

Road Traffic Accidents Among Commercial Motorcyclists In Nassarawa Local Government Area Of Kano State, Nigeria

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SUMMARY

Objective: To determine the socio-demographic profile of commercial motorcyclists, frequency of involvement in road traffic accidents (RTA) and associated risk factors in Nassarawa Local Government area of Kano State.

Subjects and Methods: A cross section of 280 registered commercial motorcyclists were interviewed using a pre-tested, structured and closed-ended questionnaire. Information was obtained about their socio-demographic characteristics as well as the frequency, nature, timing and seasonality of RTAs.

Results: Of those interviewed, 112 (40.0%) of them were involved in at least one road traffic accident while riding a commercial motorcycle giving an annual prevalence of 40.0% (95% CI= 34.2%-45.9%). Among those that had an accident, 64 (57.2%), 40 (35.7%) and 8 (7.1%) had it once, twice and more than twice respectively. About 52% were due to collision with automobiles, 13% with another motorcycle, 27% pedestrian while 8% were solo accidents. Reported injuries sustained include bruises and cuts (73%), lower and upper limb injuries (21%) and loss of consciousness (6%). The highest accident rate occurred among younger motorcyclists aged 20 – 24 years with a significant decrease in the older age groups (χ^2 linear trend = 11.5 P=0.00068). More than half 156 (55.7%) of them had no valid motorcycle rider's licence. 128 (45.7%) reported using substances including marijuana, solvent inhalation and glue sniffing to enhance endurance. Illiterate motorcyclist had a more than five-fold increased risk compared to their educated colleagues [OR = 5.76; 95% confidence interval = 3.25 – 10.27]. Similarly, substance abuse increased the risk of seven-fold [OR = 7.3, 95% Confidence Interval = 4.1 – (2.9). Most accidents occurred during morning and evening rush hours especially during the rainy season.

Conclusions: There is a need for more preventive measures like rider education on traffic laws, appropriate licensing and regulation. In addition, there is a need to re-instate the helmet legislation to mitigate the effect of motorcycle crashes.

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KEYWORDS: Road traffic accidents, prevalence, commercial motorcyclists, Kano.

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INTRODUCTION

Road Traffic accidents (RTA) are a major cause of morbidity and mortality worldwide¹. Everyday around the world, almost 16,000 people die from injuries whereas several thousand more with non-fatal injuries end up with permanent disabilities². The situation is sufficiently serious that the WHO chose road safety as its theme for World Health Day in 2004³. Nigeria has one of the highest rates of RTA in the world with an increasing yearly trend⁴. Available data reveal that indices of RTA in Nigeria are worse than those of the United Kingdom and the United States of America⁵. Between 1980 and 1988, 254,492 cases of RTA were recorded among which 73,738 people died⁵. This situation is made worse by poorly organized preventive and curative life saving interventions⁴.

The causes of these accidents can be classified into three main categories, namely; human factors, mechanical or vehicular factors and environmental factors. Whereas man has been unable to control himself, with advances in engineering, science and technology we now have improved vehicles. However, particularly in cities, there are too many vehicles and too many people using the same roads leading to increase in RTA⁵. Illiteracy, unqualified non-licensed drivers and motorcyclists; poor driving habits and ineffective enforcement of traffic laws have been reported as some of the factors responsible for high accident rates in Nigeria⁵.

There has been an increasing adoption of commercial motorcyclists as a means of transportation in major cities in Nigeria. This is to avoid traffic congestions that inhibit the free flow of vehicular traffic. Studies in Zaria, Ife and Port Harcourt have shown that riders of such commercial motorcycles are more likely to be involved in road casualties than any other kind of vehicles⁶⁻⁸. Kano being the commercial nerve center of northern Nigeria has also experienced an upsurge in the activities of commercial motorcyclists with the attendant risk of RTA. We studied the profile of these commercial motorcyclists, the frequency of their involvement in RTA and the associated risk factors in Nassarawa local government area of Kano State. This is with a view to offering recommendations for the curtailment of this menace.

METHODS

Study area

Nassarawa local government area is one of six local government areas located in metropolitan Kano. Curved out of the Kano Municipal Local Government Area in 1989, it covers an area of 43 square kilometers and a projected population of 464,225 people⁹. About 50% of Kano's commercial and industrial activities take place in this local government. The people are predominantly Hausa Muslims engaged in trading, businesses

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and other commercial activities. The local government area has 5 daily markets attracting customers from all over northern Nigeria and Niger republic. These markets include parts of Kantin Kwari, Abubakar Rimi markets and Yankaba market. Bompai, one of the major industrial layouts of Kano is located within the local government area. There are ten motor parks within the local government area and is traversed by 150 kilometres of state road, 14 kilometres of federal road and 200 kilometres of feeder roads. The main means of transportation include, taxis, buses and commercial motorcyclists popularly known as "Yan Achaba" or "Okada riders".

Study design

A descriptive cross sectional study

Sampling technique

The required sample size of 280 was obtained using an appropriate statistical formula for estimating minimum sample size in health studies¹² and prevalence from a previous study¹¹.

We used the systematic sampling strategy. The list of registered commercial motorcyclists attending monthly meeting of their association in Nassarawa local government area formed our sampling frame. A one in three sample was interviewed out of the 860 attendees.

Data Collection

Motorcyclists were interviewed using structured, closed ended questionnaires after obtaining consent from participants and permission from the association of commercial motorcyclists. The questionnaire was in four parts. The first part obtained socio-demographic information such as age, ethnic group, religion and educational background. The second part inquired about the frequency, timing and season of occurrence of RTA in the preceding year, nature of injuries and duration of hospitalization. The third part obtained information about human factors including, eye sight, alcohol and drug use, chronic illness, possession of a valid license, attendance of a motorcycle riding school, overloading and endurance. The fourth part enquired about ownership of the motorcycle, age of the motorcycle, state of tyres and source of tyres, as well as whether or not their motorcycles are equipped with driving mirrors and signals.

The study instrument was validated using a pre-test of 10 randomly selected commercial motorcyclists operating in Tarauni local government area. Results of the pre-test were used to modify the contents and wording of the questionnaire. Previously trained medical students fluent in Hausa language administered the questionnaires.

Statistical analysis

Data was analysed using Epi-Info version 6.0 statistical software (CDC Atlanta, Georgia, U.S.A.). Descriptive statistics were depicted using absolute numbers, simple percentages, measures of central tendency (mean, median) and measures of dispersion (range, standard deviation) as appropriate. The Chi-

square test was used in assessing the significance of associations between categorical groups. All tests of hypothesis were two-tailed with type I error fixed at 5% Odds ratio was used to assess the strength of associations between RTA and the risk factors.

Socio-demographic characteristics

A total of 280 male commercial motorcyclists were interviewed. Table I shows that their ages ranged between 15 to 44 years with a mean age (+SD) of 24 ± 2.6 years. Majority of the respondents (42.1%) had primary school education, 22.1% had secondary school education and 2.1% had post-secondary (tertiary) education. About 28% had Koranic education only and the remaining 5.7% were illiterate. The Hausa/Fulani ethnic groups constituted the majority (95.0%) followed by Yoruba (3.6%) and the remaining 1.4% were either Igbos or other minority Nigerian tribes. Most of the motorcyclists (97.1%) were Muslims while the remaining (2.9%) were Christians. Majority (61.4%) were single whereas the remaining 38.6% were married.

Occurrence of RTA

Out of the 280 respondents, 112 (40.0%) of them have been involved in at least one road traffic accident while riding

Table 1: Sociodemographic Characteristics Of Commercial Motorcyclists (N=280)

Variable	Frequency
	No. (%)
<i>Age group (years)</i>	
15–19	32 (11.4)
20–24	60 (21.4)
25–29	108 (38.6)
30–34	44 (15.7)
35–39	28 (10.0)
40–44	8 (2.9)
<i>Educational level</i>	
None	16 (5.7)
Koranic only	78 (27.9)
Primary	18 (42.1)
Secondary	62 (22.1)
Post-secondary	6 (2.1)
<i>Marital status</i>	
Single	172 (61.4)
Married	108 (38.6)
<i>Religion</i>	
Muslims	272 (97.1)
Christians	8 (2.9)
<i>Ethnicity</i>	
Hausa/Fulani	266 (95.0)
Yoruba	10 (3.6)
Others	4 (1.4)

Table 2: Distribution Of Occurrence Of Accidents By Age Group

Age group	Past history of RTA No. (%) Ratio	No Past History of RTA No. (%)	Odds
15-19	16(50.0)	16(50.0)	(1.00)
20-24	31(51.7)	29(48.3)	(1.07)
25-29	48(44.4)	60(55.6)	(0.80)
30-34	8(18.2)	36(81.8)	(0.22)
35-39	6(21.4)	22(78.6)	(0.27)
40-44	3(37.5)	5(62.5)	(0.60)
Total	112(40.0)	168(60.0)	

-[+² linear trend = 11.5 P=0.00068] Significant

Table 3: Distribution Of Road Traffic Accidents By Literacy Among Commercial Motorcyclists

Literary Status	Past history of RTA No. (%)	No Past History of RTA No. (%)	Total
No formal education	63(67.0) (100.0)	31(33.0)	94
At least primary school education	49(26.1)	139(73.9)	188(100.0)
Total	112(40.0)	168(60.0)	280(100.0)

[+² = 43.9 df=1 P=0.001] Significant

a commercial motorcycle. Therefore, the annual prevalence of road traffic accident among these commercial motorcyclists was 40.0% with a 95% confidence interval of 34.2% to 45.9%. Among those that had an accident, 64 (57.2%) had it once, 40 (35.7%) had it twice while the remaining 8 (7.1%) had it more than twice. None of the motorcyclists wore a crash helmet while riding their motorcycles. About 58 (52%) of the accidents were due to collision with automobiles, 15 (13%) with another motorcycle, 30 (27%) pedestrian while 9 (8%) were solo accidents. Reported injuries sustained include bruises and cuts (73%), lower and upper limb injuries (21%) and loss of consciousness (6%). Most respondents (67%) that had injuries were treated as outpatients, the rest were hospitalized for periods ranging from 2 days to more than 2 months.

Factors associated with accidents

Human factors

Table 2 shows that the highest accident rate occurred among motorcyclists aged 20-24 years with a gradual decrease in the older age groups. This decreasing linear trend with advancing age and maturity was statistically significant (+² linear trend = 11.5 P=0.00068).

Out of the 280 respondents, 156 (55.7%) of them had no motorcycle rider's licence. Similarly, 2.86% said they had visual problems, although this was not objectively tested in the present study. One hundred and twenty-eight (45.7%) of the riders interviewed admitted using substances ranging from Marijuana, "Gardagi" (a locally prepared stimulant), solvent inhalation and glue sniffing. Others took Alabukun powder (Aspiring and caffeine) and Panadol extra (Paracetamol and caffeine) without prescription. Reasons for indulgence or misuse of these substances/drugs include "to improve endurance", "to feel high", "to remain awake", "everyone does it" and "to relieve pain and tiredness". Eighty (28.6%) of the respondents reported carrying more than one passenger at a time on their motorcycle.

Table 3 shows that riders without formal education had a more than five fold risk of having had an RTA compared to those with at least primary education [OR = 5.76, 95% Confidence Interval = 3.25-10.27]. This difference was statistically significant (+² = 43.9 df = 1 P = 0.001). Similarly, Table IV shows that commercial motorcyclists that used substances had a seven-fold increase in risk of having had an RTA compared to non-users [OR = 7.3; 95% confidence interval = 4.1 - 12.9]. This difference was also statistically significant (+² = 56.8 df = 1 P < 0.001).

Environmental factors

Most of the accidents (62.5%) occurred on working days and predominantly in the early mornings (39.3%) and late evenings (32.1%). Although most of the accidents (53.6%) occurred during the rainy season as against (46.4%) during the dry season, this difference was not statistically significant (+² = 0.71 df = 1 P = 0.39). Other environmental factors mentioned by respondents include potholes and flooded roads.

Vehicular factors

Only 62 (22.1%) of the motorcyclists were using brand new motorcycles, the remaining 218 (77.9%) used second hand "Tokunboh" motorcycles. Only 50 (17.9%) and 41 (14.4%) of respondents had side mirrors and signal lights respectively fixed on their motorcycles. Although 184 (65.7%) of respondents used second hand tyres, but none of the accidents were associated with burst tyres. Sudden application of brakes on slippery roads was mentioned by 5.3% of the respondents. However, none of these factors was significantly associated with previous accidents.

DISCUSSION

The typical commercial motorcyclist in Kano was a single, male Hausa Muslim. He is in the third decade of life and had attained primary school education. These findings were not

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unexpected since Nassarawa local government area is a predominantly Hausa Muslim community. The commercial motorcycling trade attracts youths mainly from the low socio-economic class and migrant youths from the rural areas.

The prevalence of RTA among the respondents was found to be 40%. This is higher than the figure of 21.3% reported by Oluwadiya from Ile-Ife¹¹ and 10.3% reported by Odelowo in Ilorin¹². Conversely, our rate is lower than the 42.6% reported from Italy¹³. This can be explained by the fact that Kano is more densely populated and is the commercial nerve centre of northern Nigeria. This leads to traffic congestion and patronage of commercial motorcyclists to beat the congestion and enable commuters to reach their destination faster.

Majority of accidents (62.5%) occurred on workdays (Mondays to Fridays) with the highest rates recorded during the morning and evening rush hours. In contrast, Ekere and Ibeanusi found high rates of RTA during weekends in Port Harcourt⁸. Elsewhere, Wick et al¹⁶ reported from Germany that most motorcycle accidents occurred during recreational rides on weekends during summertime. This could be explained by the fact that most commercial, industrial, banking and educational institutions operate mainly during weekdays. This increases the traffic congestion leading to increased incidence of accidents. The morning rush hours correspond to the time people leave home for their work places while evening rush hours correspond to the time of return from various businesses and work places.

Although more accidents were recorded during the rainy season. The difference was not statistically significant in contrast to the report from Port Harcourt⁸ where Ekere and colleagues reported that most accidents occurred during the rainy season. This may be due to the differences in the duration of the rainy season in the two cities. Our study area being in the Savannah region has a relatively shorter rainy season compared to the South eastern part of Nigeria. In addition, the reduced visibility due to harmattan during the dry season in the northern part of the country also increase the risk of accidents thereby blurring the seasonality of accident rates.

The highest rates of accidents were recorded among youths in the age group (25 – 29 years) with a significant decrease with advancing age. This finding corroborates the findings of Oluwadiya in Ile-Ife¹¹ and that of Odelowo¹² in Ilorin who found that the peak incidence of RTA occurred among riders in the 20 – 29 years and 18 – 30 years age brackets respectively. Reports from Saudi Arabia¹⁴, Singapore¹⁵, and Europe¹³ showed essentially similar trends. This could be due to inexperience and the adventurous nature of this age group. Due to youthful exuberance, they are also less likely to obey traffic regulations especially if illiterate. All these qualities predispose them to RTA.

We also found a significant association between illiteracy and RTA among motorcyclists. There was a more than five fold increased risk among illiterates compared to their literate counterparts. Illiteracy hinders the ability of the cyclists to read and understand road signs. This finding was also reported by Ekere et al in Port Harcourt, who found that 50.7%

of motorcyclists that were involved in accidents were illiterate⁸.

Another factor that was found to be significantly associated with RTA was substance abuse. Those who used substances like “Gadagi” and Marijuana were seven times more likely to have been involved in an RTA compared to those who did not. None of the respondents reported using alcohol. This may not be unconnected with the recent introduction of Shariah (Islamic Law) banning the sale and consumption of alcohol in the state. Elsewhere, Oluwadiya and others⁷ found that 15% of motorcyclists involved in RTA in Ile-Ife were under the influence of alcohol.

Other practices reported by commercial motorcyclists include overloading (28.6%), use of second hand motorcycles/tyres. More than half had no riders’ license. Although, none of these factors was found to be significantly associated with occurrence of RTA in the present study. Other workers in Ile-Ife⁷, found that poor vehicle maintenance and poor use of safety devices were important factors responsible for motorcycle accidents.

There is a need for more preventive measures like rider education on traffic laws, appropriate licensing and regulation and the re-instatement of the helmet legislation to prevent and mitigate the effect of motorcycle crashes.

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