

**KNOWLEDGE, PERCEPTION AND ATTITUDE TOWARDS ROAD SAFETY SIGNS  
AMONG PUBLIC SECONDARY SCHOOL STUDENTS IN IBADAN NORTH LOCAL  
GOVERNMENT AREA, OYO STATE, NIGERIA**

**ADEYEMI MARY OYINDAMOLA**

**MATRIC NO: 148981**

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**BY**

**ADEYEMI MARY OYINDAMOLA**

**B.Sc Physiology (University of Ibadan)**

**MATRIC NO: 148981**

**A PROJECT IN THE DEPARTMENT OF HEALTH PROMOTION AND EDUCATION,  
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## **DEDICATION**

This work is dedicated to Almighty God, who has always been my fortress and my rock.

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## ABSTRACT

Traffic accident is one of the critical issues killing nearly 1.3 million people every year. RTAs are the leading causes of death globally among 15-19 years and second leading cause for those in 12-14years. Child pedestrian injury rates have been found to be highest in Africa and Asia and this has been attributed to the fact that many of them walk to school. Knowledge of road safety signs is therefore essential for students walking to school so they can safely navigate traffic environments. This research was designed to investigate the knowledge, perception and attitude towards road safety signs among public secondary school students in Ibadan North Local Government.

The study was a descriptive cross-sectional study carried out among a total sample of 300 public secondary school students which were selected using a four-stage sampling technique. A pre-tested semi-structured interviewer-administered questionnaire was used. A 17-point knowledge scale was used to assess knowledge of road safety signs; knowledge scale of  $<8$  was rated poor knowledge, KS of  $\geq 8 < 12$  was considered fair and KS  $\geq 12$  was rated as good. Also, a 24-point attitude scale was used to determine the attitude towards road safety signs; attitude score of  $< 17$  was poor while a score of  $\geq 17$  was rated good. A 18-point perception scale was also used to examine the perception towards road safety signs; perception score of  $< 13$  represented poor perception while a score  $\geq 13$  represented good perception. Data were analysed using descriptive and inferential statistics such as Chi square test at  $p < 0.05$  level of significance.

Age of the respondents was  $14.4 \pm 2.0$  years. Respondents, (27.3%) were in JSS1, 26.7% were in JSS2, 24.3% in SSS1 and 21.7% in SSS2. Majority, (54.7%) of the respondents were females while 45.3% were males. Only few, (28.0%) of the respondents had previously been exposed to road traffic accident or related injury. Some (46.3%), of the respondents walked to school, 33.0% of the respondents had driven a bicycle/motorcycle/car before. Only, (15.3%) had good knowledge, 44.7% had fair knowledge and 40.0% had poor knowledge of road safety signs. Majority, (78.3%) had good attitude towards road safety signs and 86.7% had good perception. Fear of injury (79.2%) was the most identified factor influencing the use of road safety signs. The most outstanding source of information on road signs among the respondents was media (85.7%). There was a significant difference between class of respondents' and knowledge of road safety signs.

Poor knowledge, good attitude and good perception were documented among the study population. Health promotion and education activities in relation to road safety signs should be strengthened to all students during school health programs.

**Keywords:** Road safety signs, Public secondary school students, Road traffic accidents, Adolescents.

**Word count:** 443

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## CERTIFICATION

This is to certify that this study was carried out by ADEYEMI, MARY OYINDAMOLA under my supervision in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.

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SUPERVISOR

**DrOyewoleOyediran Emmanuel**

B.Sc., M.Sc., MPH, Ph.D. (Ibadan)

**Senior Lecturer**

Department of Health Promotion and Education,

Faculty of Public Health, College of Medicine,

University of Ibadan, Nigeria.

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## **GLOSSARY OF ABBREVIATIONS**

DALYs – Disability-adjusted Life Years

FRSC – Federal Road Safety Commission

LFN – Laws of the Federation of Nigeria

SPSS - Statistical Package for Social Sciences

WHO – World Health Organization

RTA- Road Traffic Accidents

CDC- Center for Disease Control

### DEFINITION OF TERMS

**Road safety signs:** According to the International Commission on Illumination (CIE), a road sign is a device that provides a visual message by virtue of its situation, shape, colour or pattern and sometimes by the use of symbols or alpha-numeric characters. They are signs erected at the side of or above the road to give instructions or provide information to road users. For a good sign to be communicative; it must be conspicuous, comprehensible, legible, credible and accurate.

**Public secondary school students:** These are school students currently registered in public secondary schools in Ibadan North local government, Oyo state.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the study

As children grow and their world extends beyond the home and out into local roads, they are exposed to hazards and risks (WHO, 2004). Despite the fact that children use roads as pedestrians, motorcyclists and vehicle passengers, the road environment is rarely developed with consideration for their needs. Traffic accidents have long been known as one of the critical issues, killing nearly 1.3 million people every year and causing tremendous economic and social loss worldwide (WHO, 2011). The United Nations launched the Decade of Action for Road Safety during the period 2011-2020 and provided the five pillars of road safety activities which includes; road safety management, safer roads and mobility, safer vehicles, safer road users, and post-crash response (WHO, 2011). This declaration holds significance, as road traffic accidents are a major cause of morbidity and mortality, especially among young adults who constitute the most productive age groups of the society. Publication of the WHO and World Bank World report on road traffic injury prevention in 2004 and the dedication of World Health Day to road safety have resulted in unprecedented attention to road safety around the world. These events issued a clear call for action, and governments, international organizations, civil society, road safety practitioners, and the private sector have all responded with energy and enthusiasm.

Road traffic accidents are routine occurrences throughout the world; thousands of people lose their lives on the roads every day. Many more are left with disabilities or emotional scars that they will carry for the rest of their lives. The rate of accident is worrisome in Nigeria due to the state of disrepair of Nigeria roads, lack of road caution, road signs, and other road safety devices, recklessness of drivers and motorcycle riders among others (Ademiluyi, 2007). In Nigeria, injuries and deaths resulting from road traffic accidents are on the rise and they account for the highest proportion of deaths on the Africa continent (WHO, 2011). Road accidents are Nigeria's third leading cause of trauma-related deaths and the most common cause of disability. Increased disregard of road traffic signs, irresponsible driving habit particularly among teenage drivers and lack of consideration for other road users has been part of the significant factors contributing to the alarming proportion of accidents on Nigeria roads (Afolabi and Gbadamosi, 2017).

Every hour of every day, forty adolescents die as a result of road traffic crashes (WHO, 2011). This means that every day another one thousand families have to cope with the unexpected loss of a loved one. Losing a child is never easy and knowing that a child was lost to a preventable incident may add to the pain and suffering, and can leave families and communities with emotional wounds that take decades to heal.

According to World Health Organization (WHO) estimates, more than 260,000 children die and up to 10 million are injured in road crashes each year (WHO, 2009). Globally, road traffic injuries are the leading cause of death in 10–19 year olds. Low-income and middle-income countries account for 93% of child road traffic deaths (Peden et al., 2004). Child pedestrian injury rates have been found to be highest in Africa and Asia and this has been attributed to the fact that many of them walk to school (Linnan et.al, 2007). In many low-income and middle-income countries, children are at increased risk because the road is a shared space for playing, working, walking, and driving and this exposure, along with other risk factors inherent to childhood, makes them particularly vulnerable in traffic. Interventions to protect child pedestrians have been implemented in many countries. Some of these have focused on modification of children's behaviour while they are on the road, while others have focused on modification of the traffic environment (Tester et al., 2004).

Children are mainly involved in road traffic injuries as passengers or pedestrians (Toroyan et.al, 2007). Although, the future of a country is its young people, road traffic accidents are the leading causes of death globally among 15-19 years while for those in 12-14 they are the second leading cause of death (WHO, 2010). Factors increasing susceptibility of adolescents to involvement in road crashes include: defective road environment including excessive traffic volumes, inefficient, and unsafe public transport systems, inappropriate speed of vehicles, poor land use and networking, lack of separation of road users, and mixed land use where houses, schools, and commercial outlets are erected (WHO, 2008). Simple measures like knowledge and creating the right attitude towards road safety can effectively reduce the impacts of RTAs on the lives of people. Road-safety educated students will grow to be leaders of communities forming opinions. The chances of road traffic accidents can be averted to a large extent if these adolescents who are going to be leaders of tomorrow are made aware of road safety measures.



## 1.2 Statement of the problem

Road traffic injuries are a major but ignored epidemic, requiring concrete efforts for effective and sustainable prevention to overcome the social, economic and health implications. Every day, thousands of people are killed and injured on roads across the world. Statistics anticipate Road Traffic Accidents to be the third among fifteen more often causes of death by 2020 (WHO, 2015). Studies conducted worldwide have shown that developing countries represent 67% of world Road Traffic Accident fatalities although they own only 11% of the vehicle fleet which involves 65% of pedestrians and 35% of school children (Galal, 2010).

Most young people killed in road crashes are vulnerable road users – pedestrians, cyclists, motorcyclists and passengers of public transport – with those from the African and Eastern Mediterranean regions most at risk. In many parts of the world children and young adults and other vulnerable road users have been given inadequate consideration in urban planning decisions. As a result, they are often forced to share transport space with motorized vehicles, increasing their chances of being involved in a road traffic crash.

Although road traffic injury deaths have decreased in some high-income countries, by 2030 it is predicted that it will be the fifth leading cause of death worldwide, and the seventh leading cause of Disability Adjusted Life Years (DALY) lost. The WHO's Global status report on road safety 2015 indicates that worldwide the total number of road traffic deaths has plateaued at 1.25 million per year, with the highest road traffic fatality rates in low-income countries. Urgent action is needed to achieve the determined target for road safety reflected in the newly adopted 2030 Agenda for Sustainable Development (goal 3 and 11) and halving the global number of deaths and injuries from road traffic crashes by 2020 (WHO, 2015).

Walking is considered part of an active lifestyle and has been associated with health benefits. A disadvantage of walking to school however is the fact that it exposes children to the risk of pedestrian injury while walking. A hospital based study in Tanzania found that over 73% of adolescents injured by road traffic were walking to and from school (Museruet.al. 2002). The proportion of children walking has thus reduced in some countries such as the United States with one-third of parents reporting traffic-related danger as a barrier to walking to school (CDC, 2004). Findings from a hospital-based study on the pattern and socioeconomic implications of road crashes in Southwestern Nigeria by Ipingbemi, 2007 revealed that 5.5% of road traffic

injury (RTI) victims admitted into hospital were aged 0–15 years. Findings from a study in Asaba also revealed that prevalence on non-fatal injuries among adolescents is 73.6% with collision accounting for 13.73% of the cases and the road being one of the top sites (Azubuike and Onyemake, 2012).

The safety of students in schools has become a national concern likewise students on their way to and fro school. Knowledge of road safety signs is an integral aspect of safety education in Nigerianschools; unfortunately adolescents do not actually see it as a way of life but as a means of acquiring school certificate. They grow into adulthood with this disposition and become a source of hazards to themselves and the community at large. Hence, they acquire negative habits that predispose them to road accidents. Such factors include violation of traffic rules and ignorance of preventive measures to road accidents (Onzulike and Kalu, 2012). Joly et al, 2015 reported that one-third of adolescents who were injured crossing the streets had disobeyed pedestrian traffic rules. Another study found out that most injured adolescents routinely use the sidewalks and streets as play areas.

Traffic safety is an essential part of public health and accident preventions and it is one of the vital components of interventions related to a healthy and prosperous nation. Careful and adequate interventions need to be introduced among adolescents to prevent traffic accidents and most of the people are not aware about the keen importance and need of traffic safety measures among adolescents. Public school students in Ibadan North local government have been observed to walk to and fro school or exposed to traffic when boarding public transport as compared to their counterparts in private schools who are either being taken to schools by their parents or being conveyed by their school buses, hence the focus of this study.

### **1.3 Justification for the study**

Bringing about behavioural change among young adults with regard to road safety starting from their schooling years would go a long way in bringing down morbidity and mortality due to road accidents. Literature search revealed very few studies conducted especially from Nigeria in the area of road safety signs among high school children. The starting point for any intervention aiming to bring about a greater sense of responsibility and safety among the precious but restless

young generation would be to first know about their current level of knowledge and attitude regarding road safety and build on it.

Road safety is very important for people of all age group to be safe and secure as well as reduce the number of road accidents and injury cases. Knowledge of road safety is also essential for children walking to school so they can safely navigate traffic environments. The children of today are the adults of tomorrow who deserves to inherit a safer, fairer and healthier world; there is no task more important than safe guarding their environment. Educating the students regarding the causes and prevention of road traffic accidents, rules and regulations for crossing the road and signal lights, can reduce accidents to an extent (Dinesh, Tsimhoni and Sivak, 2009). Information on road safety rules is vital in preventing road traffic accidents and safeguarding children from road traffic accidents.

The findings from this study(if negative) can be an indicator pointing towards a deeper problem which needs to be addressed or a foundation on which to build on (if positive), in order to achieve a better road safety practice among the adolescents and in-school children. The results from this study is also aimed at guiding necessary stakeholders to find ways to enhance and improve safety on the road and to plan and implement effective road safety awareness programs among students at all levels which will consequently lead to a healthier and safe environment.

Hence, this research aims at investigating the knowledge, perception and attitude towards road safety signs among public secondary school students

#### **1.4 Research Questions**

1. What is the level of knowledge on road safety signs among public secondary school students?
2. What is the perception towards road safety signs among public secondary school students?
3. What is the attitude towards road safety signs among public secondary school students?
4. What are the factors influencing the use of road safety signs among public secondary school students?
5. What are the sources of information on road safety signs available for public secondary school students?

## 1.5 Research Objectives

The broad objective of this study was to investigate knowledge, Perception and Attitude towards road safety signs among public secondary school students in Ibadan North Local Government Area, Oyo State

### Specific Objectives were to:

1. Assess level of knowledge on road safety signs among public secondary school students.
2. Determine the perception towards road safety signs among public secondary school students.
3. Examine the attitude towards road safety signs among public secondary school students.
4. Ascertain the factors influencing the adherence towards road safety signs among public secondary school students.
5. Identify the sources of information on road safety signs available for public secondary school students.

## 1.6 Research Hypotheses

The following Null hypothesis were tested; there is no significant difference between

1. Age of respondents and perception towards road safety signs.
2. Class of respondents and knowledge of road safety signs.
3. Gender of respondents and knowledge of road safety signs.
4. Access to educational materials on road safety signs and knowledge of road safety signs.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Conceptual clarification of road safety signs

Road and traffic safety are essential part of public health and accident preventions. Ample interventions and reorientation training towards road safety need to be introduced to prevent and encourage rationale behaviour among the adolescents. This is because, accidents among adolescent results in physical, psychological and economic loss to the victim itself, family and relatives (Zaidi, Paul, Mishra, and Srivastav, 2017). "Every day thousands of people are killed and injured on our roads. Men, women or children walking, biking, or riding to school or work, playing in the streets or setting out on long trips, will never return home, leaving behind shattered families and communities. Millions of people each year will spend long weeks in hospital after severe crashes and many will never be able to live, work or play as they used to do" (WHO Report, 2004). According to the Traffic Engineering Handbook (2008), a traffic event consists of three elements: people, vehicles, and roads. It defines a traffic accident as an undesirable situation involving one of these three elements of which a traffic event consists. These traffic accidents can thus be prevented by awareness, knowledge, and adherence to road safety signs.

According to the Department for Transport UK (2007), there are three basic types of traffic sign that could properly guide road users and help to ensure the injuries and accidents gotten on the road. These signs are: signs that give orders, signs that warn and signs that give information. Each type has a different shape and a further guide to the function of a sign is its colour. All triangular signs are usually red and give warning; rectangular signs are used for direction and information while the circles signs give order (a must to obey order). Traffic signs play a vital role in directing, informing and controlling road users' behaviour in an effort to make the roads as safe as possible for everyone. This makes knowledge of traffic signs essential (Department for Transport UK, 2007).

The World report on road traffic injury prevention calls for governments to make road safety a political priority, and highlights recommendations with regard to policy, legislation and enforcement, and development of institutional capacity to improve road safety (Peden et al., 2004). The UN General Assembly declared 2011- 2020 as the "Decade of Action for Road

Safety” with a goal to stabilize and reduce the increasing trend in road traffic fatalities. This declaration holds significance, as road traffic accidents are a major cause of morbidity and mortality, especially among young adults who constitute the most productive age groups of society. Improving the knowledge-practice gap of road safety signs among the people in the community and especially students can lead to a drastic reduction in road traffic accidents (WHO, 2014).

Accident is an unpleasant event that happens unexpectedly especially in a vehicle or motorcycle which causes injury, damage of properties, and loss of lives. The rate of accident is worrisome in Nigeria due to the state of disrepair of Nigeria roads, lack of road caution, road safety signs, and other road safety devices, recklessness of drivers and motorcycle riders among others. Automobile transportation in particular has been marked by accident, injuries and fatalities right from inception and traffic accident has emerged as the single source of death throughout the world (Ademiluyi, 2007). Road safety is the concept that deals with the state of security and certainty of roads by its users. The aim of road safety must be to reduce the harm caused by motor vehicle collisions (National Open University, 2013)

Before 1988, the traffic situation in Nigeria could best be described as chaotic, unprecedented wave of road traffic accidents with attendant colossal human and material losses Road signs and other road safety devices play tremendous role in the reduction of accident among the motorcyclist plying Nigeria roads (Federal Road Safety Commission, 2013). Road safety signs give information on the nature of the road, bends, narrow bridges, animal/human crossing, construction area, it also warn of the impending dangers ahead and sometimes give some regulation such as speed limit in which non-compliance can be devastating (FRSC, 2013). With increase in the literacy level in Nigeria, many road users are now able to read and understand road signs and communicate effectively, most especially in the western and Eastern part of the country.

In a bid to reduce the road traffic accidents in Nigeria, The Federal Government of Nigeria created the Federal Road Safety Commission (FRSC) through Decree No. 45 of 1988 as amended by Decree 35 of 1992 referred to as FRSC Act cap 141 Laws of the Federation of Nigeria (LFN) and it was passed by the National Assembly as the Federal Road Safety Commission (Establishment) Act 2007. The Commission has the following functions:

1. Making the highway safe for motorists and other road users.

2. Recommending works and devices designed to eliminate or minimize accidents on the highways and advising the Federal and State Governments including the Federal Capital Territory administration and relevant governmental agencies on the localities where such works and devices are required and
3. Educating motorists and members of the public on the importance of discipline on the highway.

The commission also has the following responsibilities:


1. Preventing or minimizing accidents on the highway
2. Clearing obstructions on any part of the highway
3. Designing and producing driver's license to be used by various categories of vehicle operations
4. Determining from time to time, the requirements to be satisfied by an applicant for a driver's license
5. Designing and producing vehicle number plates
6. Standardization of highway traffic codes
7. Giving prompt attention and care to accident victims
8. Conducting research into causes of accidents and methods of preventing them
9. Determining and enforcing speed limits for all categories of roads and vehicles and controlling the use of speed limiting devices
10. Cooperating with bodies, agencies or groups in road safety activities or in prevention of accidents on the highways
11. Regulating the use of sirens among others.

Traffic signs tell an individual about traffic regulations, hazards and other road conditions, construction areas, speed limits, etc. It is important for road users to be familiar with both signs and identify their special shapes and colours (FRSC, 2007)

**Table 2.1:** Some common Road traffic signs

| Signs   | Purpose  |
|---|--|
|    | Red light: Stop<br>Yellow light: Wait<br>Green light: Go |
|    | Pedestrian Prohibited                                    |
|    | Zebra crossing   |
|  | Maximum speed limit                                      |
|  | Hospital ahead   |
|  | Cycles prohibited  |
|  | Bus Stop   |
|  | No Parking   |



|   |                 |
|---|-----------------|
|  | Horn prohibited |
|---|-----------------|

Source: Humayun and Seema (2013).

## 2.2 Global prevalence of road accidents among secondary school students

According to WHO (2009), deaths from road traffic injuries account for around 25% of all deaths from injury and every day around the world, almost 16 000 people die from all types of injuries which represent 12% of the global burden of disease, the third most important cause of overall mortality and the main cause of death among 1 to 40 years old. The categories of injuries worldwide are dominated by those incurred in road crashes.

Road accidents represent a major epidemic of Non-Communicable diseases in present century (Manoj, Mandeep, and Amarjeet, 2014) and WHO reported that, nearly 1.17 million people lost their lives every year due to road accidents and more than 260,000 children die and up to 10 million are injured in road crashes each year (WHO, 2009).

Half of those dying on the world's roads are "vulnerable road users"; pedestrians, cyclists and motorcyclists with 27% of all road traffic deaths among pedestrians and cyclists (WHO, 2007; 2014) and adolescent and young adults accounting for 59% of all global road traffic deaths (WHO, 2014).

Globally, road traffic injuries are estimated to be the leading cause of death among young people aged 15–29 years, and second leading cause of death in 10 to 14 years and 20 to 24 years age groups. Every hour, forty youngsters die due to road traffic crashes. As a result, accident takes a heavy toll on the people entering their most productive years (WHO, 2014).

In an Indonesian study among the school children, of the total respondents, there were 1 of 3 children who had experienced a traffic accident and the most types of accidents experienced was a motor accident / motorcycle (Abdillah et al, 2015). Road traffic injury and death being a world-wide problem, is projected that by 2020, road traffic injury will become the third leading cause of disability-adjusted life years (DALYs) lost, up from its ninth position in 1990, and by 2030 will be the fifth leading cause of death worldwide (WHO, 2011).

Each year in the US, approximately 850 children under the age of 15 years are killed and another 30,000 are injured in pedestrian collision (Alison and Ian, 1998). Road accidents have impacts on health, social, economic and psychosocial aspects of life of individuals, families, nations and the global community.

Refusal to follow traffic rules, drunken driving and over speeding are main reasons for road accidents (Syedd et al, 2017). Abdillah et al, (2015) in a report highlighted some risk factors of road injury among adolescent, students and different population group. Some of which include; the design of roads and road networks, failing to route heavy traffic around populated areas or to separate pedestrians from motorized traffic, excess and inappropriate speed, impairment by alcohol among drivers, young novice drivers or teenage drivers, non-compliance with road safety signs, rules and guidelines.

The morbidity and mortality from road accidents in sub-Saharan Africa is rising steadily with equally devastating economic implications (Federal Road Safety Commission, FRSC, 2011). It has been estimated that over 75% of road side accidents occur in developing countries even though these countries account for only 32% of total vehicle fleet which involves 65% of pedestrian and 35% of school children (Hogue et al, 2004). Findings from a study in Asaba revealed that prevalence of non-fatal injuries among adolescents is 73.6% with collision accounting for 13.73% of the cases and the road being one of the top sites (Azubuike and Onyemake, 2012). A hospital-based study on the pattern and socioeconomic implications of road crashes in Southwestern Nigeria by Ipingbemi (2007) revealed that 5.5% of road traffic injury (RTI) victims admitted into hospital were between age 0 and 15 years.

**Table 2.2:** Leading causes of death, 2004 and 2030 compared, WHO 2008.

| Rank | Leading cause (2004)                  | %    | Rank | Leading cause (2030)                  | %    |
|------|---------------------------------------|------|------|---------------------------------------|------|
| 1    | Ischaemic heart disease               | 12.2 | 1    | Ischaemic heart disease               | 12.2 |
| 2    | Cerebrovascular disease               | 9.7  | 2    | Cerebrovascular disease               | 9.7  |
| 3    | Lower respiratory infections          | 7.0  | 3    | Chronic obstructive pulmonary disease | 7.0  |
| 4    | Chronic obstructive pulmonary disease | 5.1  | 4    | Lower respiratory infections          | 5.1  |
| 5    | Diarrhoeal disease                    | 3.6  | 5    | Road traffic injury                   | 3.6  |
| 6    | HIV/AIDS                              | 3.5  | 6    | Trachea, bronchus, lung cancer        | 3.5  |
| 7    | Tuberculosis                          | 2.5  | 7    | Diabetes mellitus                     | 2.5  |
| 8    | Trachea, bronchus, lung cancer        | 2.3  | 8    | Hypertensive heart disease            | 2.3  |
| 9    | Road traffic injury                   | 2.2  | 9    | Stomach cancer                        | 2.2  |
| 10   | Premature and low birth weight        | 2.0  | 10   | HIV/AIDS                              | 2.0  |
| 11   | Neonatal infections and others        | 1.9  | 11   | Nephritis and Nephrosis               | 1.9  |
| 12   | Diabetes mellitus                     | 1.9  | 12   | Self-inflicted injuries               | 1.9  |
| 13   | Malaria                               | 1.7  | 13   | Liver cancer                          | 1.7  |
| 14   | Hypertensive heart disease            | 1.7  | 14   | Colon and rectum cancer               | 1.7  |
| 15   | Birth asphyxia and birth trauma       | 1.5  | 15   | Oesophagus cancer                     | 1.5  |
| 16   | Self-inflicted injuries               | 1.4  | 16   | Violence                              | 1.4  |
| 17   | Stomach cancer                        | 1.4  | 17   | Alzheimer and other dementias         | 1.4  |
| 18   | Cirrhosis of the liver                | 1.3  | 18   | Cirrhosis of the liver                | 1.3  |
| 19   | Nephritis and Nephrosis               | 1.3  | 19   | Breast cancer                         | 1.3  |
| 20   | Colon and rectum cancer               | 1.1  | 20   | Tuberculosis                          | 1.1  |

### 2.3 Knowledge of road safety signs

Knowledge of road safety is essential for children walking to school so they can safely navigate traffic environments. Although, walking to school increases children's awareness of their neighbourhood and also has a positive influence on their health and wellbeing (Dunbar, Lewis, and Hill, 2009), a disadvantage of walking to school however is the fact that it exposes children to the risk of pedestrian injury while walking. Road safety is very important for people of all age group to be safe and secure as well as reduce the number of road accidents and injury cases (Dong et al, 2011). Educating the students regarding the causes and prevention of road traffic accidents, rules and regulations for crossing the road and signal lights, can reduce accidents to an extent (Dinesh, Tsimhoni, Sivak, 2009).

In a recent study on Awareness regarding road safety rules among school children by Kale (2016) found that the majority (81%) of the school children had satisfactory level of awareness and knowledge on road safety rules and symbols. In an Indonesian study by Abdillah et al, (2015), on knowledge of students on road safety signs, found out that 4 of 5 respondents already know at least 3 meanings of traffic signs. The results of the findings also shows that almost all the respondents (97.08%) know or have heard the term traffic lights and 85.83% of students know the meanings of the three colours of traffic lights while 1 of every 4 students do not know or have ever heard the term zebra-crossings at all. Also, Zaidi et al (2017) in an India study on knowledge of road safety signs, found out that majority of the boys and girls (the study participants) had a satisfactory knowledge of traffic rules and traffic signs although only a few understand the important of helmet use, there was significant difference in the awareness level of road safety signs among boys and girls. The boys had more awareness than the girls. Despite the satisfactory knowledge on road safety signs found in this study, adherence to road safety was not satisfactory. Swami, Puri and Bhatia (2006) in another study reported that 40% of the students lacked correct knowledge of traffic/road safety rules and in particular, knowledge of correct speed limit was lacking in 67.3% of the respondents. Girls were found to be more aware of traffic rules than the boys. More so, knowledge of road safety signs was good among the school children, their knowledge regarding risk factors associated with road accidents was found to be adequate however, the knowledge does not necessarily translates into prudent traffic practices (Indhumathy and Thenmozhi, 2016).

In a cross sectional study by Evangeline, Chitra, Arumozhi and Doris (2016) among 360 participants on road safety signs, 51.7% had adequate knowledge and 48.3% had inadequate knowledge on the road safety rules, signs and regulations. 98.1% and 99.4% participants knew that it is compulsory to put on the seat belt while in a moving car and wear helmet while travelling in two-wheeler respectively. More than half (54.4%) of the participants knew that 40 K/Mph is the normal driving speed limit in the city.

The starting point for any given intervention aimed at achieving the UN declaration especially with regards to young people would be to first know their understanding and behaviour patterns with respects to road safety (Priyanka et al, 2011). In a study on knowledge and behavioural patterns among high school children, Priyanka et al (2011) observed that 55% of the students were unable to identify even one of the five given mandatory road signs. The study revealed poor knowledge of traffic signs and rules and unsafe traffic behaviour among the school children but they had good knowledge regarding risk factors associated with road accidents. The findings concluded that mere knowledge does not necessarily translate into improved traffic behaviour as the majority of the students who had driven a motorised two-wheeler did not have a valid license and did not wear a helmet. A study among Peri-Urban school children on knowledge regarding road safety signs reported that knowledge of road signs was considerably high especially in cases of what do traffic signal lights indicate although the results of the findings also show that good knowledge about road safety and signs did not translate into prudent practices by the students (Humayun and Seema, 2013).

Chakrabarty, Gupta and Bhatnagar (2013) in a study on awareness on road safety documented that road safety measures such as road signs and markings are not self-enforcing; they may be less effective unless they are properly enforced with enforcement and publicity campaign. Also, a study on awareness and behaviour of adolescents towards road traffic accidents and road safety signs, out of 1051 adolescents, all were aware about 'red' and 'green' colour road traffic signals, but about 'yellow' colour, only 86.9% were aware. Awareness for red and green signals colour was more compared to yellow colour signal and this difference was statistically significant ( $p=0.000$ ).

The awareness about road traffic signs is fairly good among the adolescent. However, the boys are more aware than the girls. It means the boys had good awareness towards road traffic signs compared to girls and statistical significant difference has been established on this level of

awareness (Salve, Dase, Jadhav, Mahajan, & Adchitre, 2014). A study among commercial motorcyclist in Ado-Ekiti Nigeria revealed a high level of awareness of road signs and other road safety information but also reported that when motorcyclist (Okada riders) are in a hurry and/or in cases of emergency, they do not observe any road safety sign (Dahunsi and Owoeye, 2016). In a study in India among coastal population, overall knowledge was found to be low with only 30% reporting good knowledge and poor road safety practices among good number of participants was documented (Shetty, Pahwa, Vibha, Kamath, & Nair, 2018).

#### **2.4 Attitude towards road safety signs**

Attitude is a positive, negative, or mixed reaction to a person, object, or idea. It is also a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour (Brehm et al., 2002). Hence, attitudes can be seen to be an evaluative reaction to a concept, such as road-user safety. It must be noted that attitudes towards a concept may be mixed and not necessarily be consistent within the individual (Brehm et al., 2002).

An Indonesian study among in-school students (Abdillah et al, 2015) reported a positive attitude toward road safety signs and that almost all respondents were always looking to the right and to the left and raised their hand whenever crossing the road. In a cross sectional study by Evangeline, Chitra, Arumozhi and Doris (2016) also on road safety signs reported that more than half of the participants had a positive attitude towards road safety rules, signs and regulations. In order to prevent traffic accidents and enhance the safety of traffic events, there is a particular need to take steps to ensure that pedestrians, cyclists, and drivers act in a safer manner.

Humayun and Seema (2013) in a study among Peri-Urban school children regarding road safety signs, majority of the students agreed that driving without a valid license is an offense and chance of accidents increased when driving bikes and motorcycles without a helmet and using mobiles while driving or crossing the road.

Children (up to the age of 15) pose a greater risk on the road than adults. This is largely due to two main factors; a lack of road-user experience and skills and large amounts of exposure to road environments in the lightest form of exposure (as a pedestrian and cyclist, for example). Inappropriate attitudes and peer pressure increase the risk of road accident. In addition, deliberate risk-taking, such as playing chicken on the road can take place among the children (Musselwhite, Avineri, Fulcher, and Susilo, 2010).

## 2.5 Perception towards road safety signs

Children and students are the most vulnerable group towards the road accidents, minor or major injuries and even death because of the lack of adult supervision (Indhumathy and Thenmozhi, 2016). In a study by Francisco (2016) on road safety, speeding was perceived and reported as one of the elements that most contributes to road fatality as well as adherence to road safety signs. This explains the facts why speeding is often dealt with in the road safety field. Participants in the study agreed that speeding should be punishable as it causes severe fatality to pedestrian on the road and students most especially. Also, average rate of the risk being involved in a traffic crash caused by drivers' speeding was 8.3 on a scale of 0-10 (Francisco, 2016).

Road signs, markings, traffic signals and other traffic devices are expected to guide the road users and they are hence the languages of the road. Every road users whether pedestrian, two-wheeler riders, driver of four-wheeled vehicles should have knowledge regarding these traffic signs, be aware of what they signifies, have good attitude towards them and also a good perception towards the safety signs as these will in no small way ensure safety on the road and reduce fatalities . The road safety signs or traffic signs are there to regulate traffic, warn about hazards and guide road users (Humayun and Seema, 2013). Road safety signs are important device to reduce the degree and extent of fatality on the road by pedestrian and other road users. For example, pedestrian and school children need to have a positive attitude and appropriate perception to the Dos of the traffics. These include but not limited to the following; walk on any side of the road if there are footpaths, on road without footpaths, walk on extreme right side facing the on-coming vehicles/traffic, use Zebra crossing, use foot over bridge and subways to cross the road. Cross the road when the vehicles are at safe distance and use/wear light coloured dresses during night walk. The Don'ts include; don't cross the road hastily by running, don't cross the road in front of or in-between parked vehicles, don't cross the road where you are not visible to the vehicle drivers and do not play on the road. The callous bad attitude and bad perceptions of road users (especially the pedestrians, cyclists and drivers) on road safety signs has been reported to leads to different degrees of road accidents (Priyanka et al, 2011).

Shinar et al. (2003) investigated comprehension levels of traffic signs in Canada, Finland, Israel, and Poland. Based on 1,000 respondents categorized into five groups, i.e. novice drivers, tourists, older drivers, problem drivers, and students, results indicated a significant difference in



comprehension level and perception and such a difference were found among specific sign messages.

## **2.6 Factors influencing adherence to road safety signs**

Socio demographic variables such as age, mother's education, source of information, mode of travelling to school and knowledge on road safety rules and symbols were reported to be influencing factors to adherence to road safety signs and regulation (Kale, 2016). In general, there are common factors that become the main causes of traffic accident including human error, bad road conditions, vehicles road worthy, and lack of road regulations as well as law enforcement and from the perspective of public health, injury due to traffic accidents is a type of incident that can be anticipated as well as prevented through adherence to road safety signs. In a study in India among coastal population, factors influencing road safety knowledge among the surveyed population include younger age, male gender, higher level of schooling and knowing to drive were significantly associated with a greater level of knowledge and adherence to road safety signs and measures (Shetty, Pahwa, Vibha, Kamath, and Nair, 2018).

The rate of road traffic accidents has been found to increase annually at the rate of 10% and most fatalities has been reported to be among male. Poor road infrastructure, pedestrians road crossing, poor road signage and markings and driver's behaviour appear to contribute and remain the primary factors associated with road traffic accidents (Biemba et al., 2015). Some of these behaviours include non-adherence to traffic signs and poor attitude to road safety signs.

A study by Touahmia (2018), show that 67% of road traffic accidents result from human factors which include excessive speed, non-awareness of traffic signs and violation of traffic rules and signs. Low rates of compliance with speed limit signs and seat-belt regulations were also observed which therefore emphasized the urgent need of strengthening effective traffic law enforcement alongside with improving traffic safety and raising public awareness.



## 2.7 THEORETICAL FRAMEWORK

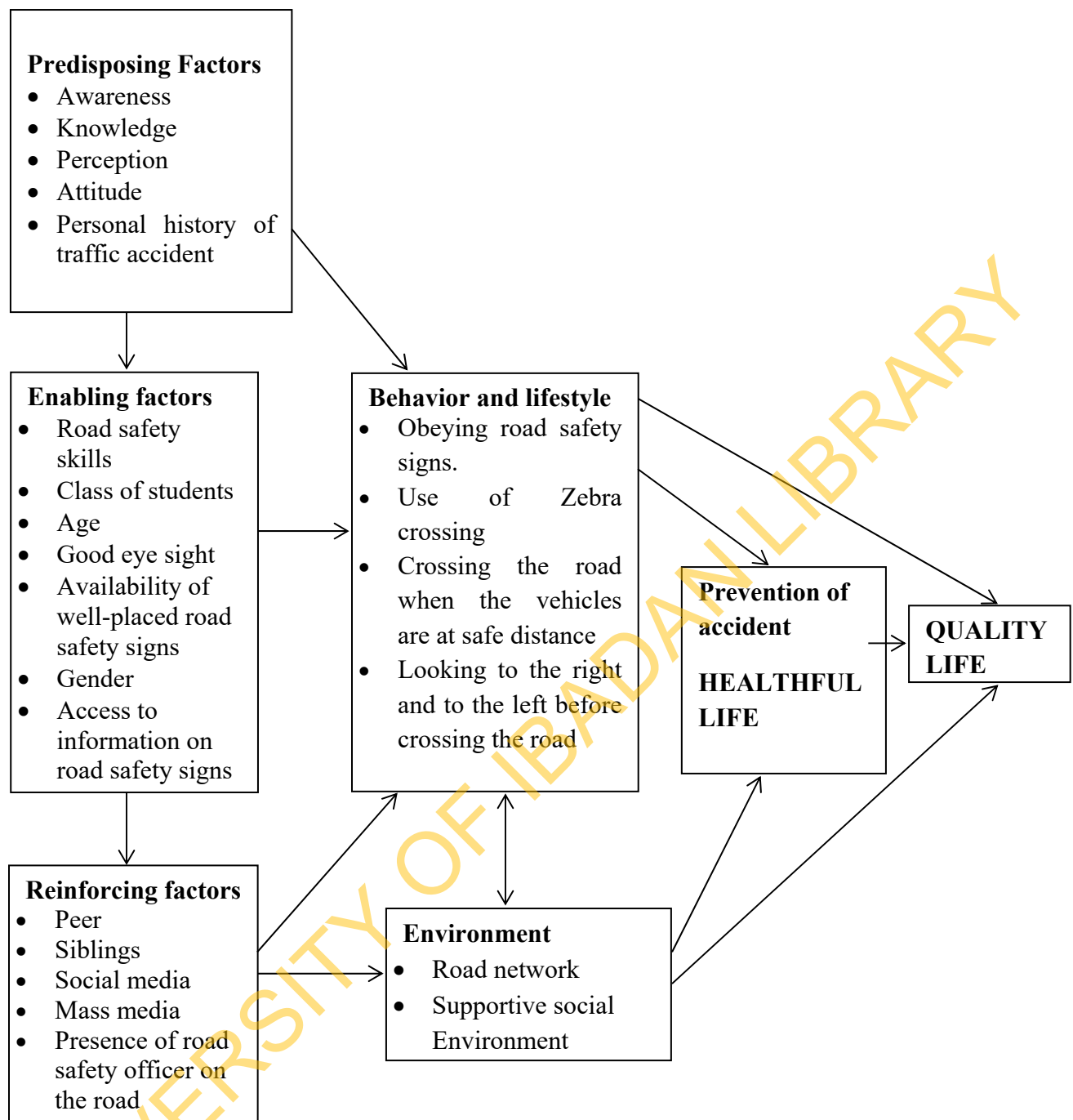
The conceptual framework to be adopted for this study will be the PRECEDE-PROCEED Model as was postulated by Green Lawrence (1974). Only the **PRECEDE** aspect of this framework will be employed for the diagnosis of the research problem. The PRECEDE is an acronym that represents **P**redisposing, **R**einforcing, and **E**nabling Constructs for **E**ducational **D**iagnosis and **E**valuation. This model will be used in this study as follows;

Predisposing Factors: These are the antecedents to behaviour that provides the rationale for the behaviour. They refer to those intrinsic factors that are unique to the research participants and make them liable to obey and adhere road safety signs. These include but not limited to awareness, knowledge, attitudes, perceptions, personal history of road accidents and previous experience of road traffic accidents. Most of the secondary school students do not have enough knowledge about the relevance and importance of road safety signs. Predisposing factors have the potential to influence the decisions people take over their health and their given health behaviour. They do this by encouraging the behavior or by inhibiting the behaviour from occurring.

Enabling Factors: These are also antecedent to behaviour that influence the realization of motives, aspirations, and decisions of an individual. They are environment bound factor which enable action for or against adherence to road safety signs. These include individual skills, level of education (class of students), age, good eye sight, availability of road safety signs on the road and ability to make informed choices about personal health.

Reinforcing Factors: These comprises of the feedback or influence of the significant order or people that influence the continuance or discontinuance of a particular behaviour. In this case, the external influence to ensure road safety compliance. Examples of these factors include peers, siblings, social media, mass media and presence of road safety officer on the road for instilling traffic rules. They are also factors that subsequent to behaviour, provides perpetual rewards or incentives for the behaviour and contributes to its persistence or extraction.

## 2.8 Conceptual framework for knowledge, attitude and perception towards road safety signs



## CHAPTER THREE

### METHODOLOGY

#### 3.1 Research Design

The study design that was adopted for this study is the descriptive cross sectional design with focus on the documentation of knowledge, perception and attitude towards road safety signs among public secondary school students.

#### 3.2 Description of the Study Area

This study was carried out in Ibadan North Local Government Area of Oyo State, one of the 33 local governments in Oyo State. It was carved out of the defunct Ibadan Municipal Council by the Federal Military Government of Nigeria on the 27<sup>th</sup> of September, 1991. This Local Government encompasses Beere, Round-About, Oke-Are, Mokola, Oke-Itunu, Ijokodo, Bashorun, Agodi-Gate, Oje, Yemetu, Sapati, Bodija, Iyana-Ashi, University of Ibadan, and Agbowo areas of Ibadan, the capital of Oyo state. Ibadan North Local Government Headquarter is situated at Quarters 87, GRA, Agodi, Ibadan.

It has an area of 27km<sup>2</sup> at the 2006 census. It is bounded in the West by Ido and Ibadan North West Local Governments while in the East, by Lagelu, Egbeda and Ibadan South East Local Government respectively. It is also bounded in the North by Akinyele Local Government. It is a home for small, medium and large-scale industries. Trading and other commercial activities are also predominant in the area. It has the highest concentration of virtually all tribes and ethnic groups in the community. This Local government was chosen because it is the largest of all the Local Government Area in Ibadan. Being the largest local government in the state, carrying out this study at this location ensured that the results and recommendations from the study can be adopted by other schools in other local government. There are a total number of 42 public secondary schools that are registered under the local government.

### 3.3 Study Population

This study was carried out among randomly selected public secondary school students in Ibadan North Local Government Area, Oyo State.

### 3.4 Inclusion Criteria

Public secondary school students in Ibadan North Local Government who agreed to participate in the study and gave their consent were included in the study.

### 3.5 Exclusion Criteria

Public secondary school students who gave informed dissent were excluded from the study. Students in JSS3 and SS3 in public secondary schools were also excluded from this study as they were no longer in school as at the time of this research.

### 3.6 Determination of Sample Size

The minimum sample size for this study was calculated using the Kish-Leslie formula for estimating sample size for a single proportion. The prevalence of injuries among adolescents in Asaba, Delta state is 13.73% (Azubuike and Onyemake, 2012). This prevalence was used to calculate the sample size.

The estimated value is obtained as shown below:

$$n = \frac{Z^2 pq}{d^2} \text{ (Kish-Leslie Formula)}$$

Where:

n = sample size,

$Z_\alpha$  = standardized normal deviate which is a constant (1.96) at 95% confidence interval.

$P = 13.73\% = 0.137$  (Azubuike and Onyemake, 2012)

$Q = 1 - P = 1 - 0.137 = 0.863$

$D = 0.05$  at 95% confidence interval

$n = \frac{Z^2pq}{d^2} = \frac{1.96^2 \times 0.137 \times 0.863}{0.05^2} = 181$

Therefore, the minimum sample size = 199 (with non-response rate of 10%)

However, to increase the rate at which the results of the study can be generalized and inferred on the study population, the sample size was increased to 300.

### 3.7 Sampling Procedure

A multistage sampling method was employed in this study. A sample of three hundred (300) students participated in the study. The selection of respondents involved the following stages;

Stage 1: The public secondary schools in Ibadan North Local Government Area were stratified into three (3); namely Inner core (Yemetu, Mokola, Sabo and its environments), Transitory (Sango, Ijokodo, Polytechnic Ibadan and its environments), and Peripheral (Bodija, Ashi, Agbowo, UI and its environments).

Stage 2: The number of public secondary schools in each stratum were determined and proportionate sampling was used to select schools that were employed in this study.

Stage 3: Proportionate sampling method was used to determine the number of respondents to be selected in each school based on the total population of all the students in all the selected schools and the total sample size.

Stage 4: Systematic sampling method was used to select the actual participants (students) that participated in the study from each selected school using their class register.

### **3.8 Method and Instrument for Data Collection**

A quantitative method of data collection which involved the use of pretested or validated semi-structured questionnaire interviewer-administered was used to collect necessary information from the respondents. It was divided into six sections namely;

- Section A documented socio-demographic characteristics of respondents.
- Section B assessed knowledge of public secondary school students on road safety signs
- Section C explored the perception of public secondary school students towards the use of road safety signs.
- Section D determined the attitude of public secondary school students towards the use of road safety signs.
- Section E identified the factors influencing public secondary school student's use of road safety signs.
- Section F identified the sources of information available for public secondary school students on road safety signs.

### **3.9 Validity of the Research Instrument**

The face and content validity of the instrument was ensured by comparing its items with previous similar studies and by matching them with stated objectives, research questions and set hypotheses. Construct Validity was also ensured by making sure variables in the theoretical framework were represented in the instrument. Copies of the prepared instrument were also made available to my project supervisor for vetting, review, critiquing, necessary amendments and corrections. The instrument was subjected to independent peer and experts reviews.

### **3.10 Reliability of the Research Instrument**

Reliability refers to the consistency of a measure. A measure is said to have high reliability if it produces consistent results under consistent conditions. The instrument was pre-tested among public secondary school students in Ibadan North East Local Government. Copies of the questionnaires were administered to thirty (30) respondents which is 10% of the sample size. The data collected was checked for errors and completeness, numbered for easy recall, coded, entered into a computer and analysed. Reliability was determined using the Cronbach's Alpha coefficient. A reliability coefficient of 0.705 was gotten. Following the pre-test, the tool was reviewed and ambiguous questions were either removed or revised.

### **3.11 Data Collection Procedure**

The data were collected by the researcher with the assistance of four (4) research assistants who had been trained prior to the time of data collection. The research assistants were given adequate information about the objectives of the research project, data collection process, sampling procedures and the content of the questionnaire to avoid probable mistakes that could affect the result of the study.

The students were given a detailed explanation about the purpose and objectives of the study before they were asked for consent and to fill in the questionnaire. The researcher provided adequate supervision to the research assistants and also participated in data collection. The research assistants submitted the filled questionnaires to the researcher on a daily basis. The researcher checked for completeness and errors before leaving the field.

### **3.12 Method of Data Management**

The researcher checked all copies of administered questionnaire one after the other for completeness and accuracy. Serial numbers were assigned to each variable for easy identification and for correct data entry and analysis. A coding guide was developed after a careful review of responses to facilitate coding and data entry.

Respondents' knowledge of road safety signs was measured on a 8-items and 17-point Knowledge scale extracted from relevant literatures on road safety signs. Knowledge Score (KS) of  $<8$  was rated as Poor Knowledge, KS of  $\geq 8 < 12$  was considered Fair Knowledge and KS  $\geq 12$  was rated as good knowledge.

A 12-item and 24-point attitude scale developed after reviewing of relevant literatures was used to examine the attitude of respondents towards road safety signs. Attitude score  $< 17$  (that is, attitude score less than 75%) represented negative attitude while a score  $\geq 17$  (that is, attitude score greater than 75%) represented positive attitude towards road safety signs.

Also, 9-item and 18-point perception scale developed after reviewing of relevant literatures was used to examine the perception of respondents towards road safety signs. A perception score  $< 13$  represented negative perception while a score  $\geq 13$  represented positive perception towards road safety signs.

To document factors influencing adherence towards road safety signs, a seven (7) statement questions was used and reported in percentage.

### **3.13 Data Analysis**

Data analysis was done with the use of Statistical package for Social Sciences (SPSS) version 22. Continuous variable were analyzed using mean and standard deviation. Chi square test statistic was used to check for relationship between age of respondents and perception towards road safety signs at 95% CI. It was also used to investigate class of respondents and knowledge of road safety signs. A p-value of less than 0.05 was considered to be statistically significant.

### **3.14 Limitation of the study**

Only public secondary school students were studied. The generalization of this finding is therefore limited only to public secondary school students.

### **3.15 Ethical Consideration**



Ethical approval was requested and obtained from the Oyo State Ministry of Health Ethics Review Committee to ensure the study meets all the principles and national guidelines in research involving human participants. Official permission was gotten from Principals of selected schools.

**Informed consent/confidentiality:** Assent was gotten from the parents of the study participants and the participants were given full details concerning the research before being asked to take part in the study so as to ensure that they fully understood the research. Valid informed consent was obtained from the study participants. The privacy, confidentiality and anonymity of the research participants were also ensured by removing all identifiers from the questionnaire. The data collected was strictly safeguarded and Information sharing was only among research team members.

**Voluntariness:** This study only involved students who showed complete willingness to participate and this was based on attestation to the informed consent provided. Freedom to withdraw from the study at any stage was allowed for the participants.

**Beneficence:** There was no direct benefit from this study for the study participants, but the findings is aimed to be of great value in the design of interventions on road safety for school principals, teachers, parents and the students,

**Non-maleficence:** The proposed research was relatively risk free without any invasive procedure or interventional activity.

## CHAPTER FOUR

### RESULTS

#### 4.1 Socio-demographic characteristics of respondents

Overall, a total of 300 secondary school students participated in the study. The age of the respondents was  $14.4 \pm 2.0$  years with minimum and maximum age of 10 and 20 years respectively. 27.3% of the respondents were in JSS1, 26.7% were in JSS2, 24.3% in SSS1 and 21.7% in SSS2. 54.7% of the respondents were females while 45.3% were males. All the respondents were from mixed schools. 28.0% of the respondents had previously been exposed to road traffic accident or related injury while 72.0% had not. Some, 46.3%, of the respondents walked to school, 45.0% boarded taxi to school, 8.0% used motorcycle and 0.7% used tricycle. Majority, 88.3% of the respondents did not possess a bicycle. Some, 33.0%, of the respondents had driven a bicycle/motorcycle/car before. Majority, 93.3%, of the respondents crosses the road when going to school. Also, 94.0% of the respondents crosses the road after closing hours while 6.0% do not cross the road. None of the respondents reported having road safety club in their schools.

**Table 4.1: Socio-demographic characteristics of respondents**

|   | N=300 |       |
|---|-------|-------|
| Variables   | No.   | %     |
| <b>Age as at last birthday (in years)</b>                           |       |       |
| 10-12   | 77    | 25.7  |
| 13-15   | 157   | 52.3  |
| 16-18   | 59    | 29.7  |
| 19-21   | 7     | 2.3   |
| <b>Class</b>  |       |       |
| JSS1  | 82    | 27.3  |
| JSS2  | 80    | 26.7  |
| SSS1  | 73    | 24.3  |
| SSS2  | 65    | 21.7  |
| <b>Gender</b>   |       |       |
| Male  | 136   | 45.3  |
| Female  | 164   | 54.7  |
| <b>School type</b>  |       |       |
| Mixed   | 300   | 100.0 |
| <b>Exposure to previous road traffic accident or related injury</b> |       |       |
| Yes   | 84    | 28.0  |
| No  | 216   | 72.0  |
| <b>Mode of transportation to school</b>                             |       |       |
| Walking   | 139   | 46.3  |
| By taxi   | 135   | 45.0  |
| By motorcycle   | 24    | 8.0   |
| By tricycle   | 2     | 0.7   |
| <b>Possession of a bicycle</b>                                      |       |       |
| Yes   | 35    | 11.7  |
| No  | 265   | 88.3  |
| <b>Ever driven a Bicycle/ Motorcycle/ Car</b>                       |       |       |
| Yes   | 99    | 33.0  |
| No  | 201   | 67.0  |
| <b>Crossing the road when going to school</b>                       |       |       |
| Yes   | 280   | 93.3  |
| No  | 20    | 6.7   |
| <b>Cross the road after closing hours</b>                           |       |       |
| Yes   | 282   | 94.0  |
| No  | 18    | 6.0   |
| <b>Presence of road safety club in school</b>                       |       |       |
| No  | 300   | 100.0 |
| Yes   | 0     | 0.0   |

Mean age=14.4±2.0

## 4.2 Knowledge of road safety signs

The knowledge of respondents on road safety signs is presented in table 4.2. Some, 44.7% had Fair Knowledge, 40.0% had Poor knowledge while 15.3% had good knowledge of road safety signs. However, the mean Knowledge Score (KS) was  $8.1 \pm 3.0$  with minimum and maximum score of 0.0 and 15.0 respectively.

### Knowledge of definition of road safety signs

Majority, 62.3% of the respondents did not know what road safety signs are. While 19.0% defined it as signs that prevent accidents, 6.3% reported that it is the sign that guides road users, 6.0% defined it as signs that keep the road safe. Other definitions include signs that must be obeyed and followed on the road (2.0%), signs that protect people on the road (1.3%), signs that cautions drivers on the road (2.3%) and signs that let students know when to cross the road 0.7%.

### Meaning of 'red traffic light'

Almost all, 95.7%, the respondents reported that the red traffic sign mean "Stop", 1.0% reported "Ready to move" and 0.7% reported "Go" while 2.6% did not know the meaning.

### Meaning of 'green traffic light'

Majority, 88.3% reported that the sign means 'Go', 5.7% reported 'ready to move', 3.0% reported 'move', 1.0% reported 'stop' while 2.0% did not know.

### Meaning of 'yellow traffic light'




Of all the responses, 85.3% was for "ready", 5.3% 'Go' and 7.0% 'don't know'. Other responses were 'Stop' (0.3%), and 'Ready to go' (1.3%).

Other knowledge variables used for assessing the knowledge of road safety signs among the secondary school students is presented in table 4.2

**Table 4.2: Knowledge of road safety signs**

| Knowledge Variables                      | Responses  | N=300 |      |
|--|--|-------|------|
|  |  | No.   | %    |
| <b>Definition of road safety signs</b>   | Signs that prevent accidents                         | 57    | 19.0 |
|  | Signs that guide road users on the road              | 19    | 6.3  |
|  | Signs that keep the road safe                        | 18    | 6.0  |
|  | Signs that must be obeyed and followed on the road   | 06    | 2.0  |
|  | Signs that protect people on the road                | 04    | 1.3  |
|  | Signs that cautions drivers on the road              | 07    | 2.3  |
|  | Signs that let us (students) know when to cross road | 02    | 0.7  |
|  | I don't know   | 187   | 62.3 |
| <b>Meaning of 'red traffic light'</b>    | Stop   | 287   | 95.7 |
|  | Go   | 02    | 0.7  |
|  | Ready to move  | 03    | 1.0  |
|  | I don't know   | 08    | 2.6  |
| <b>Meaning of 'green traffic light'</b>  | Stop   | 03    | 1.0  |
|  | Go   | 265   | 88.3 |
|  | Move   | 09    | 3.0  |
|  | Ready to move  | 17    | 5.7  |
|  | I don't know   | 06    | 2.0  |
| <b>Meaning of 'yellow traffic light'</b> | Stop   | 01    | 0.3  |
|  | Go   | 16    | 5.3  |
|  | Wait   | 02    | .7   |
|  | Ready to go  | 04    | 1.3  |
|  | Ready  | 256   | 85.3 |
|  | I don't know   | 21    | 7.0  |
| <b>The purpose of this sign</b>          | No pedestrian  | 37    | 12.3 |
|  | No crossing allowed                                  | 39    | 13.0 |
|  | No children crossing                                 | 03    | 1.0  |
|  | people cannot walk here                              | 50    | 16.7 |
|  | no road  | 08    | 2.7  |
|  | I don't know   | 163   | 54.3 |

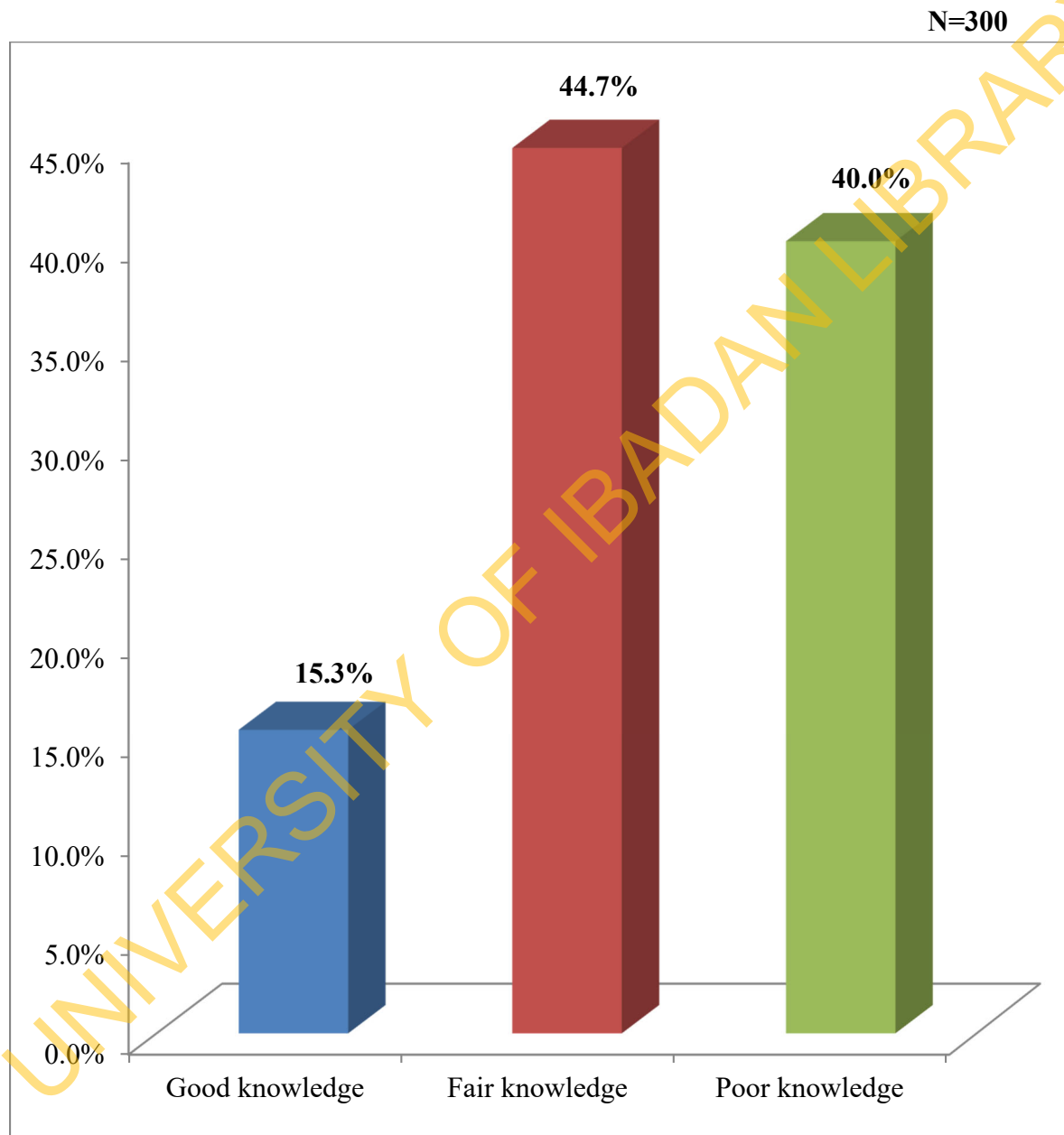


| Knowledge Variables  | Response                     | No. | %    |
|--|------------------------------|-----|------|
| <b>The purpose of this sign</b><br>   | No bicycle allowed           | 118 | 39.3 |
|  | No motorcycle allowed        | 07  | 2.3  |
|  | No parking                   | 16  | 5.3  |
|  | Bicycle rider is not allowed | 04  | 1.3  |
|  | Bicycle is dangerous         | 01  | .3   |
|  | Motorcycle                   | 03  | 1.0  |
|  | Warning sign for bicycle     | 01  | .3   |
|  | Do not ride bicycle          | 06  | 2.0  |
|  | I don't know                 | 144 | 48.0 |
| <b>The purpose of this sign</b><br>   | Zebra crossing               | 42  | 14.0 |
|  | Pedestrian crossing          | 18  | 6.0  |
|  | Children crossing            | 33  | 11.0 |
|  | Crossing                     | 20  | 6.6  |
|  | people crossing              | 07  | 2.3  |
|  | Walking                      | 16  | 5.3  |
|  | Run when crossing            | 01  | .3   |
|  | Walk on pedestrian lanes     | 02  | .7   |
|  | I don't know                 | 161 | 53.7 |
| <b>The purpose of this sign</b><br> | Bus stop sign                | 11  | 3.7  |
|  | Buses should wait here       | 03  | 1.0  |
|  | Train                        | 17  | 5.7  |
|  | Buses going                  | 35  | 11.7 |
|  | I don't know                 | 234 | 78.0 |
| <b>Total Knowledge score</b>   | Good                         | 46  | 15.3 |
|  | Fair                         | 134 | 44.7 |
|  | Poor                         | 120 | 40.0 |

Mean knowledge score = 8.1±3.0

Maximum score = 15.0

Minimum score = 00.0



**Figure 4.1: Respondents' knowledge of road safety signs**

### 4.3 Attitude towards road safety signs

Majority, 78.3% of the respondents had good attitude towards road safety signs while 21.7% had poor attitude. The Maximum attitude score was 24.0 while the minimum score was 8.0.

Table 4.3 presents the attitude towards road safety signs among the respondents. While 78.3% reported that they can always read traffic signs on the road, 89.0% reported that they need to know the meaning of traffic signs on the road and 71.3% said they do not need to know road safety signs before crossing the road or walking on the road safely. Also, 97.3% said they ensured they look to their left and right before crossing the road and 7.7% reported that they are comfortable using mobile phone while walking on the road. Majority, 64.0%, reported being against driving or riding a motorcycle on the road without having good knowledge of road safety signs, 79.0% did not feel comfortable with road users not having knowledge of road signs as it increases the possibility of road accidents and 76.0% walk on pedestrian lanes and not on the road. Majority, 93.3%, of the respondents were willing to learn more about road safety signs while 78.3% were not comfortable with making ways through cars without waiting for the traffic to reduce. Also, 77.7% were not comfortable with the traffic lights because it causes so much delay on the road while 16.7% encouraged the use of seat belts while inside cars.



**Table 4.3: Attitude towards road safety signs**

| Variables   | N=300      |            |
|---|------------|------------|
|   | Responses  |            |
|   | Yes (%)    | No (%)     |
| I can always read traffic signs on the road   | 235 (78.3) | 65 (21.7)  |
| I need to know the meaning of traffic signs on the road   | 267 (89.0) | 33 (11.0)  |
| I do not need to know road safety signs before I can cross the road or walk on the road safely                                | 86 (28.7)  | 214 (71.3) |
| I ensure I look to the left and to the right before crossing the road   | 292 (97.3) | 8 (2.7)    |
| I am comfortable using mobile phone while walking on the road   | 23 (7.7)   | 277 (92.3) |
| I am against driving or riding a motorcycle on the road without having good knowledge of road safety signs                    | 192 (64.0) | 108 (36.0) |
| I don't feel comfortable with road users not having knowledge of road signs as it increases the possibility of road accidents | 237 (79.0) | 63 (21.0)  |
| I walk on pedestrian lanes and not on the road  | 228 (76.0) | 72 (24.0)  |
| I am willing to learn more about road safety signs  | 280 (93.3) | 20 (6.7)   |
| I am comfortable with making my way through cars without waiting for the traffic to reduce                                    | 65 (21.7)  | 235 (78.3) |
| I am not comfortable with the traffic lights because it causes so much delay on the road                                      | 67 (22.3)  | 233 (77.7) |
| I encourage the use of seat belts while inside cars   | 50 (16.7)  | 250 (83.3) |

N=300

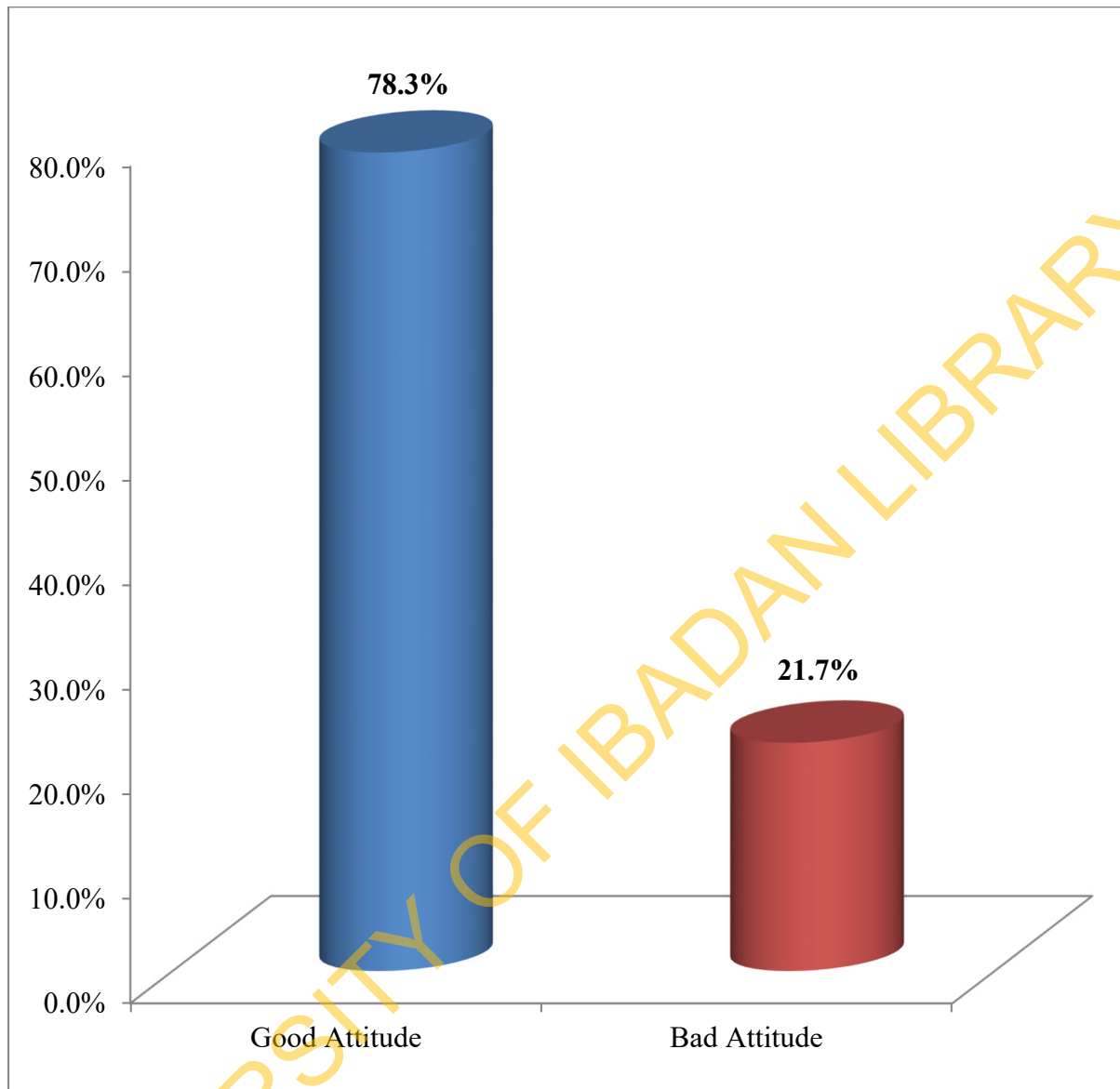


Figure 4.2: Respondents' attitude towards road safety signs

#### 4.4 Perception towards road safety signs

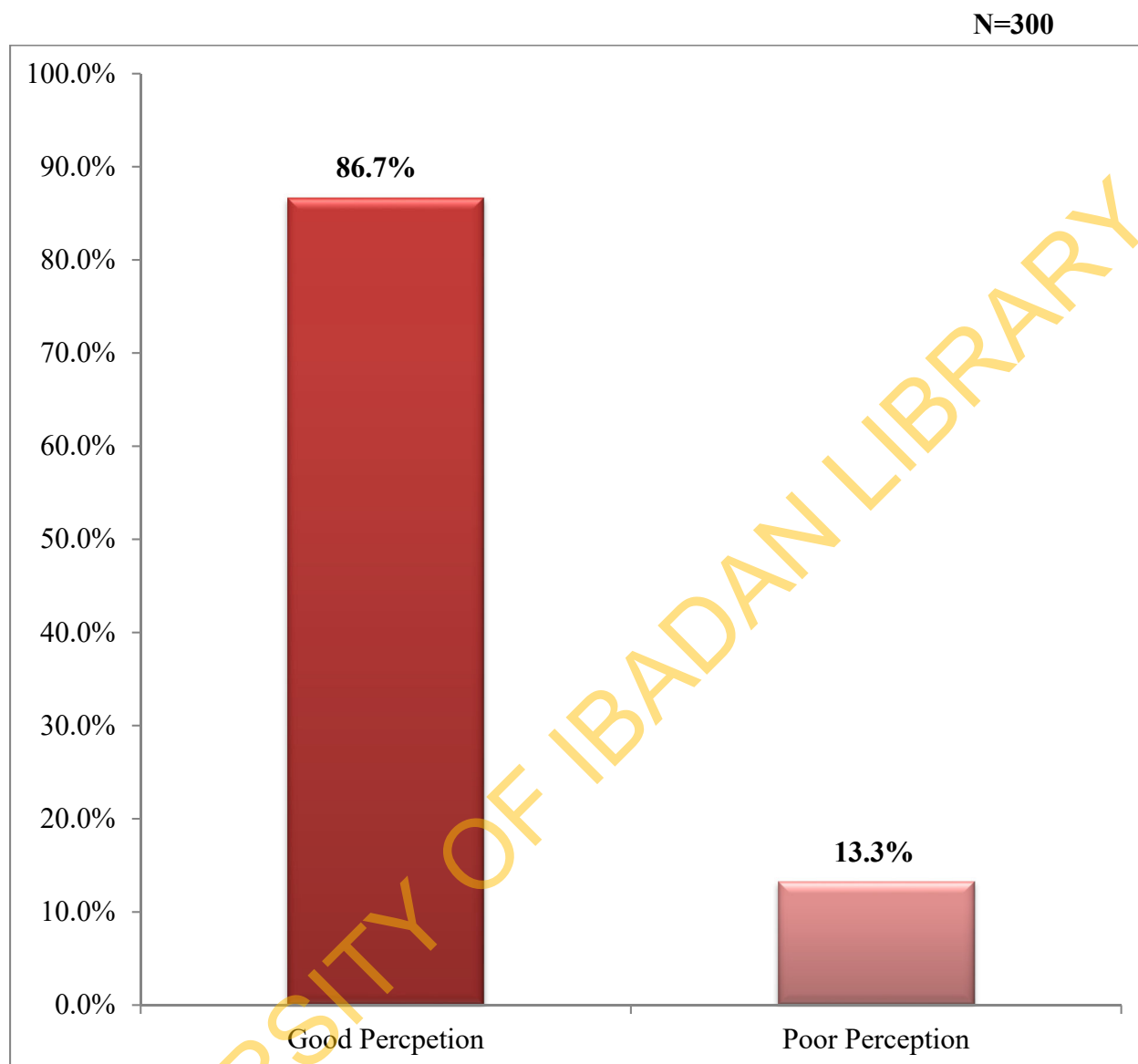
Perception of respondents towards road safety signs was presented in table 4.4. Majority, 86.7% of the respondents had good perception while 13.3% had bad perception.

While 96.3% agreed that every road users should have good knowledge of road signs as it will help ensure safety on the road, 63.0% disagree that traffic signs along roads are not easily seen by road users. Also, 52.3% agreed that traffic law enforcement in their community is too strict and 92.3% agreed that road safety signs should always be obeyed.

Majority, 91.3% opined that there should be an improvement on road safety education in schools and 84.0% agreed that there should be more road safety sign awareness programmes for road users. Few, 14.7%, disagreed that over-speeding on the road should be punishable as it causes serious injuries and death to students while 85.7% agreed that driving without having a good knowledge of road signs should be punishable. 90.7% also agreed that drunk-drivers under the influence of alcohol fail to recognise traffic signs and should be punished when caught.

**Table 4.4: Perception towards road safety signs**

| Variables  | Responses |              |
|--|-----------|--------------|
|  | Agree (%) | Disagree (%) |
| Every road users should have good knowledge of road signs as it will help ensure safety on the road.                   | 289(96.3) | 11(3.7)      |
| Traffic signs along roads are not easily seen by road users  | 111(37.0) | 189(63.0)    |
| Traffic law enforcement in the community is too strict   | 157(52.3) | 143(47.7)    |
| Road safety signs should always be obeyed by road users  | 277(92.3) | 23(7.7)      |
| There should be an improvement on road safety education in schools.  | 274(91.3) | 26(8.7)      |
| There should be more road safety sign awareness programmes for road users (such as using flyers, radio and Television) | 252(84.0) | 48(16.0)     |
| Over-speeding on the road should be punishable as it causes serious injuries and death to students                     | 256(85.3) | 44(14.7)     |
| Driving without having a good knowledge of road signs should be punishable   | 257(85.7) | 43(14.3)     |
| Drunk-drivers under the influence of alcohol fail to recognise traffic signs and should be punished when caught        | 272(90.7) | 28(9.3)      |



**Figure 4.3: Respondents' Perception towards road safety signs**

#### **4.5 Factors influencing the use of road safety signs**

Factors influencing the use of road safety signs as identified by the respondents and presented in table 4.5 included; Fear of injury (79.2%), adequate road safety education received in schools (83.2%), mothers' educational level (55.4%), previous experience of road traffic injury (65.8%), presence of road safety officers on the road (79.2%), age (60.7%). Other factors such as fear of punishment (3.7%) and father's educational level (1.7%) were also pointed out by the students. Knowledge of road traffic signs (90.3%) was most reported by the respondents.

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**Table 4.5: Factors influencing the use of road safety signs**

| <b>*Factors</b>                                    | <b>Frequency</b> | <b>%</b> |
|--|------------------|----------|
| Knowledge of road traffic signs                    | 269              | 90.3     |
| Fear of injury                                     | 236              | 79.2     |
| Adequate road safety education received in schools | 248              | 83.2     |
| Mothers educational level                          | 165              | 55.4     |
| Previous experience of road traffic injury         | 196              | 65.8     |
| Presence of road safety officers on the road       | 236              | 79.2     |
| Age  | 181              | 60.7     |
| Fear of punishment                                 | 11               | 3.7      |
| Father's educational level                         | 5                | 1.7      |

\*Multiple responses present

#### 4.6 Sources of information on road safety signs

Respondents' sources of information on road safety signs is presented in table 4.6. These include Media, Teachers, friends and parents. 85.7% reported media as their source of information on road safety signs, 80.3% reported teachers, 33.5% reported friends and 24.8% reported parents. While Media (48.0%) was the most preferred source of information, friend (7.3) was the least preferred. Most, 64.0%, of the respondents reported that educational materials are available for them on road safety signs. When asked where educational materials should be made available for their use, 67.7% of the respondents reported media, 45.0% mentioned bookshop and 57.7% reported library.

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**Table 4.6: Sources of information on road safety signs**

| <b>Variables</b>  | <b>Responses</b>           | <b>No.</b> | <b>%</b> |
|---|----------------------------|------------|----------|
| <b>*Sources of information on road safety signs</b>   | Media (Television & Radio) | 257        | 85.7     |
|   | Teachers                   | 241        | 80.3     |
|   | Friends                    | 200        | 33.5     |
|   | Parents                    | 259        | 24.8     |
| <b>Most Preferred source of information</b>   | Media (Television & Radio) | 144        | 48.0     |
|   | Teachers                   | 53         | 17.7     |
|   | Friends                    | 22         | 7.3      |
|   | Parents                    | 81         | 27.0     |
| <b>Availability of educational materials on road safety signs</b>                               | Yes                        | 192        | 64.0     |
|   | No                         | 108        | 36.0     |
| <b>*Where educational materials on road safety should be made available for students to use</b> | Classroom                  | 186        | 62.0     |
|   | Library                    | 173        | 57.7     |
|   | Media                      | 203        | 67.7     |
|   | Bookshop                   | 135        | 45.0     |
|   | Staff room                 | 6          | 2.0      |
|   | Road side                  | 10         | 3.3      |

\*Multiple responses presents

#### 4.7 Significant test of Hypotheses

**Hypothesis one:** There is no statistical difference between class of respondents and knowledge of road safety signs

The cross tabulation is presented in table 4.7.1. Chi-square test was used to test for these variables and was found to be significant ( $X^2=12.676$ ,  $df=6$ ,  $p=0.048$ ). Therefore the null hypotheses that there is no statistical difference between class of respondents and knowledge of road safety signs was rejected.

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**Table 4.7.1: Relationship between class of respondents and knowledge of road safety signs**

| Class | Knowledge of road safety signs |           |          | Total       | df | $\chi^2$ | p-value |
|-------|--------------------------------|-----------|----------|-------------|----|----------|---------|
|       | Poor                           | Fair      | Good     |             |    |          |         |
| JSS1  | 30(36.6)                       | 45(54.9)  | 7(8.5)   | 82 (100.0)  | 6  | 12.676   | 0.048*  |
| JSS2  | 28(35.0)                       | 39(48.8)  | 13(16.3) | 80 (100.0)  |    |          |         |
| SS1   | 29(39.7)                       | 27(37.0)  | 17(23.3) | 73 (100.0)  |    |          |         |
| SS2   | 33(50.8)                       | 23(35.4)  | 9(13.8)  | 65 (100.0)  |    |          |         |
| Total | 120(40.0)                      | 134(44.7) | 46(15.3) | 300 (100.0) |    |          |         |

Chi-square statistics was used

\*Significant (p<0.05)

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**Hypothesis two:** There is no statistical difference between age of respondents and perception of road safety signs

The cross tabulation is presented in table 4.7.2. Fischer-exact test statistics was used to test these two variables and was found not significant ( $X^2=7.257$ ,  $df=3$ ,  $p=0.05$ ). Therefore, the null hypothesis that there is no statistical difference between age of respondents and perception of road safety signs was not rejected.

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**Table 4.7.2: Relationship between age of respondents and perception of road safety signs**

| Age   | Perception of road safety signs |           | Total | df | X <sup>2</sup> | p-value |
|-------|---------------------------------|-----------|-------|----|----------------|---------|
|       | Poor                            | Good      |       |    |                |         |
| 10-12 | 16(20.8)                        | 61(79.2)  | 77    | 3  | 7.257          | 0.05    |
| 13-15 | 15(9.6)                         | 142(90.4) | 157   |    |                |         |
| 16-18 | 7(11.9)                         | 52(88.1)  | 59    |    |                |         |
| 19-21 | 2(28.6)                         | 5(71.4)   | 7     |    |                |         |
| Total | 40(13.3)                        | 260(86.7) | 300   |    |                |         |

Fischer-exact test statistics was used

\*Not Significant (p-value not <0.05)

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**Hypothesis three:** There is no statistical difference between Gender of respondents and knowledge of road safety signs.

The cross tabulation is presented in table 4.7.4. Chi-square statistics was used to test for these variables and was found to be not significant ( $X^2=3.255$ ,  $df=2$ ,  $p=0.196$ ). Therefore the null hypotheses that there is no statistical difference between gender of respondents and knowledge of road safety signs was not rejected.

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**Table 4.7.3: Relationship between gender of respondents and knowledge of road safety sign**

| Gender | Knowledge of road safety signs |           |          | Total       | df | $X^2$              | p-value |
|--------|--------------------------------|-----------|----------|-------------|----|--------------------|---------|
|        | Poor                           | Fair      | Good     |             |    |                    |         |
| Male   | 47(34.6)                       | 65(47.8)  | 24(17.6) | 136(100.0)  | 2  | 3.255 <sup>+</sup> | 0.196*  |
| Female | 73(44.5)                       | 69(42.1)  | 22(42.1) | 164(100.0)  |    |                    |         |
| Total  | 120(40.0)                      | 134(44.7) | 46(15.3) | 300 (100.0) |    |                    |         |

\*Not significant

+Chi-square Statistic was used

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**Hypothesis four:** There is no statistical difference between access to educational material on road safety signs and knowledge of road safety signs.

The cross tabulation is presented in table 4.7.5. Chi-square statistics was used to test for these variables and was found to be statistically significant ( $X^2=9.801$ ,  $df=2$ ,  $p=0.007$ ). Therefore the null hypotheses that there is no statistical difference between availability of educational material on road safety signs and knowledge was rejected.

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**Table 4.7.4: Relationship between availability of educational materials and knowledge of road safety sign**

| Availability of education materials | Knowledge of road safety signs |           |          | Total       | df | $X^2$              | p-value            |
|-------------------------------------|--------------------------------|-----------|----------|-------------|----|--------------------|--------------------|
|                                     | Poor                           | Fair      | Good     |             |    |                    |                    |
| Yes                                 | 86(44.8)                       | 85(44.3)  | 21(10.9) | 192(100.0)  | 2  | 9.801 <sup>+</sup> | 0.007 <sup>*</sup> |
| No                                  | 34(31.5)                       | 49(45.4)  | 25(23.1) | 108(100.0)  |    |                    |                    |
| Total                               | 120(40.0)                      | 134(44.7) | 46(15.3) | 300 (100.0) |    |                    |                    |

\*Significant

+Chi-square Statistic was used

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## CHAPTER FIVE

### DISCUSSION, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Discussion

Road traffic awareness among school going adolescents is one of the most important aspect towards safety concerning traffic rules. The students in adolescence may derive a thrill out of taking risks on road not realizing the consequences such risks may have. This age group are also the vehicle owners of tomorrow, it is very important to sensitize this population about road safety rules as they are the future of the nation.

##### 5.1.1 Socio-demographic profile of the randomly selected public secondary school students of Ibadan North Local Government

The data collected showed that public secondary school students are within the age range of 10-20 where half of the respondents fall within the 13-15 age category. The students were sampled in Jss1, JSS2, SS1 and SS2 leaving out JSS3 and SSS3 as they were not available as at the time of data collection. Gender was proportionately sampled and all the students were from mixed schools. Nearly half of these students walk to school while others used other modes of transportation. Although, walking as a means of transport has health benefits, it exposes these students to the risk of road traffic accidents. In this study, 28% of the respondents had previously been exposed to road traffic injury which is in close range with Seemaet *al*, (2012) who reported a prevalence of road accidents among peri-urban school children in Lahore as 29%. Also, few of the respondents are in possession of a bicycle. Some of the respondents had driven before. Nearly all the respondents cross the road when going to school and after closing hours. None of the public secondary schools sampled had road safety club. It is important to note that higher class does not translate into a better understanding of road safety signs.

##### 5.1.2 Knowledge of road safety signs

This study revealed the respondents level of knowledge of road safety signs. The respondents exhibited a poor knowledge of road traffic signs. It is rather surprising that only 15.3% has good knowledge of road safety signs despite it being taught as a discipline in schools. This finding appears to be in line with DadonaRahkiet *al*, (2011) which stated that most of the adolescents on

the road are not able to understand road signs. Similar finding was also reported in a study by Ranjan *et al.*, (2018) among in-school adolescents in Raichur city, India where more than half of the students could not correctly identify road signs. However majority of the respondents knew the indication of red, green and yellow signal lights. This result supported the findings by Abdillah *et al.*, (2015) who found out that 85.83% of students know the meaning of traffic lights. This could be because traffic lights on the road are placed over-head and are easily noticeable by road users when compared with other road signs. In terms of knowledge related to zebra crossing, 39.9% of the respondents could correctly identify what the sign connotes. This contradicts the findings of Abdillah *et al.*, (2015) where 75.34% of school children in Indonesia knew the zebra crossing sign. This could be because often times, there are no zebra crossing signs/stripes on the road. As regards Bus Stop sign, only 3.7% could correctly state what the sign connotes. When compared with others, the percentage who knows about this sign is the lowest out of all knowledge-related signs; this was similarly reported by Abdillah *et al.*, (2015). None of the students could correctly identify all the road signs in the study instrument. The poor knowledge of traffic signs among these study participants may be due to low awareness to road signs while on the road and reduced exposure to IEC activities.

These findings therefore underscore a need to design and implement regular road safety campaigns and education for these students especially when studies have shown that health education is effective in curbing dangerous behaviour on the road (Oladejo *et al.*, 1986). The information about road safety rules should also be given to students during school health programs.

### **5.1.3 Perception towards road safety signs**

In determining the perception of public secondary school students towards the use of road safety signs, this study revealed that majority of the respondents had positive perception towards road safety signs. This study also revealed that 92.3% of respondents agree that road safety signs should always be obeyed by road users. This contradicts the finding of Haiyan Sun *et al.* (2013), where majority of migrant workers do not have the perception of obeying traffic rules partly as a result of their gross ignorance about traffic safety rules. Likewise, this study found out that most of respondents perceived that every road user should have good knowledge of road signs as it will help ensure safety on the road. This agrees with Haiyan Sun *et al.* (2013), who discovered

that majority of migrant workers, especially after receiving practical education on traffic safety rules, had the perception that every road user should have a good knowledge of traffic rules, and they were willing to share it to their families and friends.

Most of the respondents agreed that driving without knowledge of road safety signs is an offence and should be punishable; this is in agreement with a study by Humayun et al, (2012) among peri-urban school children in Lahore.

#### **5.1.4 Attitude towards road safety signs**

It is one thing to understand road signs, it is something else to exhibit a behavior demanded by the signs. In this study, most of the respondents are willing to learn more about road safety signs. This study discovered almost all of the respondents have the attitude of ensuring they look to the left and to the right before crossing the road. This correlates with the findings of Haiyan Sun *et al.* (2013), where most migrant workers in China have the attitude of looking to the left and right when crossing the road, even though the order of looking is usually wrong. This however contradicts findings by Abdillah *et al.* (2015) where only 46.7% of school children in Indonesia ensured they look to the left and to the right before crossing the road. Also this study discovered that about 77.7% have a positive attitude towards obeying traffic lights while 22.3% have negative attitude of violating traffic lights because it causes so much delay on the road. This is similar to the finding of Haiyan Sun *et al.* (2013) who found out that according to traffic regulation sign of zebra crossing, the majority of migrant workers take the zebra crossing when crossing the road, but they always violate the traffic lights by going across even when the green light has not lit.

Overall, this study revealed that the majority of this study population has positive attitude towards the use of road safety signs.

#### **5.1.5 Factors influencing adherence towards road safety signs**

The factors identified in this study were; fear of injury, adequate road safety education received in schools, mother's educational level, previous experience of road traffic injury, presence of road safety officers on the road, age, fear of punishment and father's educational level. Factors such as age, mother's educational level and knowledge of road safety signs were in line with what was reported by Kale (2016) in another study.

The respondents, in a specific term, did not identify factors such as younger age, gender and higher level of schooling as highlighted in a similar study among coastal population in India by Shetty *et al.*, (2018).

#### **5.1.6 Sources of information on road safety signs**

There are numerous of sources of information regarding road safety signs. This study showed that the Media (forming source of information for 85.7% of the respondents), teachers (80.3%), friends (33.5%) and parents (24.8%) were the major sources of information on road safety signs for the respondents. These sources of information were also highlighted by Abdillah *et al.*, (2015). From this data, it appears that teachers are actors and intermediaries who have an important role in the process of giving road safety education for school children. It means that intervention efforts related to road safety of children can also be given to teachers, in addition to the children themselves. Also, the study discovered that 64.0% of the respondents have access to educational materials on road safety signs. The study also revealed that the Media is the most preferred source for educational materials on road safety signs for the respondents and they chose that such materials should be made available in the bookshop and library respectively. These findings differ from the discoveries of Haiyan Sun *et al.* (2013), who showed that majority of migrant workers do not have access to information regarding road safety signs but these migrant workers prefer case education of traffic safety with true stories, cartoon books, and practical materials with pictures and painted traffic safety slogans or signs as sources of information on road safety rules.

#### **5.1.7 Implications of findings for Health Promotion and Education**

The findings of this study have several implications for planning, development and implementation for health promotion and education on road safety among secondary school students. It has been deduced from this study that, although the respondents' attitude and perception towards road safety is good, their level of knowledge is low. Therefore, to improve their level of knowledge which would further translate into safe practices on the road, the following should be put in place;

#### **Public Enlightenment**

This can be in form of campaigns which could be used to create awareness and influence their knowledge and practices. This has the potential of reaching out to larger number of people including parents, teachers, drivers and other population groups in the community. Aggressive campaigns targeted at various groups should be organized with differing emphasis. Television, radio adverts, jingles and other public relation programmes should also be sponsored. An enforcement patrol free week can be declared to carry out massive campaigns distributing handbills, safety pamphlets and posters to road users across the country.

Government and other relevant agencies should design community and population-based preventive activities towards improving risk awareness.

### **Inter-sectorial approach**

Addressing the issues of road safety should cut across various sectors not just the education sector but also the health and transport sector. Students, at all level of education, should be exposed to adequate knowledge of road safety rules. With majority of secondary school students walking to school, parents needs to be taught about the dangers of letting their children cross roads alone

The FRSC could also partner with stakeholder organizations to pursue and prosecute safety campaigns.

### **5.2 Conclusion**

This study assesses the knowledge, perception and attitude towards road safety signs among public secondary school students in Ibadan North local government area of Oyo state. It can be concluded that the level of knowledge was poor while the perception and attitude were good. The most identified factor influencing the use of road signs is adequate road safety education received in schools. These findings suggests that knowledge of traffic signs and other infrastructure related to road safety among secondary school students is important, considering they are also part of road users, either as pedestrians, street crossers or public transport users.

As traffic safety is an essential part of public health and accident preventions, further research is recommended in the field of traffic safety. Irrespective of the high standard of education, there is

a scope to reintroduce the concept of road safety among young to prevent their losses and to motivate them in their active participation in spreading the knowledge to others.

### **5.3 Recommendations**

Based on the findings from this study, the following recommendations are made;

1. Secondary schools should have adult crossing guards whose primary role is to guide students safely across the street while students also remain responsible for their own safety. In this manner, a guard plays another key function—a role model helping students develop the skills necessary to cross streets safely at all times.
2. School teachers should inculcate traffic safety among students and enforce traffic rules within school premises.
3. Equipments/features such as road bumps, zebra crossings, and road signs required to ensure road safety around schools are basic and relatively inexpensive to construct and maintain especially when compared to the costs of road traffic injuries to students and the nation at large. Therefore, these features should also be put in place and maintained around schools to ensure safety of students on their way to and from school.
4. There should be strengthening of information, education and communication activities in relation to road safety signs to all school students during school health programs.
5. Government, in alliance with private institutions and urban stake-holders should fund substantially road safety campaign and education, through workshops, seminars, conferences, research and training activities in the community at large.

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## APPENDIX 1 QUESTIONNAIRE

Dear Respondent,

Good day, I am a Postgraduate student of the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan. The aim of this study is to investigate the **“Knowledge, perception and attitude towards road safety signs among public secondary school students in Ibadan-North local government area.** This study will yield information that may be used in developing health intervention programs especially those

relating to road safety among in-school adolescents with a view to reducing road traffic injury and accidents. There are no right or wrong answers to the questions asked or the statements made, what is desired of you is your truthful and honest responses. Please note that the completion of this questionnaire is entirely voluntary. All information gathered as a result of your participation in this study will be treated with utmost confidentiality and will be used strictly for research purposes only.

Thank you.

I have read and understand the consent form and voluntarily agree/disagree to participate in the study by ticking [√] in the appropriate box below:

1. Agree [ ]                      2. Disagree [ ]

Date

-----




#### **SECTION A: SOCIO-DEMOGRAPHIC INFORMATION**


**Please tick (√) any of the responses that apply to you in the options provided or complete the blank spaces provided as applicable.**

1. Age (in years) as at last birthday: \_\_\_\_\_
2. Class: -----
3. Gender: 1. Male [ ] 2. Female [ ]
4. School type: 1. Boys only [ ] 2. Girls only [ ] 3. Mixed [ ]
5. Exposure to previous road traffic accident or related injury? 1. Yes [ ] 2. No [ ]
6. Mode of transportation to school 1. Walking [ ] 2. By taxi [ ] 3. By motorcycle 4. Others (specify) \_\_\_\_\_
7. Do you have a bicycle? 1. Yes [ ] 2. No [ ]
8. Have you ever driven a Bicycle/ Motorcycle/ Car? 1. Yes [ ] 2. No [ ]
9. Does your parent come to pick you from school after closing hours every day? 1 Yes [ ] 2. No [ ]
10. Do you cross the road when going to school? 1. Yes [ ] 2. No [ ]
11. Do you cross the road after closing hours? 1. Yes [ ] 2. No [ ]
12. Do you have a road safety club in your school? 1. Yes [ ] 2. No [ ]

**SECTION B: KNOWLEDGE OF ROAD SAFETY SIGNS**

**Instruction:** The table below contains set of questions to assess your knowledge on road safety signs. Please fill in your responses

| S/N | Statements   | Responses |
|-----|--|-----------|
| 13  | What are road safety signs?  |           |
| 14  | What does the <b>red</b> traffic light symbolize?  |           |
| 15  | What does the <b>green</b> traffic light symbolize?  |           |
| 16  | What does the <b>yellow</b> traffic light symbolize?   |           |
| 17  | What is the purpose of this sign?<br> |           |
| 18  | What is the purpose of this sign?<br> |           |
| 19  | What is the purpose of this sign?<br> |           |

|    |  |  |
|----|--|--|
| 20 | What does this sign indicate?<br> |  |
| 21 | <b>Total score obtained</b>  |  |

### **SECTION C: ATTITUDE TOWARDS ROAD SAFETY SIGNS**

**Instruction:** The table below contains set of statements to determine your attitude towards road safety signs. Please tick [√] in your responses as appropriate

| S/N | Statement   | Yes | No |
|-----|---|-----|----|
| 22  | I can always read traffic signs on the road   |     |    |
| 23  | I need to know the meaning of traffic signs on the road   |     |    |
| 24  | I do not need to know road safety signs before I can cross the road or walk on the road safely                                |     |    |
| 25  | I ensure I look to the left and to the right before crossing the road   |     |    |
| 26  | I am comfortable using mobile phone while walking on the road   |     |    |
| 27  | I am against driving or riding a motorcycle on the road without having good knowledge of road safety signs                    |     |    |
| 28  | I don't feel comfortable with road users not having knowledge of road signs as it increases the possibility of road accidents |     |    |
| 29  | I walk on pedestrian lanes and not on the road  |     |    |
| 30  | I am willing to learn more about road safety signs  |     |    |
| 31  | I am comfortable with making my way through cars without waiting for the traffic to reduce                                    |     |    |
| 32  | I am not comfortable with the traffic lights because it causes so much delay on the road                                      |     |    |
| 33  | I encourage the use of seat belts while inside cars   |     |    |



|    |                             |  |  |
|----|-----------------------------|--|--|
| 34 | <b>Total score obtained</b> |  |  |
|----|-----------------------------|--|--|

#### **SECTION D: PERCEPTION TOWARDS ROAD SAFETY SIGNS**

**Instruction:** The table below contains a set of statements to determine your perception towards road safety signs. Please tick [√] in your responses as appropriate

| S/N | Statement  | Agree | Disagree |
|-----|--|-------|----------|
| 35  | Every road users should have good knowledge of road signs as it will help ensure safety on the road.                   |       |          |
| 36  | Traffic signs along roads are not easily seen by road users  |       |          |
| 37  | Traffic law enforcement in my community is too strict  |       |          |
| 38  | Road safety signs should always be obeyed by road users  |       |          |
| 39  | There should be an improvement on road safety education in schools.  |       |          |
| 40  | There should be more road safety sign awareness programmes for road users (such as using flyers, radio and Television) |       |          |
| 41  | Over-speeding on the road should be punishable as it causes serious injuries and death to students                     |       |          |
| 42  | Driving without having a good knowledge of road signs is an offence  |       |          |
| 43  | Drunk-drivers under the influence of alcohol fail to recognise traffic signs and should be punished when caught        |       |          |
| 44  | <b>Total score obtained</b>  |       |          |

#### **SECTION E: FACTORS INFLUENCING THE USE OF ROAD SAFETY SIGNS**

**Instruction:** The table below contains a set of statements to explore factors influencing the use of road safety signs. Please tick [√] in your responses as appropriate

| S/N | Factors | Yes | No |
|-----|---------|-----|----|
|-----|---------|-----|----|

|    |  |  |  |
|----|--|--|--|
| 45 | Knowledge of road traffic signs                    |  |  |
| 46 | Fear of injury                                     |  |  |
| 47 | Adequate road safety education received in schools |  |  |
| 48 | Mother's educational level                         |  |  |
| 49 | Previous experience of road traffic injury         |  |  |
| 50 | Presence of road safety officers on the road       |  |  |
| 51 | Age  |  |  |
| 52 | Others (please specify)<br>i.<br>ii.               |  |  |

#### **SECTION F: SOURCE OF INFORMATION ON ROAD SAFETY SIGNS**

**Instruction:** This section is aimed at identifying your source of information on road safety signs.

Please tick [] in your responses as appropriate

53. What source of information on road safety signs is available to you?

1. Media (Television, Radio, etc)      i. Yes [  ] ii. No [  ]
2. Teachers                                      i. Yes [  ] ii. No [  ]
3. Friends                                        i. Yes [  ] ii. No [  ]
4. Parents                                        i. Yes [  ] ii. No [  ]
5. Others (specify) \_\_\_\_\_

54. What source of information on road safety signs is the most preferred by you?

1. Media [  ] 2. Teachers [  ] 3. Friends [  ] 4. Parents [  ] 5. Others (specify) \_\_\_\_\_

55. Are educational materials on road safety signs available for your use? 1. Yes [  ] 2. No [  ]

56. Where do you think educational materials on road safety should be made available for students to use?

- a. Classroom i. Yes [ ] ii. No [ ]
- b. Library i. Yes [ ] ii. No [ ]
- c. Media (Television, Radio, etc.) i. Yes [ ] ii. No [ ]
- d. Bookshop i. Yes [ ] ii. No [ ]
- e. Others (specify) \_\_\_\_\_

UNIVERSITY OF IBADAN LIBRARY

#### APPENDIX 11

### **CODING GUIDE FOR KNOWLEDGE, PERCEPTION AND ATTITUDE TOWARDS ROAD SAFETY SIGNS AMONG PUBLIC SECONDARY SCHOOL STUDENTS IN IBADAN NORTH LOCAL GOVERNMENT AREA, OYO STATE.**



#### **SOCIO-DEMOGRAPHIC INFORMATION**



| S/N | VARIABLE   | CODE          |
|-----|--|---------------|
| 1.  | Age  | Actual figure |
| 2.  | Class  |               |
|     | Jss1   | 1             |
|     | Jss2   | 2             |
|     | Ss1  | 3             |
|     | Ss2  | 4             |
|     | No response  | 77            |
| 3.  | Gender   |               |
|     | Male   | 1             |
|     | Female   | 2             |
|     | No response  | 77            |
| 4.  | School type  |               |
|     | Boys only  | 1             |
|     | Girls only   | 2             |
|     | Mixed  | 3             |
|     | No response  | 77            |
| 5.  | Exposure to previous road traffic accident or related injury |               |
|     | Yes  | 1             |
|     | No   | 2             |
|     | No response  | 77            |
| 6.  | Mode of transportation to school                             |               |
|     | Walking  | 1             |
|     | By taxi  | 2             |
|     | By motorcycle  | 3             |
|     | No response  | 77            |
| 7.  | Do you have a bicycle?                                       |               |
|     | Yes  | 1             |
|     | No   | 2             |
|     | No response  | 77            |
| 8.  | Have you ever driven a bicycle/motorcycle/car?               |               |
|     | Yes  | 1             |
|     | No   | 2             |
|     | No response  | 77            |
| 9.  | Do you cross the road when going to school?                  |               |
|     |  | 1             |

|     |  |    |
|-----|--|----|
|     | Yes  |    |
|     | No   | 2  |
|     | No response                                    | 77 |
| 10. | Do you cross the road after closing hours?     |    |
|     | Yes  | 1  |
|     | No   | 2  |
|     | No response                                    | 77 |
| 11. | Do you have a road safety club in your school? |    |
|     | Yes  | 1  |
|     | No   | 2  |
|     | No response                                    | 3  |

### KNOWLEDGE OF ROAD SAFETY SIGNS

| S/N | VARIABLE                                      | CODE |
|-----|---|------|
| 12. | What are road safety signs?                   |      |
|     | Signs on the road                             | 1    |
|     | Signs that prevent from accident              | 2    |
|     | Signs that guide road users                   | 3    |
|     | Signs that must be obeyed                     | 4    |
|     | Signs that tell vehicle either to stop or not | 5    |
|     | Signs that keep the road safe                 | 6    |
|     | Signs that protect people on the road         | 7    |
|     | Signs that cautions the drivers on the road   | 8    |
|     | Signs that should be followed on the road     | 9    |
|     | Signs that let us know when to cross          | 10   |
|     | No response                                   | 77   |
| 13. | What does the red traffic light symbolize?    |      |
|     | Stop  | 1    |
|     | Go  | 2    |
|     | Wait  | 3    |
|     | Move  | 4    |
|     | Ready to move                                 | 5    |
|     | no response                                   | 77   |

|     |   |    |
|-----|---|----|
| 14. | What does the green traffic light symbolize?  |    |
|     | Stop  | 1  |
|     | Go  | 2  |
|     | Wait  | 3  |
|     | Move  | 4  |
|     | Ready to move   | 5  |
|     | no response   | 77 |
| 15. | What does the yellow traffic light symbolize  |    |
|     | Stop  | 1  |
|     | Go  | 2  |
|     | Wait  | 3  |
|     | Move  | 4  |
|     | Ready to move   | 5  |
|     | Ready to go   | 7  |
|     | Ready   | 8  |
|     | no response   | 77 |
| 16. | What is the purpose of this sign?   |    |
|     |   |    |
|     | no pedestrian   | 1  |
|     | no crossing allowed   | 2  |
|     | No children crossing  | 3  |
|     | People cannot walk here   | 4  |
|     | No road   | 5  |
|     | no response   | 77 |
| 17. | What is the purpose of this sign?   |    |
|     |  |    |
|     | No bicycle allowed  | 1  |
|     | No motorcycle allowed   | 2  |
|     | No parking  | 4  |
|     | Bicycle rider is not allowed  | 5  |
|     | Bicycle is dangerous  | 6  |

|     |  |              |
|-----|--|--------------|
|     | Motorcycle   |              |
|     | Warning sign for bicycle   | 8            |
|     | Do not ride bicycle  | 9            |
|     | No response  | 77           |
| 18. | What is the purpose of this sign?<br> |              |
|     | Zebra crossing   | 1            |
|     | Pedestrian crossing  | 2            |
|     | Children crossing  | 3            |
|     | Crossing   | 5            |
|     | People crossing  | 6            |
|     | Walking  | 7            |
|     | Run when crossing  | 8            |
|     | Walk on pedestrian lanes   | 9            |
|     | No response  | 77           |
| 19. | What does this sign indicate?<br>   |              |
|     | Bus stop sign  | 1            |
|     | Buses should wait here   | 2            |
|     | Train  | 4            |
|     | Buses going  | 5            |
|     | No response  | 77           |
| 20. | Total knowledge score  | Actual score |
|     | Category of knowledge score  |              |
|     | Score of $\geq 12$ (Good knowledge)  | 1            |
|     | Score of $\geq 8 < 12$ (Fair knowledge)  | 2            |
|     | Score of $< 8$ (Poor knowledge)  | 3            |

## ATTITUDE TOWARDS ROAD SAFETY SIGNS

| S/N   | VARIABLE  | CODE  |
|-------|---|---|
| 21-32 | <p>I can always read traffic signs on the road</p> <p>I need to know the meaning of traffic signs on the road</p> <p>I do not need to know road safety signs before I can cross the road or walk on the road safely</p> <p>I ensure I look to the left and to the right before crossing the road</p> <p>I am comfortable using mobile phone while walking on the road</p> <p>I am against driving or riding a motorcycle on the road without having good knowledge of road safety signs</p> <p>I don't feel comfortable with road users not having knowledge of road signs as it increases the possibility of road accidents</p> <p>I walk on pedestrian lanes and not on the road</p> <p>I am willing to learn more about road safety signs</p> <p>I am comfortable with making my way through cars without waiting for the traffic to reduce</p> <p>I am not comfortable with the traffic lights because it causes so much delay on the road</p> <p>I do not need to wear seat belt inside cars</p> | <p>For all variables</p> <p>1 = yes</p> <p>2 = no</p> <p>77 = no response</p> |
| 33    | Total attitude score  | Actual score  |
|       | Category of attitude score  |   |
|       | Score of $\geq 17$ (Good Attitude)  | 1   |
|       | Score of $< 17$ (Bad Attitude)  | 2   |

## PERCEPTION TOWARDS ROAD SAFETY SIGNS

| S/N | VARIABLE | CODE |
|-----|----------|------|
|-----|----------|------|



|       |   |   |
|-------|---|---|
| 34-42 | <p>Every road users should have good knowledge of road signs as it will help ensure safety on the road.</p> <p>Traffic signs along roads are not easily seen by road users</p> <p>Traffic law enforcement in the community is too strict</p> <p>Road safety signs should always be obeyed by road users</p> <p>There should be an improvement on road safety education in schools.</p> <p>There should be more road safety sign awareness programmes for road users (such as using flyers, radio and Television)</p> <p>Over-speeding on the road should be punishable as it causes serious injuries and death to students</p> <p>Driving without having a good knowledge of road signs should be punishable</p> <p>Drunk-drivers under the influence of alcohol fail to recognise traffic signs and should be punished when caught</p> | <p>For all variables</p> <p>1 = agree</p> <p>2 = disagree</p> <p>77 = no response</p> |
| 43    | Total perception score  | Actual score  |
|       | Category of perception score  |   |
|       | Score of $\geq 13$ (Good Perception)  | 1   |
|       | Score of $< 13$ (Bad perception)  | 2   |

### FACTORS INFLUENCING ADHERENCE TO ROAD SAFETY SIGNS

| S/N   | VARIABLE  | CODE  |
|-------|---|---|
| 44-50 | <p>Knowledge of road traffic signs</p> <p>Fear of injury</p> <p>Adequate road safety education received in schools</p> <p>Mother's educational level</p> <p>Previous experience of road traffic injury</p> <p>Presence of road safety officers on the road</p> <p>Age</p> | <p>For all variables</p> <p>1 = yes</p> <p>2 = no</p> |

|  |  |  |
|--|--|--|
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**SOURCE OF INFORMATION ON ROAD SAFETY SIGNS**

| S/N | VARIABLE   | CODE              |
|-----|--|-------------------|
| 52  | What source of information on road safety signs is available to you?<br><br>Media<br>Teachers<br>Friends<br>Parents  | Yes = 1<br>No = 2 |
| 53  | What source of information on road safety signs is the most preferred by you?<br><br>Media<br>Teachers<br>Friends<br>Parents                                 | 1<br>2<br>3<br>4  |
| 54. | Are educational materials on road safety signs available to you?<br><br>Yes<br>No  | 1<br>2            |
| 55. | Where do you think educational materials on road safety signs should be made available for students to use?<br><br>Classroom<br>Library<br>Media<br>Bookshop | Yes = 1<br>No = 2 |

**APPENDIX 111  
ALLOTTED POINTS**

**SECTION B: KNOWLEDGE OF ROAD SAFETY SIGNS**

| S/N | Statements               | Responses                      | Points allotted |
|-----|--------------------------|--------------------------------|-----------------|
| 12  | Define road safety signs | Road safety signs are signs at |                 |

|    |  |   |       |
|----|--|---|-------|
|    |  | <b>the side or above the road that provides information or gives instructions to road users in order to prevent accident on the road.</b> | 3pts  |
| 13 | What does the <b>red</b> traffic light symbolize?  | Stop  | 2pt   |
| 14 | What does the <b>green</b> traffic light symbolize?  | Go, move  | 2pt   |
| 15 | What does the <b>yellow</b> traffic light symbolize?   | Wait, get ready ,ready to move  | 2pt   |
| 16 | What is the purpose of this sign?<br>  | No pedestrian<br>No crossing  | 2pt   |
| 17 | What is the purpose of this sign?<br> | No cycle is allowed   | 2pt   |
| 18 | What is the purpose of this sign?<br> | Zebra crossing<br>Pedestrian crossing   | 2pt   |
| 19 | What does this sign indicate?<br>     | Bus stop sign   | 2pt   |
| 20 | <b>Total score obtained</b>  |   | 17pts |

|  |  |  |  |
|--|--|--|--|
|  | <b>Code = Score of <math>\geq 12</math></b><br><b>(Good knowledge)</b><br><b>Score of <math>\geq 8 &lt; 12</math> (Fair</b><br><b>knowledge)</b><br><b>Score of <math>&lt; 8</math> (Poor</b><br><b>knowledge)</b> |  |  |
|--|--|--|--|

### **SECTION C: ATTITUDE TOWARDS ROAD SAFETY SIGNS**

| S/N | Statement   | Yes          | No |
|-----|---|--------------|----|
| 21  | I can always read traffic signs on the road   | ✓            |    |
| 22  | I need to know the meaning of traffic signs on the road   | ✓            |    |
| 23  | I do not need to know road safety signs before I can cross the road or walk on the road safely                                |              | ✓  |
| 24  | I ensure I look to the left and to the right before crossing the road   | ✓            |    |
| 25  | I am comfortable using mobile phone while walking on the road   |              | ✓  |
| 26  | I am against driving or riding a motorcycle on the road without having good knowledge of road safety signs                    | ✓            |    |
| 27  | I don't feel comfortable with road users not having knowledge of road signs as it increases the possibility of road accidents | ✓            |    |
| 28  | I walk on pedestrian lanes and not on the road  | ✓            |    |
| 29  | I am willing to learn more about road safety signs  | ✓            |    |
| 30  | I am comfortable with making my way through cars without waiting for the traffic to reduce                                    |              | ✓  |
| 31  | I am not comfortable with the traffic lights because it causes so much delay on the road                                      |              | ✓  |
| 32  | I do not need to wear seat belts inside cars  |              | ✓  |
| 33  | <b>Total score obtained ( Each variable has 2pt)</b>  | <b>24pts</b> |    |
|     | <b>Code = Score of <math>\geq 17</math> (Positive Attitude)</b><br><b>Score of <math>&lt; 17</math> ( Negative Attitude)</b>  |              |    |

### **SECTION D: PERCEPTION TOWARDS ROAD SAFETY SIGNS**

| S/N | Statement   | Agree | Disagree     |
|-----|---|-------|--------------|
| 34  | Every road users should have good knowledge of road signs as it will help ensure safety on the road.                      | ✓     |              |
| 35  | Traffic signs along roads are not easily seen by road users   |       | ✓            |
| 36  | Traffic law enforcement in the community is too strict  |       | ✓            |
| 37  | Road safety signs should always be obeyed by road users   | ✓     |              |
| 38  | There should be an improvement on road safety education in schools.   | ✓     |              |
| 39  | There should be more road safety sign awareness programmes for road users (such as using flyers, radio and Television)    | ✓     |              |
| 40  | Over-speeding on the road should be punishable as it causes serious injuries and death to students                        | ✓     |              |
| 41  | Driving without having a good knowledge of road signs is an offence   | ✓     |              |
| 42  | Drunk-drivers under the influence of alcohol fail to recognise traffic signs and should be punished when caught           | ✓     |              |
| 43  | <b>Total score obtained ( Each variable has 2pts)</b>   |       | <b>18pts</b> |
|     | <b>Code = Score of <math>\geq 13</math> (Positive Perception)<br/>Score of <math>&lt; 13</math> (Negative perception)</b> |       |              |