



**THE UNIVERSITY OF NAIROBI**

**KNOWLEDGE, ATTITUDE AND PRACTICE OF BASIC TRAUMA LIFE  
SUPPORT AMONG *BODA BODA* RIDERS IN KILIFI COUNTY, KENYA.**

**BY**

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**H58/86789/2016**

**A dissertation submitted in partial fulfilment of the requirements for the  
award of the degree of Master of Medicine (M.MED) in Orthopaedic Surgery  
of The University of Nairobi**

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## DECLARATION

This dissertation is my original work and has not been undertaken and presented for a degree in any other University.

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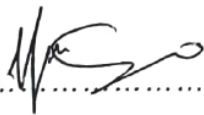
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## **DEDICATION**

I dedicate this work to my parents who nurtured me in a loving and close-knit family and taught me to have the conviction that nothing comes to pass without God's providence. They have always encouraged me to aspire to do well in my quest for knowledge. To my mentors who have always given me timely and sound advice.

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## **LIST OF ABBREVIATIONS**

BTLS – Basic Trauma and Life Support

COVID-19 – Corona Virus Disease of 2019

DALYs – Disability Adjusted Life Years

GDP – Gross Domestic Productivity

HIV – Human Immunodeficiency Virus

KAP – Knowledge, Attitude and Practice

KSHs – Kenyan Shillings

LMICs – Low and Middle Income Countries.

MDG – Millennium Development Goal

RTAs – Road Traffic Accidents

RTIs- Road Traffic Injuries

SDG – Sustainable Development Goal

UN – United Nations

US\$ - United States Dollars

WHO – World Health Organization

## **OPERATIONAL DEFINITIONS**

### *Boda Boda:*

This is a term used to describe public service motor cycles that work as taxis to ferry passengers and deliver goods. This term originated from the Ugandan border town of Malaba, Tororo where public service bicycles are used to cross the country's border from the town to its Uganda counterpart. Their use grew beyond the town to the rest of the country and evolved to the use of motorcycles as demand for speed and convenience grew.

## **ABSTRACT**

### **Background**

Road traffic injuries kill more than 1.3 million people every year. Low and Middle Income Countries (LMICs) like Kenya account for 93% of all road traffic accidents (RTAs) deaths worldwide and close to 50 million cases of disability. This has been attributed to inefficient emergency response services and delayed access to care. Such deaths and disability could easily be prevented with simple emergency treatment within the golden hour.

In LMICs where resources are limited, effective emergency pre-hospital response services are commonly unavailable. Lay bystanders play a major role in providing evacuation and pre-hospital care to accident victims. In Kenya, *boda boda* riders, are at the forefront of such care. Their wide availability and quick mobility, make them reach accident scenes, to assist victims, the earliest. This, however, raises question on their preparedness in knowledge and skills to undertake such a crucial responsibility.

This study sought to assess and document the knowledge, attitude and practice of Basic Trauma and Life Support (BTLS) among *boda boda* riders in Kilifi.

### **Objective:**

To describe the level of knowledge, attitude and practice of Basic Trauma and Life Support among *boda boda* riders in Kilifi.

### **Methodology:**

A community based cross-sectional study that utilized, researcher administered, semi structured questionnaire. In-depth interviews were conducted on *boda boda* riders drawn from towns and

villages within Kilifi County that are located adjacent to Mombasa – Garissa road, a major and busy highway that cuts through the county. Cluster sampling followed by convenient sampling was employed to recruit the participants. The tool included questions on socio-demographic information, knowledge, attitude, and practice of BTLS. In anticipation of low literacy among the target population, the tool was translated to Swahili for non-English speaking responders. Descriptive statistics was utilized to analyse and present the data.

## **Results**

A total of 507 participants were interviewed and data from 473 was included after cleaning. Of the included participants, only 2 were female. Their mean age was 29 years, and 68% were married. Half (50%) had attained primary school, 40% secondary and 10% tertiary education. Majority of them neither used protective gear (53%) nor provided them to their passengers (86%). On average they had worked 5 years as riders, 6-7 days a week and at least 12hours a day. Majority of them (83%) had witnessed RTAs while at work, with more than 70% witnessing them at least once a month. They mostly arrived at the scenes within 10 minutes or less, and usually stop to assist. They are, however, unable to offer BTLS and mostly (73%) offer transport to the victims to health facilities. Only 8% could correctly state an emergency hotline number that they would call for assistance during such emergencies.

Only 15.6% had trained in some form of BTLS, mostly in primary and secondary school, and 89% were willing to undergo training. While 87% could appreciate the importance of an open airway, only 38% had some knowledge on its assessment, and 4% on how to open it. Less than 10% knew how to secure the cervical spine.

Only 30% could check for breathing and 1.5% knew how to intervene in its absence, and none of them would correctly handle an open wound to the chest. Majority (87%) knew how to check for pulse but only 7.5% knew what to do in its absence. In the event of a bleeding wound only 53% would cover it. None however specified that they would apply pressure, which is required to control bleeding.

Very few knew how to handle an unconscious victim and majority (72%) would not remove a penetrating object from the chest or abdomen of a victim. In the event that the victim's organs protrude out of the abdomen, 32% would cover them, while 15% would push them back in. None of the participants knew how to protect a suspected pelvic injury, however, 48% knew how to identify and splint a fractured limb.

## **Discussion**

The participants demonstrated a very high exposure to RTAs and involvement in attending to victims. They, however, mostly provide transport with little intervention at the accident site. Life threatening injuries to the airway, breathing apparatus and blood circulation could cause mortality within a very short time and often cannot wait to be addressed at the hospital, but rather require immediate attention. Furthermore, spinal cord, fractures and other injuries could be aggravated with incorrect handling that was suggested by the participants. Despite being regularly exposed to RTAs, the participants were poorly prepared for them, having low knowledge on various interventions and no emergency hotline number to contact for assistance. They, however, had commendable attitude towards BTLS and willingness to undergo training. From the minimal training that they had received, some minimal basic knowledge could be demonstrated. This suggests their capability in learning BTLS.

## **Conclusion**

With the alarming statistics on RTAs, the best hope in improving survival among victims in LMICs lies in prompt and correct BTLS at the accident site. *Boda boda* riders in Kilifi are heavily involved in emergency care of RTA victims. They spend a lot of time on the roads and are quick to arrive at accident sites. They, however, are inadequately prepared with the necessary knowledge and skills to handle victims and a lot of time is lost from the golden hour of trauma. They are also likely to be mishandling the victims and may be contributing to aggravation of the injuries. They, however, demonstrate positive attitudes in this role and willingness to undergo training.

## **Significance:**

This study may inform policy on the need for training of BTLS among public service transporters including *boda boda* riders. With the absence of an efficient emergency response system, training *boda boda* riders in BTLS will go a long way in reducing RTA morbidities and mortalities in Kilifi and Kenya at large. This is in keeping with the United Nations General Assembly recommendation of empowering lay bystanders to enhance pre-hospital care of RTA victims. The general public must also not be left out. Mass communication media could be utilized and first aid teaching reintroduced in school curricula with the current ongoing implementation of competence based learning. This study also advises the need of awareness creation among *boda boda* riders on the importance of using safety gear to protect themselves and their passengers and suggests the need to enforce the relevant laws.

## CHAPTER ONE

### 1.0 INTRODUCTION

Road traffic fatalities annually account for more than 1.3 million people every year and are the leading killer among 15-29-year olds. Low and Middle-Income Countries (LMICs) like Kenya account for 93% of all road traffic deaths worldwide and close to 50 million cases of disability (1). According to a Kenyan study conducted at Kenyatta National Hospital, Thika, Meru and Machakos Level 5 hospitals by Botchey et al., 2017, it takes trauma patients approximately 162 minutes to arrive to a hospital for medical attention (2). Furthermore, only 14.9% receive some pre-hospital treatment at the site of accident or on transit to hospital and only 9.7% arrive in ambulance (2).

Prompt and correct evacuation of victims can prevent a big proportion of trauma deaths. This requires an efficient response system that can rapidly dispatch well equipped ambulances with trained emergency personnel to the accident site. In LMICs including Kenya, however, a survivor would be lucky to get a vehicle, let alone an ambulance to rush him/her to hospital. Majority of trauma patients in Kenya therefore miss the golden hour of trauma as they spend prolonged time before accessing medical attention.

There has been a steep rise in the use of motor cycles as a mode of transport commonly referred to as *Boda boda*. This term is believed to have originated from the use of cross-border bicycle transport at the Kenyan/Uganda border town of Malaba. This in time evolved into a motorcycle transport industry that spread across the country due to increasing demand.

With an inefficient emergency response system, most accident victims in Kenya are evacuated and handled by non-medical personnel at the accident site as well as on transit to hospital. Due to their large numbers all over the country, including remote areas, and their quick mobility, *boda bodas*



are commonly seen rushing to accident scenes to rescue victims. One, however, wonders how knowledgeable and skilled such lay people are on correct handling of crash victims, and whether they do more harm or good in the process. Other than failing to prevent morbidity and mortality, improper handling of victims could also aggravate injuries and even expedite mortality.

The United Nations recommends 5 pillars in curbing the alarmingly high numbers of road accident morbidities and mortalities (3). The 5<sup>th</sup> pillar focusses on improving post-crash response and emphasizes on the crucial role played by the bystanders who normally arrive first at accident scenes.

Since motor vehicle accidents occur on the roads which may be remote from health facilities, bystanders are needed to activate even the most advanced emergency response system, recognize injury as well as provide lifesaving interventions. Empowering such bystanders in Basic Trauma and Life Support (BTLS) has been demonstrated as the most cost effective public health interventions in reducing RTAs morbidities and mortalities (4). This is estimated to cost approximately US\$100 per life saved and has been shown to reduce mortality by 25-50% (5).

In LMICs where resources are limited, and effective emergency response systems are commonly deficient, this potentially offers the best hope in lowering RTA injuries and deaths. Many developed countries implement BTLS training, as a policy, among the general public in school, workplaces, media, and even enforce it as a requirement for obtaining drivers licencing. Most LMICs like Kenya, however, do not employ any of such strategies despite trauma being a leading cause of morbidity and mortality.

An attempt was made in Kenya to train the youth in first aid through scout clubs in schools. The clubs that are regulated by The Kenya Scouts Association which was founded in 1910, became

popular in schools in the 1980s and 1990s offering life skills training, including first aid, to school children. With the development of digital technology over the recent year, manual clubs such as scouting, have lost favour to digital clubs leaving the country with no known first aid trainings for the general public.

A study in Uganda demonstrated that lay people can be trained on BTLS and are capable of retaining and utilizing the knowledge and skills in saving lives (5). The same study has been acknowledged and cited by the World Health Organization (WHO) in publications to encourage enhancing crash survival through empowering of lay-bystanders (4).

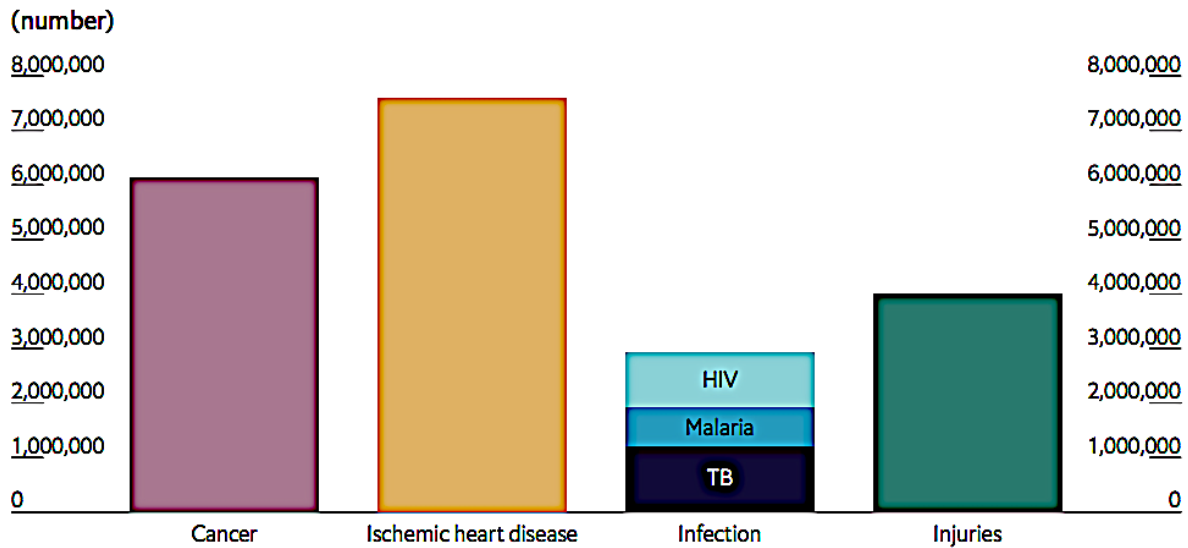
This study sought to document the knowledge, attitude and practice of BTLS among *boda boda* riders in Kilifi. It is hoped that this will identify requirements to train lay people including *boda boda* riders, who arrive at accident scenes first, to attend to victims. The study may also interest policy makers and stimulate the formulation of mandatory BTLS national code for road users.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 EPIDEMIOLOGY OF ORTHOPAEDIC TRAUMA

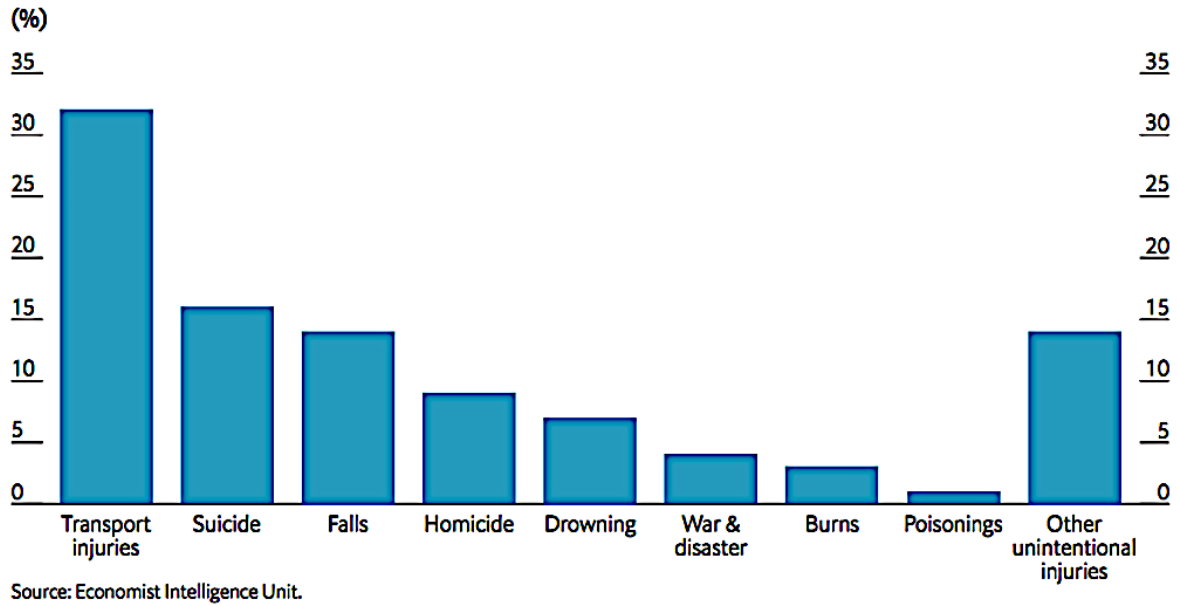
Every year, more than 4 million people die from trauma. These mortalities are 59% higher than those caused by tuberculosis, malaria and HIV combined, especially in LMICs as shown on figure 1 below (6).



*Figure 1: Total number of deaths caused by injuries, infection (HIV, malaria & TB), ischemic heart disease and cancer in LMICs (adopted from Global Burden of Disease, IHME, 2016)*

As demonstrated on figure 2, Road traffic accidents (RTAs) are the most common cause of trauma related morbidity and mortality. They lead to more than 1.3million deaths and 50million injuries

annually. The burden of RTAs is disproportionately high in LMICs as they account for 93% of all road traffic injuries and deaths worldwide (3).



*Figure 2: The main cause of deaths related to injury in LMICs are transport injuries (mostly road traffic crashes), followed by suicide, falls, and other unintentional injuries*

It is estimated that 50 times as many people who die from trauma, are left with permanent disabilities (9,10). Injuries sustained by victims of road traffic accidents vary in nature, severity and across different road user. Musculoskeletal injuries account for the majority of this burden which occur in 130 million of the cases worldwide each year (7).

In Kenya, according to a study conducted by Botchey et al., (2017), that was conducted at 4 major hospitals: Kenyatta National Hospital, Machakos, Thika and Meru level 5 hospitals, RTAs were the commonest cause of trauma leading to 36.8% of trauma related admissions. Furthermore, of all the trauma patients at the hospitals making up 40%, the largest number of trauma patients that reported to the hospitals were involved in road traffic accidents (49.5%) (2).

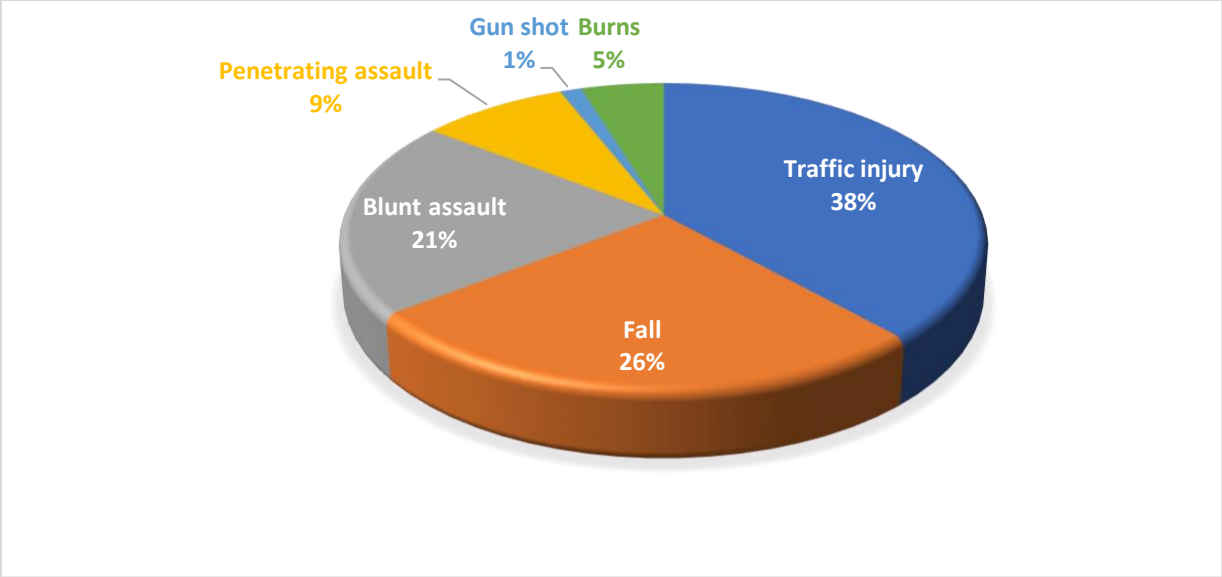


Figure 3: Mechanisms of injury in Kenya (adopted from Botchey et al., 2017)

As demonstrated on figure 4 below, orthopaedic fractures are the commonest injuries that occur in Kenya, and appendicular injuries make up more than 50% of them (8). Pedestrians and two-wheeler users are affected more than motor vehicle user, especially in LMICs (2)

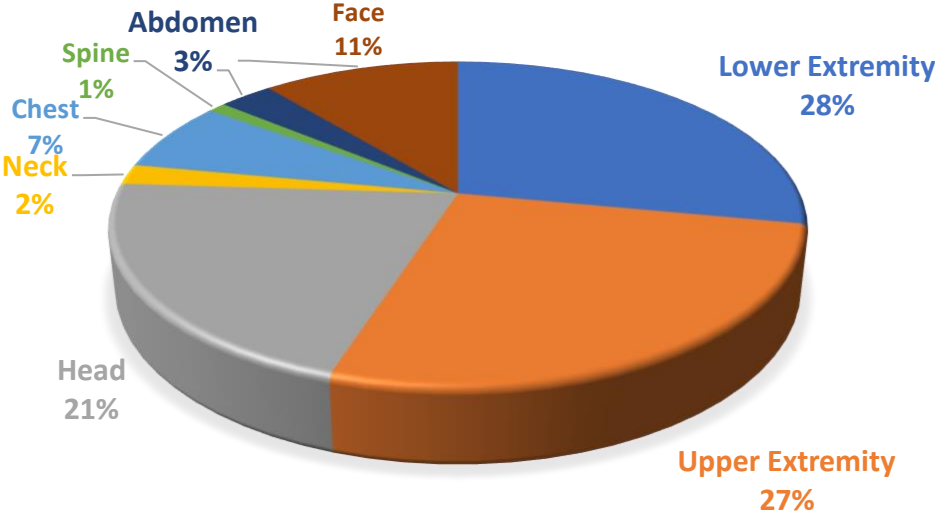


Figure 4: Patterns of injuries by body regions that present at Kenyatta National Hospital. Adapted from Botchey Jr et al. (2017) (2)

## 2.2 THE GOLDEN HOUR AND ACCESS TO ORTHOPAEDIC SERVICES

Accidents can happen in a split of a second, yet their consequences can last a lifetime and beyond generations. For every death due to orthopaedic trauma, many more patients sustain disabilities. Such deaths and disability could easily be prevented with simple emergency treatment within the golden hour on-the-scene or on transit to hospital.

The golden hour is defined as the first 60 minutes following an injury. It can define the prognosis of an injury. Prompt and effective treatment within the golden hour has the highest likelihood of preventing death and severe disability (9). An estimated 5 billion people worldwide, however, do not have access to safe emergency services, of whom 94% come from LMICs (10). In some LMICs, as many as 80% of injured people die before reaching hospital (11). Such deaths could easily be prevented with simple on-the-scene emergency procedures and quick evacuation to hospital but most LMICs lack proper emergency response systems to provide prompt intervention within the golden hour.

According to Botchey et al., (2017) who conducted a study evaluating Kenyatta National Hospital, Thika, Meru and Machakos Level 5 hospitals, most trauma patients do not receive any form of emergency treatment within the golden hour contributing significantly to permanent disability and mortality (2). Of the more than 14,000 patients that were investigated, only 14.9% received some form of pre-hospital care. Furthermore, they spent on average 162 minutes before arriving in hospital . The study was also able to demonstrate, from the sample frame, that was drawn from major hospitals in Kenya, that there was a statistically significant odds of death due to arrival in hospital beyond 30 minutes compared to earlier (2).

Other than on-the-site emergency treatment, prompt and correct evacuation of patients can also prevent a big proportion of trauma deaths. In LMICs a survivor would be lucky to get a taxi, let alone an ambulance to rush him/her to hospital. In Kenya 43% of injured victims arrive at the hospitals by car or taxi, while 28.7% arrived by matatu and only 9.7% arrived by ambulance (2). In rural areas, accident victims are commonly rushed to health facilities on motorcycles!

The World Health Organization recommends a maximum emergency response time of 15 minutes post trauma (12). Ambulances in Kenya, however, take much longer to arrive at the scenes for the few that can access their services. Furthermore, despite the existence of Ambulance Standards developed by the Kenya Bureau of Standards in 2013 and revised in 2019, very few ambulances in Kenya meet these minimum standards (13). Majority of ambulances therefore tend to be purely for transport rather than emergency treatment since they lack essential equipment (14). This contributes to further delay in attaining the golden hour.

Such delays in attaining the golden hour are unfortunately the norm in most LMICS where emergency response systems are poorly established. These countries, despite having a high burden of orthopaedic trauma, have poor emergency evacuation services, congested emergency facilities, and fewer operating rooms, surgical equipment and surgeons per capita. Even on arrival at a healthcare facility, trauma patients are often forced to wait again as personnel and equipment may not be readily available. Lives are therefore lost unnecessarily, careers are cut short, and families impoverished.

## 2.3 WORLD DECLARATIONS AND POLICIES

Trauma statistics are alarming and, as a result, The World Health Organization (WHO) identified RTAs as a public health concern globally and specifically terming them as an epidemic in LMICs (3). Subsequently, The United Nations (UN) General Assembly on 10<sup>th</sup> May 2010 passed a resolution 64/255 to declare the years 2011-2020 as the Decade of Action for Road Safety setting into motion global efforts to curb road carnage (15).

The resolution provided a framework of interventions for governments, international agencies, civil society and other stake holders for enhanced road safety and organized them into the 5 pillars below:

1. Building road safety management capacity;
2. Improving the safety of road infrastructure and broader transport networks;
3. Further developing the safety of vehicles;
4. Enhancing the behaviour of road users;
5. Improving post-crash response.

Consequently, many countries developed various sustainable road safety strategies, programmes and policies to address the road safety challenge. Kenya being a signatory to this Decade of Action established the National Transport and Safety Authority by the NTSA Act of 2012 to spearhead road safety matters (16).

The 2010 UN Decade of Action was further augmented by the Sustainable Development Goals (SDGs) which were agreed upon during yet another UN General Assembly that met in the year



2015 to evaluate the expired Millennium Development Goals (MDGs). SDGs were developed to build on the achievements of the MDGs and this time, road safety which was missing in MDGs was integrated through SDGs 3.6 and 11.2 which aimed at halving road traffic deaths and injuries by the year 2020 and providing access to safe, affordable and sustainable transport system for all, by the year 2030. Subsequently the WHO developed a road safety technical package which provides an evidence based strategic framework for governments and the international community to achieve the road safety SDGs (17). To enhance post-crash survival, the WHO recommends the development of organized and integrated pre-hospital and facility-based emergency care systems, the training of those who respond to crashes in BTLs and promoting community based BTLs training (17).

The end of the year 2020 saw the expiry of The UN Decade of Action for Road Safety, as well as SDG 3.6 yet little has been achieved in fulfilling road safety success indicators. For many countries, especially LMICs, the policies have remained ineffective as they have received little attention. Road Safety unfortunately has not been given high level priority across Government Programmes in Kenya (16).

The United Nations General Assembly once again adopted a resolution A/74/L.86, proclaiming the years 2021 to 2030 the Second Decade of Action for Road Safety, and once again set an ambitious target of halving road morbidities and mortalities by the year 2030 (18)

## 2.4 PRE-HOSPITAL CARE AND BASIC TRAUMA AND LIFE SUPPORT

Emergency care for trauma victims forms the core of post-crash response. Effective care of the victims requires a series of timely actions, beginning with activation of the emergency response system, at-the-scene care, efficient evacuation, and effective hospital based emergency care.

It is estimated that more than half of trauma deaths in LMICs could be prevented by effective pre-hospital care (4). Furthermore, twice as many patients die before reaching hospital in LMICs as compared to high-income countries (4).

Trauma related mortalities occur in one of three phases as listed below and shown in figure 5 (19)

1. Acutely within minutes as a result of overwhelming injury,
2. Sub-acutely within several hours of incident and are usually as a result of treatable conditions,
3. Delayed i.e. days or weeks after the initial injury as a result of late complications including infection and multi-system failure.

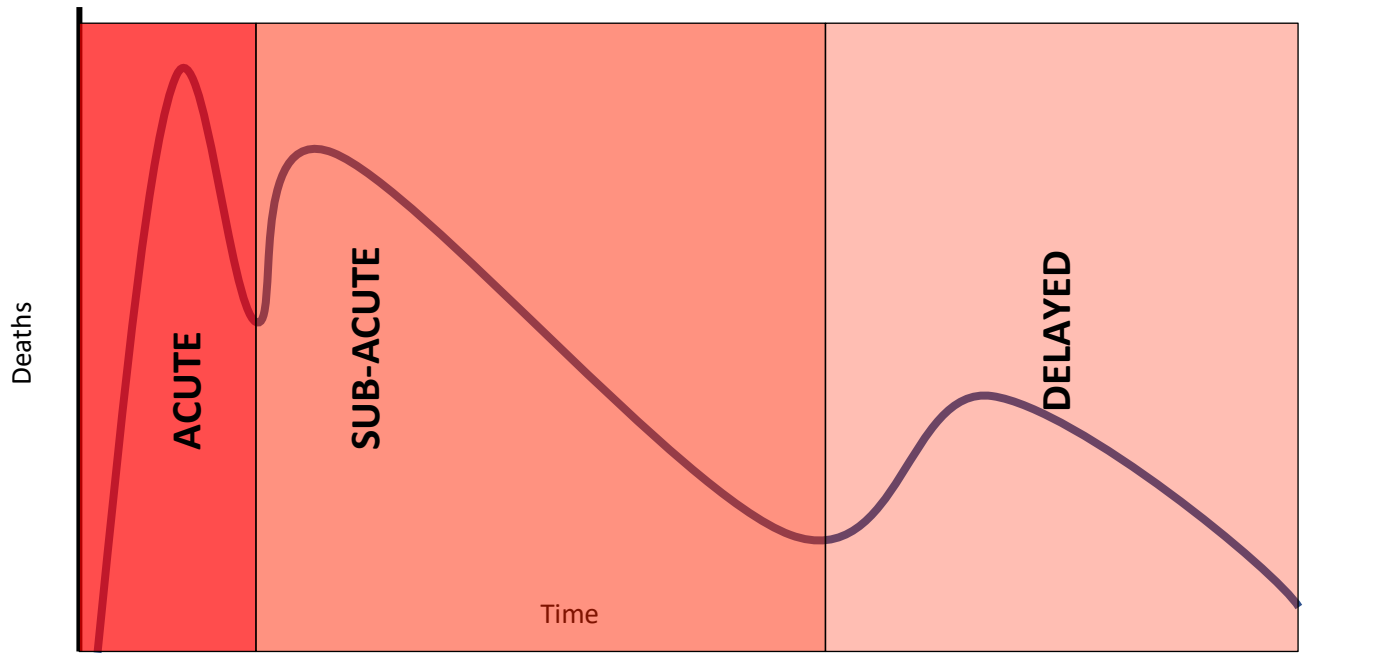


Figure 5: Trimodal distribution of deaths from road traffic injuries (Adopted from WHO 2015 (19))

Deaths occurring in the acute phase of injury are difficult to prevent once the trauma has occurred and is most effectively prevented by prevention of the trauma itself. Deaths occurring on the second phase can, however, be prevented by timely pre-hospital Basic Trauma and Life support (BTLS).

BTLS is the emergency medical care that is offered to trauma victims at the accident site or on transit until they can receive full medical care at a hospital. Timely BTLS can limit or arrest the cascade of events that would otherwise lead to disability or mortality.

Most subacute deaths are the result of: airway compromise, respiratory failure or uncontrolled haemorrhage. All these three can be readily managed by prompt BTLS measures including support

of airway, oxygenation and blood pressure, proper wound and burn care, bleeding control, adequate immobilization of fractures, spine protection among other measures (20). BTLS may also prevent a number of delayed deaths occurring in phase 3 as well as long term complication and disability. It optimizes the trauma patient and facilitates better outcome from definitive hospital-based care (19).

Since most trauma occur on the roads, often where there are no health care providers, bystanders have an important role to play at the accident scenes in ensuring timely emergency care for the injured. Bystanders can play the crucial role of recognizing injury, activating emergency response by calling for help, and providing essential BTLS prior to arrival of professional help. Early BTLS can increase the survival chances threefold for victims (20). Unfortunately, there is a common tendency of people to assume that BTLS can only be performed by qualified medical personnel. This has impeded preparedness and deterred the general non-medical public to provide emergency care to accident victims and thus hindering the ability to potentially save millions of lives.

According to an extensive study conducted by African Federation for Emergency Medicine in partnership with The Aga Khan University Hospital Nairobi and The University of Cape Town targeting major towns in all the then 8 administrative provinces of Kenya, the commonest emergency encountered in both urban and rural areas is RTIs (21). The study further demonstrated that victims are most commonly assisted by bystanders who mainly assist by rushing them to healthcare facilities (49%) with only 17% attempting some form of first aid. Majority (84%) of the respondents were willing to assist victims, and 67% reported to have offered assistance, however, most did not feel competent to offer first aid (21).

Recent studies have ranked pre-hospital BTLS as one of the most cost-effective public health interventions. Strengthening pre-hospital care by training community-based providers has been estimated to cost less than US\$100 per life saved and has been shown to reduce mortality by 25-50% in some LMICs (5). It is therefore imperative to ensure that lay general public have some knowledge and skills to provide BTLS since correct and timely treatment can save trauma victims from death or disability. In recognition of this, many countries are encouraging BTLS training for non-medical people through various strategies including teaching it as part of school curricula, and even running public campaigns through radio and television.

Majority of European countries require mandatory BTLS training before issuance of driving licenses (22). Most LMICs including Kenya, however, do not have national programs to provide BTLS training to nonmedical personnel despite having the highest burden of trauma related morbidities and mortalities worldwide. An attempt was made in Uganda where lay-people were trained in BTLS and followed up for 6 months. At the end of the duration, the participants were noted to have retained 92% of the knowledge and skills provided to them, and 97% of them had actually utilized it in providing emergency pre-hospital care to trauma victims. The study demonstrated that training of lay-people in BTLS can be an extremely cost-effective solution to enhancing pre-hospital care for trauma victims and having the potential to save thousands of lives (5).

Promoting BTLS knowledge among the general public in Kenya provides a cost-effective opportunity to save lives. It is clear that knowledge plays an important role in the attitude and behaviour of non-medical personnel as they seek to rescue accident victims. The current study therefore seeks to assess the knowledge, attitude and practice of BTLS among a group of people

that are the most affected and present during RTAs, so as to document baseline data that could inform policy and set into motion public education on BTLS.

## **2.5 MOTORCYCLES IN KENYA**

Public service motorcycles commonly known as *boda boda* are a very common mode of transport in Kenya. In some areas, they are actually the main mode of transport. They offer the convenience of helping commuters avoid traffic congestion in urban areas while manoeuvring with ease through difficult terrain and poor road networks in rural areas. Due to the increased demand and popularity, more motorcycles are getting registered by the day. In the year 2018, 204,000 motorcycles were registered up from 199,400 that were registered in 2017 and 145,900 in 2016 respectively (23). The increase in use of motorcycles as forms of transport has been attributed to their accessibility, affordability and an unregulated market in developing countries (24). The number of *boda bodas* in Kenya is estimated to be in excess of 2 million as at May 2020 (25).

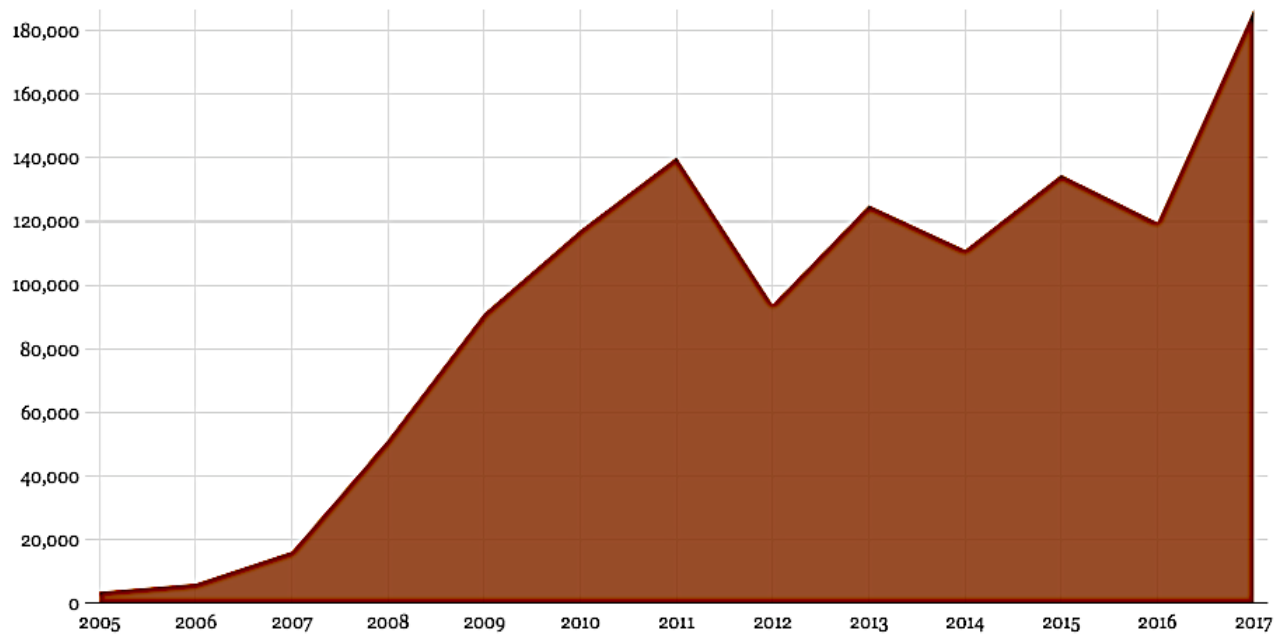


Figure 6: Registration of new motor cycles in Kenya (26)

Unfortunately, with the rapid increase in motorcycle use, there has also been a rapid rise in RTAs morbidity and mortality involving them. According to a Kenyan study, 61.5% of road traffic accidents involve motorcycles (27). Statistics show that *boda bodas* kill more people than vehicles as 1,421 riders and pillion passengers lost their lives in 2019 compared to 1,049 drivers and passengers following RTAs (23).

During the year 2019, a 41 percent surge of mortalities was experienced where 348 pillion passenger deaths occurred compared to 247 that was reported in 2018. Rider deaths rose by 22.7 percent to stand at 725 from 591 in 2018 (23). These statistics are believed to be a gross underestimate since many cases go unreported.

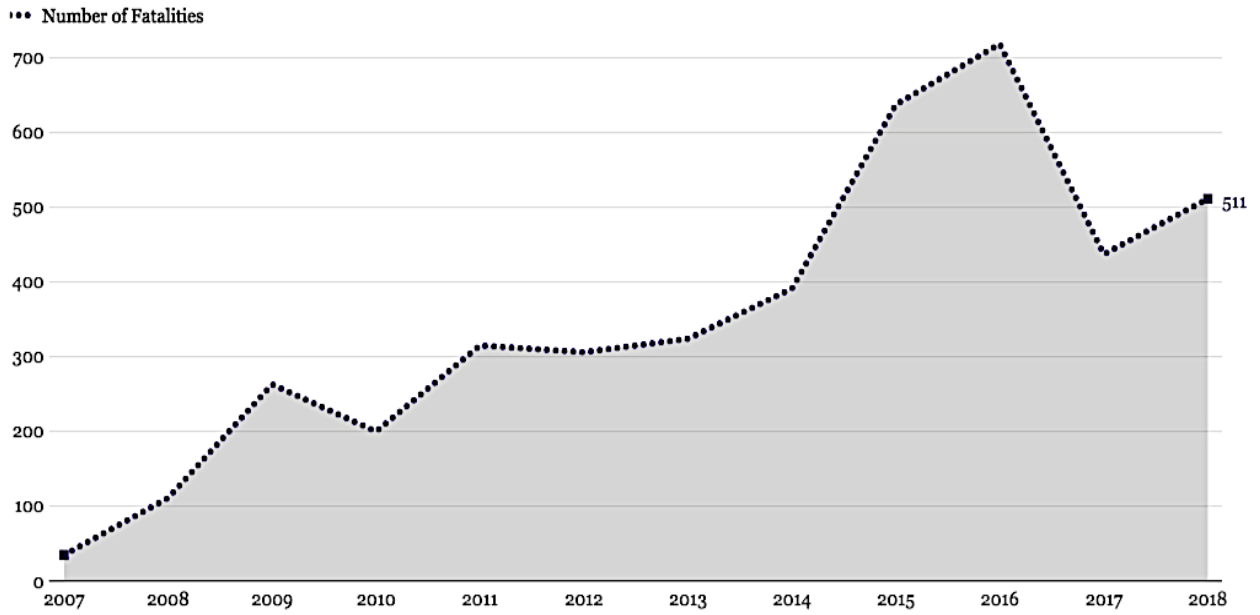


Figure 7: Road accidents fatalities caused by Motor Cycles (26).

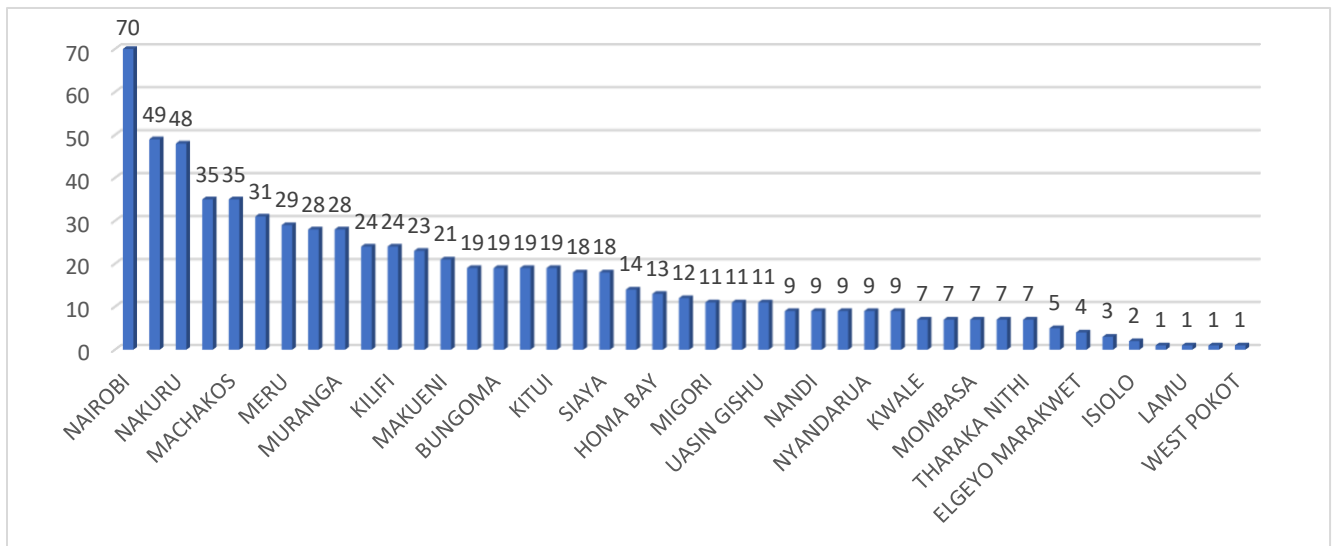


Figure 8: Contribution to motor cyclists fatalities by counties in Kenya (16).



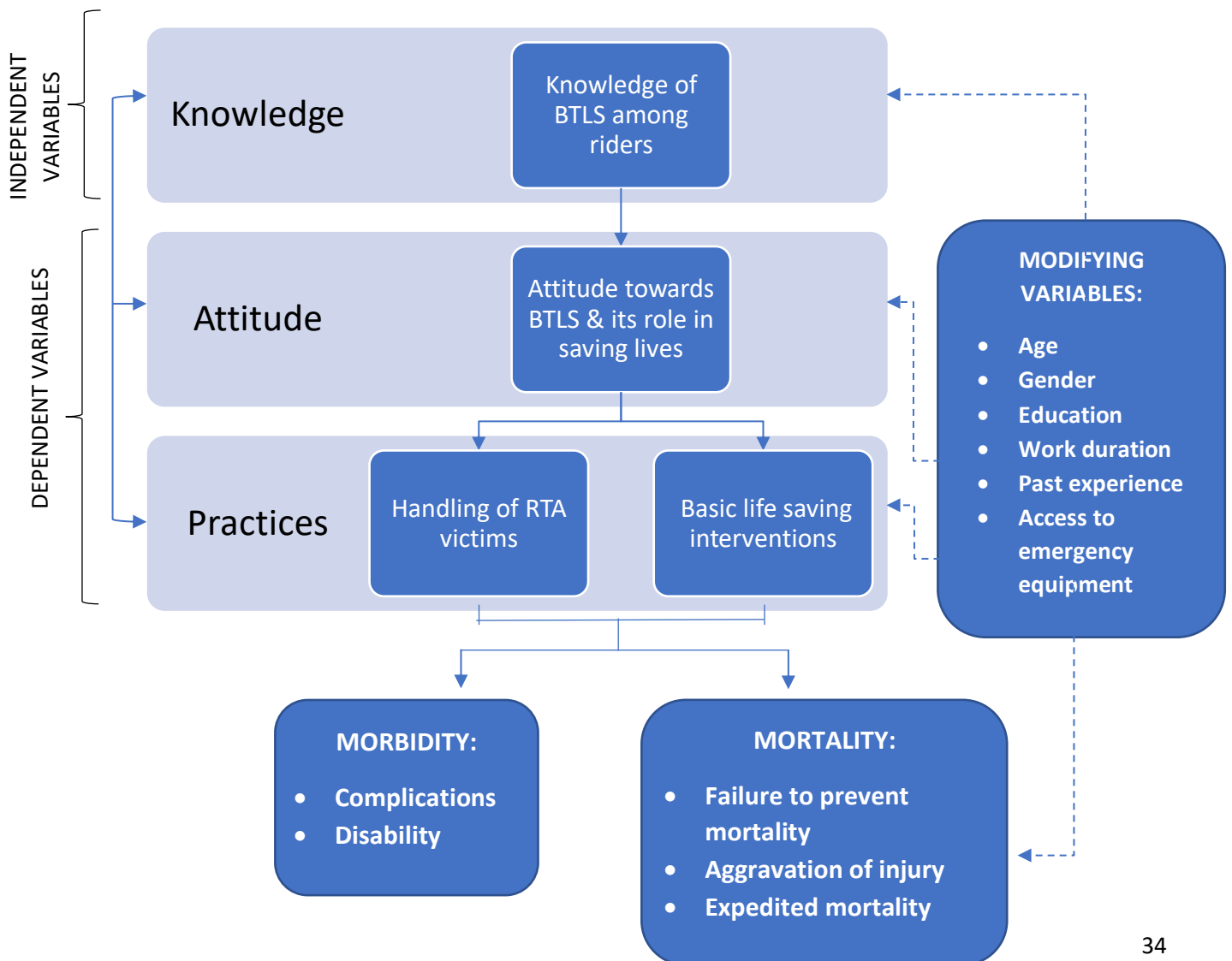
Other than being direct victims of road traffic accidents, due to their large numbers and fast mobility, motorcycles tend to arrive at accident scenes first. The riders are commonly seen swinging into action in rescuing accident victims. Their rescue efforts may, however, not only be ineffective in saving lives, but could be aggravating injuries and even expediting mortalities if not correctly executed.

In the absence of local studies, a review on a survey conducted in Dominican Republic, where motorcycles are a common mode of transport as is the case in Kenya, revealed that more than 67% of motorcycle riders had witnessed an RTA and stopped to assist, 41% could only offer transport to hospital to the accident victims. It also established that only 15% of them had received some form of first aid training (28).

Ideal optimal pre-hospital care is provided by rapidly deploying equipped ambulances with trained personnel to accident sites. This is, however, unachievable in many LMICs where resources are limited, and effective pre-hospital systems do not exist. Innovative solutions to providing emergency pre-hospital care are therefore paramount. Motorcycle riders, by virtue of their large numbers, constant presence at roads, quick mobility, and culture of rushing to accident scenes, present an opportunity to enhance pre-hospital care if they correctly handle victims. They, however, also pose a risk of aggravating morbidity and mortality with incorrect handling of victims.

## 2.6 CONCEPTUAL FRAME WORK

The independent variable knowledge of BTLS affects the attitude and practices of BTLS which influence the severity of morbidity and occurrence of mortality. Lack of knowledge commonly leads to poor attitude and practices of BTLS at accident scenes among by-standers such as *boda boda* riders. This may result in increased morbidity and mortality among victims as a result of failure to intervene and prevent life threatening conditions such as massive bleeding. Incorrect handling of the victims may also aggravate the injuries. Intermediate variable such as age, gender, education, duration of work and previous experiences can also affect both the dependent as well as the independent variable. Furthermore, the dependent and independent variables can also affect one another creating a cycle.



## 2.7 STUDY JUSTIFICATION

Statistics on road traffic injuries and mortalities are alarmingly high. They are costing families and countries major losses. In Kenya, approximately 3,000 road deaths occur annually costing the country up to Kshs.300 Billion in lost productivity, which is about 5% of the country's GDP (16). Such deaths and disability could easily be prevented with simple emergency treatment within the golden hour on-the-scene and on transit to hospital. In LMICs, however, a survivor would be lucky to get a vehicle, let alone an ambulance to rush him/her to hospital.

The UN and WHO have repeatedly emphasized the crucial role that can be played by the bystanders, who are the first to arrive at accident scenes, in providing lifesaving interventions to save lives. Empowering such bystanders has been demonstrated as the most cost effective public health interventions in reducing RTAs morbidities and mortalities. LMICs have ineffective emergency response services and accident victims inevitably rely mainly on bystanders to provide lifesaving emergency services and rush them to hospital.

Kenya, has a rapidly increasing number of *boda bodas* extending as far afield as to the most remote areas of the country. Their presence on the roads in large numbers and their quick mobility make them the main responders to road accidents. They are commonly seen heavily engaged in rescue efforts of victims, however, if they are not knowledgeable and skilled in BTLS, their efforts could be futile in saving lives and could possibly be causing more harm as they mishandle victims.

This study, therefore, documents the state of knowledge among riders in BTLS, their current practices at accident scenes and their attitude towards offering emergency services to accident

victims. This serves as a needs assessment to draw the attention of policy makers, on the need to train lay people on BTLS.

The study may also advise the need for policy to make it mandatory for public service road users to undergo BTLS training as a condition for licencing. Furthermore, at a time when Kenya is rolling out competency based curricular learning in schools, such a study may also demonstrate the need to include BTLS as part of learning. In addition, it establishes a baseline reference for use in future assessments to measure effectiveness after possibly rolling out a *boda boda* riders training in BTLS programs.

## 2.8 RESEARCH QUESTION

What is the level of knowledge, attitude and practice of Basic Trauma and Life Support among *boda boda* riders in Kilifi?

## 2.9 OBJECTIVES

### 2.9.1 BROAD OBJECTIVES

To describe the level of knowledge, attitude and practice of Basic Trauma and Life Support among *boda boda* riders in Kilifi.

### 2.9.2 SPECIFIC OBJECTIVES

- (i) To assess the level of knowledge of BTLS among *boda boda* riders in Kilifi.
- (ii) To describe the attitude of *boda boda* riders in Kilifi towards offering BTLS.
- (iii) To elucidate the current practices of BTLS among *boda boda* riders in Kilifi.

## CHAPTER THREE

### 3.0 RESEARCH METHODOLOGY

#### 3.1 STUDY DESIGN

This community based study used a cross-sectional study design combining qualitative and quantitative questions within a single semi structured questionnaire.

#### 3.2 STUDY SITE

The study setting was Kilifi County, one of the 47 counties of Kenya located in the coastal region. The county is comprised of 6 sub-counties, which have a wide range of sociodemographic and socioeconomic settings including urban, semi-urban, rural, remote and even marginalized areas. The entire county has a population of approximately 1,453,787 people according to the 2019 National census (29). The literacy level reportedly stands at 68% according to The Kenyan Commission of Revenue allocation (30). It is estimated that there are 40,000 *boda boda* riders in Kilifi according to unpublished data from *Boda Boda* Safety Association of Kenya.

#### 3.3 STUDY POPULATION

*Boda boda* riders were drawn from towns and villages that are located adjacent to Mombasa – Garissa road (coded as B8 on Kenya’s road network) a major highway which cuts through Kilifi,

connecting the port county of Mombasa and the inland county of Garissa, comprising of Mombasa-Malindi and Malindi-Garissa roads, having the coordinates 02°16'13.0"S, 40°04'24.0"E (Latitude:-2.270284; Longitude:40.073323) (31). It is a very busy highway serving as a major transport conduit for goods and people between the Kenyan sea port and North Eastern mainland and is a common site of road traffic accidents. Riders were drawn from sub-counties and towns along the road as they are the most relevant to the current study.

### **3.3.1 INCLUSION CRITERIA**

Public service transport *boda boda* riders

### **3.3.2 EXCLUSION CRITERIA**

3.4 Those that fail to give consent

3.5 Private motor cyclists

3.6 Those below age 18

### 3.7 SAMPLE SIZE CALCULATION

There is no literature available on knowledge of BTLS among riders hence 50% prevalence is being used as an assumption to calculate a sample size that is as close to a normal distribution as possible.

The sample size was determined by adopting Krejcie and Morgan formula for finite sample size calculation (32).

$$n \geq \frac{NZ_{1-\alpha/2}^2 p(1-p)}{d^2(N-1) + Z_{1-\alpha/2}^2 p(1-p)}$$

With the following assumptions:

A = type 1 error set at 0.05

p = Estimated proportion set 0.5

d = Marginal error rate set at 0.05

N = Population size estimated at 40,000 as per information from Boda *Boda* Safety Association of Kenya

$$n = \frac{40,000 \times 1.96^2 \times 0.5 (1-0.5)}{0.05^2 \times (40,000 - 1) + 1.96^2 \times 0.5 (1-0.5)}$$

$$n = 381$$



### 3.8 SAMPLING PROCEDURE

Cluster sampling was done to divide the sample size into clusters spread out across Kilifi county. The total sample size was proportionately divided into the clusters by weighting each to the respective sub-county's population contribution to the total county's population. The population of each subcounty divided by the county's total population and thereafter multiplied by the sample size was done to determine weighting of each cluster. Once each cluster size had been determined, convenient sampling was done while collecting data at each sub-county until the sample size was achieved for the respective cluster. This was done to allow proportionate sampling of the diverse conditions in Kilifi who's sub-counties fit in the different socio-economic setups including urban, suburban, rural and remote.

### 3.9 CONSENTING AND STUDY ENROLLMENT

*Boda boda* riders were approached individually as they waited calmly for passengers at their posts. This was done at low traffic times, avoiding rush, to ensure cooperation. Verbal explanation of the objectives of the study and written informed consent was obtained. There was no coercion and participation in this research was entirely voluntary. Once consent had been granted, the interview was administered individually, a few metres away from their waiting post, and keeping enough distance from other riders to ensure the respondent's privacy.

### 3.10 DATA VARIABLES

The variables have been grouped into three i.e. independent, intermediate and dependent as follows

- Independent variables
  - Knowledge of BTLS
    - Knowledge on handling different scenarios
    - Source of knowledge if any
- Modifying variables
  - Age
  - Gender
  - Marital status
  - Education
  - Duration worked as *boda boda* rider
  - Duration of work per day as *boda boda* rider
  - Past experiences
  - Access to emergency equipment and services
- Dependent variables
  - Attitude towards BTLS
    - Importance
    - Role in saving lives
    - Relevance to lay people/ non-medics
    - Willingness to train

- Practices of BTLS
  - Stopping at RTA scenes
  - Handling of RTA victims
  - Skills in basic lifesaving interventions

### 3.11 STUDY PROCEDURE

#### 3.11.1 ETHICAL CONSIDERATIONS

**Permits:** Ethical approval to conduct the study was granted by the Kenyatta National Hospital/ University of Nairobi Ethical, Research and Standards review committee. The study was conducted in compliance with the law and respect for the participants and approvals were sought from Kilifi County, Kenya Police Service and Boda Boda Association of Kenya. Individual informed consent was also obtained from the participants.

**Confidentiality:** The information that has been collected for this research project shall remain confidential. All the soft copy data sheets have been secured using a passwords only known to the researchers.

**COVID-19 precautions:** The primary investigator, research assistants, and participants were provided with face masks, and hand hygiene was observed by providing hand sanitizers. Physical distancing was observed at all times and interviews conducted in open, well ventilated areas.

### 3.11.2 TRAINING PROCEDURES

Senior medical students that have field experience in data collection were recruited from University of Nairobi to serve as research assistants. They were trained on the use of the tools and taken through two trial runs before the actual data collections.

### 3.11.3 DATA COLLECTION PROCEDURES

A researcher administered questionnaire was used which focussed on collecting the participants socio-demographic information, test their knowledge, assess their attitudes and document their practices of BTLS. The questionnaire conformed to the latest American Heart Association (AHA) guidelines. The data collection tool was adapted from several previous studies and tested (7, 33, 34). It was converted into an electronic form using Google forms ® to ensure efficiency and accuracy of data collection.

### 3.11.4 QUALITY ASSUARANCE

To check on reliability and validity, pretesting of the tool was done on 10% of the sample size. The tool was analysed to check on whether it was able to provide the required information. The tool was amended to ensure reliability.

### 3.12 DATA MANAGEMENT

All data was handled with confidentiality and the principal investigator stored it in a computer with password protection.

### 3.13 DATA ANALYSIS

Descriptive statistics i.e. frequencies and proportions were directly generated for the closed ended questions. The open ended questions were cleaned and coded for content analysis using Microsoft Excel software.

Data has been presented in suitable figures.

### 3.14 STUDY RESULTS DISSEMINATION PLAN

This study has been used to compile a dissertation which shall be available at University of Nairobi department of Orthopaedics, as well as the university's libraries. Furthermore, the results shall be published in peer reviewed journals with open access for wide readership. The findings shall also be presented in scientific conferences whenever opportunities arise.

## CHAPTER FOUR

### 4. RESULTS

#### 4.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS.

A total of 507 participants were recruited into the study and data collected from them. This was higher than the calculated minimum sample size of 381 in order to strengthen the data as well as allow for possible fall out as was experienced during the pilot study. Following cleaning, data from 473 participants was included in the current study and analysed. Of the 473 participants 99.6% were male with only 2 having been female.

The mean age was 29 years (range 17-59). Sixty eight percent of the riders were married while the remaining 32% were single. Half (50%) reported to have completed primary school, 40% had completed secondary school while the remaining 10% had completed tertiary education.

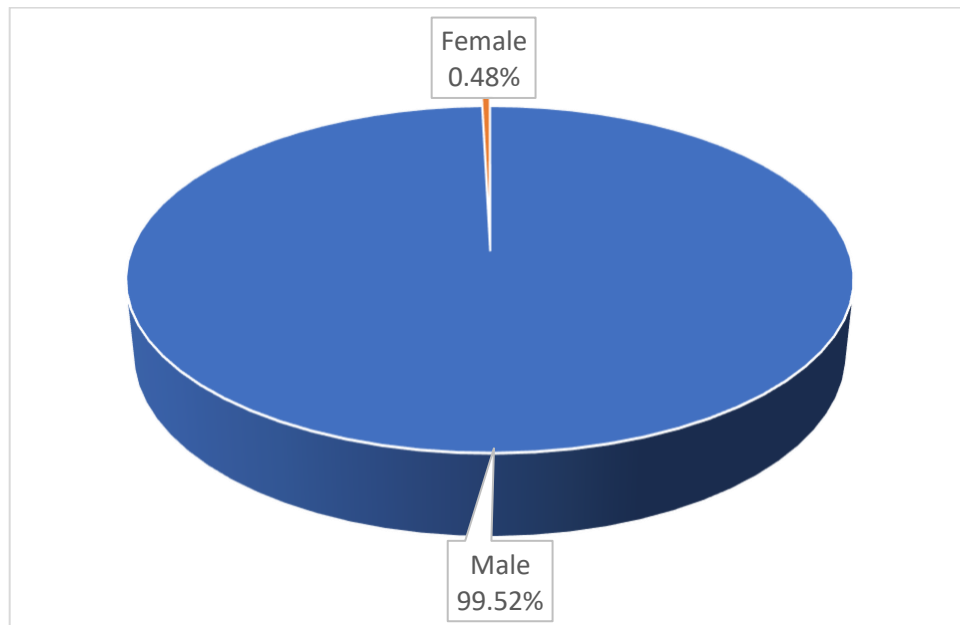


Figure 9: Gender of participants

On average, the participants had worked as *boda boda* riders for 5 years, with the longest serving being 12 years. Majority (47%) reported to work 6 days a week while 46% reported to work 7 days a week. In one day, majority (55%) reported to work for 12 hours, while others reported to work longer, with some (3.4%) even reporting 18 hours a day.

#### 4.2 EXPOSURE AND INVOLVEMENT IN ROAD TRAFFIC ACCIDENTS

Of the 473 riders, majority (83%) reported to have witnessed a road traffic accident while at work. A substantial number (19%) reported that they witness accidents weekly while 54% witness them monthly, 20% annually and the rest reported to witness accidents less frequently.

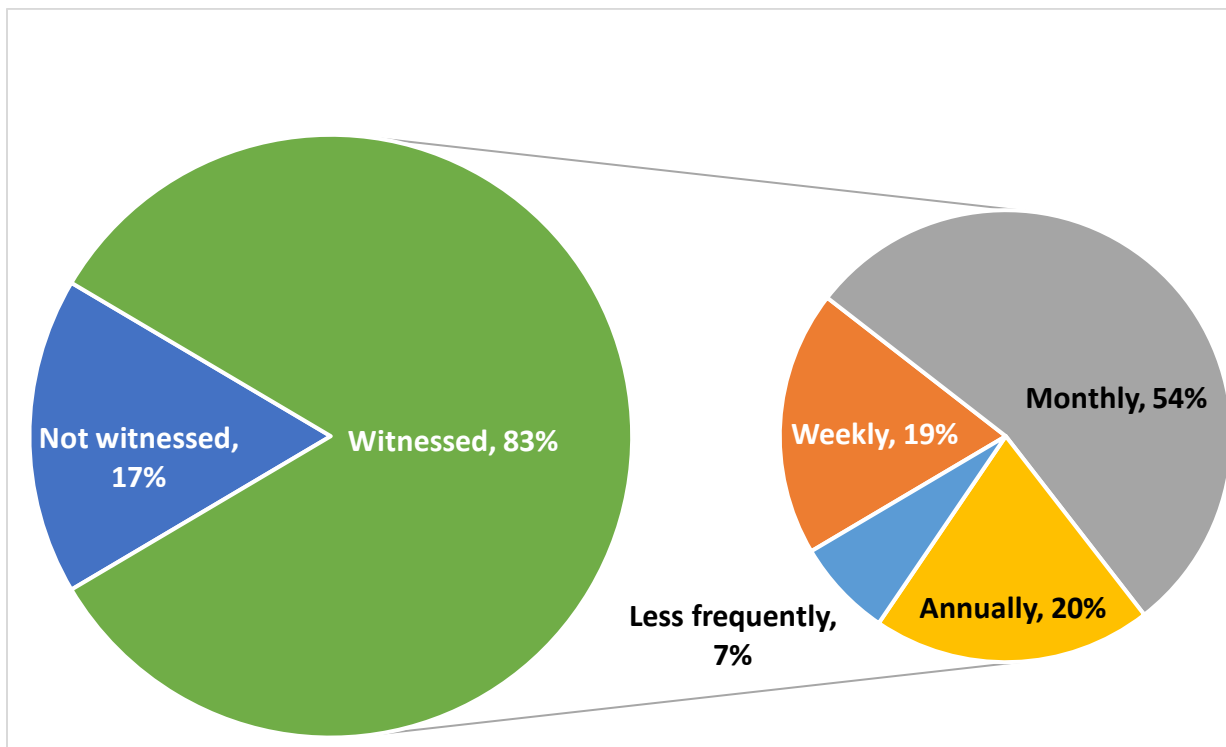


Figure 10: Riders that have witnessed road traffic accidents and how often they do

Of the 392 riders that had witnessed accidents, when asked to estimate how long it took them to reach the accident scene during the most recent event, 5% indicated that they arrived within a minute since they were nearby, 34% arrived in less than 5 minutes, 25% arrived in less than 10 minutes, 12% in less than 20 minutes, 9% in less than 30 minutes and 7% in less than 1 hour. The rest arrived after 1 hour. Among them, 91% reported that they stopped at accident scenes to assist the victims, and the most common assistance that they offered was to transport the victims to hospital (73%). Others (14%) called for help, 6.5% gave the victims first aid while 1.5% assisted in carrying the victims out of the wreckages and into the ambulance/vehicles that would rush them to hospital. The remaining 5% largely spectated at the accident scenes.

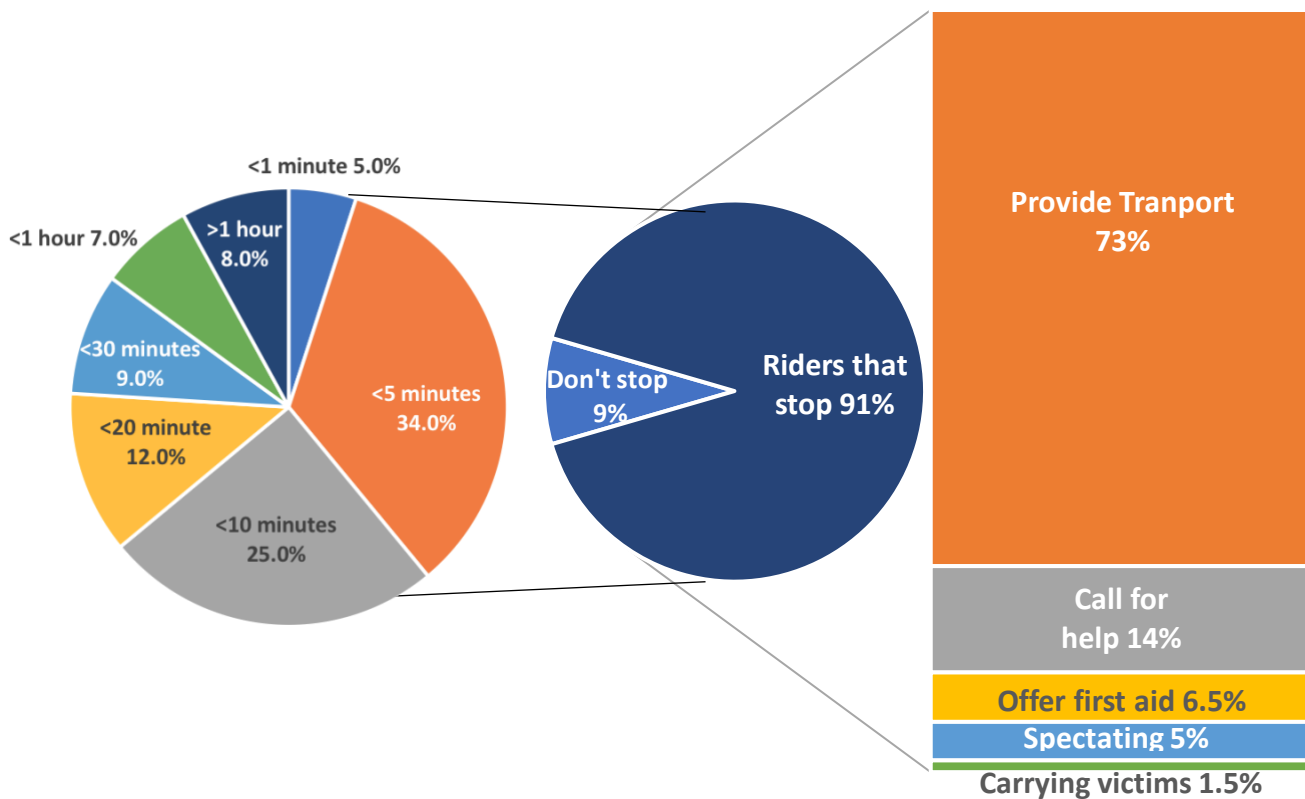


Figure 11: Time it takes for the riders to arrive at accident scenes, proportion that stop at the scenes and assistance that they offer to victims



For the 35 (9%) riders that witness accidents but did not stop at the scenes, majority (69%) reported that they did not stop because they would not be useful to the victims either due to lack of knowledge (15 riders) or necessary equipment (9 riders) to assist. Others stated that they were usually scared of accident scenes hence unable to assist (21%) while others were usually in a hurry hence unable to stop (10%).

When asked to state an emergency hotline number that they would call for assistance, only 38 out of the 473 riders (8%) were aware of the police hotline numbers 999 or 911. Eight of the participants stated 9999 while the remaining 427 participants were not aware of any emergency hotline numbers.

Of all the 473 riders that participated, majority (53%) reported to have been involved in accidents themselves, of whom 84% reported to have sustained minor injuries including cuts and bruises, while 12% sustained fractures. The rest did not sustain any injuries.

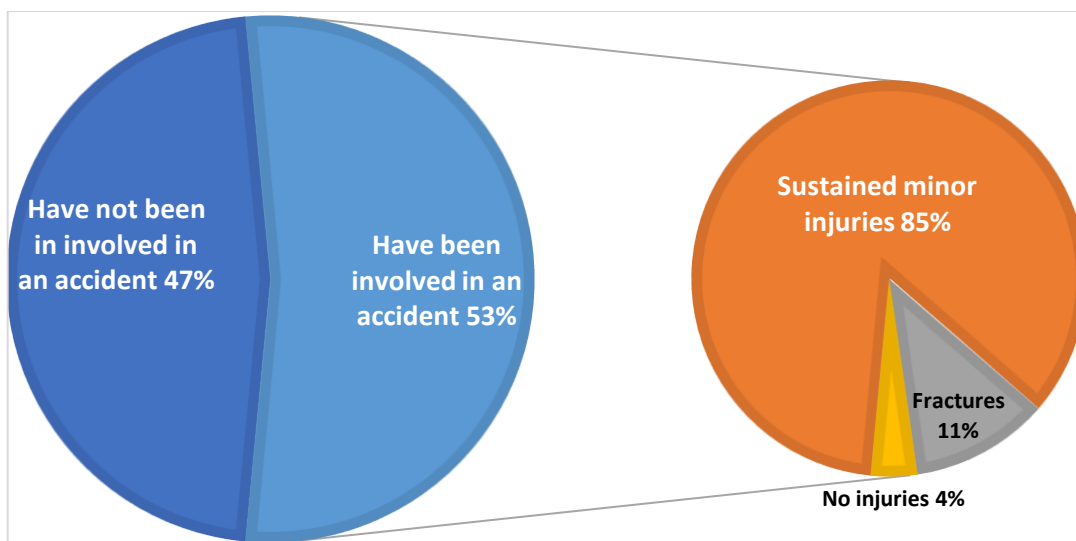


Figure 12: Involvement in accidents and injuries sustained by the riders

### 4.3 ATTITUDE TOWARDS SAFETY AND BTLS

On inquiry if the riders use protective gear. Only 47% of the 473 participants reported to use protective gear while riding their motorcycles. The commonest used gears are reflector jackets with helmets (40%), followed by jackets alone (25%), and helmets alone (17%). A few of the riders use additional gears such as boots, gloves and eye wear as shown on the figure below. Of the majority 53% that did not use any protective gear, 55% gave inability to afford the gear as the reason why they did not use them, while 27% reported not to use them as they were either too heavy or too warm for the hot environment that they worked in. A few used protective gear only when traveling long distances, while some even felt that it was not important to put on protective gear!

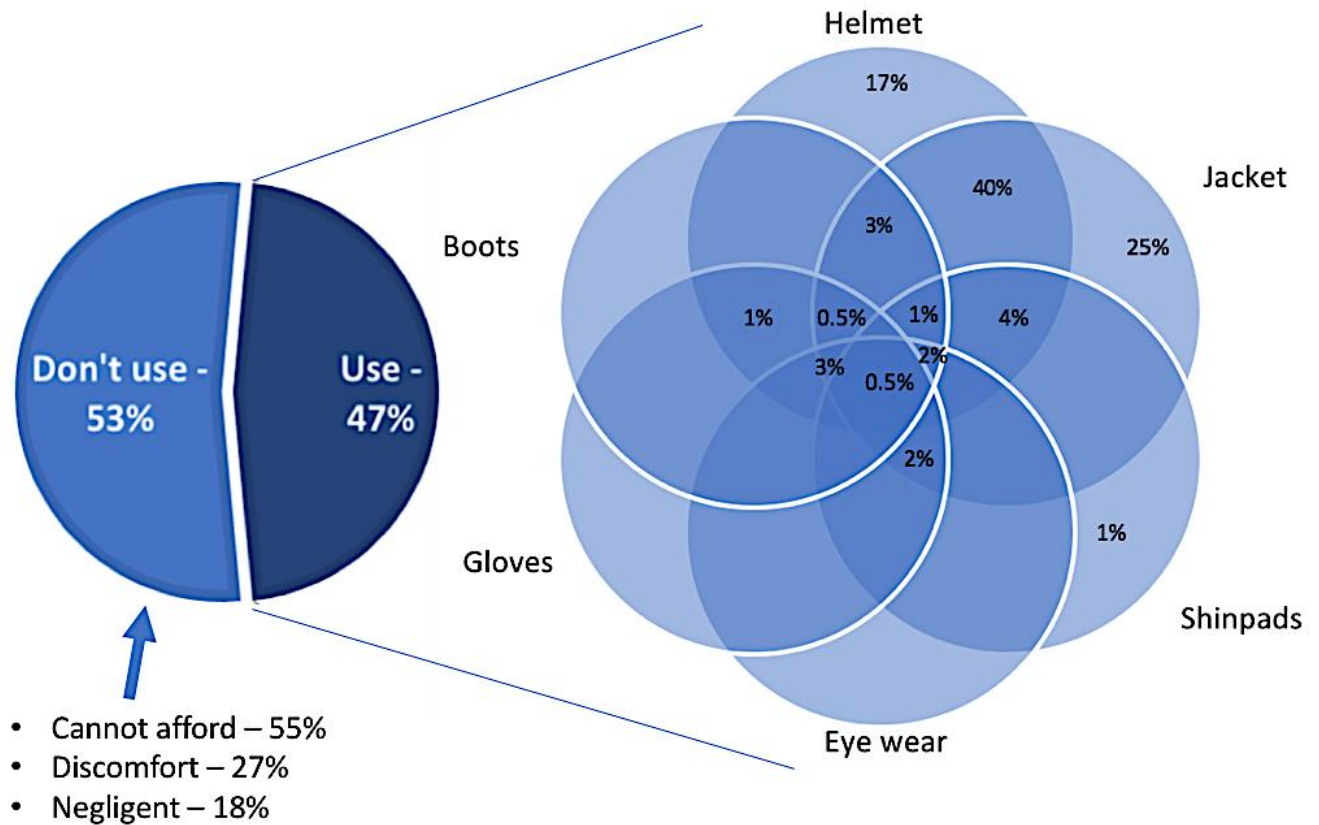


Figure 13: Use of protective gear among the riders

On inquiry on whether they provided their passengers with protective gear, 86% did not provide their passengers any protective wear as only 65 of the 473 participants did. Of the 408 riders that did not provide their passengers with protective gear, majority (72%) reported that they did not have extra protective gear to offer their passengers, while 13% preferred not to provide the gear due to fear of spreading infections including the ongoing COVID-19 pandemic. A few of them (9%) explained that passengers were reluctant to share protective gear, while the remaining 24 riders (6%) didn't think that it was important for their passengers to put on protective gear. Among the 65 riders that provided their passengers with protective gear, the commonest used was helmets (55%) followed by reflector jackets (45%).

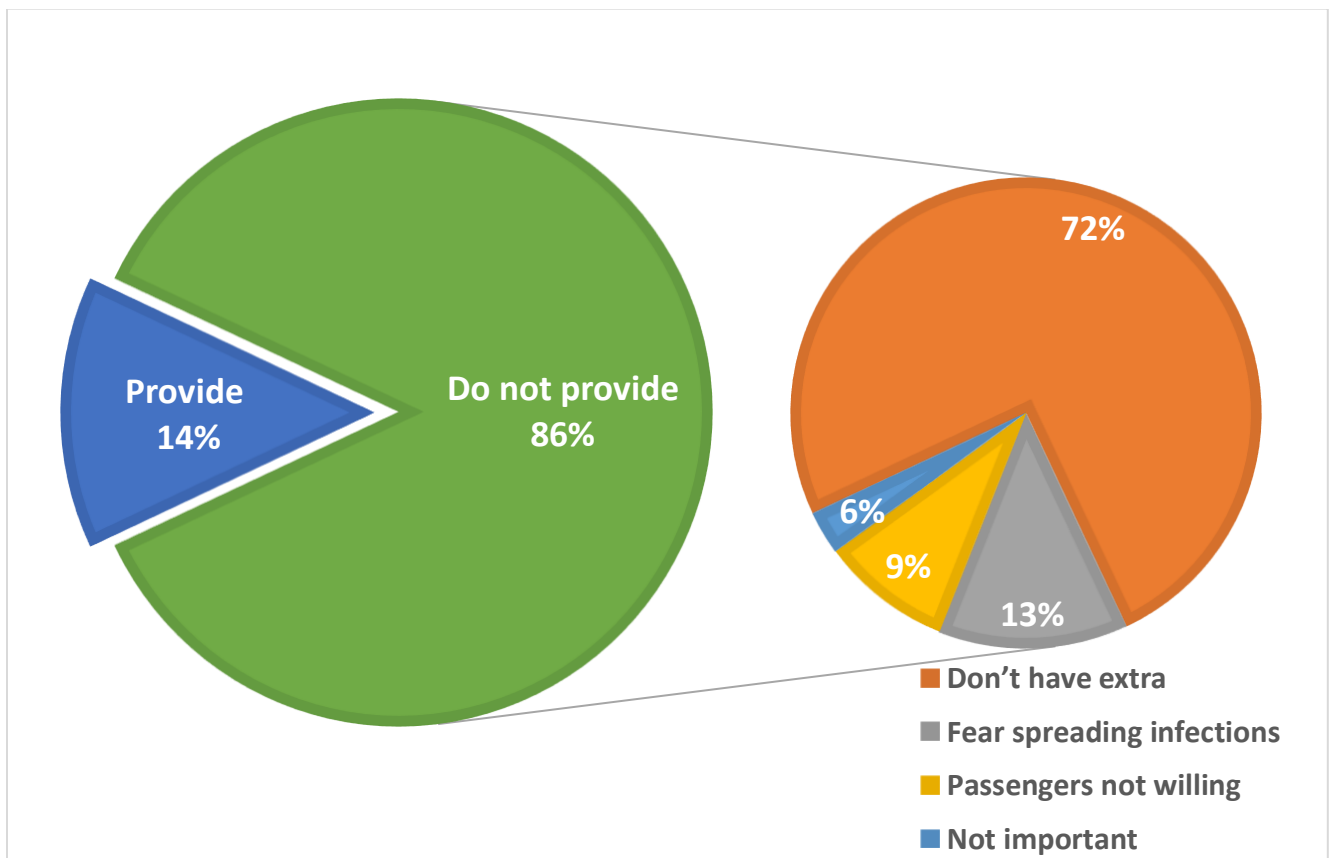


Figure 14: Riders that provide their passengers with protective gear and reasons for not doing so

When asked whether they had received any training in First aid or BTLS, only 15.6% reported to have some form of training while the remaining 399 riders had not. Majority of those that had been trained reported to have received it in primary or secondary school (61%), while others were trained by various governmental (16%) and non-governmental agencies (12%). The remaining 11% learnt through the internet and mass communication media. For the majority 399 riders that had not received any training, the commonest reason given was that they didn't know where to get the training from (58%), while others reported that they could not afford the training (37%). The remaining 5% indicated that they were either too busy earning a living to go for training or didn't think it was necessary for them to undergo training. However, the vast majority of riders (97%), expressed interest in attending a training course if given an opportunity because they believed that they would be able to save many lives. Furthermore, 89% of the riders even supported the idea of having policy that would make BTLS training a mandatory requirement for licencing of *boda boda* riders.

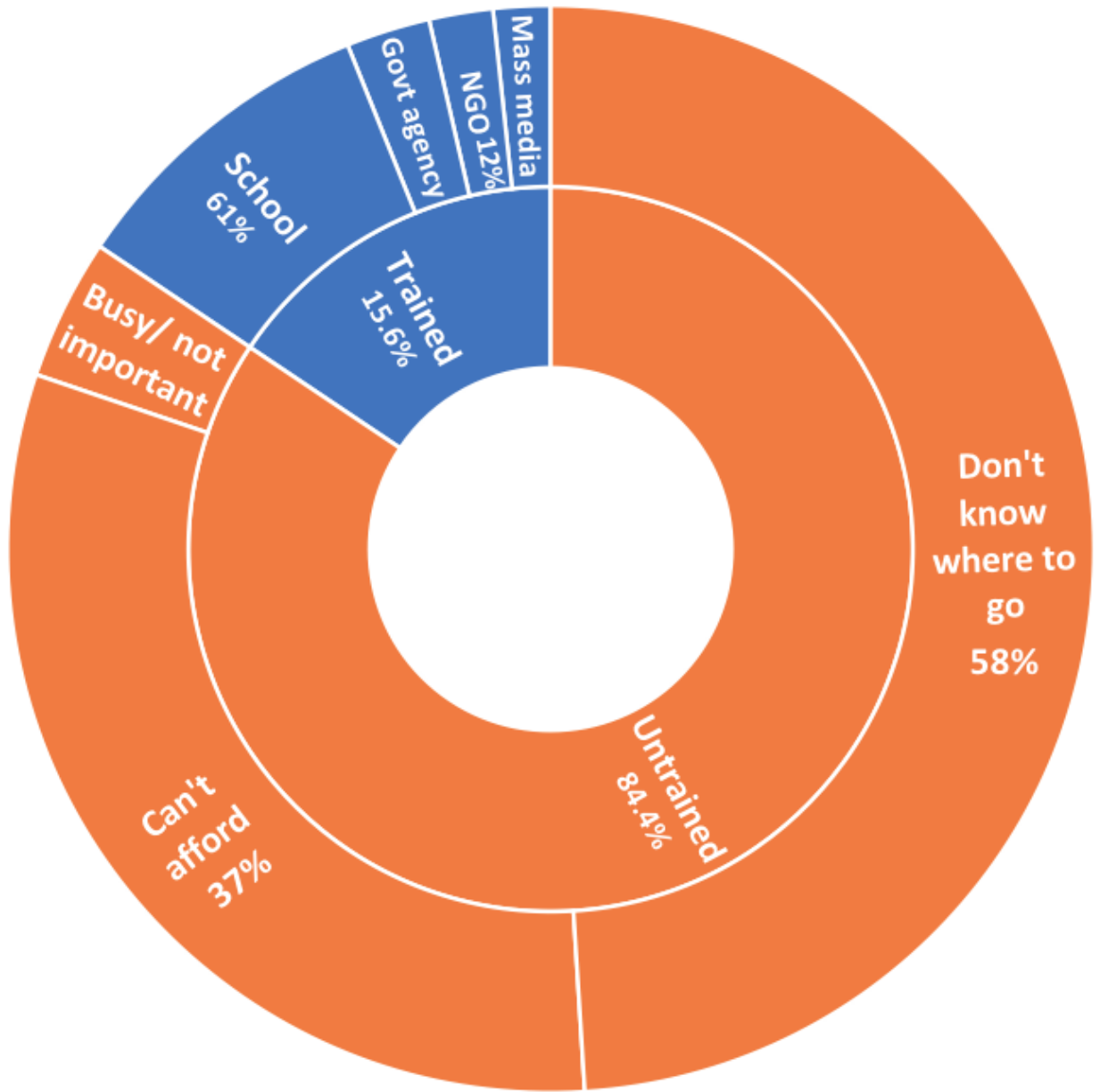


Figure 15: Riders that are trained in BTLS against those that are not trained, source of training and reasons for not training

#### 4.4 KNOWLEDGE AND PRACTICE OF BTLS

On inquiry on the importance of an open airway, majority of the participant (87%) could appreciate its importance. The commonest opinion was that an open airway is necessary for breathing to take place. When asked to explain how they would check that a victim's airway is open, 38% could demonstrate some knowledge. The commonest opinion among the 38% was that they would check for breathing movement at the chest and/or feel for air using their fingers next to the nostrils. When asked how they would open a blocked airway, only 19 riders (4%) could demonstrate having an idea. They mostly (50%) indicated that they would use a clean cloth to wipe out dirt and blood from the victims' nostrils and mouth. Others (30%) responded that they would rush the victim to hospital while the remaining participants confessed to having no knowledge on the same.

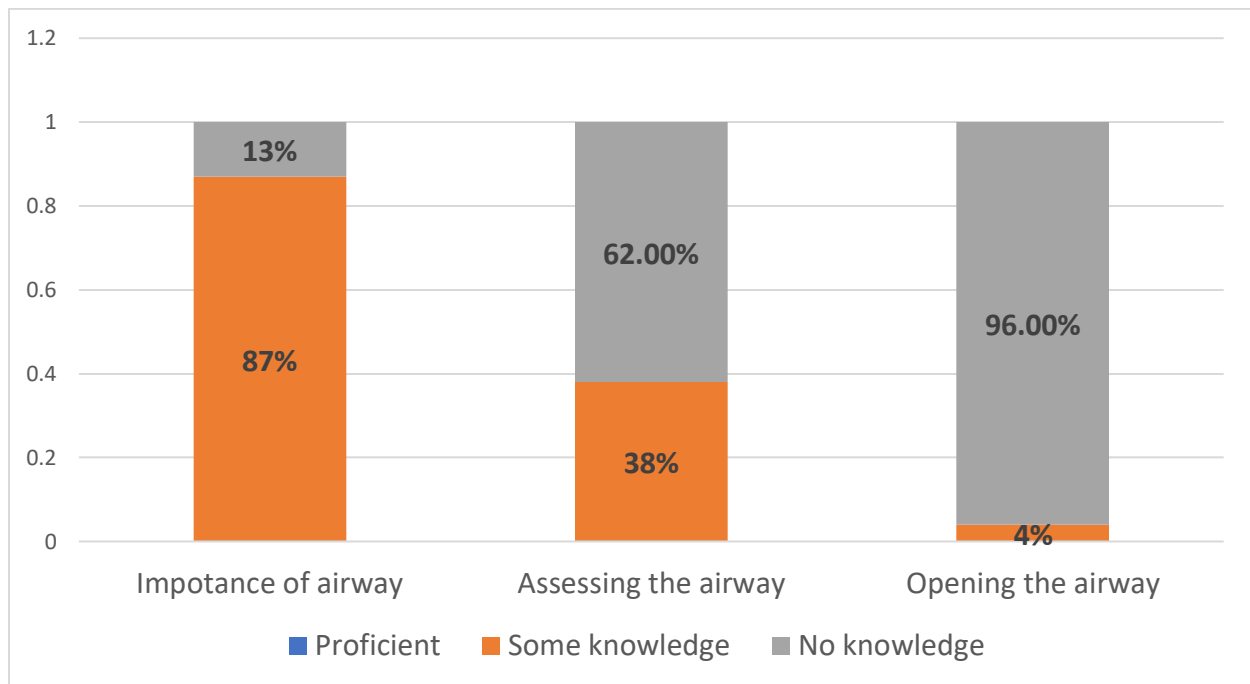


Figure 16: Basic knowledge on airway among the riders

On handling of a suspected cervical spine injured victim, 23% would handle the neck carefully while rushing the victim to hospital, 9% would tie a cloth around the neck, 5% would tie something rigid against the neck to support it, 3% would massage the neck, while the remaining 280 (60%) riders did not know what they would do.

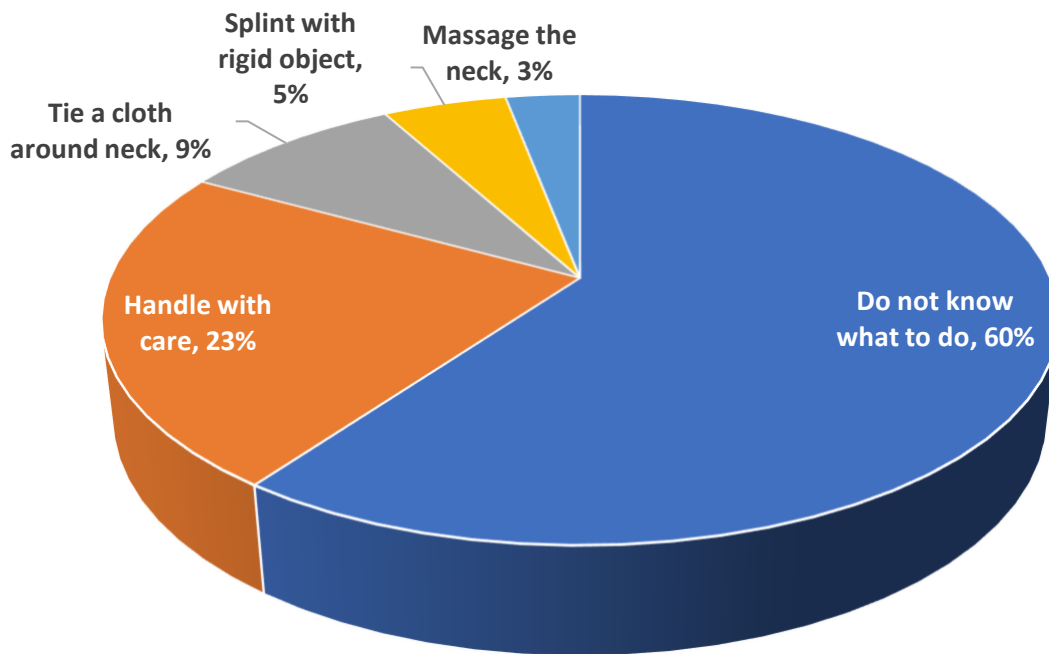
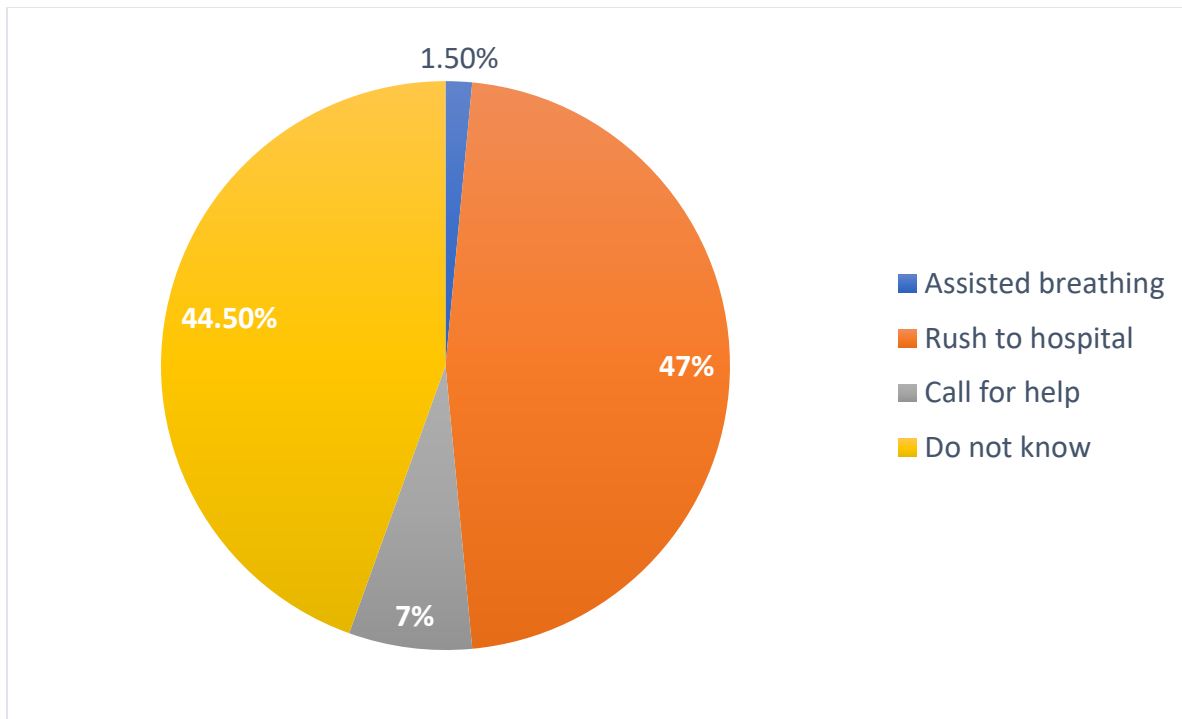


Figure 17: Handling of the cervical spine

On inquiry on how they would assess breathing, 141 (30%) had some knowledge. The commonest response was that they would use their finger to feel for air at the victims' nostrils. When asked how they would handle a victim that they find who was not breathing yet still alive, only 7 riders of the 473 stated that they would push air into the victim, all of them using their mouth. The majority (47%) indicated that they would rush the victim to hospital while 7% stated that they would call for assistance. The rest were unable to demonstrate any relevant knowledge.



*Figure 18: Management of an RTA victim that is not breathing*

On inquiry on how they would handle a victim who had an open wound on his/her chest, 151 of the participants indicated that they would cover the wound, 60 of them stating that they would use a cloth while the rest could not specify what they would use. One hundred and forty two (142) riders indicated that they would only rush the victim to hospital, while 35 would call for help. The remaining participants either admitted to not knowing what to do or responded incorrectly.



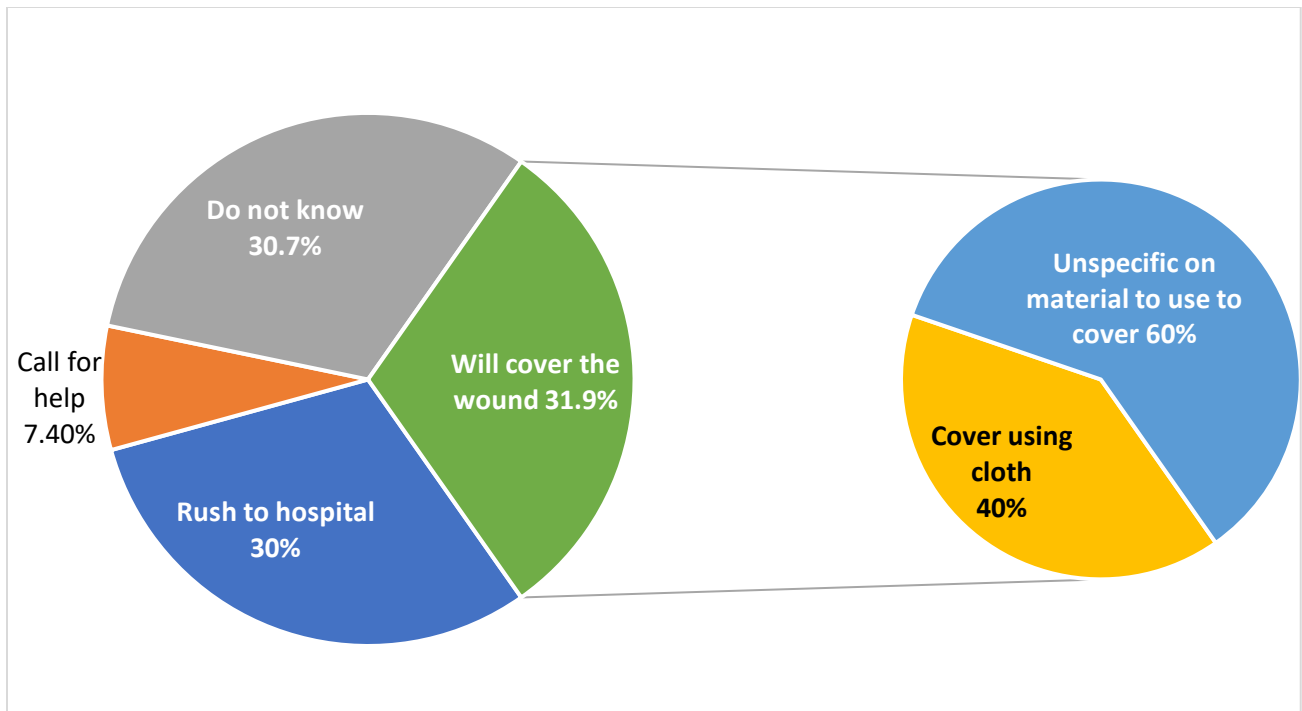


Figure 19: Management of an open wound to the chest, and material that would be used to cover the wound

When asked how they would check if the victim had a pulse/heartbeat present, 87% demonstrated some knowledge by indicating that they would feel for it on the chest, wrist, or hand. When asked what they would do if they found no heartbeat/pulse, only 7.5% demonstrate some knowledge by indicating that they would compress the victim's chest. The majority (65%) responded that they would rush the victim to hospital, 15% admitted that they didn't know what they would do, 6% stated that they would call for help, 5% would conclude that the victim was dead, while the rest responded incorrectly including responses such as pouring water on the victim. When asked what they would do if they found a victim bleeding, the majority (53%) responded that they would cover the wound with a cloth but none specifying the need for pressure dressing. On the other hand, 28%

would rush the victim to hospital, 7% admitted that they did not know, 6% would simply wipe the blood off, 3.5% would clean the wound with petrol and 2.5% would wash the wound with water.

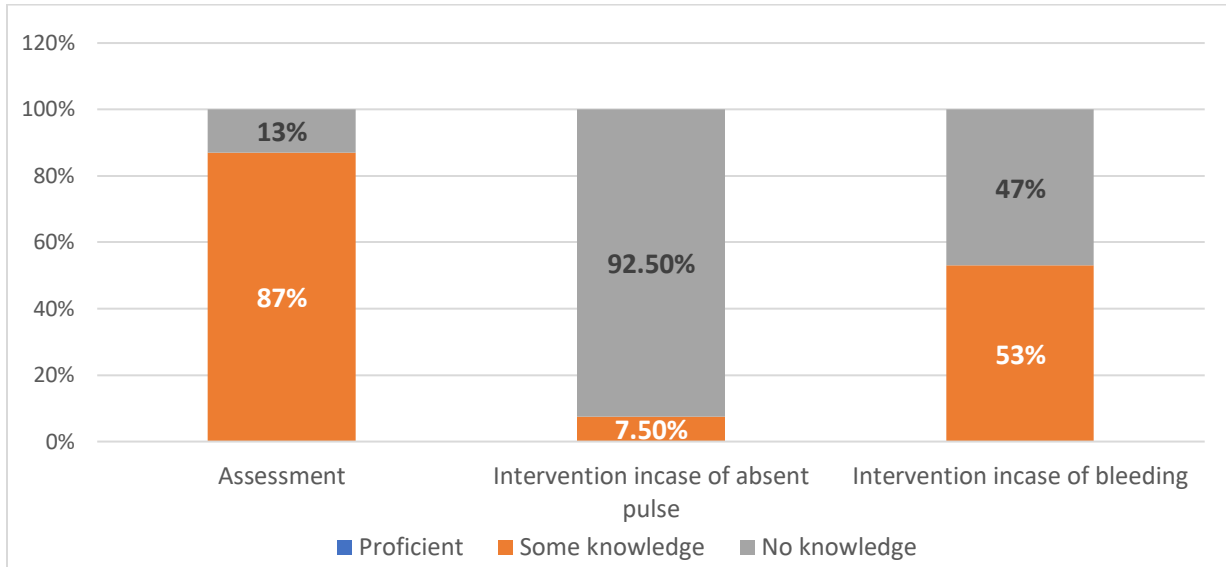


Figure 20: Basic knowledge on circulation assessment and management

On inquiry on head injury, when the riders were asked if they would be concerned about brain injury if they came across an unconscious victims, 65% responded affirmatively, 27% didn't know, while 8% would not be concerned. When asked what they would do with an unconscious accident victim, 36% would rush them to hospital, 19% would pour water on them, 18% would blow air at them, 17% admitted that they would not know what to do, and the remaining 10% gave a variety of other incorrect responses.

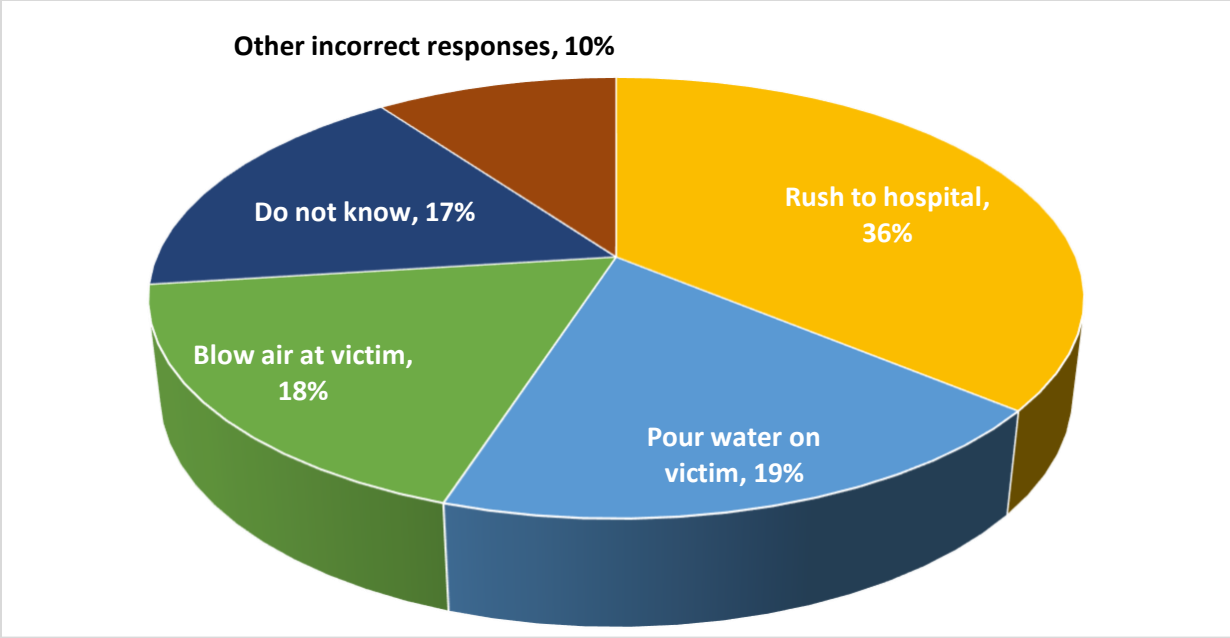


Figure 21: Handling of suspected brain injury victim

When asked if they would remove an object that they found penetrating the victim’s chest or abdomen, 340 (72%) of the riders responded that they would not while 28% would. When asked how they would handle a victim that had organs protruding outside his/her abdomen, 32% would cover them with a cloth, 27% did not know what they would do, 20% would rush the victim to hospital, 15% would push the organs back in, 5% would call for help while the remaining 1% would not touch the victim. When asked how they would handle a victim who complained of pain around the pelvic area, 52% of the riders admitted that they did not know. On the other hand, 20% indicated that they would rush him/her to hospital, 10% would call for help, while 6% would massage the victim. The remaining riders gave a variety of other inappropriate responses.

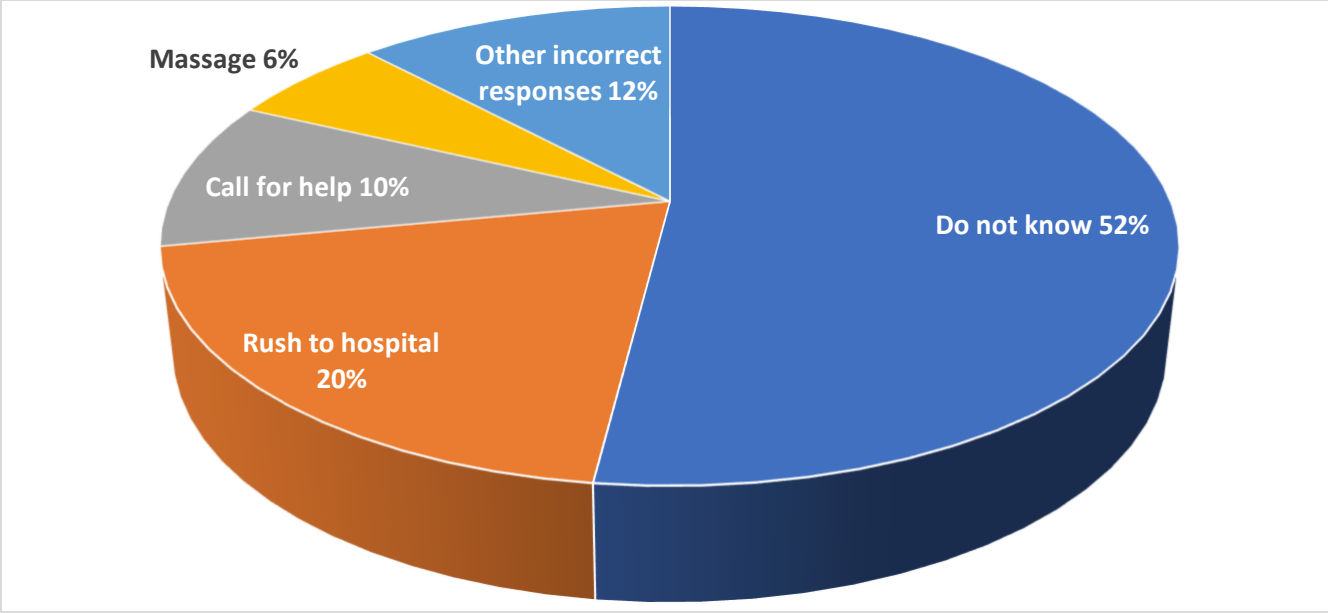


Figure 22: Handling of victims suspected of pelvic injuries

When asked how they would know if a victim had fractured a bone(s), 30% indicated that they would see the bone protruding out of the body, 30% would look out for swelling, 21% would check for weakness of the affected limb, 9% would check for deformity and the rest did not know. When asked how they would handle a broken bone, 48% would splint the limb, 41% would rush the victim to hospital, 6% admitted not knowing what to do while 5% would call for help.

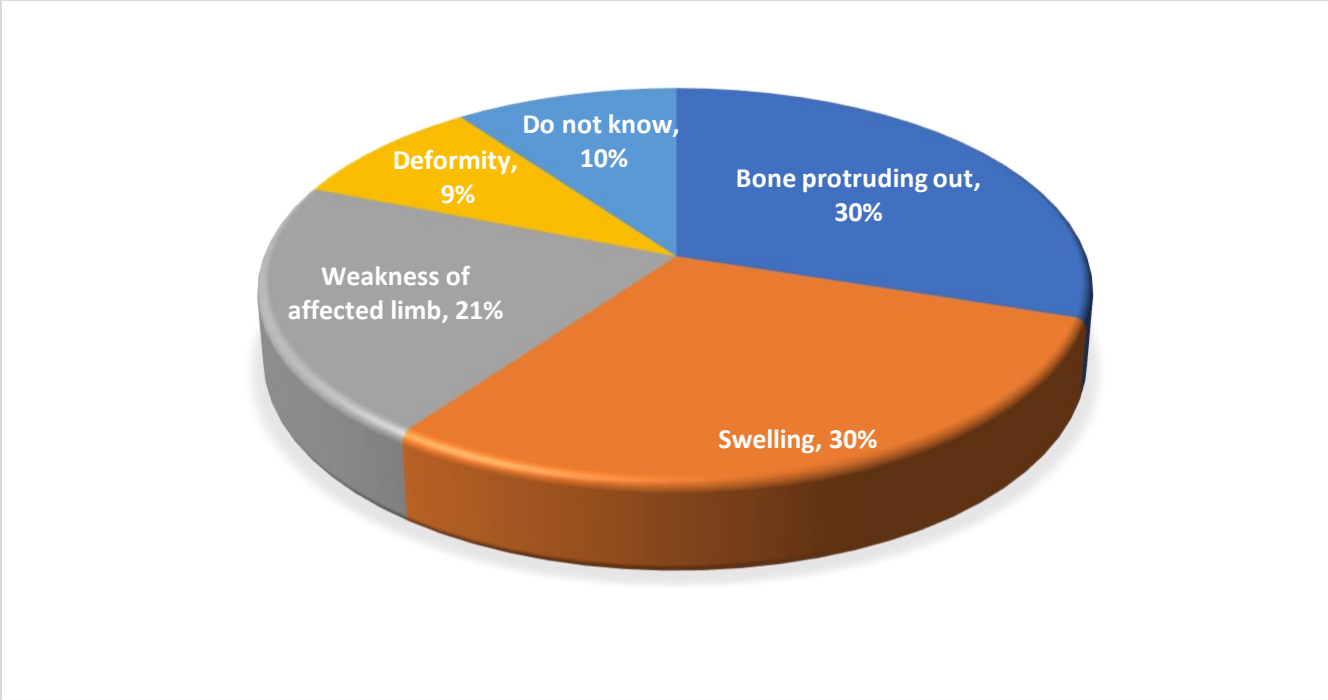


Figure 23: Assessment of fractured limbs

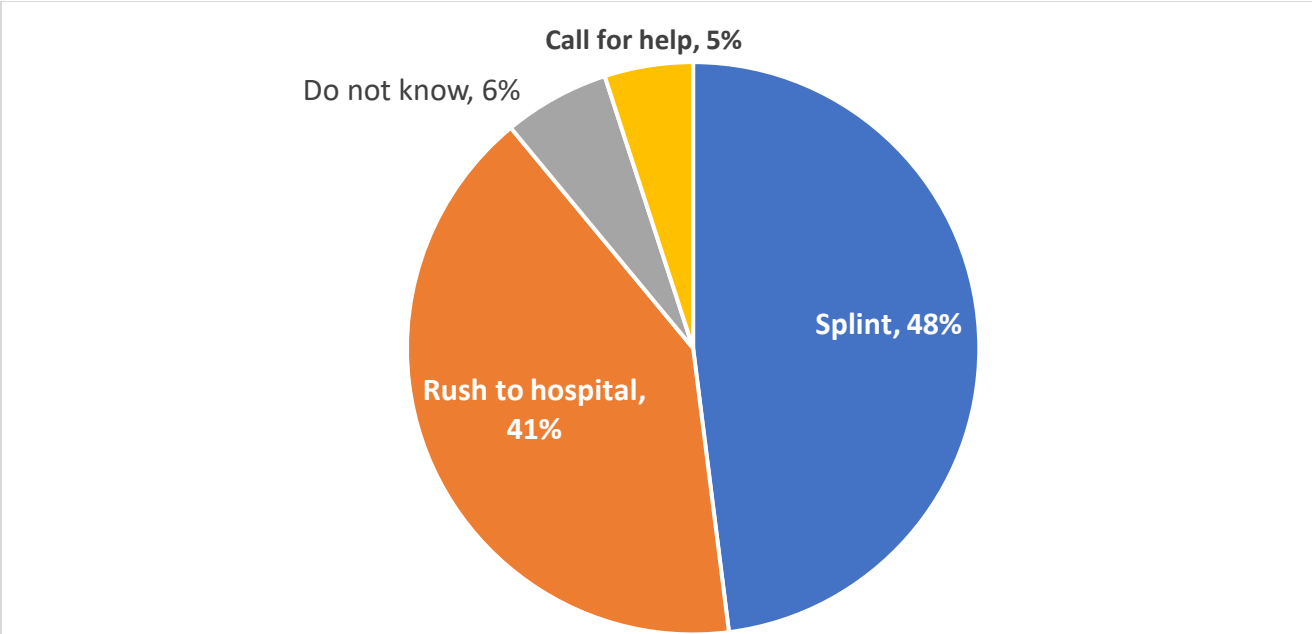


Figure 24: Handling of fractured limbs

## CHAPTER FIVE

### 5. DISCUSSION

Road traffic accidents (RTA) are considered a public health burden globally. The statistics of their morbidities and mortalities are alarming and the economic impact is too high to ignore, as countries lose substantial amounts of revenue and productivity due to RTAs. Many lives are destroyed and families forced into poverty with unimaginable suffering.

Prompt emergency services are the best remedy for lowering the mortalities and improving the outcome of trauma from RTAs. However, in countries that lack efficient emergency response services, accident victims are mostly assisted by lay bystanders who coincidentally happen to be at the scene and invariably galvanised into action on humanitarian grounds. In Kenya, these are mostly *boda boda* riders. Their numbers have steadily grown over the recent years with currently more *boda boda* motorcycles surpassing the number of vehicles in many parts of the country. Due to their widespread presence, even in remote areas, and their quick manoeuvrability, *boda bodas* are usually seen rushing to accident scenes to rescue victims.

Without the necessary knowledge and skills on correct handling of crash victims, the riders could unwittingly be doing more harm than good thereby not only failing to prevent morbidity and mortality, but even aggravating the injuries and expediting mortality, as they mishandle victims. On making this observation, the researcher therefore set out to conduct a study to assess the Knowledge Attitude and Practices (KAP) of basic trauma and life support (BTLS) among *boda boda* riders. This was aimed at assessing the depth of their knowledge, how they feel and what they actually do when they encounter an RTA, in order to postulate on the good or harm that they

are doing at accident scenes. Additional parameters were included that would give an indication on their exposure to RTAs, attitude to road safety and availability, reliability and suitability in offering BTLS to accident victims.

The reality is that for many years, emergency services in Kenya have been inefficient, and they are likely to remain that way for quite some time. In some parts, especially rural areas, they are non-existent. The United Nations recommends 5 pillars in curbing road carnage morbidities and mortalities in LMICs (3). The 5th recommends the empowerment of bystanders on correct handling of victims in order to save their lives by activating emergency response systems, recognizing injury and providing lifesaving emergency care. Since the *boda bodas* are in abundance, even in the most remote areas, constantly plying the roads, and can move very fast traversing even rough terrain, they provide an opportunity to enhance pre-hospital care for accident victims, as recommended by the UN. However before beginning the process of creating awareness in any community, it is necessary to first conduct a KAP study to assess the subject area in which awareness creation will take place. The current study therefore also serves as a needs assessment and a baseline evaluation for potential training of *boda boda* riders in BTLS.

On sociodemographic characteristics of the participants, it is noteworthy that 99.6% of the participants were male with only 2 females participating. The *boda boda* industry has widely been associated with rowdy youth, risky behaviour, crime and other social vices. Kenyan women, especially in the Coast, tend to be quite timid and reserved and it is not surprising to find very few of them working in the sector.

The participants were adult, mature men, aged 29 years on average, and fairly educated with more than 50% having been educated to secondary school and beyond. This gives an indication on their

potential of learning and suitability in handling the responsibility of offering emergency services to accident victims.

The current study demonstrates that *boda boda* riders are highly exposed to road accidents and are actively involved in providing assistance to victims. More than 90% of the participants spend more than 6 days a week, and at least 12 hours a day on the roads. Having worked as riders for 5 years on average, they are likely to be the members of society that spend the longest duration of time out on the roads. On more specific inquiry, the majority of them admitted to witness road accidents at least weekly, if not daily and that they arrive at the accident scenes within minutes of its occurrence. Majority (64%) arrive within 10 minutes and some (5%) even within seconds. This demonstrates that they arrive at scenes faster than even some of the fastest emergency response services in the world. The WHO recommends that emergency services are availed to victims within 15 minutes of an accident, a duration longer than the current participants. The majority (91%) of them compulsively stop at accident scenes, which is a number much higher than 67.7% that was reported from a study conducted in Dominican Republic (28). This demonstrates a positive attitude and willingness to be of assistance among the riders. However, after arriving at the scenes, in such record short time, only 6.5% offer any form of emergency care, and even them, as will be noted subsequently, offer substandard care. Majority of them are only able to offer transportation of the accident victims to hospital. This is much higher than was reported on the Dominican Republic study that documented 41% of participants offering transport (28). One may wonder how a victim is carried on a motorcycle. It was explained that they would sandwich the victim between the rider and a third passenger who would sit behind to support the victim!



As much as time is of essence, and transport to health facilities is necessary in the absence of efficient ambulances, life threatening injuries to the airway, breathing apparatus and blood circulation could cause mortality within a very short time and often cannot wait to be addressed at the hospital but rather require immediate attention. Furthermore, injuries to the spinal cord, bone fractures and other injuries lead to a poor outcome when handled incorrectly and would rather wait at the scenes for proper handling than be rushed in such a manner. It is not possible for a victim with an unstable spinal cord, for example, to be carried upright on a motorcycle without causing further injury. Such a venture, as well intended as it may be, would cause further permanent and even fatal damage.

It was alarming to note the low number of participants that were aware of emergency hotline numbers. Although the numbers were not tested to confirm coverage in the area, only 8% of the participants were acquainted with the police emergency hotline numbers. A study conducted in Oman in the year 2020 demonstrated 77% of their lay population were aware of emergency hotline numbers (35). This demonstrates a very low level of emergency preparedness among the current study local population.

On inquiry of involvement in road traffic accidents, only half the participants had been involved in accidents, most of whom sustained minor injuries, while others sustained none at all. However local studies have demonstrated that the majority of trauma victims in local orthopaedic practices are *boda boda* riders. Returning to work is regarded as an important outcome in orthopaedic treatment. The period it takes for a patient to return to work is commonly used as a measure to assess the economic impact of different types of trauma (36). The low number of participants reporting to have been involved in RTAs and sustained major injuries, could be an indication of

poor outcomes among *boda boda* trauma patients as the majority of those that suffered major injuries probably had not been able to return to work. This is an indication of poor outcome among *boda boda* riders that are involved in major RTAs.

The current study has demonstrated wanting attitudes towards road safety. Only 47% of the riders reported to use protective gear. This has been observed in a number of studies conducted locally. Even more alarming is the low use of protective gear among pillion passengers. With only 14% reporting to provide their passengers with safety gear, *boda boda* users are in great danger of severe injuries. Having no way to ascertain whether they actually use the gears or provide them to their passengers while riding, since the study was conducted while the participants were stationary, at their waiting bays, a possible source of bias may have come from acquiescence, the tendency to agree with a statement, and the usage of protective gear could easily be even much lower. Studies have also demonstrated a high number of *boda boda* users sustaining severe injuries including to the brain and there is urgent need for public education and awareness on the importance of protective gear use.

A very low number of the participants (15.6%) had undergone training in first-aid or BTLS with majority of the few having received it in primary and secondary school. On closer analysis, it was noted that those that had some knowledge were older than 30 years. This could be associated with the previous 8-4-4 school curricular in which first aid was taught in schools as part of home science, one of the subjects offered then. In the year 2000, however, home science was among subjects that were phased out. Furthermore, scouting clubs in schools previously offered some basic first aid training, but the clubs have since become obsolete in most schools. It is however encouraging to note that some of them learnt some basic skills from the internet and mass

communication media. This can be explored as an effective medium for awareness creation and information dissemination. It was not surprising that the commonest reason given for not having undergone any training by the majority was the lack of access to training. The vast majority of the riders (97%), expressed interest in attending a training course if given an opportunity because they believed that they would be able to save many lives. Furthermore, 89% of the riders even supported the idea of having policy that would make BTLS training a mandatory requirement for licencing of *boda boda* riders. This positive attitude and willingness to undergo training is an important quality that can be explored to enhance pre-hospital care in the area and the country at large.

## KNOWLEDGE AND PRACTICE OF BTLS

The current study, other than assessing exposure and general attitudes towards safety and BTLS, also investigated knowledge and practices of BTLS. In order to objectively do so, open ended questions were used so as to avoid guessing and acquiescence from the riders. BTLS was developed in 1981 by John Emory Campbell, MD, and the American College of Emergency Physicians (ACEP) and has since gained global recognition. It was developed to educate pre-hospital personnel in the care of trauma victims (37). Lifesaving interventions are structured into steps that are assigned the mnemonics ABCDE which stand for Airway, Breathing, Circulation, Disability and Exposure. The purpose is to guide a caregiver to quickly systematically identify and manage life threatening conditions including Airway obstruction, Breathing difficulties, and blood Circulation compromise before disability assessment and further evaluation by Exposure .

## AIRWAY:

Upon encounter with a trauma victim, the Airway is the first to be assessed and managed. It is assessed by talking to the victim, looking and listening for signs of obstruction such as checking for vomit, blood and foreign objects in the mouth and nose. If a victim is able to talk, it is assumed that the airway is clear. In case of obstruction, the airway is cleared and opened by tilting the head and lifting the chin or thrusting the jaw to allow free flow of air (38). During the current study, 85% of the riders could appreciate that the airway was crucial for breathing to take place. Most of the riders would check if the airway is blocked by checking for breathing. This does make sense and was accepted as a correct response for their level, but it does not follow the protocol of BTLS since if a victim's airway is compromised, checking for breathing does not help in identifying the cause of the compromise. Airway evaluation is placed first since it is a prerequisite for breathing and its compromise is life threatening. Only 4% could demonstrate some knowledge in clearing the airway and none of them knew how to open it. Further evaluation and intervention of the airway was not assessed as they were considered advanced level.

In victims of trauma, it is at this stage that the cervical spinal cord is also secured. A cervical collar is most recommended, however when not available such as at an accident scene, a care giver can improvise with anything rigid that can carefully stabilize the neck including tying the victims shoes against it. Failure to stabilize the neck in cervical injury could lead to compression of the cervical spinal cord causing paralysis and even death. Our participants demonstrated a very low level of knowledge on cervical spine stabilization, as 60% admitted that they didn't know what to do to protect the victims neck. A further 22% indicated that they would handle the neck carefully while rushing the victim to hospital. It is not clear how practical it would be to support a victim's neck while rushing him/her to hospital on a motorcycle, and the responders were probably guessing.

Only 5% appreciated the need to tie something rigid against the neck while 9% would tie a cloth. Clothes can be used as improvisations in the absence of alternatives, but it would require to be rolled into a hard enough collar to cover the entire length of the neck without causing airway obstruction. To our dismay, some of the participants even proposed massaging the victims neck, an action that could easily cause further injury to the spine.

## BREATHING

Once the airway is clear and cervical spine stabilized, a rescuer proceeds to assess the victim's breathing. This is done by looking at the chest for in-and-out movement and listening and feeling preferably with the cheek for air movement from the victim's nose. In the event that a victim is unable to breath and yet airway has been opened as described above, the rescuer would proceed to push air into the victim's lungs using either their own mouth, while taking safety measures such as using a cloth in between, or where available using an ambu bag. The participants of the current study had some knowledge of breathing assessment with 30% indicating that they would feel for air movement at the victim's nose using their fingers. Although this is not as sensitive as using the cheek, which allows the rescue to also listen for air, it was considered acceptable for their level. On intervention, however, only 7 of the riders (1.5%) were aware that they would need to provide the victim with air. The majority would rush the victim to hospital. This defeats the purpose of rescuing a victim's life as it takes a few seconds for a victim, who is not breathing, to die; on the other hand, rushing to hospital may not only be fruitless but may also aggravate a life threatening situation.

A number of life threatening conditions could compromise breathing including tension pneumothorax, flail chest, open/sucking wounds, and haemothorax. At basic level, rescuers may not be able to diagnose or handle most of them, but it is expected that they would at least be able to notice an open wound to the chest. This requires prompt intervention by covering it with an occlusive dressing that is taped on 3 sides with one side left free to act as a one way valve that allows air out and not into the chest, through the wound, during breathing. Among the participants, 151 (32%) could appreciate that such a wound would require to be covered, however many of them would use a cloth which may not be effective in sealing it airtight hence allowing air through the wound which would cause collapse of the lung.

## CIRCULATION

Circulation is the third system that a care giver must assess after breathing. The presence of heartbeat and pulses need to be checked as well as active bleeding and necessary interventions provided. The majority of the participants were able to demonstrate some knowledge on how to check for heartbeat and pulses. They (87%) responded that they would feel at the chest, wrist or neck. However, only 7.5% knew that they would need to provide chest compressions in the event that the heart beat is absent or weak. The majority would rush the victim to hospital, which again beats its purpose since the victim may not survive long enough to receive resuscitation at the hospital. Furthermore, 53% could appreciate the need to cover an actively bleeding wound. They however did not specify that the covering needs to be under pressure in order to arrest bleeding. None of them was aware of the possibility of applying a tourniquet in case the bleeding is very severe and life threatening.

## DISABILITY

In order to assess disability of a trauma victim, measures such as Glasgow Coma Scale and AVPU scales are commonly used (38). For the current study we however simplified the assessment and considered a state of unconsciousness to indicate possible brain injury. The majority of the participants would be concerned about brain injury in case a victim is unconscious, but there was low knowledge on how to handle one. A significant number would pour water on the victim's face, which could easily be aspirated into the airway thereby compromising breathing.

## EXPOSURE

The final step of BTLS is exposure which entails exposing the victim and examining for other injuries that require urgent attention. Some basic knowledge and skills expected of a lay caregiver include careful handling of a suspected spinal cord injured victim by logrolling, splinting a fracture, handling penetrating injuries and other basic injuries. We were relieved to note that majority of the respondents would not pull out an object penetrating into a victim's abdomen or chest. The object could be offering tamponade and preventing severe bleeding and should only be pulled out by competent hands in a hospital theatre. When a victim has organs protruding out of the abdomen, care givers are discouraged from pushing them back in but rather cover them with clean material and rush to victim to hospital. A good number of the riders (32%) responded correctly, however 15% would push the organs back in risking the introduction of severe infection. Fractures of the pelvis could lead to severe internal bleeding within the pelvic cavity which goes easily unnoticed resulting in hypovolemic shock and ultimately death. Victims having severe pain around the pelvis should be suspected to have sustained pelvic fractures and their pelvises wrapped in a sling so as to minimize the volume within the cavity and provide tamponade to possible

bleeding. The respondents had no knowledge on this and some would even massage the pelvis, risking dislodging of blood clots. They however had a reasonable amount of knowledge on how to identify a limb that is fractured based on its deformity, weakness, swelling and possible penetrating bone, and 48% knew that they require to split a broken bone. This is important to reduce pain, bleeding and soft tissue injury.



## CHAPTER SIX

### 6.0 CONCLUSION

It is evident from the current study that *boda boda* riders spend abundant time on the roads and are heavily involved in providing emergency care to road traffic accident (RTA) victims. They however possess very little knowledge and skills in correct handling of victims. An assessment of their practices indicates that they are likely causing more harm to RTA victims as they undertake their well-intended rescue missions. They possess very positive attitudes towards the role they play in offering emergency services and are willing to learn and acquire the necessary knowledge and improve their practices so as to save the lives of RTA victims that they come across regularly. Considering their widespread availability, duration they spend on the roads, promptness in arriving at accident scenes, positive attitudes, and the lack of alternative effective emergency response systems, training *boda boda* riders in BTLS will go a long way in reducing RTA morbidities and mortalities not only in Kilifi but Kenya at large. This is in keeping with the United Nations General Assembly recommendation of empowering lay bystanders to enhance pre-hospital care of RTA victims.

## 6.1 RECOMMENDATIONS

1. There is need for national policy to make BTLS training a mandatory requirement for public service transporters including *boda boda* riders
2. There is urgent need of creating awareness among *boda boda* riders on the importance of using safety gear to protect themselves and their passengers.
3. First aid teaching should be reintroduced in school curricula, especially with the current ongoing implementation of competence based learning

## 6.2 STUDY LIMITATIONS

- Some riders could not spare time for the study. Efforts were, however, made to approach them during times when few passengers were at their posts and they were parked and sitting calmly. A rider that got a client in the course of the interview was allowed to proceed with their work without further interview and were dropped from the study.
- Some riders were demanding to be paid for their time. The purpose of the study was made clear to them, and the time spent interviewing them was minimized. Where absolutely necessary, a compensation for their time was offered.

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## 8.0 APPENDICES

### 8.1 APPENDIX 1 : CONSENT FORM IN ENGLISH

**Title:** Knowledge, Attitude And Practice of Basic Trauma Life Support Among *Boda Boda* Riders In Kilifi County, Kenya.

**Principal Investigator:** Dr. Alkizim Faraj Omar

**Supervisors:** Dr Edward Gakuya and Dr. John Kingori

#### **Introduction/ Utangulizi:**

This study seeks to enhance the understanding of the knowledge, attitude, and practices of Basic Trauma and Life Support among *boda boda* riders in Kilifi County, Kenya. This will guide post-crash management policies to enhance pre-hospital care of road traffic victims by equipping non-medical personnel including *boda boda* riders with Basic Trauma and Life Support skills.

#### **Objectives of the study / Malengo ya utafiti:**

- (i) To assess the level of knowledge of BTLS among *boda boda* riders in Kilifi .
- (ii) To describe the attitude towards BTLS among *boda boda* riders in Kilifi.
- (iii) To document the practice of BTLS among *boda boda* riders in Kilifi.

**Procedure:**

You will be interviewed briefly to obtain information on your knowledge, attitude and practice of Basic Trauma and Life Support on trauma victims that you may have interacted with.

**Benefits:**

Your participation shall be beneficial in advising policy of Kenya in enhancing bystander knowledge and skills in BTLS so as to enhance pre-hospital care of accident victims and thereby their survival.

**Risks:**

There will be no risks to you when you participate in the study.

**Voluntarism**

Please also note that, your participation is voluntarily, and you have a right to decline or withdraw from the study.



**Confidentiality**

The information obtained from you will be treated with confidentiality.

**Consent certificate**

I certify that the study has been fully explained to me and I am willing to participate in it.

Participants signature or thumbprint..... DATE: .....

I confirm that I have clearly explained to the participants the nature of the study and the contents of the consent form in detail and the participant have decided to participate voluntarily without any coercion or incentive.

Investigator Signature: ..... Date: .....

Witness signature: ..... Date: .....

For any inquiries please contact

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You may also contact The Kenyatta National Hospital-University of Nairobi Ethics and Research

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P O BOX 20723 - 00202, Nairobi

## 8.2 APPENDIX 2 : CONSENT FORM IN SWAHILI

**Kichwa:** Maarifa, Mtazamo Na Matendo Ya Msaada Wa Kuokoa Maisha Kwa Waathiriwa Wa Ajali Miongoni Mwa Waendeshaji Boda Boda maeneo ya Kaunti ya Kilifi, Kenya

**Mchunguzi Mkuu:** Dkt. Alkizim Faraj Omar

**Wasimamizi:** Dkt. Edward Gakuya and Dkt. John Kingori

### *Utangulizi:*

*Utafiti huu unanua kuongeza uelewa wa maarifa, mtazamo, na mazoea ya huduma ya msingi ya majeraha kati ya waendeshaji boda boda. Hii itaongoza sera za matibabu ya baada ya ajali ili kuboresha huduma ya kabla ya hospitali kwa waathiriwa wa ajali za barabarani kwa kuwapa watu wasio na elimu ya tiba kama waendesha boda boda elimu ya huduma ya msingi ya majeraha.*

### **Malengo ya utafiti:**

- (iv) Kutathmini kiwango cha maarifa kuhusu huduma ya kwanza ya ajali kati ya waendesha boda boda jijini Kilifi.*
- (v) Kuelezea mtazamo kwa huduma ya kwanza ya ajali kati ya waendesha boda boda jijini Kilifi.*
- (vi) Kusajili mazoea ya kupeana huduma ya kwanza ya ajali kati ya waendesha boda boda jijini Kilifi.*

## **Utaratibu**

*Utahojiwa kwa kifupi kupata habari juu ya maarifa, mtazamo na mazoezi ya huduma ya msingi ya majeraha kwa wahasiriwa wa ajali ya barabarani ambao unaweza kuwa umeshirikiana nao. Kifaa cha kurekodi sauti kitatumika kurekodi mahojiano haya ili kuhakikisha kwamba itafanyika kwa kasi, urahisi, na usahihi.*

## **Faida**

*Kushiriki kwako kutakuwa na faida katika kushauri sera ya Kenya katika kuongeza maarifa katika BTLS ili kuboresha huduma za kabla ya hospitali kwa wahasiriwa wa ajali ili kuwaokowa Maisha.*

## **Harari:**

*Hakutakuwa na hatari kwako wakati unashiriki kwenye utafiti huu.*

## **Hiari:**

*Tafadhali kumbuka pia kuwa, ushiriki wako ni wa hiari, na una haki ya kukataa au kujiondoa kwenye utafiti.*

**Usiri:**

*Habari iliyopatikana kutoka kwako itabaki kuwa siri.*

**Hati ya idhini:**

*Ninathibitisha kuwa utafiti umeelezwa kikamilifu kwangu na niko tayari kushiriki.*

*Saini ya washiriki au alama ya kidole gumba..... TAREHE:.....*

Ninathibitisha kuwa nimewaelezea wazi washiriki hali ya utafiti na yaliyomo kwenye fomu ya idhini kwa undani na mshiriki ameamua kushiriki kwa hiari bila kulazimishwa au motisha yoyote.

Saini ya mchunguzi: ..... Tarehe: .....

Saini ya shahidi: ..... Tarehe: .....

*Kwa maswali yoyote tafadhali wasiliana na:*

Dr. Alkizim Faraj Omar - *Mtafiti mkuu*

Simu ya rununi                      +254721336955

Barua pepe                              alkizim@doctor.com

Unaweza pia kuwasiliana na Kamati ya Maadili na Utafiti ya Hospitali ya Kitaifa ya Kenyatta na

Chuo Kikuu cha Nairobi kupitia:

Nambari ya simu: 726300-9

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Sanduku la posta 20723 - 00202, Nairobi

### 8.3 APPENDIX 2 : DATA COLLECTION TOOL

#### **Knowledge Attitude and Practice of Basic Trauma and Life Support among *boda bodas* in**

#### **Kilifi County, Kenya**

##### **A. BIODATA**

1. Serial Number \_\_\_\_\_

2. Gender / Jinsia    *F*     *M*                       3. Age / Umri \_\_\_\_\_

4. Marital status / *Hali ya ndoa*: *Married*     *Widowed*             *Divorced*     *Single*

*Umeoa*             *Mjane*             *Mtalaka*             *Hujaoa*

5. Level of education attained: *None*     *Nursery*     *Primary*     *Secondary*     *Other*

*Kiwango cha elimu*:                      *Hujasoma*     *Chekechea*     *Msingi*     *Sekondari*     *Nyingine*

6. Area of operation in Kilifi (sub-county) – Tick one

Kilifi North                                       Ganze     Malindi

Kilifi South                                       Kaloleni

Rabai     Magarini

*Eneo la kazi Kilifi(kaunti ndogo)*:

Kilifi North                                       Ganze     Malindi

Kilifi South                                       Kaloleni

Rabai     Magarini

7. How long have you been operating as a *boda*

*boda*? \_\_\_\_\_

Umekuwa ukifanya kazi kama bodaboda kwa muda gani? \_\_\_\_\_

8. How many days per week do you work as a *boda boda* ? \_\_\_\_\_

*Je! Unafanya kazi kama boda boda kwa siku ngapi kwa wiki?* \_\_\_\_\_

9. How many hours per day do you work as a *boda boda*? \_\_\_\_\_

*Unafanya kazi kama boda boda kwa saa ngapi kwa siku?*  
\_\_\_\_\_

10. Have you ever been involved in a road accident? Yes  No

*Je! Umewahi kuhusika katika ajali ya barabarani? Ndio  Hapana*

11. If yes how many times and give details of injuries of each? \_\_\_\_\_

\_\_\_\_\_

–

*Ikiwa jibu lako ni ndio, mara ngapi? Nipe maelezo ya majeraha uliopata kwa ila ajali* \_\_\_\_\_

\_\_\_\_\_

–

12. Do you always use protective gear while riding? Yes  No

*Je! Wewe hutumia nguo za kujikinga kila wakati unapoendesha? Ndio*

*Hapana*

If yes, which ones? *Ikiwa ndio, unatumia ipi?*

*Helmet / Kofia*

*Jacket / Koti*

*Shin guard / kinga ya miguu*



- Gloves / *kinga ya mikono*
- Boots / *viatu vizito*
- Other / *Nyingine* \_\_\_\_\_

If no, why not? *Ikiwa hutumii, ni kwa nini hutumii?* \_\_\_\_\_

13. Do you give your passengers any protective gear to wear? Yes  No

Je! Unawapa abiria wako kinga ya kuvaa? *Ndio*  *Hapana*

If yes, which ones? *Ikiwa jibu lako ni ndio, unatumia zipi?*

- Helmet / *Kofia*
- Jacket / *Koti*
- Other / *Nyingine* \_\_\_\_\_

If no, why not? *Ikiwa hapana, kwanini hauwapi?* \_\_\_\_\_

- You do not have / *hauna*
- You do not want to spread diseases / *hutaki kusambaza magonjwa*
- They are expensive to buy / *ni gali kununua*
- It is not important / *si muhimu*
- Your passengers do not like using them/ *abiria hawapendi kutumia*
- Other / *Nyingine* \_\_\_\_\_

14. What is the commonest emergency that you witness as you engage in your work?

- Road accidents
- People falling along the roads
- Others \_\_\_\_\_

*Ni dharura gani ambayo unashuhudia unapohusika katika kazi yako?*

- Ajali ya barabarani*
- Watu kuanguka*
- Nyingine* \_\_\_\_\_

15. Have you ever witnessed a road traffic accidents? Yes  No

*Je! Umewahi kushuhudia ajali za barabarani? Ndio  Hapana*

16. How often do you witness road accidents? \_\_\_\_\_

*Je! Ni mara ngapi unashuhudia ajali za barabarani? \_\_\_\_\_*

17. Do you stop to assist the victims? Yes  No

*Je, unasimama kuwasaidia waathiriwa wa ajali? Ndio  Hapana*

18. If yes, why do you do so? / *Ikiwa unasimama, kwa nini unafanya hivyo*

- It's my responsibility as a human / *ni jukumu langu kama binadamu*
- I sympathise with the victims / *nawahurumia waathiriwa*
- I have the knowledge to assist / *niko na elimu ya kuwasaidia waathiriwa*
- Other / *Nyingine* \_\_\_\_\_

19. What assistance did you offer the victims?

- First Aid  Calling for help
- Transport to hospital

- I protect them from danger  
and theft

Other: \_\_\_\_\_

*Ulitoa msaada gani kwa wahasiriwa? \_\_\_\_\_*

- Huduma ya kwanza*  *Nawalinda waathiriwa kutoka*  
 *Usafiri hadi hospitali*  *kwa hatari na waizi*  
 *Niliitisha usaidizi*  *Nyingine \_\_\_\_\_*

—

20. If no, why not? *Ikiwa hapana, kwanini?*

- I wouldn't know how to assist / *nisingejua jinsi ya kusaidia*  
 I don't have the necessary equipment / *sina vifaa muhimu*  
 I don't want to be blamed for the accident / *sitaki kulaumiwa kwa ajali*  
 I am usually in a hurry / *huwa nina haraka*  
 Others were already at the accident scene helping/ *Watu wengine tayari wapo kwenye eneo la ajali wanasaidia*  
 Other / *sababu ingine \_\_\_\_\_*

21. How often are you the first one to arrive at an accident scenes?

Never  Rarely  Often  Regularly  Always

*Je! Ni mara ngapi wewe ni wa kwanza kufika kwenye matukio ya ajali?*

*Kamwe  Mara chache  Mara nyingi  Mara kwa Mara*   
*Daima*

22. When was the last time you stopped to assist accident victims? \_\_\_\_\_

*Je! Ni lini mara ya mwisho ulisimama kusaidia wahasiriwa wa ajali? \_\_\_\_\_*

23. Approximately how long after the accident had occurred did you arrive? \_\_\_\_\_

*Takribani ni muda gani baada ya ajali kutokea ulifika? \_\_\_\_\_*

24. Were you the first to arrive at the scene? Yes  No

*Je! Ulikuwa wa kwanza kufika eneo la tukio? Ndio  Hapana*

25. Have you received any first aid training? Yes  No

*Umepokea mafunzo yoyote ya huduma ya kwanza? Ndio  Hapana*

26. If yes, where did you receive the training? *Ikiwa ndio, ulipata wapi mafunzo?*

Primary school / *Shuleni ya msingi*

Secondary school / *Shule ya upili*

University / *Chuo kikuu*

Technical school / *Shule ya ufundi*

Driving school / *Shule ya kuendesha*

Government agency (e.g. NTSA) / *Shirika la serikali (k.m NTSA)*

Television-Internet-Media / *Runinga, Mtandao, vyombo vya habari*

Others \_\_\_\_\_ /

*Mengineo: \_\_\_\_\_*

27. If no to question 28 why not? *Ikiwa jibu la swali 28 ni hapana, kwanini?*

It is not important for me / *Sio muhimu kwangu*

- Only medical personnel require to undergo such training / *Wafanyakazi wa matibabu tu ndio wanaohitaji kupata mafunzo kama haya*
- Cannot afford it / *sina uwezo*
- I don't know where to get trained / *Sijui wapi kupata mafunzo*

28. If no to question 28, would you like to be trained in trauma first aid or do you think it's not something for *boda boda* riders to learn? Yes, I would  No I wouldn't

*Ikiwa jibu la swali 28 ni hapana, ungependa kufundishwa huduma ya kwanza au unafikiri sio muhimu kwa waendesha boda boda? Ndio ningependa  Hapana singependa*

29. If yes to question 30, why would like to be trained?

- |  |  |
|--|--|
| <input type="checkbox"/> To be able to save a life   | <input type="checkbox"/> To become more marketable as a        |
| <input type="checkbox"/> To be able to attend to my passenger in case we are involved in an accident | bodaboda rider since passengers will feel safer riding with me |
| <input type="checkbox"/> To minimize disability  | <input type="checkbox"/> To get a better job                   |
|  | <input type="checkbox"/> Other_____                            |

*Ikiwa jibu la swali 30 ni ndio, ni kwanini ungependa kupokea mafunzo?*

- |   |   |
|---|---|
| <input type="checkbox"/> <i>Ili kuokoa Maisha</i>                                   | <input type="checkbox"/> <i>Kupata kazi zaidi kama mwendeshaji wa bodaboda kwani abiria watahisi salama kuendesha na mimi</i> |
| <input type="checkbox"/> <i>Kuweza kumhudumia abiria wangu ikiwa tutapata ajali</i> |   |
| <input type="checkbox"/> <i>Ili kupunguza ulemavu</i>                               | <input type="checkbox"/> <i>Kupata kazi bora</i>  |
|   | <input type="checkbox"/> <i>Nyingine_____</i>   |

30. Do you think many lives can be saved in Kenya if boda boda riders are skilled in first aid?

Yes  No

*Je! Unafikiri maisha mengi yanaweza kuokolewa Kenya ikiwa waendeshaji boda boda wana ujuzi katika kupeana huduma kwanza? Ndio  Hapana*

31. Do you think it should be mandatory for all boda boda riders to have some training in first aid?

Yes  No

*Je, Ungependelea iwe ni lazima kwa waendeshaji boda boda wote kupata mafunzo ya huduma ya kwanza? Ndio  Hapana*

32. How do you check to see if the airway is open?

\_\_\_\_\_

*Unaangaliaje kuona ikiwa njia ya hewa iko wazi? \_\_\_\_\_*

33. How do you open the airway if you suspect that it is not open? \_\_\_\_\_

*Unafungua njia ya hewa vipi ikiwa unashuku kuwa haiko wazi? \_\_\_\_\_*

34. How do you check if a victim is breathing? \_\_\_\_\_

*Unaangaliaje ikiwa mwathiriwa anapumua? \_\_\_\_\_*

35. If you find that the victim is unconscious but breathing normally and has no other life threatening conditions, what would you do?

\_\_\_\_\_

*Ukipata kuwa mhasiriwa hajitambui lakini anapumua kawaida na hana hali nyingine ya kutishia maisha, utafanya nini? \_\_\_\_\_*

36. If you find the victim unconscious and not breathing, what would you do? \_\_\_\_\_

*Ukimwona mwathiriwa amepoteza fahamu na hapumui, ungefanya nini? \_\_\_\_\_*

37. How do you check if the victim's heart is beating?

\_\_\_\_\_  
*Unaangalia vipi kama moyo wa muathiriwa unapiga? \_\_\_\_\_*

38. If you check the heartbeat/ pulse and find it absent, what would you do?

\_\_\_\_\_  
*Ukipata moyo ya muathiriwa haipigi, itafanya nini? \_\_\_\_\_*

39. If the answer above is chest compressions, where on the chest do you compress?

\_\_\_\_\_  
—  
*Ikiwa jibu hapo juu ni kubonyeza kifua, unabana wapi kwenye kifua? \_\_\_\_\_*

40. If you find that the victim is bleeding, what would you do?

\_\_\_\_\_  
*Ukimpata mwathiriwa anavuja damu, ungefanya nini? \_\_\_\_\_*

41. If the victim is unconscious, would you be concerned about brain injury?

*Ikiwa mwathiriwa amepoteza fahamu, utakuwa na wasiwasi juu ya kuumia kwa ubongo wake?*

Yes/ndio

No/hapana

I don't know/ sijui

42. How would you handle the unconscious victim?

\_\_\_\_\_

Ungeshughulikiaje mhasiriwa aliyepoteza fahamu?

\_\_\_\_\_

43. If the victim has bruises on the head and face, would you be worried about his neck/spinal cord? Yes  No  I don't know

*Ikiwa mwathiriwa ana michubuko kichwani na usoni, je! Utakuwa na wasiwasi juu ya shingo / uti wa mgongo wake? Ndio  Hapana*

*Sijui*

44. If yes, do you think you need to protect it? Yes  No  I don't know

*Ikiwa jibu ni ndio, unafikiri unahitaji kuilinda? Ndio  Hapana  Sijui*

45. It yes, how will you protect the victim's neck?

\_\_\_\_\_

*Ikiwa jibu ni ndio, utailindaje shingo ya muhasiriwa? \_\_\_\_\_*

46. If you observe that the victim is not moving his or her neck or the person complains of weakness, numbness or paralysis or lacks control of his or her limbs, bladder or bowels or the neck or back is twisted or positioned oddly, what would you suspect?

\_\_\_\_\_

*Ikiwa utapata kwamba mwathiriwa hasongezi shingo lake au analalamika juu ya kukosa nguvu, kufa ganzi au kupooza au kukosa udhibiti wa viungo vyake, kibofu cha mkojo au choo au shingo au mgongo umepindishwa au kukaa kombo, ni nini utashuku? \_\_\_\_\_*



47. If you suspect someone has spinal injury what would you do?

\_\_\_\_\_

*Ikiwa unashuku mtu ana jeraha la uti wa mgongo ungefanya nini?\_\_\_\_\_*

48. How would you handle an open wound on the victim's chest?

\_\_\_\_\_

*Ungeshughulikiaje jeraha wazi kwenye kifua cha mwathiriwa?*

\_\_\_\_\_

49. If you find that the victim has an object penetrating his chest or abdomen, would you remove it? Yes  No

*Ukigundua kuwa mwathiriwa ana kitu kinachopenya kifua au tumboni, je! Utaitoa?*

*Ndio  Hapana*

50. If the victim has internal organs protruding outside his abdominal wall, how will you handle

them?\_\_\_\_\_

—

*Ikiwa mwathiriwa ana viungo vya ndani vilivyojitokeza nje ya tumbo lake, utavishughulikia \_\_\_\_\_ vipi?*

\_\_\_\_\_

51. If the victim complains of pain around the pelvis, or has signs of injury around there such as bruising, or even experiences pain when the pelvis receives gentle pressure, what will you do to protect his pelvis?

\_\_\_\_\_

*Ikiwa mwathiriwa analalamika maumivu karibu na kiuno, au ana dalili za kuumia karibu na hapo kama vile michubuko, au hata hupata maumivu wakati kiuno inapopata shinikizo kidogo, utafanya nini kulinda kiuno chake?*

---

52. How would you know if the person may have fractured bone? \_\_\_\_\_

*Utajuaje ikiwa mwathiriwa amevunjika mfupa? \_\_\_\_\_*

53. What would you do in case there is a fracture? \_\_\_\_\_

*Utafanya nini ikiwa kuna mfupa umevunjika? \_\_\_\_\_*

54. Is there any other thing you would like to share with regards to your experience or opinion of trauma first aid being offered by non-medical personnel including yourself as a boda boda

rider? \_\_\_\_\_

---

---

*Kuna kitu kingine chochote ambacho ungependa kueleza kuhusu uzoefu wako au maoni yako kuhusu matibabu ya kwanza kwa waathiriwa wa ajali kutolewa na watu wasio ne elimu ya tiba ikiwa ni pamoja na wewe mwenyewe kama mwendeshaji wa boda boda?*

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## 8.4 APPENDIX 3: LETTER OF APPROVAL FROM KNH-UON ETHICS AND RESEARCH COMMITTEE



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Ref: KNH-ERC/A/142

23<sup>rd</sup> April 2021

Dr. Alkizim Faraj Omar  
Reg. No.H58/86789/2016  
Dept. of Orthopaedic Surgery  
School of Medicine  
College of Health Sciences  
University of Nairobi



Dear Dr. Omar

**RESEARCH PROPOSAL – KNOWLEDGE, ATTITUDE AND PRACTICES OF BASIC TRAUMA LIFE SUPPORT AMONG BODA BODA RIDERS IN KILIFI (P124/03/2021)**

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 23<sup>rd</sup> April 2021 – 22<sup>nd</sup> April 2022.

This approval is subject to compliance with the following requirements:

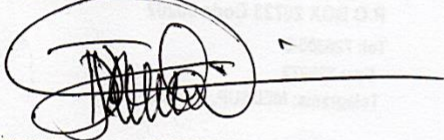
- a. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- b. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
- c. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
- d. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
- e. Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
- f. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (Attach a comprehensive progress report to support the renewal).
- g. Submission of an executive summary report within 90 days upon completion of the study.



This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Yours sincerely,



**PROF. M. L. CHINDIA**  
**SECRETARY, KNH-UoN ERC**

- c.c. The Principal, College of Health Sciences, UoN  
The Senior Director, CS, KNH  
The Chairperson, KNH- UoN ERC  
The Assistant Director, Health Information Dept, KNH  
The Dean, School of Medicine, UoN  
The Chair, Dept. of Orthopaedic Surgery, UoN  
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