

# Medical Emergency Preparedness in Dental Clinic among Dentists in Benin City

\*Osayande E, \*Omorogbe OS,  
\*\*Azodo CC

*\*Department of Oral and Maxillofacial Surgery, University of Benin Teaching Hospital, Benin City, Edo State*

*\*\*Department of Periodontics, University of Benin/University of Benin Teaching Hospital, Benin City, Edo State*

## ABSTRACT

**Objective:** To assess the level of preparedness for medical emergencies amongst dental resident doctors and house officers.

**Methods:** This cross-sectional study was carried out amongst all dental resident doctors and house officers in both Central Hospital and University of Benin Teaching Hospital in Benin City between November, 2017 and October, 2018. Data collection tool was a pre-tested 21-item self-administered questionnaire. The questionnaire elicited demographic characteristics, experiences with medical emergencies in dental clinic, perceived occurrence of medical emergencies medical emergency preparedness in dental clinic and their capabilities in the management. All data was analyzed using IBM SPSS version 20.0.

**Results:** A total of 80 questionnaires were distributed but only 71 of them were returned filled giving 88.8% response rate. In this study, 70.4% (50) showed that they have experienced medical emergencies in the dental clinic but only 31% (22) of the participants had same experience within the last 12 months. The majority of the medical emergency experienced was fainting (syncope) which represented 66.0% (49). 64.0% (32) showed that they played the role of assistance as against 26.0% (13) who attempted resuscitation while others 10% (5) showed that they observed. Only 8.5% (6) of the participants reported that they were very prepared in managing medical emergencies in dental clinic. Correct knowledge and improper sequence was highest for hypoglycemia (42.3%) followed asthma (15.5%), seizure (11.3%) and syncope (9.9%). The subjective assessment revealed that only 8.5% (6) of the respondents were very prepared to handle medical emergencies in the dental clinics. In an objective test of the respondents' knowledge on the management of some medical emergencies, the result showed that majority of the respondents had incomplete knowledge in the management of syncope (56.3%), seizure (49.3%) and asthmatic attack (39.4%). Correct knowledge and proper sequencing of the order of action was however highest in for hypoglycaemia (42.3%). The correct and proper sequence for syncope, seizures and asthmatic attacks was 9.9%, 11.3% and 15.5% respectively.

**Conclusion:** Data from this study revealed that majority of the dentists have witnessed medical emergencies in the dental clinic but were not prepared for the management.

**Keywords:** Dentist, dental clinic, fainting, medical emergencies.

## Correspondence

Dr E. Osayande  
Department of Oral and Maxillofacial Surgery  
University of Benin Teaching Hospital  
Benin City, Edo State  
E-mail: edos\_osayande@yahoo.com

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## INTRODUCTION

Medical emergencies in dental practice are those adverse medical events that may present in the course of dental treatment (Uyamadu & Odai, 2012). These medical emergencies could arise anytime in the course of management of dental patient. They are more likely to occur due to increased level of fear and anxiety associated with dental treatment (Bajaj, 2014).

It is worthy of note that some middle age adults and a large percentage of elderly seen in dental clinics suffer one chronic condition or the other which may predispose them to developing medical emergencies when undergoing dental treatment. However, poor knowledge of patient's past medical history and deficiencies in operator's skill could as well play a role in precipitating the medical emergency. These emergencies are relatively infrequent. Anders et al. (2010) reported that the incidence of medical emergencies at Buffalo School of Dental Medicine over 8½ years period was 164 events per million patients although this was lower than what was previously documented (Girdler & Smith, 1999). Medical emergencies in dental practice ranges from mild to serious versions and the later can be life threatening. About 90% of these emergency episodes constitute the mild version while 8% constitute the serious version (Haas, 2006). Patients receiving dental treatment can experience syncope, allergic reactions, angina pectoris, cardiac arrest, fits and seizures. Others include diabetic crisis, asthmatic attack, orthostatic hypotension, hypertensive crises and ingestion of foreign body.

A study that evaluated the prevalence of different medical emergency in dental healthcare setting revealed syncope as the most common (Girdle & Smith, 1999). Morse & Murthi (2004), also observed that the most frequently encountered medical emergencies in dental clinic are fainting (27.9%), postural hypotension (23.5%), hypoglycemia (19.5%), epileptic fit and seizure (11.1%) and asthma (8%).

Some basic equipment/material and drugs are necessary for resuscitation of patients in medical emergency. In fact, the Resuscitator Council of the United Kingdom (UK) requires all dental clinics in the UK to have a minimum emergency equipment that include a portable oxygen cylinder, oxygen face mask, set of oropharyngeal airway, device for inhaled bronchodilator, blood glucose measuring apparatus, defibrillator, suction, sterile syringe and needle (Mostafa et al., 2015).

The essential drugs which should be part of the emergency kit in clinic includes oral carbohydrate, oxygen, adrenaline, nitroglycerin, antihistamine, salbutamol (bronchiodilator), and aspirin. Others include naxolone, nitrous oxide, glucagon, atropine, ephedrine, corticosteroid, flumazenil and morphine (Uyamadu & Odai, 2012).

There is increasing number of older people in Nigeria and they are expected to visit the dental clinic in increasing number due to increasing oral health awareness and accessibility to oral health facilities. This increase may likely increase the prevalence of medical emergencies in dental

healthcare setting in Nigeria. However, there is paucity of literature assessing the level of preparedness for medical emergency amongst dentists especially in a poor resource setting (Ugbodaga et al., 2012).

The objective of this study was to assess the level of preparedness for medical emergencies amongst dental resident doctors and house officers.

## MATERIALS AND METHODS

This cross-sectional study was carried out amongst all dental resident doctors and house officers in both Central Hospital and University of Benin Teaching Hospital in Benin City between November, 2017 and October, 2018. All dental resident doctors and house officers practicing in Central Hospital and University of Benin Teaching Hospital in Benin City who gave informed consent were included in this study while those who did not give informed consent and were absent during the study were excluded. A total of 80 participants were recruited which exceeded the minimum sample size of 60 calculated using Cochran's formula for epidemiological study.

Data collection tool was a pre-tested self-administered questionnaire. The questionnaire which contained 21 questions elicited demographic characteristics, experiences with medical emergencies in dental clinic, perceived occurrence of medical emergencies and medical emergency preparedness.

Informed consent was obtained from participants. Participation was voluntary and no incentive was offered. All data was analyzed using IBM SPSS version 20.0.

## RESULTS

A total 80 questionnaires were distributed but only 71 of them were returned filled giving 88.8% response rate. The majority of the participants were 31-35 years (42.3%), males (62.0%), those specializing in Oral Surgery (26.8%), Registrar (53.5%), those with 6-10 years practice experience (46.5%) and those that attend to 11 or more patients per week (Table 1).

In this study, 70.4% showed that they have witnessed medical emergencies among patients in the dental clinic but only 31.0% of the participants had same experience within the last 12 months. Also, majority of the medical emergency experienced was fainting (syncope) which represent 66.0% (49). About two-thirds (64.0%) showed that they played the role of assistance as against 26.0% who attempted resuscitation while others 10.0% observed (Table 2). The most frequently ranked occurring medical emergencies reported by the participants was fainting followed by hypoglycemia (Table 3). Only 8.5% of the participants reported that they were very prepared to manage medical emergencies in dental clinic (Figure 1). Correct knowledge and improper sequence was highest for hypoglycemia (42.3%) followed asthma (15.5%), Seizure (11.3%) and syncope (9.9%) (Figure 2).

Table 1: Demographic characteristics of the participants

Characteristics	Frequency (n)	Percent (%)
<b>Age (years)</b>		
20-25	7	9.9
26-30	15	21.1
31-35	30	42.3
36-40	16	22.5
41-45	2	2.8
46-50	1	1.4
<b>Gender</b>		
Male	44	62.0
Female	27	38.0
<b>Specialty</b>		
Oral Surgery	19	26.8
Conservative	7	9.9
Oral Medicine	4	5.6
Periodontics	3	4.2
Paedodontics	5	7.0
Orthodontics	12	16.9
Family Dentistry	8	11.3
Oral Pathology	4	5.6
Prosthetics	3	4.2
Community Dentistry	6	8.5
<b>Status</b>		
Senior Registrar	11	15.5
Registrar	38	53.5
House Officer	22	31.0
<b>Years of Experience</b>		
1-5	28	39.4
6-10	33	46.5
11-15	10	14.1
<b>Average number of patients seen per week</b>		
1-10	30	42.3
11+	41	57.7
Total	71	100.0

Table 2: Medical emergencies occurrence experiences among the participants

Variable	Frequency (n)	Percent (%)
<b>Practice life experience</b>		
Yes	50	70.4
No	21	29.6
Total	71	100.0
<b>12 months experience</b>		
Yes	22	31.0
No	49	69.0
Total	71	100.0
<b>Type of emergency</b>		
Fainting	33	66.0
Seizure	2	4.0
Postural hypotension	4	8.0
Asthma	5	10.0
Anaphylactic shock	1	2.0
Foreign body ingestion	2	4.0
Hypoglycaemia	3	6.0
Total	50	100.0
<b>Role in the management of the emergency</b>		
Performer	13	26.0
Assistant	32	64.0
Observer	5	10.0
Total	50	100.0

Table 3: Perceived ranking of medical emergencies in Dental Clinic among the participants

Medical emergencies	Rank
Fainting	1
Hypoglycaemia	2
Foreign body ingestion	3
Fits/Seizure	4
Postural hypotension	5
Asthma	6
Anaphylactic shock	7
Angina pectoris	8
Cardiac arrest	9
Psychiatric (Hyperventilation syndrome)	10
Adrenal Insufficiency	11

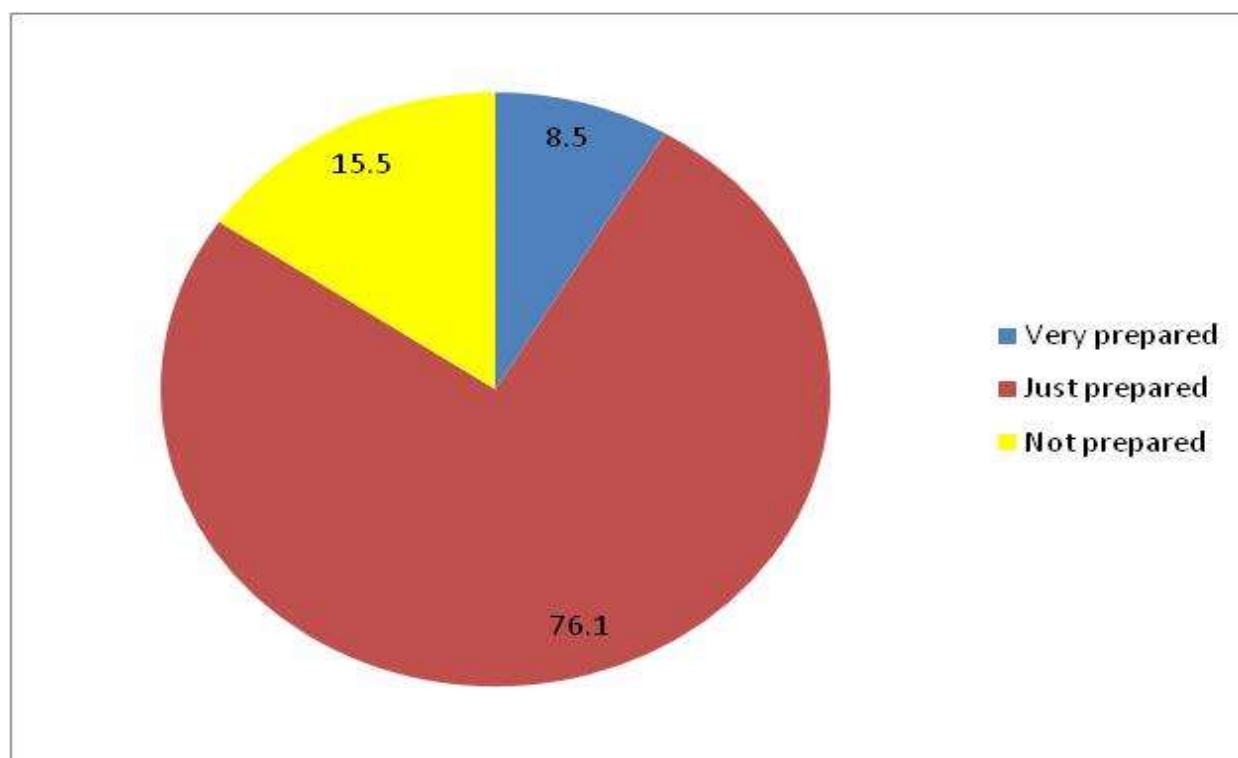


Figure 1: Subjective medical emergencies preparedness among the participants

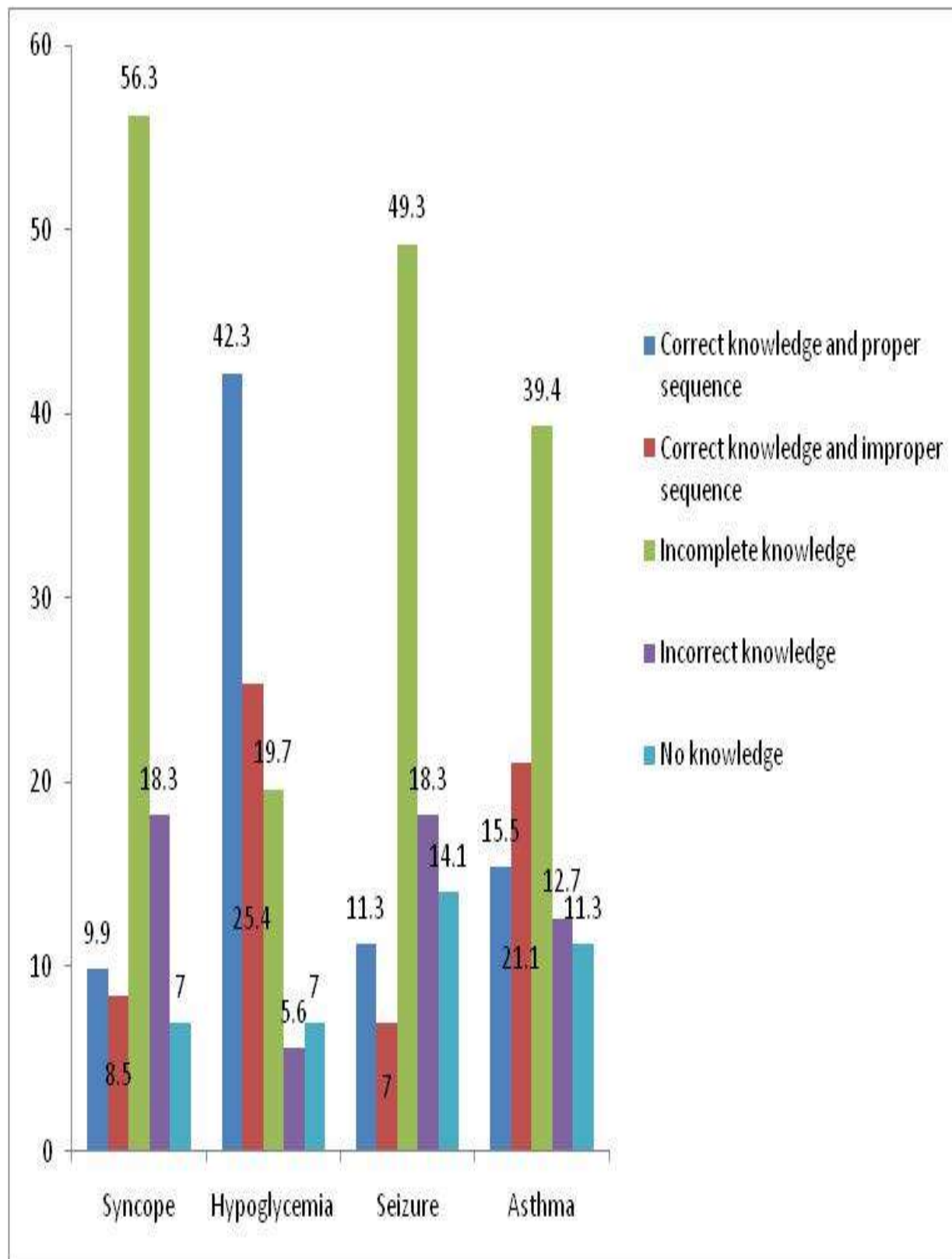


Figure 2: Objective assessment of specific medical emergencies preparedness among the participants

## DISCUSSION

Despite proper history taking and examination of patients, medical emergencies may still occur, however, the level of medical emergencies preparedness by dentist has been rated

low in the literature. This may be because these emergencies are relatively uncommon (Anders et. al., 2010) and so they are not anticipated.

In this study, only resident doctors and house officers were evaluated. The senior registrar, registrar and house officers constituted 15.5%, 53.5% and 31.3% of the participants respectively. About 62.0% of the participants were males which is in agreement with other studies which showed that male practitioners are about 65% of the dental professionals (Ogunbodede, 2004).

This study showed that the most frequently experienced medical emergency in dental clinics is fainting which is similar to what was observed by Morse & Murthi (2004) among dentist in Fiji islands. However, the perceived rate of fainting (66.0%) was much higher than that of earlier studies which reported 27.9%. This difference may be due to the fact that while this study looked at the perception of the participants, earlier study considered actual clinical cases that were recorded over a period of time.

In this study, only 8.5% of the participants expressed their readiness to attend to and manage any medical emergencies in the dental clinic, most of the participants (76.1%) reported that they were just prepared while 15.5% said they were not equipped with the knowledge and skill to manage medical emergencies. This study supports other studies which indicated poor preparedness and low confidence among dentists in the management of medical emergencies in dental clinics (Atheton et al., 1999; Broadbent & Thomson, 2001; Hashemipour, 2009; Jodalli & Ankolo, 2012; Stafuzza et al., 2014).

Medical emergencies are sudden, unexpected events, and may not follow previous history. Dentist should be equipped with the requisite knowledge, confidence and skill to resuscitate a dental patient in case of medical emergency. Most of the participants reported that they played the role of an assistant in the management of the medical emergencies they witnessed. This agrees with the previous report by Ahmed et al. (2013) that only a few dentists are knowledgeable and skilled in the act of managing medical emergencies. However, most of the participants were of the junior cadre.

The need to be able to handle medical emergencies in dental clinic, once they occur, cannot be overemphasized. However, only about half (46.3%) of the participants reported that they had postgraduate training on medical emergencies. Most of these trainings were in the form of class seminars. A few (11.3%) of the study respondents reported to have had a live demonstration/drill on medical emergency management. This is similar to what was reported by Gupta et al. (2008) in Udupi and Mangalore, India and Ugboaga et al. (2012) in Benin City, Nigeria. Lack of funding for retraining of dental health care providers may be responsible for this.

In an objective assessment of the participants' knowledge in the management of four most common medical emergencies (syncope, hypoglycaemia, seizure, asthmatic attack), it was revealed that most of the participants had incomplete knowledge except for hypoglycemia where 42.3% correct knowledge and proper sequence of action was observed. This was also similar to the work done by Shenoy et al. (2013), where they showed that there are deficiencies in the ability of dentists to manage medical emergencies in dental clinics.

## CONCLUSION

Data from this study revealed that majority of dentists in Benin City have witnessed medical emergencies in their dental clinic, but are however, not adequately knowledgeable, confident and skilled in the management of these medical emergencies. Our work also shows that most clinics do not have well outlined Departmental protocol for the management of medical emergencies. For those that do, some of the participants were not aware. It is therefore imperative for dentists to mandatorily attend a basic and/or an advanced life support course at regular intervals (once yearly). This will equip the dentists with knowledge and skill to manage medical emergencies when they encounter any.

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## Conflict of interest

The authors declare that they have no conflicts of interest.

## REFERENCES

- Anders PL, Comeau RL, Hatton M, Neiders ME (2010). The nature and Frequency of Medical emergencies among patients in a dental school setting. *J Dent Educ*; 74(4):392-396
- Atheton GJ, McCaul JA, Williams SA (1999). Emergency in general dental practice in Great Britain. Part 1: their prevalence over a 10 years period. *Br Dent J*; 186(2):72-79.
- Bajaj KL (2014). Emergency drugs and equipment in dental practice. *J Adv Med Dent Sci Res*; 2(4):136-140
- Broadbent JM, Thomson WM (2001). The readiness of New Zealand general dental practitioners for medical emergencies. *N Z Dent J*; 97(429):82-86.
- Girdler N, Smith DG (1999). Prevalence of emergency event in British dental practice and emergency management skill of British dentist. *Resuscitation*; 41:59-67.
- Gupta T., Aradhya MR, Nagaraj A (2008). Preparedness for management of medical emergencies among dentists in Udupi and Mangalore, India. *J Contemp Dent Pract*; 9(5):92-99.
- Haas DA (2006). Management of medical emergencies in the dental office. Condition in each country, the extent of treatment by the dentist. *Anesth Prog*; 53:20-24.
- Morse Z, Murthi VK (2004). Medical emergencies in dental practice in the Fiji Islands. *Pac Health Dialog*; 11(1): 55-85.
- Jodalli PS, Ankolo AV (2012). Evaluation of the knowledge, experience and perception about medical emergencies amongst dental graduates (interns) of Belgaum City, India. *J Clin Exp Dent*; 4:e14 -e18.
- Mostafa A., Talib A., Hassan A., Ali A, Omran A, Adeeb A, Muhammed AN (2015). Medical emergencies encountered in dental clinics. A study from the eastern province of Saudi Arabia. *J Fam Comm Med*; 22(3):175-179.
- Ogunbodede EO (2004). Gender distribution of dentist in Nigeria, 1981 to 2000. *J Dent. Educ*; 68:15-18.

- Hashemipour M (2009). Dentist's preparedness and knowledge of emergency cases in dental offices. Shiraz Univ Dent J; 10(3):222- 223.
- Prasad KD, Hegde C., Alva H. Shetty M (2012). Medical and dental emergencies and complications in dental practice and its management. J Educ Ethics Dent; 2(1):13-19.
- Shenoy N, Ahmed J, Ongole R., Boaz K, Srikant N (2013). Are dental surgeons prepared for medical emergencies. Int J Biomed Res; 4(9):461-464.
- Stafuzza TC, Carrara CFC, Oliveira FV, Santos CF, Oliveira TM (2014). Evaluation of the dentist's knowledge on medical emergency. Braz. Oral Res; 28(1):1-5.
- Ugbodaga PI, Ehigiatior O, Ehizele AO (2012). Self-reported preparedness for medical emergency among dentists in two hospitals in Benin City. Ebonyi Med J;.11:1-2.
- Uyamadu J, Odai CD (2012). A review of medical emergencies in dental practice. Orient J Med; 24(3-4):1-9