

Full Length Research Paper

Prevalence and pattern of road traffic accidents among commercial motorcyclists in a city in Southern Nigeria

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Abstract

Motorcycle accidents contribute significantly to the number of road traffic accidents (RTAs) in many cities in southern Nigeria. This study was carried out to determine the prevalence and pattern of RTAs among commercial motorcyclists in a city in southern Nigeria. A descriptive, cross sectional study was carried out among motorcyclists in 2010 in Ikot Ekpene, Southern Nigeria. The instrument of data collection was a semi-structured interviewer administered questionnaire. Data was analysed using SPSS version 17. A total of 200 male commercial motorcyclists participated in the study, out of which 136 (68.0%) had been involved in RTAs since they started riding. Up to 119 (87.5%) of these were involved in accidents the year prior to the study. Eighty eight (64.7%) attributed the last accident to excessive speeding. Majority, 125 (91.9%), were not wearing helmets when the accident occurred. A total of 99 (72.8%) sustained injuries during the most recent accident, out of which 74 (74.7%) were injuries at the extremities. Speed reduction was identified by 138 (69.0%) motorcyclists as the single most important way of reducing RTAs among motorcyclists. Road traffic accidents were observed to occur more commonly amongst 96.6% of motorcyclists who drank alcohol, compared to 56% who did not, ($p < 0.05$) and among 104 (80.0%) who were speeding excessively, compared to 32 (45.7%) who did not, ($p < 0.05$). There is need for legislation against alcohol consumption among motorcyclists during riding hours and enforcement of speed limits by government in order to reduce RTAs among motorcyclists.

Keywords: Commercial motorcyclist, RTA, extremity injuries, helmet use, excessive speeding.

INTRODUCTION

Motorcycle injuries constitute a major but neglected emerging public health problem in developing countries (Rafindadi, 2000; Peden et al., 2002). They are among the leading causes of disability and deaths, the main victims being motorcyclists, passengers and pedestrians in the young reproductive age group (Solagberu et al., 2006). Injuries related to motorcycle contribute significantly to the number of road traffic injuries seen. In Malaysia, a study reported that motorcyclists constituted about 55-57% of total number of road accidents and 60% of traffic fatalities (Abdul, 2003). Also, a study in a private hospital in Port Harcourt, Nigeria documented that 47.3% of RTAs seen were motorcycle accidents (Ekere and Ibeanusi, 2003). Although the risk of being involved in a road accident is over eight times as great for a motorcycle as for a car, a motorcyclist is 24 times as likely to be killed or seriously injured per kilometer travelled than a car driver (The ROSPA Guide to road

safety projects, 2005).

The reported prevalence of motorcycle injuries varies around the world, from 22.8% in China (Zhang et al., 2004) to as high as 62% in Vietnam (Nantulya and Reich, 2002). In Nigeria, prevalence of motorcycle injury ranging from 12.8-60% have been reported in different studies (Okedare, 2004; Nzegwu et al., 2008; Aniekan and Sydney, 2003; Okeniyi et al., 2005). Long established patterns of injury risk suggest that the lower limbs are the body parts most likely to be injured in motorcycle accidents. In Lagos, Nigeria, after the introduction of commercial motorcycles, incidence of reported cases of road traffic accident at Igbobi Orthopaedic hospital had a 3000% increase in number of patients with fractured limbs (Idika and Sanni, 2004). Previous studies in Nigeria have shown that limb and head injuries are the commonest causes of morbidity and mortality in motorcycle injuries (Ekere and Ibeanusi, 2003;

Oluwadiya et al., 2004).

Risk taking is known to be very common among motorcyclists. In an in-depth study in London, risk taking was found to account for 20.8% of the causes listed on the motorcycle accident database and the most common cause of single vehicle accidents was reported to be a result of riders misjudging the appropriate speed to negotiate a bend in the road (Department for Transport, In Depth Study of Motorcycle Accidents, 2004). In a rural-urban comparative study of commercial motorcyclists conducted in Oyo State, Nigeria, overspeeding was identified as a common cause of RTA by 28.2% of the motorcyclists in the rural and 37.3% of the motorcyclists in the urban area (Sangowawa, 2007). Use of excessive speed is therefore a common cause of motorcycle accidents. Several studies in developing countries have also shown that helmet use by motorcyclists is low. Majority of motorcyclists have been reported not to wear any protective gear, hence aggravating the risks of getting severe head injuries (Oluwadiya et al., 2004; Naddumba, 2004). Use of alcohol while driving is also a common practice among motorcyclists. In Nigeria, in a study done in Ondo State among motorcyclists, up to 30% of them engaged in drunk riding (Okedare, 2004) while another study in Oyo State stated that 20.4% of motorcyclists reported current use of alcohol (Sangowawa, 2007).

These risk taking behavior have continued to lead to high incidence of accidents among motorcyclists. However, despite this burden, the public policy responses to this problem have been low, probably because of lack of local data regarding the problem. Since the majority of motorcycle injuries are preventable, a clearer understanding of the magnitude, contributing factors and injury patterns is essential for establishment of prevention strategies (Solagberu et al., 2006; Alicioğlu et al., 2008). This study was carried out to determine the prevalence and pattern of RTAs among motorcyclists in Ikot Ekpene, a city in Southern Nigeria.

METHOD

Study Area

The study was carried out in Ikot Ekpene, a city in one of the 31 local government areas in Akwa Ibom State, southern Nigeria. The town is about 30 kilometers from Uyo, the State capital. It has an estimated population of 142,377 (National Population Commission, 2006). The major means of intra city transportation is the motorcycle.

Study Population

This consisted of commercial motorcyclists in Ikot Ekpene. According to the president of the motorcyclists

association in the State, there were about 15,000 motorcyclists in Ikot Ekpene in 2008. This number is likely to have increased after the recent ban of motorcycles from Uyo metropolis which may have led to the migration of many motorcyclists to surrounding cities.

Study Design and Sample Size

This was a cross sectional descriptive study. The minimum calculated sample size was 171.5, using an injury prevalence of 12.8% (Okedare, 2004) obtained in a study in western Nigeria. This was rounded up to 200, making provision for 10% non response rate.

Sampling Technique

Respondents were selected using the multi-stage sampling technique. Motorcyclists in all towns in Akwa Ibom State are divided into clusters. A cluster is made up of a group of motorcyclists operating from a specific location in a city. At the time of the study, there were 32 clusters in Ikot Ekpene. A list of these clusters was obtained from the chairman of the motorcyclists associations in the town and eight clusters were selected by simple random sampling. A list of motorcyclists registered in the selected clusters was also obtained and 25 motorcyclists were selected from each cluster by simple random sampling technique, using table of random numbers. This gave a total of 200 motorcyclists.

Data Collection

The names of all selected motorcyclists were documented in a register by the chairman of the motorcyclists union. This was in order to prevent the participants from getting mixed up with those who were not selected. The purpose of the study was explained to the chairman who in turn communicated the information to the selected motorcyclists. A convenient date was fixed for the interview. All the motorcyclists turned up on the fixed date.

Data collection was carried out using a semi-structured, interviewer administered questionnaire with the help of twenty community health officers in training who served as research assistants and had gone through a training session on how to administer the instrument. The questionnaire was pre-tested on a small group of motorcyclists in Abak, one of the urban towns not used for the study. Information collected included socio-demographic characteristics, involvement in accidents, and pattern of injury and possible causes of accidents.

Table 1. Prevalence of road traffic accidents among motorcyclists.

History of accident	Frequency N=200, n (%)
Ever being involved in accident	
Yes	136 (68.0)
No	64 (32.0)
Frequency	N=136
Once	43 (31.6)
Twice	24 (17.6)
Three times	22 (16.2)
Four times or more	47 (34.6)
Were you involved in an accident in the past year	N=136
Yes	119 (87.5)
No	17 (12.5)
Frequency	N=119
Once	26 (21.8)
Twice or more	93 (78.2)

Table 2. Reported cause of the most recent accident and object of collision.

Reported cause of most recent accident	Frequency N = 136, n (%)
Over speeding	88 (64.7)
Brake failure	18 (13.2)
Don't know	30 (22.1)
Object of collision	
A motorcycle	64 (47.0)
A stationary object	27 (19.9)
A vehicle, car	20 (14.7)
*Others	25 (18.4)

*Pedestrian and animal

Data management/Analysis

The data obtained was edited and collated manually, entered into the computer and analysed using the Statistical Package for the Social Sciences (SPSS) version 17. Frequencies were generated and the Chi-square test was used to compare different proportions and test associations.

Ethical Considerations

Permission to carry out the study was obtained from Akwa Ibom State Ministry of Health and Commercial Motorcycle Association in the State. Informed consent was obtained from respondents after explaining the purpose of the study. Respondents were told that they had a right to decline being interviewed if they wished

and would suffer no consequences for such decision. All of them willingly agreed to participate in the study.

RESULTS

A total of 200 commercial motorcyclists participated in the study. Majority, 147(73.5%) of the motorcyclists were < 40 years of age with a mean age of 33 years.

A total of 136 (68%) had been involved in road traffic accidents since they started riding motorcycles. Up to 47 (34.5%) of them had accidents 4 or more times and 119 (87.5%) were involved in accident in the year prior to the study. (Table 1)

Among those who were ever involved in accidents, 88 (64.7%) attributed the last accident to over speeding and 64 (47.1%) of them reported colliding with another motorcycle during the most recent accident. (Table 2)

Table 3. Events during most recent RTA.

Characteristics	Frequency N=136, n(%)
Helmet use by motorcyclist during RTA	
Yes	11(8.1)
No	125 (91.9)
No of passengers carried during accident	
1	36 (36.5)
>1	53 (39.0)
No passenger	47 (34.5)

Table 4. Presence and characteristics of injuries sustained during most recent accident.

Characteristics	Frequency n (%)
Sustaining of injuries	
Yes	99 (72.8)
No	37 (27.2)
If yes, specify site of injury*	
Lower limb	44 (44.4)
Upper limb	30 (30.3)
Head/face	18 (18.2)
Trunk	15 (15.1)
Type of injuries sustained*	
Bruises/abrasions	74 (74.7)
Laceration	20(20.2)
Burns	12 (12.1)
Fracture	12(12.1)

*Multiple responses

Majority, 125 (91.9%) motorcyclists were not wearing helmet during the most recent accident and 53 (39.0%) admitted to carrying more than one passenger during the accident. (Table 3)

A total of 99 (72.8%) motorcyclists sustained injuries during the most recent accident, out of which up to 44 (44.4%) reported having injuries in the lower limb. Majority, 74 (74.7%) reported sustaining bruises, while 12 (12.1%) sustained fractures. (Table 4)

Up to 93 (46.5%) felt the commonest cause of motorcycle accidents was excessive speeding by motorcyclists, while 53 (26.5%) felt it was dangerous riding by other motorcyclists. Consequently, up to 138 (69.0%) felt that the single most important way of reducing accidents among motorcyclist was speed reduction.

Road traffic accidents was observed to occur most amongst those aged <30 years, though the difference was not statistically significant ($\chi^2 = 0.93$, $p > 0.05$). The incidence of accident was higher among those who drank alcohol, 57 (96.6%), than among those who did not, 79

(56%) ($\chi^2 = 31.5$, $p < 0.05$). Accident rate was also higher among those who were speeding excessively, 104 (80.0%), compared to those who did not, 32 (45.7%) ($\chi^2 = 24.8$, $p < 0.05$). (Table 5)

DISCUSSION

Majority of the motorcyclists in this study were young and energetic and in their most productive years of life. This seems logical as the job of riding motorcycles for commercial purposes seems to be very demanding. A study carried out in Yola, Adamawa State, Nigeria showed that 88% of the motorcyclists in the study were aged between 18 and 30 years (Cervero, 2007).

The prevalence of motorcycle injuries of 68% in the present study was higher than that recorded in studies in western Nigeria, 45.3% (Owoaje et al., 2005) Uganda, 25%, (Naddumba, 2004) Benin City, Nigeria, 18% (Nzegwu et al., 2008) and India where the prevalence of motorcycle injuries was reported to be 56.1% (Fitzharris

Table 5. Association between respondents' characteristics and involvement in accident.

Characteristics	Has respondent ever been involved in an accident while riding		Total	Statistics χ^2	p-value
	Yes N= 136, n (%)	No N = 64, n (%)			
Age group					
< 30 years	52 (72.2)	20 (27.8)	72	0.93	0.63
30 to 39	49 (65.3)	26 (34.7)	75		
≥40	35 (66.0)	18 (34.0)	53		
Use of alcohol					
Yes	57 (96.6)	2 (3.4)	59	31.5	0.00
No	79 (56.0)	62 (44.0)	141		
Excessive speeding					
Yes	104 (80.0)	26 (20.0)	130	24.58	0.00
No	32 (45.7)	38 (54.3)	70		

et al., 2009). This may have been due to large number of commercial motorcyclists in the present study and their riding habits.

Injury to the extremities being the commonest form of injury recorded during motorcycle crashes in this study was similar to findings reported in some other studies. A study done in Singapore reported that wounds, fractures and/or dislocations of the limbs were significantly more common among motorcyclists in emergency departments compared with other motor vehicular incidents (Tham et al., 2004). In a study done at Obafemi Awolowo Teaching Hospital, Ile Ife, Nigeria among victims of motorcycle accident, 79.3% of them had limb injuries (Oluwadiya et al., 2004). Lower limb injuries was also reported in several other studies (Eluwa et al., 2010; Markogiannakis et al., 2006; Seleye-Fubara and Ekere, 2003; Hare and Von Holst, 2003). The probable explanation for the high frequency of lower-limb injuries is that the limbs are often squeezed between the motorcycle and impacting vehicle, the ground or some other fixed object. Some studies have however reported head injury as the most frequently occurring injury among motorcyclists. A study to assess motorcycle injuries in north-central Nigeria, reported that head injury (40.1%) was the most frequently occurring injury followed closely by extremity injuries (38.1%). None of the patients wore protective helmet (Nwadiaro et al., 2011).

Poor helmet use has been recorded in several studies, especially in developing countries. In the present study, helmet use was less than 10%. In a study among motorcyclists in Ondo, Nigeria, only 0.5% used helmets and up to a third of them had never seen the crash helmet before (Okedare, 2004). In Benin City, Nigeria two studies reported that all motorcyclists and their passengers did not use helmets (Nzegwu et al., 2008); (Saheeb and Etetafia, 2003). On the contrary, an in-depth study of motorcycle accidents carried out in London

showed that 80% of the motorcyclists wore helmets (Department for Transport, In Depth Study of Motorcycle Accidents, 2004). These differences in the rate of helmet use reflect differences in awareness of the role of helmet in preventing or reducing the severity of head injury during motorcycle accidents between these countries and poor enforcement of traffic laws. It could also be due to difference in attitudes to helmet wearing between these countries.

Excessive speed and alcohol use were identified as factors which contributed to the rate of occurrence of accidents among the motorcyclists in this study. Similar findings were recorded in a study among motorcyclists in Karu, Nigeria where reckless driving accounted for 78% of the accidents while alcohol and drug intoxication accounted for 66% and 46%, respectively (Aetukumana et al., 2010).

In conclusion, motorcycle injuries constitute a major but neglected emerging public health problem. There is need for legislation against alcohol consumption among motorcyclists during riding hours and enforcement of speed limits by government in order to reduce RTA among motorcyclists.

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