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**LINKING KNOWLEDGE AND PRACTICE: A CASE OF *BODA BODA*
MOTORCYCLE SAFETY IN KENYA**

BY

GLADYS MORAA MARIE NYACHIEO (PhD)

KENYATTA UNIVERSITY

P.O BOX 43844, NAIROBI, KENYA

glamo02@yahoo.com

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ACRONYMS / ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
KRA	Kenya Revenue Authority
KSI	Killed and Serious Injury
NTSA	National Transport Safety Authority
WHO	World Health Organization
PPS	Probability Proportional to Size
FGD	Focus Group Discussions
KII	Key Informant Interviews

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ABSTRACT

Boda boda Motorcycles in Kenya have in the last decade grown in their importance in providing transport services to both rural and urban populations. The number of motorcycles has also increased mainly due to the inability of the current transport systems to cater for transport needs, youth unemployment and zero rating of all motorcycle below 250 cc (engine capacity). The *boda boda* therefore present certain advantages in the transport sector in Kenya in that they fill the gap. In spite of these advantages, safety concerns have emerged. *Boda boda* accidents have been on the rise. If nothing is done, this may lead to more accidents with serious socio-economic implications. This paper thus, explores the levels of motorcycle safety knowledge among *boda boda* riders in Kisumu and how it may influence motorcycle safety in Kenya. The study utilized a mixed-method approach and a descriptive survey design. A two -stage cluster and systematic sampling methods were used to select a sample of 370 respondents. Study findings indicate that, majority (66.5%) had low level of motorcycle safety knowledge and low levels of rider formal training. In addition, the chi-square test indicated a highly significant relationship between formal rider training and level of motorcycle safety knowledge. Moreover, riders engaged in unsafe riding practices which compromised their safety and those of their pillion. The unsafe riding practices for instance, overloading, non-use of helmets and using mobile phones while riding, were attributed to inadequate motorcycle safety knowledge due to lack of formal training among riders.

Key Words: Boda Boda, Knowledge, Safety, Transport

1.0 INTRODUCTION

Motorcycle use for personal and public transport is increasingly becoming a global phenomenon. According to Global Road Safety Partnership (2015) in many low-income and middle-income countries, motorcycles are an increasingly common mean of transport, and the users make up a large proportion of those injured or killed on the roads. Motorcycle riders and their pillion passengers are at an increased risk of being involved in a crash because they often share the traffic space with fast-moving cars, buses and trucks (Global Road Safety Partnership, 2015).

Motorcycle riders and their pillion passengers therefore comprise a group of vulnerable road users (Solagberu, Ofoegbu, Nasir, Ogundipe, Adekanye, Abdur-Rahman, 2006). Thus, to reduce road accidents and more especially motorcycle accidents regionally and even globally, this vulnerable road users group must be prioritized.

Ownership and use of motorcycles as personalized transport is common in South and East Asia (Krishnan & Smith, 1994). The highest numbers of motorcycles used in this way are found in Vietnam with about 95% of all the motorcycles in South and East Asia (Tung, Wong, law, & Umar, 2008). Laos follows closely with 80% with Taiwan having 67% while China has 63%. In India, motorized two- wheelers make up 69% of the total number of vehicles (Mohad, 2002). Malaysia has 60 % of these motorcycle users (Zhang, Norton, & Tang, 2004). The lowest numbers of motorcycles in ASEAN countries are found in Brunei with 31% of motorcycle riders.

Boda boda motorcycles play an important role in the Kenyan transport sector as an alternative mode of transport. Motorcycles serve passengers in areas where other modes of transport may not be available. They serve as taxis and they provide the convenience of travelling irrespective of time, type of road, distance or destination and in addition, they are readily available. Due to the Kenyan transport system's inability to

fully meet the commuters' transportation needs, the demand for *boda boda* services has been on an upward trend (Kumar & Barret, 2008). In addition, the increase is attributed to the higher registration of motor and auto cycles as a result of the zero rating of all motorcycles below 250 cc in 2008.

With the increase in the number motorcycles, safety concerns have also come up. As the number and use of motorcycles increase, motorcycle related accidents are bound to increase. There is therefore need to ensure that safety of riders and the pillion passengers are taken care of. This can be achieved through proper motorcycle rider training in order for the riders to be competent and avoid poor/bad riding practices that are likely to cause accidents.

1.1 LITERATURE REVIEW

In Kenya, *Boda boda* motorcycle transport has emerged as an alternative mode of transport and has increased access and mobility in both rural and urban areas. The rapid increase and use of *Boda boda* motorcycles in Kenya is attributed to four factors first, the zero-rating of all motorcycles below 250cc by the government in 2008. Second, the current transport system's inability to fully meet the commuters' transportation needs (Kumar & Barret, 2008). Third, the high levels of unemployment forcing mostly the young people to embrace *boda boda* business as a form of employment (Nyachieo, 2012). Fourth, entry into the *boda boda* business is *laissez-faire*. One only needs to know how to ride a *boda boda* (formally or informally) and they are in business.

Boda boda motorcycles have made it possible to access the otherwise inaccessible areas thus offering an alternative mode of transport. It therefore emerges that due to offering certain advantages such as affordability, availability, flexibility and even ability to travel on poorly maintained roads, the *boda boda* motorcycle numbers are on the increase. But in spite of these advantages, safety concerns have emerged. *Boda boda*

accidents are on the increase and if nothing is done, this may lead to more accidents with serious socio-economic implications.

There has been a continuous increase in the number of motorcycles in Kenya as is indicated by data from the Kenya Revenue Authority (KRA). For instance, annual registrations of motorcycles increased by 3730% from 3,759 in 2005 to 140,215 in 2011 (KRA, 2012). In the same way, accidents involving *boda boda* motorcycles have also exhibited an upward trend. For example nationally, deaths and injuries related to motorcycles accidents have increased by a factor of 4.4, from 451 in 2005 to 1,991 in 2013.

In 2010, a total of 3,055 road traffic deaths were reported by the Kenya Traffic Police of these, approximately 7% were motorcyclists (World Health Organization, 2013). According to National Transport Safety Authority, between 1st and 13th January 2016, the number of motorcyclist who died due to motorcycle accidents was 19 and 4 pillion. If nothing is done about the increasing motorcycle accidents, the number could increase in the remaining months of 2016.

Hurt, Quellet, & Thom, (1981) observe that the motorcycle riders involved in accidents were essentially without training. Ninety two percent were self - taught or learned from family or friends. In the case of motorcycle riding in Kenya, there is lack of documented information on motorcyclists formally trained through driving schools despite the increasing cases of motorcycle accidents among *boda boda* riders. Formal training is associated with acquisition of riding skills and safety knowledge. Therefore trained motorcycle riders are expected to have a certain level of motorcycle safety knowledge.

Learning to ride a motorcycle is important for all riders, through learning; motorcycle safety knowledge is acquired to be used to ensure safety. Safety knowledge especially for commercial motorcycle riders (*boda boda*) is of paramount importance because apart from riders, passengers (pillion) are also involved. *Boda boda* motorcycles, although the

most dangerous mode of transport due to sharing of roads with fast moving vehicles is preferred by many. In spite of this, there are very few studies on Motorcycle safety knowledge among motorcycle riders in Kenya.

A review of literature shows that in Africa, there is lack of, or inadequate motorcycle safety knowledge. Obara (2009) found out that motorcycle riders lacked knowledge on road safety; Kumar (2011) observes that, motorcycle safety standards were compromised. Urban roads and highways were increasingly unsafe as riders who were not cautious or knowledgeable about traffic rules and regulations. He also points out that many commercial motorcycle riders did not know the most elementary rules.

Where formal training for riders is low, there is no adequate road safety information available for the *boda boda* motorcycle riders to use in order to reduce the rate of accidents occurrence among them. Motorcycle safety knowledge is important in safe riding. Besides handling a motorcycle, riders are to have skills to ride in different weather and road conditions for example, roads with pot holes, gravel, wet or slippery surfaces and at night. The riders must also be aware of safety gear which includes; gloves, helmets, boots, protective jacket, and reflective jacket among others.

Inadequate motorcycle safety knowledge therefore has implications to the general safety of riders and the passengers. As the number for *boda boda* motorcycles increase, there is need to have measures that can reduce motorcycle related accidents. For example if rider training and safety campaigns are not emphasized on, many people may be killed or injured in motorcycle related accidents. This may be due to unsafe riding practices such as overloading, non-use of helmets and use of mobile phones while riding.

It is against this background that the study seeks to find out levels of motorcycle safety knowledge and training among *boda boda* riders in Kisumu East sub-county. The study

also attempts to link the riders' motorcycle safety knowledge and the riders riding practices.

1.2 OBJECTIVE

The objective of the study was to show the link between the riders' motorcycle safety knowledge and the riders riding practices. Therefore, the study attempted to find out the levels of motorcycle safety knowledge, training and rider behavior or practices among *boda boda* riders in Kisumu East sub-county.

1.3 METHODOLOGY

The study employed a mixed-method and a descriptive survey design. The study was part of larger study conducted in Kisumu East sub-county in Kenya between 2012 and 2014 (Moraa, 2015). The larger study focused on determinants of *boda boda* motorcycle safety in Kisumu East sub-county. The overall objective of the study was to find out what determines motorcycle safety in Kisumu. The study examined the levels and safety knowledge among *boda boda* riders in Kisumu and levels of formal rider training. The study also captured socio-economic characteristics of the *boda boda* motorcycles riders and gathered information on riding practices.

The study utilized a two-stage cluster and systematic sampling methods. The researcher observed that the *boda boda* motorcycles congregated at some points to wait for passengers. These assembly points were referred to as "base" by the riders. These "bases" were treated as clusters for the purpose of sampling in this study. A total of 22 clusters were mapped. Out of these, 12 were selected using "probability proportional to size" (PPS). In the PPS method, the researcher purposely determines the number of cluster to pick depending on the already determined sample size for the study and the number of respondents that are to be selected per cluster. The choice of 12 clusters was based on the fact that the desired sampled size was 370 and other logistics such as

money and time and the area of study were put into consideration. It is from the 12 selected clusters that the samples were drawn using systematic sampling.

An interview schedule was used to collect data from the 370 riders. Additional information was obtained through Focus Group Discussions (FGDs) and key informant interviews (KIIs) Quantitative data obtained through the interviews with the riders were analyzed using SAS. Qualitative data from the FGDs and KIIs were analyzed thematically using NVIVO 10.

1.4 KEY FINDINGS AND DISCUSSIONS

Riders Socio-Economic Characteristics

The study sought to find out the socio-economic characteristics of the riders. These characteristics included sex, age, marital status, level of education, prior occupation and number of years worked. The study found that all respondents were male. They were aged between 18 and 31 with those aged 18-24 accounting for 27% and those aged 25 - 31 accounting for 51.9%. It was found that 70% of the study populations were married. Most riders (54.05%) were literate with secondary education while those with primary education accounted for 43.5%. Prior to *boda boda* employment, 45.14% of the riders were jobless, about (25.40%) were previously bicycle *boda boda* riders while 21.62% indicated they had been in informal employment. Most riders had less than five years riding experience. Majority (58.7%) has worked 2 - 3 years while 17% had four years working experience.

Formal Rider Training

The study sought to establish the level of formal rider training among *boda boda* riders in Kisumu and how it influenced motorcycle safety. The study found that levels of formal rider training were low. About 38% percentage of the riders reported formal training while 62% did not undergo formal training. These results indicate that majority of the

boda boda riders were not formally trained to ride. Table 1 indicates frequency distribution of rider training.

Table 1: Frequency Distribution of Rider Training

Formal Training	Frequency	Percent
Yes	140	37.84
No	230	62.16
Total	370	100

Source; Field data

Motorcycle Safety Knowledge

The study sought to find out the levels of motorcycle safety knowledge among *boda boda* riders in Kisumu East sub-county. To carry out this task, the study interrogated rider motorcycle safety knowledge, and rider practices/behaviour for instance frequency of helmet use.

The aspects focused on in this study included: levels of motorcycle safety knowledge, respondents rating of the most important safety measures, number of passengers transported at a time, *boda boda* motorcycle average speed, number of helmets a rider possesses, helmet use by riders and passengers and use of mobile phones while riding.

Level of Motorcycle Safety Knowledge

In order to assess the level of motorcycle safety knowledge, three specific areas of safety were addressed: personal physical protection, awareness of the importance of motorcycle good conditions and rider's behavior (riding practices). Findings in the current study indicate that 66.5% of the respondents who comprised the majority had

low level of motorcycle safety knowledge, while 29.2% had moderate knowledge. Only 4.3 % of the respondents had high level of motorcycle safety knowledge.

To determine low, moderate and high levels of motorcycle safety knowledge, the study came up with a typology, a classification scheme designed to facilitate understanding and comprehension. In the typology, those respondents who identified all the three aspects in motorcycle safety were said to have high levels of safety knowledge; while those who identified two aspects had moderate and those who identified one or none had low levels of motorcycle safety knowledge. Table 2: shows motorcycle safety knowledge typology.

Table 2: Motorcycle Safety Knowledge Typology

Motorcycle safety knowledge	Personal physical protection	Motorcycle mechanical condition	Rider's behaviour or riding practices	Total count
High safety knowledge	+	+	+	
Moderate safety knowledge	+	+		
Low safety knowledge	+			

Source: Synthesized from field data

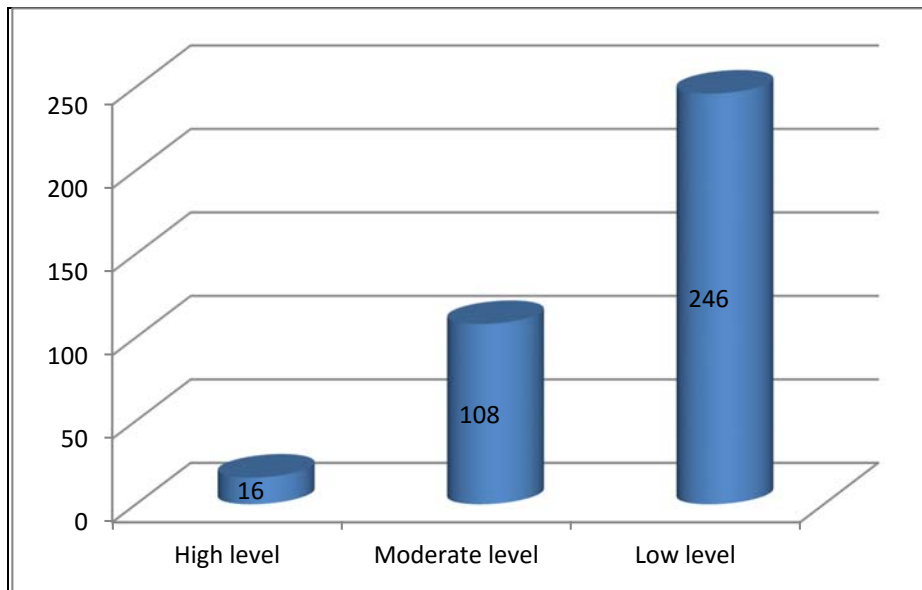
Road safety knowledge for riders is important to avoid or reduce accidents. This can be achieved through motorcycle rider training and road safety campaigns. When riders lack formal training it means that motorcycle safety knowledge is limited thus jeopardizing their safety and that of other road users. Due to their social category, the riders are not able pay for training and therefore may not be well vast in safety knowledge and riding skills. Furthermore, most riders did not understand how

important the three aspects of personal safety, mechanical and behaviour affect motorcycle safety.

There were various themes on safety that emerged from the qualitative data of the current study. For example, from the driving schools' officials, the emerging theme was lack of formal training for riders and therefore lack of information on road safety and how to avoid traffic accidents. Another theme was that riders were not conversant with traffic rules and this compromised safety. It also emerged that many riders were previous bicycle *boda boda* riders without training and did not adhere to traffic rules. Many of the riders did not have motorcycle safety gear and those who had them did not use them perhaps because of lack of understanding of their importance.

These findings are consistent with other studies in Africa. Obara (2009) found out that motorcycle riders lacked knowledge on road safety; Kumar (2011) observes that, motorcycle safety standards were compromised. Urban roads and highways were increasingly unsafe as riders who were not cautious or knowledgeable about traffic rules and regulations, compete on the streets for customers. Konings (2006) also points out that many *bendskin* (commercial motorcycle) riders did not know the most elementary rules.

Knowledge of motorcycle safety should be able to reduce the high incidences of traffic accidents involving *boda boda* motorcycles. In this study, it was evident that most respondents had low level of motorcycle safety knowledge. Therefore, the institutions charged with the responsibility of training and sensitization need to do their work in collaboration to ensure this function is performed. Motorcycle safety knowledge can be disseminated to the public through public means like the media. Such safety knowledge may lead to positive attitudes towards road safety thereby improving motorcycle safety. Figure 1 illustrates the level of safety knowledge among *boda boda* riders in Kisumu East sub-county.



Source: Field data

Figure 1: Level of motorcycle Safety Knowledge

Table 3: A Cross Tabulation of Formal Training and Levels of Motorcycle Safety Knowledge

		Level of Motorcycle Safety Knowledge			Total
		High	Moderate	Low	
Formal Training	Yes	10 (7.1%)	51(36.4%)	79(56.4%)	140(100)
	No	6(2.6%)	57(24.8%)	167(72.6%)	230(100%)
Total		16(4.3%)	108(29.2%)	246(66.5%)	370(100%)

Source: Own computation based on SPSS results.

$$\chi^2=11.61; df = 2; p=0.003, N=370$$

The results presented in Table 3 show the relationship between acquiring formal training and the level of safety knowledge among *boda boda* riders in this study. The

respondents who had formal training and high safety knowledge were 7.1%. Those who had formal training but moderate safety knowledge were 36.4% while those that formal training and had low safety knowledge were 56.4%.

Riders without formal training and had high safety knowledge were, 2.6%. The ones who had formal training and had moderate level of safety knowledge were 24.8%. Finally, those without formal training and with low safety knowledge were 76.6%. Therefore, fewer respondents with formal training had low level of safety knowledge. On the contrary, majority of those with no formal training had low level of safety knowledge. This relationship was statistically significant as Chi-Square results indicates $\chi^2=11.61$; $df=2$; $p=0.003$, $N=370$).

Respondents' Rating of the Most Important Safety Measures

For motorcycle riding to be safe, three aspects of safety must be considered: personal physical measures, safe riding practices and good / safe motorcycle conditions. In this study, 66.22% of the respondents reported personal physical safety measures, such as helmets and gloves as the most important in motorcycle safety. This was followed by safe riding practices at 31.35%. These include practices like use of reflective jackets, not riding under the influence of drugs, not answering or making calls while riding, using daytime headlights, and not overlapping (overtaking on the wrong side). The remaining, about 1%, reported safe motorcycle conditions, such as good breaking systems, reflectors, proper and frequent motorcycle servicing, and tires in good condition as most important. The results suggest that very few respondents (1%) understood the importance of good motorcycle conditions. Table 4: shows the distribution of respondent's most important safety measures.

Table 4: Distribution of Respondent’s Most Important Safety Measures

Respondents most important safety measure	Frequency	Percent
Physical personal safety measures	245	66.22
Safe riding practices	116	31.35
Safe motorcycle conditions	4	1.08
Do not know	5	1.35
Total	370	100

Source: Field data

From the riders FGDs, it emerged that riders knew the importance of a helmet as a safety gadget. Apart from protection in the event of an accident, they also noted that helmets prevented riders from wind and dust. The only other gadgets for physical protection that they mentioned were gloves, which, again they said were expensive costing up to Kshs 2,00 (\$23). They did not mention other physical safety gadgets like boots or protective jackets. This may be attributed to lack of knowledge of their importance in motorcycle safety given that most respondents had a low level of motorcycle safety knowledge as already observed in the current study.

Mechanical condition of motorcycles is an important aspect in motorcycle safety. Despite that, riders did not prioritize it accordingly in this study. This suggests that riders did not think much of mechanical conditions of motorcycle they rode. Even when they indicated knowledge they did not put it to practice, they still used faulty motorcycles. The *boda boda* were mostly serviced by the owners whenever they found it necessary. The respondents claimed that if a rider was ferrying a passenger and the motorcycle developed a mechanical problem mid-way, the rider had to get the customer to his / her destination first before attending to the problem. Failure to do that, they claimed that the customer would refuse to pay for the distance already covered. The respondents reported that since they had a financial target to meet, they

would ride on to the pillion passenger's destination. This is clearly indicated by one of the participants in one of the rider only FGD.

“Why we use *boda boda* even when they are faulty is because if we stop mid-way because of mechanical problems, the customer will not pay and we have a target to meet. So we ride on – *ni hali ya customer* (that is how customers are) – they will not pay if they do not get to their destinations.”

It is evident from both qualitative and quantitative data that, the helmet is the most known safety gadget and the most used as compared to others such as boots, gloves and protective jackets. The mechanical conditions of motorcycle did not receive the much attention it required. Also, the fact that one required money to fix whatever mechanical problem there was, made it hard for the riders to deal with the mechanical problem as soon as was necessary. The loss of income as one attends to the mechanical problem was also a challenge as one focus group participant indicated.

Riding Practices among *Boda boda* Motorcycle Riders

Overloading

Overloading has been cited as a cause of accidents on many roads especially among public service vehicles (Assum, 1998). Despite that, this study found that majority (58.6%) of the respondents transported one pillion passenger at a time. The other 32.4% carried two passengers at a time, while 8.9% indicated that they would sometimes ferry three passengers at a time. Although 58.6% of the respondents reported transporting one passenger at a time, it is evident that there are cases of overloading among *boda boda* motorcycles. The 32.4% that ferried two passengers together with the 8.1% that ferry three passengers add up to 40.5%. The focus group participants and key informants also indicated that overloading was a problem in Kisumu East sub-county just like the other unsafe riding practice.

The researcher observed overloading in many streets in Kisumu town and its outskirts. As illustrated in plate 1, overloading is common in most towns in Kenya. Riders ferry up to five passengers at the same time. In the eventuality of an accident, there could be numerous losses of lives. The traffic rules introduced in December 2012 make it illegal to transport more than one passenger on a single trip. The riders may not be aware of the dangers of overloading in controlling a motorcycle especially on poor roads. Training becomes important in such aspects. Plate 1 presents an overloaded *boda boda*.



Source: Daily Nation 22nd April 2012.

Plate 1 an Overloaded *Boda boda*

The plate 1 shows a *boda boda* with three adults and two children. Notice that none of the pillion passengers has a helmet. In addition, the young girl seated in front of the rider sits on the fuel tank.

In Plate 2 below, shows six children on a *boda boda* motorcycle going to school. It can be observed that the younger children are seated in front of the riders facing him and their legs cannot reach the foot rest. This is a very dangerous way of transporting school children. In some countries like Uganda, children are not allowed on motorcycles unaccompanied. In Kenya, the issue of children and *boda boda* motorcycles is not very

well addressed in the Traffic Act. The Act only states that children can be sandwiched between two adults on a motorcycle.



Source: Photo taken by Jacob Owiti

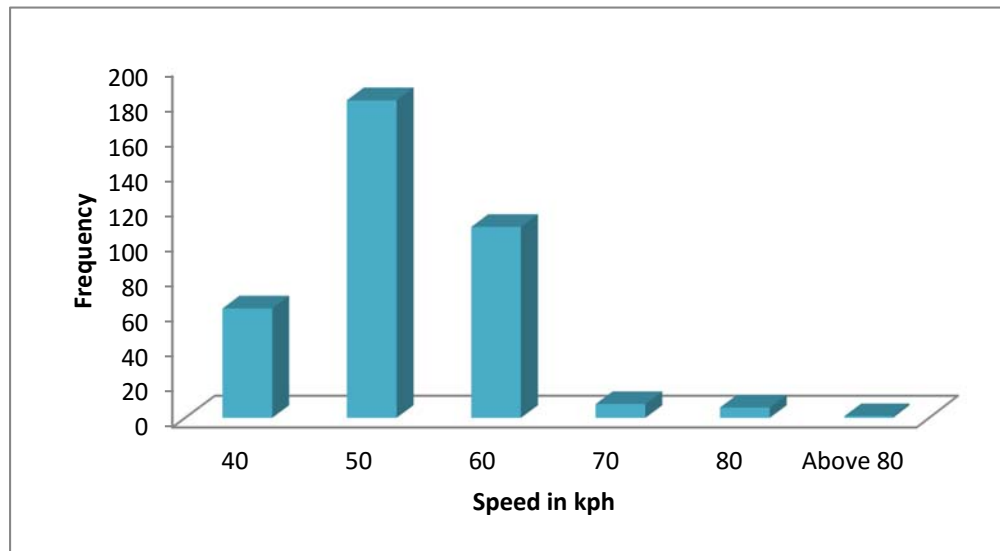
Plate 2: A *boda boda* rider takes six children to school in Kisumu on March 23, 2014.

The lack of motorcycle safety knowledge (due to lack of or inadequate training) together with need to make enough money for the day might motivate a rider to engage in bad riding practises. This is especially when rules and regulations are not implemented because some concerned institutions are not performing their functions as a team. This may therefore lead to motorcycle related accidents.

Motorcycle Speed

The Kenya Traffic Act does not explicitly indicate the speed limits for the *boda boda* motorcycles. The study findings indicate that close to half (48.9%) of the riders rode at 50 kilometers per hour whereas 29.55% rode at 60kph. Another 17% rode at 40

kilometers per hour and the rest either rode at 70, 80 and above 80kph. Figure 2 presents *boda boda* motorcycle speeds.



Source: Field data

Figure 2: Motorcycle Riding Speeds

According to the Traffic Act (2009), motorcycles travelling on dual carriageway should not exceed 110 kph while on a single carriageway, the speed limit is 100kph. In this case, motorcycles are not considered as public service vehicles. The Act also states that all commercial vehicles and public service vehicles have their speed limit at 80kph on any type of road. This only applies to commercial public service vehicles. What is not clear is the category to which the *boda boda* motorcycles fall because legislation does not specifically classify them as public service vehicles.

The foregoing discussion indicates that the speed for *boda boda* motorcycles is not regulated. This seems to emanate from legislative issues. It is evident that apart from registration of *boda boda* there is no other provision within the law that regulates a motorcycle to operate as a PSV and therefore no speed limit because the amended Traffic Act (2012) does not give specific guidelines on *boda boda* motorcycle speed. This

is despite the insertion of section 103 B in the traffic Act in December 2012 (amended Traffic Act). This may therefore mean there is no one speed limit for *boda boda* as per the current Traffic Act. The Act only indicates that riders must be licensed, have reflective jackets, two helmets and may not transport more than one passenger at a time among others. There is therefore a gap in as far as what the speed of *boda boda* motorcycles should be. There is even a greater gap in as far as when the motorcycle has a passenger and when they do not have a passenger. This warrants further attention. This is because, without knowledge of the speed limits, the rider may ride at high speeds.

Konings (2006:43) observed that speeding was a problem in Douala. This is how he captures it:

Young *bendskin* (commercial motorcycle operators) riders are renowned for driving recklessly. They tend to drive at high speed, ignore traffic lights overtake on the left and the right, stop without warning, and do U-turns, exposing themselves and their passengers to untold dangers. As a result of their recklessness, *bendskin* drivers cause many accidents.

The current study has shown that, 62.16 % of the *boda boda* riders did not have formal training in motorcycle riding. In this case, riding a motorcycle even at 40kph may be potentially dangerous due to lack of training and therefore safety knowledge. Road conditions include weather, and time of day (day or night). Other road conditions may be potholes, wet roads, loose stone and gravel, winding roads with sharp bends, blind spots, and objects. When motorcyclists ride at high speeds, they can cause accidents (Clarke et al., 2004).

Helmet Use by Passengers

This study found that 72.2% of the respondents reported non-use of helmets among passengers, while only 24.6% reported the use of helmets. The remaining 3.2% used helmets occasionally. Consequently, this study found, use of helmets by passengers as

reported by the respondents to be minimal. In the recently amended Traffic Act, there is a fine of Kshs 10,000 and in default 12 months imprisonment for those who do not comply with the helmet law. It is not easy to tell if this has been enforced fully. This is because many riders could still be spotted ferrying passengers that did not have helmets. Table 5 shows the frequency of use of helmets by motorcycle passengers.

Table 5: Use of Helmets among Motorcycle Passengers as Reported By Riders

Use of helmets by pillion	Frequency	Percent
Yes	91	24.59
No	267	72.16
Some	12	3.24
Total	370	100

Source: Field data

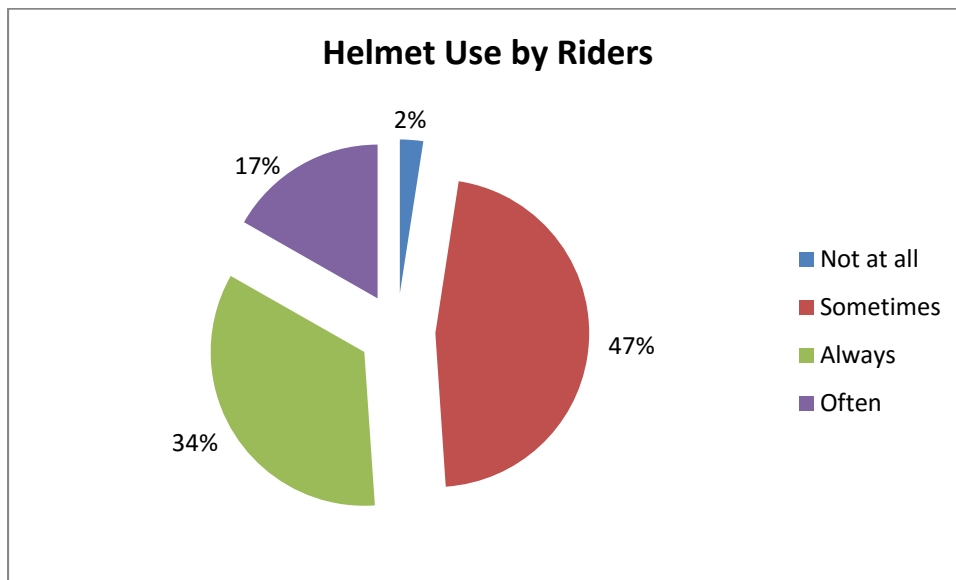
Use of helmets is low in many countries. Studies have shown that wearing a motorcycle helmet correctly can reduce the risk of death by 40% and the risk of severe injury by 70%. Motorcyclists who do not wear helmets are almost three times more likely to be killed compared to those who wear helmets (WHO, 2009). In a study of factors associated with severity of road traffic injuries in Thika - Kenya, Bachani et al., (2012) observed that measures such as helmets would help reduce severity of road traffic injuries.

In the current study, the reasons given for non - use of helmets by passengers as reported by the riders were varied. The helmets were said to be unhygienic by 60% of the respondents, who said that they found them to be dirty, smelly and sweaty and could transmit skin diseases because they were shared. Apart from hygiene, 35% of the women were concerned about their hair; they claimed that helmets spoiled their

hairstyles. They hence preferred not to use them. In both the passenger FGDs, the hair style and hygiene were emphasized. The question is, do *boda boda* passengers have the necessary motorcycle safety knowledge? Are they fully aware of the risk they put themselves in when they do not use helmets?

Frequency of Helmet Use among Riders

In the Traffic Act, the inserted section 103B states that, motorcycle operators / rider must put on a helmet. This study found that 2% of the riders reported never used helmets, 34% always used helmets and the majority at 47% sometimes used helmets. Figure 4 indicates the percentage frequency of helmet use by riders in Kisumu City.



Source: Field data

Figure 3: Percentage Frequency of Helmet Use by Riders

Similar to passengers' helmet use, the use of the same among riders was low. Some reasons given for non - use of helmets by riders and riders FGD participants were that helmets were inconveniencing because they cover the ears and one was not able to hear well. The helmets were also reported to be uncomfortable. They were hot and hindered them from seeing properly. Some respondents' gave reasons, such as helmets being

expensive. It was noted that riders avoided use of helmets for short distance. They claimed that nothing would happen to them because they were just taking a short distance. That is, they did not expect to be involved in an accident in short distances. This brings in the question of motorcycle safety knowledge. The riders reasoned that nothing would happen to them while on short trips. Is that true?

These findings are consistent with finding from other studies done in other countries. Hurt et al., (1981) observe that, voluntary safety helmet use by those motorcycle riders involved in accidents was lowest for untrained, uneducated and young motorcycle riders on hot days and short trips. Motorcycles do not offer much protection to the riders, thus helmets are required for people riding motorcycles. Helmet use should therefore be encouraged in Kisumu through safety education through publicity campaigns and law enforcement.

Mobile Phone Use While Riding

Making and receiving calls while riding was a common practice among *boda boda* riders. Majority (56.5%) acknowledged that they made and received calls sometimes while riding. About 35% reported having never made or received calls while riding; 3.5% percent often did use a phone while riding and the remaining 5.1% acknowledged that they always used a phone while riding. Field observations confirmed this practice. Riders talked to friends, relatives or passengers who were asking to be picked by that rider. One of the themes emerging from the FGDs was that riders regularly used their phones while ferrying passengers. This has implications on safety.

Any distraction while riding may result into an accident. Literature, for example, has indicated that motorcycle riding is a complex exercise (Clarke et al., 2004; Hurt et al., 1981). This means that one must be very attentive while riding. But due to the use of mobile phones by riders while riding, a rider could get distracted by an incoming call or he may even want to call for various reasons. This may lead to an accident. (Hurt et al.,

1981) observes that lack of attention to the riding task is a common factor for the motorcyclist in an accident. (Clark et al., 2004) noted that poor observation and/or inattention were the most common cause of motorcycle accidents.

It is evident that there is low level of motorcycle safety knowledge; this is in regard to safety measures, overloading, helmet use, *boda boda* speed and mobile phone use. There is need therefore to ensure safety knowledge among riders and the public (potential passengers) in order to reduce motorcycle related accidents.

1.5 CONCLUSIONS AND RECOMMENDATIONS

The study has shown that most riders in Kisumu East Sub-county were not trained and consequently had low motorcycle safety knowledge as indicated by the chi-square test. The study therefore suggests reducing the accident rate by improving rider skills and motorcycle safety knowledge through introduction of rider specific schools. NTSA, which is in charge of establishing systems and procedures for and overseeing, training, testing and licensing of drivers/riders, should ensure that levels of formal rider training and motorcycle safety knowledge are increased by making sure that most riders are trained. This can be achieved by introducing subsidies rider specific riding schools. Alternatively, the government can identify specific driving schools in the country and subsidize for rider training. Road safety education should be included in the school curriculum so that everyone is well conversant with road safety. A standard training manual for all schools offering rider training should be implemented as soon as possible.

In addition, the current study shows that riders engaged in risky practices /behaviour such as overloading, speeding, not wearing a helmet, riding without reflective jackets and headlights, using mobile phones when riding and wrong overtaking. This study recommends that NTSA and other stakeholders concerned with road safety need to promote motorcycle safety education and awareness. This can be achieved through the

mass media, road campaigns, peer groups, motorcycle rider associations, and educational institutions of all levels. The study also found that, there were low levels of helmet use. Safety education on importance of helmets even on short trips will be of significance. It is evident that, inadequate motorcycle safety knowledge therefore has implications to the general safety of riders and the passengers.

REFERENCES

- Assum, T. (1998). Road Safety in Africa: Appraisal of road safety initiatives in five African countries, The World Bank and Economic Commission for Africa. Sub-Saharan Africa Transport Policy Programme. Working paper No. 33.
- Bachani, A. M., Koradia, P., Herbert, H. K., Mogere, S., Akungah, D., Nyamari, J., Osoro, E. Maina, W. Stevens, K. A. (2012). Road traffic injuries in Kenya: The health burden and risk factors in two districts. *Traffic Injury Prevention*. 2012; 13 Suppl 1:24-30. Doi: 10.1080/15389588.2011.633136.
- Clarke, D. D., Ward, P., Bartle, C., & Truman, W. (2004). In-depth study of motorcycle accidents. Road Safety Research Report No 54. London: Department for transport.
- Global Road Safety Partnership, (2015) <http://www.grsproadsafety.org/our-knowledge/safer-road-users/vulnerable-road-users>
- Hurt, H. H., Quillet, J. V., & Thom, D. R. (1981). Motorcycle Accident Cause Factors and Identification of Countermeasures, Vol 1: technical Report. Contact HS-5-01160. Los Angeles: Traffic Safety Centre, University of Southern California.
- Konings, P. (2006). *Solving Transportation Problems in African cities: Innovative Responses by the Youth in Doula, Cameroon*. *Africa Today*, Vol 53, No 1 (2006), 35-50, Indiana Universty Press. Retrieved from: <http://www.jstor.org/stable/4187755>.
- Kenya Revenue Authority. (2013). *Road transport department*. Nairobi:Government printer.
- Krishnan, R., & Smith, G. (1994). "Motorcycle injuries in south East Asia". *Worlds Health Forum* 15, 186-187.

- Kumar, A. (2011). Understanding the role of motorcycles in African cities; a political economy perspective. Sub-Saharan Africa Transport Policy Program. SSATP discussion paper No 13 (urban transport series).
- Kumar, A., & Barrett, F. (2008). Stuck in Traffic: Urban Transport in Africa . Retrieved from: <http://www.infrastructureafrica.org>.
- Kumar, A. (2011). Understanding the role of motorcycles in African cities; a political economy perspective. Sub-Saharan Africa Transport Policy Program. SSATP discussion paper No 13 (urban transport series).
- Mahlstein, M. (2009). *Shaping and being shaped. The regulation of commercial motorcycle operation and social change in Calabar, Nigeria*. MA Thesis, Basel, Univ. of Basel, Institute of Social Anthropology.
- Mohan, D. (2002). Traffic safety and health in Indian cities. *Journal of Transport and Infrastructure*. 9:79-94.
- Nyachio, G. M. M. (2012). Creating employment through transport; the youth and motorcycle (boda boda) in Kitengela, Kajiado county Kenya. *Research journal in organizational psychology and educational studies (RJOPE) volume 2 number 4*: 154-157.
- Obara, R. (2009). Motorcycle injuries in low and middle income countries experiences within Kisumu municipality. RTIRN Regional Workshop on motorcycle injuries, Nairobi, Kenya June 23, 2009.
- Solagberu, B., Ofoegbu, C., Nasir, A., Ogundipe, O., Adekanye, A., & Abdur-Rahman, L. (2006). Motorcycle injuries in developing country and the vulnerability of riders, passengers, and pedestrians. *Injury Prevention*, 12, 266 -268.

Tung, S. H., Wong, S. V., Law, T. H., & Umar, R. S. R. (2008). 'Crashes with road side objects along motorcycle lanes in Malaysia" *International journal of crashworthiness* 13(2), 205 - 210.

World Health Organization. (2009). *Global status report on road safety*.
http://www.who.int/violence_injury_prevention/road_safety_status/2009/en/

World Health Organization. (2013). Motorcycle-related road traffic crashes in
Kenya Facts & figure

Zhang, J. Norton, R., & Tang, K. C. (2004). Motorcycle ownership and injury in China.
Injury Control & Safety Promotion, 11:159-163.