Prevalence Of Motorcycle Injuries In Nakuru County Referral Hospital, Nakuru County Kenya

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Abstract: Traffic crashes are predicted to become the fifth leading cause of death by 2030.Currently Motorcycle accidents are the second most common cause of road traffic accidents in both developed and developing countries. In Kenya Motorcyclists' are the third most common causes of road traffic injury admissions. Information about motorcycle injuries is easily available in the developed countries from hospital records, vital statistics, and police records but in Kenya studies covering a wide range
of these injuries are minimal. The current study aimed to increase the knowledge on the burden of motorcycle injuries by determining the number of injury cases attributed to motorcycle accidents, finding out the common types of injuries sustained from motorcycle accidents by age and sex distribution and to establish the causative factors of motorcycle injuries. The results showed that 27.1% of the respondents had been involved in a motorcycle accident. The majority of who were male with 80.8% of which 50% of the injuries were fractures. Those aged between 21-30yrs were the most affected at 42.3%, with the commonest cause of the motorcycle injuries being over speeding. Road safety campaigns should be conducted in a bid to reduce the number of these motorcycle injuries.
Key words: Motorcycle injury, prevalence,

I. INTRODUCTION

Injuries and violence are a significant cause of death and ill health in all countries.[1] Injury is an important contributor of premature deaths in the community especially among the young population, with the three leading causes of death globally from injuries being road traffic crashes, homicide and suicide.[2, 3] over a third of road traffic deaths in low- and middle-income countries are among pedestrians and cyclists. The African region has the highest road fatality rates, (24.1 deaths per 100 000 population), well above the global average of 18 deaths per 100,000. Road traffic crashes are predicted to become the fifth leading cause of death by 2030. [3] in a study done in Ghana the annual rate of transport-related mortality in Kumasi was 86 deaths per 100 000.[4]

Studies conducted in Kenya have found that road traffic fatalities in Kenya are highest and have increased steadily over time[5 6] with the Motorcyclists being the third most common cause of road traffic injury admissions in kenya.[7]Evidence based strategies geared towards prevention of injuries are key towards improving the general health of individuals both at a global and local level. However, less than 35% of low- and middle-income countries have policies in place to protect this road users.[2] In Kenya new initiatives by organizations such as the World Bank and Bloomberg Philanthropies are seeking to enhance safety on Kenyan roads.[8, 9].This study aimed to increase the knowledge on the burden of motorcycle injuries.

II. MATERIALS AND METHODS

The study was carried out in Nakuru County Referral Hospital. The study was centered in the surgical and orthopedic wards. The hospital is in Nakuru County, Nakuru District, Nakuru Division, Nakuru Town Location and Viwanda Sub Location. It is approximately 300 kilometers from Nairobi. A sample size of 96 respondents both male and female aged >5 years who had been admitted in surgical and orthopedic wards was interviewed.
Study design: Descriptive cross sectional design.
Study location: This is a level 5 hospital based study centered in the surgical and orthopedic wards at Nakuru County Referral Hospital. The hospital is in Nakuru County, Nakuru District, Nakuru Division, Nakuru Town Location and Viwanda Sub Location. It is approximately 300 kilometers from Nairobi.

Sample size: 96 patients.

Data collection tool: pretested interviewer-administered questionnaire was used to all patients that consented.

Study population: all patients male and female aged >8 years admitted in the orthopedics and surgical wards in Nakuru County Referral Hospital

Inclusion criteria: all respondents aged >8 years admitted in the orthopedics and surgical wards at Nakuru County Referral Hospital who gave consent were included in the study.

Exclusion criteria:
1.All respondents aged 8 years and below
2.Individuals that were unable to participate due to seriousness of illness/injury
3.Individuals who did not give consent.

Procedure methodology: oral informed consent was obtained from the individuals and using an interviewer-administered questionnaire, information was collected on the respondents. Socio-demographic characteristics, involvement in a motorcycle crash and injuries sustained, motorcycle-riding experience and training, opinion on the causes of the motorcycle crashes was also sought

Sampling method: the sample size being 96 which were a manageable number and thus a census was employed to collect the data.

Sample size calculation: The sample was determined using the Yamane Simplified Formula for Proportions. The population size was 136 which was the average capacity of surgical and orthopedic wards at Nakuru County Referral Hospital.

$$n = \frac{N}{1 + N(e)^2}$$

Where:
n -is the sample size,
N -is the population size,
e -is the level of precision

$$n = \frac{136}{1 + 136(0.05)^2}$$

n= 101

A sample of 96 respondents' was used

Statistical analysis: Data was analyzed using SPSS version 20.

III. RESULTS

Age distribution of the respondents

Most respondents (26%) were aged between 11-20 years. They were followed by those aged 21-30 years at 18.8%. The least were aged 71-80 years at1%
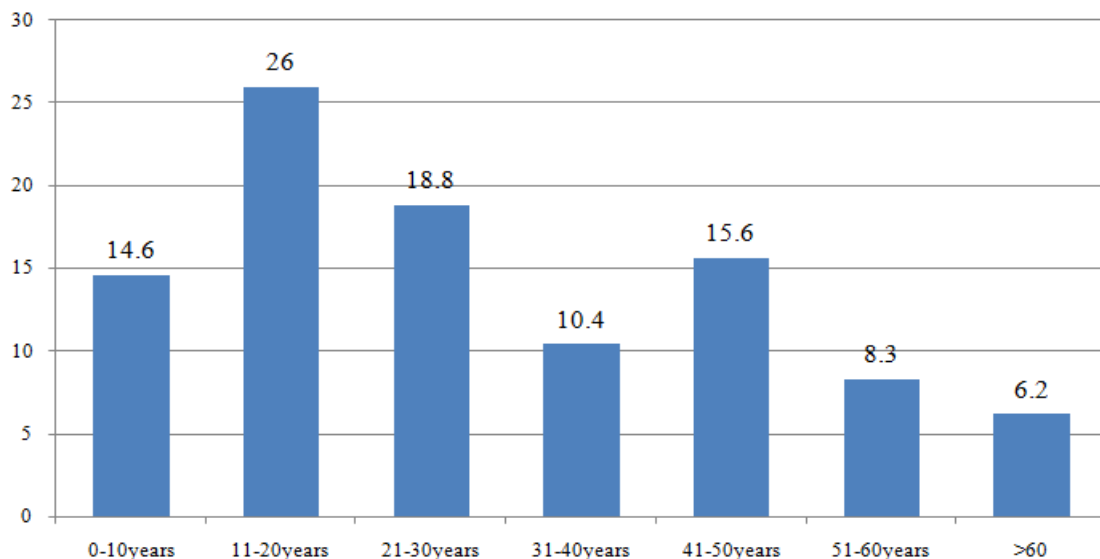

Figure 1 Age of respondents

Distribution of the respondents by sex

Most respondents were aged 11-20 years with 26%. They were followed by those aged 21-30years at 18.8%. The least were aged 71-80years.
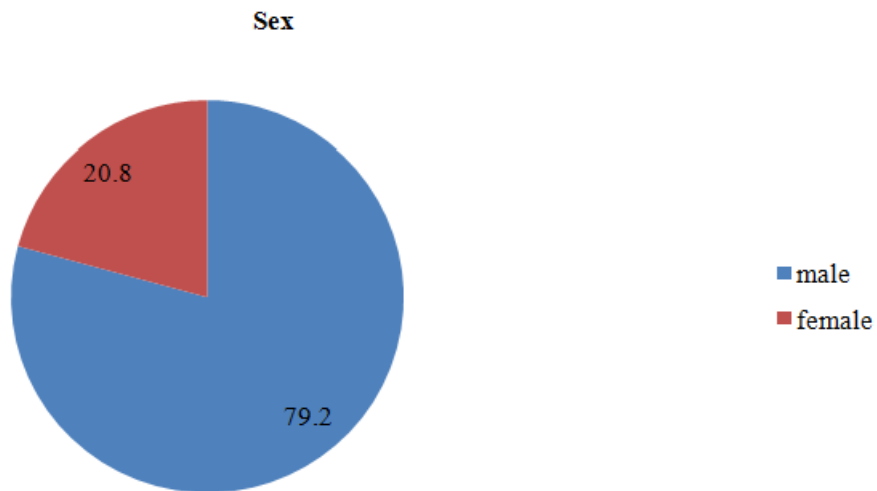
Sex

Figure 2 Sex

Respondents who had been involved in a motorcycle accident

The number of respondents who said that they had been involved in a motorcycle accident was 27.1%.
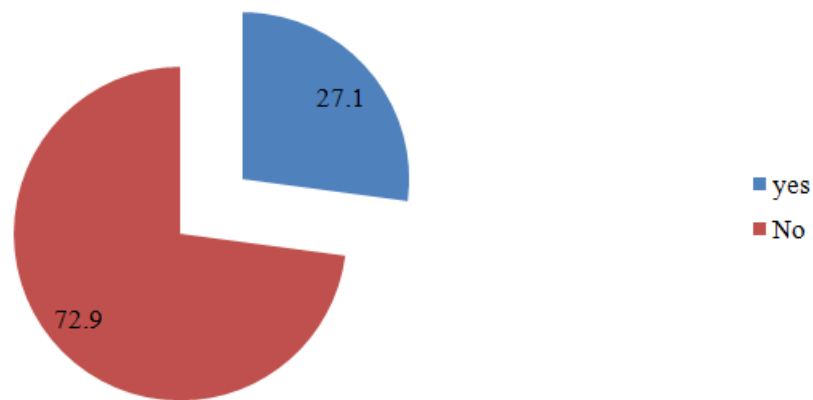
Involvement in a motor cycle crash

Figure 3 Involvement in a motorcycle crash

Age in Years * Type of injury sustained Cross-tabulation

The majority of the injuries sustained were fractures at 57.7% of the total injuries with those aged between 21-30yrs being the most affected at 23.1%. With the least affected age group being those between 41- 50 years with 0%.

Table 1 Age in years* Type of injury sustained

	Type of injury sustained				
Age in years	Bruise/Abrasion	Laceration	Burns	Fracture	Total
0-10years	0	0	0	3.8	3.8
11-20years	3.8	0	3.8	19.2	26.8
21-30years	11.5	3.8	3.8	23.1	42.3
31-40years	7.7	0	0	11.5	19.2
41-50years	0	0	0	0	0

51-60	0	3.8	0	0	3.8
>60	3.8	0	0	0	3.8
Total	26.9	7.7	7.7	57.7	100

Type of injury sustained by sex

The majority of those that sustained motor cycle injuries were male with 80.8% with 50% of the injuries being fractures. While 19.2% female with majority of the injuries being bruise/abrasions at 11.5%

Table 2 Type of injury sustained by sex distribution

		Type of injury sustained				Total %
		Bruise/Abrasion	Laceration	Burns	Fracture	
Sex	Male	15.4	7.7	7.7	50	80.8
	Female	11.5	0	0	7.7	19.2
	Total	26.9	7.7	7.7	57.7	100

Site of the injury sustained

The riders, pedestrians and passengers involved in accidents had the following injuries; 42.3% head/face injuries, 42.3% lower limb injuries and the least had sustained upper limb injuries at 15.4%
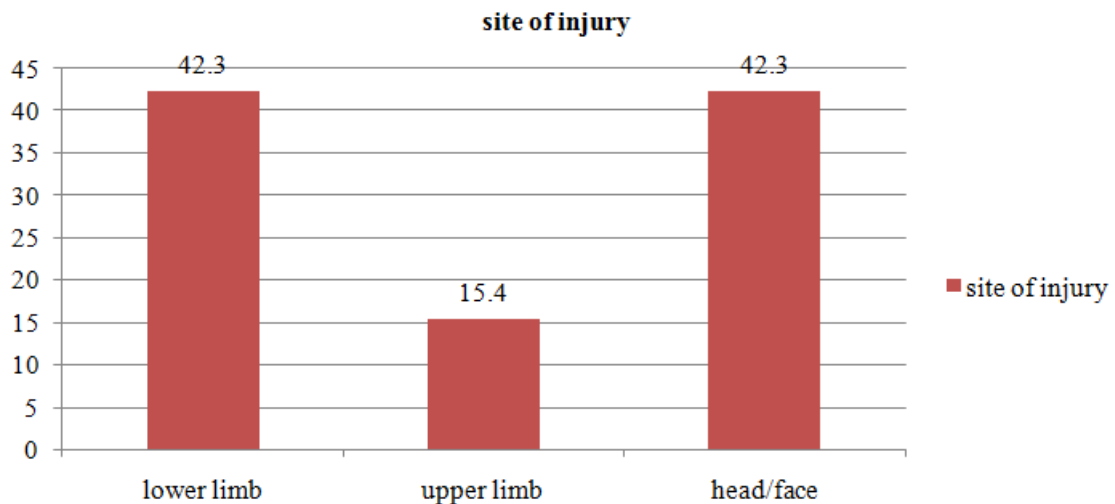

Figure 4 site of injury

State of involvement

For those who had been involved in motorcycle accidents, 38.5% were pedestrians, 34.6% were riders and 26.9% were passengers, all at the time of accident
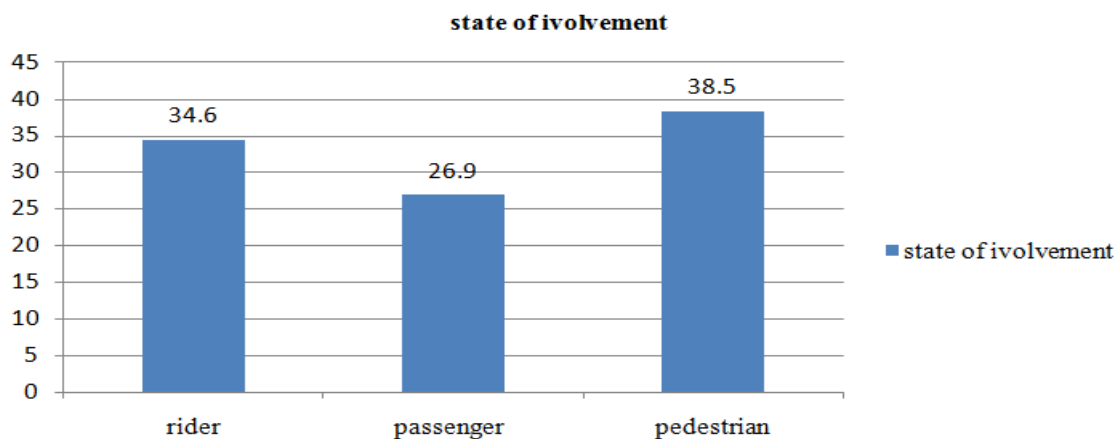

Figure 4 State of involvement

Period of licensed riding
According to figure 6 when respondents were asked for the period they had ridden under a valid license, 54.5% said less than one year. Periods lasting between 1-2 years and 2-3 years both had 18.2% of respondents
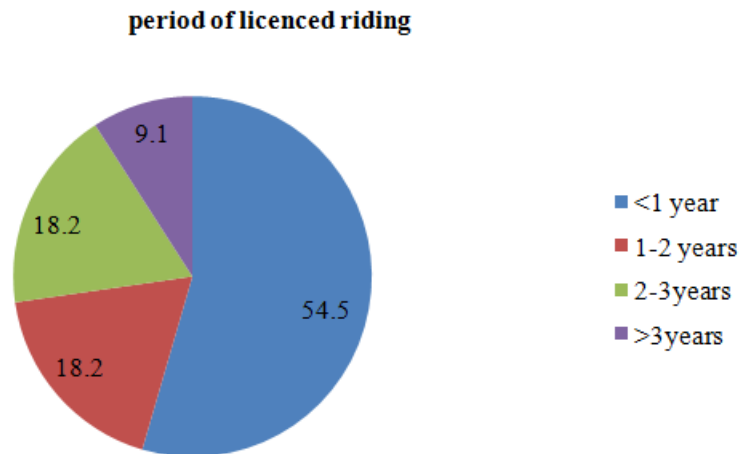
period of licenced riding

Figure 5 period of licensed riding

Place of motorcycle training
Motorcycle riders [regardless of whether they were riding at the time of the accident(s) in the study were asked where they underwent training. The majority had undergone informal training (71.4%) while least had gone to driving school (28.6%)
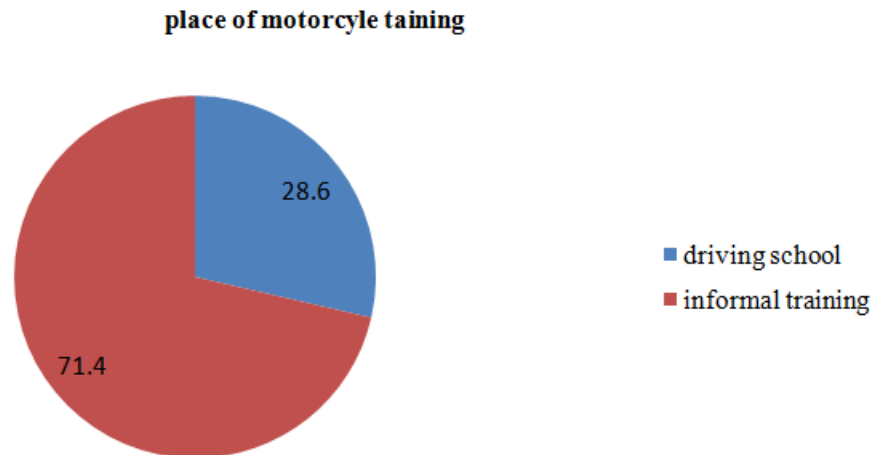
place of motorcyle taining

Figure 6 place of motorcycle training

Period of training
On period of training 50% of the respondents had been trained only for a few weeks while 28.6% had been trained other periods. The minority (21.4%) had been trained for less than one week.
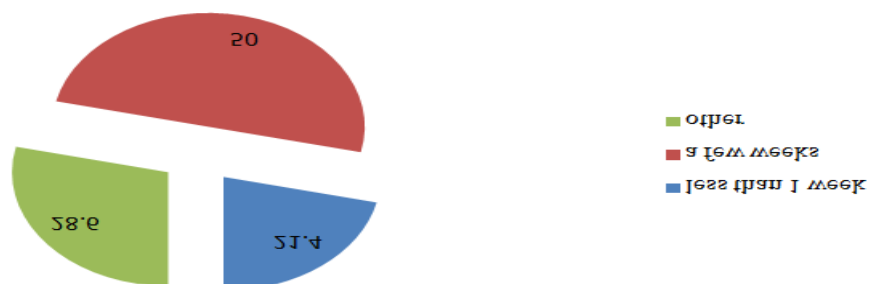

Figure 7 period of training

Causes of motorcycle crashes

When the respondents were asked to mention the causes of motorcycle accidents, the most mentioned cause was over speeding at 34.1% followed by riding under influence of alcohol at 24.4%
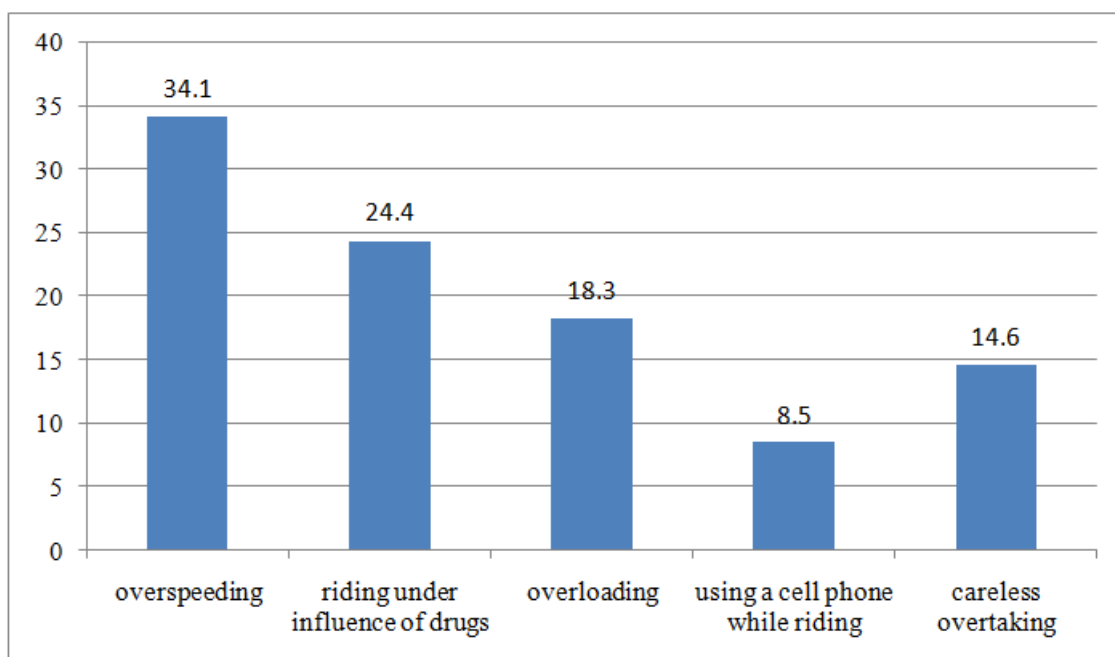

Figure 8 Causes of motorcycle crashes

IV. DISCUSSION

Number of injury cases attributed to motorcycle accidents

The study showed that 27.1% of the respondents had been involved in a motorcycle accident. This finding is consistent to other studies that have showed a high prevalence of motorcycle injuries. In a study done in Uganda motorcycle injuries constituted 21.9%.[10] While a study in Kenya showed Commercial motorcycle traffic injuries accounted for 39.4% of all road traffic injuries.[11] In Brazil the prevalence is documented at 63.6% among the motorcycle taxi drivers.[12] This is in agreement with (WHO; 2010) report that generally injuries are not evenly distributed around the world or within countries [1]

Common types of injuries sustained from motorcycle accidents by age and sex distribution.

The majority of those that sustained motor cycle injuries were male with 80.8% of which 50% of the injuries were fractures. While majority of the injuries sustained by the female were bruise/abrasions at 11.5%. This showed that the male were more predisposed to severe injuries.

This finding is consistent to studies that show that the male are more likely to be injured by a motorcycle than female. [10, 11] this can be related to (Cholo et al. 2015) finding that Motorcycling is predominant among the male[13].

The study found out that those aged between 21-30yrs were the most affected at 42.3%. The most common type of injury was fracture at 23.1%. This showed that majority of persons involved in motorcycle accidents are adolescents and the middle aged with the majority likely to suffer from a severe injury. This finding is in agreement with other studies that have shown the most vulnerable age group of Motorcyclists being those aged between 26 and 40years.[13, 14]

Head/face injuries were equal to the lower limb injuries at 42.3% which was a finding consistent to that by (NHTSA. 2009) on Motorcycle Safety that showed Lower extremity injuries are the most common injuries sustained by motorcyclists in crashes[15].

Causative factors of motorcycle injuries

This study showed that most of the respondents who had been involved in motorcycle accidents were pedestrians with 38.5%, this finding puts the pedestrian at vulnerable position in a motorcycle accident. When respondents were asked for the period they had ridden under a valid license, 54.5% said less than one year. 71.4% of the riders had informal training with 50% of respondents having been trained only for a few weeks.

These majorities that had low riding experience, informal and short lived training are a red flag since informal training does not concentrate on vital training rules and regulations.
When the respondents were asked to mention the causes of motorcycle accidents, the mentioned causes were;

▪Over speeding 34.1%
▪Driving under influence of alcohol 24.4%
▪Overloading 18.3%
▪Careless overtaking 14.6%
▪Riding while using a cell phone 8.5%

This finding is in support of a study by (MAIDS.2009) that shows that the motorcycle rider is an important contributor to motor cycle accidents. In a study on by (Crompton JG, Oyetunji TA. et al) on association between helmets and facial injury after a motorcycle collision, the motorcyclists were found to over-speed and over load their motorcycles for quick returns. They are known to be reckless, in disciplined and lack respect for other road users.[16]

V. CONCLUSION

Motorcycle injuries prevalence stood at 27.1%. The Male were the most likely sex to be victims of motorcycle injuries. Majority of the injuries sustained were fractures with those aged between 21-30yrs being the most affected. The most important factors that contributed to motor cycle accidents were failure to follow rules and regulations that are stipulated and recommended for safe riding together with Poor and short-lived training.

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