

## ROAD TRAFFIC CRASHES IN RURAL AREA: CASE STUDY FROM DELTA STATE, NIGERIA

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### ABSTRACT

Road traffic crashes (RTC) are a major cause of mortality and morbidity worldwide, but especially in low and middle-income countries.

This study was carried out to describe the categories of road users involved in accidents, the prevalence of injury and the fatality rate resulting from such accidents among adult rural dwellers in Delta State, Nigeria.

A descriptive cross sectional study was carried out among 146 road crashes victims selected by cluster sampling method from two communities of Delta State of Nigeria. Tool for data collection were researcher administered semi structured questionnaire. Descriptive statistics such as mean, standard deviation and percentages were used to summarize data. Inferential statistics such as Chi-square test was used to draw association between categorical variables. Data was analysed using SPSS version 16.0 computer software.

Ninety nine (67.8%) of the victims were age 18-37 years. There were more males (61.0%) than females (39.0 %). The category of road users involved in crash consisted mainly of occupants of motor cycle (63.7 %), bus (13.7 %) and car (12.3 %). Out of 146 respondents, 128 (87.7%) sustained injury and 12 (8.2%) of them were said to have involved at least a death. The road crashes that resulted to death of at least a person, was higher at night (35.7%) than during the day.

Victims of road traffic crashes were predominantly young adult (18-27 years) and males. Majority of them sustained injury. Reported history of road crashes that resulted in at least one death was more in the night than other times of the day. Most respondents have been involved in single accident episode. History of multiple accidents was more among males than females, and higher among respondent with a primary education than those who had a secondary education.

### INTRODUCTION

Road traffic crash (RTC) is an important public health problem in both developed and developing countries. Road traffic crashes are a major cause of mortality and morbidity worldwide and in low and middle-income countries it accounts for more than 85% of the deaths and up to 90% of disability following trauma globally.<sup>1-3</sup>

In most high-income countries, cars make up the largest proportion of the road traffic,

while in low-income countries pedestrians and riders of bicycles, motorcycles and mopeds are more common.<sup>4,5,6</sup> The differences in the pattern of road users have an important impact on the occurrence of injuries among the different types of road users. Research has shown that, pedestrians and riders of bicycles, motorcycles and mopeds are less protected from crashes per kilometer traveled and they are at much greater risk than the drivers and passengers of cars and motor vehicles.<sup>2,6</sup> A study in Brazil reported that motorcyclists have eight-fold risk of dying, a four-fold risk of injury and a two-fold risk of running over pedestrians as compared to automobile drivers.<sup>7</sup> The difference in road traffic

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**KEYWORDS:** Road traffic crash, injury prevalence.

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crashes and fatality rates between industrialized and developing countries is the reflection of an obvious consequence of the difference between the traffic and population characteristics of developed and developing countries.<sup>4,6,9</sup>

The purpose of this study was to describe the categories of road users involved in crashes, the prevalence of injury and reported history of death resulting from such crashes among adult rural dwellers.

### **METHODOLOGY**

This was a cross sectional study carried out in two rural communities of Delta state, Nigeria. This study was carried out between November and December 2012.

Data for this study was collected from Onicha Ugbo and Owa Abbi communities in Delta State of Nigeria. Onicha Ugbo is located in Aniocha North LGA while Owa Abbi is in Ukwuani LGA. In the 2 communities (Onicha-Ugbo and Owa-Abbi) the living arrangement is described as quarters. Onicha-Ugbo community has 5 quarters which comprised of: Ogbe-obi, Ogbe-kenu, Ishiekpe, Umu-olo and Agba. Owa-Abbi has 4 quarters which are: New Owah Abbi, Old Ogbe Owah, Obi-onyu Onicha and Obi-Oluku. The study population included all adult males and females aged 18 years and above who were resident in the communities at the time of the study. In each of the 2 communities, cluster sampling methods were used to select participants. A quarter was regarded as a sampling unit while a list of all the quarters in each community served as the sampling frame.

In Onicha Ugbo, one out of five quarters was selected by balloting and all males and females aged 18 years and above, in the selected quarters, were included in the study. In all 300 questionnaires were distributed in Onicha-Ugbo of which only 82 gave a positive history of road traffic crash. In Owa-abbi, one out of the four quarters was selected by balloting and all adults aged 18 years and above in the selected quarter were studied. In Owah-Abbi, 250 respondents were interviewed, of which 64 gave a positive history of road crash. All the respondents (146) who gave a positive history of road crash in both communities were then studied.

A pretested, semi structured, interviewer administered questionnaire was the tool for data collection. Information collected from respondents included the age, sex, time and place of occurrence of the last accident episode, history of injury, where the respondent was at the time of the accident, and history of any death in the course of the accident. Informed consent was obtained from the respondents after explaining the purpose and the benefit of the study to them. Descriptive statistics such as mean, standard deviation and percentages were used to summarize collected data. Inferential statistics such as Chi-square test was used to draw association between categorical variables.

Data analysis was by computer, using the SPSS version 16.0 statistical package, differences were considered significant at p less than 0.05.

**RESULTS****Table 1: Characteristics of accident casualties (n=146)**

| <b>Characteristics</b>           | <b>Frequency</b> | <b>Percent</b> |
|----------------------------------|------------------|----------------|
| <b><u>Age group (years)</u></b>  |                  |                |
| 18-27                            | 57               | 39.0           |
| 28-37                            | 42               | 28.8           |
| 38-47                            | 20               | 13.7           |
| 48-57                            | 23               | 15.8           |
| 58-67                            | 4                | 2.7            |
| <b><u>Sex</u></b>                |                  |                |
| Male                             | 89               | 61.0           |
| Female                           | 57               | 39.0           |
| <b><u>Educational status</u></b> |                  |                |
| Nil                              | 4                | 2.7            |
| Primary                          | 20               | 13.7           |
| Secondary                        | 84               | 57.6           |
| Tertiary                         | 38               | 26.0           |
| <b><u>Marital status</u></b>     |                  |                |
| Single                           | 62               | 42.5           |
| Married                          | 81               | 55.5           |
| Widow                            | 3                | 2.0            |

**Table 2: Category of road users involved in crashes**

| Class       | Frequency | Percent |
|-------------|-----------|---------|
| Motor cycle | 93        | 63.7    |
| Bus         | 20        | 13.7    |
| Car         | 18        | 12.3    |
| Pedestrian  | 13        | 8.9     |
| Lorry       | 1         | 0.7     |
| Bicycle     | 1         | 0.7     |
| Total       | 146       | 100.0   |

**Table 3: Prevalence of injury by Class of road user among crash victims**

| Road user   | Number (%) |             |            |
|-------------|------------|-------------|------------|
|             | Injured    | Not Injured | Total      |
| Motor cycle | 84 (90.3)  | 9(9.7)      | 93(100.0)  |
| Bus         | 16 (80.0)  | 4(20.0)     | 20(100.0)  |
| Car         | 15 (83.3)  | 3(16.7)     | 18(100.0)  |
| Pedestrian  | 11(84.6)   | 2(15.4)     | 13(100.0)  |
| Lorry       | 1(100.0)   | 0 (0.0)     | 1(100.0)   |
| Bicycle     | 1(100.0)   | 0(0.0)      | 1(100.0)   |
| Total       | 128(87.7)  | 18 (12.3)   | 146(100.0) |

A total of 146 accident victims participated in this study. Their ages ranged from 18 to 67 years. The mean age of the respondents was  $33.0 \pm 12.0$  years and 99 (67.8%) were aged 18-37 years. (Table 1) Eighty nine (61.0%) of the respondents were males, while 57 (39.0%) were females, with a male to female ratio of 1.6:1.

The highest group of road users involved in accident was occupants of motor cycle (63.7%), followed by bus (13.7%), car (12.3%) and pedestrian (8.9%). (Table 2)

Out of the 146 accident episodes studied, history of death was reported by 12 (8.2%) respondents. The proportion of respondent that reported history of death at different times of the day the crashes occurred were 5.3% (3/57), 5.9% (2/34), 2.7% (1/37) and 35.7% (5/14) at afternoon, evening, morning and night, respectively. Analysis of the time of the day (n=142) the crashes took place shows that 9.9%, 26.1%, 23.9%, and 40.1% of the accidents occurred at night, morning, evening and afternoon respectively. The prevalence of injury was 87.7% (128/146). Table 3 shows the prevalence of injury by the class of road users involved in crashes. The occupants of lorry and bicycle both sustained injury. The prevalence injury was higher among motor cycle riders (90.3%) than pedestrian (84.6%). Most of the victims (70.5%) experienced a single episode of accident, whereas 29.5% reported multiple episodes. More males (37.1%) than females (17.5%) were involved in multiple accidents ( $X^2=6.38$ ;  $p=0.01$ ;  $df=1$ ). A greater proportion of respondents with at least a primary education (33.3%) were involved in multiple accident compared to those with a minimum of secondary education (28.7%). However, this difference was not statistically significant. ( $X^2=3.02$ ;  $p=0.08$ ;  $df=1$ ).

## DISCUSSION

The preponderance of males in cases of RTC in this study compared to the females corroborates with findings from other studies.<sup>10-12</sup> Although this study did not elicit the driving status of the RTC victims at the time of accident, studies have shown that, males are more exposed to traffic as commercial drivers. A number of reasons have been attributed to this. They travel longer distances to work and are more often involved in the use of automobile as leisure activities.

The most common age group involved in RTC as shown in this study is between 18-27 years, followed by 28-37 years. A number of studies have recorded similar finding.<sup>10,11,13</sup> This age group (young adults) is the most active phase of adult life, physically and socially, hence they outnumber other road users. Considering the high proportion of these young adults affected, this may have an important economic impact on the nation. Preventive measures should therefore be targeted at this high risk age group to reduce further incidence of RTC and deaths. In this study, about 12 (8.2%) of the accidents was reported to have resulted in death of persons which was lower 35.27% and 23.53% obtained from studies in India<sup>14</sup> and Ikeja<sup>15</sup> respectively. On the other hand, it should be noted that, a fatal accident may have resulted in all persons dying who may not have been alive to be a respondent in this research. So the result could have been quite higher than current. This finding should be taken with caution which is a limitation of this study as the population at risk did not involve the dead.

The India study population comprised medicolegal cases autopsied. Accidents cases awaiting medicolegal intervention are likely to be severe cases and hence the high fatality rate.

Road crashes that occurred at night resulted in more deaths (35.7%) compared to other times of the day. This was not unexpected for a number of reasons. For instance, at night visibility is poor, road edges, dangerous pot holes and traffic signs are almost invisible. This no doubt provides a necessary condition for the occurrence of fatal and serious accidents.

In this study, motor cycle occupants constituted 63.7% of the road users involved in RTC, followed by occupants of bus (13.7%), car (12.3%) and pedestrians (8.9%). This reflects the profile of road users seen in the environment. It can therefore be said that, motor cycle occupants had the highest likelihood of being involved in RTC than any other group in the community studied. Previous authors have shown the emergence of motorcycle crash as a group of RTC victims with increasing importance in rural environment.<sup>10,16,17</sup> Many people in this environment resort to this means of transportation, as it is readily available in many areas with poor road network and where there is no reliable mass transit programme. Commercial motorcycles have constituted a common means of transportation in the rural communities of Nigeria in the past decade. This mode of transportation is associated with high rate of RTC and road traffic injuries. Some reasons given by authors to be responsible for the high rate of crashes among motor bike include, risk taking and overspeeding.<sup>16,17</sup>

In Malaysia, a study reported that motorcyclists constituted about 55-57% of total number of road crashes, which was lower than 63.7% obtained in this study.<sup>18</sup> The prevalence of injury noted in this study indicates that for every ten (10) persons involved in RTA, at least eight would be injured. This study shows that in these

communities riders and passengers of motor cycle (90.3%) were more likely to sustain injury than drivers and passengers of bus (80.0%) and car( 83.3%) following a road crash.

Victims of road traffic accident were predominantly young adults and males. Majority of them sustained injury. Less than a tenth of the accidents were fatal. Fatality rate was more in the night than other times of the day. Occupants of motorbike were more likely to sustain injury than occupants of car and bus, following road traffic accident. Most respondents have been involved in single accident episode. History of multiple accidents was more among males than females, and higher among respondent with at most a primary education than those who had a minimum of secondary education.

## CONCLUSION

Categories of persons involved in road traffic crashes were predominantly young adults and males. The classes of road users involved in road crashes were most likely to be riders and passengers of motor cycle, followed by drivers and passengers of bus, car, and pedestrian. The least involved were drivers and passengers of lorry and riders of bicycle. Majority of them sustained injury. Most of the respondents have been involved in single accident episode. History of multiple accidents was more among males than females, and higher among respondents with at least a primary education than those who had a minimum of secondary education.

There is need for government to intensify road safety measures among the young adult especially at inception of learning basic driving skills when they are being issued driving license and in secondary and tertiary level of learning.

## REFERENCES

1. Krug EG, Sharma GK, Lozano R. The Global Burden of Injuries. *American Journal of Public Health*. 2000; 90 (4):523-526.
2. Afukaar FK. Speed control in developing countries: Issues, Challenges, and Opportunities in reducing road traffic injuries. *Injury Control and Safety Promotion*. 2003; 10:77-81.
3. Nantulya VM, Reich MR. the neglected epidemic: road traffic injuries in developing countries. *British Medical Journal*. 2002; 324: 1139-41.
4. Rafindadi AH. A review of Injuries sustained following road traffic accidents and their prevention. *Nigerian Journal of Surgical Research*. 2000; 2:100-104.
5. The World Health Report 2003. Shaping the future. Geneva. WHO. 2003: 85-102.
6. World Health Organization. Road safety is no accident. A brochure for the World Health Day 7<sup>th</sup> April, 2004. Geneva. WHO. 2004.
7. Barros AJ, Amaral RL, Olivera MS, Lima SC, Goncalves EV. Traffic accidents resulting in injuries: under reporting, characteristics, and case fatality. *Cad Saude Publication*. 2003; 19(4):979-86.
8. Filani MO, Gbadamosi KT. Spatial and Temporal Pattern of Road Traffic Accident Occurrences in Nigeria: 1970-1995. *Nigeria Geographical Journal*. 2007; 5(1):55-70.
9. Atubi AO, Onokala PC. Contemporary Analysis of Variability in Road Traffic Accidents in Lagos State, Nigeria. *Journal of African Geographical Review*. 2009; 28:11-41.
10. Owoaje ET, Amoran OE, Osemeikhain O, Ohnoferi OE. Incidence of road traffic accidents and pattern of injury among commercial motorcyclists in a rural community in south western Nigeria. *Journal of Community Medicine and Primary Health Care*. 2005; 17 (1): 7-12.
11. Akinpelu OV, Oladele AO, Amusa YB, Ogundipe OK, Adeolu AA, Komolafe EO. Review of Road Traffic Accident Admissions in a Nigerian Tertiary Hospital. East and Central African Journal of Surgery. 2006; 12(1): 63-67.
12. Jha N, Srinivasa DK, Roy G, Jagdish S. Epidemiological study of road traffic accident cases: A study from South India. *Indian Journal of Community Medicine*. 2004; 29(1): 20-24.
13. Afukaar FK, Antwi P, Ofosu-Amaah S. Pattern of road traffic injuries in Ghana: Implications for control. *Injury Control and Safety Promotion*. 2003; 10(2): 69-76.
14. Kumer A, Lalwani S, Agrawal D, Rautji R, Dogra TD. Fatal road accidents and their relationship with head injuries: An epidemiological survey of five years. *Indian Journal of Neurotoma*. 2008; 5(2):63-67.
15. Atubi AO. Road Traffic Accident Variation in Lagos State, Nigeria: A Synopsis of Variance Spectra. *African Research Review*. 2010; 4(2): 197-218.
16. Johnson OE. Prevalence and Pattern of road traffic accidents among commercial motorcyclists in a city in Southern Nigeria. *International Research Journals*. 2012; 3(6): 537-542.
17. Aniekan UE, Sydney I. Pattern of motorcycle accident-associated injuries in Fort Harcourt: A hospital study. *Orient Journal of Medicine*. 2003; 15:36-40.
18. Abdul K. Review of global menace of road accidents with special reference to Malaysia: A social perspective. *Malaysian Journal of Medical Science*. 2003; 10:31-39.