



Analysis of Patterns of Morbidity and Mortality amongst Pedestrians involved in Road Traffic Accident in Benin City Nigeria between August 2003 - July 2004

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ABSTRACT

Forty-four pedestrians participated in the study. They were road traffic accident victims who were brought into the emergency units of either the University of Benin Teaching Hospital or the State Specialist Hospital. Blood-alcohol assay was done on all of them. The injured ones were examined and dead patients had an autopsy done on them to determine the pattern of their injury and cause of death. The paper tabulates results with respect to number/percentage, sex, blood alcohol levels, age, type of vehicle involved, as well as morbidity patterns and mortality. The 44 pedestrians are composed of 38 cases of morbidity or 86.4% and 6 mortality representing 13.6%. One half of them 22 (50%) were of the productive age group 15-44years of age. Majority were males numbering 34 (77.2%), while females were 10 (22.8%). While most of the injuries inflicted were of the primary impact type. Secondary impact injury was responsible for most deaths. The Average blood alcohol level of a pedestrian was 11.6mg/100ml of blood. The highest blood alcohol level was 70md/100ml in an elderly male who was struck by a car and died of intra-cranial haemorrhage. Pedestrian accidents represent 15.6% of all accident cases, with only one under alcoholic influence blood alcohol level 70mg/dl. Cars struck down 33 (75%).

KEYWORDS. *Pedestrian, Road traffic accident, mortality, morbidity, primary impact, secondary impact.*

INTRODUCTION

World Health Organization (WHO) reports that road traffic accidents injuries (RTI) killed an estimated 1.2 million victims in 1998 worldwide [1]. Over 70% of these (nearly 850,000 victims) were under 45years of age. Deaths from injuries are projected to rise from 5.1 million in 1990 to 8.4 million in 2020 with increase in RTI as a major cause of this rise. Current deaths from RTI account for 2.2% of the global mortality affecting all age groups [2]. Road accidents, ranking ninth among the leading causes of disease burden worldwide, account for 2.8% of all global deaths and disability [2]. Although the number of motor vehicles per population is much higher in developed countries, the toll due to RTI is highest in developing countries, representing more than one million death (88%) of deaths in 1998.[2]. The economic costs of road RTI are enormous. Some 50% of road traffic fatalities worldwide involve young adults aged 15 to 44 years corresponding to the most economically productive segment of the population. Key factors responsible for RTI are preventable and include in the order of frequency

1. Driving under the influence of alcohol [2].
2. Speeding [2].
3. Under-utilization of seat belts and child restraints [2].
4. Poor road design and roadway environment [2].
5. Unsafe vehicle design [2].
6. Underimplimentation of road safety standards [2].

In a paper presented at a seminar at Harvard center for development and studies, in April 30 2004, Wilson Odera, the Dean school of public health at Moi University Kenya asserted that about 10% of global road traffic accident deaths occurred in sub-Saharan Africa in 1999, even though the region has about four percent of the worlds registered vehicles³. Pedestrians constitute a significant proportion of crash-related deaths and injuries in Australia. Police data indicate that 419 pedestrians were killed in 1990 and 3,283 were hospitalized, accounting for 18.0% and 13.1% of crash-related deaths and hospitalizations respectively (FORS, 1993) [3].

The paper highlights the facts of paucity of reliable data concerning RTI in Sub-Saharan Africa especially in Benin City Nigeria and reasons for the observed RTI and their prevention then furnishes basic base line data for RTI observed pedestrians in Benin City Nigeria.

For the purposes of this paper, pedestrian morbidity will be classified into-

1. Primary impact morbidity to the first part struck by the vehicle, usually involving lower limb fractures without the victim sliding from lower velocity impact [4].
2. Secondary impact morbidity caused by a further impact to the vehicle, if the feet slide then secondary impact injury will involve the back of the head hitting the windscreen. It can also occur on the palms, knees and face as the body hits another surface vertically such as the wall or another vehicle [4].
3. Secondary injury when the victim strikes the ground.

PATIENTS AND METHODS

Forty-four pedestrians participated in this study, and they were involved in road traffic accident. They were brought into the accident and emergency units of either the University of Benin Teaching Hospital or the State Specialist Hospital. A structured questionnaire was administered to them after an informed consent was duly extracted in line with hospital ethics. Blood-alcohol assay was done on all of them using the Sunshine and Nenad Method [5].The injured ones were examined and dead patients had an autopsy done on them to determine their extent of their injury and cause of death. The data was collated and analyzed using the statistical package for social sciences to find simple percentages.

RESULTS

The 44 pedestrians constitute 15.6% of 283 total accidents cases recorded in the period of study. Of these there are 38 cases of RTI or 86.4% and 6 mortality representing 13.6%of involved pedestrians. Majority are males 34 (77.2%) of pedestrians, while females are 10 (22.8%). The Average blood alcohol level of a pedestrian is 11.6mg/100ml of blood while the highest blood alcohol level recorded was 70mg/100ml in an elderly male who was struck down by a car and died of intra- cranial haemorrhage.

Thirteen pedestrians (29.5%) were aged 0-14years, majority were of the 15-44years of age, numbering 22 (50%) Table 1. Table 2 shows that out of a total of 44 pedestrians, most 33 (75%) were struck down by cars. Of these 19 (43.2%) sustained primary impact injuries, while 4 (9%) sustained secondary impact injuries. Ten sustained secondary injuries representing 22.7%. Six fatalities were recorded representing 13.6%, 1 (2.3%) died from severe intracranial haemorrhage with a blood alcohol level of 70mg/dl. Four pedestrians were struck down by buses (9%), with 3 (6.82%) sustaining primary impact injury while 1, (2.28%) sustained secondary impact injuries. Six pedestrians (13.64%) were struck by motorbike, out of these 5 (11.4%) sustained primary impact injuries while 1 sustained secondary injuries (2.28%). Trailers struck 1 pedestrian (2.28%), who sustained primary impact injuries. In all, an average of 28 (63.6%) pedestrians sustained primary impact injuries, 6 (13.6%).

Table 1: Showing Age and Sex Distribution of Pedestrian Road Traffic Accidents.

Age Range	Frequency	Percent	Sex	
			Male	Female
0-14yrs	13	29.5%	9	4
15-44yrs	22	50%	19	3
45-64yrs	4	9%	4	0
65yrs and above	3	7.0%	1	2
Unspecified	2	4.5%	1	1
TOTAL	44	100%	34	10

Table 2: Jury Patterns of Pedestrian Injuries

PEDESTRIAN	PRIMARY IMPACT (mostly bruises and single lower fractures)	SECONDARY IMPACT (Mostly facial and head lacerations with upper limb injuries)	SECONDARY Head injuries with skull fractures and severe intracranial haemorrhage in fatal cases.	TOTAL
STRUCK BY CAR	19	4	*10	33
STRUCK BY BUS	3	1	-	4
STRUCK BY MOTORBIKE	5	1	-	6
STRUCK BY TRAILER	1	-	-	1
TOTAL	28	6	10	44

*6 mortalities.

DISCUSSION

The mounting toll of road traffic accidents injury deaths in Nigeria constitutes a public health problem, which requires urgent attention since these deaths are preventable. The pattern of injuries sustained in these fatalities has received relatively little attention in Nigeria. However, few studies have been done.6 Attention has however, been focused on road traffic accidents in Nigeria since the early seventies when concerned citizens advocated the setting up of a road traffic marshal corps in the old western state of Nigeria. This metamorphosed into the traffic warden corps popularly called “yellow fever” in this country due to the colour of their uniform. Legislation in 1980 led to the setting up of a federal road safety corps [7]. There is still a basic lack of good traffic education programs both for the motorist and the pedestrian. Road Infrastructure like Zebra crossing exists in few areas and most pedestrians including motorists judging from the driving culture in Nigeria are completely ignorant of its use. Only recently did road constructing companies start creating walk ways in urban roads and traffic lights generally do not bear pedestrian cross road facility. Finally a situation where a large number of motorist get driving licences without due process has compounded the situation of the pedestrian making the more vulnerable to RTI.

RTI in developing countries mostly affect pedestrians, passengers and cyclists as opposed to drivers who are involved in most of the deaths and disabilities occurring in developed world [2]. As will be noted, cars generally more in number on our roads struck down most pedestrians and were responsible for a higher percentage of RTI and mortality because of this numerical factor and their faster speed and greater momentum they deliver in case of an accident. In Australia, Police data indicate that 419 pedestrians were killed in 1990 and 3,283 were hospitalized, accounting for 18.0% and 13.1% of crash-related deaths and hospitalizations respectively (FORS, 1993) [3].

Pedestrian accidents involved 44 cases (15.6%) of all victims, similar to findings at Ilorin Nigeria where pedestrians in a two-year study were found to be involved in 108 out of 715 road traffic accident cases (19.1%) [8]. While in Kampala C.N. Andrews, O.C. Kobusingye, R. Lett reported 157 cases of pedestrian accidents out of 361 accident cases (43.1%) [9]. This is higher than what was noted above in this study. 13 (29.5%) of all pedestrians were 14 years old or younger. 22 pedestrians (50%) were of the 15-44 year old working Age group representing significant loss of useful productive manpower. Males constituted 34 (77.3%) of all pedestrians due to the paternalistic nature of our society, a fact already noted by Eke N7 Male to female ratio is 3.4:1 higher than the finding of E.O.O. Odelowo at Ilorin Nigeria of 2.4:18. Death in pedestrians were related to secondary injuries especially intra cranial haemorrhage which was related to the speed of the offending vehicle which in Benin Nigeria is a car in 33 or 75% of D.S Adeola and S.A Eguma in Northern Nigeria demonstrated that RTA is the single most common cause of maxillofacial trauma in Kaduna metropolis [10].

The velocity of the offending vehicle often is the sole determinant of the pattern of injury with the

faster and more numerous cars responsible for most RTI and all fatalities. Those who died of intracranial haemorrhage also appeared to have suffered secondary impact injuries from their head hitting the hard tar with intracranial haemorrhage.

CONCLUSION

In conclusion pedestrians represented only 15.6% of all accident cases, with only one case of pedestrian who was under alcoholic influence with a blood alcohol level of 70mg/dl. He was struck down by a car and subsequently died of intra cranial haemorrhage. Majority of them 22 or 50% were of the productive age group 15-44years of age. Cars struck down majority of them 33 or 75%. While majority of the injuries inflicted on them were of the primary impact type. Secondary impact injuries were responsible for most deaths. We advocate a safer road construction culture and reformation of the process of acquiring the all important drivers' license in Nigeria with an emphasis on better enforcement of traffic rules to protect the average pedestrian and minimize RTI in this population of road users.

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