

ORIGINAL ARTICLE**Call hour maxillofacial emergencies presenting to a Nigerian teaching hospital****F. J. Owotade, O. A. Fatusi, M. A. Ojo¹***Department of Oral and Maxillofacial Surgery and Oral Pathology, Obafemi Awolowo University, Ile-Ife, Nigeria and ¹Department of Oral and Maxillofacial Surgery and Oral Pathology, University of Benin, Benin-City, Nigeria.***Summary**

Objective: The study was undertaken to document the pattern of maxillofacial emergencies presenting to the accident and emergency unit of the Obafemi Awolowo University Teaching hospital, Ile-Ife between January 2001 and December 2002. **Method:** The patients' demographics, the time of presentation, duration of emergency and mode of arrival was documented. Injuries of the oro-facial soft and hard tissues, injuries in other parts of the body, the investigations carried out and the management instituted was also recorded. **Results:** 106 patients representing 1.3% of all the Accident and Emergency admissions were seen by the maxillofacial unit. Males predominated (90 males against 16 females), mean age was 31.3 years, students (28%) were the most frequently encountered and weekends recorded the highest number of emergencies (50 patients or 47.2%). Trauma was the main reason for presentation (102 patients or 96.2%) and commercial vehicles were the commonest means of transportation to the hospital in 63 patients (59.4%). About a third of the subjects (31 or 36.1%) presented within the first hour, and the soft tissues of the midface were most often involved. The mandible was the most commonly fractured bone (20 patients or 19.6%) and limb injuries were the most commonly observed injury in other parts of the body (43 patients or 42.2%). Sixty-eight out of the 88 patients who required a surgical procedure were treated in the accident and emergency unit and 49 patients (46.2%) were admitted into the wards. The outcome was not significantly affected by the time or mode of presentation. **Conclusions:** There is a need for an oral and maxillofacial trauma registry at different locations in the country to ensure a long-term data collection for the development and evaluation of preventive measures.

Key words: Maxillofacial trauma, emergencies.**INTRODUCTION**

The American Association of Oral and Maxillofacial surgeons have defined emergency dental care as the treatment of haemorrhage, upper airway impair-

ment, trauma, infection or acute inflammation involving the oral and maxillofacial structures including teeth and dentoalveolar processes¹. The role of oral and maxillofacial surgery in the accident and emergency units has been recognized and trauma has played a role in the establishment of the specialty as the leading expert in the field of facial trauma^{2,3}.

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This is largely due to the fact that the head and face are the most frequently injured anatomic sites in motor vehicle crash victims⁴ and maxillofacial injuries constitute an important component in the multiple trauma victims^{5,6}. Other causes of trauma include interpersonal violence, falls, sport related injuries and gunshot injuries^{7,8}. Severe infection, temporomandibular disorders and bomb attacks are other instances that may require emergency management by oral and maxillofacial surgeons^{9,10}.

The pattern and presentation of maxillofacial emergencies have been studied in different parts of the world. In a large series from Innsbruck, Austria, activities of daily life and play accidents accounted for the majority of patients, followed by sports related emergencies³. A similar study in Nigeria, which concentrated on children, showed that road traffic accidents were the major aetiologic factors in maxillofacial emergencies¹¹.

This study is therefore aimed at documenting the pattern of maxillofacial emergencies and to evaluate the treatment and outcome. This is not only necessary for the evaluation of present preventive and therapeutic regimens but will also help to develop optimal treatment regimens and help in appropriate resource and manpower allocations^{12,13}.

MATERIALS AND METHODS

All the patients who presented to the Accident and Emergency department of the Obafemi Awolowo University Teaching hospital, Ile-Ife with maxillofacial emergencies during the

call hours of 4.00pm to 8.00 am from January 2001 to December 2002 were included in the study. A questionnaire was used to record the patients' demographics, day and time of presentation, duration of emergency and mode of arrival. Other factors recorded include; the patients' level of consciousness using the Glasgow Coma Scale (GCS) for trauma patients, the diagnosis of the patients' condition and the duration.

With regards to trauma patients, associated injuries outside the face were noted as well as the investigations carried out. The management instituted, where the treatment was carried out as well as the outcome of treatment while in the Accident and Emergency department were also noted.

Data was fed into an IBM compatible computer and analyzed using the SPSS 11.0 statistical package. Simple proportions were calculated and cross tabulations made for some parameters where a statistical significance was inferred at p value of less than 0.05.

RESULTS.

During the period under review 8,254 patients attended the Accident and Emergency department, there were a total of 106 maxillofacial cases representing 1.3 %. The age range was from 2 years to 70 years with a mean age of 31.3 years. More than half of the patients (50 patients, 55.7%) were in the third decade of life and males were in the majority (90 males against 16 females giving a male: female ratio of 5.6:1). The occupation of the patients is listed in Table 1. Students were the most commonly seen, and constituted 28.9%.

Table 1. Occupation of the emergency patients

OCCUPATION	No	%
SCHOOLING	28	26.4
TRADING/BUSINESS	23	21.7
ARTISAN	15	14.2
MOTORCYCLIST	4	3.8
DRIVING	5	4.7
FARMING	7	6.6
CIVIL SERVANT	8	7.5
UNEMPLOYED	3	2.8
NOT STATED	13	12.3
TOTAL	106	100.0

Friday recorded the highest number of patients (22 patients, 20.8%) and almost half of the patients (50 or 47.2%) presented on the weekend days of Friday to Sunday (Table 2).

Table 2. Day of presentation

DAY	No	PERCENT
MONDAY	12	11.3
TUESDAY	10	9.4
WEDNESDAY	11	10.4
THURSDAY	14	13.2
FRIDAY	22	20.8
SATURDAY	11	10.4
SUNDAY	17	16.0
NOT STATED	9	8.5
TOTAL	106	100.0

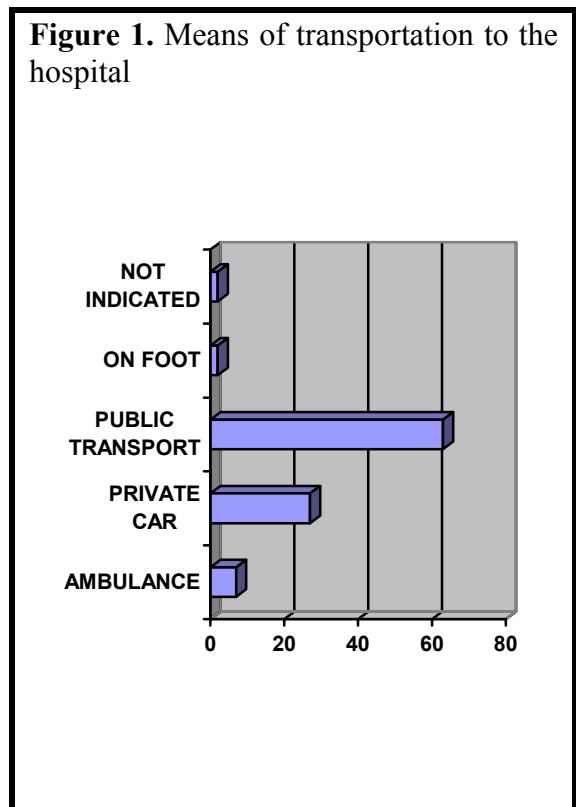
The causes of emergency as well as the age and sex distribution are shown in Table 3. Trauma was the most frequent cause of an emergency in 102 patients (96.2%). Other reasons for presentation include Ludwig’s angina, acute erythema multiforme and a rapidly growing tumour later diagnosed as rhabdomyosarcoma.

Table 3: Cause of emergency

CAUSE	No	%
Road Traffic Accident	87	82.1
Infection (Ludwig’s Angina)	2	1.9
Falls	3	2.8
Fights	2	1.9
Gunshot injury	7	6.6
Epileptic convulsion	2	1.9
Acute Erythema Multiforme	1	0.9
Rhabdomyosarcoma	1	0.9
Industrial Accident	1	0.9
TOTAL	106	100.0

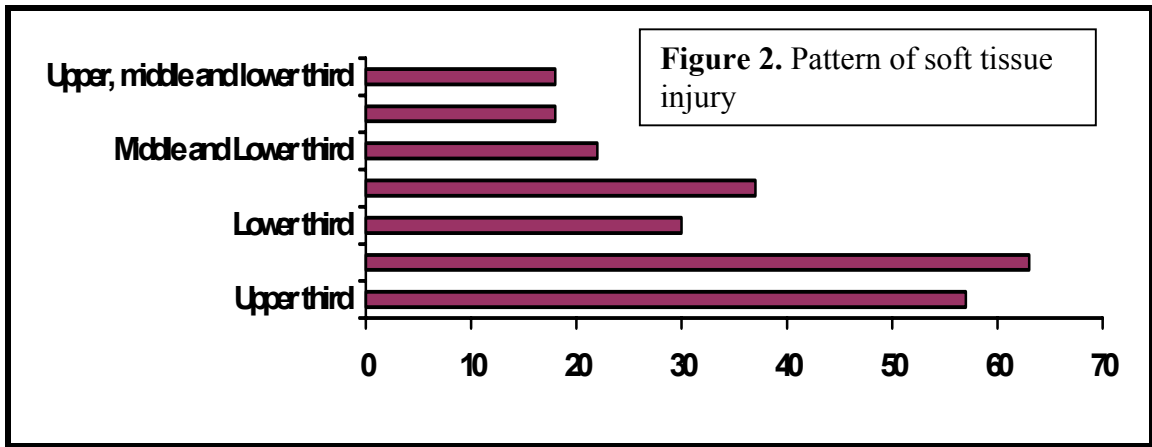
Sixty-three patients (59.4%) were brought to the Accident and Emergency by commercial transport. Twenty-seven patients (25.5%) came in private vehicles, 7 (6.6%) were brought by an ambulance and two (1.9%) came on foot (or were carried by relations) (Figure 1).

Figure 1. Means of transportation to the hospital



Majority of the patients 88 (83%) were fully conscious at presentation, 14 (13.2%) were semi conscious and 4 (3.8%) were in a coma. The level of brain injury as assessed for all the 102 trauma patients using the Glasgow Coma Scale (GCS) showed 4 patients (3.9%) had severe brain injury (GCS 4-8), 12 patients (11.8%) had moderate brain injury (GCS 9-12) while 6 patients (5.9%) had a mild brain injury (GCS 13-

14). The duration of the patients' condition could only be determined in 86 patients. Thirty-one of them (36.1%) presented within the first hour, 75 (87.2%) within 24 hours and 11 patients (12.9%) presented after 24 hours. In the trauma victims, the soft tissue of midface was involved in 63 patients (61.8%), the upper third of the face in 57 (55.9%) and the lower third in 30 patients (29.4%) (Figure 2).

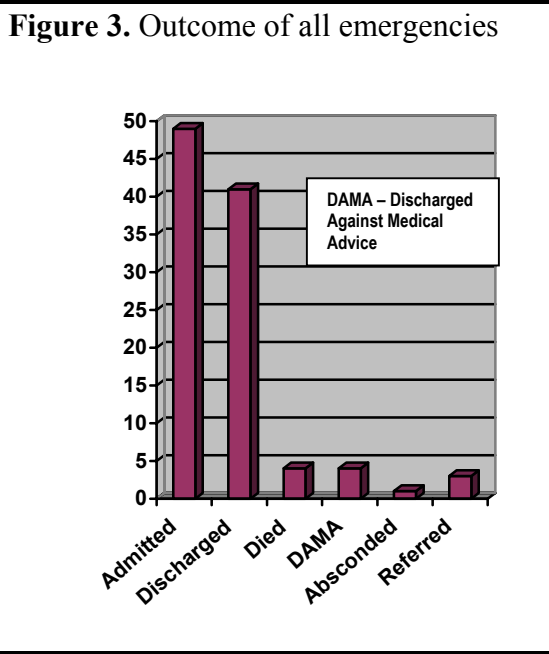


The combined percentage is greater than 100 as more than a third of the face was often involved in the same patient. The mandible was the most commonly observed fractured bone in 20 patients (19.6%) while the zygoma and mid facial skeleton fracture accounted for 17 patients (16.7%) and 10 patients (9.8%) respectively.

Limb injuries (hard and soft tissue) were the most commonly observed associated injuries in the trauma victims seen in 43 patients (42.2%). Sixteen patients (15.7%) had brain injuries 8 (7.8%) had eye injuries, 3 (2.9%) had cervical injuries and 2 patients (1.9%) sustained injuries to the chest. Seventy six (71.2%) had a packed cell volume check (PCV) while in the emergency department, grouping and cross matching of blood

was requested in 31 patients (29.2%) though only 8 patients (7.5%) actually received blood transfusion while in the Accident and Emergency department. The postero-anterior view of the skull was the most commonly requested radiographic view in 71 patients or 67%. This was followed by the occipitomeatal view, which was ordered in 38 patients or 35.8%. The other views are the oblique lateral views of the mandible in 34 patients (32.1%), true lateral view of the skull in 17 patients (16%), submentovertex skull view and Townes view in 4 patients (3.8%). Fifteen patients (14.2%) required limb radiographs while 10 patients (9.4%) had chest radiographs. Computed tomographic scan was done in only 5 patients out of those suspected with head injuries (4.7%).

In the management of emergencies, all the trauma patients had anti-tetanus prophylaxis, analgesics were prescribed in 101 patients (95.3%) and 102 patients (96.2%) were given antibiotics while dexamethasone was prescribed in 36 patients or 34 per cent. Sixty-eight (64.2%) out of the 88 patients that required a surgical procedure were operated in the Accident and Emergency, 13 (12.3%) were operated in the main operating theatre and the rest were referred to the outpatient clinic. The outcome for all the patients is presented in Figure 3.



Almost half of the patients were admitted into the ward (49 or 46.2%), 41 patients (38.7%) were discharged home from the Accident and Emergency unit, 4 died (3.8%), 4 discharged themselves against medical advice, 1 (0.9%) absconded and 3 were referred to other hospitals. The outcome was not recorded in three patients. Cross tabulations were computed to determine the effect of the patients' age, time and day of presentation on the outcome, no

statistically significant relationship was demonstrated.

DISCUSSION.

The pattern and presentation of maxillofacial emergencies have been studied in many parts of the world and maxillofacial injuries constitute an important component in the management of multiple trauma victims^{3,5,6,11}. This study has concentrated on the emergencies seen during the call hours of 4pm to 8am on weekdays and 24 hours on weekends and it is by no means a reflection of all the patients seen by the unit. Other conditions that constitute emergencies such as pulpitis, failed root canal treatments, fractured teeth or dentures and other maxillofacial emergencies, which present to the dental hospital during the day are not included. It is also probable that many emergencies are being seen by quacks and some private clinics, despite the fact that our hospital is a major referral centre in the environ. Patients may have patronized other clinics due to financial constraints.

The mean age of 31.3 years for our patients averages for the third and fourth decades of life, the age of activity. It is therefore not surprising that most of the patients are students and traders who are constantly traveling for one reason or the other. Such individuals are very prone to road traffic accidents, which accounted for the majority of the patients presenting as emergencies. This observation is supported by previous studies in Nigeria where road traffic accidents were the major cause of facial hard and soft tissue injuries and such individuals usually require emergency care^{14, 15}. A recent study from northern Nigeria however has demonstrated that facial injuries due to assault have been

on the increase¹⁶. The gunshot injuries recorded were due to armed robbery attacks, a deviation from a previous study conducted in our hospital where sport related activities (hunting) were mainly responsible¹⁷. The recent communal clashes in Ile-Ife and Modakeke with an attendant influx of arms and unemployment may be responsible for this trend. Weekends (Friday evening to Sunday) recorded many patients because of the twenty-four hour coverage and the fact that most social functions that necessitate traveling are also done on weekends. It is also a well-documented fact that emergencies present more frequently at the weekends¹⁸.

It is not surprising that approximately a third of the patients were only able to reach the hospital within the first hour which is usually the 'golden hour' in an emergency¹⁸. A situation where ambulance services are almost non-existent and patients have to be transported to the hospital in commercial vehicles or private cars (Figure 1) allows for this. Apart from the delay in conveying patients to the hospital, such vehicles are not designed for such functions and in some cases may worsen the condition of the patient. In spite of this limitations, the fact that 87.2% presented within 24 hours is an improvement over previous studies where only a third of patients managed to get to the hospital within a similar time frame^{14,16}. The observation that more Nigerians in recent time have acquired private vehicles may contribute to this. In the trauma victims, soft tissue injuries predominated a fact that has been well documented³. The pattern of soft tissue injuries, which is highlighted in Figure 2, contrasts with a similar study among children from our center in

which the upper third of the face was most commonly injured¹⁹. The larger ratio of the upper third of the face in children may explain the differences, especially in falls (which is common in children) where the head impacts on the floor and other objects. Additionally, our observation that mandibular fractures are the most commonly fractured bone of the facial skeleton agrees with reports from different parts of the world^{16,20,21}.

The importance of associated injuries in patients with facial injuries has been emphasized in a previous report from our institution where more than 20% had one form or the other¹⁴. While head injuries have been described as the most commonly associated concomitant injury with facial fractures^{13,20}, it ranked second after limb injuries in this study. Eye injuries were the third most frequently observed injury and this is important due to the possibility of visual loss. The incidence of eye involvement is high in midface fractures and with the absence of an obligatory seat belt law²², a situation which existed in Nigeria until January 2003 when the seat belt law was enforced by the Federal Road Safety Corps.

The role of computed tomographic scanning in the management of trauma related emergencies have been emphasized²³. This is especially relevant in patients with head injuries, which has been reported to be the most commonly associated injury in facial trauma²⁴. It is however unfortunate that only very few patients in this study had this mode of investigation carried out for the reason that they could not afford the cost. Good Samaritans, police or other voluntary organizations usually bring in many trauma victims and there is usually no relative to pay for this very important

investigation when the patients need it most. It is suggested that government should make this investigation available for all trauma victims during the initial phase of treatment and relatives could then pay for the services whenever they show up. The observation that not all the patients who needed a surgical intervention could be managed in the theatre is a reflection of the facilities available. While this study was being conducted, there was no functioning Accident and Emergency theater. This situation, which has since changed with the construction of a new Accident, and Emergency complex which has a functioning theatre.

It is obvious from this study that trauma victims, especially as a result of road traffic accident constitute the bulk of emergencies seen by the maxillofacial unit of the Obafemi Awolowo University Teaching Hospital, Ile-Ife, especially on weekends. There is therefore a need for every member of the

unit to be versed in the management of trauma victims. There is also a need to be on the lookout for associated injuries such as limb injuries and head injuries which may sometimes be a greater threat to the patients' life than the maxillofacial condition. In addition, there is an urgent need for the provision of ambulance services round the clock and free CT scans for all emergency victims in order to reduce morbidity and mortality. While this study has provided an insight into the nature of maxillofacial emergencies presenting to our hospital, it is by no means exhaustive and there is a need for larger surveys which is not only necessary for auditing the services provided but will also help in the appropriate planning and allocation of human and material resources. There is also a need for an oral and maxillofacial trauma registry at different locations in the country. This will ensure a long-term data collection for the development and evaluation of preventive measures³.

REFERENCES

1. Deluke DJ. Emergency dental care for the community: What is the responsibility of the hospital? *J. Dent. Pract.* 1976; 10: 43-45.
2. Wood GD and Leeming KA. Oral and maxillofacial surgery in accident and emergency departments. *J. Accid. Emerg. Med* 1995; 12: 270-272.
3. Gassner R, Tuli T, Hachl O, Rudisch A and Ulmer H. Craniofacial trauma: a 10 year review of 9543 cases with 21067 injuries. *J Craniomaxillofac. Surg.* 2003; 31: 51-61.
4. Reath DB, Kirby J, Lynch M and Maull KI. Patterns of maxillofacial injuries in restrained and unrestrained motor vehicle crash victims. *J. Trauma.* 1989; 29: 806-809.
5. Tcsherne H, Regel G, Pape HC, Pohlemann T and Krettek C. Internal fixation of multiple fractures in patients with polytrauma. *Clin. Orthop* 1998; 347: 62-78.
6. Adams CD, Januszkiewicz JS and Judson J. Changing patterns of severe craniomaxillofacial trauma in Auckland over eight years. *Aust N Z J Surg* 2000; 70: 401-404.
7. Hill CM, Burford A and Thomas DW. A one year review of maxillofacial sports injuries treated at an accident and emergency department. *Br. J. OralMaxillofac. Surg.* 1998; 36: 44-47.

8. Kassan AH, Laloo R and Kariem G. A retrospective analysis of gunshot injuries to the maxillofacial region. *SADJ* 2000; 55: 359-363.
9. Josell D. Evaluation, diagnosis and treatment of the traumatized patient. *Dent. Clin. North. Am* 1995; 39:270-272.
10. Odhiambo WA, Guthua SW, Macigo FG and Akama MK. Maxillofacial injuries caused by terrorist bomb attack in Nairobi, Kenya. *Int. J. Oral. Maxillofac Surg.* 2002; 31: 374-377.
11. Denloye OO, Fasola AO and Arotiba JT. Dental emergencies in children seen at University College Hospital, Ibadan, Nigeria- 5 year review. *Afr. J. Med Med. Sci.* 1998; 28: 197-199.
12. Mani SP, Cleaton-Jones PE and Lownie JF. Demographic profile of patients who present for emergency treatment at Wits' Dental School. *J. Dent Assoc. South. Afr.* 1997; 52: 69-72..
13. Hogg NJ, Stewart TC, Armstrong JE and Girotti MJ. Epidemiology of maxillofacial injuries at trauma hospitals in Ontario, Canada, between 1992 and 1997. *J. Trauma* 2000; 49: 425-432.
14. Ugboko VI, Odusanya SA and Fagade OO. Maxillofacial fractures in a semi-urban Nigerian teaching hospital. A review of 442 cases. *Int. J. Oral. Maxillofac Surg.* 1998; 27: 286-289.
15. Abiose BO. The incidence and management of middle third facial fractures at the University College Hospital, Ibadan. *East. Afr. Med. J.* 1991;68:164-173.
16. Olasoji HO, Tahir A, Arotiba GT. Changing picture of facial fractures in northern Nigeria. *Br. J. Oral. Maxillofac. Surg.* 2002;40:140-143.
17. Ugboko VI, Owotade FJ, Oginni FO and Odusanya SA. Gunshot injuries of the orofacial region in Nigerian civilians. *SADJ* 1999; 54: 418-422.
18. Leigh J, Neil-Dwyer G, Rowe NL and Williams JLI. Primary care In. Williams JLI eds. Rowe and Williams' Maxillofacial Injuries 2nd edition – Churchill Livingstone; 1994: 65.
19. Oginni FO, Fagade OO, Akinwande JA, Arole GF and Odusanya SA. Pattern of soft tissue injuries to the oro-facial region in Nigerian children attending a teaching hospital. *Int. J. Paediatr. Dent.* 2002 ;12:201-206.
20. Bo B, Gu X, Zhou S. An epidemiologic retrospective study of 1693 maxillofacial injuries. *Hua Xi Kou Qiang Yi Xue Za Zhi* 1998;16:56-58
21. Huang V, Moore C, Bohrer P, Thaller SR. Maxillofacial injuries in women. *Ann Plast Surg* 1998;41:482-484.
22. Abiose BO. Maxillofacial skeleton injuries in the western states of Nigeria. *Br. J. Oral. Maxillofac. Surg.* 1986;24:31-39.
23. Ashar A, Kovacs A, Khan S, Hakim J. Blindness associated with midfacial fractures. *Oral Maxillofac Surg* 1998;56:1146-1150.
24. Mick N, Brown DFM and Nadel E. Blunt multisystem trauma. *J. Emergency. Med.* 2003; 24: 449-454.
25. Bavetta S. and Benjamin JC. Assessment and management of the head injured patient. *Hosp. Med.* 2002; 63: 289-293.