

ORIGINAL ARTICLE

Motorcycle injuries in north-central Nigeria

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Abstract

Background: The increasing use of commercial motorcycle as mode of transportation in urban cities in Nigeria has become important source of morbidity and mortality. This is coupled with poor helmet use, narrow roads, increasing traffic, and poor licensing of the motorcycle riders. The objectives of this study are to determine the pattern of injuries following accident involving motorcycles, the mortality rate, and the immediate causes of mortality.

Materials and Methods: This is a combined retrospective and prospective study spanning over 2 years (1 year each). Patient's records were retrieved to collate data for the retrospective study while all the patients presenting to the casualty unit of Jos University Teaching Hospital following involvement in motorcycle accidents between April 2006 and March 2007 were selected for the study.

Results: Out of 485 motorcycle injured patients, 295 and 190 were recruited from the retrospective and prospective study respectively. The male: female (M: F) ratio was 4.8:1. The ages ranged from 2.5 to 84 years with a peak at 21-30 years. The total number of injuries was 559 with 443 patients singly injured and 42 patients multiply traumatized. Head injury (40.1%) was the most frequently occurring injury followed closely by extremity injuries (38.1%). None of the patients wore protective helmet. Thirty-six (36) mortalities (7.4%) were recorded and all dead patients had head injuries. All deaths occurred within 24 h.

Conclusions: Head injury represents a common cause of morbidity and mortality following motorcycle injuries in our environment. Therefore, strict enforcement of helmet laws from May 10, 2010 may reduce morbidity and mortality.

Key words: Motorcycle injuries, motorcycle riders, protective helmets, passengers, road traffic accident

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Introduction

Over the past three and a half decades the use of motorcycles has galloped in most Nigerian cities.^[1-3] Before this time, it was only popular in cities like Calabar, Lafia, etc. The use was mainly confined to personal transportation and was viewed as a status symbol for the "nouveau riche" among the low income people.

With the economic depression of late 70s and early 80s, motorcycle use as a means of commercial transportation made a steady in-road into Nigerian cities. The ease of circumventing road traffic hold ups, and its ability to navigate remote and unmotorable areas of the cities coupled with the relative cheapness of its procurement ensured an increase in its use.

The poor licensing of the motorcycle riders and disregard to road traffic regulations brought about a significant increase in morbidity and mortality following motorcycle injuries.^[4] In addition, there is no legislation concerning safety devices such as crash helmet. Where that exists, poor enforcement is almost always the case.^[5,6]

It is no longer strange to encounter head-on collision from motorcycles.

This study is undertaken to determine the extent of surgical problems arising from motorcycle injuries, the pattern of injuries, and the morbidity and mortality arising there from.

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The study also seeks to identify any factors that might mitigate the problems of motorcycle injuries.

Materials and Methods

This is a combined retrospective and prospective study of patients who sustained motorcycle injuries and were treated in Jos University Teaching Hospital (JUTH). The retrospective study covered a 1 year period from April 2005 to March 2006, while the prospective study was carried out from April 2006 to March 2007 inclusive. The case notes of casualties of motorcycle injuries who presented at the accident and emergency (A/E) department within the study period were obtained from the hospital retrieval system. The contents were analyzed for demographic data, type of injuries sustained, status of patients as to whether he or she is a rider, passenger or pedestrian, and early outcome of injuries.

The prospective study was undertaken for consecutive motorcycle-injured patients who presented at Accident and Emergency Department over a 1 year period. Questionnaires were used to obtain information, while physical examination was carried out on arrival by the casualty officer and the results entered into preplanned proforma. Data obtained from both prospective and retrospective studies were subjected to statistical analysis.

This study focused only on the pattern and immediate outcome of motorcycle injuries in JUTH- which is a major referral tertiary institution that covers most of the states of middle-belt of Nigeria and beyond namely Plateau, Nasarawa, Bauchi, Gombe, Benue, Taraba, Adamawa, and Kogi states.

For the purpose of this study, motorcycle injury was defined as any injury sustained in a road traffic accident (RTA) involving a motorcycle or a pedestrian knock-down by a motorcycle.

Results

A total of 1603 patients who were involved in road traffic accidents presented during the 2 year study period. Of these, 485 were motorcycle injured patients making up 30.3% of the road traffic accident victims.

The 485 motorcycle-injured patients were made up of 295 from the retrospective and 190 from the prospective group. There were 401 males (82.7%) and 84 females (17.3%), giving a male to female ratio of M: F = 4.8:1. Of these, there were 193(39.8%) motorcyclists, 109(22.5%) pedestrians, and 183(37.7%) passengers.

The ages ranged from 2.5 to 84 years with a peak incidence from 21 to 30 years. The age distribution of the patients is

shown in Table 1. In five patients from the retrospective group, the ages were not entered while the ages of four patients from the prospective group were unknown. None of the motorcyclists or passengers wore protective helmet.

A total of 559 injuries were recorded from 443 (90.6%) patients who had single injuries and 42 (8.7%) patients who were with multiple injuries. Table 2 shows the injuries sustained by the study population. The most frequently occurring injury was head injury (40.1%), followed by tibio-fibula fractures (19.3%), and femoral fracture (10.4%). Vascular injury occurred only in one patient from the retrospective study group.

Thirty-six (36) mortalities were recorded, constituting 7.4% of the study population. All deaths occurred within 24 h of presentation and all the patients who died were observed to have had severe head injury. Of these, 21(58.3%) were motorcyclists, while 15(41.7%) were passengers. No

Table 1: Age distribution

Age	Retrospective study		Prospective study		Total no %	
	No	%	No	%	No	%
0-10	28	9.5	12	6.3	40	8.2
11-20	41	13.9	20	10.5	61	12.6
21-30	101	34.2	80	42.1	181	37.1
31-40	51	17.3	36	19.0	87	17.9
41-50	47	15.9	18	9.5	65	13.4
50	24	1.8	20	10.5	44	9.1
Unknown	5	1.7	4	2.1	9	1.9
Total	295	100	190	100	485	100

Table 2: Pattern of injuries

Injury	Retrospective study	Prospective study	Total no	%
Head injuries	130	95	225	40.1
Femoral fracture	Open 6 36	Open 5 22	58	10.4
	Closed 20	Closed 17		
Tibio-fibular fracture	Open 36 60	Open 35 48	108	19.3
	Closed 24	Closed 13		
Humeral fracture	7	3	10	1.8
Radioulnar fracture	6	3	9	1.6
Ophthalmic injuries	21	1	22	3.9
Facial injuries	11	8	19	3.4
Chest injuries	18	7	25	4.5
Abdominal injuries	8	3	11	2.0
Pelvic/hip fracture	8	3	11	2.0
Spinal injuries	5	8	13	2.3
Other joint injuries	21	7	28	5.0
Miscellaneous injuries	8	11	19	3.4
Vascular injuries	1	Nil	1	0.2
Total			559	

Table 3: Status of motorcycle injured patient

Status	Retrospective	Prospective	Total	%
Motorcyclist	106	87	193	39.8
Passenger	124	59	183	37.7
Pedestrian	65	44	109	22.5

mortality was recorded among pedestrians.

Table 3 shows the distribution of motorcycle-injured patients according to status. The most frequently injured patients were motorcyclists themselves (39.8%) followed closely by passengers (37.7%). Pedestrians' involvement in the motorcycle injury was found to be 22.5%.

Discussion

It is evident from this study that motorcycle injuries constitute a significant cause (30.3%) of morbidity and mortality arising from road traffic accidents in Jos. This is as a result of markedly increased use of motorcycles for commercial purposes in most Nigerian cities.^[3-10] Several factors such as cheapness of the cycles (a new motorcycle is six times cheaper than a second hand vehicle), ability to beat traffic hold ups, access to remote non-motorable parts of towns, and poverty ensure its continued use.

It is noted that there was a drop in the number of motorcycle injuries by 105 during the prospective phase of the study the following year. This was a result of official ban of motorcycle use in Jos from 8.00pm while the study was in progress. This limitation of permitted operating time for motorcyclists was necessitated by rise in the use of motorcycles for criminal purposes rather than forestalling accidents.

The peak age period of 21-30 years and the concentration of 55% within the 20-40 year age group is in keeping with the known peak occurrence of road traffic accidents generally.^[11-13] This is the active age group involved in use of the motorcycles for commercial transportation and as a means of livelihood.^[10-11]

The finding that head injury was the most frequently occurring injury (40.1%) is instructive. This contrasts with some other workers that found extremity injuries as the most common cause of motorcycle injury.^[13-16] Passengers involved in the accident wore no protective helmet. It is no surprise that all mortalities were as a result of head injury (7.4%).^[17,18]

Fewer patients (8.7%) were polytraumatized compared to 90.6% who were singly injured. This may be as a result of the fact that most of the motorcycle accidents took place within the town where it is not likely to have very high velocity injury. This fact might also explain why there was just 7.4% mortality despite the large number of patients who had head injury. This is without bias to the fact of

poor licensing, non-adherence to traffic rules and at times reckless driving by largely illiterate motorcycle users.^[8-11]

Both the motorcyclists and the passengers were nearly equally involved in the motorcycle injuries. This shows that the passengers as well as motorcyclists share equal risk of getting injured.^[3] Any measure for prevention would target both the passengers and the motorcyclists. While the cyclists should be taught safety rules, adherence to speed limits and obedience to road traffic regulations, the passenger as a stakeholder in his or her own safety should be in a position to check the cyclist from dangerous excesses. The law enforcement agents should ensure adherence to safety rules and eliminate drunk-driving.

It is envisaged that the morbidity and mortality from motorcycle injuries would be reduced if legislations and enforcement of protective helmet for motorcyclists and passengers are re-introduced.

Conclusions

Motorcycle injuries are undoubtedly a major surgical problem in Jos. More in-depth education of the riders and passengers, strict enforcement of traffic regulation, restriction or partial ban of motorcycle for commercial purposes, and provision of alternative would help improve the situation. No doubt, the use of protective helmets by both the motorcyclists and passengers if adequately enforced would reduce mortality arising from motorcycle injuries.

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