HELMET USE AS A SAFETY TOOL AMONG MOTORCYCLE RIDERS IN IBADAN, OYO STATE, NIGERIA.

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ABSTRACT
This work studies helmets use as a safety tool among motorcycle riders in Ibadan, Oyo state, Nigeria. The instrument of data collection was a structured interviewer administered questionnaire on 400 motorcycle riders at Mokola and Sango areas, Ibadan. 330 responses were obtained to give a return rate of 82.5%. The analysis of the results showed that the frequency of helmet use in the study areas is 77.6% and that of non-user is 22.4%. 80% of the respondents felt that helmet use should be mandatory while only 20% felt that it should be at the discretion of riders. 150 (45.5%) respondents have ever been involved in motorcycle accidents out of which 94 (62.7%) were involved in head injury accidents. Up to 86 (91.5%) of these were involved in head injury accident before the introduction of legislation for compulsory crash helmet wear by motorcyclists in Nigeria while only 8(8.5%) were involved in the accident after the legislation of the law. This shows a decrease in head injury accidents after implementation of crash helmet law. Hence, there is need to strengthen existing legal enforcement of helmet use and ensure the availability of quality helmet to non-user both the commercial and private motorcyclists.

Keywords: Helmet, motorcycle, accident, safety tool

INTRODUCTION

According to World Health Organization (2013), road traffic injuries take an enormous toll on individuals, communities and national economies. Half of the world's road traffic deaths occur among motorcyclists (23%), pedestrians (22%) and cyclists (5%). Several researches have been carried out on motorcycle injury (Tumwesigye *et al,* 2016; Slesak *et al.,* 2015; Cheng *et al.*, 2014; Brown *et al.*, 2009; Hung *et al.,* 2008). This is because motorcyclists are more at risk of sustaining injury than motor vehicle drivers. According to National Highway Traffic Safety Administration (NHTSA, 2007) motorcycle riders have a 34 times risk of death than the drivers of other types of vehicles per mile travelled. They are also 8 times more likely to be injured. According to Cheng *et al.* (2014), usage of helmets, control of motorcycle access on highways, educational and training programs among others are suggested for motorcycle safety improvement.

In Nigeria, the dwindling economy and the decay of infrastructure have led to the emergence of motorcycle (popularly called Okada) for commercial transportation (Owoaje *et al.,* 2005). Motorcycles began to gain popularity in the late 80s when some jobless youths started using it for commercial purposes to transport stranded but willing passengers through the narrow or bad roads to the inaccessible parts of the cities or villages (Solagberu *et al.,* 2006). It is one of the chief modes of transport in Nigeria and, by far, the most common form of informal transport system in the country. It is easily affordable and very flexible for the common man. Above all, the motorcycle is readily available. One can hardly wait too long for a motorcycle to come around, even in the remotest villages, they appear in short intervals. There is no road too narrow or a place too remote for motorcycle to ply. For these reasons, motorcycles became quickly loved and did not take too long to convince its critics in Nigeria.

Previous studies have shown that head injury is the commonest causes of morbidity and mortality in motorcycle accidents (Slesak *et al.,* 2015; Oluwadiya *et al.*, 2004). 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). Helmets have been recognized to be effective towards head injury prevention (WHO, 2006). Non-use of helmet has been recognized as a specific factor leading to head injuries and fatalities resulting from motorcycle crashes. According to Keng (2004) helmet reduces the fatality of motorcycle riders. The fatality risk is reduced by 34% by the use of helmet (Dee, 2009). Hence, motorcyclists need to consistently and properly wear helmets according to the prescribed standards in order to protect them from head injury.

Li *et al.* (2008) stated that helmets are not as widely used as they should be despite their

effectiveness. Negative attitudes towards helmet use among other factors, explains the reason behind the reported low rate of use (Oluwadiya *et al.,* 2004; Odelowo, 1994). According to Dandona *et al.* (2005) some reasons for non-use of helmet include feelings of discomfort due to heat during the hot weather, and lateral vision and hearing ability impairment. However, the National Highway Traffic Safety Administration (NHTSA, 2007) has shown that helmets do not impair hearing ability and the lateral vision.

In order to reduce the rate of head injury accident in Nigeria, the Federal Road Safety Commission (FRSC) made the implementation of the compulsory use of helmet as a New Year gift to motorcycle riders on January 1st 2009. This study strive to reduce motorcycle related accident, especially head injury, by providing useful information about helmets use as a safety tool among motorcycle riders in Ibadan, Oyo state, Nigeria. The study will compare the rate of head injury motorcycle accidents before and after the enforcement of crash helmet law in Nigeria in order to see the impact of the helmet on its users.

STUDY AREA

Ibadan is the capital city of Oyo State and the third largest metropolitan area, by population, in Nigeria, after Lagos and Kano, with a population of over 3million according to the 2006 census result including 11 local government areas (see Fig.1). Ibadan is also the largest metropolitan geographical area. At Nigerian independence, Ibadan was the largest and most populous city in the country and the third in Africa after Cairo and Johannesburg. Ibadan is located in south-western Nigeria, 128 km inland northeast of Lagos and 530 km southwest of Abuja, the federal capital, and is a prominent transit point between the coastal region and the areas to the north. Ibadan had been the center of administration of the old Western Region since the days of the British colonial rule, and parts of the city's ancient protective walls still stand to this day. The principal inhabitants of the city are the Yorubas. The city ranges in elevation from 150 m in the valley area, to 275 m above sea level on the major north-south ridge which crosses the central part of the city. The city's total area is 1,190 sq mi (3,080 km^2).

Trading and other commercial activities are the predominant economic activities in the study area. Motorcycles have being in the area for more than five decades. Today it has become an inexpensive and convenient means of transportation in the area. Motorcycles have become a popular means of transportation in Ibadan especially in its central business district areas, as fewer people in Ibadan can maintain their cars for economic and commercial reasons. High rate of unemployment in the city also made commercial motorcycling popular in almost every part of the city. Therefore, commercial motorcycling as a means of livelihood is a demanding occupation in Ibadan. Presently youths, adults and aged people own at least one motorcycle which they often use as a means of transportation. Hence, the study of helmets use as a safety tool among motorcycle riders in Ibadan could be generalized to all motorcycle riders in Nigeria.

METHODOLOGY

A structured interviewer administered questionnaire was used to capture data on demographic characteristics of motorcycle riders, possession of riding license, awareness of Federal Road Safety Corps (FRSC), awareness of compulsory use of helmet, frequency of helmet use, views on mandatory use of helmet, involvement in motorcycle accident, especially head injury accident and number of accidents experienced before and after the enforcement of crash helmet law. Motorcycle riders were observed based on helmet use during the study.

Sango and Mokola areas were selected for the study based on the popularity and high concentration of motorcycles in the two areas. During data collection, four interviewers and two supervisors were employed in order to expedite the administering of questionnaires in the study area. The instrument used in this study was interpreted to the respondents in their local language where need arises. Four hundred copies of questionnaires were administered on motorcycle riders but a total of three hundred and thirty questionnaires were returned and analyzed using simple statistics (tables, frequency and Percentages).

RESULTS AND DISCUSSION

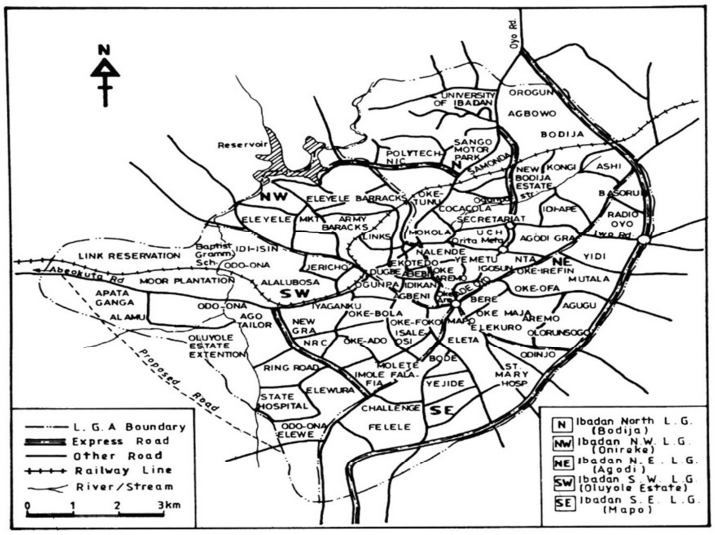
Table 1 shows the analysis of questionnaire distribution. The total numbers of questionnaires administered were 400 copies out of which 330 responses were obtained to give a return rate of 82.5%. This response rate was acceptable in a study with such a total questionnaire sample size (Tijani and Ajagbe, 2016).

Table 2 presented the general information about the respondents. The characteristics include age group, level of education, ethnicity, religion, occupation, years of motorcycle riding experience and purpose of riding motorcycle. The result revealed that the age groups of the respondents were 10.9% (15-19years), 31.5% (20-29years), 24.2% (30-39years), 17.0% (40-49years) and 16.4% (above 50years). 9.1% of the respondents had no formal education, 19.4% attended primary school, 49.7% attended secondary school and 21.8% further their studies to tertiary institution. 81.8% of the respondents were Yorubas, 13.3% were Igbos while 4.8% were Hausas. The religion of the respondents were Christianity (53.9%) and

Islam (46.1%). 18.2% of the respondents were students, 32.1% were unemployed, 9.1% were salary earners, 26.7% were traders while the remaining 13.9% did not specify

Table 1. Questionnaire distribution analysis

A Map of the City of Ibadan



Source : National Population Commission 1991

Description	Total Number	Percentage (%)
Questionnaire administered	400	100
Questionnaire retrieved	330	82.5

Table 2. General Information about the respondents

	Frequency	**Percentage**
Age group		
15-19 years	36	10.9
20-29 years	104	31.5
30-39 years	80	24.2
40-49years	56	17.0
Above 50 years	54	16.4
Total	330	100.0
Level of Education		
None	30	9.1
Primary	64	19.4
Secondary	164	49.7
Tertiary	72	21.8
Total	330	100.0
Ethnicity		
Yoruba	270	81.8
Igbo	44	13.3
Hausa	16	4.8
Total	330	100.0
Religion		
Christianity	178	53.9
Islam	152	46.1
Total	330	100.0
Occupation		
Student	60	18.2
Unemployed	106	32.1
Salary employment	30	9.1

Trader	88	26.7
Others	46	13.9
Total	330	100.0
Motorcycle Riding Experience		
1-5years	220	66.7
6-10years	54	16.4
10-15years	24	7.3
> 15 years	32	9.7
Total	330	100.0
Motorcycle Riding Purpose		
Personal	76	23.0
Commercial	254	77.0
Total	330	100.0

their occupations. Years of motorcycle riding experience were 66.7% (1-5years), 16.4% (6-10years), 7.3% (10-15years) and 9.7% (above 15years). 23% of the respondents ride motorcycle for personal use while 77% use it for commercial purpose.

From the results, higher percentages of motorcycle riders in the study were young and are in their most productive years of life. Since motorcycling is a high risk venture, young people tend to engage more in risky ventures than their old counterparts. This result is in line with the work of Cervero (2007) who showed that majority of the motorcyclists in Yola, Adamawa State were between 18 and 30 years of age. However, most of the motorcyclists are lowly educated with secondary education or less and majority of them are unemployed. According to Iribhogbe and Odai (2009), those who are less educated found themselves with few chances of getting other jobs and thus engage into commercial motorcycling business as a last resort following unemployment regardless of being a risky job. The level of education account for high level of ignorance among motorcyclists as most of them cannot interpret road traffic regulations or signs (Ngim and Udozen, 2007). Majority of the respondents are Yorubas because the study area is in Yoruba land. More than two-third of the motorcycle riders used their motorcycles for commercial purpose and they have been doing that for a period of less than 5 years.

Table 3 showed the result of motorcycle riders by possession of riding license, awareness of FRSC and awareness of compulsory use of helmet. It could be seen from the table that 72.1% of the respondents do not possess riding license while 27.9% possess it. 96.4% were aware of FRSC while only 3.6% were unaware. 92.7% were aware that helmet use is compulsory while 7.3% were unaware. The research findings revealed that majority of the riders do not possess riding license. This accounts for why the rate of accidents among commercial motorcyclists was on the high rate (45.5%). This is in line with Nwadiaro *et al.* (2011), Ogunmodede and Akangbe (2013) Owoaje *et al.* (2005). The finding of this study reveals that there was adequate road safety information available for the motorcycle riders because of high rate of awareness of FRSC. This ought to have reduced the rate of accidents occurrence among them (Ogunmodede and Akangbe, 2013). Also, majorities were aware of compulsory helmet use and this might be the reason we have high rates of helmet use among the participants.

Table 4 presented the frequency of helmet use while riding motorcycle, the reasons for wearing helmet and the reasons not for wearing it. The results showed that the frequency of helmet use in the study area is 77.6% and that of non-user is 22.4%. 98.4% of the users said that they used it for protection in case of accident while 1.6% used it to save them from traffic police. 18.9% of non-users said helmet is very expensive, 32.5% were of the opinion that helmet create discomfort, 21.6% said it looks awkward and clumsy wearing helmet while 27% others were indifferent about it.

The results show high rates of helmet use among motorcycle riders in Ibadan. This is in line with the study done in Tanzania (Emmanuel, 2011)

Table 4. Frequency of helmet use

Table 3. Motorcycle riders by possession of riding license, awareness of FRSC and compulsory use of helmet.

	Frequency	Percentage
Possession of riding license		
Yes	92	27.9
No	238	72.1
Total	330	100.0
Awareness of FRSC		
Yes	318	96.4
No	12	3.6
Total	330	100.0
Awareness of compulsory use of helmet		
Yes	306	92.7
No	24	7.3
Total	330	100.0

Frequency		Percentage
Motorcycle riders by using of helmet while riding motorcycle		
Yes	256	77.6
No	74	22.4
Total	330	100.0
Motorcycle riders by reason for wearing helmet.		
Protection in case of accident	252	98.4
To save you from traffic police	4	1.6
Total	256	100.0
Motorcycle riders by reason for not wearing crash helmet		
Helmet is very expensive	14	18.9
It create discomfort	24	32.5
It looks awkward and clumsy	16	21.6
Others	20	27.0
Total	74	100.0

but contrary with studies done in Vietnam and USA, which demonstrated low rates of helmet use despite the enactment of helmet laws (Hung *et al.*, 2008; Ranney *et al.,* 2008; Houston, 2007; NHTSA, 2001). To be protected from head injury, motorcyclists need to consistently and properly wear helmets according to the prescribed standards. Li *et al*. (2008) stated that very few motorcyclists wear helmets for preventive purposes and many just do because they don't want to be caught by law. However, this research was in contrary with his study since majority used helmet for protection in case of accident while a few used it to save them from traffic police. According to Kulanthayan *et al.* (2000), it has been shown that motorcyclists are likely to put on helmets if they anticipate meeting a traffic police. Possession of helmet may be one of the determinants of helmet use. The non-use of helmet has been associated with the notion that use of helmet increases rather than decreases the risk of an injury by reducing field of vision, creating discomfort, etc. (Dandona *et al.,* 2005).

Table 5 presented the outcome of the question on whether the use of helmet should be mandatory for all motorcycle riders or not, the reasons for it to be mandatory and not to be mandatory. It could be observed from the results that 80% of the respondents were of the opinion that helmet use should be mandatory while 20% said it should not. 75% of those that supported mandatory use of helmet believed that using it will reduce head injury and mortality, 24.2% supported it because it is mandatory in most developed countries while the rest 0.8% assumed that it is very dangerous to ride bike without helmet. 69.7% of those that opposed mandatory use of helmet felt that it should be at the discretion of the riders, 21.2% believed that traffic police cannot enforce implementation even if made compulsory while the rest 9.1% thought it is useless during accident. Most participants (80%) agreed that wearing helmet should be mandatory in order to reduce head injury and mortality in case of accident. This finding is similar to the study done in Rawalpindi whereby it was found that majority of participants agreed on the mandatory use of helmet (Babar, 2007). Olakulehin *et al.* (2015), in the study carried out in Ogbomoso found that almost all the respondents agreed that serious penalties should be imposed on motorcyclists riding without helmets.

Table 6 shows the involvement of motorcycle riders in motorcycle accidents in

general and head injury accidents in particular. It also presented the frequency of head injury accidents before and after the enforcement of crash helmet law in Nigeria. The findings revealed that 150 (45.5%) respondents have ever been involved in motorcycle accidents out of which 94 (62.7%) were involved in head injury accidents. 86 (91.5%) of these were involved in head injury accident before the introduction of legislation for compulsory crash helmet wear by motorcyclists in Nigeria while only 8(8.5%) were involved in the accident after the legislation of the law. This shows a great decrease in head injury accidents after enforcement of crash helmet law. Previous studies have shown that head injuries are the commonest causes of morbidity and mortality in motorcycle injuries (Slesak *et al.,* 2015). Motorcycle helmets reduce the risk of mortality and head injury in motorcycle riders who crash (WHO, 2006). Riding without a qualified helmet securely fastened on the head doubles or triples the rider's risk of death, and triples the risk of a debilitating brain injury if the rider survives the crash (Ouellet and Kasantikul 2006). Several studies have reported on the effectiveness of helmet in protecting against head injury (Chang and Yeh, 2006; Hung *et al*, 2008; Julian *et al.,* 2002; Brown *et al.,* 2009; Lin *et al.,* 2003). The use of protective helmets by both the motorcyclists and passengers if adequately enforced would reduce mortality arising from motorcycle injuries (Nwadiaro *et al.,* 2011).

Table 5. Mandatory use of helmet

	Frequency	Percentage
Motorcycle riders by mandatory use of helmet		
Yes	264	80.0
No	66	20.0
Total	330	100.0
Motorcycle riders by reasons for supporting mandatory use of helmet		
It reduces head injury and mortality	198	75.0
It is mandatory in most developed countries	64	24.2
It is very dangerous to ride bike without helmet	2	0.8
Total	264	100.0
Motorcycle riders by reason for not supporting mandatory use of helmet		
It depends on my choice	46	69.7
Traffic police cannot enforce implementation if made mandatory	14	21.2
It is useless in case of accident	6	9.1
Total	66	100.0

Table 6. Involvement in motorcycle accident and period of accident

Criteria	Frequency	Percentage
Involvement in motorcycle accident		
Yes	150	45.5
No	180	54.5
Total	330	100.0
Involvement in head injury related motorcycle accident		
Yes	94	62.7
No	56	37.3
Total	150	100.0
Motorcycle riders by period of head injury accident.		
Before enforcement	86	91.5
After enforcement	8	8.5
Total	94	100.0

CONCLUSION

Motorcycle riders in Ibadan generally show a high rate of helmet use (77.6%) because of their awareness of its compulsory use by FRSC. Majority agreed that wearing helmet should be mandatory in order to reduce head injury and mortality in case of accident. The study shows that the introduction of legislation for compulsory crash helmet wear on motorcyclists in Nigeria has led to high decrease in head injury accidents in Ibadan. In order to maintain downward trend of the number of motorcycle riders with head injuries and to save thousands of precious lives, government should employ more traffic law enforcement officers on our major roads to effectively enforce the use of helmet on non-users. The finding that a high percentage did not possess riders' license (72.1%) underlines the need for enforcement of license as a criterion to motorcycle riding.

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