

*Original Research Article*

# The use of crash helmets among commercial motorcycle riders in Ogbomoso, South-West, Nigeria

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## Abstract

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Despite the fact that the incidence and prevalence of road traffic crashes especially involving the motorcyclists in this environment have continued to increase, with attendant complications like head injuries, majority of our motorcyclists have remained without their helmets while driving. This study was carried out to determine the use of crash helmets among motorcycle riders and their passengers in Ogbomoso. This was a community based cross sectional study carried out among commercial motorcyclists in Ogbomoso, in Southwest Nigeria. The instrument used in collecting data was a semi-structured interviewer administered questionnaire. A total of 111 male commercial motorcyclists were recruited for the study. Data was analyzed using Stata 12 statistical software. About 62 (56%) of the participants had been involved in road traffic crashes since they started to ride motorcycle. Even though 100 (90.1%) participants claimed to have the crash helmets, only 29 (29%) regularly wore the crash helmets. Also, out of the 111 participants, only 16 (14.4%) had crash helmets for their passengers and only 1(6.2%) regularly made the helmets available for his passengers. Again, 78 participants had attended lectures on road safety but as noted above only 30 respondents regularly wore their crash helmets. The level of education of the respondents was not found to have any association with the use of crash helmets in this study. There is an urgent need to educate the public and enforce the law of universal helmet use so that all motorcyclists and passengers are protected from possible head injuries should they be involved in crashes.

**Keywords:** Commercial motorcyclists, Crash helmets, Head injuries, Road traffic crashes, Southwest Nigeria

## INTRODUCTION

Preventing serious injuries and deaths from motorcycle crashes is a major and growing public health concern globally and the situation is not different in Nigeria. Injuries to the head, after motorcycle crashes, are common causes of severe morbidity and mortality. Wearing a helmet is the single most effective way of reducing head injuries and fatalities resulting from motorcycle and bicycle crashes. Wearing a helmet has

been shown to decrease the risk and severity of injuries among motorcyclists by about 70%, the likelihood of death by almost 40%, and to substantially reduce the costs of health care associated with such crashes (WHO, 2014).

Even though motorcycle helmets are designed to protect riders against head injuries yet its use is not widespread in Nigeria. (Oni et al., 2011) in Lagos state,

Nigeria found that only 12.4% of the motorcycle riders make use of the crash helmets while driving. (Ogunmodede et al., 2012) in Oyo state Nigeria, found that 33.8% of the riders sampled in Oyo state, Nigeria used crash helmets while driving. Also less than 10% of the motorcycle riders were found to use helmets in Uyo, Nigeria (Ofonime, 2012) and a study carried out in the north central Nigeria revealed that none of the motorcyclists involved in the study wore helmets (Nwadiaro et al., 2011). In the study conducted by HC Nwadiaro in the north central Nigeria, head injury accounted for the most frequently occurring injury (40.1%) and all mortalities were as a result of the head injury (Nwadiaro et al., 2011).

Helmet use consistently has been shown to reduce motorcycle crash-related injuries and deaths, and the most effective strategy to increase helmet use is enactment of universal helmet laws (National Highway Traffic Safety Administration, 2011). Universal helmet laws, which require that every motorcycle rider and passenger wear a helmet whenever they ride, can increase helmet use and save money, according to a new Centre for Disease Control and Prevention (CDC) study (Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report, 2010).

Helmet use is estimated to prevent 37% of fatalities among motorcycle operators and 41% of fatalities among passengers (Centers for Disease Control and Prevention, 2008-2010). The United States National Highway Traffic Safety Administration (NHTSA) estimates that in 2010, helmet use saved the lives of 1,544 motorcyclists, and an additional 709 lives might have been saved if all motorcyclists had worn helmets (NHTSA, unpublished data, 2012). They also affirmed that motorcycle helmets are 67 percent effective in preventing brain injuries and those unhelmeted motorcyclists are over three times as likely to suffer a brain injury as those who were helmeted.

In the United States during 2008–2010, a total of 14,283 motorcyclists were killed in crashes, among whom 6,057 (42%) were not wearing a helmet. In the 20 states with a universal helmet law, 739 (12%) fatally injured motorcyclists were not wearing a helmet, compared with 4,814 motorcyclists (64%) in the 27 states with partial helmet laws and 504 (79%) motorcyclists in the three states without a helmet law (National Center for Statistics and Analysis, 2012). This clearly shows that places where universal helmet laws are enforced tend to enjoy better protection from fatal injuries.

Worldwide, the economic cost of road crash injuries is estimated to be about 1% of the gross national product in low income countries and 1.5% in middle income countries (Hung et al., 2006). Helmet laws significantly reduce the strain on public resources. Unhelmeted riders cost more to treat at the hospital, spend a longer time in rehabilitation, and are more likely to require some form of public assistance to pay for medical bills and rehabilita-

tion. In 1991, prior to enacting its helmet law, California's state medical insurance program paid \$40 million for the treatment of motorcycle-related head injuries. That figure dropped to \$24 million after enactment of a universal helmet law (University California - Los Angeles School of Public Health, Center for Injury Prevention, 2010).

## **METHODOLOGY**

### **Study area**

The study was carried out in Ogbomoso, an urban and commercial town in south-western Nigeria about 100 kilometers from Ibadan, the Oyo State capital. It is the gateway between Western and Northern Nigeria. It has an estimated population of 318,394 (National Population Commission, 2006). The major means of intra city transportation is the motorcycle.

### **Study population**

This consisted of commercial motorcyclists in Ogbomoso.

### **Study design and sample size**

It was a community based cross sectional descriptive study. A total of 111 commercial motorcyclists participated in the study. There had been initial visits to the leaders of the association of the motorcyclists in Ogbomoso and the purpose of the study was thoroughly explained. The leaders passed the information to the members and eventually they all agreed on two separate dates to educate and carry out the data collection during their monthly meetings. Those who gave their consent were enlisted and interviewed. Those who were non-commercial motorcyclists and those that withheld their consent were excluded.

### **Data collection**

Data collection was carried out using a semi-structured, interviewer administered questionnaire with the help of twenty student nurses who served as research assistants after they had gone through a training session on how to administer the instrument. Information collected included socio-demographic characteristics, ownership of crash helmets, the use of crash helmets, and involvement in road crashes.

### **Statistical analysis**

Analysis was done using Stata 12 software. The results

**Table 1.** Socio-demographic characteristics of respondents

<b>Variables</b>	<b>Freq (%)</b>
<b>Agegroup n=108</b>	
20 – 29	21 (19.4)
30 – 39	46 (42.6)
40 – 49	28 (25.9)
50 – 59	6 (5.6)
>= 60	7 (6.5)
<b>Mean Age = 37.0 ± 10.2</b>	
<b>Educational Status n=111</b>	
No Formal Education	4 (3.6)
Primary	28 (25.2)
Secondary	64 (57.7)
Tertiary	15 (13.5)
<b>Marital Status n=111</b>	
Single	15 (13.5)
Married	96 (86.5)
<b>Ethnicity n=111</b>	
Yoruba	110 (99.1)
Others	1 (0.9)
<b>Religion n=111</b>	
Christianity	100 (90.1)
Islam	11 (9.9)
<b>Primary Occupation n=111</b>	
Okada Driver	17 (14.9)
Other Jobs	94 (85.1)

**Table 2.** Ownership and use of crash helmets by respondents

<b>Variables</b>	<b>Freq (%)</b>
<b>Owns A Crash Helmet n=111</b>	
Yes	100 (90.1)
No	11 (9.9)
<b>Frequency of Use n=100</b>	
Always	29 (29.0)
Rarely	30 (30.0)
Occasionally	41 (41.0)
<b>Has Passenger Crash Helmet n=111</b>	
Yes	16 (14.4)
No	95 (85.6)
<b>Frequency of Use By Passengers n=16</b>	
Always	1 (6.2)
Occasionally	3 (18.8)
Rarely	12 (75.0)
<b>Reasons For Using Crash Helmets By Respondents n=111</b>	
To Prevent Arrest By FRSC	
To Protect My Head	9 (9.0)
No Reason	84 (84.0)
	7 (7.0)

**Table 3.** Sociodemographic characteristics and ownership of crash helmets

Socio-demographic Variables	Owns A Crash Helmet		Chi Square	P value
	Yes (%)	No (%)		
<b>Agegroup n=108</b>				
20 – 29	20 (95.2)	1 (4.8)	3.97	0.41
30 – 39	41 (89.1)	5 (10.9)		
40 – 49	23 (82.1)	5 (17.9)		
50 – 59	6 (100.0)	0 (0.0)		
>= 60	7 (100.0)	0 (0.0)		
<b>Educational Status n=111</b>				
No Formal Education	4 (100)	0 (0)	0.95	0.81
Primary	26 (92.9)	2 (7.1)		
Secondary	57 (89.1)	7 (10.9)		
Tertiary	13 (86.7)	2 (13.3)		
<b>Marital Status n=111</b>				
Single	14 (93.3)	1 (6.7)	0.20	1.00
Married	86 (89.6)	10 (10.4)		
<b>Ethnicity n=111</b>				
Yoruba	99 (90.0)	11 (10.0)	0.11	1.00
Others	1 (100.0)	0 (0.0)		
<b>Religion n=111</b>				
Christianity	90 (90.0)	10 (10.0)	0.01	1.00
Islam	10 (90.9)	1 (9.1)		

were displayed in tables. Cross tabulation of variables were also done. Chi-squared test was used to test for significant associations between categorical variables. A p-value of less than 0.05 was considered as statistically significant.

## RESULTS AND DISCUSSIONS

A total of 111 male commercial motorcyclists participated in the study. Their mean age was 37 years (SD±10.2) and the age group with the highest frequency was 30-39 years. Majority of the respondents 64 (57.7%) had secondary education and most were married. (Table 1)

One hundred men (90.1%) claimed to have the crash helmets but only 29 (29%) regularly used them. Only 16 of these motorcyclists had crash helmets for their passengers and just one of them regularly made the helmet available for his passengers. (Table 2)

Those that were married were found to regularly use the helmets more than those that were single, 27 (31.4%) compared with 2 (14%). (Table 3)

The age range found to be mostly involved in the regular use of the crash helmets was 50-59 years.

Attendance at lectures on road safety did not translate into improved use of the crash helmets in this study. (Table 5)

A larger percentage of the motorcyclists enlisted in this study fell in the age range 20-39 years and this is not surprising since commercial motorcycling is quite demanding and requires expending a lot of energy. Similar findings were reported by Ofonime E.F. at Uyo and Oni et al in Lagos. Majority of the participants in this study were married 96 (86.5%). Again this can be explained by the pressure on the unemployed men to provide for their families. So they found commercial motorcycling an easy way out to make ends meet. This was also noted by (Oni et al., 2011) in their study on motorcycle riders in Lagos. All the respondents aged 50years and above owned crash helmets and regularly wore the helmets in this study. This suggests that people tend to become more careful and more protective of their bodies as they age compared to younger men.

We found no female rider amidst these commercial motorcyclists and this is likely due to the reasoning in this part of Nigeria that commercial motorcycling is basically a job for the men. Though in a study to determine factors responsible for high rate of commercial motorcycle crashes in Oyo state, Nigeria, Ogunmodede et al found that 5.1% of the respondents were females. It should be noted however that there are women who ride privately owned motorcycles in this same environment.

The finding of 29% as the prevalence of crash helmet use in this study is quite poor and the reason is not far

**Table 4.** Sociodemographic characteristics and frequency of use of crash helmets

Socio-demographic Variables	Frequency of Using Crash Helmet			Chi Square	P value
	Rarely (%)	Occasionally (%)	Always (%)		
<b>Agegroup n=97</b>					
20 – 29	5 (25.0)	12 (60.0)	3 (15.0)	10.43	0.24
30 – 39	15 (36.6)	15 (36.6)	11 (26.8)		
40 – 49	5 (21.7)	10 (43.5)	8 (34.8)		
50 – 59	0 (0.0)	2 (33.3)	4 (66.7)		
>= 60	3 (42.9)	2 (28.6)	2 (28.6)		
<b>Educational Status n=100</b>					
No Formal Education					
Primary	2 (50.0)	0 (0)	2 (50.0)	8.74	0.19
Secondary	7 (26.9)	10 (38.5)	9 (34.6)		
Tertiary	20 (35.1)	22 (38.6)	15 (26.3)		
	1 (7.7)	9 (69.2)	3 (23.1)		
<b>Marital Status n=100</b>					
Single					
Married	6 (42.9)	6 (42.9)	2 (14.2)	2.13	0.35
	24 (27.9)	35 (40.7)	27 (31.4)		
<b>Ethnicity n=100</b>					
Yoruba					
Others	29 (29.3)	41 (41.4)	29 (29.3)	2.36	0.31
	1 (100.0)	0 (0.0)	0 (0.0)		
<b>Religion n=100</b>					
Christianity					
Islam	28 (31.1)	36 (40.0)	26 (28.9)	0.59	0.74
	2 (20.0)	5 (50.0)	3 (30.0)		

**Table 5.** Attendance at lectures on road safety and frequency of helmet use

Had Lectures On Road Safety n=100	Frequency of Using Crash Helmet			Chi Square	P value
	Rarely (%)	Occasionally (%)	Always (%)		
Yes	21 (30.4)	28 (40.6)	20 (29.0)	0.024	0.99
No	9 (29.0)	13 (41.9)	9 (29.0)		

fetches. The major reason responsible for this poor use of crash helmet is that there is no enforcement of the universal helmet use law. Other studies have largely reported poorer findings in this environment. HC. Nwadiaro et al<sup>[5]</sup> in a study carried out in the north-central region of Nigeria discovered that none of the motorcyclists they enlisted wore crash helmets! Less than 10% were found to wear crash helmets while driving at Uyo in the south-eastern region of Nigeria. However Ogunmodede et al reported a slightly better finding of 33.8% in Oyo state, Nigeria. Likewise in Thailand, Suriyawongpaisa et al found a prevalence rate of crash helmet use to be 43.7% generally and 81.8% in Bangkok this was due to the law enforcement activities to ensure helmet use.

A study carried out in Vietnam revealed that a higher rate of helmet use was found on roads with legislation requiring compulsory helmet use than on roads without such requirement.

Another reason for the poor use of crash helmets in this environment is the high level of ignorance. Though in this study 78 (70.27%) of the respondents claimed to have attended lectures on road safety, their commitment to the use of the helmets has remained quite low. It is obvious that majority really do not understand the unnecessary risk they put themselves into while riding without helmets. Therefore if commitment to its use will improve, there is need to repeatedly educate these motorcycle riders and the public on the necessity and the dangers involved in the refusal to embrace the use of crash helmets while driving.

It was also discovered that only 16 (14.4%) motorcyclists had helmets for their passengers and only one motorcyclist regularly made the helmet available for the passengers. This is expected since the motorcyclists themselves are yet to come to terms with the use of the helmets for their own protection, so how will they subject themselves to the extra burden of buying and carrying

helmets for their passengers. Some passengers in their ignorance have simply refused the helmets because they thought they could contract diseases from the helmets worn by people they do not know. Others have felt it could contain some charms and they could be kidnapped as a result. However these reasons could easily be dealt with when proper education is given.

Most health facilities in this environment do not offer neurosurgical services, and even where such services are available, the cost is usually beyond the reach of an average commercial motorcyclist. Therefore, to continue to stay alive and healthy, there is need to prevent head injuries with the use of crash helmets.

### **What is already known on this subject**

. The use of crash helmets while riding motorcycles has been found to protect against head injuries during crashes.

. Head injuries are a leading cause of death and disability

. There is gross under utilization of crash helmets all over the globe especially in countries or states where the universal helmet law is not enforced.

### **What this study adds**

. Married men made use of crash helmets more than the single men.

. The age range found to be mostly involved in the regular use of the crash helmets was 50-59 years.

. Attendance at lectures on road safety did not translate into improved use of crash helmets by the motorcyclists studied. (eighty four out of 111 motorcyclists knew that the crash helmet was to protect their head yet only 29 regularly wore the helmets)

### **RECOMMENDATIONS**

The Nigerian parliamentarians should rise to the occasion and ensure the enforcement of the universal helmet use law.

The Federal Road Safety need to carry out repeated educative programs to enlighten the commercial motorcycle riders and the general public on this very important simple safety precaution- the need to always use crash helmet either as rider or as a passenger.

### **CONCLUSION**

It has been clearly shown in different parts of the world that the key to reducing head injuries causing significant morbidity and mortality after motorcycle crashes is the

enactment and enforcement of the universal helmet use law. Hence this law should be enforced without further delay in Nigeria. Also health professionals should endeavour to painstakingly embark on rigorous education of the populace on the need to prevent head trauma that usually results from motorcycle crashes with compliance with the use of crash helmets.

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### **Data sharing**

No additional data available.

### **Contributors**

Dr. Bolaji.O. Oyelade: Contributed to design, acquisition of data, interpretation of data, drafting of the article and final approval of the version to be published.

Dr. Isaac .O. Amole: Gave contribution towards the conception, design, acquisition of the data, drafting of the article and final approval of the version to be published.

Dr. Louis .O. Odeigah: Contributed to design, critical evaluation of the article and final approval of the version to be published.

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