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Level of Awareness about Helmet Use and Risk Factors Associated with Boda-boda Accidents among Riders in Fort Portal City

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ABSTRACT

The aim of this study was to assess the socio-demographic characteristics of boda bodas, the level of awareness of helmet use and risk factors associated with boda boda accidents among riders in Fort Portal City. The study was limited only to boda-boda riders from Fort Portal City. The cross-sectional study design was employed to suit the study using questionnaires as a data collectiontool, data collected and analysis done using SPSS 273. Boda boda cyclists were sampled at different stages in fort portal city, it was foundthat 98.9% were male and 1.1% female. Majority of the participants 56.4% were aged between 21 to 30 years, 32.6% between 31 to 40 years, and 9.9% below 20 years while the minority1.1% between 41 to 50 years. Majority 42.1% attended secondary, 28.6% primary, and 27.8% tertiary while the minority 1.5% attended up to university level. It was also found that74.0% owned motorcycles while 26.0% did not. The majority of 49.1% of the cyclists had invested in agriculture, 28.2% in business, 11.4% in tailoring, 3.3% education sector and 8.1% in other ventures. The majority 87.9% also had a history of being involved in a road traffic accident while the minority 12.1% had no history, the reason for the accidents differed from one boda boda to another with the majority 54.6% happening because of over speeding, 11.7% drinking and riding, 10.8% driving while tired, 7.1% poor brakes, 3.8% using a mobile phone, 2.9% associated with poor roads and 10.7% others. Awareness about advantages of a helmet after scoring them it was found that the majority 75.9% were not aware, 21.5% moderately aware while only 2.6% were aware of the advantages of a helmet. The majority of the boda-boda riders in fort portal city are men, have at least attended secondary, are in their third decade of age, have been in this business for at least six years but less than ten years and own motorcycles.

Keywords: Motorcycles, Usage of helmets, Boda-boda cyclists, Accident among riders, over speeding, Poor riding skills.

INTRODUCTION

Road accidents are one of the common leading causes of injury and death among the human population whereby every 25 seconds an individual would be involved in a fatal crash [1]. The WHO estimates that 1.35 million people die as a result of road traffic crashes [2] with 20–50 million sustaining severe injuries, the majority of which require long-term treatment [3] thus the major cause of mortality among people aged 15–29 years in Low and Middle-Income Countries (LMICs) in Africa including Uganda [4] hence being ranked ninth globally among the leading causes of disability, and this rank is projected to rise to by 2020 [5]. Motorcycles are the preferred and easiest means of transportation for most people in developing countries despite the associated risk [2] being responsible for a considerable part of road traffic accidents (Experience of Motorcycle Accident Victims: A Qualitative Study, 2012) which are increasing annually [6] with 23% of all traffic deaths [7], [8] hence leading to motorcycle-related injuries, mainly head injuries and disabilities in low- and middle-income countries (LMICs). However, helmets have been proven to be one of the safest ways to reduce the risk of head injury [9], thus protecting a motorcyclist from serious neck and head injuries when a crash occurs [10] full-face helmets provide the best coverage of head and face and are more protective than the other types of helmets [11]. Road traffic injury and death are a burden in Africa [12] with a mortality rate of 26.6 deaths per 100,000 population [13] being suggested that lack of control and enforcement concerning implementation of traffic regulation

,primarily driving at excessive speed, driving under the influence of alcohol, and not respecting the rights of other road users mainly pedestrians and cyclists, lack of appropriate infrastructure and un road worthy vehicles can be some of the reasons to the increased road traffic accidents [3]. There has been significant growth in the use of motorcycles as a commercial public transport mode for easy manoeuvrability, ability to travel on poor roads, and demand responsiveness which has led to an increase in road accidents, and traffic management problems [14]. This is due to some of the factors such as inexperience, lack of skill, and risk-taking behaviours which have been associated with the collisions of young drivers leading to visual, cognitive, and mobility impairment among the collisions of older drivers [15] and can be reduced through applying an integrated approach to safety on roads [3]. However, motorcycle helmets reduce the risk of mortality and head injury in motorcycle riders who crash [16]. Motorcycles are an important form of transportation in Uganda, used as motorcycle taxis, better known locally as boda bodas [17] with the riders having a 34 times risk of death than the drivers of other types of vehicles and 8 times more likely to be injured [18]. Approximately 2000 lives are lost in Uganda annually through road traffic accidents accounting for 39% of all injuries, primarily in males aged 16-44 years [19] this is due to reckless driving or riding, poor road design, overloading, double parking, inadequate road safety signs and knowledge [20] lack of telecommunication infrastructures, and even road infrastructures for the implementation of an intelligent transport system within sub-Saharan countries of which Uganda is a victim [21] however helmetsprovide protection to boda boda riders involved in traffic accidents thus decreasing mortality rates and risk of head injuries [22] though it is ignored by a large number of motorcyclists [23].

Road traffic injuries are a serious public health problem and one of the leading causes of death, injury and disability around the world [24] claiming more than 1.25 million lives each year with 21,000 people killed annually [25] affecting mostly young people aged between 15 and 29 years old [26] and are being reported to be common cause of death by 2020 [27] and estimated to become the seventh leading cause of death globally by 2030 [28]. Bodabodas are a common form of transport in Uganda (The Impact of Bodaboda Motor Crashes on the Budget for Clinical Services at Mulago Hospital, Kampala, 2010) with boda boda riders having a 34 times risk of death than the drivers of other types of vehicles and 8 times more likely to be injured [17]. Motorcycle-related injuries form a significant contributor to the burden of disease in low- and middle-income countries (LMICs) [9]. Despite efforts by the government and NGO such as Helmet Vaccine Uganda to educate and sensitise cyclists about traffic laws, ensure that motor cyclists get helmets at subsidized prices, or free of charge and levying penalties to traffic law offenders to enhance awareness about the importance of helmet, their use is still low [29]. This study aim to assessed the level of awareness of helmet usage and risk factors associated with boda-boda accidents in Fort Portal City.

METHODOLOGY

Study design

The cross-sectional study design was employed to suit the study (level of awareness of helmet use and risk factors associated with boda-boda accidents among riders in Fort Portal city). These involved interviewing boda- boda riders' right at their randomly selected parking stages. Datawas collected for a duration of one month.

Area of Study

The study was conducted in Fort Portal city at the selected boda-boda parking stages. Fort portal is a city located in the western region of Uganda and approximately 296km west from kampala (Uganda's capital city). It has a population of about 60,800 per estimation done in 2020 by UBOS and was estimated to have a population growth at an average rate of 2.12% annually between 2014 and 2020. This city is located at the foot of the Rwenzori mountains, bordered by kyenjojo in the northeast, kamwenge in the east, Kasese in the south, Ntoroko, Bundibugyo in the west. The study of commercial motorcyclists in Fort Portal City could be generalized to all boda-boda riders within Uganda.

Target population

The target population was all boda-boda

riders in Fort Portal City who were present at the time of the interview at the parking stages.

Study population

The study involved boda-boda riders in Fort Portal City whose representative sample was obtained from parking stages.

Inclusion criteria

Boda-boda riders present with or without passenger(s) and have consented.

Exclusion criteria

Boda boda riders were present but have got a passenger and hence do not consent.

Sampling technique

The sample population was obtained through stratified simple random sampling by identifying all boda-boda stages in Fort Portal City and obtaining respondents from each of them. The mapping process was done by the principal investigator with the help of one boda-boda rider familiar with the concerned administration of the various stages. Boda boda riders from the selected parking stages were conveniently included in the study.

Sample size

The sample size was calculated using the formula as follows (Kirkwood, 2003):n= Z 2 P(1-P)/ d 2 Where n=sample size Z=Z statistics for a level of confidence e.g. 1.96 (95%)P=expected proportion or prevalence = 23% d=precision (in proportion of one e.g. if 5%, d = 0.05) Using proportion of 23%, precision of 5% and confidence level of 95%, Substituting, this gave:n= (1.96)2 (0.231) (1-0.231)/ (0.05) (0.05) =273 Boda bodas

Data collection

A survey questionnaire was used for data collection. The survey questionnaire was used to gather socio-demographic data, data related to risk factors associated with boda-boda accidents and the level of awareness of helmet use among the riders. It had 17 questions which were read by the interviewer. Taking into account the educational background of most commercial motorcyclists, English and Rutooro versions of the questionnaire were used for easy understanding and therefore ensured the validity of responses. The time estimated for the interview was 10 minutes.

Pre-testing

A pilot study was conducted to pre-test the questionnaire and the accessibility of the target population. Fifteen commercial motorcyclists were randomly selected at parking points apart from the ones selected for the study and were involved in pilot-testing the survey questionnaire.

Validity

The validity of the content of the questionnaire was examined in collaboration with two research scientists interested in the area of injury prevention; the questionnaire was in English and also translated into the local language (Rutooro) which ensured the same meaning was conveyed.

Data processing and analysis plan.

Data was fed in and analyzed using IBM Statistics SPSS for Windows 16.0. Data relating to the socio-demographics are presented in terms of mean, and median and expressed in tables A 3-item scale was used to access the level of awareness i.e. aware (if the participant knew about helmets and >7 of its advantages), moderately aware(if the participant knew about helmets and >7 but not <3 of its advantages, not aware(if participant knew about helmets and <3 of its advantages) The total number of a particular risk factor was obtained from all participants and bivariate and multivariate analysis was carried out to identify the most statistically significant risk factors in relation to causing boda-boda accidents with a value of less than or equal to 0.05 as statistically significant.

RESULTS

Demographics

In this study, it was found that 270(98.9%) were male and 3(1.1%) female. Majority of the participants 154(56.4%) were aged between 21 to 30 years, 89(32.6%) between 31 to 40 years, 25(9.9%) below 20 years while the minority 3(1.1%) between 41 to 50 years. Level of education was assessed where the majority 115(42.1%) attended secondary, 78(28.6%) primary, 76(27.8%) tertiary while the minority 4(1.5%) attended university. It was also found out that 202(74.0%) owned the motorcycles while 71(26.0%) did not. These boda cyclists had side investments apart from the cycling with the majority 134(49.1%) doing agriculture, 77(28.2%) business, 31(11.4%) tailoring, 9(3.3%) education sector and 22(8.1%) other ventures.

Table 1: Showing the socio-demographic factors

	Frequency	Percentage
Sex		
Male	270	98.9%
Female	3	1.1%
Age		
Below 20 years	27	9.9%
21-30 years	154	56.4%
31-40 years	89	32.6%
41-50 years	3	1.1%
Level of education		
Primary	78	28.6%
Secondary	115	42.1%
Tertiary	76	27.8%
University	4	1.5%
Ownership the motorcycle		
Yes	202	74.0%
No	71	26.0%
DURATION OF WORKING AS A BODA BODA		
Below 5 years	186	68.1%
6- 10 years	76	27.8%
11-15 years	8	2.9%
Above 16 years	3	1.1%
Side business		
Agriculture	134	49.1%
Tailoring	31	11.4%
Business	77	28.2%
Education sectors	9	3.3%
Others	22	8.1%

RISK FACTORS

In this study, it was found that the majority 240(87.9%) had a history of being involved in a road traffic accident while the minority 33(12.1%) had no history. Of these, most 166(69.2%) had been involved in accident less than 2 times, 67(27.9%) three to five times, 5(2.1%) six to eight times and 2(0.8%) above nine times. The type of accident differed from one cyclist to another with the majority 94(39.2%) having boda to boda accident, 73(30.4%) boda boda to the passenger, 53(22.1%) boda boda to the vehicle while the minority 2(8.3%) had boda boda to animal accidents.

Table 2: Shows the prevalence, frequency and type of RTA among boda boda riders in fortportal city.

	Frequency	Percentage
Have a history of road traffic accident		
Yes	240	87.9%
No	33	12.1%
If yes, how many times		
Below 2 times	166	69.2%
3-5 times	67	27.9%
6-8 times	5	2.1%
Above 9 times	2	0.8%
Type of accident involved in		
Boda to boda	94	39.2%
Boda to passenger	73	30.4%
Boda to vehicle	53	22.1%
Boda to animal	20	8.3%

The reason for the accidents differed from one boda boda to another with the majority 131(54.6%) happening because of over speeding, 28(11.7%) drinking and riding, 26(10.8%) driving while tired, 17(7.1%) poor brakes, 9(3.8%) using a mobile phone, 7(2.9%) associated with poor roads. other reasons were tailgating which accounted for 2.1% (5), poor riding skills 1.7%(4), taking medicines and riding3(1.2%) taking drugs and riding 1.2%(3), impatience of roadusers 1.2%(3), reckless while riding 1.2%(3), hand-free mobile phone 0.4%(1).

Table 3: shows the reasons why the accidents happened

	Frequency	Percentages
Over speeding	131	54.6%
Drinking and riding	28	11.7%
Driving when tired	26	10.8%
poor brakes/ brake failure	17	7.1%
using a mobile phone held	9	3.8%
poorly maintained roads	7	2.9%
Tailgating	5	2.1%
poor riding skills	4	1.7%
Taking medicines and riding	3	1.2%
Taking drugs and riding	3	1.2%
impatience of road users	3	1.2%
recklessness while riding	3	1.2%
hand-free mobile phone	1	0.4%
Total	**240**	**100.0**

Level of awareness

This study also assessed the level of awareness and it was found that the majority 270(98.9%) knew what the helmet was and the minority 3(1.1%) didn't know. of those who knew the majority 255(94.4%) owned one while minority 15(5.6%) didn't have. The

study also found out that outof those whom hard helmet majority 247(96.9%) were putting on and the minority 7(3.1%) were not. The study also found out that of those who used to put on helmets, this wasn't a daily practice but they would put them on under certain circumstances with the majority 160(64.8%) every time on the road, 63(25.5%) when carrying a passenger, 16(6.5%) after meeting the police, 7(2.8%) not carrying a passenger while the minority 1(0.4%) had other reasons.

Table 4: shows the awareness and use of the helmet

	Frequency	Percentage
Know helmet		
Yes	270	98.5%
No	3	1.5%
If yes, do you Own one?		
Yes	255	94.4%
No	15	5.6%
If yes, do you put it on ?		
Yes	247	96.9%
No	8	3.1%
If yes, when do you put on the helmet?		
Every time on the road	160	64.8%
Carrying a passenger	63	25.5%
Meet the police	16	6.5%
Not carrying a passenger	7	2.8%
Others	1	0.4%
Do you Know the advantages of a helmet?		
Yes	251	93.0%
No	19	7.0%

The study also assessed the awareness of the advantages of a helmet. The researcher formulated a3-level scale in which the participants were scored based on a number of advantages they choose. Each advantage scored one point. This was corded and then analyzed.

Table 5: shows the list of advantages used to score participants to determine the level of awareness with each scoring one and a total of 10.

	ADVANTAGES	SCORE
1	Helmets protect from a head injury.	1
2	Helmets are effective in preventing fatal injuries to motorcyclists.	1
3	Fitted helmets improve the riders' ability to hear bystreamlining head and ear which deduce wind noise allowing rider to hear other sounds.	1
4	Helmets help prevent eye injuries and distraction from dust,dirt and debris thrown up by other vehicles on road.	1
5	Helmets prevent incidences of traumatic brain injury.	1
6	Helmets reduce traffic accidents.	1
7	Helmets help oblige duty as a citizen.	1
8	Helmets protect riders from other weather conditions likebright and sunny days and rain thus increasing visibility.	1
9	Helmets protect riders from flying objects like rocks, gravel,twigs, and insects.	1
10	Helmets make riders feel less exposed and therefore safer.	1
TOTAL		**10/10**

Table 6: shows a 3-level scale used to score participants on the level of awareness

Number of advantages mentioned(score/10)	Interpretation
Less than 3 advantages	Not aware
3 advantages but less than 7	Moderately aware
7 and above	Aware

It was found that majority 250(94.3%) thought they knew the advantages while minority 15(5.7%) didn't know. After scoring them it was found that the majority 205(75.9%) were not aware. 58(21.5%) were moderately aware while the minority 7(2.6%) were aware of the advantages of the helmet as in the table below.

Table 7: shows the results of the level of awareness among boda boda cyclists in fort portal city

	Frequency	Percentages
Not aware	205	75.9%
Moderately aware	58	21.5%
Aware	07	2.6%

DISCUSSION

Demographics

In this study, 98.9% of males were involved in the RTA and only 1.1% of females of the total accidentvictims were involved in RTA, this agrees with the study done by Ghadipasha et al., 2015 that showed men are more involved in road traffic accidents than women in a study population of total 1185. This study also found out that boda boda Riders majority 56.4% were aged between 21 to 30 years, 32.6%% 31 to 40 years, 9.9%% below 20 years and 1.1% between 41 to 50 years, this is in line with a study that showed a majority of boda bodas involved in RTAS were aged 20-40 years (Fouda et al., 2015) In this study also most of the boda boda (42.1%) had attained secondary, followed by tertiary, primary and lastly university which agrees with the study were men aged 20 years or older who had completed secondary education, and experienced in driving both motorcycles and cars were involved in RTAs, (De Oliveira et al., 2015). This indicated that recklessness while driving the motorcycle was the main cause of traffic accidents which agrees with this study since lack of riding skills was among the least risk factor with about 2.1%.

Risk factors

Majority 87.9 % had a history of being involved in a road traffic accident whereas 69.2% had been involved in an accident less than 2 times, 27.9% three to five times, 2.1% six to eight times, and 0.8% above nine times. The type of accident differed from one cyclist to another with the majority 39.2% having boda to boda accidents, 30.4% boda boda to the passenger, 22.1% boda boda to the vehicle while the minority 8.3% had boda boda to animal accidents. High speeds contribute to a relevant part of traffic accidents [30] this agrees with this study where the majority 46.2%of RTAs were due to speeding, speed not only affects the severity of a crash but is also related to the risk of being involved in a crash [31]. 11.7% of these RTAs were because of

drinking &riding, Alcohol has been thought to play an important role in the occurrence of road traffic accidents and in determining the nature of accidents and injuries [32] though this study did not focus on the nature of injuries. 10.8% riding while tired, this does not agree with a study done by [33] that stated that fatigue driving is a major cause of traffic accidents but the public remains unaware of its potential harmfulness. 3.8% RTAs where due to use of a mobile phone. A substantial body of research has shown that use of mobile phones while driving can impair driving performance and increase the risk of being involved in accidents [34]. This study also identified poor roads (2.9%) as one of the reasons for RTAs among boda boda riders in fort portal city which agreed with a study that found that these two factors were significant contributors to the RTAs [35]. The other risk factors for RTAs among boda boda cyclist in my study are:7.1% poor brakes, 2.1% Tailgating, 1.7% poor riding skills, 1.2% Taking drugs and riding,1.2% impatience of road users, 1.2% recklessness while riding, 1.2% Taking medicines and riding. However, some reasons were not risk factors for RTAs among boda boda riders in fort portal city which include: traffic congestion, faulty light, burst tyres, bald tyres, defective horns, lack of knowledgeof signposts and poor visibility.

Level of awareness

This study also assessed the level of awareness and it was found that the majority 98.5% knew what the helmet was and the minority 1.5% didn't know. Of those who knew the majority 94.4% owned one while minority 5.6% didn't own any helmet. The study also found out that out of those who hard helmet majority 96.9% were putting it on and a minority 3.1% were not putting it on. The study also found out that of those who used to put on helmets, this wasn't a daily practice but putting it on under certain circumstances with the majority 64.8% every time on the road, 25.5% when carrying a passenger, 6.5% after meeting the police, 2.8%not carrying a passenger while the minority 0.4% had other reasons. This explains little awareness of the advantages of a helmet among the boda boda riders in fort portal city. This may have contributed to the RTAs however research should be done to assess if the riders be putting on a helmet at the time of the accident. The study also assessed the awareness about the advantages of a helmet and it was found that the majority 93.0% thought they knew the advantages while the minority 7.0% didn't know. After scoring them it was found that the majority 75.9% were not aware, 21.5% moderately aware and a minority 2.6% were aware of the advantages of the helmet.

CONCLUSION

Majority of the boda boda riders in fort portal city are men. Most of these riders have at least attended secondary and in their third decade of age. Majorities have been in this boda boda business for at least six years but less than ten years and own the motorcycles. The risk factors for road traffic accident among the boda boda riders are over speeding as the major cause followed by drinking and driving, driving when tired, poor brakes/brake failure, mobile phone use, poor road maintenance, tailgating, poor riding skills, impatience of road users and recklessness while riding. There is a very low level of awareness about the advantages of using a helmet among the boda boda riders in fort portal city despite them taking in mind that they know the advantages of using a helmet.

Recommendations

To the boda boda community

The boda boda riders in fort portal city should be educated on the disadvantages of overspeedingsince it is the major cause of road traffic accidents. They should avoid taking alcohol and drugs before riding. They should also service their motorcycles frequently, join driving/riding schools to perfect their

riding skills and avoid using phones or accessories while riding. The government should improve on road maintenance and construct more good roads since poor roads are among the contributors to road traffic accidents. The government should also put more effort into sensitizing boda boda riders about theadvantages of using a helmet, and the importance of servicing their motorcycles.

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