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Road traffic injuries as seen in a Nigerian teaching hospital

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Abstract Trauma is a major problem in both developing and developed countries. World wide road-traffic injuries (RTIs) represent 25% of all trauma deaths. Injuries cause 12% of the global disease burden and are the third commonest cause of death globally. In our own environment, trauma is also important, with RTIs being a leading cause of morbidity and mortality. There is limited data on RTIs in West African countries, and this necessitated our study. We aimed to find common causative factors and proffer solutions. This was a one year prospective study examining all cases of trauma from RTIs seen at the Accident and Emergency Department of the Ebonyi State University Teaching Hospital (EBSUTH), Abakaliki, Nigeria. Three hundred and sixty-three patients were studied. There was a male/female ratio of 3.4:1, with the modal age being 25 years. Most injuries involved motorcycles (54%). Passengers from cars and buses were also commonly affected (34.2%). Most of accidents occurred from head-on collisions (38.8%). Soft-tissue injuries and fractures accounted for 83.5% of injuries. The head and neck region was the commonest injury site (41.1%), and the most commonly fractured bones were the tibia and fibula (5.8%). Death occurred in 17 patients (4.7%), and 46 (12.7%) patients discharged themselves against medical advice. Improvements in road safety awareness, proper driver education—especially motorcycle drivers—and proper hospital care are needed in our subregion.

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Introduction

Trauma is a major problem in both developing and developed countries. It is the fourth leading cause of death in all age groups and the leading cause in patients between one and 39 years in the USA [11]. Globally road-traffic accidents (RTIs) cause 25% of all trauma deaths [4]. Injuries represent 12% of the global disease burden and are the main cause of death between the ages of one and 40 years. Injuries are the third commonest cause of death globally [8]. In developing countries, trauma is also important, with RTIs being a leading cause of morbidity and mortality [3, 10]. Middle- and low-income countries are thought to bear up to 90% of the global injury burden [3]. Trauma outcomes have improved tremendously in regions that have evolved comprehensive trauma care systems [4]. Many of our centres have no such comprehensive trauma care systems, usually due to poor infrastructure, large numbers of uninsured patients and inadequately trained human resources. Also, roads are in bad condition, there is poor driving technique and poor road worthiness of many vehicles [6]. It is therefore important for us to examine the pattern of injuries in our environment. Our aim was to find common causative factors and proffer solutions.

Materials and methods

This was a one year prospective study of all patients with RTIs seen at the Accident and Emergency (A&E) Department of EBSUTH from 1 March 2007 to 29 February 2008. EBSUTH is a 350-bed hospital situated along a major interstate highway and serves a population of about 8 million people. Data was taken using a proforma detailing

Table 1 Injuries sustained by gender

Injury sustained	Female	Percent	Male	Percent	Total	Percent
Fractures/dislocations	3	3.7	4	1.4	7	1.9
Soft tissue/fractures	4	4.9	39	13.9	43	11.8
Dislocations only	2	2.4	6	2.1	8	2.2
Fractures only	10	12.2	32	11.4	42	11.6
Soft tissue injury only	61	74.4	200	71.2	261	71.9
Others	2	2.4	0	0.0	2	0.6
Total	82	100	281	100	363	100

Pearson's chi square: X^2 = 12.993038 (p=0.023444), Fisher's exact test: two-sided p value for p [O > =E|O < = E]=0.022434

biodata, presenting complaints, mechanism of injury and outcome of treatment in the A&E Department. Data analysis was done with Epi info version 3.4.3 and Quantitative Skills Software (SISA tables) from SISA website at http://www.quantitativeskills.com/manuals/tablesman.htm. Frequency tables, Fisher's exact test and Pearson's chi-square test of significance were used. Averages of means such as mode and mean [with standard deviation (SD)] were used to analyse the patient age pattern. Consent for the study was obtained from the hospital's ethical committee.

Results

Three hundred and sixty-three patients were seen during the study period. Ages ranged from two to 81 years, with a mean of 29.39±12.53 years. The modal age was 25 years. Most patients were between 15 and 40 years of age (269 cases, or 74.11%). There were 281 males and 82 females, with a male: female ratio of 3.4: 1 (Table 1). Injuries occurred on rural (interstate) and urban (intracity) roads with almost equal frequency with, 180 and 183 cases, respectively (Table 2).

Motorcycles were involved in 191 (52.6%) injuries, followed by commercial minibuses with 27.5% and cars with 12.1% (Table 2). On rural roads, minibuses were the most common causes, whereas motorcycles were the most common causes on urban roads. These findings were highly significant, with p values <0.001 for both Pearson chi-square test and Fisher's exact test. Of the patients, passengers in cars/ buses accounted for 34.2%. Motorcycle drivers accounted for 26.7%, whereas motorcycle passengers were 18.5%. Pedestrians injured by motorcycles accounted for 8.8%. Most injuries were from head-on collisions (141 patients, or 38.8%). In 14.1%, the mechanism of injury was unknown. Pedestrian injuries, side collisions and vehicle somersaults were also important causes of injury, accounting for 12.4%, 12.1% and 11.6%, respectively (Table 3).

One hundred and twenty-five patients had multiple injuries (34.4%): 261 presented with soft-tissue injuries (71.9%); fractures were seen in 11.6%, but when associated with soft-tissue injury or dislocations, fractures occurred in 25.3% of all cases. These results were significant, with p< 0.05 (Table 1). Head and neck injuries were the most common, occurring in 181 patients (41.1%). Lower-limb injuries were also common, occurring in 113 patients (25.7%). Upper-limb injuries were next, with 22.1%, whereas chest and abdominal injuries occurred in 11.1% (Table 4).

The commonest bones fractured were the tibia and fibula, which were seen in 21 (5.85%) cases. Two hundred and sixty-three patients were treated and discharged from the A&E Department (72.5%), 12.7% discharged against medical advice and 9.9% were admitted to the ward. Death occurred in 17 patients (4.7%).

Table 2 Type of vehicles and roads involved in injuries

Vehicle	Intercity road		Intracity road		Total	
	No	(%)	No	(%)	No	(%)
BICYCLE	2	0.55	1	0.28	3	0.8
MOTORCYCLE	50	13.77	141	38.84	191	52.6
CAR	36	9.92	8	2.2	44	12.1
MINIBUS	72	19.84	28	7.71	100	27.5
LUXURY BUS	3	0.83	0	0	3	0.8
LORRY/TRUCKS	12	3.31	2	0.55	14	3.9
UNKNOWN	5	1.38	3	0.83	8	2.2
Total	180	49.6	183	50.4	363	100

Pearson's chi-square test: X^2 =91.491849 (p=0.0000000), Fisher's exact test: two sided p value for p[O>=E|O<=E]=0.000000

Table 3 Mechanism of injuries

Mechanism of injury	No of patients	Proportion (%)
Head-on collision	141	38.8
Pedestrian injury	45	12.4
Side collision	44	12.1
Vehicle somersault	42	11.6
Vehicle veered off road	40	11.0
Others/unknown	51	14.1
Total	363	100

Table 4 Site of injuries

Site of injury	No. of injuries	Percent
Head/neck	181	41.1
Chest	41	9.3
Abdomen	8	1.8
Lower limbs	113	25.7
Upper limbs	97	22.1
Total	440	100

Discussion

RTIs account for a large portion of trauma costs [10]. Males were more commonly affected than females. This, along with the mean age, was similar to most studies, as young adult males are most commonly involved in trauma [8, 12]. RTIs occurred with almost equal frequency on interstate and intracity roads. A study by the World Health Organization Europe found that 67% of injuries occurred on urban roads. [9] This difference with our findings may be due to the high incidence of motorcycle-associated injuries. Motorcycles are a commonly used method of transport in developing nations, and this includes rural roads [6]. However for intercity roads (rural), most commuters use minibuses in Nigeria. These are typically long-distance journeys, and minibuses are much cheaper over these distances. People injured on motorcycles were found to be a vulnerable group for more severe injuries in another study [5]. Our study noted that motorcycle drivers were more commonly injured than their passengers, unlike the commonly held notion here in Nigeria. However, this is similar to a study in Italy in which drivers were the most commonly injured irrespective of vehicle type [1]. In our study, passengers in four-wheeled vehicles, excepting trucks, were the largest single injured group. This correlated with another study done in Nigeria [12].

Most injuries were from head-on collisions. This was similar to a European study [1]. This may be due to the poor state of our roads causing drivers to swerve to avoid potholes. Also, poor driving technique coupled with impatience of drivers may be a major causative factor. Various studies have identified driver errors in the majority of injuries [9, 13]. We were unable to obtain reliable information on alcohol consumption, however, and this may be a limitation of our paper

Soft tissue injuries and fractures were the most common type of injuries seen, and this correlated with other studies [12]. The most common injury site was the head and neck. This also correlated with an Indian study [2], which was done on motorcycles, and we found a large number of motorcycle injuries in our study; this may account for the similar findings. More than a third of patients had multiple injuries. This was higher than that reported in a previous study done in Nigeria [12]. However, that study considered other injuries apart from RTIs. Tibia and fibula bones were the most common bone fractures in our study, and this was similar to results from other studies [7]. Mortality rate was 4.7%, which was within the expected worldwide range of 0.5–6%.

A large number of patients discharged themselves against medical advice. This was due to the widespread patronage of traditional and unorthodox healers in our environment.

Conclusion

Trauma associated with road transportation remains a significant problem in our environment, with motorcycles involved in more than half of the cases. The use of commercial motorcycles should be discouraged. Proper education and improvements in health-care facilities will reduce the incidence of discharges against medical advice. This may improve our trauma management. Injury prevention measures should include proper training of drivers and regular maintenance of roads with adequate and appropriate road signs, as most accidents were head-on collisions.

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Conflict of interest The authors declare that they have no conflict of interest.

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