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PATTERN OF PRESENTATION AND OUTCOME OF TRAUMATIC INJURIES AT THE ACCIDENT AND EMERGENCY DEPARTMENT OF A MAJOR TEACHING HOSPITAL SOUTHEAST NIGERIA

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ABSTRACT

Background: Traumatic injuries have been responsible for significant number of deaths globally. There is an increase in the number of trauma-related morbidities and, mortalities and, this trend has been projected to increase over time.

Aim: This study looked at the pattern, characteristics and outcome of traumatic injuries in Alex Ekwueme Federal University Teaching Hospital Abakaliki (AEFUTHA), southeast Nigeria

Methods: This is a retrospective, cross-sectional study that spanned over a period of 2 years (January 2018 to December 2019) in which patients that presented to the emergency room (ER) of AEFUTHA were studied. Health information data for the patients were extracted from their clinical folders and data analyzed using SPSS.

Results: 7117 patients were seen in the ER, out of which 2007 (28%) were trauma cases. The mean age of trauma patients was 29.18±14.66 years, the modal age group was 21-30 years with a male to female ratio of 2.6:1. Road traffic accident (RTA) accounted for about 70% of the cause of injuries followed by assault (12.4%). Head injury accounted for the highest proportion (30%) of encountered regional injuries seen. 44.3% of the trauma patients were managed successfully and discharged while 40.9% were admitted. 10.8% were discharged against

medical advice. The mortality rate was 3.2% while 0.8% of the patients were referred.

Conclusion: The productive age group were the most affected and RTA was the commonest cause of trauma. Head injury accounted for most of the mortalities observed. Discharge against medical advice was a trend observed among patients with fractures.

INTRODUCTION

Individuals are exposed to different forms of trauma daily. Trauma is a major cause of morbidity and mortality in our environment. Injury is one of the top 3 causes of death for people between 5 and 44 years of age worldwide and affects mostly young productive age group worldwide.¹ Many studies have shown that majority of these injuries involve young adult males between the ages of 21 and 40 years.²⁻⁵ This is probably because they are the active and adventurous group; therefore, they are exposed to risk of injury. This is a bad omen because it may lead to gradual and steady loss of the productive age-group in our population with a consequential negative economic impact on nations.

Up to 90% of global injury burden is borne by developing countries as a result of industrialization, motorized transportation, and armed ethno-religious conflicts.^{6, 7} In Nigeria, reports show that trauma is the main reason for emergency room admissions.⁴ A study done by Adeyi *et al*⁸ at Jos, northcentral Nigeria shows 31.1% of the cases presenting at the Emergency department was as a result of trauma, similar study done at Port Harcourt Nigeria reported an incidence of 20.9%.³ Prekker *et al* reported incidence of 24.4% for trauma cases in an Emergency department in Minnesota USA,⁹ this shows that trauma cases are also common in emergency department of developed nations.

Nearly a third of the global (5.8 million) deaths from injuries are from violence and nearly a quarter is due to road traffic crashes.¹ Injuries resulting from violence and road traffic crashes are predicted by World Health Organization (WHO) to rise in rank when compared to other causes of death, with road traffic crash deaths expected to become the 5th leading cause of death by 2030.¹ Other causes of traumatic injuries include fall from height, sports injuries, injuries from assaults, workplace injuries and domestic injuries.

Road traffic injuries (RTI) are the most frequently encountered injuries and the leading cause of death in Nigeria.^{10,11} This trend could be attributed to rapid unplanned, unregulated industrialization and, urbanization which has led to unprecedented surge in the use of automobiles. In Nigeria, regional variations in the patterns and aetiologies of these injuries have also been reported. The use of motorcycle and tricycles as a means of commercial transportation in some part of Nigeria may change the type and prevalence of injuries from road traffic crashes.²

A common practice observed in our sub-region is the act of patients not willing to accept orthodox treatment especially when there are associated bony injuries; hence, such people consent to be discharged against medical advice (DAMA). This is the usual trend when the injury is perceived as minor and should not warrant hospital admission

thereby opting for the traditional bone setters.¹²⁻¹⁶

Many studies have described various aspects of injuries in different parts of our region including the patterns.^{2, 4, 10, 11} However because of peculiarity of our commercial transport system whereby motorcyclists are still being allowed to ply the main town in the state, also the upsurge in bandits/farmers clashes, these study findings cannot easily be extrapolated to our environment. Understanding the prevalence of the injuries help to analyze the risk factors, develop effective preventive measures, and reduce morbidity and mortality from injuries and this forms the bases of our study.

The aim of the study is to find the pattern and characteristics of injuries in our environment and outcome. This will help to develop policies, preventive measures and effective management protocol for these injuries.

MATERIALS AND METHODS

Study area: This was a retrospective study of traumatic injured patients who presented to the surgical accident and emergency (ER) department of Alex Ekwueme Federal University Teaching Hospital Abakaliki, southeast Nigeria from January 2018 to December 2019.

The hospital is the only tertiary hospital in Ebonyi state and provides healthcare to people of Ebonyi state and, neighbouring states. AEFUTHA is a 720 bed capacity health facility. It offers 24-hour emergency services through the accident and emergency unit (ER). This unit is of 12 bed capacity with a status of full department. The head of the department is a consultant general surgeon and has 11 permanent medical officers, 30 nurses (of which four are accident and

emergency trained specialist nurses), 32 health attendants and 8 security officer. The department has supporting administrative, account and health information management units.

The surgical specialties of the hospital include, general surgery, plastic, cardiothoracic, maxillofacial and paediatric surgery. It also has neurosurgery, urology, orthopaedic surgery, otorhinolaryngology and ophthalmology units. All these specialties take daily unit calls in the ER. Patients are received, triaged and resuscitation commenced by the ER doctors before referring to the subspecialty involved. In cases of mass casualties all the surgical specialties and sometimes other departments are called up. Patients managed in ER are discharged home after full treatment, referred to another hospital or transferred to the wards directly or after operation. Some do request for discharge against medical advice (DAMA). Mortalities are sent to the morgue.

Study design: This is a retrospective study of all cases that presented to the ER of AEFUTHA from January 2018 to December 2019. Ethical clearance was obtained from the hospital's Research and Ethic Committee. Information were obtained from the Health Information Management Unit of the ER. The data collected were patients' demographic characteristics which include age and sex of individuals, other relevant information like the causes of the trauma and part of the body affected, discharge records, referrals, mortalities, and admissions. All the patients seen in the accident and emergency within the study period were noted and traumatic cases recruited for the study but those who were brought in dead were excluded.

Data analysis: The data collected and collated were entered into statistical package for social

sciences SPSS IBM version 22 software for analysis. The results were presented in tables.

RESULTS

A total of 7,117 patients were seen in the accident and emergency department during the study period, out of which 2007 (28.2%)

were cases of trauma. More male patients presented with trauma with a male to female ratio of 2.6:1. The age range of the patients in this study spanned from the 1st to 7th decade (mean age is 29.18±14.66 years). The modal age group is 21 – 30 years followed by 31 – 40 years as shown in table 1.

Table 1

Age and sex distribution of the patients

Age group (years)	Frequency	Percent	Male n (%)	Female n (%)
1 - 10	213	10.6	139 (9.6)	74 (13.2)
11 - 20	209	10.4	125 (8.7)	84 (14.9)
21 - 30	848	42.3	599 (41.5)	249 (44.3)
31 - 40	423	21.1	333 (23.0)	90 (16.0)
41 - 50	161	8.0	134 (9.3)	27 (4.8)
51 - 60	83	4.1	70 (4.8)	13 (2.3)
61 - 70	37	1.8	20 (1.4)	17 (3.0)
≥70	33	1.6	25 (1.7)	8 (1.4)
Total	2007	100.0	1445 (72.0)	562 (28.0)

Table 2 shows the clinical description of the traumatic injuries in relation to cause, part of body affected and, outcome of management in ER. The commonest cause of trauma from this study was road traffic accident, followed

by assault. When fracture/dislocations are added to soft tissue injuries, the limbs becomes the part most affected. Most patients are either fully treated and discharged or admitted into the wards.

Table 2
Clinical description of traumatic injuries encountered

	Frequency	Percentage
Aetiology of injury		
Road traffic accidents	1408	70.0
Assault	248	12.4
Fall from height	90	4.5
Burns	76	3.8
Gunshot	68	3.4
Domestic/occupational accidents	66	3.3
Animal bite	32	1.6
Human bite	8	0.4
Rape	7	0.3
Urethral catheter	3	0.1
Explosives	1	
Region of body affected		
Head	603	30.0
Polytraumatized	410	20.4
Upper limb (soft tissue injuries)	298	14.8
Limb fractures/Dislocations	206	10.3
Lower limbs (soft tissue injuries)	206	10.3
Chest	116	5.8
Spine	52	2.6
Abdomen	49	2.4
Eye	35	1.7
Pelvic	17	0.8
Genital	15	0.7
Patient management pathway		
Discharged	889	44.3
Admitted	821	40.9
DAMA	217	10.8
Mortality	65	3.2
Referred	15	0.8

Table 3 shows the distribution of admissions, mortality and DAMA amongst the patients depending on the part of the body affected by the injury. The majority of the mortalities were seen in patients presenting with head

injury either as an isolated pathology or as a component of polytrauma. Head injured patients and polytraumatized patients had 53.8% and 29.2% of the total mortalities respectively. The highest frequency (33.2%) of

people that are discharged against medical advice (DAMA) were seen amongst those that sustained fractures. Head injuries accounted for the highest number of ward admissions.

Table 3

Distribution of some pathways (Admissions, DAMA, and Mortality) according to part of the body injured

Part of the body injured	Frequency (Percentage)		
	Admissions n (%)	DAMA n (%)	Mortality n (%)
Head	213(25.9)	43(19.8)	35(53.8)
Polytraumatized limb fractures	211(25.6)	58(26.7)	19(29.9)
Lower limb (soft tissue injuries)	105(12.7)	72(33.2)	2(3.0)
Upper limb (soft tissue injuries)	72(8.7)	18(8.2)	3(4.6)
Chest	68(8.3)	11(5.0)	0(0.0)
Spine	49(5.9)	6(2.7)	2(3.0)
Abdomen	38(4.6)	3(1.4)	0(0.0)
Pelvic injury	37(4.5)	1(0.4)	3(4.6)
Genital injury	11(1.3)	4(1.8)	1(1.5)
Eye	10(1.2)	0(0.0)	0(0.0)
Total	8(0.9)	1(0.4)	0(0.0)
	821(100.0)	217(100.0)	65(100.0)

DISCUSSION

Trauma is a major health burden world over and affects largely the productive age group with a negative impact on economy of nations especially in developing nations like Nigeria. Injuries resulting from trauma are the leading cause of emergency department presentations in different parts of the world⁴. Quite a significant number of people (28%) presenting to the ER in this study were victims of trauma. This observation is consistent with findings from other similar studies in our subregion.^{2, 3, 8} Reports from other climes like sub-Saharan Africa is also in agreement with findings from our study.⁹

The commonest age group (63.4%) that was involved in trauma is 21 to 40 years age group. These are young, active, productive and

adventurous population groups involved in driving the country's economy. They become victims of various forms of trauma while moving from a place to the other fending for livelihood.^{2, 3, 8, 17, 18} Prolonged loss of these young and active people to morbidities and mortalities associated with trauma impacts negatively on the economy. The higher incidence of trauma in males than females as reported in this study is widely documented by several authors.^{2, 3, 8, 17, 18} This may be as a result of the fact that males engage in activities that exposes them to various hazards while trying to cater for their family needs as breadwinners. Such activities include climbing heights, driving automobile, heavy objecting lifting, exposure to machinery injuries in factories among others.

Injuries from road traffic accidents were the commonest cause of presentations to the accident and emergency with prevalence of 70.0%. This is consistent with other findings in Nigeria and abroad. Thanni *et al*¹⁹ reported incidence of 90.6%, Solagberu *et al*²⁰ and Onwuchekwa *et al*³ reported 62.3% and 50.4% respectively, Abhilash *et al*¹⁸ reported incidence of 65% in south India. However, Villaveces *et al*²¹ reported fall from heights as the commonest cause of traumatic injury presenting to the accident and emergency in the United States of America, this was followed by automobile injuries. Rapid increase in the number automobiles across our country with no consequent improvement in the quality of the roads and improper enforcement of road traffic rules contribute to high incidence of road traffic accident in a developing country like ours.

The variation in the aetiology of trauma as reported by Villaveces *et al*²¹ therefore demonstrates that a strong association between poor social infrastructures and economic factors being responsible for majority of the cases of trauma seen and reported from the developing countries. Also, compliance with road traffic rules in the developed countries has also been attributed to low vehicular traffic injuries.

The second commonest cause of trauma in this study was assault with prevalence of 12.4%. Assault was also reported as second commonest cause by Onwuchekwa *et al*³. This may be because of similarity in socioeconomic status of the two study areas. Other injuries encountered were from gunshot. This may be due to harsh economic conditions predisposing youths to robbery, rising incidence of farmers/herders clashes and communal fights from boundary disputes. Adejumo *et al*²² also reported a prevalence of firearm injuries in their series. The unlawful

possession of short and light weapons (SALW) by various individuals over the last decade has also led to increase in armed robbery attacks and perennial disturbances arising from various ethno-religious crises were found responsible for this.

The limbs were the most affected body part. This include fractures, dislocations and, soft tissue injuries of the limbs. They also constituted most of the cases possibly minor injuries that were managed and discharged from ER. The head is the next common part of the body affected, followed by those that sustained multiple injuries (to various regions of the body). Similar trend has been reported by other authors from their various studies.^{3, 8,}

²³The head is an exposed and frequent mobile part of the body which can easily be injured following trauma. Patients with head injury and polytraumatized patients accounted for the highest number of admissions into the wards, which is similar to what was reported by Onwuchekwa *et al*.³The severity of head injury ranges from mild to severe and regardless of the severity of such injuries, hospital admission is deemed necessary either for observation or definitive treatment, specialized investigations, close monitoring and multidisciplinary level of management. The finding from this study is at variance with the earlier report by Adejumo *et al*²² in which the abdomen was far more involved in the injuries than other part of the body. This variation may not be surprising as the major cause of injury in their study was from firearms.

The majority (44.3%) of the trauma patients were successfully managed and discharged from ER. This may be because most of the injuries may have been minor injuries. Significant proportion (40.9%) of the patients had injuries necessitating admission for various reasons. This calls for the need for

promotion of injury prevention strategies in the study area. A mortality rate in ER of 3.2% was observed in this study and, were seen largely in patients that sustained head injury from road traffic accidents. Our observation corroborated with reports from other studies in which similar prevalence was also observed.^{2,3,8,19, 23, 24} Our observation is not too different from that reported in previous studies by Solagberu *et al*²⁴ (2.6%) and Onyemaechi *et al*² (4.5%). However, higher mortality rate of 7.3% was reported from Jos⁸. This higher mortality value from Jos corroborated with the persistent ethno-religious and herdsmen/farmers crises of that area.

The high prevalence, 10.8% of discharged against medical advice seen in many of our patients with fractures has been a common experience in our subregion. Several authors have documented a similar pattern especially in orthopaedic practice.¹⁴⁻¹⁶ Omoke *et al* opined that this attitude is related to cultural belief that traditional bone setters possess certain supernatural powers that confer them with the ability to easily treat musculoskeletal injuries better than the orthopaedic surgeons.¹⁴ On the other hand, poverty and ignorance may have also contributed to DAMA as the study area is inhabited by mainly peasant farmers.

Limitations to the study: The study is retrospective, and single center based. A prospective multicenter study will give more reliable results.

CONCLUSION

The injury prevalence and other epidemiological parameters from this study is consistent with those from other similar studies in our sub-region. The young productive age groups were more vulnerable

to trauma. Road traffic accidents and assault were the leading causes of traumatic injuries that presented to the study center. Discharge against medical advice among our trauma patients were prominent. Traumatic brain injuries accounted for most mortalities.

RECOMMENDATIONS

The high prevalence of head injury and attendant mortality accrued from head injury is quite high in the study. This calls for investment in neurosurgical services in the Abakaliki by both private and public sector.

Government should ensure provision of good roads, and strict adherence to road traffic rules, this will help reduce road traffic crashes and consequently head injuries.

The pattern of trauma in this study overtly emphasized the need to establish a trauma center in the study area. It will be necessary to embark on public health enlightenment programs. This will reduce the frequency of hospital discharges against medical advice, early presentation and ensure optimum care of patients.

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