

Pedestrian Injuries Resulting From Road Traffic Accidents: The Azare Experience.

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Abstract

BACKGROUND: Road traffic accident (RTA) is a leading cause of serious morbidity and mortality world wide. The pedestrians are not spared from this epidemic.

OBJECTIVE: The aim of this study is to identify factors that puts the pedestrian at risk of injuries from RTA and the anatomical regions most commonly involved in our environment and suggest ways of curbing them.

METHODS: This was a one-year retrospective study of 122 pedestrian casualties resulting from road traffic accident attending the Accident and Emergency (A/E) Unit of the Federal Medical Centre, Azare.

RESULTS: Majority of the patients (72%) were males with a male to female ratio of 2.6:1. Children and adolescents constitute 54.1% of the casualties. Motorcycles were responsible for most of the pedestrian injuries (73%). The head and neck was the most frequently injured anatomical region of the body (43.4%), followed by the extremities (37%). The months of August and January were the peak periods of injuries.

CONCLUSION: The safety of pedestrian is seriously threatened by the growing popularity of commercial motorcycles on our roads. Preventive measures are advocated to ensure only licensed cyclists are allowed on the roads. Adequate personnel training to manage head injury in our centers is also advised. More patrol by the road safety agents is advised in the months of January and August.

KEYWORDS: Pedestrian, injury, road traffic accident, Azare

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INTRODUCTION

Trauma from RTA is on the increase in the developing countries and it is a leading cause of serious morbidity and mortality in the developed world¹⁻³. Motorcycle related pedestrian injuries are the commonest of pedestrian injuries in Great Britain and in Kenya pedestrians are the highest risk groups in road traffic accidents^{1,4,6}.

Nigerian road users are not spared from this epidemic, although there is no validated national statistics of RTA mortality and morbidity, it has been reported that about 50,000 lives are lost yearly on Nigerian roads due to RTAs⁷.

The growing popularity of motorcycles as a relatively low cost means of intracity transport in the last 30 years has exposed pedestrians to the threat of serious injuries^{4, 8}. Children under 15 years of age contribute the bulk of pedestrian accidents, although the two extremes of life are not spared^{1,8,9}.

There is paucity of literature on pedestrian injuries; despite the large number of patients we see in our accident and emergency department daily, this necessitate the present study. The aim of this study was to identify risk groups, type of vehicle involved and the most frequently injured anatomical regions of the body from RTA in our environment. The result will assist in advising the relevant agencies in planning programs that prevent pedestrian injuries and improves pedestrian trauma care in general.

MATERIALS AND METHODS

This was a retrospective study of pedestrian casualties resulting from RTAs in the Accident and Emergency (A/E) Unit of the Federal Medical Centre, Azare, over a one year period between May, 2004 and April, 2005. Federal Medical Centre Azare is a 120-bed hospital located along the busy Maiduguri Kano highway in Azare town, Bauchi State.

All pedestrian injuries resulting from RTA are included in the study irrespective of their ages. All RTA victims with injuries that are not pedestrians were excluded from the study. Pedestrian victims with no clinical finding or inadequate information on there case notes were excluded in the study. All patients with no relevant good quality radiographs were equally excluded.

The data obtained from the case notes include the age, sex, type of vehicle involved, anatomical sites of injury, and outcome of A/E management and monthly variation of injury. Radiographs of the region involved were

reviewed for detection of fractures by a Radiologist. The outcome of A/E management was assessed by cases treated satisfactorily and discharged from the A/E, cases requiring admission to the wards, referrals to other centres for further management and mortality. Out of the 420 patient's records reviewed, only 122 have the above information.

The limitation was the inadequate assessment of severity (injury severity score) in the records, as this was a retrospective study.

The data was collected and analyzed using SPSS for windows version 11 and Microsoft excel. The results are presented in form of tables and bar charts.

RESULTS

Of the 122 pedestrian RTA victims who presented to the A/E Unit of Federal Medical Centre Azare, 72% were males and 28% females, giving a male to female ratio of 2.6:1. Children under 10 years of age constituted 35.2%, while 54.1% were less than 20 years (Table I).

Motorcycles constituted the major cause of pedestrian injuries 73%, while motor vehicles contributed 22.9% and bicycles 4.1%.

Regarding the anatomical region of the body injured, 43.4% of the patients had head and neck injuries, followed by extremity injuries 37%. Multiple injuries occurring in more than one region of the body occurred in 14% of the patients (Table II).

Table I Age of Sex Distribution of the patients studied.

Age (Years)	Male	Female	Total	Percentage
0-9	32	11	43	35.2
10-19	13	10	23	18.9
20-29	7	3	10	8.2
30-37	6	3	9	7.4
40-49	8	2	10	8.2
50-59	8	2	10	8.2
60-69	7	1	8	6.6
70-79	5	2	7	5.7
80 and above	2	-	2	1.6
Total	88	34	122	100

Table II Anatomical region of injuries in the 122 patients studied.

Sites of Injury	Number of patients	Percentage (%)
Head and Neck	53	43.4
Extremities	45	37.0
Multiple injuries	14	11.5
Chest	7	5.7
Abdomen	3	2.4
Total	122	100

As regards to outcome of A/E management, 61.5% of the casualties sustained abrasions and lacerations that were treated satisfactorily and discharged, while 30.3% were admitted. We recorded a crude mortality of 4%, while 4.2% of victims were referred to other centres for further management. Fifty percent of the casualties had long bone fractures. The tibia and fibula were the most frequently affected long bones.

The monthly variation of pedestrian casualties is as shown in figure 1 with the peak periods of accidents in August and January.

Patients

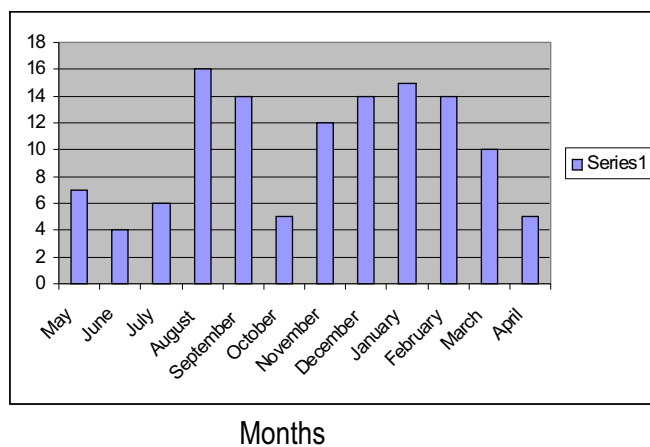


Figure 1 Monthly distribution of the patients studied

DISCUSSION

Trauma is a disease of epidemic proportion, in the United States of America; over 140,000 lives are ended suddenly, unexpectedly and brutally each year by this killer^{10, 11}. In 1990, injuries accounted for 10% of global mortality and road traffic accident caused 1 million deaths¹⁰. Trauma is said to be the leading cause of death for all people under age 44 and leading cause of disability for people under the age of 65¹¹.

There is paucity of trauma statistics in Nigeria, but it has been estimated that about 50,000 lives are lost annually through RTA⁷. Certainly this is an under estimation since most of the accidents occurring on our rural roads are not reported.

The age distribution of pedestrian injuries in our study is in agreement with the previous,^{12,13,14} that a child pedestrian was at higher risk probably due to immaturity, poor risk appreciation and child hawking. This is even more pronounced in our environment where street hawking and

begging by the *almajiris* is common in these age group. The male preponderance (72%) more marked among children was attributed to the agility of males compared to their counterpart, coupled with the fact that their life schedules make them usually available at accidents sites when they occur^{1, 15, 16}.

In our experience motorcycle was a major cause of pedestrian casualties. This is similar to findings of other authors^{1, 14, 15}. This is largely because motor cycles are becoming popular means of transport in our communities due to its relatively low cost^{8, 13}, while the poor road user habit of the commercial motor cyclists, most of whom operate under influence of drugs and have no regard for road signs or traffic direction; are additional factors exposing other road users especially child pedestrian to serious hazard of injury⁷.

Majority of the casualties sustained abrasions / lacerations, and were treated in the A/E and discharged home. The victims that sustained head and, or extremity injuries were hospitalized. Fifteen percent of the patients in this group had long bone fractures that needed some form of stabilization. The tibia and fibula were the most frequently affected long bone in this study; this is conformity with common pattern of morbidity associated with pedestrian injury resulting from RTAs^{8, 15, 16, 18}.

The crude mortality of 4% recorded in the A/E resulted from head and multiple injuries. This is similar to findings of others^{14, 18} but lower than most Nigerian studies,¹⁶ this could be explained by the fact that the remaining survivors in this category were referred to better equipped centres of which the outcome was not included in this study.

The monthly variation of RTAs is well documented by others^{3, 18, 19}. This variation is attributed to the socio cultural background and climatic differences of the regions. We recorded majority of pedestrian accidents in the months of August and January, which coincided with the peak of rainy season and hazy hammattan period respectively in Northern Nigeria. These periods are known for poor visibility and very slippery roads on rainy days. This is comparable to reports from Shagamu, South Western Nigeria¹⁹ where the months of May and June were peak periods of accident which also coincided with the peak of rainy season.

There is significant threat to the safety of pedestrians on our roads and they need protection. It is known that

accident involving pedestrian cannot occur except the vehicle and the pedestrian are at the same place at the same time^{1,4}. Separation of vehicular traffic in space and time as practiced in the developed world^{1,4,5} may be the first step in the right direction. The lateral and vertical separation of pedestrians from traffic by provision of footpaths and pedestrian overhead bridges respectively should be emphasized when township roads are constructed.^{1,20}

The laws prohibiting road side begging and hawking by minors should be stringently enforced, while legislation to moderate the operations of commercial motorcyclist is long overdue. This will go a long way in preventing most of the avoidable pedestrian injuries on our roads.

REFERENCES

1. Seleye-Fubara D, Ekere AU. Pedestrian Deaths resulting from road traffic accidents at the University of Port Harcourt Teaching Hospital- Six-year review. *Niger j med* 2003;12 (2): 103 105.
2. Eke N. Road Traffic accidents in developing world; who are liable? *Aril Aggrawal's Internet journal of Forensive medicine and Toxicology* 2001; 2:1-3.
3. Street J. T., Winter D, Buckley S., Nicholson P., Twomey A. Trauma on rural roads: the role of a peripheral hospital. *Injury* 1999; 30: 337 340.
4. Asogwa S. E. Deaths and injuries on Nigerian roads. *J Traff Med* 1978; 6:52 54.
5. Bothwell P. W. The problem of motorcycle accidents. *practitioner*1962; 188: 474 488.
6. Odero W, Khayesi M, Heda PM. Road Traffic Accidents in Kenya: magnitude, causes and status of intervention. *Inj Control Saf Promot* 2003; 10: 53-61.
7. Owoade F. Road safety means no accident. *Pharmanews* 2005; 27 (4): 24.
8. Folope IA. Motorcycle Accident in Nigeria: a new group at risk. *WestAfri J Med* 1991; 10(2); 187-189.
9. Mc Coy GF, Johnstone RA, Duthie BA and RB. Injury to the elderly in Road Traffic Accident. *The Journal of Trauma* 1989; 29(4): 494-497.
10. Murray CJ, Lopez AD. Mortality by cause for eight regions of the World Global Burden of Disease Study. *Lancet* 1997; 349: 1269 1276.
11. Yagmur Y, Kiraz M, Kara IH. Looking at trauma and deaths: Diyarbakir City in Turkey. *Injury* 1999; 30: 111 114.
12. Adeloye A, Odeku EL. The pattern of road traffic accident seen at the University College Hospital Ibadan, Nigeria. A preliminary study. *West Afr Med J* 1970; 19: 153 157.
13. Adesukanmi ARK, Oginni LM, Oyelami OA, Badru OS. Road Traffic Accidents to African Children: assessment of severity using the Injury Severity Score (ISS). *Injury* 2000; 31: 225-228.
14. Adesukanmi ARK, Oginni LM, Oyelami OA, Badru OS. Epidemiology of Childhood Injury. *The Journal of Trauma: Injury, Infection and Critical Care* 1998; 33(3): 506-512.
15. Asogwa S. E. The Child in the road transport system in Nigeria. *Niger Med J* 1984; 14(1-2): 37 42.
16. Odelowo E. O. Pattern of pedestrian injuries from road traffic accident in Nigerians. *West Afr J Med.* 1992; 11 (2): 130 134.
17. Derlet R. W., Silver J. Jr, Holcroft J. Pedestrian accidents: adult and pediatric injuries. *J Emerg Med* 1989; 7 (1): 5 8.
18. Kong LB, Lekawa M, Navarro RA, *et al.* Pedestrian motor vehicle trauma: analysis of injury profile by age. *J Am Coll Surg* 1996; 182 (1): 17 23.
19. Izegbu MC, Inem VA, Bamgbala A. Audits of deaths arising from Traffic accidents, the Shagamu experience. *Lagos J Sur* 1992; 2 (1): 20 22.
20. Galloway D. J., Patel AR. The Pedestrian problem: a 12-months review of pedestrian accidents. *Injury* 1982; 13 (4): 294-298.