Dental emergencies at the University of Port Harcourt Teaching Hospital

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Abstract

Background: Dental emergencies represent a significant burden in both developed and developing countries, often requiring immediate intervention to manage pain, infection, trauma, or life-threatening complications.

Aim: This study aimed to evaluate the spectrum, frequency, and demographic distribution of dental emergencies presenting at the University of Port Harcourt Teaching Hospital (UPTH).

Methods: A retrospective, descriptive cross-sectional analysis was conducted on all dental emergencies presenting to UPTH's Dental Out-Patient Clinic and Emergency Department from January 2023 to December 2024. Data were collected from clinical records and analyzed using descriptive statistics and chi-square tests.

Results: A total of 1,598 cases were recorded, with the majority (94.1%) presenting at the dental outpatient clinic. The mean age of the patients was 33.2 ± 16.8 years, and females accounted for 59.0% of the cases. Odontogenic infections were the most common emergencies (86.5%), particularly acute apical periodontitis (61.5%). Traumatic dental injuries constituted 6.4%, while jaw and soft tissue trauma accounted for 3.9%. Significant associations were found between type of emergency and age, gender, and route of presentation (p < 0.001). Trauma-related cases were predominantly seen in males and presented more frequently at the emergency unit.

Conclusion: Dental emergencies at UPTH were predominantly odontogenic infections presenting at the out-patient clinic, while trauma-related cases were more likely to present through the emergency department.

Keywords: Dental emergencies, odontogenic infections, maxillofacial trauma

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INTRODUCTION

Dental emergencies are acute oral health conditions that often require immediate clinical intervention to arrest bleeding, alleviate severe pain, manage infections, This is an open access journal and articles are distributed under the terms of the Creative Commons Attribution License (Attribution, Non-Commercial, ShareAlike 4.0) -(CCBY-NC-SA4.0) that allows others to share the work with an acknowledgement of the work's authorship and initial publication in this journal.

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prevent further tissue destruction, or address potentially life-threatening complications.^{1,2} These emergencies encompass a wide spectrum of presentations resulting from trauma, pulpal or periapical infections, periodontal diseases, or complications

following dental procedures. emergencies constitute a significant aspect of the global burden of oral health conditions in both developed and developing countries, comprising a large proportion of cases seen in both out-patient dental clinics and hospital emergency departments.⁴⁻⁶ However, in lowand middle-income countries (LMICs), like Nigeria, the burden of dental emergencies is often exacerbated by delayed presentation, poor oral hygiene practices, and limited access to both preventive and therapeutic dental care.⁷ The bulk of dental emergencies result from untreated dental caries and periodontal diseases which subsequently progress to conditions such as irreversible pulpitis, acute apical periodontitis, periapical abscesses, and even cellulitis.⁵⁻⁷ In children and adolescents, traumatic dental injuries also contribute significantly to emergency visits and can lead to long-term functional and aesthetic deficits if not properly managed.^{1,8}

The pattern and presentation of dental emergencies can vary widely depending on geographic, socioeconomic, and cultural factors. In Nigeria, previous studies have shown that patients mostly visit the dental clinic because of pain, swellings, and holes in the teeth.^{9,10} These conditions often reflect both the prevalence of untreated dental caries and the underutilization of routine dental care services, which may be due to cost, limited awareness, or fear of dental treatment.⁵ On the other hand, studies in hospital emergency departments reveal that the commonest oral and maxillofacial emergencies include jaw fractures, soft tissue lacerations and traumatic dental injuries. 11-13

Early recognition and prompt management of dental emergencies is essential because of their profound clinical and public health implications. If **left** untreated, dental emergencies e.g. deep fascial space infections can lead to airway obstruction or cause systemic sepsis, both of which are potentially life threatening.¹⁴ Additionally, the economic burden associated with emergency dental care is considerable, as many patients seek treatment only when pain becomes unbearable or when complications arise, thereby requiring more resource-intensive interventions. 4,15 Furthermore, the high prevalence of dental-related emergency visits places additional pressure on hospital emergency units, already grappling with other medical emergencies and related cases. 16 This underscores the need for targeted studies that will explore the clinical presentation and the demographic characteristics of dental emergencies.

Despite their clinical significance, there is a relative paucity of epidemiological data on the burden and characteristics of emergencies in Nigeria. The University of Port Harcourt Teaching Hospital (UPTH) is a tertiary healthcare institution in Nigeria's Niger Delta region, it serves as a major referral centre for both medical and emergencies. Despite the increasing demand for emergency dental services in this setting, there is paucity of comprehensive data on the nature and distribution of dental emergencies encountered in this hospital. By examining the pattern of dental emergencies at UPTH, this study sought to fill a critical gap in the literature and provide empirical data to inform local clinical practice and health system planning. Previous Nigerian reports have mostly been skewed, examining only cases that presented to the emergency department. 11-13 However, many dental emergencies may also present to the dental out-patient clinic. This study aims to give a wholistic data by including all dental emergencies presenting at the emergency unit, as well as those presenting at the dental out-patient clinics.

Therefore, the aim of this study was to spectrum, frequency, evaluate the and demographic distribution of dental emergencies presenting at the University of Port Harcourt Teaching Hospital (UPTH). The findings will serve as a foundation for strategic interventions aimed at improving emergency dental services, informing public health interventions such as developing preventive oral health policies, resource allocation, and workforce training.

METHODS

Study design and population

This was a retrospective, descriptive cross-sectional study conducted at UPTH, Port Harcourt, Rivers State, Nigeria. The study population comprised all patients who presented with dental emergencies at the Dental Clinic as well as the Emergency Department of the Teaching Hospital over a two-year period (from January 2023 to December 2024). Emergency dental cases were identified from the clinical records and categorized based on presenting complaints and final diagnoses.

Inclusion and exclusion criteria

All patients who presented with acute dental conditions necessitating immediate or urgent care (such as odontogenic pain, facial swellings, dentoalveolar trauma, uncontrolled bleeding, or post-operative complications), were included in the study. Exclusion criteria included patients with incomplete documentation or those who presented for elective or follow-up procedures.

Data collection

Data was extracted from the dental clinics registers and individual patient case notes using a structured data collection form. Variables collected include: demographics (age, gender), specific diagnosis and type of dental emergency, which was then categorized into five: (i) Dental/Orofacial infections (ii) Traumatic injuries to the teeth and their supporting structures (iii) Traumatic injuries to the jaw bones and orofacial soft tissues (iv) Traumatic injuries to the orofacial soft tissues only (v) Others.

Data analysis

The collected data was entered into IBM SPSS Statistics version 25 (IBM Corp., Armonk, NY, USA) and analyzed descriptively. Categorical variables were summarized as frequencies and percentages, while continuous variables (e.g., age) were reported as means and standard deviations. Associations between demographic variables and types of emergencies was determined using the Chi-square test or Fisher's exact test where appropriate. A *p*-

value of <0.05 was considered statistically significant.

Ethical considerations

Ethical approval for the study was obtained from the Research and Ethics Committee of the University of Port Harcourt Teaching Hospital. [Protocol number: UPTH/ADM/90/S.11/VOL.XI/1921]. All data were handled with strict confidentiality, and patient identifiers were anonymized during data extraction and analysis in compliance with ethical standards for retrospective studies.

RESULTS

Overview

A total of 1,598 dental emergency cases were recorded between January 2023 and December 2024 at the University of Port Harcourt Teaching Hospital. Of these, 1,503 (94.1%) presented at the Dental Out-Patient Clinic, while 95 (5.9%) were seen at the Accident and Emergency (A & E) Department. The patients' ages ranged from 1 to 87 years, with a mean age of 33.2 \pm 16.8 years. The highest frequency of cases (29.1%) occurred among individuals aged 20–29 years, followed by the 30–39 years age group (18.6%). There was a female predominance, with 655 males (41.0%) and 943 females (59.0%), giving a male-to-female ratio of approximately 1:1.4. (Table 1).

Distribution of emergency types

The most frequently encountered dental emergencies were odontogenic infections, accounting for 1,383 cases (86.5%). Traumatic dental injuries comprised 103 cases (6.4%), with complicated crown fractures, and traumatic tooth avulsions being the most common types. Trauma to the jawbones and orofacial soft tissues represented 62 cases (3.9%). Overall, the most frequent dental emergencies were acute apical periodontitis (61.5%), irreversible pulpitis (13.5%) and dentoalveolar abscess (10.9%). (Figure 1)

Demographic associations

There was a statistically significant association between age group and class of dental emergency (p < 0.001). Odontogenic infections were most prevalent in the third decade of life (20-29 years), while traumatic

dental injuries were more common in the second and fifth decades of life.

Temporal trends

Dental emergencies were most commonly encountered in the month of January (14.1%), and least seen in the month of August (5.6%). Figure 2 shows the monthly average of dental emergencies over the two-year period. Cumulatively, most of the cases were recorded in the first quarter of the year (January – March), while the fewest number of cases were seen during the third quarter (July – September). However, there was no statistical significance in the temporal trends. (Table 1)

Comparison based on route of presentation

There were notable differences in the presentation of dental emergencies, depending on the route of presentation. (Table 1) Cases presenting at the out-patient clinic peaked among those aged 20-29 years (29.4%), showed a female predominance (60.6%) and were mostly infective (91.3%) in origin. On the other hand, cases presenting at the accident/emergency department peaked among those aged 30-39 years (29.5%), had male predominance (66.3%) and were mostly of traumatic aetiology (83.2%). These differences in age group (p < 0.001), gender (p < 0.001) and type of dental emergency (p < 0.001) were all statistically significant.

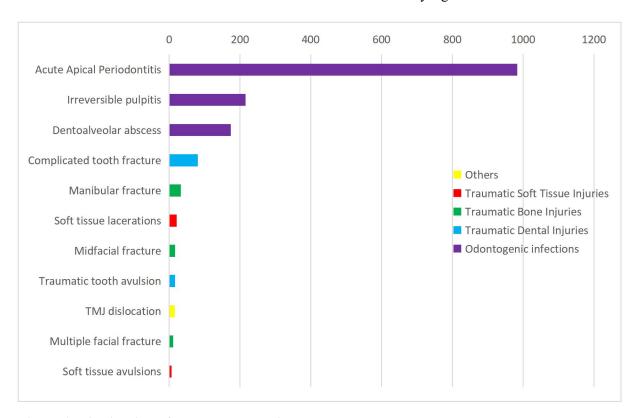


Figure 1. Distribution of dental emergencies by category

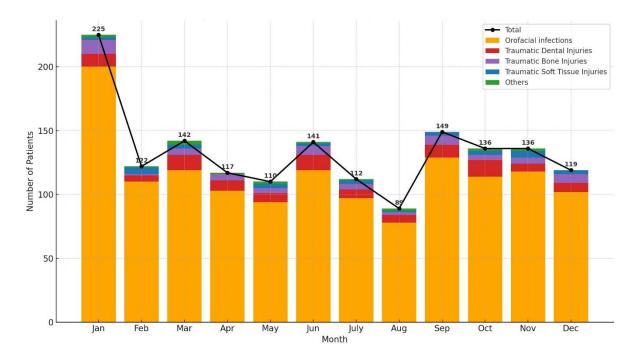


Figure 2. Average monthly distribution of the dental emergency cases

Table 1. Demographic characteristics of dental emergencies based on route of presentation

Demographic characteristics	Overall N (%)	Out-Patient Clinic N (%)	Emergency Dept.* N (%)	p-value
	(100)			
Age group (years)				
0 - 9	91 (5.7)	82 (5.5)	9 (9.5)	
10 - 19	226 (14.1)	219 (14.6)	7 (7.4)	
20 - 29	465 (29.1)	442 (29.4)	23 (24.2)	
30 - 39	297 (18.6)	269 (17.9)	28 (29.5)	p=0.039
40 - 49	242 (15.1)	225 (15.0)	17 (17.9)	
50 - 59	138 (8.6)	133 (8.8)	5 (5.3)	
60 - 69	93 (5.8)	88 (5.9)	5 (5.3)	
70 - 79	34 (2.1)	33 (2.2)	1 (1.1)	
80 - 89	12 (0.8)	12 (0.8)	0 (0)	
Gender				
Male	655 (41.0)	592 (39.4)	63 (66.3)	p<0.001
Female	943 (59.0)	911 (60.6)	32 (33.7)	
Type of Dental emergency				
Dental/Orofacial infections	1383 (86.5)	1372 (91.3)	11 (11.6)	
Traumatic dental injuries	103 (6.4)	98 (6.5)	5 (5.3)	p<0.001
Traumatic injuries to the	62 (3.9)	21 (1.4)	41 (43.2)	•
jaw bones and orofacial soft tissues	- ()	()	(-)	
Traumatic soft tissue injuries	33 (2.1)	0 (0)	33 (34.7)	

Others	17 (1.1)	12 (0.8)	5 (5.3)	
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Temporal trends				
January – March	489 (30.6)	462 (30.7)	27 (28.4)	
April – June	368 (23.0)	351 (23.4)	17 (17.9)	p=0.334
July – September	350 (21.9)	329 (21.9)	21 (22.1)	-
October – December	391 (24.5)	361 (24.0)	30 (31.6)	
Overall Total	1598 (100.0)	1503 (100.0)	95 (100.0)	

^{*}Dept. = Department

DISCUSSION

This study offers valuable insight into the pattern and burden of dental emergencies at the University of Port Harcourt Teaching Hospital (UPTH), highlighting epidemiological trends relevant to resource planning and emergency care delivery. A total of 1,598 cases were recorded over the twoyear period, highlighting the substantial burden that dental emergencies place on tertiary care centres in low- and middleincome settings like Nigeria. overwhelming majority (94.1%) of the cases presented at the dental out-patient clinic with only a minority seen at the accident and emergency department.

The mean age of patients in this study was 33.2 ± 16.8 years, and is similar to that seen in previous studies. 10,17 The age distribution of emergency cases revealed a peak in the 20-29year age group, a finding that is consistent with previous Nigerian studies. 10,13 This age group may be more vulnerable due to poor oral hygiene habits, increased exposure to cariogenic diets, and inadequate preventive dental visits among young adults, possibly compounded by competing socioeconomic pressures. 12,18 The relatively high number of cases among females (59%) is consistent with patterns noted in other outpatient-based dental clinic audits, ^{10,19} and may reflect gender-based differences in healthcare-seeking behaviour, as women are generally more likely to utilize health services, including dental care, compared to men.²⁰ On the other hand, the male predominance observed among cases presenting at the Accident and Emergency Department, corroborates existing literature. This is because males are more likely to be involved in interpersonal violence, road traffic accidents, and sports injuries. 11-13

Our findings reveal overwhelming predominance of dental/orofacial infections, which accounted for 86.5% of all emergency presentations. In particular, acute apical periodontitis, irreversible pulpitis, dentoalveolar abscess were the most frequent diagnoses, reflecting the high prevalence of untreated dental caries and periodontal disease within the population.^{7,21} These findings are consistent with previous studies in Nigeria and other low and middle income countries (LMICs), which indicate that patients mostly seek dental care as a result of pain.¹⁹ This highlights that poor oral hygiene practices and delay in seeking care often led to advanced pulpal and periapical pathology at the time of presentation.^{1,22,23} Thus, there is need for greater public education on the need to seek dental care early, in addition to utilising available preventive dental services, as inadequate use of preventive dental services, coupled with late presentation, likely contributes to the progression of otherwise manageable dental conditions into acute emergencies requiring urgent intervention.⁵

Traumatic dental emergencies, though less common than infections, accounted for 6.4% of cases, with complicated crown fractures being the most common presentation, similar to the findings of Al-Jundi et al.²⁴ This indicates that trauma to the anterior teeth, especially in children and adolescents, is a leading cause of dental emergency visits and may result in long-term functional and aesthetic challenges if not promptly managed. 1.8,24

A significant strength of this study lies in its comparative evaluation of emergency presentations via two distinct routes: the dental outpatient clinic and the accident/emergency unit. The vast majority (94.1%) of cases presented via the Dental Out-Patient Clinic,

predominantly for infections, while only 5.9% presented to the Accident and Emergency Unit, most of which were trauma-related. This dichotomy was statistically significant across age group, gender, and class of emergency (p < suggesting that while infective 0.05), conditions are often perceived as painful but non-life-threatening, trauma-related emergencies are more likely to be perceived as urgent by both patients and healthcare providers. Similar findings were reported by Owotade et al.¹¹ indicating that non-trauma dental complaints are often underrepresented in hospital emergency audits. This underscores the need for integrated emergency care planning that considers the dual presentation routes of dental crises. These findings further buttress the importance of including both outpatient and emergency department data in epidemiological assessments of dental emergencies, as relying on one source alone may result in a skewed representation—as noted in prior studies limited to A&E data alone.11,12 In contrast to the trend in LMICs, where most dental emergencies presenting to the emergency unit were trauma-related, in high-income countries (HICs), infectionrelated conditions were the predominant emergencies even in hospital emergency departments.¹⁷ This may be attributed to better roads and better compliance to traffic regulations in HICs, thus reducing burden of trauma related to road traffic accidents.²⁵

The implications of our findings are multifold. First, the high proportion of preventable caries-related conditions suggests a breakdown in primary preventive care and highlights the urgent need for improved oral health education, programs, preventive care and intervention strategies. Community-based awareness and screening initiatives may help reduce the late presentation of dental conditions. Also, incorporating oral health into general primary healthcare initiatives may improve early diagnosis and reduce the burden services.26 emergency Second, significant proportion of trauma cases also calls for increased public health efforts in injury prevention and road safety enforcement. Thirdly, from a service delivery standpoint, the disparity in cases seen at the outpatient clinics and the A&E department suggests that different types of clinical preparedness and staffing may be necessary at these two points

of care. While outpatient services may benefit from expanded endodontic and minor surgical capabilities, the A&E department may require maxillofacial surgical expertise and trauma management tools.

Limitations of this study include retrospective design and reliance on the accuracy of recorded diagnoses. Some cases may have been missed due to incomplete documentation. Additionally, this study did not account for socioeconomic factors, which may have provided further insight into the drivers of dental emergencies and their impact on quality of life. Furthermore, information on oral hygiene of the patients and caries status of other teeth were not collected leading to conjecture that the patients had poor oral hygiene and high burden of untreated caries. Nonetheless, the relatively large sample size comprehensive inclusion of both outpatient and emergency unit data make our findings representative.

CONCLUSION

This study reveals that dental emergencies at UPTH were predominantly odontogenic infections, especially acute apical periodontitis, while trauma-related cases were less common but showed male predominance and were more likely to present through the emergency department. These findings highlight the need for regular dental visits to prevent or minimize the frequency of dental emergencies as recorded in the study. Emergency departments should be equipped and staffed appropriately to handle trauma-related dental emergencies, while routine clinics should strengthen capacity for managing infections effectively and promptly.

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Conflicts of interest

There are no conflicts of interest.

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