KNOWLEDGE, PERCEPTION AND PATTERN OF USE OF HERBAL REMEDIES AMONG COMMERCIAL DRIVERS IN OLORUNDA LOCAL GOVERNMENT AREA, OSOGBO, OSUN STATE

BY

Olajumoke Abiodun, FAROTIMI
BNSC (LAUTECH)
MATRIC NO: 181475

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DEDICATION

This research work is dedicated to Almighty God who in his infinite mercy brought me thus far.

ABSTRACT

People engage in the use of herbal therapies and other natural treatments owing to the impression that they are more efficacious and risk-free than allopathic medicines. These herbal remedies may have their own benefits but the safety is not guaranteed. This study investigated the knowledge, perception and pattern of use of herbal remedies among commercial drivers in Olorunda Local Government Area, Osogbo, Osun state.

A descriptive cross-sectional study was conducted using a three-stage sampling technique. A total of 374 respondents were selected from four motor parks ('Oke-Fia', 'Stadium', 'Old garage' and 'Ota-Efun') using proportionate and systematic random selection, with an interviewer-administered questionnaire used to collect data from them. Knowledge about herbal remedies was assessed using a 5-point scale with score < 4 categorized as 'poor' and ≥ 4 as 'good'. Perception about herbal remedies was assessed using a 13-point scale with score < 7 categorized as 'unfavorable' and ≥7 as 'favorable' towards herbal remedies. Data were analyzed using descriptive statistics and Chi-square test at p = 0.05.

Out of the 374 questionnaires administered, 352 were used for the data analysis, the remaining were rejected because they had too many missing data. Respondents were all males and the mean age was 44.3±10.2 years. Majority (98%) of the respondents reported use of herbal remedies. Also, the majority (99.1%) of respondents had awareness about herbal remedies and the major source of information about herbal remedies was through elders (98%). Other leading sources of information included hawkers (91.4%), family members (88.9%), friends (88.9%), co-drivers (81.7%), radio (77.1%), and television (74.9%). Majority (82.4%) of the respondents showed poor knowledge of herbal remedies while only 17.6% had good knowledge. Majority (96.9%) of the respondents had a favorable perception about herbal remedies while a bare 3.1% had an unfavorable perception. Respondents used herbal remedies for both prophylactic and curative treatment of health problems including malaria, pile, typhoid and stomach ache. Most (63.7%) of the respondents reported the intake of alcohol-based herbal remedies such as 'sepe', 'alomo bitters' and 'paraga' which have intoxicating properties, however, only

32.1% of them reported the intake before driving. Respondents' age, marital status, knowledge of herbal remedy and perception of herbal remedy showed statistically significant relationship with usage of herbal product when need arises ($p<0.05$). However, there was no relationship between other socio-demographic characteristics and usage of herbal medicine as all tests of associations were not statistically significant. Herbal medicine is popular among the respondents but they appear to be ignorant of its potential toxicities as reflected by the poor knowledge and favorable perception about the medicine. Public enlightenment programs and effective communication about safe use of herbal medicines may be necessary as a means of minimizing the potential adverse effects.

Key-words: knowledge, herbal remedies, prevalence, perception, pattern of use, commercial drivers

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CERTIFICATION

I hereby certify that this study was carried out by FAROTIMI Olajumoke Abiodun under my supervision at the Department of Health Promotion and Education, Faculty of Public Health College of Medicine, University of Ibadan, Nigeria.

SUPERVISOR

Fredrick O. Oshiname, MPH, M.A., PhD

Department of Health Promotion and Education,

Faculty of Public Health, College of Medicine,

University of Ibadan, Ibadan

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ABBREVIATIONS

FEPA: Federal Environmental Protection Agency

HRs: Herbal remedies

HMs: Herbal medicines

HDs: Herbal dietary supplement

LGA: Local Government Area

NHAA: National Herbalist Association Australia

NURTW: National Union of Road Transport Workers

WHO: World Health Organization

NAPEP: National Poverty Eradication Programme

NAFDAC: National Agency for Food and Drug Administration and Control

NDLEA: National Drug Law Enforcement Agency

OPERATIONAL DEFINITION OF TERMS

Health seeking behaviour: Health seeking behaviours refer to all voluntary actions and/or activities embarked upon by an individual to prevent, detect, treat or manage diseases at any stage either asymptomatic or symptomatic.

Knowledge: these are facts, information and skills acquired through experience or education; the theoretical or practical understanding of a subject

Perception: it is the way in which something is regarded, understood or interpreted

Pattern of use: this is the repeated or regular way in which something is been used or done.

Herbal remedies: it is a plant or plant part or an extract or mixture of these used to prevent, alleviate or cure diseases.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Herbs are widely used across the world in the treatment of several ailments and for preventive purposes. People engage in the use of herbal therapies and other natural treatments owing to the belief that they are more efficacious and risk-free than allopathic medicines (Donald, 2012). The World Health Organization estimated that 80% of people worldwide rely on herbal medicines for some parts of their primary health care (WHO 2002). A 2002 National Health Interview Survey indicated that nearly 1 in 5 adults in America reported using herb for treatment of health conditions and/or health promotion (Owens, Toone and Steed-Ivie, 2014). The high use of herbal medicines may be due to accessibility, affordability, availability and acceptability of traditional herbal medicines by majority of the population most especially in developing countries (Tamuno, Omole-Ohonsi and Fadare, 2010).

In Nigeria, more than 70% of the populations depend on traditional remedies including herbal products for the initial treatment of diseases and injuries (Lambo, 2005). Commercial drivers consume various herbal preparations and a certain mixture of unrefined or poorly refined alcohol and herbs which is periodically ingested as a form of self-medication in the prevention of certain illnesses (Oshodi and Aina, 2007). The use of herbal mixture is common among drivers and there have been various negative reports that manufacturers of some herbal mixtures sometimes include psychoactive herbs such as cannabis, cocaine and even alcohol (Oyeniyi, 2007).

In the past 20 years, public dissatisfaction with the cost of prescription medications, combined with an interest in returning to natural or organic remedies, have led to an increase in herbal medicine use in the United States. (www.nhaa.org.au) Unfortunately, most information available to the public about these remedies in the media and on the internet is misleading because they are not based on the quality of scientific evidence required by the Food and Drug Administration (FDA) for approval of conventional medications (Donald,2012). Virtually, all the people use herbs indiscriminately

without any standard measurement or standard dosage neither do they consider any damage the arbitrary use of the medicines could cause to their body system. People who quantify the concoction only take arbitrary dosage as there is no uniform dosage. The so-called 'dosage' could be two or three cups (without standardized volume) taken twice or thrice per day. Though, plants commonly used in traditional medicine are assumed to be safe due to usage in the treatment of diseases according to knowledge accumulated over centuries, scientific evidences have shown that many plants used as food or in traditional medicine are potentially toxic, mutagenic and carcinogenic (Olorunniyi and Morenikeji, 2013). Herbal medicines which are plant extracts contain dozens of chemicals whose actions are unknown. In fact, there is no scientific basis for advertising claims that natural herbal remedies are gentler and safer than conventional medications (Donald, 2012). Herbal remedy is common among commercial drivers in Osogbo, Osun state; however, their knowledge, perception and pattern of use are yet to be scientifically investigated.

1.2 Statement of problem

Although some people assume that herbal remedies used for centuries must be safe, we have learnt in recent years that many traditional herbs have dangerous and even fatal side effects. For instance, herbal medicines called birthwort and snakewort, made from extracts of '*Aristolochia'* plants, have been used all over the world for more than 1,000years. Studies have shown that these plants contain aristolochic acids, substances that can cause kidney failure and cancer of the kidney (Donald, 2012). The world has long been alerted about the risks associated with herbal medicines but people continue to use them for the treatment of minor and major ailments especially in developing countries (Corns, 2003).

In Nigeria, 25.6% of drivers have been involved in road crashes when they drove after taking '*paraga'* which is an alcohol based herbal mixture mostly consumed by commercial drivers (Oluwadiya and Fatoye, 2012). Obi et al., 2009 reported that 100% of samples of herbal products collected in Nigeria contained elevated amount of heavy metals which are harmful to the body system and as such alerts to the possibility of heavy metals toxicity from herbal products in Nigeria. In contrast to conventional drugs, herbal remedies do not undergo rigorous clinical trials and post approval surveillance to define their effectiveness and relative safety as the

pharmacodynamics and pharmacokinetics of these medications are not well known which could consequently pose some medical problems (Winslow and Kroll, 1998).

A number of herbs could cause adverse effects due to adulteration, inappropriate formulations, plant and drug interactions, effects that are sometimes life threatening or lethal.(Elvin-Lewis, 2001). Oral use of herbs constitutes a greater potential for significant health risk than non-ingested treatment modalities. In addition, interactions between herbs and orthodox medicines may decrease or increase the pharmacological or toxicological effects of either component coupled with the synergistic therapeutic effects that may complicate the dosing of long term medications (Furg-Berman, 2000). In developing countries, people seek any kind of medical or non-medical therapy concordant with their culture and financial status which could be one of the factors responsible for herbal use among the population (Abbasi-Shavazi, Inhorn, Rezeghi-Nasrabad, Toloo, 2008). The chemical composition, dosages and toxicity of the plants used in ethnomedicine are not clearly defined (Oladunmoye and kehinde, 2011; Lowe, Payne-Jackson, Beckstrom-Sternberg, Duke, 2000).

Habitual herbal intake has been reported to be a significant risk factor for chronic kidney disease, the unbridled proliferation of herbal practitioners has led to the sale and consumptions of herbal products which have potential nephrotoxic effects and this has been implicated in the increasing prevalence of end stage renal disease (Afolabi, Ajoye and Arogundade, 2009; Nwankwo, Wudisi and Akinsola, 2007; Chinedu , Okoye , Oviasu and Ojogwu , 2011). In a study carried out by Vanherweghem, (1998), it was reported that 100 cases of extensive interstitial fibrosis of the kidney were observed among women who used Chinese herb called ``*Stephania tetrandra'* for weight loss. Prolonged use of herbal drugs can cause renal problems, gastro intestinal irritation and other adverse effects.

In Nigeria, there have been newspaper reports of deaths following consumption of certain herbal mixtures and evidence that alcohol-based herbal mixture increase the risk for some road traffic injuries among drivers. There is therefore a need for the drivers to be educated on the adverse effects of these mixtures and for government to reduce access to the concoction by restricting its sales in motor parks (Oluwadiya & Fatoye, 2012). Commercial drivers represent a group of workers who regularly

patronize hawkers of herbal remedies for the prevention and treatment of various medical conditions including chronic pain, pile, fatigue among others due to the nature of their work; drivers prefer “on the move” healthcare since they hardly have time to visit hospitals to seek care and they often opt for the readily available herbal remedies. However, most of these herbal remedies have no scientific basis neither are they subject to any form of regulations. There is paucity of research work on this category of workers regarding their use of herbal medicines. However, the knowledge, perception and pattern of use of herbal remedies among commercial drivers in Nigeria have not been adequately explored. This study is therefore designed to investigate the knowledge, perception and pattern of use of herbal remedies among commercial drivers in Osogbo the capital of Osun State.

1.3 Justification of the study

Data on the prevalence of use of herbal medicines among commercial drivers is scanty especially in sub-Sahara Africa, where the legislation for distribution and purchase of herbal medicines is not as stringent as it is for conventional medicines.This study will yield information that has a great potential in helping to regulate the sale and control the abuse of herbal remedies in motor parks. Findings from this study will also be vital in designing educational intervention to help create awareness and increase the level of knowledge about the consequences of herbal remedies.

1.4 Research questions

1. What is the prevalence of use of herbal remedies among the commercial drivers?
2. What is the level of knowledge of the commercial drivers concerning herbal remedies?
3. What is the perception of the commercial drivers in relation to herbal remedy use?
4. What is the pattern of use of herbal remedies among the commercial drivers?
5. What are the factors associated with herbal remedy use among the commercial drivers?

1.5 Objectives of the study

Broad objective

The broad objective of this study was to evaluate the prevalence, knowledge, perception and pattern of use of herbal remedies among commercial drivers in Olorunda Local Government Area Osogbo, Osun State Nigeria.

Specific objectives

The specific objectives were to:

1. Determine the prevalence of use of herbal remedies use among the commercial drivers;
2. Assess the level of knowledge of commercial drivers relating to herbal remedies;
3. Assess the perception of commercial drivers relating to the use of herbal remedies;
4. Determine the pattern of use of herbal remedies among the commercial drivers;
5. Identify the factors associated with herbal remedy use among the commercial drivers.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual clarification

The World Health Organization defines traditional medicine as "the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses"(Brijlal, Khoza, Mbonane, S'Phumelelo, Moodley, Parbhoo, Pillay, Lubbe and Bodenstein, 2011; WHO 2011). This includes herbs, herbal materials, herbal preparations and finished products that contain parts of plants or other plant materials as active ingredients which are the concepts that are worth reviewing in this study.

Herbs include crude plant material such as leaves, flowers, fruit, seed, stems, wood, bark, roots, rhizomes or other plant parts, which may be entire, fragmented or powdered(WHO 2000). Herbal materials include, in addition to herbs, fresh juices, gums, fixed oils, essential oils, resins and dry powders of herbs. In some countries, these materials may be processed by various local procedures, such as steaming, roasting, or stir baking with honey, alcoholic beverages or other materials (WHO 2000). Herbal preparations are the basis for finished herbal products and may include comminuted or powdered herbal materials, or extracts, tinctures and fatty oils of herbal materials. They are produced by extraction, fractionation, purification, concentration, or other physical or biological processes. They also include preparations made by steeping or heating herbal materials in alcoholic beverages and/or honey, or in other materials. (WHO 2000). Finished herbal products consist of herbal preparations made from one or more herbs. If more than one herb is used, the term "mixtured" herbal product can also be used. Finished herbal products and mixture herbal products may contain excipients in addition to the active ingredients. However, finished products or mixture products to which chemically defined active substances have been added, including synthetic compounds and/or isolated constituents from herbal (Suleiman, 2014). Traditional use of herbal medicines refers to the long historical use of these medicines. (WHO 2000).

Herbal remedies are medicines made up of plants, trees or fungi (www.nhs.uk/condiyions/herbalmedicines). It is said to be a medication prepared from plants, including most of the world's traditional remedies for disease (www.medicinenet.com). It is often used as first line of treatment in developing countries like Ghana, Mali and Nigeria (WHO 2003). These herbs which are obtained from the wild and sometimes cultivated exist as hundreds of species in Nigeria (Ibe and Nwafo 2005: Aiyeloja and Bello, 2006)

2.2 Historical overview of herbal remedies

No one knows where or when plants first began to be used in the treatment of disease, but the connection between plants and health has existed for thousands of years (Faleyimu and Oluwalana, 2008) An accidental discovery of some new plant food or juice that eased pain or relieved fever might have been the beginning of folk knowledge, which was passed down for generations and eventually became foundation of medicine (Estelle and Karen,1999).The use of plants as medicines predates written human history. Archeological evidences indicates that humans were using medicinal plants during the Paleolithic, approximately 60,000 years ago, furthermore other non-human primates are also known to ingest medicinal plants to treat illness(Sumner and Judith, 2000). Just as many Europeans knew of the use of Aloe Vera (Alloaceae) to treat burns, many indigenous people in Nigeria also know some common plants that have medicinal value.

Herbalist and native doctors in Nigeria value all plants in their garden and do not consider any as weeds (Adekunle and Sam-Wobo, 2004).The investigation carried out by Adekunle and Sam-wobo 2004 revealed that Chenopodiumambiosioides, Curscutaaustralis and Plumbagezeylanica among others have been used effectively for the treatment of Guinea Worm (Dracunculus medinensis) infection in Ogun State, Nigeria. Also Adebisi (1999) reported that Phyllantus Amarus, Enantia Chloranta, Solenoste monmonstachyus, Carica papaya and Paaqualina nigrescens have been found effective in treating malaria fever in the Southwestern Nigeria originates from medicinal plants.

Medicine used by the majority of the population of most developing countries originated from plants samples gathered from prehistoric burial sites support the claim

that Paleolithic people had knowledge of herbal medicine. For instance 60,000years old Neanderthal burial site, shiandariv, in northern Iraq has yielded large amounts of pollen from 8 plants species of which 7 are used now as herbal remedies (Solecki and Ralph, 1975). In Mesopotamia, the written study of herbs dates back over 5000years to the Sumerians, who created clay tablets with lists of hundreds of medicinal plants9 such as myrrh and opium however the ancient Egyptians wrote the ebers papyrus around 1500 bc, which contains information over 850 plant medicines, including garlic, juniper, cannabis, castor bean, aloe and mandrake (Sumner and Judith, 2000).

Herbs used by Egyptian healers were mostly indigenous in origin, although some were imported from other regions like Lebanon. Other than papyri, evidence of herbal medicines has also been found in tomb illustrations or jars containing traces of herbs(Nunn and John, 2002) By 2000BC, Chinese started prescribing herbal medicines(Hood and Lucy, 2000). In china, seeds likely used for herbal remedies have also been found in archeological sites of Bronze Age china dating from Shangdynasty (Hong, 2004).

Herbs were also common in the medicine of ancient India, where the principal treatment for diseases was diet. In the United States, many herbal remedies are classified by the government as dietary supplements whereas consumers use them as drugs. Herbs works in ways that are poorly understood, they are a complex mix of chemicals. Since the late 1700s, herbal remedies or medicines were replaced by medicine. (www.uic/edu/classes/osci/20%herbal/20%remedies) Historically the use of herbs for medicinal purpose predates written history. Their uses must have been discovered largely by accident. Early documented evidence of medicinal use is scarce. Records from ancient Babylon dated at about 2200 BC give instructions for the preparation and administration of medicinal herbs. The Egyptians and Greeks also possessed a considerable knowledge of the use of herbs. Students of Hippocrates, ‘the father of medicine’ was learning about the use of herbs for easing pain and curing disease in 400BC. The Romans also used herbs extensively and it has been estimated that more than 200 herbs were introduced to Britain by the invading Romans (Baker, 1999)

2.3 Types of herbal medicines

There are different "types" of herbal medicine that spring from different cultures around the world. All these have the use of medicinal plants in common, but they vary in the plants they use, the way they prepare and use medicines from these plants, and the philosophy of their treatment approaches, different cultures may also use the same plants but differ in how it is used or the part they use (National Herbalist Association Australia). In Nigeria, approximately 205 medicinal plant species are prevalent in nature (FEPA, 1992), however some herbal preparations are mostly consumed in Nigeria as reported by Oreagba, Oshikoya and Amachree, 2011 (see table2.1a and table 2.1b)

In addition, Oshodi and Aina, (2007) also identified a certain herbal mixture which is also commonly used by commercial driver *paraga* and it is defined as "a mixture of unrefined or poorly refined alcohol and herbs which is periodically ingested, as a form of self-medication against certain illnesses which also corroborates with the report of Oluwadiya and Fatoye, 2012. This leads to a further classification of herbal preparation into their base as reported by Fakeye, Rasaq and Ismail, 2009 in the study of herbal remedy use among pregnant women. These include alcohol-laced herbal mixtures, water-based herbal mixtures, non-alcoholic carbonated mixtures, milk and lime fruit juice-based mixtures.

Table 2.1a

Types of Herbal Remedies and their constituents

Herbal products	**Constituents**
Agbojedi-jedi	Scented-leaves (Pelargonium zonale (L.) L'Hér.), grapefruit (Citrus paradisiMacfad.) juice extracts, bitter leaf (VernoniaamygdalinaDelile), Sorghum (Sorghum bicolour Moench) leaves, naphthalene tablets, garlic (Allium sativum L.)
Agboiba	Bark of pineapple (Ananascomosus (L.) Merr.) fruit, paw paw (Carica papaya L.) leaves and seeds, 'Dongoyaro' (Azadirachtaindica A. Juss.) leaves, lime juice, lemon grass (Cymbopogon citrates Stapf.) leaves, guava (Psidiumguajava L.) leaves, scented- leaves (Pelargonium zonale (L.) L'Hér.)
Oroki herbal mixture®	Stem bark of African mahogany (KhayaivorensisA.Chev.) tree, pattern wood (Alstoniacongensis Engl.), mango (Mangiferaindica L.) leaves, Sorghum (Sorghum bicolour Moench)
Herbal tooth paste	Aloe vera (Aloe barbadensis Mill.)
Ajasepoki-poki®	Tobacco (Nicotiana L.) leaves, stem bark of coconut (Cocosnucifera L.), seeds and coat of alligator pepper (AframomummeleguetaK.Schum.)

Source: Oreagba et al., 2011

Table 2.1b

Types of herbal remedies and their constituents2

Herbal products	**Constituents**
Yoyo bitter®	Bitter leaf (VernoniaamygdalinaDelile), ginger (Zingiberofficinale Roscoe), scented-leaves (Pelargonium zonale (L.) L'Hér.)
'Ijebu-ode'	mixture drink Mushroom (Ganodermalucidum), Coconut (Cocosnucifera L.) oil and roots
SplinaSplina	(Bucatariacorpului), natural honey
Omega root	Coconut (Cocosnucifera L.) oil
Jobelyn®	Sorghum (Sorghum bicolour Moench) leaves
Dudu-Osun soap®	Palm kernel (Elaeisguineensis A. Chev.) oil
Alomo bitter®	African breadfruit (Treculia Africana Decne. Ex Trécul), stem bark of African mahogany (Khayaivorensis A. Chev.)

Source: Oreagba et al., 2011

Alcohol laced herbal mixtures are most often sold at the motor parks which are peddled by the local women. They are often laced with alcoholic drinks with over 40 percent volume in alcohol content. Some of the '*Agbo*' sellers use industrial ethanol to mix their medicines which are largely patronized by touts and drivers. And on demand, consumers can get tailor-made '*Agbo*' mixed with marijuana leaves and left to ferment for days which makes it very hot and concentrated. This special mixture is often referred to as "*sepe*" by the sellers and their customers (Osae-Brown, 2012). Some other types of herbal products which are consumed are: '*Aishetu'*, '*Gangaria the flush'* and '*gbogbonise'*. *'Gbogbonise'* which is popularly known as "*AWO ARUN IGBA*" in Yoruba, a native language (that which cure hundreds of diseases). It is often referred to as '*gbogbonise'* by its users because of its claim to cure all manner of ailments including inflammatory diseases such as arthritis and rheumatism, malaria, typhoid fever and pile among others. '*Gbogbonise'* peddlers are common figures among the Yoruba speaking people in western Nigeria where they peddle a group of herbs that has been an alternative form of medicine for many Nigerians. The majority of the herb traders have little or no education yet they claim to know the right mixture to administer for any kind of ailment (Osae-Brown, 2012)

2.4 Methods of herbal medicine preparation

Herbal medicines come in various forms depending on the methods of preparation. These methods usually vary based upon the plant utilized and sometimes what condition is being treated. Some of these forms include: infusions (hot teas), decoctions (boiled teas), tinctures (alcohol and water extracts), among others.

Decoctions: these are made by boiling tree barks, roots and berries to extract the active ingredients. The liquid is then strained and can be taken either hot or cold. This method of choice is used when working with tougher and more fibrous plants, barks and roots which have water soluble chemicals (www.rain-tree.com). One of such is an aqueous decoction of mango stem bark which was developed in Cuba for the purpose of providing nutritional supplements and also serving as antioxidants for tissue damage repair following quantitative analysis of the extracted active ingredients - Gallic acid, 3,4-diphydroxybenzoic acid and other constituents (Alberto et al., 2002).

Another study also reported the use of decocted *mimosa pudica* leaves as an anticonvulsant agent in the treatment of seizures (Ngo Bum et al., 2004).

Tinctures: these are made by soaking herbs in water and alcohol to extract and preserve the active ingredients. The liquid is then stored in small bottles and taken with water. The alcohol is used as a preservative for the herbs and the higher the percentage used the longer the shelf life of the herbal product (www.rain-tree.com) . Various studies have shown the use of tinctures as therapies and analysis of the constituents showed that alcohol was present. For instance, tinctures prepared from ginkgo leaves, Echinacea plants and ginseng roots were found to contain some phenol compound after analysis (Bos et al., 2011; Masteikova et al., 2007). Also, valerian tinctures used in phytotherapy because of their mild sedative properties had analysis of the constituents of the species which revealed high cytotoxicity.

Infusions: these are typically used for delicate herbs, leaves and fresh tender plants. These are herbal products made in form of teas (www.rain-tree.com). Boiled water is poured over the herb and is left for about 10minutes, creating a liquid to be taken as hot drink or medicine (www.unh.edu/healthservice/complementarymedicine). Some of these herbal infusions are used with abortive intents - Aganda and Amalia (2003) reported both the use of infused herbal products for induced abortions, as well as their toxic effects.

Creams and **Ointments**: these are made from herbs and either of oil or fat. The mixture simmers for about three hours before it is strained and set in dark bottles as creams whereas for ointments, it is heated over boiling water before it is strained and set. There are studies that have tried to assess the efficacy and safety of these topical agents. One of such, is that of Kucera et al., (2004) where the efficacy and safety of symphytum herb extract cream used in the treatment of ankle distortion was proven having done a randomized controlled clinical double blind study.

Infused oils are made with chopped herbs and oil. The mixture is either placed in a bowl over boiling water, or left to infuse in the sunlight.

2.5 Health Seeking Behaviour

Health seeking behaviours are the activities undertaken by individuals in response to disease symptoms experienced for the purpose of finding an appropriate remedy (O'Reilly and Browne, 1997; Ward, Mertens and Thomas, 1997). Interestingly too, some people engage in some forms of health behaviors not only for health reasons but for such reasons as culture and their perception.

A study conducted by Afolabi, Daropale, Irinoye and Adegoke (2013) identified significant barriers to seeking medical attention at the health centre to be cost of care, protracted waiting time, inadequate health information, unfriendly attitude of healthcare workers and drug shortage. All these might have led to the high rate of self medicating. In a study carried out by Ige and Nwachukwu (2008) among traders, self medication was the most used option for treatment modalities. In addition, most of these traders had a preference for alternative medicine rather than conventional medicine owing to the belief that it gives a last longing cure. This erroneous belief portends danger whether the alternative medicine is used singly or in combination. However, it is a known fact that a lot of people do combine herbs and conventional drugs together for use. Osae-brown (2012) reported that a lot of commercial drivers use "alabukun" with herbs and combining this duo is dangerous as it can damage the liver and kidney. These herbs are not well treated as the poisonous substances are not totally removed which can eventually damage the body system even though the patient may be cured of the prevailing ailment (Osae-Brown, 2012). Furthermore, many patients who self medicate herbal remedies in combination with allopathic medicines without the knowledge of their physicians may experience adverse events that might be related to this combination (Tasaki et al., 2002).

Health seeking behavior is influenced by a large number of factors apart from knowledge and awareness. This behavior among different populations, particularly in the rural communities, is an outcome of many factors operating at individual, family and community level including their bio-social profile, their past experiences with the health services, influences at the community level, availability of alternative health care providers including indigenous practitioners and lastly their perceptions regarding efficiency and quality of the services. Belief systems in the communities i.e. how people conceptualize the aetiology of health problem and how symptoms are perceived, is an important factor in deciding the first step of treatment seeking

(Detmar, Muller and Schornagel, 2012). Psychosocial factors such as stress and anxiety regarding perceived risk for disease, along with social support for engaging in the health-promoting behaviours must also be considered. Recently, people have started taking over their health and its determinants but the action plan must be tailored to fit with the patient's values and belief systems (Martucci and Gulanik, 2012).

2.6 Prevalence and Pattern of use of herbal remedies among commercial drivers and various populations.

Globally, more than 80% of the world's populations rely on various forms of traditional medicine including herbal remedies with self medications making up the majority of use. Up to 69% of adults of the Australian population use herbal medicine for preventive and curative purposes mostly on a daily basis (Braun et al., 2010). Varga and Veale (1997) reported that nearly 90% of mothers felt that traditional herbal medicine, *Isihlambezo,* was a helpful part of self-care during pregnancy.

The use of medicinal plants in traditional medicine is well known in many developing countries like Africa (Gupta et al., 2005: Sandhu and Herinch, 2005). In South Africa, 80% of the African people still depend on one form of traditional medicines for primary health care, in fact in some rural communities in the country traditional medicines remain the only source of treatment with herbal remedies inclusive. Rahman et al. (2008) carried out a study on herbal medicine use during pregnancy among Malaysian women where 51.4% of their respondents reported use of at least one type of herbal medicine during pregnancy while 79.6% used it during the third trimester of pregnancy only. In the same study, majority of the respondents used the herbs only once and one type throughout the pregnancy. In Kenya, Mothupi (2014) reported that 20% of the respondents in his study use herbal medicine concomitantly with western medicine for the same illness/conditions and there were high rates of self-prescription as well as sourcing from family and friends. In a study among medical students in Ghana, majority of the students (54.7%) had used herbal medicine for various health concerns (Evans et al., 2015).

Oreagba et al. (2011) reported 66.8% prevalence of herbal remedy use among urban residents of Lagos, south- west, Nigeria also. Oridota et al. (2014) reported 88.1%

prevalence of herbal use among secondary school students, where majority (74%) of the students' source of purchase was said to be from hawkers in addition; 32.9% of the students combine herbal drugs with conventional medicine. Alade et al. (2014) reported that 97% of the respondents have had contact with herbs. Some studies conducted among the Nigerian population have shown widespread use of traditional herbal medicine amongst hypertensive patients (Amira and Okubadejo, 2007; Osamor and Owumi, 2010).

Fakeye et al. (2009) reported in their study that 56.6% of pregnant women were not favorably disposed to combining herbal medicines with conventional drugs so as to prevent drug-herb interaction. Oluwadiya and Fatoye (2012) reported that 55.4% drivers admitted to driving after consuming *paraga* in the past. Of these, 22.8% were doing it on most days, 52.2% between 1–5 times a week, 9.8% at least once a month and 15.2% rarely. 36.7% had actually seen someone behave drunkenly after consuming this herbal mixture and 26.5% admitted to having been involved in a road crash in the past after taking 'paraga'. Adusumili et al. (2004) reported that patients taking herbal medicine often consumed more than one type of products and as such combining various herbal products for their consumption.

2.7 Knowledge and perception of herbal remedy among the general population

Globally, the knowledge and use of herbal remedies in addressing health problems have been passed from one generation to another. Interestingly, there appears to be disparate findings from different studies on the knowledge and perception of herbal remedies. Perceptions on the effectiveness of herbal medicines in solving problems may influence its usage presently and in the future. The knowledge of the potential adverse reactions to herbs and herbal products seem to be under- recognized and under- reported in the USA (Howell et al., 2006). This same study showed that the overall knowledge about herbs was lacking among the participants as most of them were with various perceptions about herbal remedies. In almost all European Union (EU) member states, herbal medicines are considered medicinal products and include plants, parts of plants and plant preparations (Samojlik et al., 2013). In the majority of cases, the HMs is presented with therapeutic or medical claims. Furthermore, in some

cases, the same herb may be simultaneously available as a drug, herbal product and food supplement, making the regulation of herbal products somewhat complex (Suleiman, 2014). Majority of the population know these plant species as source of medicine for treating specific ailments such as malaria, common cold with some chronic conditions and based on the relevant literature, it can be deduced that a significant number of consumers of HMs and HDS have a positive opinion with regards to self-medication and the use of herbal products (Yilmaz et al., 2007; Kennedy, 2005). These two studies also found that herbal product consumers believed that herbals are healthy and that additional benefit is gained if they are combined with other medicines. Furthermore, a study focused on consumers of herbal products in Jamaica, found that 13% believed herbs and drugs 'work well together'. These findings may suggest that the majority of consumers use herbs as complementary therapies to conventional medication rather than a straight alternative (Picking,Younger, Mitchell and Delgoda, 2011). In a study carried out by Owens et al. (2014) in the USA, majority of the respondents perceive herbal remedies to have potential adverse effects when used with conventional drugs which is contrary to the aforementioned findings of other studies. However in the same study, 71.5% of the respondents perceive that herbal remedies are more efficacious for the treatment of medical conditions and for promoting health and wellbeing.

In South Africa, herbal preparations (such as Ishihlambezo) were believed to be effective in treating pregnancy-related ailments which was similar to a study conducted among Tanzania mothers. In addition, Rolanda and Sally (2006) reported that traditional herbal medicines were believed to change the presentation of a baby in-utero. Similarly, in a study carried out in Malaysia, herbal remedies were believed to be effective in preventing and solving their problems (Rhaman et al., 2008).

In Nigeria, the knowledge of herbal remedies seems to be good among older members of the community. A study by Oladunmoye and Kehinde (2011) showed that older members of the community between 51-80 years of age seems to have a good knowledge of herbal remedies meanwhile civilization has also affected differently the knowledge of herbal remedies in various classes of the population. However, consumers generally perceive herbal drugs to be better and safer alternatives to conventional drugs that are prescribed by physicians because most manufacturers of

herbal medicines or supplements usually offer a broad range of therapeutic claims which are powerful temptations for these consumers (Fakeye et al., 2009). Similarly, Oridota, Ilodiba, Olajide, Akanmu and Soriyan (2014) also reported that 38.4% of the respondents perceive herbal drugs to be more effective than conventional drugs. In relation to commercial drivers which is the focus of this study, the report documented from the few studies showed that they have a favourable perception towards the use of herbal remedies most especially the alcohol-based HRs. Osae-Brown (2012) reported that most drivers believe that '*sepe'* (combination of herb and alcohol) increases their driving ability and enables them drive for hours without getting tired and that it makes them strong. Oluwadiya and Fatoye (2012) reported that 40% of commercial drivers believe that herbal mixture which is alcohol-based is harmful to users; 21.1% believed it can cause liver disease while 17.55% believed that it can result into kidney disease but a greater percentage still believed that its benefits outweigh its harmful effects. Meanwhile Fakeye et al., (2009) reported in their study that most respondents believed that herbal remedies should not be combined with conventional medicines which correspond with the previous survey done by Suleiman, (2014). This was quite unexpected since substantial number of the respondents believed herbal medicines are safe.

2.8 Factors associated with the use of herbal remedies

Globally, people develop unique indigenous healing traditions adapted and defined by their culture, beliefs and environment, which satisfied the health needs of their communities over centuries and many studies have also focused on why people turn to this form of medicine (Oreagba & Oshikoya, 2011; Manya, 2012; Braun et al., 2010; Akan et al., 2012). Williamson et al., (2009) reported that, worldwide, around 80% of herbal medicine consumers rely on the advice of friends regarding the use of such remedies. Furthermore, in a study carried out by Gardiner et al. (2007) in the United state, it was reported that people use herbs because conventional medical treatments were too expensive, and some had uninsured life despite having poor health. In addition the most frequent conditions for herb use were head or chest cold, musculoskeletal conditions and stomach or intestinal illness among others.

In the African region, 70–95% of its population relies on traditional healing methods, including herbal remedies, for maintenance of health and wellbeing (James and Bah, 2014). This could be due to its perceived success in recovering, healing, improving health, and more importantly, perceived lack of side effects, lower cost, and prompt attention compared to conventional medicines and practice (Evans et al., 2015; Awofesi, 2011; Bent, 2008).

In Nigeria, Fakeye et al. (2009) reported that marital status and educational qualification of respondents had effects on respondents' views on use and side effects of herbal medicines while only geopolitical zones and educational qualifications seemed to have influence on respondents' opinion on the harmful effects of herbal medicines to the fetus. Oluwadiya and Fatoye (2012) reported that for 55% of the drivers (respondents), the reason for herbal medicine use was to treat common cold and other illnesses. Thus, the respondents might continue to take the concoction as long as they felt they still had the illness. In addition, the relative high cost of orthodox medicine might have encouraged the use of alternative medicine among the populace. The persistent use might also be because the drivers were getting addicted to some of the constituents of the herbal mixture the most likely candidate being alcohol. Reasons such as "enjoyable taste", "makes me become more alert" and "makes me gain more energy" might be the manifestations of alcoholic herbal dependence (Edward and Gross, 1976). It is also instructive that almost all the suggested benefits were for treating chronic illnesses like back pain or coping with emotional and stress related conditions. These are conditions that are very difficult to manage, for example, chronic back pain, which is an occupational disease of drivers, and thus patients may be encouraged to try different types of treatment with herbal remedies inclusive (Tamrin et al., 2007 : Braun et al., 2010). Herbal remedies are used for various conditions as perceived by the consumers. However, in the study carried out by Oreagba et al. (2011), the responses as reasons for herbal remedies use included: 'no specific reasons', Malaria, Blood sugar level reduction, Fever, Teeth cleaning, General body pain relief, Diarrhea, Fatigue, Menstrual pain, Self protection, Skincare, General illness, Dysentery, Strength gain, Blood cleansing, Cholera, Blood enrichment. The greater percentage of those who consume herbal remedy so to speak have no specific reasons for its consumption hence it can be attributed to preventive

purpose which in turn may lead to the advent of illnesses when the safety and efficacy of the herbal products are not specified (Oreagba et al., 2011).

2.9 Theoretical framework

The theoretical framework adopted to facilitate the design of this study will be reviewed briefly which is the PRECEDE framework. This framework was first developed and introduced in the 1970s by Green and colleagues. PRECEDE is based on the premise that, just as a medical diagnosis precedes a treatment plan, an educational diagnosis of the problem is very essential before developing and implementing the intervention plan. It provides a comprehensive structure for assessing health and quality of life need, and for designing, implementing and evaluating health promotion and other public health programs to meet those needs (Gielen et al., 2008). A fundamental assumption of this model is the active participation of its intended audience - the participants ("consumers") will take active part in defining their own problems, establishing their goals and developing their solutions. Health behaviour is regarded as being influenced by both individual and environmental factors (Green and kreuter, 2005). This outlines and describes the antecedent factors that influence behaviours. These factors are: Predisposing factors, Enabling factors and Reinforcing factors.

Predisposing factors: These are the antecedents' behaviour that provides rationale for the behaviour. They are knowledge, values, beliefs, attitudes, perceptions, norms, and behavioural intensions.. Predisposing factors have the potential to influence the decisions people take about their health and their given health behaviour. They do this by either encouraging the behaviour or by inhibiting the behaviour from occurring.

Enabling factors: These factors are also antecedents to behaviour because they also influence the realization of motives, aspirations and decisions. They are skills or physical factors such as availability and accessibility of resources, or services that facilitate achievement of motivation to change behaviour.

Reinforcing Factors: This entails influence of significant others or people that influence the continuance or discontinuance of a particular behaviour, examples of these factors include pressure from peers, siblings, co-workers, policy makers, peer

groups and other social support group. They are also factors subsequent to behaviour that provide perpetual rewards or incentives for the behaviour and contribute to its persistence or extraction. Most commercial drivers have great influence on their co-drivers.

2.91 Application of the precede model to this study

Predisposing factors: Most commercial drivers use herbal remedy due to the knowledge and perception they have about it, believing that it is of great benefit and not perceiving the risks that can be attributable to it. This construct was used to develop Knowledge and perception questions such as; question 12 "Herbal remedies have no side effects" and perception questions such as question 15.3 *"herbal medicines are more effective than western medicine"*, question 15.5 *"herbal medicines can cure a wide range of illnesses compared with western medicine"* 15.9*"long distance driving requires the use of herbal mixtures to make one strong".*

Reinforcing factors: these factors that reward or reinforce the desired behaviour change include the social support, economic rewards and changing social norms. Most commercial drivers get influenced by their co-drivers in doing many things, amongst which is the intake of herbal remedies (alcoholic and non alcoholic herbal remedies). The following questions were developed for practices relating to herbal remedies in this study using this construct : question 27 " *who often prescribe the herbal remedies that you use?"* 28*"do you encourage people to use herbal remedies?" 28b "who do you often encourage to use herbal remedies if yes?"*

Enabling factors: These include: availability of sellers of herbal medicines in motor parks and along the roads, affordability of the resources, availability of herbalists, and accessibility to herbal medicines. Question 25 was developed in lieu of this construct: *"what are the various sources of the herbal remedies which you use?*

All the questions referred to in this section can be found in the appendix I.

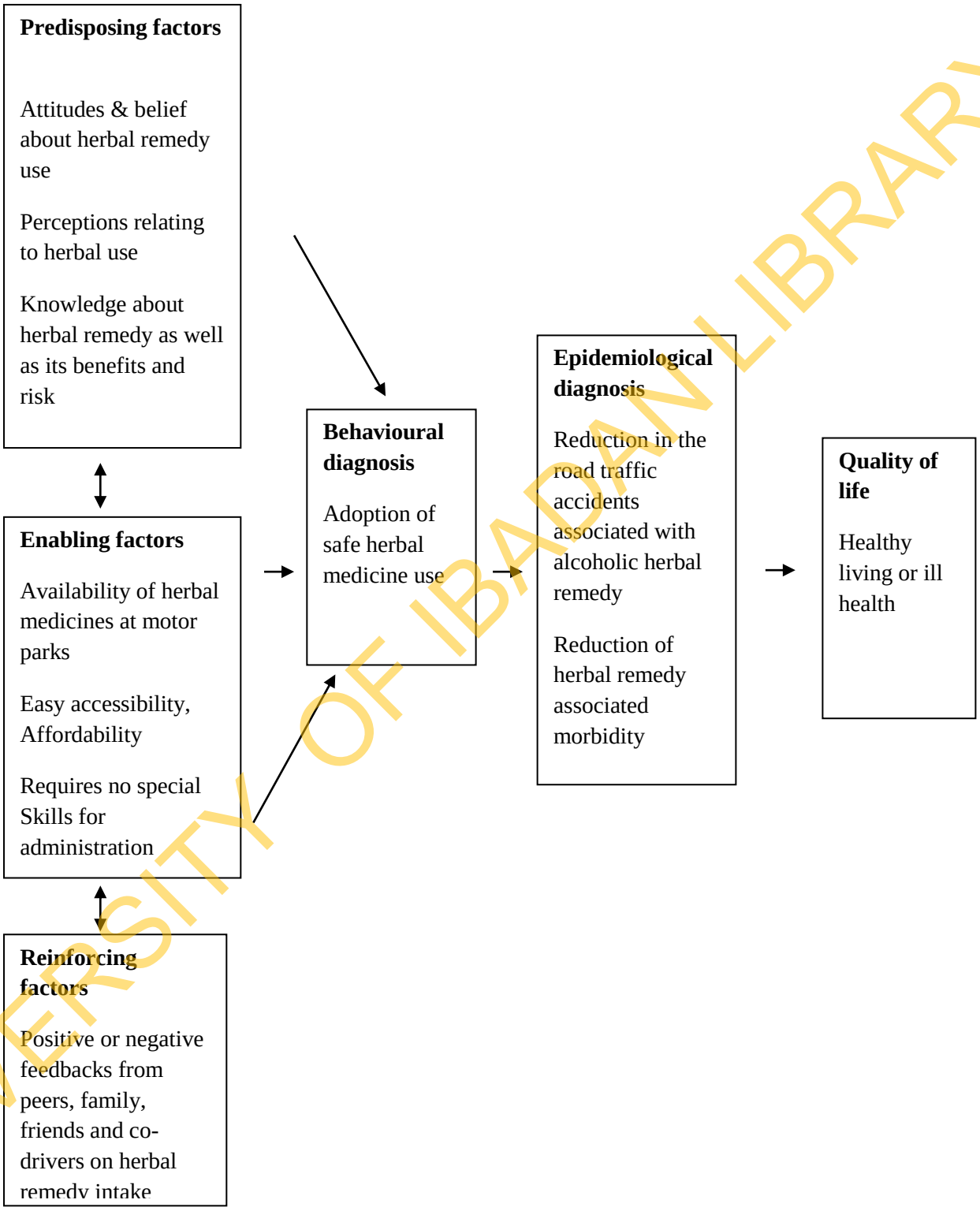

Figure 2.1: Application of the PRECEDE framework to the study

CHAPTER THREE

METHODOLOGY

3.1 Study design

The descriptive cross-sectional survey design was used and the study was limited in scope to the determination of the knowledge, perception and pattern of use of herbal remedies among commercial drivers in Olorunda LGA Osogbo, Osun State Nigeria.

3.2 Study location

This study was carried out in Olorunda LGA Osogbo, Osun State. Osogbo is the capital of Osun State and it is located at the south western part of Nigeria. It is a nodal town with road connections to surrounding towns and other cities in the country. The Yoruba, one of Nigeria's three major ethnic groups, is the predominant ethnic group in the study area however Igbos and Hausas/ fulanis are also resident in the town. Olorunda LGA is one of the 30 LGAs in Osun State and it has 11wards. Commercial drivers belong to the National Union of Road Transport Workers (NURTW), which has an organization structure made up of a chairman and other officers. The smallest units are the motor parks, each with its own officials. Olorunda has four of these units and they were the locations of the study Oke-Fia, Old garage, Stadium and Ota-Efun. Each motor park consists of a large open space surrounded by kiosks and shops where food stuffs, drinks including herbal mixtures, and other items are sold.

3.3 Study population

The study population was intercity commercial drivers from the four motor parks in Olorunda LGA Osogbo. These are intercity commercial drivers in Oke-fia, Old garage, Stadium AND Ota-Efun motor parks. Intercity commercial drivers travel from one city to another within and outside Osun State.

3.4 Inclusion criteria

Intercity commercial drivers in Oloruda LGA who were willing to participate in the study were included.

3.5 Exclusion criteria

Commercial drivers who were not willing to participate, those who were sick at the time of the data collection, drivers of '*keke'* NAPEP and intra city commercial drivers in Olorunda LGA were excluded from the study.

3.6 Sample size calculation

The sample size (n) was determined using Lwanga and Lemeshow(1991) sample size formula which is as follows:

$$n = \frac{Z^2 p(1-p)}{d^2}$$

Where n=minimum sample size required

Z= standard normal deviate at 95% confidence level (1.96)

P= Prevalence of 66.8% as reported by Oreagba et al., 2011 = 0.668

d=absolute deviation from true value (degree of accuracy) = 5%

$$n = \frac{1.96^2 \times 0.668 \times 0.332}{0.05^2} = 340.8 \text{ approximately} = 341$$

Adding the 10% non response rate =34

Total sample size= 341+34=375

3.7 Sampling technique

A three-stage sampling technique was used to select the respondents, the stages were as follows:

Stage 1

The four motor parks were purposively selected; the total number of drivers in each of the motor parks was obtained from their various record offices. (See table 3.1a)

Stage 2 Proportionate sampling technique was used to select 375 commercial drivers in the 4 motor parks (Oke-Fia, Stadium, Old garage and Ota-Efun) to get a proper representation of the sample size (see table 3.1a and3.1b for details)

Stage 3

Respondents were selected using systematic random sampling from each of the parks

Table 3.1a: The distribution of commercial drivers in the motor parks

S/No	Name of motor park	Number of drivers
1.	Old garage	362
2.	Oke fia	158
3.	Stadium	178
4.	Ota efun	362
	TOTAL	814

Proportionate calculation for sample size determination

Old garage: $\frac{362x375}{814} = 166.8 = 167$

Oke fia: $\frac{158x375}{814} = 72.8 = 73$

Stadium: $\frac{78x375}{814} = 35.9 = 36$

Ota efun: $\frac{216x375}{814} = 99.5 = 99$

Table 3.1b: Proportion of respondents in the four motor parks

S/No	Motor parks	Number of drivers
1	Old garage	73
2	Oke fia	167
3	Stadium	36
4	Ota efun	99
	Total	375

3.8 Instrument for data collection

An interviewer administered, semi-structured questionnaire was used for the survey. The questionnaire included questions addressing the following variables: awareness

and knowledge on use of herbal remedy; prevalence and pattern of use of herbal remedies; perception; and factors responsible for the use of herbal remedies among commercial drivers. The instrument consisted four sections, the first section addressed the socio demographics of the respondents, the second section assessed the knowledge and awareness of commercial drivers towards herbal remedy use, the third section assessed their perception on herbal remedies and identified factors that could be associated with herbal remedy use while the fourth section determined the prevalence and pattern of use of herbal remedies

3.9 Validity of instrument

Validity is the degree or extent at which an instrument measures what it is supposed to measure and perform as it is designed to perform. To ensure validity, there was extensive literature review and independent review from peers and experts in the field of public health. Also an effective supervisor's scrutiny and correction was made to ascertain the face and content validity of the developed instrument, the instrument was also given to other academic staffs in the department of health promotion and education for their inputs before it was subjected to pretesting. The questionnaire was also translated into Yoruba (the local language spoken by most people in the study area) for ease of administration to respondents and back translated into English so as to retain its original meaning.

3.10 Reliability and pre-testing of instrument

Reliability of a research instrument is the extent to which an instrument yields the same results on repeated trials. To ensure reliability, the instrument was pre-tested on 10% of the total population proposed for the study (37) in Osogbo LGA. Analysis of the pretest was done through the use of Cronbach Alpha statistical test on the pre-test study, Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group(William, 2006). A result showing correlation coefficient greater than 0.7 is said to be reliable. The obtained Cronbach alpha coefficient was 0.82 implying that it was reliable. The pre-test result was useful in determining the trend in the respondents, their level of understanding of the items in the research instrument and revealed the adjustments that need to be done on the instrument.

3.11 Data collection procedure

Data collection procedure included recruitment and training of seven research assistants for two days. Research assistants had previous experiences on data collection. The contents of the training included purpose of the study, interpersonal communication and data collection procedures. An interviewer administered questionnaire was conducted among the commercial drivers in the various motor parks, date were collected within two weeks. The data collection process involved the following steps:

1. Identification of each wards, selected motor parks by the interviewers prior to the research.
2. Visit and permission from the chairman NURTW, this was done by the researcher prior to the commencement of the research. Permission was sought and gotten to carry out the research.
3. The respondents were selected based on the inclusion criteria.
4. Questionnaires were administered to the respondents based on informed consent.
5. Data was collected within the period of two weeks; 8th to 21st August, 2015, Tuesdays to Saturdays of each week.

3.12 Ethical consideration

Approval for the study was obtained from Ethical Review Committee of Osun state, Ministry of Health Abere, Osogbo Osun state (Appendix III). Permission to conduct the study in the motor parks was gotten from the chairman National Union of Road Transport Workers in the various motor parks. Ethical issues like confidentiality, opportunity to decline interview at any stage and non-exposure to risk was discussed with each respondents. Only respondents who were able to give informed consent (i.e. were able to demonstrate an understanding of the objectives of the study and the implication of their role in it) were recruited into the study (see appendix II for the informed consent form). A written consent was obtained though no name was required from the respondents except for signatures and date on the informed consent

form. They were informed that participation is voluntary and that data collected would be used mainly for research purposes.

The following issues were discussed in great details before interview:

Confidentiality of data: In order to assure respondents of confidentiality of the information that was supplied, anonymity was maintained, only identification number was assigned to the questionnaires for proper recording.

Beneficence to participants: The outcome of the research will be of benefit to the participants so as to ensure safety of herbal products before use and safe use of herbal remedies.

Non-maleficence to participants: The research does not require collection of invasive materials. Therefore, safety of the participants is guaranteed.

Voluntariness: The participants had full details concerning the research before taking part and they were not coerced to participate also they were told they could withdraw from the study whenever they wanted without any penalties attached so as to ensure that they fully understand the research and their willingness to take part in it.

3.13 Data management and analysis

All copies of administered questionnaire were checked one after the other for purpose of completeness and accuracy. A serial number was assigned to each question for easy identification retrieval and for correct data entry and analysis. Processing of the data included sifting of questionnaires, sorting of questionnaires, collation and scoring. A coding guide was developed to code and enter each question into the computer for analysis. Analysis was done with the use of statistical package for social science (SPSS) version 20. The data entered into the computer was subjected to descriptive (mean, median, mode) and inferential (Chi-Square) statistical analysis. The results generated from this study were presented in tables and charts in chapter four.

The demographics were analyzed with the use of frequency distribution tables and cross tabulations of categorical variables (demographics) against the outcome variables (knowledge, perception and practices relating to herbal remedy use) using chi square to determine the level of significance. Also the knowledge and perception

sections were scored. The knowledge relating to herbal remedies was assessed using the number of correct responses the participants gave. Each correct response equalled one score. The maximum score obtainable was 5. Respondents were evaluated based on the points they received from knowledge questions. Knowledge scores were categorized as follows:

0 – 3 points = poor knowledge, 4 – 5= good knowledge (see table 4.3)

The perception was measured on a 3-level likert scale of agree, disagree and undecided. The perception score was determined using number of correct responses the participants gave. Each correct response equalled one score. The maximum score obtainable was 13. Respondents were evaluated based on the points they received from perception statements.

<7 points = unfavourable perception, ≥7 = favourable perception to herbal remedies.

3.14 Limitation of the study: This study was conducted among commercial drivers in one LGA, this therefore limit the generalizability of the results. Future studies should explore different populations such as adolescents, the elderly, and mothers of children under 5years who also use herbal remedies as part of self-medication in primary health care.

CHAPTER FOUR

RESULTS

The findings from the quantitative surveys are presented in this chapter .Out of the 375 questionnaires administered, 352 were adequate for analysis while others could not be used because of too many missing data giving a response rate of 93.9%. The findings are organized into the following sections:

Socio-demographic characteristics; Awareness and knowledge relating to herbal remedies; Perceptions relating to herbal remedies; Prevalence and practices relating to herbal remedies.

4.1: Socio-demographic information

The socio-demographic characteristics of respondents are presented in table 4.1. The ages of respondents ranged from 20 to 70years with a mean of 44.3±10.2 years. Majority (69%) were 40years and above while 20-29 has d least percentage (9.4%). Most of the respondents were educated up to secondary school level (41.8%) while those who had tertiary education were 11.4%. Majority were Muslims (61.1%), only 35.8% were Christians and 3.1% were traditional African worshippers. and from the Yoruba tribe (97.4%). 92% of respondents were married with 5.45 being single. Those who had driving experience of 30years and above had the least percentage while majority had 10 – 19years of driving experience. The mean driving experience calculated was 18.4 ± 10.0.

Table 4.1: Socio-demographic characteristics of respondents

N=352

Demographic characteristics	Frequency	Percentage (%)
Age in years*		
20 - 29	33	9.4
30 - 39	76	21.6
40 - 49	120	34.1
50 and above	123	34.9
Level of Education		
No formal education	27	7.7
Primary	138	39.2
Secondary	147	41.8
Tertiary	40	11.4
Religion		
Christianity	126	35.8
Islam	215	61.1
Traditional African Religion	11	3.1
Ethnic group		
Yoruba	343	97.4
Hausa	7	2.0
Igbo	2	0.6
Marital Status		
Single	19	5.4
Married	324	92.0
Separated	3	0.9
Divorced	6	1.7
Driving experience in years**		
<10	61	17.3
10 – 19	126	35.8
20 – 29	107	30.4
30 and above	58	16.5

*Mean age = 44.3±10.2years

**Mean driving experience = 18.4 ± 10.0years

Awareness and knowledge relating to herbal remedies

Respondents' awareness and knowledge relating to herbal remedies are shown in table 4.2. Majority have heard about herbal medicine (99.1%) with 47.4% of respondents defining herbal remedy as traditional medicine used in the treatment of ailments. Out of the various sources of information including elders, hawkers, family members, co-drivers, friends, elders were the major source of information about herbal remedies (98.6%) and most believe herbal medicine can cure all diseases (57.7%). A large proportion thinks herbal medicines have no side effects (56.8%), however most (51.4%) did not rule out possible adverse effects when taken in any amount. Majority thinks combining herbal medications with conventional/western medications isn't safe (80.7%).

Table 4.2: Respondents' awareness and knowledge relating to herbal remedies

		N=352
Awareness / knowledge	**Frequency**	**Percentage(%)**
Ever heard of herbal medicine		
Yes	349	99.1
No	3	0.9
What are herbal remedies?		
Medicines made from herbs	78c	22.2
Traditional Medicines used in the treatment of ailments	167	47.4
Ancient natural means of treatment before orthodox medicine	78	22.2
Others**	27	7.7
Source of information about herbal remedies*	286	81.7
Co-drivers	311	88.9
Friends	311	88.9
Family members	345	98.6
Elders	141	40.3
Leaflets	152	43.4
Newspaper	270	77.1
Radio	262	74.9
Television	94	26.9
Magazines	155	44.3
Posters	320	91.4
Hawkers		
Herbal medicine cures all diseases		
True	203	57.7
False	124c	35.2
Don't know	25	7.1
Herbal medicines have no side effects		
True	200	56.8
False	141c	40.1
Don't know	11	3.1
Herbal medicine can be taken in any amount without adverse effects unlike orthodox medicine	153	43.5
True	181c	51.4
False	18	5.1
Don't know		
It is very safe to combine any herbal medications with conventional/western medications	48	13.6
True	284c	80.7
False	20	5.7
Don't know		

*Multiple response **concoctions, remedy used for prevention, used for health promotion c= correct responses

Table 4.3: shows respondents' level of knowledge on herbal remedies. Only 17.6% of the respondents had good knowledge about herbal remedies. knowledge score was computed using 5 questions from section B of the questionnaire. Each correct answer was scored 1 while incorrect answer scored zero to make a total score of 5. Respondents with score of 4 and above were taken to have good knowledge while those with below 4 were taken to have poor knowledge.

Table 4.3: Respondents' level of knowledge on herbal remedies*

N=352

Level of Knowledge	Frequency	Percentage
Good (≥ 4points)	62	17.6
Poor (< 4points)	290	82.4

***This was based on a 5point knowledge scale

4.3 Perceptions relating to herbal remedies

Table 4.4 shows respondents perception relating to herbal medicines. Majority perceives herbal medicine to be safer than western medicines (77.8%). Majority perceives herbal medicines to be readily available (84.7%) and more effective (79.8%) than western medicines. Most respondents believe that those who take herbal remedies fall sick less frequently compared with those who take western medications (85.8%) and that herbal medicines can cure a wide range of illnesses compared with western medicines (85.2%). While 48.0% of respondents agree that herbal medicines have no side effects at all, 48.3% disagree.

Majority (94.3%) believe herbal medicines are more affordable than western medicines and 80.4% of the respondents believe it is better to use herbal medicines first before considering the use of western medicine. Most respondents perceive that long distance driving requires the use of herbal mixtures to make one strong (70.5%), and also improving one's alertness while driving (75.3%). Most respondents (77.8%) also perceive that there are diseases which can only be cured by herbal remedies and that they should be used when conventional medicine fails (95.5%). Lastly, most perceive that it is safe to combine the use of herbal medicines with western medicine (76.1%).

Table 4.4: Perceptions relating to herbal medicines

N = 352

Perception Statement	Agree (%)	Disagree (%)	Undecided (%)
Herbal remedies are safer than western medicines	274(77.8)	29(8.2)	49(13.9)
Herbal medicines are readily available compared with western medicines	298(84.7)	40(11.4)	14(3.9)
Herbal remedies are more effective than western medicines	281(79.8)	27(7.7)	44(12.5)
Those who take herbal remedies do not fall sick frequently compared with those who take western medications	302(85.8)	21(6)	29(8.3)
Herbal medicines can cure a range of illnesses compared with western medicines	300(85.2)	28(8.0)	24(6.8)
Herbal medicines have no side effects at all	169(48.0)	170(48.3)	13(3.7)
Herbal medicines are more affordable than western medicines	332(94.3)	5(1.4)	15(4.3)
It is better to use herbal medicines first and if there is no improvement one can use western medicine	283(80.4)	50(14.2)	19(5.4)
Long distance driving requires the use of herbal mixtures to make one strong	248(70.5)	82(23.3)	22(6.3)
Herbal products improve one's alertness while driving	265(75.3)	71(20.2)	16(4.5)
There are some diseases which only herbal remedies can cure	274(77.8)	45(12.8)	33(9.4)
Herbal medicines should be used when conventional medicine fails	336(95.5)	11(3.1)	5(1.4)
It is safe to combine the use of herbal medicines with western medicine	78(22.2)	268(76.1)	6(1.7)

Table 4.5 shows category code for respondents' perception about herbal remedies. Only 3.1% of the respondent had unfavourable perception about herbal remedies. Perception score was computed using 13 questions from section c of the questionnaire. Each correct answer was scored 1while incorrect answer scored zero to make a total score of 13. Respondents with score 7 and above were taken to have unfavourable perception while respondents with score <7 were taken to have favourable perceptions towards herbal remedies.

Table 4.5: Typologies of respondents' perception relating to herbal remedies

Perception	Frequency	Percentage (%)
Unfavourable	11	3.1
Favourable*	341	96.9

***Favourable perceptions were those that were supportive of herbal remedies

Table 4.6: shows health problems that respondents use herbal medicines to prevent and treat. Malaria, pile, typhoid and backache were the most listed health problems that herbal medicines were being used to prevent (64.5%, 57.1, 52.8%, and 51.4% respectively) and treat respectively (60.8%, 57.7, 52.8%, and 50.6% respectively). See table for details

Table 4.6: Health problems that respondents use herbal medicines to prevent and treat

		N=352
Health problems	**Frequency**	**Percentage (%)**
Health problems used herbal medicines to prevent*	227	64.5
Malaria	201	57.1
Pile	186	52.8
Typhoid fever	181	51.4
Backache	64	18.2
All diseases	11	3.1
Convulsion	11	3.1
Gonorrhea	7	2.0
Others(Diabetics, Hypertension)	20	5.7
None		
Health problems used herbal remedies to treat*	214	60.8
Malaria	203	57.7
Pile	186	52.8
Typhoid fever	178	50.6
Backache	81	23.0
All diseases	17	4.8
Convulsion	17	4.8
Gonorrhea	7	2.0
Others(Diabetics, Hypertension)	11	3.1
None		

* Multiple responses

4.4 Prevalence and practices relating to the use of herbal remedies

Table 4.7 shows the prevalence of usage of herbal remedies. Majority (98%) had taken herbal medication at one time or the other. A large proportion (98.6%) use herbal products when the need arises. In most respondent (70.5%), duration of usage was 30 years and above.

Table 4.7: Prevalence of usage of herbal remedies

Prevalence and pattern of usage	Frequency	Percentage (%)
Ever taken any herbal medication (N=352)		
Yes	345	98.0
No	7	2
Whether still use any herbal product when the need arises (N=345)		
Yes	340	98.6
No	5	1.4
Duration of usage (n = 345)		
Less than 10years	15	4.0
10 - 19years	32	9.3
20 - 29years	50	14.2
30 years and above	248	70.5

Figure 4.1 shows how often respondents take herbal medicines. Majority (54.0%) often take herbal medicine.

N =352

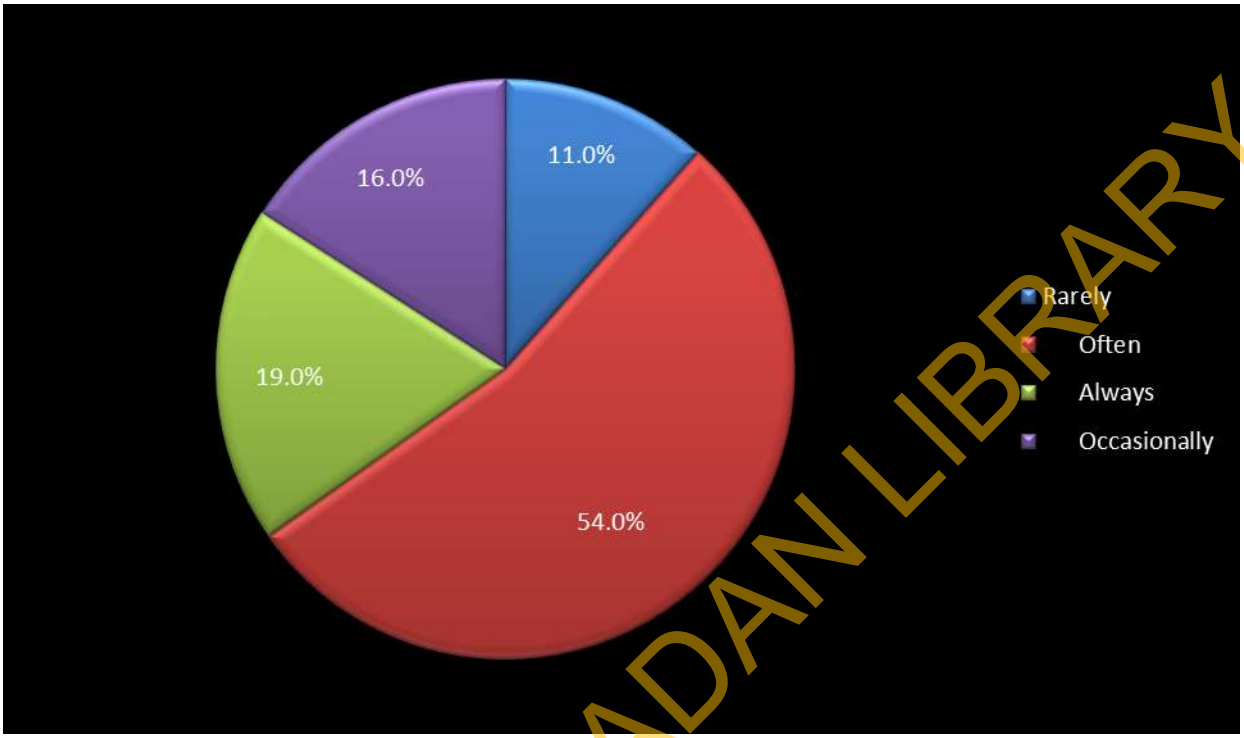

Figure 4.1: Respondents' frequency of use of herbal medicines

N= denominator in which the above percentages were calculated.

Table 4.8 shows practices relating to use of herbal remedies. Majority (64.1% and 67.1%) stored opa-eyin/agbo jedi and Agbo iba respectively at home for use when the need arises. More than one-quarter of the respondents got the prescription for herbal remedies to use from elders (47.8%), self (40.1), and friends (30.4). Majority (85.9%) of the respondents had encouraged someone to use herbal remedies at one time or the other. More than two-thirds of the respondents often encourage their friends (73.4%) and family members (84.0%) to use herbal remedies.

Table 4.8: Practices relating to use of herbal remedies

Practices relating to use of herbal remedies	Frequency	Percentage (%)
Herbal mixtures stored at home for use when the need arises* (N = 340)		
Agbo iba	200	67.1
Opa-eyin/ agbo jedi	191	64.1
Epa ijebu	79	26.5
Gbogbonise	70	23.5
Gangaria the flush	42	14.1
Alomo bitters	21	7.0
Yoyo bitters	16	5.4
Orijin	6	2.0
Paraga	2	0.7
Prescriber of herbal remedies used by respondent* (N = 345)		
Elders	162	47.0
Self	136	39.4
Friends	103	29.9
Family member	73	21.2
Sellers	65	18.8
Co-driver	39	11.3
Ever encouraged anyone to use herbal remedies (N = 352)		
Yes	280	85.9
No	72	20.5
Persons often encouraged to use herbal remedies* (N = 352)		
Family members	246	69.9
Friends	215	61.1
Co-drivers	118	33.5
Others (which includes passengers & visitors)	10	2.8

*Multiple responses

Figure 4.2 shows type of herbal mixtures ever used by respondents. More than 70% of the respondent had used ‘epa ijebu’ (70.7%), ‘Agbo iba’ (95.4%) and ‘Opa-eyin/agbo jedi’ (96.8%) before.

N = 345

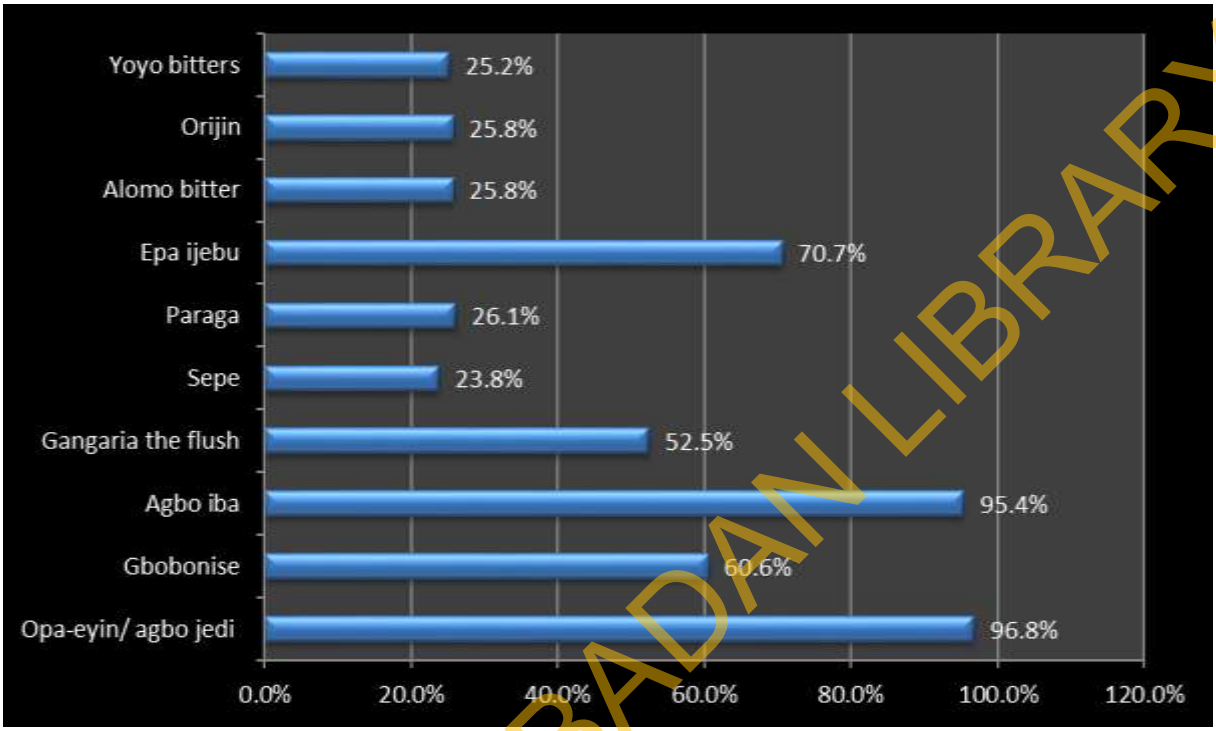

Figure 4.2: Types of herbal medicines ever used by respondents

Figure 4.3 shows herbal mixtures that respondents are currently using. More than half of the entire respondents that used herbal mixtures are currently using ‘Epa ijebu’ (56.6%), ‘Agbo iba’ (89.1%) and ‘Opa-eyin/agbo jedi’ (92.6%).

N = 345

Figure 4.3: Types of herbal medicines that respondents were currently using

Table 4.9 shows health conditions that respondent used different herbal mixture to manage. A large proportion of the respondents used ‘opa-eyin/agbo jebi’ and ‘alomo bitters’ for pile (76.6% and 30.3% respectively), ‘Gbobonise’ and ‘Gangaria’ for All diseases (46.2% and 33.8% respectively), ‘Agbo iba’ for malarial (90.2%), ‘Sepe’, ‘paraga’ and ‘orijin’ for relaxation (48.6%, 47.1%, and 40.0% respectively), ‘epa ijebu’ for stomach aches (69.4%).

Table 4.9: Types of herbal mixture that respondents used in managing different health conditions*

(N = 340)

Health problems / Herbal medicines	Malaria n(%)	Pile n(%)	Back-ache n(%)	Malaria, Pile, Typhoid n(%)	Sexual stimulant n(%)	Relaxation n(%)	Stomach ache n(%)	All diseases n(%)
Opa-eyin/ agbo jedi	7(2.1)	256(76.6)	37(11.1)	4(1.2)	4(1.2)	1(0.3)	23(6.9)	0(0.0)
Gbobonise	37(18.8)	9(4.6)	23(11.5)	0(0.0)	3(1.5)	4(2.0)	18(9.1)	91(46.2)
Agbo iba	286(90.2)	2(0.6)	2(0.6)	26(8.2)	1(0.3)	0(0.0)	0(0.0)	0(0.0)
Gangaria the flush	24(15.3)	22(14.0)	16(10.2)	2(1.3)	3(1.9)	0(0.0)	37(23.6)	53(33.8)
Sepe	2(2.9)	7(10.0)	3(4.3)	0(0.0)	21(30.0)	34(48.6)	2(2.9)	1(1.4)
Paraga	3(4.3)	5(7.1)	4(5.7)	0(0.0)	20(28.6)	33(47.1)	4(5.7)	1(1.40
Epa ijebu	2((0.9)	1(0.5)	2(0.9)	0(0.0)	0(0.0)	0(0.0)	152(69.4)	1(0.5)
Alomo bitter	1(1.3)	23(30.3)	7(9.2)	0(0.0)	22(28.9)	14(18.4)	2(2.6)	7(9.2)
Orijin	2(3.1)	8(12.3)	7(10.8)	0(0.0)	18(27.7)	26(40.0)	0(0.0)	4(6.2)
Yoyo bitters	7(9.6)	14(19.2)	9(12.3)	0(0.0)	10(13.7)	1(1.4)	10(13.7)	22(30.1)

*multiple responses

Table 4.10 shows respondents' frequency of use of herbal remedies. Majority never used herbal remedies dissolved in alcohol (36.1%); never took herbal remedies dissolved in alcohol before driving (67.9%); takes herbal remedies before driving because it gives energy and strength (93.1%). The major sources of their herbal remedies were from hawkers who move around (88.7%), hawkers in motor parks (87.8%) and self-preparation (79.1%).

Table 4.10: Respondent's frequency of use of herbal remedies

Frequency of use of herbal remedies	Frequency	Percentage (%)
Frequency of taking herbal remedies dissolved in alcohol (352)		
Always	21	6.0
Occasionally	33	9.4
Often	58	16.5
Rarely	113	32.1
Never	127	36.1
Frequency of taking herbal remedies dissolved in alcohol before driving (352)		
Always	12	3.4
Occasionally	30	8.5
Often	33	9.4
Rarely	38	10.8
Never	239	67.9
Reason for taking herbal remedies before driving(n=103)		
To give energy and strength	95	93.1
For eye-opening and alertness	8	6.9
Sources of the herbal remedies (345)*		
Hawkers who move around	305	86.6
Self preparation(made by respondent)	272	78.8
Pharmacies(packaged products)	60	17.4
Hawkers in motor parks	302	87.5
Herbalist	25	7.2

*multiple responses

Table 4.11 shows relationship between usage of herbal product when need arises and Socio-demographic distribution of respondent. Age in years and Marital status shows statistically significant relationship with usage of herbal product when need arises while level of education, religion and ethnic group shows no statistical difference.

Table 4.11: Relationship between Usage of herbal products when need arises and Socio-demographic characteristics of respondents.

	Use of herbal remedies				
Socio-demographic characteristics	Yes n(%)	No n(%)	Chi-Square (x^2)	df	P-value (P)
Age in years					
20 - 29	27(81.8)	6(18.2)	15.140	3	**0.002***
30 - 39	75(98.7)	1(1.3)			
40 - 49	117(98.3)	2(1.7)			
50 and above	121(98.4)	2(1.6)			
Level of Education					
No formal education	25(92.6)	2(7.4)	7.402	3	0.060
Primary	135(98.5)	2(1.5)			
Secondary	144(98.0)	3(2.0)			
Tertiary	36(90.0)	4(10.0)			
Religion					
Christianity	119(95.2)	6(4.8)	2.194	2	0.334
Islam	210(97.7)	5(2.3)			
Traditional African Religion	11(100.0)	0(0.0)			
Ethnic group					
Yoruba	331(96.8)	11(3.2)	0.581	2	0.748
Hausa	7(100.0)	0(0.0)			
Igbo	2(100.0)	0(0.0)			
Marital Status					
Single	15(78.9)	4(21.1)	10.787	3	**0.013***
Married	316(97.8)	7(2.2)			
Separated	3(100.0)	0(0.0)			
Divorced	6(100.0)	0(0.0)			

*Significant; df = degree of freedom

Table 4.12 shows relationship between usage of herbal product when need arises and knowledge of herbal remedy. Usage of herbal product when need arises is statistically significantly related to the knowledge of herbal remedy ($p = 0.001$)

Table 4.12: Relationship between Usage of herbal products when need arises and Knowledge of herbal remedy.

	Use of herbal remedies				
Knowledge	Yes n(%)	No n(%)	Pearson Chi-Square (x^2)	df	P-value (P)
Good	56(90.3)	6(9.7)	10.621	1	**0.001***
Poor	284(98.3)	5(1.7)			

*Significant; df = degree of freedom

Table 4.13 shows relationship between usage of herbal product when need arises and perception of herbal remedy. Usage of herbal product when need arises is statistically significantly related to perception about herbal remedy ($p = 0.002$).

Table 4.13: Relationship between Usage of herbal products when need arises and Perception of herbal remedy.

	Use of herbal remedies				
Perception relating to herbal remedies	Yes n(%)	No n(%)	Chi-Square (x^2)	Df	P-value (P)
Perception					
Unfavourable	7(70.0)	3(30.0)	9.768	1	**0.002***
Favourable	333(97.7)	8(2.3)			

*Significant

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This study explored the knowledge, perception and pattern of use of herbal remedies among commercial drivers in Olorunda local government area, Osogbo Osun-state. Implication of the findings of this study to health promotion and education was also discussed. Recommendations were made at the end of the report.

The major findings of the research were that:

Level of knowledge of herbal remedies was low among the respondents;
Respondents had favourable perceptions of herbal remedies;
Use of herbal remedies was common among the respondents;
Most respondents take alcohol based herbal remedies compared to non-alcoholic ones

5.1 Socio-demographic characteristics of the respondents

The age of respondents ranged from 20 to 70years with a mean of 44.3±10.2 years, majority were 40years and above. All respondents were males which may not be unrelated to the fact that traditionally, the occupation is believed not to be female-friendly, a trend which was observed in a similar study by Oluwadiya and Fatoye (2012). Majority of the respondents were educated up to secondary school level (41.8%) as they actually reported dropping out of school. The fact that almost all the respondents were married is not unexpected considering the age distribution of the respondents. The location of the study also explains why almost all the respondents were Yorubas.

5.2 Knowledge and perception of herbal remedy among commercial drivers

Herbal medicine is popular among commercial drivers where 99.1% reported awareness of it in this study. However, elders were the major source of information on herbal medicines for respondents which further reinforces the similar assertion by Vhurumuku (2015) in a study carried out among pre-school service teachers in South Africa. However, majority of the respondents had poor knowledge as relating to herbal remedies which is similar to the findings of Howell et al., (2006) among

Hispanic patients in USA; this poor knowledge demonstrated may be explained by the generally low educational status of the respondents. Most of the respondents believed that herbal medicines have no side effects and also believed it is very unsafe to combine any herbal medications with conventional/western medications which correspond to the findings of Fakeye et al (2009) among pregnant women and Suleiman (2014) among consumers of herbal medicines in Riyadh. While this belief seems plausible because of the likely drug-drug interaction, it was quite unexpected as majority of the respondents had the notion that herbal medicines have no side effects.

Most respondents perceived that herbal medicines are safer and effective than the conventional ones this could be because of the favourable perceptions towards HRs. These findings were similar to that observed in the work of Oridota et al. (2014). This appears to stem from the fact that most manufacturers tend to convince the consumers of these products into believing that they are natural and offer a broad range of therapeutic values. In this study, most respondents believe that a single herbal medicine can cure a wide range of illness. Most of the commercial drivers also perceived that the herbal remedies are more readily available and affordable which may further explain the wide acceptability and use of these products and corresponds with the findings of Taylor et al. (2000) that the use of traditional plant medicines in developing countries could be attributed to high costs of western medicine. Most respondents perceived that long-distance driving requires commercial drivers to take herbal medicines to keep them strong and alert while driving, a finding similar to that of Osae-Brown (2012).

Majority of the drivers listed malaria, typhoid, pile and backache as the main ailments they use the remedies for and relates it to prevention and treatment purposes. This is similar to the findings in the study by Kennedy (2005) among adult population but contradicts the findings from Vhurumuku (2015) where malaria was the least ailment mentioned. It was also found that knowledge and perception had statistical relationship with the pattern of use of herbal medicine with $p=0.001$ and $p=0.002$ respectively. Since they do not have adequate knowledge about the potential toxicities of herbal remedies they tend to use it unsafely and the favourable perceptions of respondents towards herbal remedies contributes to its preference of use.

5.3 Prevalence and Pattern of use of herbal remedies among commercial drivers

There is a widespread use of herbal medicine among commercial drivers with up to 98% reporting use. Majority often take herbal medicine which is comparable with the findings of other studies (Evan et al, 2015; Alade et al, 2014) and the major source of the herbal remedies were hawkers in motor parks which depicts a high accessibility of the drivers to herbal remedies at the parks. Similar findings was reported by Oluwadiya and Fatoye (2012) which then suggests the need for placing restrictions on the sales of non-standardized herbal products at motor parks. It was also observed that there was a long history of use herbal remedies in the range of 20years and above which may have a far reaching health implication especially on the end organs of the body such as liver and kidneys.

In this study, despite the widespread use of alcohol-based herbal medicine, majority did not report use of herbal remedies dissolved in alcohol before driving contrary to the findings of other studies like that of Oluwadiya and Fatoye (2012). This could be because respondents may not want to be identified with alcohol and it explains the high negative response rate for alcoholic herbal mixture intake before driving. Furthermore, it is a common knowledge that alcohol intake at the initial state provides energy and increases alertness and those who claimed to take herbal remedies before driving believed that it provides energy and make them alert as also reported by Osae-Brown (2012). Thus it can be inferred that alcohol provided the increased energy and alertness but it was just under-reported by the respondents.

Most respondents reported use of herbal remedies like epa ijebu' , 'Agbo iba' and 'Opa-eyin/agbo jedi' both in the past and present with no significant difference in the prevalence of use in both periods. In a study among adult population in a south western part of Nigeria by Oreagba et al., (2011) similar findings were reported. However, products like 'yoyo bitters', 'orijin', 'alomo bitters', 'paraga' and 'sepe' which has intoxicating properties and seem to be popular among the general population were less reported among the commercial drivers before driving, though the reasons for this pattern was not explored in this study, further research in this regard may be plausible.

The statistically significant relationship between age in years and marital status and usage of herbal product suggests that older drivers tend to use herbal remedies more than the younger ones and married drivers use herbal remedies more frequently. This is similar to the findings of Fakeye et al., (2009) in a study among pregnant women where age and marital status were predictors of usage of herbal products.

5.4 Implication for Health Promotion and Education

Findings from this study have reiterated the fact that commercial drivers have poor knowledge about Herbal Remedies (HRs). Misconceptions about herbal remedies were also evident among the respondents. These had an influence on their pattern of use of herbal remedies which could lead to possible health challenges. Health promotion and education strategies have been vital in mitigating health problems in the past and could be important in this case. The identified health promotion strategies are public enlightenment, training and advocacy.

Public enlightenment/Effective communication

Public enlightenment is a strategy used to create awareness which will lead to the promotion of healthy behaviours. It involves the use of Behaviour Change Communication (BCC) materials such as flyers, media etc. Civil organizations and non-governmental organizations (NGOs) could use this strategy with the aim of reinforcing health promoting messages relating to the safe use of HRs and clarification of misconceptions relating to herbal products. For example, a material such as a flyer could be designed under the supervision of a public health scientist with expertise in BCC.

Furthermore, the messages will be designed to suit the comprehension level of respondents; especially in this case where majority of respondents had secondary school education and below. The flyers could contain messages encouraging the use of regulated or standardized herbal remedies among commercial drivers and awareness about the potential adverse reactions to herbal remedies. The flyers could then be placed at strategic places such as motor parks and union secretariats.

In addition, public enlightenment could be done through messages on radio since it is one of the most used media outlets by drivers and they could listen while working.

Messages on radio could be in form of health talks and advertisements specifically targeted at explaining the potential side effects of herbal remedies and safe usage of HRs.

Training

Training is one of the health promotion and education strategies particularly used to impart knowledge and skills. It could be used to increase the level of knowledge of HRs among commercial drivers on potential adverse effects and correct the misconceptions of HRs. Commercial drivers' union (NURTW) officials could be trained by experts from the State Ministry of Health, NAFDAC and NDLEA in this regard. Designing a training curriculum which would help in facilitating a seminar or a lecture for NURTW officials would be of great importance. The curriculum will contain program objectives, contents, methods, materials and evaluation. The following could form the contents: how to identify safe and unsafe HRs; potential side effects of HRs; correct use of HRs and misconceptions of the HRs. Relevant materials that could be used for training commercial drivers are use of projector, charts and images. These materials are particularly necessary for understanding and retention. Evaluation in the form of pre and posttest, questions and answers could be used to measure the effectiveness of set objectives.

A step-down training can then be conducted by the union officials to transfer gained knowledge and skills to their members. This will go a long way in increasing their knowledge and therefore enable them make informed decisions about HRs.

Advocacy

Advocacy is a strategy used to influence decisions within political, economic and social systems and institutions. It is a health education strategy which involves championing the course of something or an action. Concerned individuals and groups (including NGOs) could advocate for better policies and laws to help in regulating the sales of standardized HRs especially the unsafe ones. Policies could also help curbing the production and misinformation relating to HRs. people that could be targeted for advocacy are lawmakers heading health committees, stakeholders in the federal ministry of health and state ministry of health. Advocacy visits could be made to the

relevant stakeholders through whom the problem will be explained and possible solutions. Other methods such as media advocacy could be used to put pressure on stakeholders to make appropriate policies and strengthen the ones on ground.

5.5 Conclusion

Herbal remedy utilization is very high among commercial drivers and many of them consume alcohol-based herbal remedies but they appear to be ignorant of its potential side effects since majority believed that it has no side effects from the findings in this study hence the level of knowledge of the participants need to be improved towards safe herbal use and prevention of herbal misuse especially in combination with alcohol. It may be necessary to evaluate the safety, efficacy and quality of herbal medicines and their products through randomized clinical trial studies. Public enlightenment programmes about safe use of herbal medicines may be necessary as a means of minimizing the potential adverse effects; this will also guide the healthcare decision-making process.

5.6 Recommendations

From the findings in this study, the following were recommended:

1. Drivers need to be educated on the potential of some herbal mixtures increasing the risk for alcohol-related traffic injuries
2. Reduction of access to herbal concoctions by strictly restricting its sales in motor parks.
3. The National Union of Road Transport Workers (NURTW) has a powerful control on her members; hence they can also be used to control unsafe herbal remedy use and other alcohol-based herbal mixture consumption by commercial drivers.

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APPENDIX Ia
QUESTIONNAIRE

KNOWLEDGE, PERCEPTION AND PATTERN OF USE OF HERBAL REMEDIES AMONG COMMERCIAL DRIVERS IN OLORUNDA LOCAL GOVERNMENT AREA OSOGBO, OSUN STATE NIGERIA

Serial number_____ Motor park _____

Name of interviewer---------- Date interviewed----------

SECTION A: Socio-demographic information

Instruction: Please tick (√) the box that corresponds with respondent's answer or complete the blank spaces provided

1. **Age** as at last birthday _____
2. **Gender** (a) Male ☐ (b) Female ☐
3. **Level of Education** (a) No formal education ☐ (b) Primary ☐ (c) Secondary ☐ (d) Tertiary ☐
4. **Religion** (a) Christianity ☐ (b) Islam ☐ (c) Traditional African religion ☐ (d) Others, (specify) …….
5. **Ethnic group**: (a) Yoruba ☐ (b) Hausa ☐ (c) Igbo ☐ (d) Others, (specify) ……
6. **Marital Status** (a) Single ☐ (b) Married ☐ (c) Separated ☐ (d)Divorced ☐

7. How long have you been driving? (In years)……

SECTION B: Awareness and Knowledge relating to herbal remedies

Instruction: kindly tick (√) either yes or no in the box for the respondents answer and also fill the open spaces.

8. Have you ever heard of herbal remedies? Yes ☐ No ☐

9. What is a herbal remedy? .....

   .....

   .....

10. How do you get to know about herbal remedies? For each kindly(√) either Yes or No using table 1

Table 1

S/N	Source	Yes	No
10.1	From Co-drivers		
10.2	From Friends		
10.3	From Family members		
10.4	From Elders		
10.5	From leaflets		
10.6	From newspaper		
10.7	From radio		
10.8	From Television		
10.9	From magazines		
10.10	From posters		
10.11	From hawkers		

Instruction: kindly state yes, no or don't know about the following questions

11. An herbal medicine cures all diseases? True ☐ False ☐ Don't know ☐
12. Herbal medicines have no side effects? True ☐ False ☐ Don't know ☐
13. Any herbal medicine can be taken in any amount without adverse effects unlike orthodox medicine True ☐ False ☐ Don't know ☐
14. It is very safe to combine any herbal medications with conventional/western medications? True ☐ False ☐ Don't know ☐

Section c: Perceptions relating to herbal medicines

Table 3 contains a set of statements, for each kindly tick (√) **Agree**, **Disagree** or **Undecided** as applied to the respondent

Table 3

SN	Statements	Agree	Disagree	Undecided/ Not sure
15.1	Herbal remedies are safer than western medicines			
15.2	Herbal medicines are readily available compared with western medicines			
15.3	Herbal remedies are more effective than western medicines			
15.4	Those who take herbal remedies do not fall sick frequently compared with those who take western medications			
15.5	Herbal medicines can cure a wide range of illnesses compared with western medicines			
15.6	Herbal medicines have no side effects at all			
15.7	Herbal medicines are more affordable than western medicines			
15.8	It is better to use herbal medicines first and if there is no improvement one can use western medicine			
15.9	Long distance driving requires the use of herbal mixtures to make one strong			

SN	**Statement**	**Agree**	**Disagree**	**Undecided/Not Sure**
15.10	Herbal products improves ones alertness while driving			
15.11	There are some disease which only herbal remedies can cure			
15.12	Herbal medicines should be used when conventional medicine fails			
15.13	It is safe to combine the use of herbal medicines with western medicine			

16. List in the table 4 the diseases which you use herbal remedies to prevent

Table 4

s/n	Health problems that you use herbal medicines to prevent
16.1	
16.2	
16.3	
16.4	
16.5	

17. List in table 5 the health problems that you use herbal remedies to treat

Table 5

S/N	Health problems that you use herbal remedies to treat
17.1	
17.2	
17.3	
17.4	

SECTION D Practices relating to use of herbal remedies

Instruction: Please indicate the respondent's answer by ticking (√) as applied

18. Have you ever taken any herbal medication? (a) Yes ☐ (b) No ☐

19. Do you use any herbal product when the need arises? (a) Yes ☐ (b) No ☐

20. How often do you take herbal medicines? (a) Rarely ☐ (b) Often ☐ c) Always ☐

(d) Occasionally ☐

21. How long have you been using herbal remedies? ……

22. For each of the herbal medicines in table 6 kindly tick (√) if respondent have ever used or currently using it and state the health conditions that is used to manage

Table 2

S/N	Herbal mixtures	Ever used	Currently using	Health conditions used to manage
22.1	Opa-eyin/ agbo jedi			
22.2	Gbogbonise			
22.3	Agbo iba			
22.4	Gangaria the flush			
22.5	Sepe			
22.6	Paraga			
22.7	Epa ijebu			
22.8	Alomo bitters			
22.9	Orijin			
22.10	Yoyo bitters			
22.11	Aporo			

23. How often do you take herbal remedies dissolved in alcohol? (a) Always ☐ (b)Occasionally ☐ (c) Often ☐ (d) Rarely ☐

24. How often do you take herbal remedies dissolved in alcohol before driving? (a)Always ☐ (b) Occasionally ☐ (c) Often ☐ (d) Rarely ☐ (e) Never ☐

24b If yes what makes you take herbal remedies before driving? .....……

……..

25. What are the various sources of the herbal remedies which you use? Kindly tick (√) one or all the options that apply to you

a. Hawkers who move around ☐
b. Self preparation ☐
c. Pharmacies (packaged products) ☐
d. Hawkers in motor parks ☐
e. Others specify ……

26. What are the herbal remedies which you store at home for use when the need arises?

26.1……

26.2……

26.3……

26.4……

26.5……

27. Who often prescribes the herbal remedies that you use?

……

……..

……..

28. Have you ever encouraged anyone to use herbal remedies? (a) Yes ☐(b) No ☐

28b If yes who do you often encourage to use herbal remedies?

……..

……

APPENDIX Ib Yoruba version

IBEERRE

IMO, IRISI ATI ,LILO EGBOOGI IBILE LAARIN AWON OLOKO ERO NI IJOBA IBILE OLORUNDA, NINU ILU OSSOGBO, IJOBA IPINLE OSUN, NI ORILEDE NIGERIA.

Serial number_____

Garaji oko _____

IPIN A: Awon nkan idanimon nipa yi (**SOCIO-DEMOGRAPHIC INFORMATION)**

ATOKA:: Fun pupo ninu awon ibeere wonyi, ejowo esami (√) yi idahun ti oba bojumu julo si yin ninu ibeere ikookan

1. **Ejowo omo odun melo ni ese ni ojo ibi ti ese kehin**.....(Odun)
2. A. Okunrin ☐ B. Obirin ☐
3. Iwe melo ni eka: a. Nko kawe rara ☐ b. Ile-Iwe alako b☐ c. Iwe ☐ mewa
   d. Ile iwe giga ☐ e. Ile iwe eko giga julo ☐
4. **Elesin woni yin**1.Kristiani ☐. Musulumi ☐. Elesin Abalaye☐. **Imiran eso pato (edaruko)**……
5. **Omo eya wo ni yin?** 1. Yoruba ☐ 2. Hausa ☐ 3. Igbo ☐ 4. Eya Imiran (eso pato) _____
6. **Ipowo ni ewa nipa igbeyawo** (a). Nko gbeywo☐ (b). Moti gbey☐o ri (c). Ofintitu igbeyawo wal☐ (d). Opo ☐
7. Odun melo ni eti bere sini wa oko? (odun)……

IPIN B: Imo ati gbigbo nipa oogun Egoogi lilo

8. Nje eti gbo nipa egboogi ri? Beeni ☐Beeko ☐

9. Ki gan gan ni egboogi? .....

……

……

……

……

10 Bawo ni ese mon nipa egboogi lilo? **ATOKA**: Fun ikokan ninu awon ibeere yi, ejowo esami (√) si beeni tabi beeko

S/N	Orisun	Beeni	Beeko
10.1	Lati odo awon awako egbemi		
10.2	Lati odo awon ore		
10.3	Lati odo awon ebi		
10.4	Lati wiwo awon agbalagba		
10.5	Lati inu iwe		
10.6	Lati inu iwe iroyin		
10.7	Lati ori ero asoro magbesi		
10.8	Lati ori ero amohun maworan		
10.9	Lati inu iwe ilewo magasini		
10.10	Lati ara patako ipolongo (posters)		
10.11	Lati odo awon ti wo n kiri		

Atoka: Ejowo ete owo si (√) Beeni tabi Beeko tabi Nko mo

11. Nje egbogi kan wa ti ole se iwosan gbogbo aarun? Beeni ☐ Beeko ☐ Nko ☐ mo

12. Awon egboogi koni abeyin leyin lilo Beeni ☐ Beeko ☐ Nko mo ☐

13. A le lo egboogi ni iwon ki won lai ni abeleyin? Beeni ☐ Beeko ☐ Nko mo ☐

14. Nje osese lati lo egboogi pelu oogun igbalode titi oyinbo ? Beeni ☐ Beeko ☐ Nko mo ☐

Section c: Irisi ti ojo mo egboogi lilo

15. Atoka: Ejowo esami si (√) Boya **Mofaramo**, **Nkofaramo** or **Nkomo** tioba se bojumu pelu awon ibeere na .

SN	**IBEERE**	Mofaramo	Nkofaramo	Nkomo
15.1	Awon oogun egboogi ko lewu to oogun oyinbo			
15.2	Awon oogun egbogi rorun lati ri ju oogun oyinbo lo			
15.3	Awon oogun egboogi sise ju oogun oyinbo lo			
15.4	Awon tonlo oogun egbogi ki saare loorekore bi awon tonlo oogun oyinbo ti igbalode lo			
15.5	Oogun egboogi le sise iwosan fun opolopo aarun ju oogun igba lode lo			
15.6	Oogun egboogi koni ewu abeyin yo leyin lilo			
15.7	Awon egboogi rorun lati raj u oogun oyinbo lo			
15.8	Egboogi gangan lo ye ki eniyan malo saju ninu aisan koto loogun miran			
15.9	Wiwa oko ona jinjin nilo lilo egboogi lati le mu ki ara o le			
15.10	Egboogi maa n je ki oju ati ara gbe gangan nigbati a ba nwa oko			
15.11	Awon arun kan wa ti oje wipe egboogi nikan lo le wo o san			
15.12	Egoogi gangan loye keyan malo nigbati oogun eyinbo ba sunko			
15.13	Lilo egboogi pelu oogun oyinbo ko ni ewu rara			

16. Ejowo edaruko awon aarun ti eman fi oogun egboogi ibile dekun

S/N	Iru aarun na
16.1	
16.2	
16.3	
16.4	
16.5	

17. Edaruko awon aarun marun ti e ti fi oogun egboogi se iwosan

17.1……

17.2……

17.3……

17.4……

17.5……

Section D: **Isesi ti ojemo egboogi lilo**

Atoka: Ejowo esami (√) si idahun fun awon ibeere ti oba bojumu fun yin

18. Nje eti lo oogun egboogi tele ri? (a) Beeni ☐ (b) Beeko ☐

19. Nje ehun lo oogun egbogi nigbati e ba nilo re? (a) Beeni ☐ (b) Beeko ☐

20. Bawo ni ese man lo oogun egbogi si? (a) nigbogbo☐gba (b) ☐rekore ☐ (c)Leekookan (d) ko☐ po

21. Igbawo leti bere sini lo oogun egoogi? .....

22. Nje elo nkakan ninu awon egboogi kan lowolowo? **Atoka:** Ejowo esami si (√) idahun to ba bojumu julo. Efi beni tabi beeko ati awon arun ti e lo won fun

S/N	Egboogi	Beeko	Beeko	Aarun ti afin wo
22.1	Opa-eyin/ agbo jedi			

22.2	Gbogbonise			
22.3	Aishetu			
22.4	Gangaria the flush			
22.5	Sepe			
22.6	Paraga			
22.7	Epa ijebu			
22.8	Alomo bitters			
22.9	Orijin			
22.10	Yoyo bitters			

23. Nje bawo ni ese ma n lo oogun egboogi ti a fi oti ki si?(a) Nigbakugba ☐
(b)leekookan ☐(c) loorekoore ☐ (d)nigboogbo igba ☐

24(i). Nje bawo ni ese ma n lo oogun egboogi ti won fi oti ki si ki eto wa oko? (a)Nigbakugba ☐ (b)leekookan ☐ (c) loorekoore ☐ (d) nigboogbo ☐ igba (ii). Kini idi ti e fi maa nlo oogun egboogi ki e to wa oko?

……..

25. Nibo gangan nipato ni eti ma ra oogun egboogi na? Ejowo esami si (√) idahun ibeere ti oba bojumu julo

a. awon ti won kiri ka ☐
b. moma nki egboogi na fun ra mi ☐
c. Awon ologun oyinbo ☐
d. Awon ti won kiri ninu garaaji ☐
e. Imiran (eso pato)……

26. awon oogun egboogi wo ni e ni si ile fun lilo?

26.1 ……..

26.2 ……..

26.3 ……..

26.4 ……..

26.5 ……

27. Awon wo gan ni won ma n gba yin ni imoran lati lo egboogi

……

……

……

……

28. nje e ti gba eniyan ni imoran lati lo oogun egboogi ri (a) beeni ☐ (b) beeko ☐

(ii) awon wo gan ni e gba ni imoran lati lo oogun egboogi?

……..

……..

……..

APPENDIXIIa

INFORMED CONSENT

My name is **Farotimi Olajumoke Abiodun**, a Post graduate student of Department of Health Promotion and Education, Faculty of Public health, College of Medicine, University of Ibadan. The purpose of this study is to document the knowledge perception and pattern of use of herbal remedies among commercial drivers. The findings from this study will help improve safety and efficacy of herbal products and also as input in designing educational programmes to reach out to commercial drivers on safe use of herbal remedies. Your identity, responses and opinion will be kept strictly confidential and will be used for the purpose of this research only. Please note that your name is not needed, your participation is voluntary and you may request to withdraw at any time.

Would you want to participate in the study? Yes **[ ]** No **[ ]**

Date……

APPENDIX IIb:

Yoruba version

IWE IFOWOSI

Eyin eludahun wa nitooto,

Oruko mi ni Farotimi Olajuoke, mo je akeko ti ile iwe giga ti unifasiti ti ilu ibadan Eka ti Igbelaruge ati eko eto ilera, ile iwe imo iwosan, ti ilu Ibadan. Mo je ikan lara awọn egbe ti ohun gbe igbese lati se iwaadi kan ti akole re wa ni oke . Iwadi yi je ikan lara awan nkan pataki ki oluwadi na tole fi okan bale. Ofe ni iwadi yi, gbogbo nkanti abaso ninu iwadi yi niyio wa ni pipamo laarin wa. nibakan nan, kosi idahun tiko muna doko, awon esi iwadi yi ni yio wa ni pipamo laarin wa.

Nje e fara mo lati ko pa ninu iwadi yi? Beeni( ) beeko( )

Eseun pupo.

APPENDIX III

ETHICAL APPROVAL

MINISTRY OF HEALTH, OSOGBO
HEALTH PLANNING RESEARCH AND STATISTICS DEPARTMENT
PRIVATE MAIL BAG NO. 4421, OSOGBO, OSUN STATE OF NIGERIA

Your Ref. No.....
All communication should be addressed to the Permanent Secretary quoting

11th September, 2015

OSHREC/PRS/569T/47

Farotimi Olajumoke A.
Department of Health Promotion Education,
Faculty of Public Health,
University College Hospital,
Ibadan.

PERCEPTION AND ATTITUDE RELATING TO HERBAL REMEDY USE AMONG COMMERCIAL DRIVERS IN OLORUNDA LGA OF OSUN STATE

I wish to inform you that the Osun State Health Research Ethics Committee (OSHREC) has granted you an approval to proceed on the above exercise.

The approval lasts one (1) year spanning September 7, 2015 and 6th September 2016.. You are to inform the committee the starting date of the exercise. If there is any delay in starting, kindly inform the Committee to enable it adjust the date accordingly. This will equally allow for monitoring by designated representative of the Committee.

Regard this letter as Certificate of OSHREC approval.

Thank you.

Dr. Tope Oladele
Chairman
(OSHREC)