

# Frequent motorcycle crashes: An issue of serious Public Health concern in the Wa Municipality of Upper West Region, Ghana.

Godfred Etsey Sebiawu, Emmanuel Aikins, George Okyere Dokyi.

**Abstract**— Road traffic injuries and fatalities constitute a major public health and development crisis in Ghana. Motorcycle crashes and the related costs of personal injuries are issues of public health concern in the Wa Municipality and across the nation as a whole. There were about 778 injuries and fatalities from various road traffic accident underreported to Motor Traffic and Transport Unit, MTTU, of the Ghana Police Service in the Wa Municipality between 2008 and 2013, which resulted in millions of cedis in hospital charges and damages to the State due to tremendous increase of 450% in annual registration of motorcycles from 2007 to 2013 at the Wa Office of Drivers and Vehicle Licensing Authority, DVLA. The increase in motorcycles in the Municipality also indicate a corresponding increase in road traffic accidents. The study was done at Wa Municipality and the gender distribution of the respondents indicate males dominate in the use of motorcycles as means of transport in Wa metropolis and with most within the age of 20-39 years. It also suggests that most of the respondents considered the use of motorcycle to be very cheap, easy to learn, easy to maintain and very attractive for work, school and leisure. The study also shows that most of the motorists comply with traffic regulations, ensure monthly maintenance and also admitted they cannot do basic repair works on their motorcycles. Almost all the respondents claimed to be aware of Universal Crash Helmet law, law governing registration of motorcycle, riding of motorcycle by minors, riding under the influence of alcohol and the consequence of overloading, over-speeding and the essence of taking personal accident insurance policy.

**Key Terms**— Motor cycle accidents, crash helmet, Road Traffic Accidents, Drivers and Vehicle Licensing Authority

## 1 INTRODUCTION

Road traffic injuries and fatalities constitute a major public health and development crisis, and are predicted to increase if road safety is not addressed adequately [1]. Safety programs and campaigns are one policy response to reduce motorcyclist fatalities. But education on motor accidents has not been targeted at specific issues that lead to accidents which result in fatality. While there is a substantial and detailed body of work relating to motorcycle accidents and safety in western

Motorcycle crashes and the related costs of personal injuries are issues of concern in the Wa Municipality and across the nation as a whole. Statistics throughout the world show motor traffic accidents are significantly high in developing economies and that motorcyclists are more likely to be seriously injured in a crash than drivers or passengers of other motor vehicles [3], [4], [5]. Injuries from motor crashes tended to be worse than those involving motor cars, and fatalities in motor crashes far outstrip those involving motor cars [6]. To make matters worse for the motorcyclists, most of the operators ignore the little protection available to them, which is the crash helmet. The riders do not have any type of protection besides their helmet and possible protective clothing that is worn. There is no seatbelt, no airbag and the metal cage surrounding motorcyclists [7]. The vast majority of motorcycle crashes result in injury to the riders and passenger, with most leading to Emergency Department for treatment.

There were about 778 injuries and fatalities from various road traffic accident underreported to Motor Traffic and Transport Unit, MTTU, of the Ghana Police Service in the Wa

- Godfred Etsey Sebiawu is a lecturer at the Department of Dispensing Technology, Wa Polytechnic, Wa, Ghana. E-mail: [etseygodfred@yahoo.com](mailto:etseygodfred@yahoo.com)
- Emmanuel Aikins is a lecturer at the Department of Secretarialship and Management, Wa Polytechnic, Wa, Ghana. E-mail: [paemmaikins@yahoo.com](mailto:paemmaikins@yahoo.com).
- George Okyere Dokyi is an Assistant Estate Officer at Wa Polytechnic, Wa, Ghana. E-mail: [godokyi@yahoo.com](mailto:godokyi@yahoo.com)

countries, there are only a handful of studies involving such research in rapidly developing economies in Africa [2].

Municipality between 2008 and 2013, which resulted in millions of cedis in hospital charges and damages to the State. The Bolgatanga Municipality loses about \$1.2 million annually due to motorcycle crashes [8]. There are many personal and financial costs associated with motorcycle crashes, all of which increase if a person rides without a crash helmet.

These bareheaded riders are almost twice as likely to sustain a traumatic brain injury (TBI) in a crash as riders who wear crash helmets [9] and median hospital charges for motorcycle riders hospitalized with severe traumatic brain injuries were 13 times higher than the charges for those who did not have a traumatic brain injury [10].

The number of motorcycles are growing across the Wa Municipality due to influx of people from various parts of the country into the municipality in pursuit of higher education since the University for Development Studies, UDS and Wa Polytechnic were established in 1992 and 1999 respectively [11], [12]. In comparison to other vehicles, motorcycles are very cheap and easy to learn [10]. Both the mobility and lesser cost of maintenance are the very attractive factors to those who want to use them for work, school and leisure.

### 1.1 LOCATION AND SIZE OF STUDY AREA

The Upper West region is one of the youngest regions in Ghana and was created in 1983, before its creation it was part of the Upper East region of Ghana with the regional capital being Bolgatanga. The region is bordered on the north by Burkina Faso, on the east by the Upper East region and Northern region, on the south by the Northern region, and on the west by the western Ghana-Burkina Faso border. It is the seventh largest region in Ghana in total area, and is made up of 9 districts.

Wa Municipality is among the Eleven (11) Municipalities and Districts Assemblies in the Upper West Region. The Administrative Capital of the region is Wa. This makes it the largest urban Centre in the region. The Municipality shares boundaries with Nadowli District to the North, Sawla-Tuna-Kalba District to the South, Wa West District to the West and Wa East District to the East. The Upper West region is inhabited predominantly by Moslems with the main occupation being farming. The region is also inhabited by few illegal immigrants from Burkina Faso.

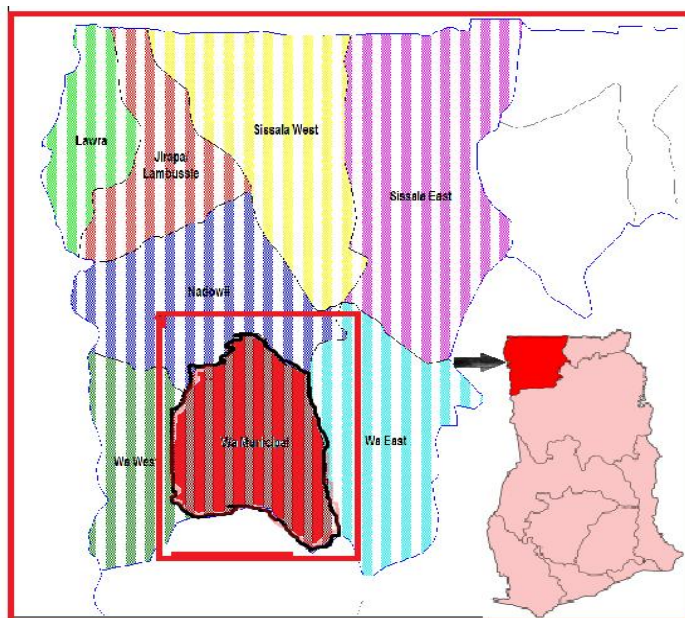


Fig.1. Location of Wa Municipality on the Regional Map of Upper West of Ghana.

TABLE 1: STATISTIC OF VARIOUS DISTRICTS

	TOTAL	MALE	FEMALE
GHANA	24,658,823	12,024,845	12,633,978
UPPER WEST	702,110	341,182	360,928
WA WEST	81,348	40,287	41,121
WA MUNICIPAL	107,214	52,996	54,218
WA EAST	72,074	36,396	35,678
SISSALA EAST	56,528	27,503	29,025
NADOWLI	94,388	44,724	49,664
JIRAPA	88,402	41,592	46,810
SISSALA WEST	49,573	24,151	25,422
LAMBUSSIE KARNI	51,654	24,952	26,702
LAWRA	100,929	48,641	52,288

Source: Ghana Statistical Service (GSS)

## 1.2 MOTOR RIDING IN THE WA MUNICIPALITY

Despite the laws regulating the use of crash helmets, safety equipment, use of headlight at night, over-speeding, overloading and the practice of motor traffic safety, most motorcyclists in the Wa municipality blatantly flout the laws. Statistics on road accidents made available by the Motor Traffic and Transport Unit of from Ghana Police Service Upper West regional branch showed that 778 accidents involving motor vehicles and motorcycles were reported to the Unit in the Wa Municipality since January 2008 to July 2013. Out of this figure, 243 persons died, 195 others sustained serious injuries and 147 sustained minor injuries as shown in fig.2. In 2005, 16 motorcycles were involved in various accidents killing eight people and injuring 14 of them [16]. The MTTU attributed the increasing rate of accidents to the increase in population with its corresponding increase in motorcycles on the roads. They further attributed the increase in accidents to the lack of respect for road traffic regulations, lack of defensive riding skills as well as careless, inexperienced and impatient riding. Other factors suggested by some authors include motorcycle speed, alcohol consumption, rider age and gender [17], [18], [19], [120], [21]. Crashes involving motorcyclists have become an issue of great concern to Health Authorities, Ghana Police Service, Drivers and Vehicle Licensing Authority Department in the Wa municipality Road Safety Commission.

Graphs below show number of Motorcycles registered at DVLA for the last seven years, accidents cases reported at the Central Police Station, Wa for the last six years and lastly number of road traffic accident victims admitted at the Regional Hospital, Wa for last four years in the Wa Municipality are as follows.

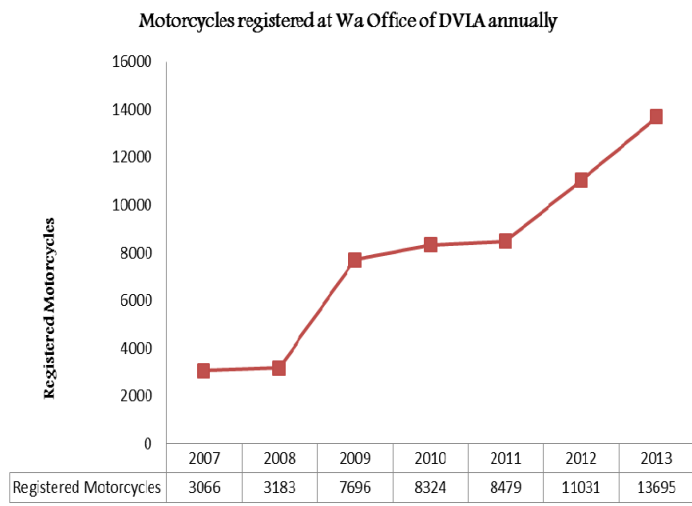


Fig.2. Motorcycles registered annually at Wa Office of DVLA.

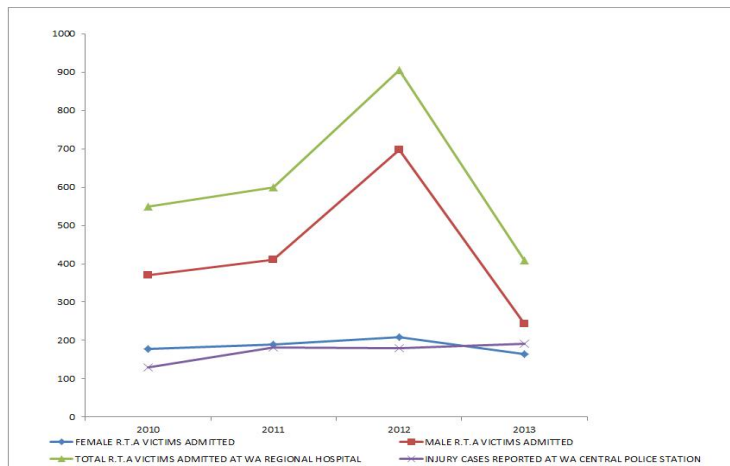


Fig.3. R.T.A victims admitted at the Regional Hospital, Wa.

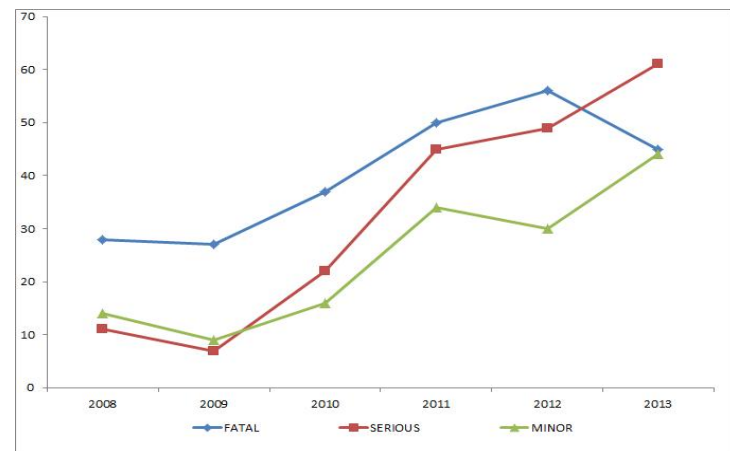


Fig.4. Degree of injuries sustained by R.T.A victims.

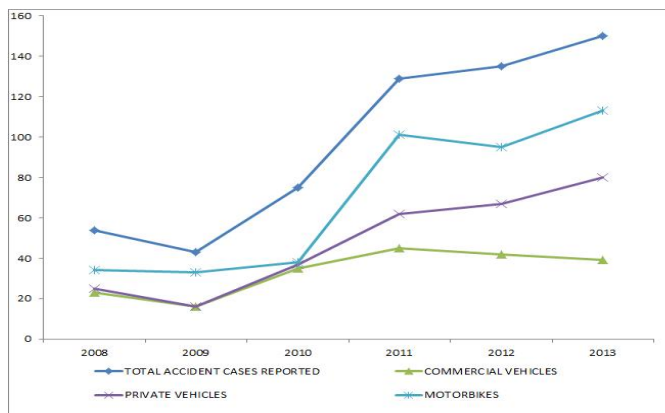


Fig.5. Accident cases recorded by Central Police Station, Wa.

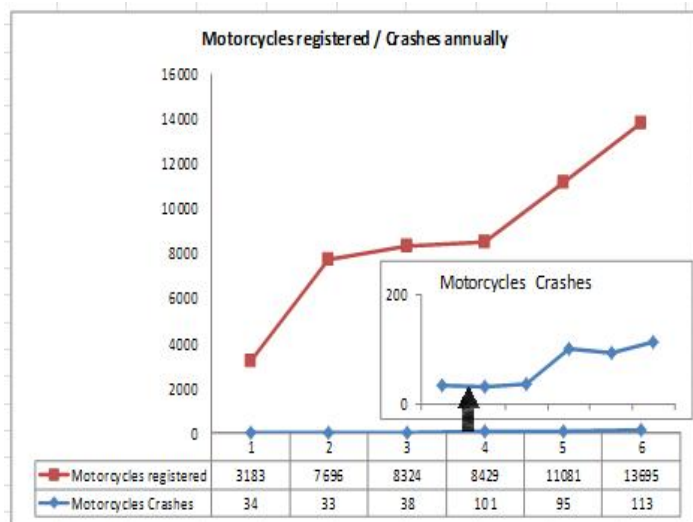


Fig.6. Comparison of Motorcycles registered at DVLA with motorcycles crashes in the Wa Municipality annually.

From Fig.2. It was realised that the annual registration of motorcycles from 2007 to 2013 at Drivers and Vehicle Licensing Authority, DVLA increased significantly from 3066 in 2007 to 13695 in 2013. The increase in motorcycles at the Municipality also indicate corresponding increase in road traffic accident victims admitted at the Regional Hospital, Wa as shown in fig.3. The year 2012 recorded the highest rates, and this was as a result of the December the Presidential and Parliamentary elections held in Ghana. This could be due to frequent rallies at the weekends by most Political Parties in that year.

Most records and the interviews with the Senior Nurses in-charge at both the Male and Female Surgical Wards show about 90% of the road traffic accident victims admitted at the Wa Regional Hospital were from various motorcrashes in the Municipality. This fact is also confirmed by reported cases of road traffic accidents to the MTTU of the Ghana Police Service at Wa central as shown in fig.3, fig.4, fig.5. and fig.6. show the increase in motorcycles registered with its corresponding motorcrashes in the metropolis.

However, despite high fatality rates among motorcyclists, information regarding the factors and causes that contribute to the high rate of road traffic accidents in the Upper West Region of Ghana are woefully inadequate.

### 1.3 TRAFFIC MANAGEMENT FACILITIES IN THE WA MUNICIPALITY

Road traffic crashes in the Upper West region is a serious Public health and injury prevention issue. The issue is more acute because the victims are overwhelmingly healthy, strong and fit prior to their crashes. Statistics from the Regional hospital and Motor Traffic and Transport Union (MTTU) of the Ghana Police Service show about 17 cases are reported weekly. The Municipality as a whole has only one traffic light controlling traffics from the main commercial centres. This traffic light hardly functions and as a result of that, there is always a traffic guard or police officer to moderate the traffic density in order to avoid traffic build-up at peak hours. The streets in the Municipality do not have speed limit signs, parking signs, priority lanes for pedestrians, motorists and cyclists parking bays, restrictions, pedestrians crossing and traffic signals. Only few streets were recently constructed with speed ramps and street lights and finally but not the least most commercial vehicles and motorists carry in excess passengers (overloading) and overspeed at any point at the municipality.

On Wa market days, which usually occurs on every sixth day night, most people come to the market for trading and marketing of their goods and products and as result of this, there is always a struggle for space for all users of the roads. This results in a lot of road traffic accidents.



Fig.7. Picture of Motorists in Traffic at the Wa municipality.





Fig.8. Picture of a Woman carrying her Children to school



Fig.9 Picture of motorist involved in road traffic accident.

The focus of the study is to assess personal safety awareness level of motorists, education on road signs and motor traffic regulations and to establish the perception of motorcyclists on the usage of protective crash helmets and its regulation.

## 2 METHODOLOGY

The research approach was cross sectional and specifically case study design was used to allow an in-depth assessment and analysis of an existing contemporary situation. The study relied on primary and secondary data source, and adopted a procedure involving collecting data and information on the types of motorcycles, level of safety awareness, motor traffic regulations and helmet law awareness. The questionnaires consist of eight parts. Personal information, Training on riding, Safety measures, maintenance of motorcycle, accidents and hospitalisation history, on-road experience, countermeasure and Type of accident. Secondary data were

obtained from published and unpublished source including journals and internet among others. The survey covered a sample size of 256 respondents consisting of motorcyclists in the Wa Municipality.

Simple random sampling was used to pick the motorcyclists of who were mainly students of Wa Polytechnic and University for Development Studies, UDS, and a few residents in the Wa metropolis for the administration of the questionnaires.

Purposive sampling was also used to interview Deputy regional Commander of the Motor Traffic and Transport Unit, MTTU, of the Ghana Police Service, head of Drivers and Vehicle Licensing Authority, DVLA, Wa, and some Senior Nurses in-charge of Male and Female Surgical Wards, Emergency Ward and the Casualty Ward of the Regional Hospital in the Wa municipality.

### 2.1 Data Analysis

The data obtained were inputted and coded using Statistical Package for the Social Scientist (SPSS) version 20 for windows, employing both descriptive (such as frequencies, means, percentages and proportions) and inferential statistical tools. The results are presented in tables, bar charts and pie chart with Microsoft Excel 2010.

### 2.2 Analysis of Findings

This section clarified demographic features of the respondents such as gender, age, educational level and the type of motorcycle one owned as shown in Table 2, 3, 4 & 5.

Table 2: Gender and Age Distribution of Respondents

Gender	Age Distribution					Total
	10-19	20-29	30-39	40-49	above 50	
Male	6	97	27	7	1	138
Female	3	81	30	1	3	118
<b>Total</b>	<b>9</b>	<b>178</b>	<b>57</b>	<b>8</b>	<b>4</b>	<b>256</b>

Table 3: Gender and level of Education of Respondents

Gender	Level of Education				Total
	Primary	JHS/Middle School	SHS/Secondary School	Tertiary level	
Male	2	10	8	118	138
Female	0	3	11	104	118
Total	2	13	19	222	256

Table 4: Percentage of Gender.

Gender	Frequency	Percent	Cumulative Percent
Male	138	53.9	53.9
Female	118	46.1	100.0
Total	256	100.0	

Table 5: Type of Motorcycle used

Gender	Type of Motorcycle			Total
	Manual	Automatics	Both	
Male	65	27	46	138
Female	57	41	19	117
Total	122	68	65	255

Formal Training in Motorcycle Riding

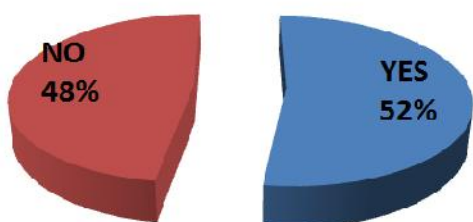


Fig.9. Formal training in motor riding

In describing training period for riding, 43.8% (112) took less than a week, 34.4%(88) took one month and 10.2% (26) said they took three months to learn how to ride motorcycles.

Those who did not respond to that part of the question constituted 11.7% (30) of the respondents. This was because they could not remember the time they used for the learning of how to ride motorcycle.

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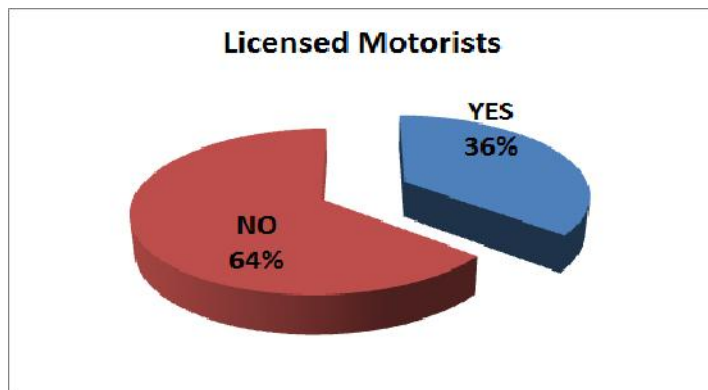


Fig.10. Licensed motorist

Table 6: Years of riding Motorcycle in the Municipality

Period	Frequency	Percent	Valid Percent	Cumulative Percent
less than six months	22	8.6	8.6	8.6
6-12months	41	16.0	16.0	24.6
1-5years	103	40.2	40.2	64.8
6-10years	67	26.2	26.2	91.0
11-15years	11	4.3	4.3	95.3
16-20years	7	2.7	2.7	98.0
above 20years	5	2.0	2.0	100.0
Total	256	100.0	100.0	

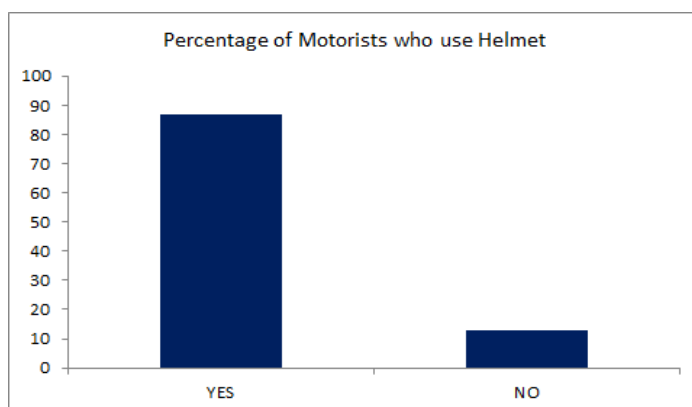


Fig.11. Motorists who use Crash Helmet

For the use of crash helmets for riding, 62.1% (159) said they always did, 20.7% (53) said often, 9.4% (24) said rarely and 6.3% (16) said never put on when riding motorcycles. The respondents were asked why they always were crash helmet, 84% (215) of them claimed they wear crash helmet purposely

to protect them against accident while 11.3% (29) said they were crash helmet to avoid arrest by Police officers of MTTU.

Table 7: Various reasons for wearing Crash helmet for riding.

Reason for wearing Crash helmet for riding	Frequency	Percent	Cumulative Percent
To avoid arrest	29	11.3	11.6
For protection against accident	215	84.0	98.0
Decoration	2	.8	98.8
For comfort	3	1.2	100.0
Total	249	97.3	
Missing System	7	2.7	
Total	256	100.0	

### 3 DISCUSSION OF RESULTS

The increased in annual registration of motorcycles by DVLA at the Wa municipality shows the preference of it by the vast majority of residents for their means of transport in the Upper West Region of Ghana.

The gender distribution of the respondents clearly indicated that males continue to dominate in the use of motorcycles as a means of transport in Wa. Males form about 53.9% (138) and the females 46.1% (118) with about 69.5% (178) and 22.3% (57) of them between the ages 20-29 and 30-39 years. The study got to realise that about 86.7% (222) of the respondents are in either Wa Polytechnic or University for Development Studies, UDS. This suggest that most of the motorists are students who consider the use of motorcycle to be very cheap, easy to learn, lesser to maintain and very attractive for work, school and leisure [8]. If being youth can be ascribed to all those below the ages of 40 years, then most of the respondents can be said to be in their youthful ages. This is normally the time that most people have the energy, zeal, time and strength to pursue higher education and is therefore referred to as the most productive age group.

To know how they acquired the motorcycle, it was realised that 72.7% (186) of the respondents bought it themselves and 84.0% (193) of them have been riding for more than a year.

It was realised that 43.8% (112) of the respondents used less than a week to learn how to ride motorcycle. To know from respondents if they have had accidents before, 44.9% (114)

claimed they have had an accident with 26% (68) of them having multiple injuries during the accident. For accidents causation, 73.9% (189) of the respondents claimed motorists themselves are the causes of most of the accidents in the Wa municipality and they ascribed this to the inexperience of motorists, reckless riding and poor road.

The study also shows that most of the respondents comply always with traffic regulations, ensure monthly maintenance with their own permanent motor mechanic and also admitted they cannot do basic repair work on their motorcycles. They claimed to be aware of the Universal Crash Helmet Law, laws governing registration of motorcycle, riding of motorcycle by minors, riding under the influence of alcohol or drug, risk and consequence of overloading, over-speeding and also the essence of taking personal accident insurance policy.

#### 3.1 Causes and Effects of Motorcycle Accidents

It was realised from the study that most of the motorists are within the ages of 21-40 years, which is the most productive age group in Ghana. Hence, its adverse effect on the economy of Ghana. It has been established in the study that most motor accident victims sustained multiple injuries. This can be explained by the fact established in the study that, most motorists use less than a week to learn how to ride, do not acquire riding license and employ in formal way of training to ride and as result of this, they are not conversant with a lot of traffic regulations, use of helmet and spectacles. This exposes them to a lot of road hazards [6],[7],[9].

At an individual level, the personal costs of motorcycle accidents can be highly emotional and financial as well as the pain and mental distress. It can also cause a major life change.

Other researched papers have also estimated the costs of motorcycle accidents, which are basically the medical cost, productivity losses, loss of life and properties. Motorcycle crashes create a burden to society, consuming public funds for emergency response, emergency treatment costs, and insurance premiums. [1], [22],[23],[24],[25],[26],[28],[29],[30].

### 4 CONCLUSION

The respondents were in their youthful ages with most of them being students of Wa Polytechnic and University for University. It was realised that about 78.2% (200) took less

than a month to learn how to ride motorcycle and as a result of that they do not go for riding test to acquire riding license from DVLA. They do not also learn most of the road regulations, road signs and some of the basic, easy and regular maintenance works.

The study also shows that most of the respondents comply with traffic regulations, ensure monthly maintenance and claimed to be aware of the Universal Crash Helmet Law, laws governing registration of motorcycle, riding of motorcycle by minors, riding under the influence of alcohol or drug, risk and consequence of overloading, over-speeding and also the essence of taking personal accident insurance policy. It is good that 84% (215) of the respondents claimed they wear crash helmet purposely to protect them against accident with about 11.3% (29) said they were crash helmet to avoid arrest by Police officers of the MTTU.

It was also realised that the number of road traffic accidents increases with corresponding population growth and increase in number of registered motorcycles by DVLA. Therefore, countermeasures, law enforcement by Ghana Police Service, and education on safe riding attitude by DVLA and Road and Safety Commission should be improved significantly to reduce the rate of morbidity and mortality.

## **5 RECOMMENDATIONS**

In order to ensure drastic reduction in road traffic accidents, this study would recommend that the institutions in charge of road safety should be well equipped to enforce road safety regulations and improve education on safe riding attitude and finally and not least, prosecute the traffic offender heavily to deter other motorists from committing the same offence.

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