) 2 (20)	0.001*	68 (93.2) 5 (6.8)	108 (98.2) 2 (1.8)	0.2	
Q2.	Y - 129 (70.5) N - 54 (29.5)	48 (60.8) 31 (39.2)	81 (77.9) 23 (22.1)	0.01*	6 (60) 4 (40)	79 (78.2) 22 (21.8)	29 (78.4) 8 (21.6)	11 (44) 14 (56)	4 (40) 6 (60)	0.001*	46 (63) 27 (37)	83 (75.5) 27 (24.5)	0.01*	
Q3.	Y - 124 (67.8) N - 59 (32.2)	55 (69.6) 24 (30.4)	69 (66.3) 35 (33.7)	0.6	2 (20) 8 (80)	67 (66.3) 34 (33.7)	28 (75.7) 9 (24.3)	22 (88) 3 (12)	5 (50) 5 (50)	0.001*	51 (69.9) 22 (30.1)	73 (66.4) 37 (33.6)	0.1	
Q4.	Y - 123 (67.2) N - 60 (32.8)	56 (70.9) 23 (29.1)	67 (64.4) 37 (35.6)	0.6	2 (20) 8 (80)	67 (66.3) 34 (33.7)	29 (78.4) 8 (21.6)	17 (68) 8 (32)	8 (80) 2 (20)	0.005*	59 (80.8) 14 (19.2)	64 (58.2) 46 (41.8)	0.003*	
Q5.	Y - 110 (60.1) N - 73 (39.9)	52 (65.8) 27 (34.2)	58 (55.8) 46 (44.2)	0.2	4 (40) 6 (60)	60 (59.4) 41 (40.6)	20 (54.1) 17 (45.9)	17 (68) 8 (32)	7 (70) 3 (30)	0.08	46 (63) 27 (37)	64 (58.2) 46 (41.8)	0.4	
Q6.	Y - 182 (99.5) N - 1 (0.5)	78 (98.7) 1 (1.3)	104 (100) 0 (0)	0.2	10 (100) 0 (0)	101 (100) 0 (0)	37 (100) 0 (0)	24 (96) 1 (4)	10 (100) 0 (0)	0.001*	72 (98.6) 1 (1.4)	110 (100) 0 (0)	0.5	
Q7.	Y - 104 (56.8) N - 79 (43.2)	62 (78.5) 17 (21.5)	42 (40.4) 62 (59.6)	0.001*	4 (40) 6 (60)	44 (43.6) 57 (56.4)	29 (78.4) 8 (21.6)	22 (88) 3 (12)	5 (50) 5 (50)	0.001*	51 (69.9) 22 (30.1)	53 (48.2) 57 (51.8)	0.006*	
Q8.	Y - 164 (89.6) N - 19 (10.4)	68 (86.1) 11 (13.9)	96 (92.3) 8 (7.7)	0.2	8 (80) 2 (20)	91 (90.1) 10 (9.9)	32 (86.5) 5 (13.5)	23 (92) 2 (8)	10 (100) 0 (0)	0.001*	68 (93.2) 5 (6.8)	96 (87.3) 14 (12.7)	0.001*	
Q9 Adrenaline	Y - 174 (95.1) N - 9 (4.9)	77 (97.5) 2 (2.5)	97 (93.3) 7 (6.7)	0.1	10 (100) 0 (0)	94 (93.1) 7 (6.9)	36 (97.3) 1 (2.7)	25 (100) 0 (0)	10 (100) 0 (0)	0.7	73 (100) 0 (0)	101 (91.8) 9 (8.2)	0.03*	
Q9 Oral Glucose	Y - 179 (97.8) N - 4 (2.2)	77 (97.5) 2 (2.5)	102 (98.1) 2 (1.9)	0.8	10 (100) 0 (0)	97 (96.3) 4 (3.7)	37 (100) 0 (0)	25 (100) 0 (0)	10 (100) 0 (0)	0.4	73 (100) 0 (0)	106 (96.4) 4 (3.6)	0.2	
Q9 Ammonia Inhalant	Y - 98 (53.6) N - 85 (46.4)	42 (53.2) 37 (46.8)	56 (53.8) 48 (46.2)	0.9	4 (40) 6 (60)	60 (59.4) 41 (40.6)	15 (40.5) 22 (59.5)	10 (40) 15 (60)	9 (90) 1 (10)	0.001*	29 (39.7) 44 (60.3)	69 (62.7) 41 (37.3)	0.002*	
Q9 Hydro- cortisone	Y - 126 (68.9) N - 57 (31.1)	57 (72.2) 22 (27.8)	69 (66.3) 35 (33.7)	0.4	8 (80) 2 (20)	69 (68.3) 32 (31.7)	24 (64.9) 13 (35.1)	18 (72) 7 (28)	7 (70) 3 (30)	0.004*	46 (63) 27 (37)	80 (72.7) 30 (27.3)	0.03*	
Q9 Atropine	Y - 111 (60.7) N - 72 (39.3)	51 (64.6) 28 (35.4)	60 (57.7) 44 (42.3)	0.3	2 (20) 8 (80)	63 (62.4) 38 (37.6)	21 (56.8) 16 (43.2)	16 (64) 9 (36)	9 (90) 1 (10)	0.001*	46 (63) 27 (37)	65 (59.1) 45 (40.9)	0.1	
Q10.	Y - 183 (100) N - 0 (0)	79 (100) 0 (0)	104 (100) 0 (0)	---	10 (100) 0 (0)	101 (100) 0 (0)	37 (100) 0 (0)	25 (100) 0 (0)	10 (100) 0 (0)	----	73 (100) 0 (0)	110 (100) 0 (0)	---	

Y = yes; N = No *P<0.05 statistical significance

Table 3. Distribution of responses to questions on knowledge/awareness in handling emergencies at dental office

Variables	Responses	Total n (%) n=183	Gender (n=183)		P value	Age groups (in years) (n=183)						P value	Qualification (n=183)		P value
			Male n (%) n=79	Female n (%) n=104		≤25 n (%) n=10	26-30 n (%) n=101	31-35 n (%) n=37	36-40 n (%) n=25	>40 n (%) n=10	MDS n (%) n=73		BDS n (%) n=110		
Q 11	Correct	173 (94.5)	73 (92.4)	100 (96.2)	0.22	10 (100)	91 (90.1)	37 (100)	25 (100)	10 (100)	0.72	70 (95.9)	103 (93.6)	0.74	
	Incorrect	10 (5.5)	6 (7.6)	4 (3.8)		0 (0)	10 (9.9)	0 (0)	0 (0)	0 (0)		0 (0)	3 (4.1)		7 (6.4)
Q 12	Correct	56 (30.6)	23 (29.1)	33 (31.7)	0.35	4 (40)	30 (29.7)	12 (32.4)	8 (32)	2 (20)	0.71	25 (34.2)	31 (28.2)	0.86	
	Incorrect	127 (69.4)	56 (70.9)	71 (68.3)		6 (60)	71 (70.3)	25 (67.6)	17 (68)	8 (80)		48 (65.8)	79 (71.8)		
Q 13	Correct	71 (38.8)	32 (40.5)	39 (37.5)	0.69	4 (40)	37 (36.6)	13 (35.1)	11 (44)	6 (60)	0.067	29 (39.7)	42 (38.2)	0.0001*	
	Incorrect	112 (61.2)	47 (59.5)	65 (62.5)		6 (60)	64 (63.4)	24 (64.9)	14 (56)	4 (40)		44 (60.3)	68 (61.8)		
Q 14	Correct	148 (80.9)	70 (88.6)	78 (75)	0.019*	4 (40)	75 (74.3)	36 (97.3)	23 (92)	10 (100)	0.014*	64 (87.7)	84 (76.4)	0.13	
	Incorrect	35 (19.1)	9 (11.4)	26 (25)		6 (60)	26 (25.7)	1 (2.7)	2 (8)	0 (0)		9 (22.3)	26 (23.6)		
Q 15	Correct	155 (84.7)	68 (86.1)	87 (83.7)	0.17	8 (80)	83 (82.2)	30 (81.1)	21 (96)	10 (100)	<0.001*	67 (91.8)	88 (80)	0.34	
	Incorrect	28 (15.3)	11 (13.9)	17 (16.3)		2 (20)	18 (17.8)	7 (18.9)	1 (4)	0 (0)		6 (8.2)	22 (20)		
Q 16	Correct	175 (95.6)	77 (97.5)	98 (94.2)	0.36	10 (100)	95 (94.1)	35 (94.6)	25 (100)	10 (100)	0.91	69 (94.5)	106 (96.4)	0.18	
	Incorrect	8 (4.4)	2 (2.5)	6 (5.8)		0 (0)	6 (5.9)	2 (5.4)	0 (0)	0 (0)		4 (5.5)	4 (3.6)		
Q 17	Correct	91 (49.7)	47 (59.5)	44 (42.3)	0.035*	4 (40)	39 (38.6)	23 (62.7)	17 (68)	8 (80)	0.06	42 (57.5)	49 (44.5)	0.22	
	Incorrect	92 (50.3)	32 (40.5)	60 (57.7)		6 (60)	62 (61.4)	14 (37.3)	8 (32)	2 (20)		31 (42.5)	61 (55.5)		
Q 18	Correct	75 (41)	24 (30.4)	51 (49)	0.043*	6 (60)	34 (33.7)	14 (37.8)	14 (56)	7 (70)	0.018*	29 (39.7)	46 (41.8)	0.08	
	Incorrect	108 (59)	55 (69.6)	53 (51)		4 (40)	67 (66.3)	23 (62.2)	11 (44)	3 (30)		44 (60.3)	64 (58.2)		
Q 19	Correct	39 (21.3)	21 (26.6)	18 (17.3)	0.3	2 (20)	21 (20.8)	2 (5.4)	12 (48)	2 (20)	0.012*	18 (24.6)	21 (19.1)	0.26	
	Incorrect	144 (78.7)	58 (73.4)	86 (82.7)		8 (80)	80 (79.2)	35 (94.6)	13 (52)	8 (80)		55 (75.4)	89 (80.9)		

*P<0.05 statistical significance

emergency training or management programs which is very high [12].

The results of our study established that 60.1% of dentists were confident enough to handle emergency situations independently. This was similar to the findings of *Alhamad et al* - (45%) [2] and *Stafuzza et al* - (66%) [22]. Contradictory findings of lower response by *Kumarswami et al* (14%) [14] and higher response by *Broadbent* and *Thomson* among 80% of British dentists were also reported [6]. This difference may be attributed to more of theoretical knowledge and lack of practical training/experience.

The varying degrees of confidence among the dentists with regard to giving intravenous injections was quite evident. Here, 43.2% dental practitioners gave a negative response in comparison with the study findings of *Gupta et al* [12], *Arsati et al* [3] and *Varma et al* [24] who reported negative responses of 72.2%, 61.4% and 28.24% respectively.

In our study 89.6% of the practitioners had emergency kits at the dental office, which was similar to the findings of *Alhamad et al* (75%) [2], *Varma et al* (87.2%) [24] and *Atherton et al* (80%) [4]. But in contrast only 24% were having emergency kit as found by *Kumarswami et al* [14] and 8.9% by *Gbotolorun et al* [11]. In light of the findings of these studies it is suggested that there is a need for strict regulations requiring an emergency medical kit and the specific items to be kept by dental practitioners.

The most commonly available drugs in the clinic set up were oral glucose (97.8%), followed by adrenaline (95.1%) and hydrocortisone (68.9%). These findings were similar with that by *Gupta et al* [13] where oral glucose (82.2%) was followed by adrenaline (65.8%), and with *Kumarswami et al* [14] where adrenaline (88%) and oral glucose (81.4%) were most commonly available drugs. *Pandey et al* [20] found oxygen at only 2% clinics which is a very critical point to be addressed. Based on a study on Australian general dental practitioners, oxygen was found to be most common emergency item [8]. Also in Great Britain it was found that oxygen was the most commonly available emergency drug followed by adrenaline and oral glucose [4].

Attending the workshops on management of emergencies is essential for dentists not only to refresh their knowledge but also to learn new concepts in medical evaluation. Likewise, it was good to know that all our respondents (100%) felt the need to routinely attend such programs. This finding was contradictory to studies of *Gupta et al* [12] and *Fast et al* [10] who reported the necessity among 30% and 16% dentists respectively.

Our study also reflected that the dentists had a poor knowledge (38.8%) about the emergency medical services (EMS). Activation of EMS is a most crucial

step for management of emergency situations arising in a dental office in addition of being aware of state dental practice acts. The dentist will become more familiar with the accepted treatment and protocols for handling emergencies that forms the basis for a legal standard of care. Failure to follow the right principles results in unintentional injury which can lead to tragic consequences and sometimes legal action [9,18].

Average number of dentists had knowledge about basic life support and CPR (49.7%). Similar results were seen in a study by *Sharma et al* [21] and *Chandrasekharan et al* [7] where the overall knowledge score was below 50% and *Akritia et al* [1] who also reported inadequacy of knowledge about BLS. Nevertheless, improvement of knowledge and skills of CPR after a BLS training was demonstrated by *Marsden* [17] and *Sudeep et al* [23]. But the training of the resuscitation skills is difficult because of the busy schedules and lack of teachers and resources in India. In addition, due to the updating of the guidelines every 5 years, repetitive training is needed to ensure the changes [19].

It was found that dentists from age group >36 years and above had better knowledge ($p < 0.05$) about CPR. This can be reasoned by interpreting the experience of the elderly age group dentists. The male dentists in Bhubaneswar had a better knowledge about the location of chest compression than the females.

To prepare for emergencies we need to involve personal, staff, and office preparation wherein under personal and staff preparation, an in-depth knowledge of signs, symptoms, and management of emergencies, basic life support (BLS) measures, and cardiopulmonary resuscitation (CPR) are some of the essentials to be included. Office preparation involves maintaining emergency equipment, emergency drugs, and backup medical assistance. Effective management of an emergency situation in the dental office is ultimately the dentist's responsibility. The lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal action. Thus, need of the hour is framing of legislations and update of the emergency medical kits.

LIMITATIONS

Since the study was conducted in a single geographical area, generalization should be done with caution. Future studies can include a question regarding the most frequently encountered medical emergency situation faced by the dentist in their practice. Dental students and interns can also be assessed for their preparedness to handle emergencies as this group can effectively be trained during early stages of their career.

CONCLUSIONS

A detailed knowledge about the signs, symptoms and appropriate management of the emergencies is the only way to handle these kinds of situations. Our study findings suggest that a moderate number of dentists have knowledge about the emergencies whereas a majority remains unaware on how to deal with these situations. Awareness of EMS and CPR among dental practitioners is very minimal and needs improvisation. Besides that, attending continuing

dental education program consisting of workshops and hands-on courses in this field should be made mandatory.

Conflicts of interest

None.

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ANNEX 1. QUESTIONNAIRE

1. Do you enquire about medical history including medication and allergy? Yes/No
2. Do you obtain filled health history performa from the patients? Yes/No
3. Do you obtain the vital signs (blood pressure, pulse, respiration, and temperature) of the patients before commencing any treatment? Yes/No
4. Have you attended any workshop on emergency training or management programs? Yes/No
5. Do you think you can handle any emergency condition at your dental office? Yes/No
6. Can you give an intramuscular injection? Yes/No
7. Can you give an intravenous injection? Yes/No
8. Availability of emergency kits at dental office? Yes/No
9. Availability of emergency drugs. Yes/No
 - ADRENALINE
 - ORAL GLUCOSE
 - AMMONIA INHALANT
 - HYDROCORTISONE
 - ATROPINE
10. Do you think it is necessary to attend any workshop on management of medical emergencies? Yes/No
11. A patient suffered from syncope when you commenced a dental procedure. What would be your immediate action?
 - a. continue dental procedure
 - b. place patient in Trendelburg position and give ammonia inhalant
 - c. make patient to sit in upright position
 - d. not sure
12. A patient is cited with airway obstruction during dental treatment due to aspiration of foreign body what would you do?
 - a. attempt Heimlich/ Triple manoeuvrer
 - b. Examine mouth and local area
 - c. ask patient to cough
 - d. all of the above
13. If you confirm somebody is not responding to you even after shaking and shouting at him. What will be your immediate action?
 - a. start Cardio Pulmonary Resuscitation (CPR)
 - b. activate Emergency Medical Services (EMS)
 - c. put him in recovery position
 - d. not sure
14. How do you plan for extraction of a tooth in patients with prosthetic heart valve?
 - a. advise antibiotic prophylaxis
 - b. ask the patient to stop blood thinners
 - c. advise the patient to take consent from the general physician
 - d. all of the above

15. Which of the following procedures can be performed in patients with prosthetic heart valve without giving antibiotic prophylaxis?
 - a. Dental radiographs
 - b. Placement of orthodontic brackets
 - c. Placement of removable prosthesis and orthodontic appliances
 - d. All of the above
16. What is the abbreviation of BLS?
 - a. Best life support
 - b. Basic life support
 - c. Basic lung support
 - d. Basic life sciences
17. What is the location of chest compression?
 - a. Left side of the chest
 - b. Mid chest
 - c. Xiphisternum
 - d. Not sure
18. Ratio of CPR, single rescuer in adult?
 - a. 15:2
 - b. 30:2
 - c. 15:1
 - d. not sure
19. How do you give rescue breathing in infants?
 - a. Mouth to mouth with nose pinched
 - b. Mouth to mouth and nose
 - c. Mouth to nose only
 - d. Mouth to mouth without nose pinched

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