Original Article

Knowledge and Perception of Nigerian University Undergraduates about the Risks Associated with using Commercial Motorcycle for Transportation

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ABSTRACT

Background and Purpose of Study: Commercial motorcycle is a popular mode of mass transportation in Nigeria, which despite its acknowledged benefits has been associated with health and social problems. It is embraced largely by young Nigerians, including university undergraduates who have not been well studied with respect to this mode of transportation. We determined the proportion of undergraduates of a Nigerian university regularly using commercial motorcycle. Level of knowledge and perception of risks associated with usage and some factors that may influence choice of commercial motorcycle were also investigated.

Methods: This cross-sectional survey was conducted among Nigeria premier University of Ibadan undergraduates, recruited from their halls of residence using consecutive sampling technique. A self-administered questionnaire was hand-distributed to obtain information on the respondents' socio-demographic variables, knowledge and perception of risks associated with using commercial motorcycle for transportation. Descriptive statistics were calculated and Chi-square test was used as inferential statistics at $\alpha = 0.05$.

Results: Among the 1000 respondents, 75% regularly used commercial motorcycle for transportation. A statistically significant association was found between gender and the knowledge of risks ($p< 0.001$) and also between age and the perception of risks associated with using this mode of transportation. However, there was no significant difference in the knowledge ($p=0.03$ and perception of risks ($p=0.97$) associated with using commercial motorcycle for transport between users and non-users.

Conclusions: Respondents had limited knowledge and low perception of the risks associated with using commercial motorcycle for transport. Strategies should be put in place to educate these youths on the risks associated with using commercial motorcycle for transport.

INTRODUCTION

Road transportation is the most commonly used mode of transportation in Nigeria. [1, 2] It is considered important for the growth and development of any society as it facilitates the movement of people, allows for optimum utilisation of resources and provides access to areas that were hitherto inaccessible. [3] Advantages of road transportation over other forms of transport have been identified to include low capital outlay, flexibility of the services rendered, rapid speed, less cost and provision of services to rural areas.[4]

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Commercial motorcycle, popularly called '*Okada*' in southwestern Nigeria, is a mode of road transportation that represents a significant proportion of commuter's choice in many cities in the country.[3, 5, 6] It is reported to be the second most used mode of road transportation in Nigeria, after commercial vehicles.[7] Some of its perceived benefits as a means of road transportation include flexibility, availability, door-to-door convenience, quick generation of money to meet basic life needs as well as its cheap and easy maintenance.[3, 8] These perceived benefits have also contributed to their general acceptance as a source of employment among the urban poor and as an alternative transport solution to the problems of commuting in most cities and rural areas of Nigeria. [3,9]

Despite its reported benefits, using motorcycles for commercial transportation poses several disadvantages including increased rate of motorcycle-related accidents, which result in physical injuries, and death in severe situations[10], increasing rate of crime (theft, armed robbery, violence and kidnapping) committed by persons using motorcycles, noisy and distracting nature of motorcycles on the roads [11], as well as health issues such as eye and breathing problems [10], and erectile dysfunction in men.[12]

Risk perception is the subjective assessment of the probability of a specified type of accident happening and how much human beings are concerned with the consequences. Perceiving risk includes evaluations of the probability as well as the consequences of a negative outcome.[13] Perceiving a health threat is considered the most obvious prerequisite for the motivation to change risk behaviours. Furthermore, lack of awareness of the risky nature of one's actions results in lack of motivation for change.[14] Risk perception affects health behaviour and emotional well-being among individuals facing a health threat. Perception of risks appears to be positively correlated with a desire to make risk-reducing behavioural changes and with actual behavioural change. Perceptions of personal risk thus occupy a central role in theories of individual health behaviour such as the health belief model, which suggests that perceptions of risk play a critical role in a patient's compliance with recommended health behaviours.[15]

Motorcycle crashes accounted for 54% of all road traffic injuries.[16] *Considering that* motorcyclists and passengers are among the most vulnerable road users, they represent an important group to target for reducing road traffic injuries. [5] Researchers have studied different aspects of using commercial motorcycles, such as occupational health hazards, [10] risk perception among motorcycle operators [17, 18] and risk perceptions among users of commercial motorcycles in cities of South Western Nigeria. [19] Although, youths represented by university undergraduates constitute a large percentage of intra-city commuters, this group of individuals has not been studied with respect to using motorcycle as a means of transportation. Furthermore, we did not come across any documented information on the knowledge and perception of risks associated with the use of commercial motorcycles among commercial motorcycle users and non-users alike, particularly among students of an institution of higher learning.

We investigated the proportion of undergraduates of the Nigerian premier university using commercial motorcycle as a regular mode of transportation. The knowledge of risks and perception of risk associated with using commercial motorcycle as a mode of transportation among users and non-users of commercial motorcycles was also studied. Users and non-users were operationally defined as those who use commercial motorcycle for transportation regularly and once in a while respectively.

METHODS

Participants

The participants in this cross- sectional survey were consenting undergraduates of the Nigerian premier University of Ibadan. They were recruited from among those residing in the undergraduate halls of

residence on the University of Ibadan main campus, including private hostels within the university campus and the medical hostel at the teaching hospital. This is the oldest in the country and has a student population of about 8,500 university undergraduates.

Instruments

A 31-item questionnaire was used to obtain information on the risk perception and knowledge of commercial motorcycle users and non-users on the risks associated with its use. This questionnaire was developed for this study using questions similar to those used in earlier studies. [18, 19] Face and content validity of this instrument was established before use in the study.

The questionnaire comprised three sections:

Section A: This has 10 items, seeking information on the socio-demographic variables of the respondents.

Section B: contained 10 questions to assess the respondent's knowledge of the risks associated with the use of commercial motorcycles as a mode of transport.

Section C: consists of 11 questions to assess the participant's perception of the risks associated with the use of commercial motorcycles as a mode of transport.

Scoring:

a) Level of knowledge was graded using a set of 10 questions; respondents who obtained 13 points and above were assigned "good knowledge"; those with 7-12 points were rated as having "fair knowledge" while those who obtained less than 6 were considered to have "poor knowledge".

b) Risk perception was assessed using a Likert scale of eleven items (four points scale). The level of risk perception was graded as high level (>75%), moderate level (50% - 75%) and low level of perception (<50%).

Procedure

University of Ibadan/ University College Hospital (UI/UCH) Health Research Ethics Committee approved the protocol of this study. The rationale and procedure for the study were explained to the respondents through the letter of transmittal and their informed consent was obtained. Copies of the questionnaire forms were hand distributed to the participants and retrieved by hand after they had been duly completed. Some of the respondents completed the questionnaire immediately while the others returned theirs on second visit by one of the authors (AOO).

Data Analyses

The duly completed questionnaire forms were coded; data gathered cleaned and entered using the IBM SPSS Statistics, version 20. Percentage, mean and standard deviation were used to describe the socio-demographic variables. Mann -Whitney U test was used to compare each of the knowledge of risks associated with, and the risk perception of the use of commercial motorcycle as a mode of transport between the users and non-users. Chi- square test was used to investigate the association between the level of knowledge, the risk perception and each of age, gender, discipline and level of study of commercial motorcycles users and their non-user counterparts at $\alpha = 0.05$

Results

All the one thousand (1000) undergraduates of the University who satisfied the inclusion criteria and recruited for this study duly completed and returned the questionnaire, thus giving a 100% response rate.

Respondents comprised 475 females (47.5%) and 525 males (52.5%). The mean age for the male respondents was 20.99 ± 3.00 years and that for the females was 20.15 ± 2.66 years (Table 1).

It was noted that 750 (75%) respondents use commercial motorcycle as a mode of transportation regularly. About twenty-seven percent (26.9 %) reported to have been involved in a commercial

motorcycle accident and 21% of these have sustained injuries from using commercial motorcycle for transport. Types of injuries sustained are burns (20%) and sprain (2.2%), with 2.9% indicated having received physiotherapy care following motorcycle- related accident. A mean knowledge score of 9.61 ± 3.61 was recorded. This indicates that the respondents' knowledge of risk is fair based on the gradings in this study. There was no significant difference in the level of knowledge of risks associated between users and non-users of commercial motorcycle for transport (Table 2). A mean perception score of 25.90 ± 5.25 was obtained, indicating that they have low perception about the risks associated with using commercial motorcycle for transport. Results showed that the users had a significantly lower level of perception of risks associated with using commercial motorcycle for transport than the non- users (Table 2).

Table 1: Age and Gender Distribution of the Respondents

Age (years)	Gender Female (%)	Male (%)	Total(%)
16- 20	278 (27.8)	242 (24.2)	520 (52.0)
21- 25	190 (19.0)	252 (25.2)	442 (44.2)
26- 30	6 (6.0)	31(31.0)	37 (37.0)
31 and above	1 (1)	0 (0)	1 (1)
Total	475 (47.5)	525(52.5)	1000 (100)
Mean	20.15 ± 2.66	20.99 ± 3.00	20.6 ± 2.90

Table 2: Level of Knowledge and Perception of risks associated with using Commercial Motorcycle for Transport among Users and Non-users (N = 1000)

Variable	N	Mean Rank	U	P
Knowledge of risks				
Users	751	508.09	87796.00	0.15
Non-users	249	477.59		
Total	1000			
Perception of risks				
Users	751	489.94	85566.00	0.04
Non-users	249	532.36		
Total	1000			

Table 3: Level of Knowledge and Perception of Risks by Gender of the respondents (N=1000)

Variable	N	Mean Rank	U	p
Knowledge of risks				
Female	475	458.66	104813.50	0.00
Male	525	538.36		
Total	1000			
Perception of risks				
Female	475	520.73	115077.00	0.35
Male	525	482.19		
Total	1000			

Table 4: Association between Level of Knowledge of Risks and Year of academic study

		Knowledge of Risks				χ^2	df	p
		Good	Fair	Poor	Total			
Level of Study	100	3	76	33	143	17.29	10	0.63
	200	58	193	56	307			
	300	40	75	31	146			
	400	49	165	47	261			
	500	26	71	18	115			
	600	11	15	2	28			
	Total	218	595	187	1000			

Male respondents had a significantly higher level of knowledge of risks than the female respondents (p = 0.00) (Table 3). There was no significant association between the level of knowledge of risks, year of academic study of the respondent ($<^2$ = 7.29; p = 0.63) (Table 4) and the discipline of study ($<^2$ = 17.92; p = 0.44) (Table 5). A significant association was recorded between level of knowledge of risks and the age of the respondents ($<^2$ = 12.37; p = 0.05) (Table 6).

Results showed that there was no statistically significant difference in the level of perception of risks associated with using commercial motorcycle for transport between male and female respondents (p = 0.35) (Table 3). No significant association was

observed between the level of perception of risks associated with using commercial motorcycle and each of the year of academic study ($<^2 = 11.45$; p = 0.32) (Table 7) and the discipline of study of the respondents ($<^2 = 7.92$; p = 0.44) (Table 8). Level of risk perception had significant association with the age of the respondents ($X^2 = 24.60$; p = 0.00) (Table 9).

Table 5: Association between Level of Knowledge of Risks and Discipline of Study

		Knowledge of Risks				$\varkappa^2$	df	P
		Good	Fair	Poor	Total			
Discipline of Study								
	Arts and Education	35	85	43	163	7.92	8	0.44
	Veterinary medicine, Agriculture and forestry	14	57	17	88			
	Social sciences and Law	31	62	36	129			
	Sciences and Technology	53	165	39	257			
	Basic medical sciences, Clinical sciences, Pharmacy and Dentistry	85	226	52	363			
	Total	218	595	187	1000			

Table 6: Association between Level of Knowledge of risks And Age

	Knowledge of Risks				$\varkappa^2$	df	p
	Good	Fair	Poor	Total			
Age							
16- 20	112	291	117	520	12.365	6	0.05
21-25	97	275	67	442			
26- 30	9	25	3	37			
31 and above	0	1	0	1			
Total	218	595	187	1000			

Table 7: Association between Level of Perception of Risks and Year of academic Study

		Perception of Risks				χ^2	Df	p
		High	Moderate	Low	Total			
Level of Study								
	100	96	42	5	143	11.45	10	0.32
	200	207	91	9	307			
	300	98	40	8	146			
	400	177	69	15	261			
	500	86	23	6	115			
	600	24	3	1	28			
	Total	688	268	44	1000			

Table 8: Association Between Level of perception of Risks and Discipline of Study

		Knowledge of Risks				χ^2	Df	P
		High	Moderate	Low	Total			
Discipline of Study								
	Arts and Education	105	51	7	163	7.92	8	0.44
	Veterinary medicine, Agriculture and forestry	14	25	6	88			
	Social sciences and Law	84	39	6	129			
	Sciences and Technology	175	71	11	257			
	Basic medical sciences, Clinical sciences,Pharmacy and Dentistry	267	82	14	363			
	Total	688	5	187	1000			

Table 9: Association between Level of Perception of Risks and Age

		Perception of Risks				χ^2	Df	p
		High	Moderate	Low	Total			
Age								
	16- 20	351	148	21	520	24.60	6	0.00
	21- 25	311	112	19	442			
	26- 30	26	8	3	37			
	31 and above	0	0	1	1			
	Total	688	268	44	1000			

DISCUSSION

Increased number of injuries and deaths from road traffic accidents in Nigeria has been blamed on the escalating use of motorcycles for commercial transportation of commuters, goods, and services[5, 8, 20] this puts a heavy burden on families, communities and the health system in general.

The target population in this study is youths, represented by undergraduates of a university, who unfortunately had not been well studied with regards their choice or otherwise of commercial motorcycles for transportation. Knowledge of associated risk and perception about the risks of using this mode of transportation was investigated. Results obtained in this study showed that a large proportion of the respondents (about three-quarter) were using commercial motorcycle for transport, and thus labeled users as operationally defined in this study. A male: female ratio of respondents is approximately 1:1, thereby allowing for a proportionate comparison between the sexes. The proportion of female and male users was 47.4% and 52.6% respectively. This is consistent with reports of[21]. The males were significantly older, and two-fifth of all respondents were in the final year of their studies (400 – 600 level). This level of study pattern may be attributable to the University of Ibadan hostel allocation policy wherein final year students are mandatorily allocated accommodation spaces. Respondents were sampled from among those resident in the hostel, the trend of level of students is not strange.

About one-third of our respondents had been involved in road traffic accidents as passengers on commercial motorcycles. It has been observed that lack of training and traffic education among motorcycle operators, impatience on the part of the motorcycle operators, disregard for traffic rules and regulations and reckless riding by the operators [8] are the main factors attributable to motorcycle accidents. These factors are believed to often lead to injuries including bruises, lacerations, dislocation and fractures, [10] as observed in this present study.

Pattern of injuries sustained by those who have had accidents in the course of using commercial motorcycle for transportation showed that majority

had bruises and abrasions (56.5%). This finding is consistent with earlier reports. [10, 22] Whereas, bruises and abrasion are typically non-life threatening injuries, they may however pose significant challenge to the health of the injured. Infection may result if not properly treated and necessary innoculations are not taken, infected and improperly healed abrasions or bruises may result to death and leave scars with cosmetic implications respectively.

Our findings showed that respondents mean knowledge score is 9.61 ± 3.61. This score is within 7-12 that was rated in this study as fair knowledge of associated risk of using motorcycle for commercial transportation. There was no significant difference between the users and non users in the level of knowledge of risks associated with using commercial motorcycle for transports. This implies that the level of knowledge of the risks associated with the use of commercial motorcycle for transport does not inform the choice or otherwise of using commercial motorcycle for commuting. Conversely, the non-users had a significantly higher level of perception of risks associated with using commercial motorcycle for transport than the users. A mean perception score of 25.90 ± 5.25 was recorded by the respondents. This suggests that the choice or otherwise to use commercial motorcycle for commuting is influenced by the risk perception of the individual. The higher level of risk perception among the non-users may also be attributable to past experiences with commercial motorcycles. Risk perception is believed to be associated with desire to make risk reducing behavioral changes and with actual behavioural change.

There was a significant association between the level of knowledge of risks associated with using commercial motorcycle for transport and gender. Male respondents were more knowledgeable about the associated risks with motorcycle transport. This may be because most commercial motorcycle operators are males and they tend to strike discussions with their male customers and such discussions may veer in the direction of risks associated with motorcycle riding. There was also a significant association between the level of knowledge of risks associated with using commercial motorcycle for transport and the discipline of study of respondents. Students in health sciences (Basic medical sciences, Clinical sciences, Pharmacy and Dentistry) had the highest level of knowledge. This could be related to their experiences in managing conditions associated with motorcycle related accidents. However, there were no significant associations between the level of knowledge of risks associated with using commercial motorcycle for transport, age and the year of academic study of the respondents. This gives the impression that age and level of academic study does not influence choice or otherwise of using commercial motorcycle for transportation. It is probable that commercial motorcycle usage was based on other considerations such as its flexibility, availability, door to door convenience[8] rather than age or the supposed maturity that goes with it.

Level of perception of risks associated with using commercial motorcycle for transport had no significant association with year of academic study, discipline of study and gender of the respondents. This would imply that the way one perceives risks associated with other factors asides the individual's gender discipline and year of academic study. There was a however a significant association between the level of perception of risks associated with usage and age of the respondents. It is probable that as one ages, one takes less risks and observe more safety means in life activities including choice of transport mode.

CONCLUSION

Majority of the studied university undergraduates were regularly using commercial motorcycle as a means of transportation. They had fair knowledge of the risks, but a low perception of the risks associated with using this using this mode of transportation. Age is significantly associated with the knowledge and perception of risks associated with using commercial motorcycle for transport and those who

do not use commercial motorcycle as a regular mode of transport have a significantly higher perception of risks associated with using commercial motorcycle. There is therefore a need for sensitization of the youths on the risks associated with use of commercial motorcycles which can be achieved through billboard, poster adverts as well as peer education.

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