THE IMPACT OF MOTORCYCLE ACCIDENTS IN TANZANIA:
A CASE STUDY OF MOROGORO MUNICIPALITY
THE IMPACT OF MOTORCYCLE ACCIDENTS IN TANZANIA: A CASE STUDY OF MOROGORO MUNICIPALITY

By

Erasmi G. Mnzava

A Dissertation submitted to the department of Health System Management in Partial fulfillment of the Requirements for the Award of Master of Health Systems Management (MHSM) of Mzumbe University

2013
CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by the Mzumbe University, a dissertation entitled The Impact of Motorcycle Accidents in Tanzania: A case study of Morogoro municipality, in partial fulfillment of the requirements for award of the degree of Master of Health Systems Management (MHSM) of Mzumbe University.

Signature

-------------------------------------
Major Supervisor
Signature

-------------------------------------
Internal Examiner

-----------------------------
External Examiner

Accepted for the Board of School of Public Administration and Management

-----------------------------
Signature

-------------------------------------
DEAN/SCHOOL BOARD
DECLARATION
AND
COPYRIGHT

I, Erasmi, G Mnzava, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature -------------------------------

Date -------------------------------

©

This dissertation is a copyright material protected under the Berne Convention, the Copyright Act 1999 and other international and national enactments, in that behalf, on intellectual property. It may not be reproduced by any means in full or part, except for short extracts in fair dealings, for research or private study, critical scholarly review or discourse with an acknowledgement, without the written permission of Mzumbe University, on behalf of the author.
ACKNOWLEDGEMENTS

Though writing this dissertation has been a personal demanding journey, however, it could not be materialized without some assistance from various people. Therefore, I extend my sincere gratitude to all who, with their help in whatever form made my study possible.

Special thanks to my supervisor Mr. Amani Paul, J for his untiring help and indispensable suggestions for the betterment of this dissertation, without forgetting the research lecturer Mr. Riwa, Colman, R

My appreciation goes to my employer Tanzania Peoples Defenses Force (TPDF) under General Office in Command (GOC), Mazao KJ and General Manager of Mzinga Corporation, Major General Dr. C. Mzanila for his motivation towards my decision to pursue further studies and the support for my training.

I am also indebted to the medical team and traffic police officers who managed to create a conducive environment for customers to work on my questionnaires at Morogoro Referral Hospital, Saba Saba and Mzinga Health Centres. I eventually thank all respondents for their support
DEDICATION

To my wife Rehema Mnzava, my children: Hamadi, Rama and Asma Mnzava, my friends; Corporal Ombeni Mushi and Kinabos’ family. Obviously without them, this academic venture would have never come into a good end.

To my dear parents and relatives: Thank you for holding me when it seemed like I would fall.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GOC</td>
<td>General Officer in Command</td>
</tr>
<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MHSM</td>
<td>Master of Health Systems Management</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>TPDF</td>
<td>Tanzania Peoples Defense Forces</td>
</tr>
<tr>
<td>TRA</td>
<td>Tanzania Revenue Authority</td>
</tr>
<tr>
<td>URT</td>
<td>United Republic of Tanzania</td>
</tr>
</tbody>
</table>
ABSTRACT

Motorcycle injuries constitute a major but neglected emerging public health problem in developing countries (Tanzania being among them) and contribute significantly to the overall road traffic injuries. However, motorcycle accidents which cause injuries and death have not received the adequate attention they deserve as the situation is worsening. The general objective of the study was to examine the impact of motorcycle traffic accidents in Morogoro municipality. Case study research design was used in the methodology. A sample size of 70 respondents was involved. Data collected were descriptively analysed using Statistical Package for Social Sciences (SPSS).

The respondents argued that, motorcycle accidents mainly due to driving a motorcycle without formal training (70%), use of substandard motorcycles especially those imported from China (77%) and motorcycle defects such as break failure and tyre bursts reported by (79%) of the respondents were among the factors. However, motorcycle accidents deprived people of their social status (70%) and caused marriage separations to those who were seriously affected by the accidents and motorcycle accidents necessitated the presence of permanent dependence to relatives of the victims as reported by (75%) of the respondents. Moreover, organizing road safety week campaigns and prosecuting in courts or penalizing without prosecution those who contravene road traffic rules and other related legislations as reported by (80%) of respondents, constructing bumps along crossing areas such as schools, market e.t.c (85%) and enhancing road safety committees with traffic safety activities in coordinating and organizing different activities relating to control and prevention of road traffic accidents as affirmed by (85%) of the respondents would prohibit the incidences of accidents.

The study concludes by arguing for the need to enforce laws to those who violate the rules by being fined or withholding their licenses to alleviate motorcycle accidents in Morogoro municipality. However, the researcher argues for the enhancement of drivers’ skills on the road through continous training while honoring other users of the road by adhering to laws and changing the drivers’ behaviours.
TABLE OF CONTENTS

CERTIFICATION........................................................................................................ ii
DECLARATION........................................................................................................... iii
COPYRIGHT ............................................................................................................... iii
ACKNOWLEDGEMENTS ........................................................................................ iv
DEDICATION ........................................................................................................... v
ABBREVIATIONS AND ACRONYMS ..................................................................... vi
ABSTRACT ............................................................................................................... vii
LIST OF TABLES .................................................................................................... x
LIST OF FIGURES ................................................................................................. xi
LIST OF APPENDICES .......................................................................................... xii

CHAPTER ONE ......................................................................................................... 13
INTRODUCTION AND BACKGROUND INFORMATION ...................................... 13
1.0 Introduction...................................................................................................... 13
1.1 Background of the Problem .......................................................................... 13
1.2 Statement of the Problem ............................................................................ 16
1.3 Research Objectives ..................................................................................... 17
  1.3.1 General objective .................................................................................. 17
  1.3.2 Specific Objectives .............................................................................. 17
1.4 Research Questions ....................................................................................... 17
1.5 Significance of the study .............................................................................. 17
1.6 Justification of the study ............................................................................. 18
1.7 Scope of the study ....................................................................................... 18
1.8 Structure of the study .................................................................................. 18

CHAPTER TWO ........................................................................................................ 20
LITERATURE REVIEW ............................................................................................. 20
2.0 Introduction...................................................................................................... 20
2.1 Theoretical Literature Review .................................................................... 20
  2.1.1 General overview .............................................................................. 20
  2.1.2 Definitions of Terms .......................................................................... 22
  2.1.3 Theoretical Reviews ......................................................................... 23
  2.1.4 Causes of Motorcycle Accidents ......................................................... 26
  2.1.5 Key Challenges of Motorcycle Accidents .......................................... 27
2.2 Empirical Literature Review ....................................................................... 27
2.3 Conceptual Framework ................................................................................ 29

CHAPTER THREE ................................................................................................... 31
RESEARCH METHODOLOGY ................................................................................. 31
3.0 Introduction..................................................................................................... 31
3.1 Research Design ........................................................................................... 31
3.2 Study Area ..................................................................................................... 31
3.3 Population and Sample Size ...................................................................... 32
3.4 Sampling Procedures .................................................................................. 33
  3.4.1 Purposive sampling .......................................................................... 33
  3.4.2 Stratification sampling ....................................................................... 33

viii
3.5 Data collection methods

3.5.1 Primary data collection methods

3.5.2 Secondary data collection methods

3.6 Data Analysis

3.7 Ethical Consideration

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESEARCH FINDINGS

4.0 Introduction

4.1 Response rate

4.2 Respondents’ background information

4.3 Factors that contribute to motorcycle accidents in Morogoro municipality

4.4 Motorcycle accidents’ implications among the inhabitants of Morogoro municipality

4.5 Road safety measures taken by stakeholders to combat motorcycle accident challenges in Morogoro municipality

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

5.1 Summary

5.2 Conclusion

5.3 Recommendation and policy implication

5.3.1 Recommendations

5.3.2 Policy Implications

5.4 Need for Further Research

BIBLIOGRAPHY

APPENDICES
LIST OF TABLES

Table 3.1: Sample size of the study population.................................................................33
Table 4.1: Respondents’ background information .........................................................37
Table 4.2: Factors contributing to motorcycle accidents .................................................40
Table 4.3: Motorcycle accidents’ implications in Morogoro municipality .................43
Table 4.4: Safety measures taken to combat accident challenges.............................45
LIST OF FIGURES

Figure 2.1: Conceptual framework.............................................................................30
LIST OF APPENDICES

Appendix 1: Questionnaires ............................................................... 55
Appendix 2: Interview guide/Check list Questionnaires .......................... 58
CHAPTER ONE
INTRODUCTION AND BACKGROUND INFORMATION

1.0 Introduction
This chapter stated briefly the impact of motorcycle accidents as alarming incidences. It describes the background of the problem; states the problem, research objectives and questions, the significance, justification, scope and structure of the study.

1.1 Background of the Problem
Motorcycle injuries constitute a major but neglected emerging public health problem in developing countries and contribute significantly to the overall road traffic injuries (Peden et al, 2002). Motorcycle injuries are among the leading causes of disability and deaths and the main victims are the motorcyclists, passengers and pedestrians in their young reproductive age group (Peden, 2004; Solagrebu et al., 2006). The problem is increasing at a fast rate in developing countries due to rapid motorization and other factors (Galukande et al, 2009). It is estimated that 3,000 people die and 30,000 are seriously injured on the world’s roads every day with the majority of the casualties coming from what the World Bank classifies as low and middle-income countries Tanzania being among them (Afukaar, 2000).

Whilst there is a general decline in the number of fatalities in industrialized countries the opposite is true elsewhere (Peden, 2004). Motorcycle users are vulnerable on the road and represent an important group to target for reducing road traffic injuries (Solagrebu et al, 2006). Even in developed countries with low morbidity and mortality rates from motorcycle injuries, the risk of dying from a motorcycle crash is 20 times higher than from a motor vehicle crash (Peden, 2004; Solagrebu et al, 2006). The reasons are that motorcyclists tend to over-speed and over load their motorcycles for quick returns. It is because of that recklessness, indiscipline and lack of respect for other road users by the motorcyclists who are mainly youths, are the major cause of road related injuries. The majority of the motorcyclists don’t wear any protective gears, hence aggravating the risks of getting severe head injuries (Naddumba, 2004).
Motorcycles are becoming an increasingly popular means of transportation. They are appealing to a broader range of riders than ever before, including older adults and more affluent individuals. Their popularity is attributed, in part, to the low cost of maintaining one and they are typically much more fuel efficient than cars and trucks (Banyikwa, 2005). The motorcycle, commonly called “bodaboda” in Uganda and Kenya (Naddumba, 2004, Galukande et al., 2009) and “okada” in Nigeria (Oluwadiya et al., 2004; Solagrebu et al., 2006), has recently become increasingly popular in Tanzania as a means of commercial transport but their operation is characterized by non-helmet use by riders and their passengers, passenger overload, lack of certified driver training and valid licensing, over speed and reckless driving, poor regulation and law enforcement and possible use of alcohol and drugs (Museru and Leshabari, 2002). The popularity of this mode of transport in Tanzania can be due to the following reasons; they are a quick means of transport especially for short distances in cities and towns, they are efficient in mitigating traffic jam delays in the cities and they are available throughout the day and night hours (Chalya et al., 2010). The negative side of motorcycle as a means of transport is the risk of injury as reported in other studies (Naddumba, 2004; Galukande et al., 2009) and they constitute a major public problem in major cities in developing countries like Tanzania (Museru and Leshabari, 2002).

Haonga (2010) stated that 52% of all the patients who came to Muhimbili national hospital were road accident victims who were either injured or got dead due to motorcycle accidents; most of them being young men. This state of affair has caused incapacitations to many patients who stay in the hospital for long periods of time to undergo surgery and receive medication resulting into cost burdens to their families as well as national health resources. The young male preponderance agrees with findings reported elsewhere (Naddumba, 2004; Okeniyi et al., 2005; Solagrebu et al., 2006; Galukande et al., 2009). High occurrences of motorcycles accidents among this group have been attributed to a wide range of activities engaged in by this class of people. They are more likely to have reasons to move from one place to another. They represent the active group that partake in high risk-taking activities such as recklessness riding, over-speeding and overloading their motorcycles, riding under
the influence of alcohol and riding without wearing any protective gears. Males are more often exposed to traffic as drivers; they travel longer distances to work and are more often involved in use of automobile as leisure activities (Akinpelu et al., 2007). Motorcycle riding in this area is almost exclusively men, most of whom do it for commercial purposes.

Since cost of life is reflected in per capita income of the country and it’s Gross Domestic Product (GDP), the proportion of costs due to loss of life is evident. Because of a scarcity of good rehabilitation care facilities and lack of assistance for the disabled, road crash victims suffering permanent disability would suffer greater due to lack of poor economical activities and poor access to employment opportunities (Banyikwa, 2005). Owing to lack of welfare functions provided by the state and health care facilities, families of injury victims have to spend much more time looking after injury victims. This causes greater time and economic losses overall (Henry, 2000). The rapidly increasing number of motorcycle accidents has a negative impact on the economy and society of Tanzania. Road traffic accidents cost the government about Tsh. 230 billion per year. This huge financial liability is four times the government’s health budget (URT, 2005).

The people who are affected by motorcycle accidents are mostly in their most productive years (15-44 years). These deaths are a huge drain on the country’s human resources. Also, when a head of household dies or is seriously injured in a road traffic accident, the whole family is plunged into poverty and psychological torture. Motorcycle accidents are, therefore, a big problem to the government and the society of Tanzania. Yet, road traffic accidents are made. While defective vehicles and bad roads account 26% of all road traffic accidents, the human factor (dangerous driving and excessive speeding) accounts for 74% of all the road traffic accidents (URT, 2005). Dangerous driving and excessive speeding are sustained by the transformation of the built environment from a habitat for cars and other vehicles. The traffic conflicts of the motorized and the non-motorized in the urban built environment are, probably, the single most important explanation of road traffic accidents in the country (Banyikwa, 2005).
Accidents are observed to hinder individual development and reduce national economic intensification against expectations of Millennium Development Goals (MDGs). The presence of users of motorcycles and the associated accidents influx offer a unique challenge in view of inadequate manpower which is frequently lost. This obviates the need for this presentation and further actions in order to reduce the magnitude of accidents (Chalya et al., 2010). Therefore, this study examined the impact of motorcycle accidents in Morogoro municipality in order to come out with adequate measures to rectify the situation.

1.2 Statement of the Problem

Road transport is the dominant mode of transport in Tanzania. It accounts for more than 80% of passenger traffic and over 70% of freight traffic in the country (URT, 2002). Increased economic performance and investments in roads transport infrastructures have resulted into increased levels of motorization in the country in general, and in the urban centers, in particular. But, increased motorization has also been accompanied by an unprecedented increase in road traffic accidents (URT, 2005). It was through adjusting the environment in order to ease existing hardships in transportation, that has guided producers to manufacture motorbike as the best model in moving people using two wheels and especially for off roads where cars cannot go. It is obvious that those who buy motorcycles, majority had never seen tragic accident. They drive without prior notion in their mind of accidents, hence risking their lives through driving while unprotected or under the influence of excessive alcohol. Therefore such practice is solving the problem via creating other problems (Chalya et al., 2010).

Road traffic accidents are a major worldwide problem. In developing countries the trend has reached an alarming state, but very little attention is paid to the problem (Odero et al., 1997). In recent years, there has been a significant increase in the number of motorcycle accidents in Morogoro municipality in parallel with increasing use of motorcycles as a commercial means of transport (Tanzania Revenue Authority, 2008/2009 unpublished). Injuries related to motorcycle contribute significantly to the number of road traffic injuries seen at Morogoro referral hospital,
taking out a significant number of lives and resources including consumables and the health worker time. Despite the burden of the problem and all ongoing implemented road safety initiatives in Morogoro municipality, motorcycle accidents which cause injuries and death have not received the adequate attention they deserve as the situation is worsening. Since the majority of motorcycle injuries are preventable; contributing factors, implications to inhabitants and safety measures can be addressed for the establishment of preventive strategies for the purpose of eliminating the problem. Therefore, there was a need to research on these issues and come out with solutions for the betterment of the users of motorcycles.

1.3 Research Objectives
The objectives of this study were divided into two main categories, that is; general objective and specific objectives as itemized here below.

1.3.1 General objective
The general objective of the study was to examine the impact of motorcycle traffic accidents in Morogoro municipality

1.3.2 Specific Objectives
i) To examine the factors contributing to motorcycle accidents in the municipality
ii) To explore the motorcycle accidents’ implications among the inhabitants of Morogoro municipality
iii) To examine different road safety measures taken by stakeholders to combat the challenges in the municipality

1.4 Research Questions
i) What are the factors contributing to motorcycle accidents in the municipality?
ii) What are the motorcycle accidents’ implications among the inhabitants of Morogoro municipality?
iii) What are different road safety measures taken by stakeholders to combat the challenges in the municipality?

1.5 Significance of the study
a) This study examined the impact of motorcycle accidents in Morogoro municipality and alerted all stakeholders to take urgent steps to solve the challenges.

b) This study created awareness among stakeholders regarding the causes, implications and safety measures to be taken for the purpose of conducting further studies as to overcome the challenges associated with them.

c) The data obtained in this study could be used by the road safety authorities for planning and evaluating road safety measures as well as being utilised by the health authorities in Morogoro municipality.

d) This study was important for the researcher for the fulfillment of Masters of Health Systems Management (MHSM) as the requirement of Mzumbe University.

1.6 Justification of the study
The study introduced and evaluated the facts regarding the impact of motorcycle accidents and developed possible solutions which gave directions towards the development of effective measures for better service provision by the motorcyclists to their passengers.

1.7 Scope of the study
The study focused the motorcyclists, passengers/victims, traffic officers, driving schools, health officers and Tanzania Revenue Authority (TRA) officers of Morogoro municipality (who collaborated with traffic police to provide driving licenses to motorcyclists). The study examined the impact of motorcycle traffic accidents in the municipality.

1.8 Structure of the study
The research consisted of five chapters. The first chapter was the Introduction and background information. The second chapter presented the Literature Review, the third chapter highlighted the Research Methodology used, the fourth chapter focused the Presentation and Discussed the Research findings and the fifth chapter presented
the Summary, Conclusion and Recommendations. It ends with the list of bibliography and appendices attached with this report.
CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction
This chapter reviewed literatures of other studies in order to provide a theoretical framework which guided the development of the study on which analysis of data for the study was based. It is based on theoretical literatures, empirical review and the conceptual framework.

2.1 Theoretical Literature Review
This provided an account of what has been published on a topic by accredited scholars and researchers with the purpose of conveying knowledge and ideas established and what their strengths and weaknesses are.

2.1.1 General overview
Road traffic injuries form a significant amount of injury related mortality and morbidity around the world with an estimated 1.2 million people killed and about 20–50 million injured on the roads annually (Peden et al., 2004). Low- and middle-income countries account for the majority of these injuries. Nearly 85% of the global burden of road traffic injuries is accounted for by these countries (Peden et al., 2004). The road traffic injury mortality rate is highest in Africa (28.3 per 100,000 population when corrected for underreporting, compared with 11.0 in Europe) (Peden et al., 2004). The rate of road traffic deaths in Sub-Saharan Africa is 40% higher than that in all other low- and middle-income countries (28.3 compared to 20.2 per 100,000) and 50% higher than the world level (28.3 compared to 19.0 deaths per 100,000 population), making traffic injuries the 10th leading cause of death in the region (WHO, 2010). In East Africa, Tanzania and Kenya accounts for more road traffic deaths with 34.3 and 34.4 deaths per 100,000 population respectively. Burundi, Uganda and Rwanda accounts for 23.4, 24.7 and 31.6 deaths per 100,000 population respectively (Peltzer, 2011). A ten year epidemiological appraisal survey done in Tanzania (Museru et al., 2002), between 1990 and 2000 road accidents rose by 44% for a cumulative total of 10,107. However due to the rapid importation of motorcycles, the contribution of motorcycles to road accidents
cannot be ignored; in the first 3 months of the year 2010, 181 people died in motorcycle accidents leaving 1200 injured (Nkwame, 2000).

Motorcycles have increasingly become a popular means of transport in low and middle-income countries (WHO, 2006). This is partly because motorcycles are relatively cheaper than other motor vehicles in terms of initial purchase and maintenance costs (Solagberu et al., 2006). The motorcycles can easily evade traffic jams, making them an attractive means of transport in these countries. In Morogoro, the business of commercial motorcycle taxis is increasing. At different locations in Morogoro seeing the commercial motorcyclists parking waiting for the passengers forms a common phenomenon. A study by Solagberu et al., (2006), in Nigeria showed that the business of motorcycle taxis was becoming an increasingly popular means of employment and one can earn enough amount of money for daily living out of this business. Tanzania has witnessed a mushrooming of imported motorcycles between year 2007 and 2009 from 6700 to 85000 respectively (Nkwame, 2000).

Despite the advantages that motorcycles have, motorcyclists form a large proportion of those injured or killed on the roads. This is because they often share the traffic space with fast-moving, heavier and bigger cars, buses and trucks, and also because they are less visible. In addition, their lack of physical protection makes their passengers vulnerable to being injured if they are involved in a collision (WHO, 2006). This is compounded by the fact that motorcycles have much higher risks of being involved in crashes involving fatalities than other vehicles (Deutermann, 2004). Lack of safe driving concepts is another factor that increases the vulnerability of the motorcyclists in road traffic accidents. In a study done in Taiwan (Chang and Yeh, 2006) it has been observed that almost all motorcycle riders (engine capacity lower than 250cc) were self-taught with a lack of appropriate driving education or training and many accumulated their experiences via trial-and-error process. This is a typical situation that happens in Tanzania.
2.1.2 Definitions of Terms

a) Motorcycle
A motorcycle (also called a motorbike, bike, motor or cycle) is a two or three wheeled motor vehicle. Motorcycles considerably vary with their intended task; e.g., long distance travel, navigating congested urban traffic, cruising, sport and racing, or off-road conditions. Motorcycles are one of the most affordable forms of motorized transport and, for most of the world's population; they are the most common type of motor vehicle (Odelowo, 1994).

b) Motorcyclist
This is a person who rides a motorcycle (Odelowo, 1994).

c) Traffic officer
A traffic officer is a person whose job is to make sure that cars and motors are properly driven safely for the purpose of safeguarding all users of roads (Komba, 2006).

d) Motorcycle accident
This is an accident caused by a motorcycle with other causative agent related to that accident. Motorcycle accidents are caused by a number of different factors. As a result, motorcycles are more vulnerable to careless drivers and common driving hazards. Motorcycle accidents are often caused by drivers in passenger cars who fail to check their side-view mirrors before changing lanes. Motorcyclists themselves may cause crashes by exceeding the speed limit, weaving dangerously between lanes of traffic, driving while intoxicated, or driving in severe weather (Paden, 2004).

e) Health officer
The name of an officer invested with power to enforce the health laws. The powers and duties of health officers are regulated by local laws (Galukande et al., 2009).
f) **Health care provider**

A health care provider is an individual or an institution that provides preventive, curative, promotional or rehabilitative health care services in a systematic way to individuals, families or communities. An individual health care provider (also known as a health worker) may be a health care professional within medicine, nursing, or allied health professions. Health care providers may also be a public/community health professional. Institutions (also known as health facilities) include hospitals, clinics, primary care centres, and other service delivery points (Galukande et al., 2009).

### 2.1.3 Theoretical Reviews

Muhlrad *et al* (2005) gave the explanations of the systems theory which is based on man-environment adjustments and maladjustments. The components of the theory are the environment, the means of transport (vehicles) and the behavior of man. The environment component comprises of the natural and the built environments and transport networks (Krug *et al*, 2000). The means of transport component comprises of the volume and quality of vehicles on the modes of transport. The behavior of man component comprises of demographic characteristic of road users (age, sex, education, socio-economic status, stage in life cycle), people’s perceptions of risk and people’s general behavior on the streets (Hauer, 1995). Integrated in the systems theory is a system of highway codes and enforcement mechanisms designed to ensure that road users adhere to the controls and regulations of traffic flow for maintaining road traffic safety. Moreover, Muhlrad *et al*, (2005) stated that the behaviour of the population includes its characteristics such as age and sex ratio as well as attitudes and general traffic behavior. And it goes further into driving behavior, driving experience, driving style, risk compensation and risk driving (influence of alcohol and drugs). Available literature identifies traffic accidents in a place which has been caused either by physical factors in the road system (environment), the vehicle or behavior factors, and how they interact with enforcement regulations in unique settings (Banyikwa, 2005).
Studies done on drivers after being involved in motor accidents reported that although alcohol is the most prevalent source of driver’s impairment, other drugs or substance abuse can also contribute to the problem (Violent et al., 1996). Driving under the influence of alcohol or other drug abuse is known to impair the driver’s ability to judge and control the vehicle (Orsay et al., 1994). Excessive speed is also mentioned as the major contributing factor on road crashes and subsequent injury rates of person injured (Shibata et al., 1994). Similarly property doge appears to be linked to the vehicle’s speed at impact. The driver’s age is also known to be an important factor contributing to occurrence of accidents. Available literatures show that adolescents or young drivers are frequently involved in traffic accidents than other age groups (Banyikwa, 2005). Violent et al., (1996) have also shown through their various studies that young drivers are more frequent involved in accidents caused by inappropriate speed and loss of control of the vehicle compared to other age group of drivers.

Leon et al (1996) observed that reckless driving in adolescents has been associated with increased risk of crashes. The problem with young drivers is that they like risk taking behaviour; also they lack driving skills (Zhang et al, 1998). The problem of young drivers is also mentioned as an important variable contributing to high fatalities or injuries.

Under the vehicle factors including its design, lighting system, break system and its use are significant contributors to road traffic accident (Odero, 1995). According to Jørgensen and Abane (1999) a mixture of different type of vehicle including motorcycles and bicycles operating at different speeds is more widespread in urban areas. This influences the system risk due to the risk of crashes or collisions between various types of vehicles (light, heavy or overloaded) with various speed levels and non-motorized road users. Defects in design or manufacture of vehicle can threaten occupants’ safety. Improvement of the interior of the vehicle tends to increase the safety of the occupants. The environmental factors including design of road, its geographic location, season, weather, visibility, time of day and traffic regulations contribute to road accidents (Bjornskau et al, 2000). Well-designed roads with
separate lines for pedestrians and cyclists are much safer than those without such facilities. Sometimes barriers to discourage pedestrians to motor roads reduce the rate of injuries. Modern roads are safe because they are well designed with all important signs. The road signs should be clear by themselves and should convey an unmistakable message to the driver.

Activities along the road side such as petty trading, increases exposure risk to traffic accidents according to Shibata et al (1994) at the same time improved road quality may lead to behavioural adjustments in terms of more risk prone driving. Regulations by traffic signaling systems, speed limits and speed controls as well as the existence of police patrols and checkpoints can lead to some reduction of accidents by influencing the road user’s behavior. Jørgensen and Abane (1999) also argued in their study in Ghana that traffic regulation schemes are not systematically implemented and the police service is generally less well trained, equipped and motivated to enforce moving violations as are evident in cities in developed countries. Tripop (1994) found that riders with helmet had an 85% reduction in their risk of head injury compared with those without a helmet. The effectiveness of the helmets in pedal cyclists and motor cyclists is paramount. Mandatory use of helmets in Sweden showed the same good effects (Kent 1991). The effectiveness of helmet use is dependent up on the speed of the motorcyclist. It is more protective at low speed of 50km per hour but less effective at higher speeds. Promotion of road safety through the use of targeted media campaigns at community level can effectively reduce motor traffic accidents (Chalya et al., 2010).

Alcohol usage causes carelessness and loss of concentration as well as over speeding and neglecting to use safety equipment such as helmet (Nzegwu et al., 2008). Chalya et al (2010) in their study in Mwanza stated that motorcyclists constituted the majority of motorcycle injury victims which resulted into physical and mental disabilities to the injured. In most cities in developing countries pedestrians signs are either absent or not observed by pedestrians or drivers and this has been responsible for high rate of fatality among pedestrians (Komba, 2006). Along with this many
injured persons became permanent dependants, were deprived of social status and their working capacity deteriorated.

2.1.4 Causes of Motorcycle Accidents

A good control of the vehicles on the road depends very much on the behaviours (which is very complex) and skill on the driver (Muhlrad et al., 2005). Driving is a complex system in which a large number of variables are interacting with each other but also with varying degree of dependence. Accident may be due to judgement errors, ignorance, incompetence, rule violation, lapses or carelessness, all of which are human errors (Leeming, 1969). The human factor contributes to the majority of road traffic accidents. A study done by Odero (1995) in Kenya reported that human factors were responsible for 85% of all causes. Jorgensen and Abane (1999) note that concerning road traffic behavior, one can distinguish between driving skills (knowledge and training) and driving style which reflects attitudes and traffic risk perception. Training of drivers increases their driver’s skills.

A study done by Asongwa (1992) in Nigeria has revealed that a sizeable proportion of drivers who possesses driving licenses never showed up in any driving school or went through a driving test but simply bought their licenses. Untrained drivers, not unexpectedly, often result in high accident rates. In emergence conditions, stopping distance is also important. However, this depends very much on the driver’s reaction time, speed of the vehicles, quality of tyres, and the condition of the road (Lemming, 1969). Odero (2009) identified the following factors that increase the risk of motorcycle crashes and injuries such as; a) lack of certified driver training and valid licensing; b) speed and reckless driving – moving between lanes and vehicles; c) poor regulation and law enforcement; d) non helmet use by riders and their passengers; e) non use of conspicuity measures - wearing of reflectors, daytime headlights; f) overload – carrying 2 or more passengers and g) possible use of alcohol and drugs.
2.1.5 Key Challenges of Motorcycle Accidents

Odero (2009) provided the following challenges of motorcycle accidents such as; a) poor public transport systems – inadequate, unregulated and unsafe; b) under-developed road infrastructure; c) poverty and under-employment; d) weak and poor enforcement of laws governing the use of motorcycles as taxis - for public transport; e) wide use of motorcycle taxis is a new phenomenon; requires innovative safety measures and f) inadequate data on the use and safety of motorcycle taxis in Africa.

2.2 Empirical Literature Review

Komba (2006) in his research revealed the pattern and trends of motor traffic accidents in Kibaha district from 2001 to 2004. It showed that the accident occurrence was increasing every year, passengers and pedestrians were always at highest risk of being injured or killed on the road and young males were highly prone to motor traffic accidents. Males were more involved in road accidents than females; the risk of dying in an accident during the night was significantly higher than during the day, especially when it was raining.

On the other hand the collision between motorcycle and motor vehicle was the most common mechanism of injury followed by collision between motorcycle and pedestrians. Similar trend was also reported by Solagrebu et al. (2006) and Twagirayezu et al. (2008). According to Odero et al (1997) there is sufficient evidence in support of high incidence of day time causalities in developing countries. In their view this can be explained by greater traffic volume during the day resulting to greater risk of traffic accidents involvement as people travel to work, children go to school and commercial enterprises are open for business. They also found out in their study on Road traffic injuries in developing countries that more than 50% of the weekly traffic injuries occur on Friday, Saturday and Sunday, with a high peak on Saturdays. Odero et al (1997) also revealed that in Papua New Guinea for example, studies have shown that nearly 60% of the weekly traffic injuries are reported to occur during this period and it is likely that, a greater proportion is alcohol related.

These are important and interesting observations concerning traffic accidents risk in
developing countries. However, the studies could not examine the factors contributing to motorcycle accidents in the respective countries.

Chalya et al., (2010) stated that the most common complaints were loss of consciousness, headache and confusion. Skull X-ray performed in 67 cases showed fractures in eight cases only (six mild head injury and two moderate head injury), and was normal in all cases. Computed tomography (CT) scan of the brain performed in 36 cases revealed positive findings in 15 cases; most common findings were cerebral oedema (9 cases), linear fracture (8 cases), and extradural haematoma (5 cases). All patients with severe head injuries did not wear helmet at the time of injury. Motorcycle helmets have been reported in literature to reduce the risk of death and head injuries (Brandt et al., 2002; Keng, 2005). However, studies have shown that helmet use in developing countries is low (Oluwadiya et al., 2004). In the study, helmet use was recorded in 22.7% which is higher than that reported in Uganda (Galukande et al., 2009; Nzegwu et al. (2008) and in Benin City. Nigeria reported that all motorcyclists and their passengers did not use helmets. The same trend of non-usage of crash helmet was demonstrated in Lagos and in Kampala (Andrews et al., 1999).

Catherine et al. (2008) in Victoria reported high incidence of helmet use in 53% of patients. These differences in the rate of helmet use reflect differences in awareness of factors contributing to crush occurrence and injury severity related to motorcycle accidents between these countries and poor enforcement of traffic laws. The differences in helmet use may also imply different attitudes to helmet wearing between these countries. The reasons for non-compliance were not specifically studied but may include the cost of the helmet, ignorance, a cultural disposition toward lawlessness, fatalism, insufficient educational campaigns, and/or recreational drug use, which has been associated with non-compliance (Sauter et al., 2005). Other arguments that have been advanced in opposition to helmet use include impaired rider vision, attenuation of critical traffic sounds, rider fatigue and increased neck injuries in the event of a collision (Solagrebu et al., 2006). However, their studies
could not explore the motorcycle accidents’ implications to the inhabitants of their specific areas.

Komba (2006) identified qualitatively that the technical element of the highway construction, corruption, irresponsibility, poor management, driving while using cell phone, driving without training, failure to respect and obey traffic regulations, bad condition of vehicles, age of the vehicles and poor condition of service as the major risk factors associating to the cause of traffic accidents in Kibaha district. Banyikwa (2005) states that several studies regarding improvement of road safety in Tanzania were carried out in the past ten years, but the implementation of the recommendations is quit minimal. Those studies indicate that 16% to 20 % of all accidents in Tanzania are caused by faulty vehicles. The present influx of vehicles in the country, the laxity in the control of quality of vehicles coupled with poor maintenance has led many people to believe that the condition of the vehicle may determine whether an accident will occur given the presence of the contributing factors. Moreover, a research done by Komba (2006) indicate that, road traffic accidents in communities living along the highways in Tanzania including Kibaha district is very high, there is a gap of knowledge as to exactly what is the source and what should immediately be done, there is no specific agent (institutional wise) to be blamed, locals feel irresponsible, risk and impact accelerate poverty. The innocent passengers and pedestrians become victims. The study by Komba (2006) also described different types of motor related injuries and the survival status of the accident victims. Age, sex, over speeding, reckless driving, being a pedestrian, or a motor cyclist were identified as risk factors to motor accidents. However, the studies could not examine different road safety measures taken by stakeholders to combat the challenges.

2.3 Conceptual Framework

Figure 2.1 provides the conceptual framework. This is defined as an abstract idea or a theory used to develop new concepts or to reinterpret existing ones (Kothari, 2004). It gives the relationship between the independent and dependent variables. From the figure the dependent variable is the motorcycle accidents while the independent
variables include; human carelessness, high speed (driver’s errors), use of devices while driving (cellular phone), traffic officer’s irresponsibility and corruption, poor compliance to safety rules and driving without training.

**Figure 2.1: Conceptual framework**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Control variables</th>
<th>Dependent variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Human carelessness</td>
<td>- Occupation of respondents</td>
<td>Motorcycle accidents</td>
</tr>
<tr>
<td>- High speed (driver’s errors)</td>
<td>- Income of respondents</td>
<td>➢ Physical and mental disabilities</td>
</tr>
<tr>
<td>- Use of devices while driving (cellular phone)</td>
<td></td>
<td>➢ Reduction of working capacity</td>
</tr>
<tr>
<td>- Traffic officers’ irresponsibility and corruption</td>
<td></td>
<td>➢ Permanent dependence</td>
</tr>
<tr>
<td>- Poor compliance to safety rules</td>
<td></td>
<td>• Sex</td>
</tr>
<tr>
<td>- Driving without formal training</td>
<td></td>
<td>• Age</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Marital status</td>
</tr>
</tbody>
</table>

*Source: Researcher’s modeling, 2013*
CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction
This chapter provided a blueprint to be adopted in the study under the following parts namely; research design; study area; population and sample size; sampling procedures; data collection methods; and data analysis.

3.1 Research Design
Case study research design was used in this study as it is an empirical enquiry that investigates a contemporary phenomenon within its real life context especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2003). A case study research design is one of the several ways of doing social science research. Case studies are the preferred strategy regarding “when” “how” or “why” questions are being posed as argued by Schorr (1997) and when the investigator has little control over events and when the focus is on a contemporary phenomenon with the same real experiences/context (Silverman, 2000).

Yin (2003) argues that case studies allow a researcher to retain the holistic and meaningful characteristics of real life events. The most important with case studies according to Yin (2003) is to explain the causal links in real life intervention, describe the real life context in which an intervention has occurred and evaluate the intervention itself. The research design was allocated with exploratory and inductive approaches to seek for new insight by asking questions and assessing the phenomena in a new light.

3.2 Study Area
The study was conducted in Morogoro Municipality focusing the motorcycle accidents. This area was selected because there have been increasing motorcycle accidents which have resulted into loss of peoples’ lives while others being left with injuries. The study assisted on collecting data on peoples’ opinions regarding the
motorcycle accidents in order to unveil the impact of these accidents to the inhabitants of Morogoro municipality.

Morogoro Municipality is one of the 6 districts in Morogoro region. The municipal council lies between 07° 00' and 10° 00' south and between 37° 40' and 38° 22' east at the central part of the Eastern Arc of Mountain Uluguru. It covers an area of 531 square kilometers. It is bordered by Morogoro Rural district to the East, Mvomero district to the North West and South West. In the South it is bordered by Uluguru Mountains around Morogoro municipality. Morogoro municipality has approximate inhabitants of 322,280 people according to Municipal projections of 2011 with estimated growth rate of 4.6% per annum. Morogoro municipal council has one division called Morogoro Urban. This division is divided into 29 wards, which in turn are sub divided into sub wards commonly known as hamlets (mitaa). There are 274 hamlets.

The municipality has 55, 075 households with the average of 4.1 individuals each. The Municipal council has 3 Hospitals, 11 Health Centres and 42 Dispensaries (Municipal Report, 2010).

3.3 Population and Sample Size

The study population comprised of 1,500 participants in the municipality. For the statistical analysis, a sample size of 70 respondents (40 motorcyclists, 10 passengers/victims, 6 driving school owners/instructors, 5 traffic police, 5 health officers and 4 TRA officers) was selected from whom information required for the study was obtained.

Cooper and Schindler (2008) argue that, for any valid and reliable study to be carried, its sample size shouldn’t be less than 3% of its population. As it stands, the sample size is 4.6% of the population; hence fulfilling their argumentations. Table 3.1 shows the distribution of respondents.
Table 3.1: Sample size of the study population

<table>
<thead>
<tr>
<th>S/N</th>
<th>Category of respondents</th>
<th>Population</th>
<th>Sample size</th>
<th>Method employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motorcyclists</td>
<td>750</td>
<td>40</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td>2</td>
<td>Passengers/victims</td>
<td>690</td>
<td>10</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td>3</td>
<td>Driving school owners/instructors</td>
<td>12</td>
<td>6</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td>4</td>
<td>Traffic police</td>
<td>25</td>
<td>5</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td>5</td>
<td>Health officers</td>
<td>15</td>
<td>5</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td>6</td>
<td>TRA officers</td>
<td>8</td>
<td>4</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,500</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>

Source: Research data, 2013

3.4 Sampling Procedures
The study used two sampling procedures namely; purposive and stratification sampling.

3.4.1 Purposive sampling
This method was used as it is a non-random sampling procedure in which personal experience of the respondent (regarding occurrence and incidences of motorcycle accidents in the municipality) was considered to be key derived from the position one held or the roles s/he played in relation to a particular activity. Thus, respondents were selected purposively in order to attain the above objectives.

3.4.2 Stratification sampling
This method was used to focus gender (male and female) and age distributions as to obtain views regarding the topic. The reason according to Carmines and Zeller (1979) is that, stratification serves the distribution among heterogeneous population which needs to be incorporated for the purpose of gaining insights from it.

3.5 Data collection methods
Primary and secondary data collection methods were used to get informations from respondents and other sources.

3.5.1 Primary data collection methods
Primary data collection methods were used by the researcher to collect data from the field whereby interviews, questionnaires and observations were employed.
a) Interview
The researcher used interview to the passengers/victims, driving school owners/instructors, health officers and TRA officers in order to solicit information regarding the impact of motorcycle accidents in the municipality (Appendix 2). According to Yin (2003) the interview tool is very important source of getting informations and it is helpful in handling case study related matters as the research design indicates.

b) Questionnaires
Questionnaires which were self administered were used to obtain information from motorcyclists and traffic police officers. The information to be asked included; the factors contributing to motorcycle accidents, motorcycle accidents’ implications to the inhabitants in the municipality and different road safety measures taken by stakeholders to combat the challenges (Appendix 1). Copies of questionnaires were prepared based on the essentials of a good questionnaire, i.e. short and simple, and organized in a logical sequence moving from relatively easy to more difficult issues. Technical terms, vague expressions and those affecting sentiments of the respondents were avoided. These complemented and supplemented informations obtained under interview, observation and documentary review. The reason was to obtain consistency of responses to the questions asked in repeated measurements (Carmines and Zeller, 1979).

c) Observation
The researcher used observation method (practical observation) to get rich information and awareness about a phenomenon through direct personal observation. This observation complemented information which was not obtained from the interview and questionnaires. The eye witness in real situation assisted the researcher to justify what was revealed from the interview and questionnaires while observing the behaviours of respondents while performing their activities. The reason for using this method was the ability to obtain faithful answers from the respondents exactly when performing their jobs and making sure that what was observed was what was reported (Bryman, 2004).
3.5.2 Secondary data collection methods

The researcher used different documents in order to access accurate and reliable data. Documents comprised of personal profiles (for victims), guidelines and directives (circulars known to respondents regarding the impact of motorcycle accidents), policies and regulations (regarding road traffic accidents), books and journals (used as literatures) and performance reports (quarterly and annual reports) obtained from the hospital and police force.

3.6 Data Analysis

Data collected were analysed both qualitatively (using content analysis) and quantitatively (descriptive statistics analysis). These data were summarized, coded and analyzed by Statistical Package for Social Science (SPSS). Frequency distribution and percentages were used to describe major variables.

Qualitative data from interviews and observations were analyzed using content analysis (by analysing texts regarding authenticity or meaning from respondents’ responses on "Who says what, to whom, why, to what extent and with what effect?"). According to Holsti (1969) cited by Kumar (2007) content analysis is used into three basic categories:

i) make inferences about the antecedents of a communication
ii) describe and make inferences about characteristics of a communication
iii) make inferences about the effects of a communication.

However, this chapter discussed the tools and instruments which were used in getting the findings. The next chapter presents and discusses the research findings.

3.7 Ethical Consideration

Respondents were assured on the basis that the information they provide, were basically academic and that there were no hidden agenda which would implicate them in the coming days. This was obvious to them as the questionnaire didn’t demand their names. Participants were informed in advance on their freedom to provide information or not that means they had the mandate and discretionary powers to accept willingly or refuse
CHAPTER FOUR
PRESENTATION AND DISCUSSION OF RESEARCH FINDINGS

4.0 Introduction
This chapter presented and discussed the research findings. It highlighted the impact of motorcycle traffic accidents in Morogoro municipality. It is presented and discussed under five main sections; the first section provides the response rate; the second section provides the respondents’ background information; the third section examines the factors that contribute to motorcycle accidents; the fourth section focuses on exploring the motorcycle accidents’ implications among the inhabitants of Morogoro municipality; the last section presents different road safety measures taken by stakeholders to combat motorcycle accident challenges in Morogoro municipality.

4.1 Response rate
Primary data were obtained by using interviews, questionnaires and observation while secondary data being obtained from published and unpublished reports. In this research 45 questionnaires were spread among motorcyclists and traffic police while interview being conducted to passengers/victims, driving school owners/instructors, health and TRA officers in Morogoro municipality.

All questionnaires were successfully filled while the expected interviewees being reached something that allowed the researcher to code, summarize and analyse the data using SPSS computer software.

4.2 Respondents’ background information
The respondents’ background information included Sex, Age, Marital status, Occupation and Estimated income. Table 4.1 summarizes the results as follows;
Table 4.1: Respondents’ background information

<table>
<thead>
<tr>
<th>Information</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47</td>
<td>67.1</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>32.9</td>
</tr>
<tr>
<td><strong>Age (In years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 18</td>
<td>02</td>
<td>2.8</td>
</tr>
<tr>
<td>18-24</td>
<td>27</td>
<td>38.6</td>
</tr>
<tr>
<td>25-34</td>
<td>30</td>
<td>42.8</td>
</tr>
<tr>
<td>35-44</td>
<td>04</td>
<td>5.8</td>
</tr>
<tr>
<td>Above 45</td>
<td>07</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>40</td>
<td>57.1</td>
</tr>
<tr>
<td>Single</td>
<td>21</td>
<td>30.0</td>
</tr>
<tr>
<td>Widowed</td>
<td>05</td>
<td>7.2</td>
</tr>
<tr>
<td>Divorced</td>
<td>04</td>
<td>5.7</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peasant</td>
<td>08</td>
<td>11.4</td>
</tr>
<tr>
<td>Civil servant</td>
<td>17</td>
<td>24.2</td>
</tr>
<tr>
<td>Business Person</td>
<td>45</td>
<td>64.4</td>
</tr>
<tr>
<td><strong>Estimated income (per month in Tsh)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300,000-500,000/=</td>
<td>47</td>
<td>67.1</td>
</tr>
<tr>
<td>500,001-700,000/=</td>
<td>11</td>
<td>15.7</td>
</tr>
<tr>
<td>Above 700,000/=</td>
<td>12</td>
<td>17.2</td>
</tr>
</tbody>
</table>

*Source: Research data, 2013*

a) Sex
The results in Table 4.1 reveal that out of 70 respondents, 67.1% were male and 32.9% were female. However, the opinions from both sexes were important regarding the impact of motorcycle traffic accidents in Morogoro municipality. While women could identify factors contributing to motorcycle accidents such as individual motorcyclist recklessness and poor compliance to safety rules which result into loss of life to many motorcyclists and passengers; men identified factors such as traffic officers’ irresponsibility and corruption, intoxication and poor infrastructure which is in agreement with Galukande *et al* (2009) as among the factors.

b) Age
The age distribution of the respondents involved those who had less than 18 years, those between 18 and 24 years, 25 and 34 years, 35 and 44 years and above 45 years as given in Table 4.1. Those who were less than 18 years were 2.8%, between 18 and 24 years were 38.6%, between 25 and 34 years were 42.8%, between 35 and 44 were
5.8% and those above 45 years were 10%. The age distribution of respondents influenced the study due to experience gained by Morogoro municipality inhabitants regarding motorcycle accidents. With that regard the respondents who were between less that 18 years and 34 years identified the factors such as unreliable driving training to motorcyclists and improper testing when providing driving licenses as supported by Museru and Leshabari (2002). Moreover, those who were above 35 years could identify factors such as failure to use protective tools such as helmets, gloves and shoes as well as the availability of substandard motorcycles imported from China by unethical business persons causing dependency of the victim when it happens to have lost some of his/her body parts.

c) Marital status
The results from Table 4.1 indicate that 57.1% were married; 30% single; 7.2% widowed and 5.7% divorced. These findings suggest that marital status significantly influenced the study findings as most of those who were married could identify factors such as poor compliance to safety rules and high speed caused by drivers’ errors leading to loss of manpower. However, the involvement of those who were single, widowed and divorced played an important part by highlighting factors such as use of devices while driving (e.g. cellular phones) and driving without being trained as supported by Banyikwa (2005) as among the factors.

d) Occupation
According to the results in Table 4.1; 11.4% of the respondents were peasants, 22.2% were civil servants (who included Police and TRA officers) and 64.4% were business persons (e.g. motorcycle drivers (bodaboda) and those who engaged in business while using motorcycles as means of transport). Peasants pointed out factors such as poor responses by other users of road, individual capacity and desire to expose competences. However, civil servants and business persons identified factors such as human recklessness and motorcycle defects as supported by Chalya et al (2010).
e) Estimated Income
The results given in Table 4.1 show that 67.1% of respondents had estimated monthly income raging from 300,000 - 500,000/= Tanzanian shillings (Tsh); while 15.7% having estimated monthly income ranging from 500,001 – 700,000/= Tsh. Those who had estimated monthly income above 700,000/= were 17.2%. However, those who had estimated monthly income ranging from 500,000/= to 700,000/= pointed out factors such as use of devices while driving and stressful work as among the factors causing motorcycle accidents; while those who had estimated monthly income above 700,000/= identifying traffic officers’ irresponsibility and corruption as key factors causing accidents.

4.3 Factors that contribute to motorcycle accidents in Morogoro municipality
The first objective of this study was to examine the factors contributing to motorcycle accidents in Morogoro municipality. According to the literature, the researcher identified fourteen factors which were considered to cause accidents. These included; poor responses by other users of the road, failure to use protective tools, individual capacity and desire to expose competences, use of devices while driving, motorcycle driving as a career being a stressful work, poor compliance to safety rules, motorcycle defects, intoxication, human carelessness, poor infrastructure, high speed, driving without formal training, traffic officers’ irresponsibility and corruption and substandard motorcycles imported from China. To obtain information on the factors that contributed to motorcycle accidents, the researcher asked the respondents to identify relevant factors causing accidents (from Likert scale choices something which enabled the analysis to be done in terms of Yes or No responses). Table 4.2 summarizes these factors as follows;
Table 4.2: Factors contributing to motorcycle accidents

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor responses by other users of the road</td>
<td>80</td>
</tr>
<tr>
<td>Failure to use protective tools</td>
<td>96</td>
</tr>
<tr>
<td>Individual capacity and desire to expose competences</td>
<td>82</td>
</tr>
<tr>
<td>Use of devices while driving</td>
<td>85</td>
</tr>
<tr>
<td>Motorcycle driving as a career being a stressful work</td>
<td>75</td>
</tr>
<tr>
<td>Poor compliance to safety rules</td>
<td>97</td>
</tr>
<tr>
<td>Motorcycle defects</td>
<td>79</td>
</tr>
<tr>
<td>Intoxication</td>
<td>81</td>
</tr>
<tr>
<td>Human carelessness</td>
<td>80</td>
</tr>
<tr>
<td>Poor infrastructure</td>
<td>83</td>
</tr>
<tr>
<td>High speed</td>
<td>90</td>
</tr>
<tr>
<td>Driving without formal training</td>
<td>70</td>
</tr>
<tr>
<td>'Traffic officers’ irresponsibility and corruption</td>
<td>95</td>
</tr>
<tr>
<td>Substandard motorcycles imported from China</td>
<td>77</td>
</tr>
</tbody>
</table>

Source: Research data, 2013

The results in Table 4.2 show that the majority of respondents were able to examine the factors by agreeing from their understanding on which factors contribute to motorcycle accidents in Morogoro municipality; while the minority of respondents disagreeing or being unable to examine the factors from various reasons such as little knowledge regarding the causes of motorcycle accidents as indicated above.

Specifically, the results in Table 4.2 show that 70% of the respondents identified driving a motorcycle without formal training while practicing informal training done in the outskirts of the town instead which necessitates accidents as one of the factors, motorcycle driving as a career perceived as a stressful work as drivers work under pressure while having inadequate time to rest as attested by 75% of the respondents and supported by Solagberu et al (2006) and the availability of substandard motorcycles imported from China by unethical business persons which are bought by innocent Tanzanians without knowing resulting into unnecessary accidents to them. However, motorcycle defects such as break failure and tyre bursts were reported by 79% of the respondents as among the factors.

On the other hand, the results in Table 4.2 show that, 80% of the respondents highlighted human carelessness resulting from reckless driving and poor responses
from other users of the road which result into non-users to provide either more space or reduce the space needed by motorcyclists and others as among the factors that contributed to motorcycle accidents in Morogoro municipality as supported by Nzegwu et al (2008). Moreover, 81% reported intoxication from drugs or alcohol as a habit that has been developed by motorcyclists, and individual capacity and desire to express competences 82% done as a prestige to many motorcyclists as factors that contributed to many accidents.

Furthermore, the results from Table 4.2 show that, 83% of the respondents pointed out the availability of poor infrastructure in various places in the municipality, 85% reported the use of devices while driving such as cellular phones which result into less control of the bike by the driver and high speed driving which can cause drivers’ errors as affirmed by 90% of respondents as among the factors. However, traffic officers’ irresponsibility and corruption practices reported by 95% of the respondents done on the road or elsewhere to the motorcyclists and failure to use protective tools reported by 96% of respondents such as gloves, shoes and helmets were among the factors. It was reported by one of the respondents that “helmets are normally worn to avoid being caught by traffic police and not about their own safety given the obvious risk of head injury should a collision occur”. Likewise, poor compliance to safety rules such as driving on the opposite side, excessive cargo etc as affirmed by 97% of the respondents were factors that contributed to motorcycle accidents as supported by Galukande et al (2009).

It is concluded that, 70% of the respondents identified driving a motorcycle without formal training, 75% identified that motorcycle driving was a career perceived as a stressful work and the availability of substandard motorcycles imported from China reported by 77% of respondents as among the factors. However, motorcycle defects such as break failure and tyre bursts were reported by 79% of the respondents, 80% of the respondents highlighted human carelessness and poor responses from other users of the road as among the factors that contributed to motorcycle accidents in Morogoro municipality. Moreover, 81% reported intoxication from drugs or alcohol as a habit developed by motorcyclists, individual capacity and desire to express
competences 82% done as a prestige to many motorcyclists and 83% of the respondents pointed out the availability of poor infrastructure in various places in the municipality caused motorcycle accidents. Likewise, 85% reported the use of devices while driving such as cellular phones, high speed driving which can cause drivers’ errors as reported by 90% of respondents and traffic officers’ irresponsibility and corruption practices reported by 95% of the respondents done on the road or elsewhere. Yet the failure to use protective tools reported by 96% of respondents such as gloves, shoes and helmets, poor compliance to safety rules such as driving on the opposite side, excessive cargo etc as affirmed by 97% of the respondents were factors that contributed to motorcycle accidents.

4.4 Motorcycle accidents’ implications among the inhabitants of Morogoro municipality
The second objective of the study was to explore the motorcycle accidents’ implications among the inhabitants of Morogoro municipality. From the literature, the researcher highlighted ten implications which have been visualized. These included; mental disabilities, reduction of working capacity, marriage separations, psychological problems, segregation and stigmatization, physical disabilities, permanent dependence, deprival of social status, family conflicts between the driver and the owner of the motorcycle and loss of life. For that purpose, the researcher asked the respondents to identify/mention (in terms of Yes or No) different implications as Table 4.3 shows.
Table 4.3: Motorcycle accidents’ implications in Morogoro municipality

<table>
<thead>
<tr>
<th>Implication</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Mental disabilities</td>
<td>76</td>
</tr>
<tr>
<td>Reduction of working capacity</td>
<td>80</td>
</tr>
<tr>
<td>Marriage separations</td>
<td>70</td>
</tr>
<tr>
<td>Psychological problems</td>
<td>82</td>
</tr>
<tr>
<td>Segregation and stigmatization</td>
<td>85</td>
</tr>
<tr>
<td>Physical disabilities</td>
<td>93</td>
</tr>
<tr>
<td>Permanent dependence</td>
<td>75</td>
</tr>
<tr>
<td>Deprivation of social status</td>
<td>70</td>
</tr>
<tr>
<td>Family conflicts between the driver and the owner of the motorcycle</td>
<td>90</td>
</tr>
<tr>
<td>Loss of life</td>
<td>95</td>
</tr>
</tbody>
</table>

Source: Research data, 2013

The results in Table 4.3 show that the majority of respondents identified by agreeing (from their perception) with the implications put forward; while the minority of respondents disagreeing or being unable to identify them due to the lack of information needed to be disseminated by health officers and police force as indicated above.

Specifically, the results in Table 4.3 show that, motorcycle accidents deprived people of their social status as affirmed by 70% of the respondents and caused marriage separations to those who were seriously affected by the accidents. However, 75% reported that motorcycle accidents necessitated the presence of permanent dependence to relatives of the victims while 76% reported to have mental disabilities.

Moreover, the results in Table 4.3 show that, 80% of respondents reported the presence of the reduction of working capacity to the victims, 82% reported to have psychological problems as the result of head injuries and 85% reported to result into segregation and stigmatization from various people such as health officers who had to care for the victims in hospitals. Likewise, 90% had family conflicts between the driver and the owner of the motorcycle when the two parts agree to share the costs due to the damages or breakages envisaged but not honoring the agreement put. Yet, 95% of the respondents reported to have physical disabilities as supported by Banyikwa (2005) which cost their life long and 95% of respondents reporting loss of life as among the motorcycle accidents’ implications.
It can be conclude that, motorcycle accidents deprived people of their social status as affirmed by 70% of the respondents and caused marriage separations to those who were seriously affected by the accidents. However, 75% reported that motorcycle accidents necessitated the presence of permanent dependence to relatives of the victims while 76% reported to have mental disabilities. Moreover, 80% of respondents reported the presence of the reduction of working capacity to the victims, 82% reported to have psychological problems as the result of head injuries and 85% reported to result into segregation and stigmatization from various people such as health care provider who had to care for the victims in hospitals. Likewise, 90% had family conflicts between the driver and the owner of the motorcycle, 95% of the respondents reported to have physical disabilities which cost their life long and 95% of respondents reported the loss of life as among the motorcycle accidents’ implications.

4.5 Road safety measures taken by stakeholders to combat motorcycle accident challenges in Morogoro municipality

The third and last objective of the study was to examine different road safety measures taken by stakeholders to combat the accident challenges. According to the literature, the researcher identified ten safety measures which were considered and suggested to be relevant for the eradication of motorcycle accidents. These included; proper use of standard helmets, enhancement of road safety committees with traffic safety activities in coordinating and organizing different activities relating to control and prevention of road traffic accident, enforcement of laws to those who violate the rules by being fined or withholding their licenses, increasing the police force budget to assist the road safety activities, construction of bumps along crossing areas such as schools, market e.t.c, regular repair and replacement of road signs, organizing road safety week campaigns, education dissemination concerning road safety measures to pupils and various levels of education and communities, conducting frequent motorcycle inspection and prosecuting in courts or penalizing without prosecution those who contravene road traffic rules and other related legislations.
To obtain the information the researchers asked the respondents to state and identify (in terms of Yes or No) the road safety measures. Table 4.4 summarises road safety measures as follows;

Table 4.4: Safety measures taken to combat accident challenges

<table>
<thead>
<tr>
<th>Safety measure</th>
<th>Percentage %</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper use of standard helmets</td>
<td></td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>Enhancement of road safety committees with traffic safety activities in</td>
<td></td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>coordinating and organizing different activities relating to control and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prevention of road traffic accident</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforcement of laws to those who violate the rules by being fined or</td>
<td></td>
<td>89</td>
<td>11</td>
</tr>
<tr>
<td>withholding their licenses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increasing the police force budget to assist the road safety activities</td>
<td></td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>Construction of bumps along crossing areas such as schools, market e.t.c,</td>
<td></td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>Regular repair and replacement of road signs</td>
<td></td>
<td>92</td>
<td>08</td>
</tr>
<tr>
<td>Organizing road safety week campaigns</td>
<td></td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>Education dissemination concerning road safety measures to pupils and</td>
<td></td>
<td>95</td>
<td>05</td>
</tr>
<tr>
<td>various levels of education and communities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conducting frequent motorcycle inspection</td>
<td></td>
<td>91</td>
<td>09</td>
</tr>
<tr>
<td>Prosecuting in courts or penalizing without prosecution those who contravene</td>
<td></td>
<td>80</td>
<td>20</td>
</tr>
<tr>
<td>road traffic rules and other related legislations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Research data, 2013

The results in Table 4.4 show that the majority of respondents identified by agreeing with the safety measures taken by stakeholders to combat the challenges in the municipality; while the minority of respondents disagreeing or being ignorant due to little mass education provided regarding these safety measures as indicated above.

Specifically, the results in Table 4.4 show that 75% of the respondents were in opinion of increasing the police force budget to assist the road safety activities, organizing road safety week campaigns and prosecuting in courts or penalizing without prosecution those who contravene road traffic rules and other related legislations as reported by 80% of respondents and supported by Chalya et al (2010) were road safety measures emphasized. However, 85% were in opinion of constructing bumps along crossing areas such as schools, market e.t.c and enhancing road safety committees with traffic safety activities in coordinating and organizing different activities relating to control and prevention of road traffic accidents as affirmed by 85% of the respondents.
Furthermore, the results in Table 4.4 show that, 89% of the respondents emphasized the enforcement of laws to those who violate the rules by being fined or withholding their licenses for a given time, 90% pointed out the proper use of standard helmets to both the driver and the passenger to save in case of injury and conducting frequent motorcycle inspection as reported by 91% of respondents and supported by Naddumba (2004) as safety measures. Moreover, 92% of the respondents were in opinion of having regular repair and replacement of road signs while 95% of respondents emphasizing the need of education dissemination concerning road safety measures to pupils and various levels of education and communities.

It is concluded that, 75% of the respondents were in opinion of increasing the police force budget to assist the road safety activities, organizing road safety week campaigns and prosecuting in courts or penalizing without prosecution those who contravene road traffic rules and other related legislations as reported by 80% of respondents. However, 85% were in opinion of constructing bumps along crossing areas such as schools, market e.t.c and enhancing road safety committees with traffic safety activities in coordinating and organizing different activities relating to control and prevention of road traffic accidents as affirmed by 85% of the respondents. Likewise, 89% of the respondents emphasized the enforcement of laws to those who violate the rules by being fined or withholding their licenses, 90% pointed out the proper use of standard helmets to both the driver and the passenger and conducting frequent motorcycle inspection as reported by 91% of respondents as safety measures. Moreover, 92% of the respondents were in opinion of having regular repair and replacement of road signs while 95% of respondents emphasizing the need of education dissemination concerning road safety measures to pupils and various levels of education and communities.
CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction
This chapter highlights the summary, conclusion and recommendations along with the policy implications and the need for further research. It starts with the summary proceeded by conclusion and recommendations, policy implications and the need for further research.

5.1 Summary
Accidents are observed to hinder individual development and reduce national economic intensification against expectations of Millennium Development Goals (MDGs). The presence of users of motorcycles and the associated accidents influx offer a unique challenge in view of inadequate manpower which is frequently lost. In developing countries the trend has reached an alarming state, but very little attention is paid to the problem.

The results from the study regarding the impact of motorcycle traffic accident in Morogoro municipality showed that, 70% of the respondents identified driving a motorcycle without formal training, motorcycle driving being perceived as a stressful work 75% and the availability of substandard motorcycles imported from China reported by 77% of respondents were among the factors. On the other hand, motorcycle defects such as break failure and tyre bursts was reported by 79% of the respondents, 80% highlighted human carelessness and poor responses from other users of the road, 81% reported intoxication from drugs or alcohol as a habit developed by motorcyclists, individual capacity and desire to express competences 82% done as a prestige to many motorcyclists and the availability of poor infrastructure in various places in the municipality caused motorcycle accidents as reported by 83% of the respondents.

Likewise, 85% reported the use of devices while driving such as cellular phones, high speed driving which can cause drivers’ errors as reported by 90% of
respondents and traffic officers’ irresponsibility and corruption practices reported by 95% of the respondents done on the road or elsewhere as among the factors. Yet the failure to use protective tools reported by 96% of respondents such as gloves, shoes and helmets, poor compliance to safety rules such as driving on the opposite side, excessive cargo etc as affirmed by 97% of the respondents were factors that contributed to motorcycle accidents.

Furthermore, motorcycle accidents deprived people of their social status as affirmed by 70% of the respondents and caused marriage separations to those who were seriously affected by the accidents. However, 75% reported that motorcycle accidents necessitated the presence of permanent dependence to relatives of the victims while 76% reported to have mental disabilities. Moreover, 80% of respondents reported the presence of the reduction of working capacity to the victims, 82% reported to have psychological problems as the result of head injuries and 85% reported to result into segregation and stigmatization from various people such as health officers who had to care for the victims in hospitals. Likewise, 90% of the respondents had family conflicts between the driver and the owner of the motorcycle, 95% of the respondents reported to have physical disabilities which cost their life long and 95% of respondents reported the loss of life as among the motorcycle accidents’ implications.

Finally, 75% of the respondents were in opinion of increasing the police force budget to assist the road safety activities, organizing road safety week campaigns and prosecuting in courts or penalizing without prosecution those who contravene road traffic rules and other related legislations as reported by 80% of respondents. However, 85% were in opinion of constructing bumps along crossing areas such as schools, market e.t.c and enhancing road safety committees with traffic safety activities in coordinating and organizing different activities relating to control and prevention of road traffic accidents as affirmed by 85% of the respondents. Likewise, 89% of the respondents emphasized the enforcement of laws to those who violate the rules by being fined or withholding their licenses, 90% pointed out the proper use of standard helmets to both the driver and the passenger and conducting frequent
motorcycle inspection as reported by 91% of respondents as safety measures. Moreover, 92% of the respondents were in opinion of having regular repair and replacement of road signs while 95% of respondents emphasizing the need of education dissemination concerning road safety measures to pupils and various levels of education and communities.

5.2 Conclusion
Based on the empirical findings from the study, some major conclusions are drawn with regards to the impact of motorcycle traffic accidents in Morogoro municipality.

The availability of substandard motorcycles imported from China, human carelessness and poor responses from other users of the road need to be rectified by stakeholders for the safer use of roads. However, reported intoxication from drugs or alcohol as a habit developed by motorcyclists, individual capacity and desire to express competences done as a prestige to many motorcyclists and the availability of poor infrastructure in various places in the municipality need to be keenly tackled as to minimize motorcycle accidents. Furthermore, as motorcycle accidents necessitate the presence of permanent dependence to relatives of the victims, the presence of the reduction of working capacity and psychological problems resulting from head injuries; steps need to be taken to eliminate the accident indicators for the betterment of the community at large. Moreover, enforcing laws to those who violate the rules by being fined or withholding their licenses would alleviate motorcycle accidents in Morogoro municipality.

5.3 Recommendation and policy implication
5.3.1 Recommendations
In light of the above findings, the researcher has proposed the following recommendations;

a) It has been reported to have informal training to motorcycle drivers done in the outskirts of the town which necessitate many accidents because; those trainings don’t provide skills relevant for perfect driving. Therefore, it is upon
the concerned (drivers, police etc) to have continuous training of motorcycle drivers in order to alleviate unwanted accidents.

b) There has been a tendency to stigmatize motorcycle victims in various hospitals in Tanzania by health care providers. However, this stigmatization of motorcycle victims and drivers need to be stopped as some accidents are not caused by drivers’ carelessness but the motorcycle defects which are beyond the drivers’ control.

c) Road safety measures need to be provided to every road user while traffic police conducting frequent motorcycle inspections for the purpose of safeguarding the consumers of that service.

5.3.2 Policy Implications
The researcher argues for the enhancement of drivers’ skills on the road through continuous training while honoring other users of the road by adhering to laws and changing the drivers’ behaviours.

5.4 Need for Further Research
The study examined the impact of motorcycle traffic accidents in Morogoro municipality; it is advised that further studies be done on the following issues;

a) To what extent have road safety measures taken been able to minimize motorcycle accidents in Morogoro municipality?

a) What are the challenges motorcycle drivers face when carrying out their jobs?
BIBLIOGRAPHY


APPENDICES

Appendix 1: Questionnaires

*Topic: Impact of motorcycle traffic accidents in Tanzania. A case study of Morogoro municipality*

PART A: Examination of the factors contributing to motor cycle accidents in the municipality

1. Please indicate your agreement or disagreement regarding the factors contributing to motorcycle accidents as follows; 1) SA=Strongly Agree 2) A=Agree 3) U=Uncertain 4) D=Disagree 5) SD=Strongly Disagree.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poor responses by other users of the road (non-users providing more space or reducing space)</td>
<td>Strongly agree</td>
</tr>
<tr>
<td></td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>Uncertain</td>
</tr>
<tr>
<td></td>
<td>Disagree</td>
</tr>
<tr>
<td></td>
<td>Strongly disagree</td>
</tr>
<tr>
<td>2. Failure to use protective tools (e.g. gloves, shoes, helmets)</td>
<td></td>
</tr>
<tr>
<td>3. Individual capacity and desire to expose competencies (i.e. prestige)</td>
<td></td>
</tr>
<tr>
<td>4. Use of devices while driving (e.g. cellular phone)</td>
<td></td>
</tr>
<tr>
<td>5. Stressful work (working under pressure and inadequate time for resting)</td>
<td></td>
</tr>
<tr>
<td>6. Poor compliance to safety rules (e.g. riding on opposite sides, excessive cargo etc)</td>
<td></td>
</tr>
<tr>
<td>7. Motorcycle defects (e.g. break failure, tyre bust etc)</td>
<td></td>
</tr>
<tr>
<td>8. Intoxication (e.g. driving while intoxicated from drugs or alcohol)</td>
<td></td>
</tr>
<tr>
<td>9. Human carelessness</td>
<td></td>
</tr>
<tr>
<td>10. Poor infrastructure</td>
<td></td>
</tr>
<tr>
<td>11. High speed (drivers’ errors)</td>
<td></td>
</tr>
<tr>
<td>12. Driving without training</td>
<td></td>
</tr>
<tr>
<td>13. Traffic officers’ irresponsibility and corruption</td>
<td></td>
</tr>
</tbody>
</table>
2. Would you please mention other contributing factors for the motorcycle accidents in the municipality?

i) .......................................................... ii) .................................................
iii) .......................................................... iv) .................................................

PART B: Exploring the motorcycle accidents’ implications to the inhabitants of Morogoro municipality.

3. Do you think that among the mentioned items could be the motorcycle accidents’ implications?

<table>
<thead>
<tr>
<th>Accident’s Implication</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of working capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marriage separations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Segregation and stigmatization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent dependence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deprival of social status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family conflict between the driver and owner of motorcycle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Would you please mention other accident’s implications to the inhabitants of Morogoro municipality?

i) .......................................................... ii) .................................................
iii) .......................................................... iv) .................................................
PART C; Examination of different road safety measures taken by stakeholders to combat the challenges.

5. Do you think that the following road safety measures could harness the challenges if followed and implemented strictly?

<table>
<thead>
<tr>
<th>Safety measure</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper use of standard helmets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhancement of road safety committees with traffic safety activities in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>coordinating and organizing different activities relating to control and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prevention of road traffic accidents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforcement of laws to those who violate the rules by being fined or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>withholding the licenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increasing the budget to assist the road safety activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction of bumps along crossing areas such as schools, markets etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular repair and replacement of road signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organising road safety week campaigns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education dissemination concerning road safety measures to pupils an various</td>
<td></td>
<td></td>
</tr>
<tr>
<td>levels of education and communities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conducting frequent motorcycle inspection (i.e. checking tyres, brakes,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>steering system, driving licenses and availability of safety equipments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prosecuting in courts or penalizing without prosecution (notification) those</td>
<td></td>
<td></td>
</tr>
<tr>
<td>who contravene road traffic rules and other related legislations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART D: Characteristics of respondents

6. Age in years (*tick where appropriate*)
   (a) Below 18 ( )
   (b) 18 – 24 ( )
   (c) 25 – 34 ( )
   (d) 35 – 44 ( )
   (e) 45+ ( )

7. Sex: (a) Male ( )
   (b) Female ( )

8. What is your marital status?.
   a) Married ( )  b) Single ( )  c) Widowed ( )  d) Divorced ( )

9. Occupation: (a) Peasant ( )
    (b) Civil servant ( )
    (c) Businessman/woman ( )
    (d) Others (specify)……

10. What is your estimated income per month?
    a) 300,000-500,000/= ( )
    b) 500,001- 700,000/= ( )
    c) above 700,000/= ( )
Appendix 2: Interview guide/Check list Questionnaires

1. What are the factors contributing to motorcycle accidents in Morogoro municipality?

2. What are the motorcycle accidents’ implications to the inhabitants of Morogoro municipality?

3. What are different road safety measures taken by stakeholders to combat the challenges?