USE OF HERBAL REMEDIES FOR INFANTS BY NURSING MOTHERS IN IBADAN SOUTH EAST LOCAL GOVERNMENT AREA, OYO STATE, NIGERIA

BY

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DEDICATION

This project work is dedicated to the God Almighty, Ancient of days,my hope in every hopeless situation.

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ABSTRACT

Use of herbal preparations is gaining use throughout the world and is redefined as comprising therapeutic practices that have been in existence for hundreds of years. Medicinal plants have played a vital role in man's health as a large percentage of world's population still depend on herbal medicine to meet their health needs. Thefoetus, infants and older children, the elderly and pregnant women are at risk of adverse effects of herbal medicines. Infants are physiologically more vulnerable to certain adverse effects of herbs than are adults because they have developing nervous and immune system. It is hoped that the findings generated from this study will provide greater insight on polyherbal mixture usage on infants by nursing mothers. The evidence generated from this study will serve as a reference point to inform policy makers in addressing the issue of morbidity and mortality among infants and also provide a basis for further research. Hence, this study was carried out to investigate use of herbal remedies for infants by nursing mothers in Ibadan South East Local Government Area, (IBSELGA) Oyo State.

The study was both quantitative and qualitative. The quantitative was a descriptive cross-sectional survey. A four stage sampling technique was used to select a total number of 340 consenting nursing mothers from six health centres in IBSELGA. A validated semi-structured interviewer administered questionnaire was used for the study. Perception towards safety of herbal remedies was measured on an 18-point scale; scores of ≤8, >9 were categorized as poor and good perception respectively. Perception on efficacy of herbal remedies were measured on an 8-point scale; scores of ≤4, >5 were categorized as poor and good respectively. A key informant interview (KII) guide was used to conduct seven KIIs for herb sellers in Bode Market. Quantitative data were analysed using descriptive statistics and Fisher's exact at p=0.05 and qualitative data were analysed thematically.

The mean age of respondents was 27.9± 6.1years, 93.8% were Yoruba, 71.2% had secondary education and the mean age of babies was 6.6±3.5months. All, (100%) the nursing mothers have used herbal remedies for their infants, 86.8% first used herbal remedies for their infants when they were less than six months. The respondents used herbal remedies for health maintenance (20%), prevention (67.9%) and treatment of diseases (54.4%). The major disease conditions for which herbal medicines were used are malaria, measles, *okaori,* diarrhea, haemorrhoid, skin diseases, colic pain, convulsion, and jaundice. Mothers-in-law were the major source of

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information (33.4%) on the use of herbal remedies. Major factors influencing use of herbal remedies were belief in nature (29.8%) and influence of friends and relatives (25%). Majority of the respondents (97.1%) and 95.9% had poor perception about safety and efficacy of herbal remedies respectively. There was no significant relationship between level of education of respondents and their perception towards safety of herbal remedies.

Perception of respondents towards safety and efficacy of herbal remedies were poor. Public enlightenment is vital in addressing the gaps identified.

KEYWORDS: Herbal remedies, Herb sellers, Infants, nursing mothers

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CERTIFICATION

I hereby certify that this study was carried out by ADEOSUN, Florence Olufunmilayo in the Department of Health Promotion and Education (Population and Reproductive Health Education), Faculty of Public Health, College of Medicine, University of Ibadan.

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TABLE OF CONTENTS

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

UNIVERSITY OF IBADAN LIBRARY

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

UNIVERSITY OF IBADAN LIBRARY

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

LIST OF TABLES

UNIVERSITY OF IBADAN LIBRARY

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

LIST OF FIGURES

UNIVERSITY OF IBADAN LIBRARY

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

LIST OF APPENDICES

UNIVERSITY OF IBADAN LIBRARY

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CAM	Complementary and Alternative Medicine
CDC	Centre for Disease Control
HIV	Human Immunodeficiency Virus
HR	Herbal Remedies
IMG	Ibadan Municipal Government
IWC	Infant welfare Clinic
KII	Key informant Interview
LGA	Local Government Authority
NAFDAC	National Agency for Food and Drug Administration and Control
NCCAM	National Center for Complementary and Alternative Medicine
PHC	Primary Health Care
TBA	Traditional Birth Attendant
TM	Traditional Medicine
UN	United Nations
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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OPERATIONAL DEFINITION OF TERMS

Herbal Remedies: Plant-derived preparations that are believed to have therapeutic benefits.

Infants: Children in their first year of life

Nursing Mothers: Mothers with children who are within their first year of life.

Primiparous mothers: mothers who have given birth to only one child

Multiparous mothers: mothers who have given birth to two or more offspring

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The National Center for Complementary and Alternative Medicine (NCCAM) at the National Institutes of Health defines Complementary and Alternative Medicine (CAM) as "a broad domain of healing resources that encompasses all health systems, modalities, and practices and their accompanying theories and beliefs, other than those intrinsic to the politically dominant health system of a particular society or culture in a given historical period" (NCCAM, 2010).

World Health Organisation (WHO) defines Traditional medicines (TM) as diverse health practices, approaches, knowledge and beliefs that incorporate plant, animal and/or mineral based medicines, spiritual therapies, manual techniques and exercises which are applied singularly or in combination to maintain well-being, as well as to treat, diagnose or prevent illness (WHO, 2008).

Herbal medicines are defined as plant-derived material or preparations that are perceived to have therapeutic benefits; many times they contain raw or processed ingredients from one or more plants (WHO, 2000). Herbal medicines include herbs, herbal materials, herbal preparations, and finished herbal products that contain parts of plants or other plant materials as active ingredients (WHO 2008).

Plants have been used for medicinal purposes for thousands of years. Americans reported their top reasons for using herbs and supplements as enhancing health, and helping with common chronic symptoms or diseases such as memory loss, arthritis, and fatigue (Towns, Eyi and Andel 2014). In this way, herbs are similar to other complementary and alternative medicines in that they are constantly used for chronic conditions for which conventional medicine does not offer straightforward answers or cures. Herbs are also appealing to those who perceive nature as benevolent and healing, and people that use the herbs believe that a naturally-derived product is always safe. In developing countries, herbal medicines are often less expensive and more accessible than conventional pharmaceuticals (Eisenberg et al, 1998). The growing incidence of chronic and incurable diseases, such as diabetes, cancer, HIV/AIDS and arthritis, has led to the

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increased use of herbal medicine in recent years (Kumar *et al*., 2006). The reliance of people on herbal medicine has been for reasons of cost-effectiveness, acceptability, biomedical benefits and accessibility (Lulekal, Kelbessa, Bekele, & Yineger, 2008)

In the countries where the dominant health care system is based on allopathic medicine or where traditional medicine has not been incorporated into the national health care system, traditional medicine is often termed complementary, alternative or non-conventional medicine, {United Nations (UN) and WHO, 2003}. In many part of the world, there is a rich tradition in the use of herbal medicine for treatment of many diseases. In developing countries, it is estimated that about 80% of the population rely on traditional medicine for their primary health care, Brantner and Grein, (1994) including herbal remedies, for health maintenance and therapeutic management of diseases. Also in developing countries, a resurgence of interest in herbal medicines has resulted from the preference of products of natural origin by many consumers.

According to Gilani and Rahan, (2005), 25% of drugs in typical western pharmacies are plant derived. The growing number of national traditional medicine research institutes in developing countries is also a sign of the growing importance of traditional medicine. Notable examples are found in Nigeria, China, Ghana, India, Madagascar and Vietnam WHO, (2004). Herbs and herbal products have played a crucial role in health and disease management for many centuries. Herbal remedy is one of the first line of treatment for 60% of children with high fever due to malaria in Nigeria, Ghana, Mali, and Zambia (WHO, 2003).

1.2 Statement of Problem

Irrational use of medicine is a major problem worldwide. According to WHO, (2008), it is estimated that more than half of all medicines are prescribed, dispensed or sold inappropriately and that half of all patients do not take them correctly. This contributes to enormous health and economic impacts both at a personal and national level. As a result of this, paediatric use of complementary and alternative medicine (CAM) therapies raises legal as well as clinical concerns (Cohen and Kemper 2005).

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With the widespread use of various herbal products which are often concomitantly used with pharmaceutical drugs, herb-drug interactions have become an important issue in drug safety and clinical practice (Wai Fan, 2005). It is well documented that concomitant use of herbal medicine with conventional drug treatment can alter pharmacokinetic profiles of many classes of pharmaceutical drugs, including psychotropic agents, anticoagulants, oral contraceptives, immunosuppressant drugs, cardiovascular drugs, anti Human Immunodeficiency Virus (HIV), anti-cancer agents and antiepileptic drugs (Piscitelli, *et al*, 2002).

According to Conover, (2003), categories of people who are likely to be at risk from adverse effects of herbal medicines include those who are already prone to difficulties from regularly prescribed medications. They include foetus, infants and older children, the elderly, as well as pregnant and lactating women.

Most herbal medicines have not been subjected to rigorous clinical trials. The lack of standardization and regulation of many products complicates the testing of their clinical utility. As a result, there remains a dearth of knowledge concerning how children are affected by taking herbal products, (Gardiner and Kemper, 2000).

Findings from a study conducted by Tyagi and Delanty, (2003), revealed that 19.38% of infants used herbal medicine. This percentage might look small but it is highly significant because research carried out by Oshikoya, Njokanma, Chukwura and Ojo (2007) revealed that use of herbal traditional medicine for infants has resulted into deaths of Nigerian infants.

1.3 Justification

Use of herbal remedies have been documented globally and particularly in Nigeria. Many studies have been carried out on the use of herbal remedies among all ages and different groups of people in different parts of the world. Studies have documented herbal medicine use in adults Einseberge et al, (1993). Ezeoma and Anarodo, (2007), documented use of CAM among cancer patients, Onyeka et al, (2012) recorded herbal medicine use in pre-surgical patient booked for ambulatory anaesthesia and Nwanko and Fakeye, (2009) explored use of herbal medicine among ambulatory hypertensive patients. Also, Oshikoya, Sebanjo, Njokanma and Soipe (2008), carried

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out research on use of CAM in children with chronic health conditions, Nwaiwu and Oyelade, (2016), documented traditional medicine used in neonates and infant less than six months and Towns et al (2014), reported herbal medicine use in paediatric age group. Moreover, Fakeye, Adisa and Musa, (2009), documented the attitude and use of herbal medicine among pregnant women, Sim et al (2013), explored herbal medicine use among breastfeeding women and Oreagba, Oshikoya and Amarache, (2011) documented herbal medicine use in the general population.

However, there is a dearth of knowledge on herbal remedy usage among infants in Nigeria. Therefore this study focused on practices on herbal remedy usage for infants, factors influencing their usage and perceptions of nursing mothers on the safety and efficacies of the herbal remedies. Findings from this study will in addition to contributing to the general body of knowledge hopefully inform policy makers in addressing the issue of morbidity and mortality among the infants and also provide a basis for further research.

1.4 Research Questions

1. What are the practices of nursing mothers in Ibadan South East LGA of Oyo State on the herbal remedies for their infants?
2. What are the perceived factors influencing use of herbal remedies for infants?
3. What are the sources of information about these herbal remedies?
4. What are the perceived efficacies of herbal remedies by nursing mothers?
5. What are the perceived safeties of herbal remedies by nursing mothers?

1.5 Broad Objective

The broad objective of the study is to investigate the use of herbal remedies for infants by nursing mothers in Ibadan South East Local Government Area, Oyo state

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1.6 Specific Research Objective

1. To document practices of herbal remedies usage for infants by nursing mothers in Ibadan South East LGA
2. To describe the factors influencing use of herbal remedies in infants
3. To identify the sources of information about those herbal remedies used for infants by nursing mothers.
4. To document the perceived efficacy of herbal remedies used for the infants.
5. To document the perceived safety of herbal remedies used for the infants by nursing mothers

1.7 Research Hypotheses

1. There is no significant relationship between occupation of nursing mothers and their perception about safety of herbal remedies in their infants.
2. There is no significant relationship between level of education of mothers and their perception about safety of herbal remedies in their infants.
3. There is no relationship between religion of mothers and their perception about efficacy of herbal remedies in their infants.
4. There is no significant relationship between ethnicity of nursing mothers and their perception about efficacy of herbal remedies in their infants.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Herbs are crude plant materials such as leaves, flowers, root, seeds, stems, rhizomes or other plant parts which may be entire, fragmented or powdered (WHO 2000). Medicinal plants are those plants that are commonly used in treating and preventing specific ailments and diseases and that are generally considered to be harmful to humans (Moore and Adler 2000). These plants are either "wild plant species" those growing spontaneously in self maintaining populations in natural or semi-natural ecosystems and could exist independently of direct human actions or the contrasting "Domesticated plants species" those that have arisen through human actions such as selection or breeding and depend on management for their existence e.g. *Aloe barbadensis* (Cowley, 2002)..

Herbs that are used for medicinal purposes come in different forms. They may be taken internally as pills or powders, dissolved into tinctures or syrups, or brewed in teas and decoctions. Salves, ointments, shampoos, or poultices may be applied to the skin, scalp, or mucous membranes (Woolf, 2003).

2.2 Global view of herbal remedy usage

The Alma-Ata Declaration recognised the role of traditional medicine for the achievement of 'Health for All' and recommended that proven traditional medicines and health practices should be incorporated into national essential medicine programmes for primary health care (Trapsida, 2003).

In Nigeria, the importance of traditional medicine in the nation's healthcare has been recognised by the national government. According to Adelaja (2006), the government, in December, 2006 set up a high profile committee to develop, promote and commercialise traditional medicine products. Also, efforts have been made by the government to preserve indigenous Nigerian medical knowledge by boosting research into traditional medicine.

According to W.H.O, (2002), in its global situation report in Traditional Medicine Strategy 2002-2005, stated CAM prevalence rate of Chile (71%), Canada (70%), India (65%), France

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(49%), Australia (48%), U.S.A (42%), Colombia (40%), China (40%) and Belgim 31%. In Arab countries, the use of herbal medicines is also increasing faster in the richer than in the poorer ones. A survey in United Arab Emirates reported that 76% of the population is using herbal medicines (Albraik, Rutter and Brown 2008).

Studies from Nigeria showed that use of herbal medicine cuts across all ages and groups. A study conducted among 595 pregnant women in the six geo-political zones in Nigeria on their attitude and use of herbal medicine revealed that more than two-third of respondents (67.5%) had used herbal medicines in crude forms or as pharmaceutical prepackaged dosage forms, with 74.3% preferring self-prepared formulations (Fakeye, Adisa and Musa 2009). Ekeze (2013), in a study of public perception of the role of herbal medicine in healthcare delivery in Awka South LGA of Anambra State Nigeria found that 52.6% of the 180 study participants use herbal medicine.

In a study conducted by Oshikoya, Sebanjo and Njokanma (2009) to determine the knowledge of Nigerian mothers about colic – their home base management, extent of self-medication for the infants with colic and the types of medicines involved. They found that, of the 558 infants that experienced colic, 378 (67.7%) sought medical intervention in a hospital and 17 (3.1%) were treated by traditional herbal medicine practitioner. Herbal medicines were the most frequently used (51.8%) for those who were treated by herbal practitioner. Moreover, Nwaiwu and Oyelade (2016) in their study on traditional herbal medicine use in neonates and young infants discovered that a high percentage (72%) of the mothers used herbal medicine for their neonates and infants.

2.3 Use of Herbs

Use of plants for medicinal purposes is as old as human civilization. Many drugs used in conventional medicine were originally derived from plants. According to Mosihuzzaman, (2012), Salicylic acid is a precursor of aspirin that was originally derived from white willow bark and the meadowsweet plant (Filipendula ulmaria (L.) Maxim.). Quinine and Artemesinin are antimalaria drugs derived from Cinchona pubescens Vahl bark and Artemisia annua L. plant, respectively (Rain tree Nutrition and Covello, 2008). Vincristine is an anticancer drug derived from periwinkle (Cantharnthus rosues Linn. G. Donn.) (Mosihuzzaman, (2012). According to Elhardallou, 2011, Morphine, codeine, and paregoric, derived from the opium poppy (Papaver

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somniferum L.), are used in the treatment of diarrhea and pain. Digitalis is a cardiac glycoside derived from foxglove plant (Digitalis purpurea L.); an herb in use since 1775, (Hollman 1985).

Herbs and herbal products have played a crucial role in health and disease management for many centuries. According to WHO (2003), herbal remedy is one of the first line of treatment for 60% of children with high fever due to malaria in Nigeria, Ghana, Mali, and Zambia. In folklore medicine in Nigeria *Rauwolfia vomitoria* (Afzel) is used for treating hypertension, stroke, insomnia and convulsion (Amole et al, 2009) and *Ocimum gratissimum* L. is used for treating diarrheal diseases (Ilori et al, 1996). The seeds of *Citrus parasidi Macfad*. are effective in treating urinary tract infections that are resistant to the conventional antibiotics (Oyelami et al 2005); dried seeds of *Carica papaya L*. is effective in the treatment of intestinal parasitosis (Okeniyi et al 2007); the analgesic and inflammatory effects of *Garcinia kola Heckel* is known to enhance its use for osteoarthritis treatment (Adegbehingbe et al, 2008); and *Aloe vera Mill*. gel is as effective as benzyl benzoate in the treatment of scabies (Oyelami et al 2009). Similarly, in South Africa, plant extracts with muscle relaxant properties are used by traditional birth attendants (TBAs) to assist in child deliveries (Veale et al 1992).

2.4 Indications for Herbal Use

Studies have explored the specific purposes for using herbs. Several sources suggest that CAM is primarily used for the treatment of chronic conditions (Eisenberg et al, 1998, and Astin 1998). People with these chronic conditions are likely more prone to seek alternatives especially when contemporary medical treatments have not provided a solution. In studies on the prevalence of herbal usage in adults carried out by Johnston, (2000), both chronic and acute conditions were identified as reasons for using herbs. Chronic conditions included anxiety, allergies, depression, enlarged prostate and high cholesterol. Acute conditions identified included burns, congestion, diarrhea, headaches, insomnia, symptoms associated with menopause, rashes, treatment of cold and flu, stomach ailments and weight loss.

Harnack et al, (2001) also identified Health maintenance and prevention of disease as prominent reasons for herbal use. In a study carried out by Aydin, et al, (2008), 37.4% of respondents used

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herbs for prevention, 25.6% for treatment while 37% used it for other reasons. Johnston, (1997) indicated that 75 percent of 2000 respondents in a nationally representative survey reported that they use herbs to ensure good health. In a study carried out by Andre et al, (2015), exploring conditions frequently self treated with herbal remedies, he found out that the remedies are sought to treat respiratory tract infections, (coughing and flu-like symptoms), digestive problems (including heartburn, diarrhoea, and constipation), to ward off evil spirits. Other frequent uses included the use as a general immune booster, enhancer of libido and fertility problems and in the treatment of HIV/ AIDS and some chronic conditions (asthma, epilepsy, hypercholesterolemia, and heart failure).

In a study carried out by Priebe, 2002 in Wisconsin, burns, colic, cold, stomach ache, chicken pox, ear infection, cough, runny nose hives/rashes indigestion headache, prevention, overall wellness measles among others were the indications for herbal use among infants and children. According to Oshikoya, Senbanjo, Soipe and Njokanma, (2009), herbal medicines are among the most home-based interventions for infants with colic. 51% of mothers using home-based intervention were involved in the use of herbal medicines for their infants with colic. Aworinde & Erinoso, (2015) and Shosan et al, (2014), in their study on ethnobotanical survey of plants used for infants, fontanel jaundice and convulsion were identified as diseases for which herbs were used.

2.5 Different Herbs Used for Infants.

Different types of herbal remedies are used for infants and children for different purposes. They could be gotten from a single plant or variety of plants. Some plants used across all ages as documented by Gardiner and Kemper, 2000 are listed in Table 1.1

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Table 2.1: Herbs used across all ages

Herbs	Typical use across all ages
Aloe vera	Minor burn, abrasions, insect bites, acne, poison ivy, sunburn, skin irritations, frostbite, canker sores, peptic ulcers, digestive disorders, laxative
Calendula	Skin irritations, rashes, cold sores, eczema, conjunctivitis
Catnip	Low-grade fever, upper respiratory tract infection, colic, headache, nervousness, sleep disorders, indigestion
Chamomile	Skin irritation, prevention and treatment of cracked nipples, colic, peptic ulcer disease, teething, sleep problems, anxiety
Evening Primrose oil	Asthmatic coughs, whooping cough, gastrointestinal disorders, mastalgia, premenstrual syndrome, atopic eczema, psoriasis, acne, rheumatoid arthritis, multiple sclerosis and autoimmune diseases, diabetic neuropathy, intermittent claudication.
Fennel	Colic, dyspnea, bloating, fullness, flatulence and diarrhea in infants, cough, bronchitis, upper respiratory tract infection, conjunctivitis
Garlic	Ear infection, upper respiratory tract infection, cough, bronchitis, atherosclerosis, high cholesterol, hypertension, gastrointestinal disorders, menstrual disorders, diabetes mellitus
Ginger	Colic, anorexia, indigestion, prevention of vomiting and nausea in motion sickness, morning sickness, postoperative nausea, upper respiratory tract infection, cough, bronchitis
Goldenseal	Conjunctivitis, boils, inflammation of gums, hemorrhoids, fungal infections, diarrhea and other digestive disorders, upper respiratory tract infection, postpartum bleeding
Hops	Nervousness, irritability, insomnia, indigestion
Lemon balm	Oral and genital herpes, insomnia, anxiety, depression
Purple Cone Flower (Echinacea *sp*)	Boils, ulcerations, burns, herpes simplex, prevention and supportive therapy for upper respiratory tract infection, urinary tract infection, yeast infection, and other infections

Adapted from Gardiner and Kemper, 2000

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In a study carried out by Nwaiwu and Oyelade, (2016), the following herbal mixtures were documented to be used for infants

Anti-malaria herbal mixture which is gotten from: *Alstoniaboonei* (stool woo), *Aliumcepa* (white onion), Enanthiachlorantha (African yellow wood), *Curcuma longa* (Tumeric), Citrugcurantifoilia (lime), *Khayaivorensis* (red mahogany), *Nuclealatifolia* (African peach tree), *Ananas cosmos* (pineapple), Citrus paradise (grape), *Axonopus compressus* (tropical carpet grass).

Spasmolytic mixture: prepared from *Aristolochiaalbida* (Duthcma's pipe), *Cryptolepissan guinolenta* (Nibima), Aliumascalonicum (spring onion), *Calkliandra haematocephala* (corpse awakener), and *Eugenia aromatic*.

Neonatal jaundice herbal mixture: prepared from Carica papaya, (pawpaw), Aliumcepa (white onion), Alstoniaboonei (stool wool).

Herbal mixtures for skin diseases: are composed of *Khayaivorensis* (mahogany), Daniellia (African balsam), *Detariummi crocarpum* (sweet detar), and *Echinopslongifolius.*

Anti-diarrhoeal mixture: composed of *Samafistula* (Indian laburnum), *Gongronemalatifolium* (Amaranth globe), Cryptolepissanguinolenta (Jamaican climbing fern), *Aristolochiaailbida* (Dutchman's pipie), Eugenia aromatic (clove), Bidenspilosa (Spanish needle), *Rauvolfia vomitoria* (Jamaican dogwood), Aristolochiaringens (Duthchman's pipe), *Aliumascalonicum* (spring onion), Pteleiopsissuberosa, Pseudocedrelakotschyi (dry cedar), Anthocleistadjalonensis (cabbage tree), *Aistoniaboonei* (stool wool).

2.6 Sources of recommendation on herbal remedy usage

In a study carried out among pregnant women, it was discovered that older family members which included parents and parents in law were the most common (63.9%) source of recommendation for herbal remedy usage (Azriani et al 2008). A qualitative study demonstrated a considerable influence of the older generation like grandmothers, mothers and mothers in law

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to Tswana mothers in South Africa to take traditional herbal medicines, Kgaba (Rolanda and Sally, 2006).

In addition to the sources of recommendation already identified above, Sim et al (2013) in their study among lactating women in Western Australia found out that family, friends and self were the major sources of recommendation for the use of herbal remedies.

2.7 Factors Influencing Use of Herbal Remedies

According to Low Dog (2009), several researches have been carried out in an attempt to unfold the reasons why people now turn to alternative medicine in general and to herbal medicine in particular. He concluded that the desire to have personal control over ones health has been cited as the strongest motive for women to use herbal remedies. Also, he gathered that dissatisfaction with conventional treatment and its disregard for a holistic approach as well as concerns about the side effects of medication is another reason for the use of herbal remedies.

In a study carried out by Austin, (1998), examining the reasons for use of alternative medicine, it was found that majority of the user of the therapy claimed that the therapy is in consonant with their beliefs, values and philosophical orientation towards health and life. Other factors underlying the use of herbal medicine have been identified by Jewkes et al, (1998) as social pressure, dissatisfaction with the behavior of clinic staff, reluctance of clinic staffs to give drugs and lack of privacy within the conventional clinic environment.

According to Glisson et al, (1999), announcements of withdrawal of some prescription drugs from the market due to their dangerous side effects have prompted consumers to seek safer alternatives. Herbs, being marketed as “all natural” products may be interpreted by the populace to mean “all safe” therefore subscribing to their use rather than prescription medication.

In a survey by Johnston, (1997) assessing the prevalence of herbal usage in adults, 47 percent of consumers thought their health care providers were more concerned about making money than providing care. The increased costs of health care, especially expensive prescription medications surely fuel this frustration. Many consumers perceived herbal remedies as less expensive compared to prescription medications, (Johnston, 1997 and Ramsay et al 2000).

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2.8 Sources of Information on the Use of Herbal Remedies

Different sources of Information about herbal remedies have been identified. Oshikoya, Sebanjo, Njokanma and Soipe (2008) in a research on use of CAM for children found out that parents get information about the herbal remedies they use for their children from relatives, friends, neighbours, churches, complementary and alternative therapy practitioners. Other sources of information that they identified include media (television, radio, newspaper) advertisement open market and hospital staff. In a study carried out among pregnant women in Cape Town, mothers, grannies, aunts and elderly women in the community were mentioned as the most common sources of information about herb use (Abrahams, Jewkes and Zodumo, 2002). Meanwhile, Sim et al (2013) reported internet, family and friends as the sources of information on the use of herbal medicine.

2.9 Perceived Safety and Efficacy of Herbal Remedies

According to Erdtsieck (2001), infants under five years of age are more vulnerable to different diseases; and since parents want their wards to survive, grow and mature to adulthood, various measures are taken using both conventional and traditional medicines. According to Spigelbatt et al (1994), parents often use herbal medicine for their children on the basis that it is more ‘‘natural’’ and safer. One third of parents use CAM because they feel that they are safer than conventional medicines! However, studies have shown that not all natural products are safe. Some poisons are also natural (Kayombo, 2013).

A study carried out by Oreagba, Oshikoya and Amarache (2011) among Lagos residents revealed that a high proportion of respondents believed that herbal medicines do not have side effects. Meanwhile some of the respondents had experienced adverse effects which include skin rashes, vomiting, frequent stooling, abdominal pain and dizziness. Also, a study carried out among breastfeeding mothers by Sim et al, 2013 revealed that (43.4%) believed that herbal medicines are generally safer when compared to conventional medicines during breastfeeding. Toxicological potential of natural plant chemicals is roughly the same as that of synthetic chemical. Therefore herbal remedies though natural can cause serious illness from allergy to liver or kidney malfunction to cancer and even death (WHO, 2001).

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Kayombo (2013) pointed out that some illnesses are believed to be caused by witchcraft, evil eye, curse, sorcery, jealousy and also from the cosmic planes - where the gods and ancestors abode and such (inflicted illnesses), cannot be detected or cured with conventional health facilities therefore they resort to use of herbal remedies which they believe to be efficacious.

According to Aworinde and Erinoso, (2015), traditional societal approaches have taught us relevant treatment plan for common and persistent illnesses such as malaria, measles, tuberculosis, diarrhoea etc. Many of these diseases are preventable; however, when new episodes break out, herbal products may serve as potent measures to arrest them. Although, orthodox medical practice does not subscribe to the use of herbal products especially with respect to inadequate standardization and dosage profile, yet, traditional societies – rural and/or semi-urban – have testified to the efficacy of these products (Dawood, 2010).

2.10 Toxicity of Herbs and Herbal Products.

People are of the opinion that herbs and herbal products are non-toxic and have been used by the general public and traditional medicinal practitioners worldwide in the treatment of a wide range of diseases or ailment. The fact that something is natural does not necessarily make it safe or effective. The active ingredients of plant extracts are chemicals that are similar to those in purified medications, and they have the same potential to cause serious adverse effects. While the literature documents severe toxicity resulting from the use of herbs, on many occasions the potential toxicity of herbs and herbal products has not been recognized Jowell, (1999).

The concentration of active ingredients and other chemicals in plants varies by the part of the plant harvested and sold; the maturity of the plant at the time of harvest; the time of year during harvest; geography and soil conditions; soil composition and its contaminants; and year-to-year variations in soil acidity, water, weather conditions, and other growth factors (Woolf, 2003).

The safety of herbal products may be related to the mixtures of active chemicals that they contain; their interactions with other herbs and drugs, contaminants, or adulterants; or their inherent toxicity. Plants have complex mixtures of terpenes, alkaloids, saponins, and other chemicals, increasing the risk of adverse reactions to any one of them or to the additive or

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synergistic effects of chemical interactions. For example, more than 100 chemicals have been identified in tea tree oil (Carson and Riley, 1995).

Herbal medicines are made from different ingredients. Because of the variability in the ingredients, the actual dose of active ingredients being consumed is often variable, unpredictable, or simply unknown. When compared with adults, children may be particularly susceptible to the effects of such dosage variations by virtue of their smaller size and different capacity for detoxifying chemicals (Centre for Disease Control (CDC), 1994).

According to But, (1994), contaminants and adulterants of herbal products can be pharmacologically active and responsible for unexpected toxicity. Herbal plants may be harvested from contaminated soils or cleaned improperly such that they may contain illness-producing microorganisms.

There have been many reports of cutaneous reactions to herbal preparations with most common adverse event being allergic contact dermatitis, Shenefelt, (2011). According to Monk (1986), two patients developed erythroderma after using topical herbal treatment for psoriasis and atopic dermatitis and one other patient developed Stevens- Johnson syndrome after taking “golden health purifying tablets” which contained multiple herbs including red clover, budrock, queen’s delight, poke root, prickly ash, sassafras bark and passiflora.

Also, serious systemic adverse effects have been reported with the use of herbal mixtures for the treatment of dermatologic disorders with most common being hepatotoxic effects. There were reports of patients with acute liver failure leading to death, renal failure and granulocytosis, Mostefa-Kara et al, (1992), and Koo & Arain, (1998). In a studies carried out by Nwaiwu & Oyelade (2016) and Shosan et al, (2014) vomiting was reported as side effect experienced by infants following use of herbal remedies.

In some countries, such as Nigeria, herbs can be obtained from temples, herbal stores, neighbourhoods, or relatives, and from traditional medicine practitioners. Ordinary people recommend the medicines to others without safety considerations. The general public and many practitioners also believe that the herbs are nontoxic. This is of public health concern hence, need for health education on drug safety. Herbs and herbal preparations can cause toxic adverse

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effects, serious allergic reactions, adverse drug interactions, and can interfere with laboratory tests {Moore & Adler (2000), and D'Cry, (1993)}. The elderly, expectant mothers, children, patients with chronic conditions, those with hypertension, depression, high cholesterol or congestive heart failure, should be more cautious in taking herbal medicine.

Two kinds of side effects have been reported for herbal medicines. The first, considered to be intrinsic to herbal drugs themselves, is mainly related to predictable toxicity due to toxic constituents of the herbal ingredients and over dosage, and the second is allergy. Many cases of allergic reactions have been reported for herbal drugs. It is impossible to completely eliminate the possibility of any substance, including prescription drugs, herbal remedies, or cosmetics, producing an allergic response in people exposed to them. Herbal medicines do not present any more of a problem in this respect than any other class of widely used foods or drugs.

Based on published reports, the side effects or toxic reactions associated with herbal medicines in any form are rare. This could be due to the fact that herbal medicines are generally safe, that adverse reactions following their use are underreported, or because the nature of the side effects or minor allergic reactions are such that they are not reported. Perhaps the major problem with regard to the safety of herbal medicines is related to the manufacturing practice, including contamination, substitution, incorrect preparation and dosage, intentional addition of unnatural toxic substances, interactions involving synthetic prescriptions, drugs, and herbal medicines, either intentional or unintentional mislabeling, and the presence of natural toxic contaminants.

Many ordinary foods contain constituents that could be regarded as poisonous. Alpha gliadin produced by gluten in wheat, oats, and rye, the cyanogenic glycosides in many fruit skins and seeds, thiocyanates of the brassica vegetables, and lectins of many pulses including soya and red kidney bean are such examples. Cyanogenetic glycodides present in the kernel of many fruits can undergo gastric hydrolysis, resulting in the release of hydrogen cyanide. Viscotoxins, which are constituents of mistletoe, are both cytoxic and cardiotoxic (Tomassoni & Simone, 2001 and Heri, 2005). Notwithstanding, these foods are generally regarded as safe. Similarly, both water and oxygen can kill in excessive amounts. So quantity is often an important consideration.

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2.11 Susceptibility of Infants

Children are different from adults in their absorption, distribution, metabolism, and excretion of some substances. They have relatively larger livers and, thus, in some respects are more efficient at detoxification. However, they also have developing central nervous and immune systems that may make them more sensitive to the adverse effects of herbs Woolf, (2003). Infants and young children are physiologically more vulnerable to certain adverse effects of herbs than are adults. For example, some herbs such as buckthorn, senna, and aloe are known cathartics, and some herbal teas and juniper oil contain powerful diuretic compounds Saxe, (1987). The effects of the diuretic compounds may cause clinically significant dehydration and electrolyte disturbances quickly in an infant or young child, whereas adults would more easily make up such fluid losses. The duration of use is another consideration, with longer courses of herbal therapy exposing the patient to a higher risk of acute and sub-acute, cumulative, or chronic adverse effects. For some herbs, such as those that contain pyrrolizidine alkaloids, there may be no safe dose or duration of use for children.

There may be subpopulations of children who are more susceptible than other children to the adverse effects of herbs. Individuals with allergies may be at increased risk, because the allergic potential of plants is well known. Infants and young children may be particularly sensitive to their first introduction to chemicals in herbs and dietary supplements. Some plants cause contact dermatitis, whereas others may produce wheezing, rhinitis, conjunctivitis, itchy throat, and other allergic manifestations, Benner and Lee, (1973).

Although the chemicals in herbs may have carcinogenic effects, this concern has not been adequately investigated. Some chemicals found in plants are known carcinogens or tumour promoters in animals (eg, pyrrolizidines [comfrey, coltsfoot, senecio], safrole [sassafras], aristolochic acids [wild ginger], catechin tannins [betel nuts]) Whether such chemicals pose a threat for humans remains unknown; children, by virtue of their longer lives, may be particularly vulnerable to herbs that contain chemicals whose carcinogenic effects may not become manifest until a long latency period has passed Saxe, (1987)

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2.12 Theoretical Framework

Health Belief Model was adopted for this study

The Health Belief Model provides the theoretical framework for this study. The Health Belief Model (HBM) was developed in the early 1950s by social scientists like Hochbaum, Kegels and Rosenstock at the US public health service in order to understand the failure of people to adopt disease prevention strategies or screening test for the early detection of disease (Croyle, 2005). Later in 1970s and 1980s HBM was further developed by Rosenstock and Becker. HBM is a psychological model that attempts to explain and predict health behaviour. This is done by focusing on the attitudes and beliefs of individuals; HBM suggests that a person's belief in personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behaviour or action will predict the likelihood that the person will adopt a given health seeking behaviour (Croyle, 2005).

There are six main tenets which influence people's decisions about whether to take action to prevent, screen for, and control illness. These tenets are: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action and perceived efficacy.

The tenets in this study are:

1. **Perceived susceptibility**

Perceived susceptibility refers one's belief about the likelihood of personal harm from a disease. People will not change their health behavior unless they believe that they are at risk. For example nursing mothers who do not think that their babies are at risk of common illnesses in infants are not likely to use herbal remedies for their children.

2. **Perceived severity**

Perceived severity refers to perception of the seriousness of risks or threats, such as the consequences of contracting a disease. The probability that a person will change his/her health behaviour to avoid consequences depends on how serious he/ she considers the consequence to

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be. Nursing mothers will use herbal remedies for their children when they perceive that the sickness of their children might lead to unpalatable consequence.

3. **Perceived benefit**

It is difficult to convince people to change their behaviour if they perceive that there is no gain in it. Mothers will use herbal remedies for their children if they perceive that using those remedies will prevent wasting of time in the clinic.

4. **Perceived barrier**

One of the major reasons people do not their health behaviours is that they think that doing so is going to be difficult. It might be both physical and social difficulty. Changing one's health behaviour can cost effort, treasure and time. Mothers will not use herbal remedies for their children if they perceive that the remedies are too costly or not safe for their children.

5. **Cues to action**

Cues to action are external events that prompt a desire to make a health change. They can be anything like advertisement on the dangers of herbal remedy usage or death of a child after ingesting herbal remedies. Also mothers will be encouraged to use herbal remedies for their children if they see it work for others that have used it aforetime.

6. **Self-Efficacy**

Self-efficacy looks at a person's belief in his/her ability to make a health related change. Mothers will use herbal remedies for their children if they perceive that they can prepare it and safely administer such for their babies.

2.13. Application of the model to the study

Perceived Susceptibility: some mothers believe that newborn babies are vulnerable to some illness for example abdominal colic pain, skin diseases and fontanel. Therefore, they used herbal remedies for their babies even before the babies start manifesting signs and symptoms of those diseases.

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Perceived severity: some mothers used herbal remedies for their infants because they perceived that what was wrong with their infants was severe, that it could not be treated with orthodox medicine.

Perceived benefits: majority of nursing mothers used herbal remedies for their infants because of the perceived benefit that herbal remedies cure better and faster than orthodox medicine. Some of the mothers used herbal remedies because they believe the remedies do not have side effects like orthodox medicine.

Perceived barriers: some mothers stopped using herbal remedies for their infant because their babies reacted to the remedies while some stopped because health workers discouraged them from using the remedies.

Cue to action: majority of nursing mothers used herbal remedies for their infants because of the recommendation they got from their mothers-in-law while some used herbal remedies because they have seen those remedies work for other infants.

Self-efficacy: in respect to this study, for mothers to use herbal remedies for their infants, they must believe that their infants are susceptible to common illnesses in infants, perceive that the illnesses could be severe. They must perceive that the benefits of using herbal remedies outweigh the constraints and must have enough cues that will make them use herbal remedies for their infants.

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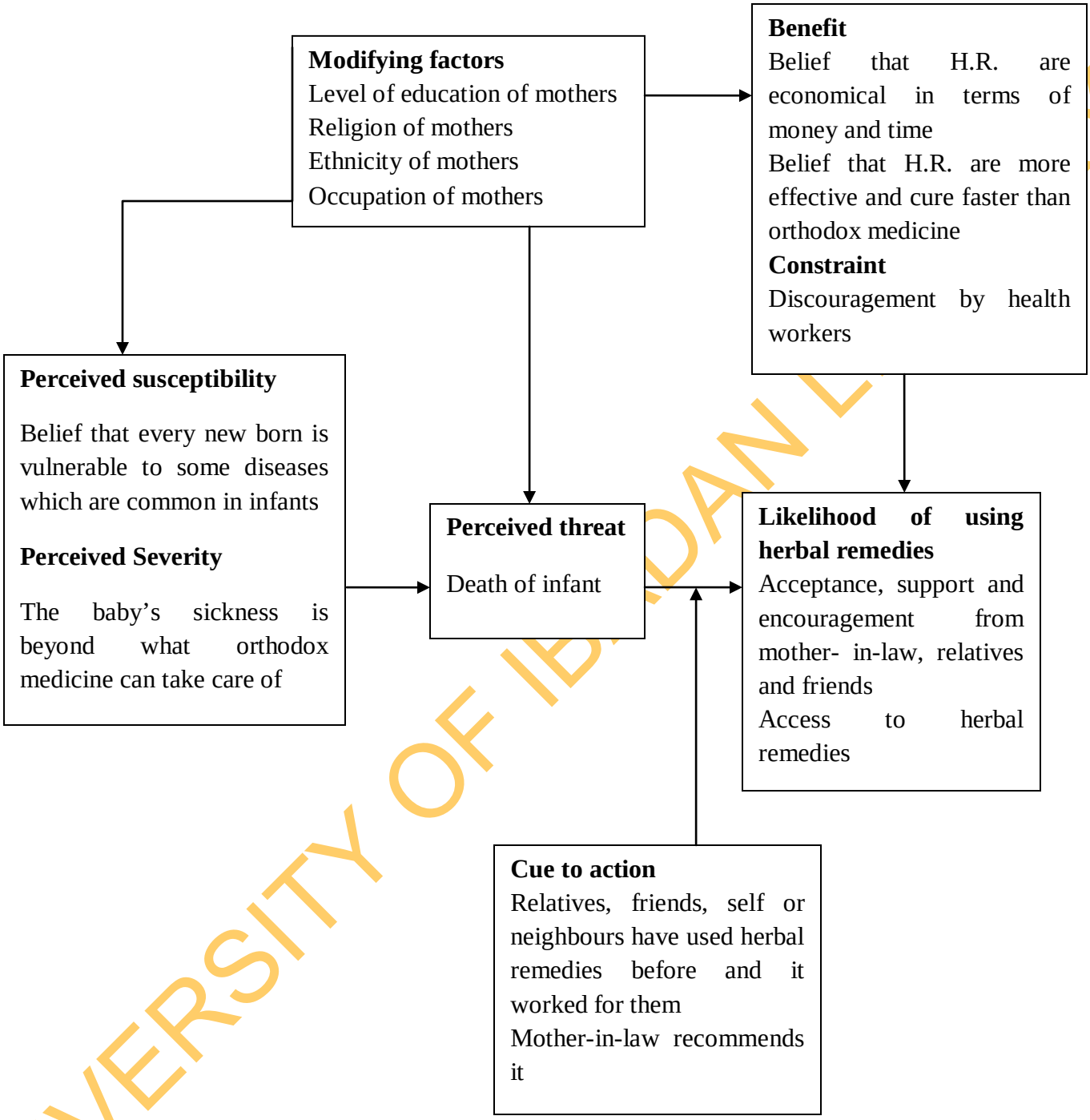

HEALTH BELIEVE MODEL FOR HERBAL REMEDIES USE FOR INFANTS BY NURSING MOTHERS

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CHAPTER THREE

METHODOLOGY

3.1 Study Design

The study was both quantitative and qualitative. The quantitative was a descriptive cross-sectional survey. It investigated the use of herbal remedies for infants by nursing mothers in Ibadan South East. The qualitative aspect of the study was in form of key-informant interview.

3.2 Description of Study Area

The study was carried out in Ibadan South East Local government Area. This LGA is the second smallest urban LG. It is among the five LGA carved out of Ibadan Municipal Government (IMG) in the year 1991. The LGA maintains the headquarters of the defunct IMG which historically situated at the centre of Ibadan land on the top of Mapo hill. It covers a land area of 58.251 square kilometres with year 2010 estimated population of 301,775 using a growth rate of 3.2% from 2006 census.

It is bounded by other local governments. In the West by Ibadan South West LGA, in the East by Ibadan North East LGA, in the North by Ibadan North LGA and in the South by Oluyole LGA. The LGA comprises twelve political wards. It is made up of older residential districts located at the central area of Ibadan city. The residential areas are largely occupied by the indigenous Ibadan Population and the early non-Ibadan Yoruba immigrants. The economic activities in the LGA are: trading, craftsmanship/service industry, public service and transportation business. There are health facilities sixteen PHCs within the LGA. Ibadan South East LGA has a good share of the educational facilities (primary and secondary) available in Ibadan City.

3.3 Study Population

The population for this study included nursing mothers attending Infant Welfare Clinic (IWC) in selected health centres and herb sellers in Bode market in Ibadan South East Local Government.

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3.4 Sample Size Determination

The sample size for this study was estimated using the formula $n=Z^2pq/d^2$

Where,

n=desired sample size,

z=the standard normal deviation usually set at 1.96 which corresponds to the 95% confidence level,

p = prevalence of use of herbal remedies for infants 72% =0.72 {Nwawu and Oyelade, (2016)}.

q= proportion that does not have the characteristic that will be investigated (q=1-p = 1-0.72 =0.28).

d= precision for the study which is set at 5%

$n= (1.96)^2 \times 0.72 \times 0.28/0.05^2 = 309.8$.

10% of the sample size, 31 was added in order to give room for attrition rate. So the total number of respondents is approximately 340.

3.5 Sampling Technique

A multistage sampling method was used which involved the following stages:

Stage 1: In Ibadan South East Local Government Area, there are twelve political wards out of which only one ward does not have PHC centre. Six wards were randomly selected from the twelve political wards in the LGA.

Stage 2: Six PHC centres in the selected wards were involved in the study.

Stage 3: proportionate selection of nursing mothers from the PHC centres.

Stage 4: purposive selection of each proportion from the selected PHC centres to make up for the total sample size (340).

$$\frac{\text{Average number of attendees} \times \text{total sample size}}{\text{Sum of the total number of attendees.}} = \text{the proportion selected in each PHC}$$

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Table 3.1: List of PHCs involved in the study and their sample size

Primary Health Care centres	Average number of attendees	Proportionate sampling
Mapo	20	$\frac{20 \times 340}{355} = 19$
Oranyan	100	$\frac{100 \times 340}{355} = 96$
Agbongbon	70	$\frac{70 \times 340}{355} = 67$
Orita Aperin	50	$\frac{50 \times 340}{355} = 48$
Iyana court	15	$\frac{15 \times 340}{355} = 14$
Molete	100	$\frac{100 \times 340}{355} = 96$
Total	355	340

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3.6. Inclusion Criteria

The study accommodated nursing mothers with children within one year of age who have ever used herbal remedy for their infant and were willing to participate in the study.

3.7. Exclusion Criteria

The study excluded nursing mothers with children within their first year who have never used herbal remedy for their children and those mothers with children within one year of age who have ever used herbal remedies for their children but were not willing to participate in the study.

3.8 Methods and Instruments for Data Collection

The study employed both qualitative and quantitative method of data collection.

3.8.1 Qualitative method

The qualitative method used was Key Informant Interview (KII). An unstructured 12 item Key Informant Interview Guide (Appendix 1) was used to conduct seven sessions of KII. The reason for conducting KII was to further gain insight into the following issues: components, safety and efficacy of the herbal remedies used for infants.

3.8.2 Quantitative method

Semi-structured questionnaire was the instrument used for the collection of the data. It was interviewer administered. The questionnaire (Appendix II) was divided into six sections. Section A contains questions on socio-demographic characteristics of the nursing mothers and their infants. Section B contains questions on practice of herbal remedies usage for infants. Section C consists of questions on general sources of information about herbal remedies. Section D contains questions on the factors influencing use of herbal remedies for infants while section E and F addressed questions on perceived safety and efficacy of the herbal remedies respectively. The questionnaire included both closed ended and open ended questions.

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3.9 Validity of Research Instrument

In order to ensure validity of the study instrument for data collection, several steps were considered. Firstly, relevant literatures were consulted in order to develop the instrument. Secondly, the instrument was reviewed by peers, lecturers, experienced researchers and supervisor, and necessary corrections were made.

3.10 Reliability of Research Instrument

In order to ensure reliability of the instrument, it was translated into Yoruba language and back to English language. Also a pre-test was carried out among thirty four nursing mothers (10 percent of the target population) in Ibadan North West Local Government Area of Ibadan. The questionnaire used in pre-testing was coded and analysed using Statistical Package for Social Sciences (SPSS). According to this approach, the reliability coefficient was determined using Cronbach Alpha formula. A result showing correlation coefficient greater than 0.05 is said to be reliable. The result of the analysis of the data collected during pre-test was 0.712 which showed that the instrument was reliable.

3.11 Procedure for Data Collection

Two trained research assistants helped in the administration of the questionnaire in the selected PHC centres. The research assistants already had experience in the field of data collection. Notwithstanding they were trained on data collection procedures and how to ensure completeness.

3.11.1 Conduct of KIIs

A total of seven KIIs were conducted for seven women selling herbs at Bode market. Consent of the herb sellers was sought and the seven women who gave their consent were interviewed using KII guide. Key informant Interview sessions were recorded on audio tapes.

3.11.2 Semi-structured questionnaire

Quantitative data were collected within four weeks. The researcher together with the two research participants collected data from respondents selected purposively from each PHC

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centre. Early in the morning while the nursing mothers are still awaiting the service of the health care workers was the most suitable time to get the attention of the respondents. Prior to the administration of the questionnaire, respondents were provided with some information relating to the nature of the study objectives, selection process of respondents, time frame for the interview and the issue about confidentiality of responses. Only the nursing mothers who disclosed using H.R. for their infant and gave their consent verbally and by appending their signature on the questionnaire were interviewed using the questionnaire. The researcher made provision for interviewer-administered questionnaire in the local language (Yoruba) (Appendix IV) ensuring that the wordings of the questions contained in the questionnaire was easy to comprehend, and help was given to the respondents where necessary.

3.12 Data Management and Analysis

After administering the interviewer-administered questionnaire, manual editing was carried out to ascertain completeness, consistency and accuracy of information collected. Serial number was assigned to the administered copies of the questionnaire for easy identification, correct data entry, analysis and recall of any instrument with one problem or the other. A coding guide was developed and used for coding the answered questionnaire. Data were entered and managed using SPSS version 21 statistical software. Descriptive statistics such as percentage, mean, frequencies and standard deviation were used to summarise dependent and independent variables. Fishers exact test were used for univariate/bivariate analysis at 0.05 level of significance. The results obtained were represented in forms of tables.

Perception on safety of herbal remedies was measured on an 18-point scale; scores of ≤ 8, >9 were categorized as poor and good perception respectively. Perception on efficacy of herbal remedies were measured on a 8-point scale; scores of ≤ 4, >5 were categorized as poor and good respectively. Thematic analysis was used for qualitative data obtained.

3.13 Ethical Consideration

Ethical approval was obtained from the Oyo State Research Ethical Review Committee, Ministry of Health (see Appendix V) and permission was obtained from Ibadan South East Local Government Medical Officer of Health before going to the PHCs that participated in the study.

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Permission was also obtained from the matrons in charge of the selected PHCs. Informed consent (Appendix III) was obtained from each participant with their signature appended on the form. The trust of the participants was gained by assuring them that there was no means of identification on the forms. The research did not cause any harm to the participants and was conducted at a time that was convenient for them. The information gotten from them was stored properly in a safe and confidential place.

Confidentiality: participants were assured of confidentiality as no identifier was included in the questionnaire. Data collected were stored in a password protected computer and used for research purpose only.

Voluntariness: participation in the study was without coercion. Informed consent form was signed by all willing research participants. The informed consent form contained simple language and was void of any technical terms to ensure full understanding.

Non-maleficence to participants: the participants were not subjected to any form of harm as the research did not require collection of invasive materials. Therefore, safety of the participants was guaranteed. The result of this study will help in addressing the issue of morbidity and mortality among the infants. .

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CHAPTER FOUR

RESULTS

4.1 Qualitative results

The opinions of participants during the key-informant interview are highlighted in this section. Seven women were involved in the KII and each participant gave her opinion about the questions raised during the interview willingly.

4.1.1 Knowledge on practice of herbal remedy usage

All the respondents were of the opinion that herbal remedies are good, nourish the body of infants and it has been in practice from time immemorial. Some of the respondents opined that following the delivery of a child, such a child should be taken to the herb sellers in order to compound herbal remedies for him/her irrespective of his/her health condition while others said that something has to be wrong with a child before herbal remedies could be compounded for him/her. Most of the respondents said that herbal remedies make the bones of a child strong, and such a child will be normal. Also, majority of the respondents added that the use of orthodox medicine does not stop one from using herbal remedies "*No matter how much one uses orthodox medicine, one will still continue to use herbal remedies inherited from our mothers*" (KII 1). All the respondents claimed that herbal remedies are more effective than orthodox medicine. Giving the reason that orthodox medicines only take care of symptoms whereas herbal remedies take care of both symptoms and causative factors and are also fast in action.

The respondents hold different views concerning the age to commence using herbal remedies for infants. Majority of the respondents were of the opinion that use of herbal remedies for an infant should be commenced at birth; some said it should be commenced after eight days of birth; while a few were of the opinion that it could be commenced before or after eight days of birth. *"One may start using herbal remedies for a child starting from a day to eight days and above"* (KII 6).

4.1.2 Characteristics of consulting mothers

Some of the respondents were consulted by mothers both from within and outside the country, some by primiparous and multiparous mothers. Another respondent was of the opinion that it is

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only true mothers who do consult her. Moreover, one of the respondents claimed that it is the learned mothers who patronize them most. Others claimed to be consulted by mothers with either healthy or sick children. *"All categories of nursing mothers patronize herb sellers. The mother that does not use herbs for her child immediately after eight days of delivery will still be forced to use it as the child becomes restless, disturbing the mother"* (KII 1).

4.1.3 Factors influencing use of herbal remedies

Different reasons for using herbal remedies for infants by nursing mothers were given by the respondents. Some of them were of the opinion that mothers use herbal remedies for their infants in order to protect culture. *"There are no specific reasons why mothers use herbal remedies for their infants other than that is how we met it. After eight days of delivery herbal remedies are prepared for drinking, bathing and for sound sleep. If at all you use orthodox medicine, it is herbal remedies they use to bathe babies, there are no orthodox medicine for bathing babies after all"* (KII 1). Some of the respondents claimed that mothers use herbal remedies for their infants in order to prevent illnesses which could make the children to be disturbing them while some were of the opinion that mothers use herbal remedies for their infants because they know that herbal remedies cure better than orthodox medicine. *"Mothers use herbal remedies for their infants not because of financial constraints but because herbal remedies cure better than orthodox medicine. Orthodox medicine can take effect within a short time but the disease can relapse shortly thereafter, unlike the herbal remedies which cure the problem completely without recurrence. For example, there might be re-growth of fibroid following surgical intervention, whereas there will not be recurrence if treated with herbal remedies"* (KII 2). Notwithstanding, all the respondents were of the opinion that mothers do not use herbal remedies for their infants due to financial constraints. *"Rich people do come for herbal remedies. Rich people that do pay substantial amount of money which make us happy"* (KII 7).

4.1.4 Types of herbal remedies used in infants

The respondents were of the opinion that there are herbal remedies for maintenance, prevention and treatment of ailments in infants. They claimed that these herbal remedies bear same name both for prevention and treatment of a particular disease but the components are different. *"Same*

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name is given to herbal remedies for both prevention and treatment but the components of herbal remedies for treatment are stronger than those for prevention" (KII 5).

4.1.5 Names and components of herbal remedies used for infants and diseases indication for the remedies.

The herbal remedies commonly used for infants as mentioned by the respondents include: *Agbo Jewo, Agbo jedijedi, agbo iba, agbo ile tutu, agbo kokoro, agbo oka ori, agbo igbona, agbo idagbe, agbo* jaundice. The indications for using these herbal remedies are either for prevention or treatment of ailments common in infants which include colic pain, skin diseases "oka ori"

Agbo jedijedi: eepo ogbogbo, eepo oganwu, eepo okuku, aidantoro, olora igbo, kafura, kannafuru, iyere, aayu, tankotanko, paran funfun and madunmaro.

Agbo iba: ewe dongoyaro, ewe mangoro, ewe guava, ewe aparun, ewe ata ire, ewe otili, ewe tea, ewe oruwo, efinrin, ewe poporo, egbo egbesi, opon, egbo akoko, yaani, ata ile pupa, eru Alamo, eepo ahun, eepo akoko, eepo erun.

Agbo kokoro: eepo opon, egbo opon, eepo emi yemi, eepo emi gbegi , eepo ponpola, erun, obobo, eepo pandoro, ifon."

Agbo oka: egbo apoka, ayoka, egbo elewe kan, egbo sagere, egbo aaka, egbo osunsun, egbo apata, egbo egbesi, eepo arira, eepo iyeye, eepo ponpola, erun.

Agbo jewo:, alubosa elewe, kannafuru,

"Agbo jewo (inu iwo): egbo oja ikoko, egbo paran, alubosa elewe, ayu, kannafuru, eso abere, paran pupa, paran funfun, epo erin, akogun and kafura."

*Agbo ita/igbona (*measles): *egbo egbesi, lagere, eepo opon, eepo ogbogbo, ifon, ipekan, ponpola, eepo okuku* e.t.c.

Agbo Jaundice: unripe pawpaw inside water e.t.c.

Agbo ile tutu: ogede odo, ifon, e.t.c.

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Table 4.1 Components of herbal remedy for malaria

Local name	Botanical name	Family	Part used
Dongoyaro	*Azadirachta indica*	Meliaceae	Leaf
Mangoro	*Mangifera indica*	Anarcadaceae	Leaf
Gilofa	*Psidium guajava*	Myrtaceae	Leaf
Oparun	*Bambusa vulgaris*	Poaceae	Leaf
Atare	*Aframomum melegueta*	Zingiberaceae	Leaf
Otili	*Cajanus cajan*	Fabaceae	Leaf
Oruwo	*Morinda lucida*	Rubiaceae	Leaf
Ewe tii	*Cymbopogon citratus*	Poaceae	Leaf
Efinrin	*Ocimum gratissimum*	Lamiaceae	Leaf
Poporo	*Sorghum bicolour*	Poaceae	Leaf
Eru Alamo	*Xylopia aethiopica*	Annonaceae	Bark
Egbesi	*Nauclea latifolia*	Rubiaceae	Root
Ahun	*Alstonia boonei*	Apocynceae	Bark
Akoko	*Newbouldia laevis*	Bignoniaceae	Bark, root
Ata ile pupa	*Curcuma longa*	Zingiberaceae	Rhizome
Eru	*Croton lobatus*	Euphorbiaceae	Bark
Baani	*Acacia nilotica*	Fabaceae	Bark

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Table 4.2 Components of herbal remedy for skin diseases

Local name	Botanical name	Family	Part used
Opon	*Lecaniodiscus cupanioides*	Sapindaceae	Bark, root
Emi yemi	*Vitellaria paradoxa*	Sapotaceae	Bark
Emi gbegi	*Pseudocedrela koschyi*	Meliaceae	Bark
Ponpola	*Bombax buonopozense*	Bombacaceae	Bark
Eru	*Croton lobatus*	Euphorbiaceae	Bark, root
Obobo	*Erythrophleum suavollens*	Fabaceae	Bark
Pandoro	*Kigelia Africana*	Bignoniaceae	Bark
Ifon	*Olax subscorpioidea*	Olacaceae	Bark

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Table 4.3 Components of herbal remedy for abdominal colic pain

Local name	Botanical name	Family	Part used
Alubosa elewe	*Allium ascalonicum*	Amaryllidaceae	Leaf
Ayu	*Allium sativum*	Liliaceae	Bulb
Kannafuru	*Syzygium aromaticum*	Myrtaceae	Bark
Abeere	*Picralima nitida*	Apocynaceae	Fruit
Paran pupa	*Cryptolepissan guinolenta*	Apocynaceae	Bark
Paran funfun	*Aristolochia albida*	Aristolochiaceae	Bark
Erin	*Hunteria umbellate*	Apocynaceae	Bark
Akogun	*Aristolochia ringens*	Aristolochiaceae	Bark

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Table 4.4 Components of herbal remedy for haemorrhoids

Local name	Botanical name	Family	Part used
Ogbogbo	*Detarium microcarpum*	Leguminosae	Bark
Oganwo	*Khaya ivorensi*	Meliaceae	Bark
Okuku	*Pteleipsis suberosa*	Combretaceae	Bark
Aidantoro	*Senna fistula*	Leguminosae	Bark
Kannafuru	*Syzygium aromanticum*	Myrtaceae	Bark
Iyere	*Piper guineense*	Piperaceae	Bark
Ayu	*Allium sativum*	Liliaceae	Bulb
Paran funfun	*Aristolochia albida*	Aristolochiaceae	Bark
Madunmaro	*Gongronema latifolium*	Asclepiadaceae	Bark, stem

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Table 4.5 Components of herbal remedy for (‘oka ori’) fontanel

Local name	Botanical name	Family	Part used
Apoka	*Combretum sordidum*	Combretaceae	Root
Ayoka	*Combretum tomentosa*	Combretaceae	Root
Elewe kan	*Salacia pallescens*	Celastraceae	Root
Sagbere	*Strophanthus hispidus*	Apocynaceae	Root
Osunsun	*Carpolobia lutea*	Polygalaceae	Root
Egbesi	*Nauclea latifolia*	Rubiaceae	Root
Orira	*Rauvolvia vomitoria*	Apocynaceae	Bark
Iyeye	*Spondia smombin*	Anarcadaceae	Bark
Ponpola	*Bombax buonopozense*	Bombacaceae	Bark
Eru	*Croton lobatus*	Euphorbiaceae	Bark

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Table 4.6 Components of herbal remedy for measles

Local name	Botanical name	Family	Part used
Ifon	*Olax subscorpioidea*	Olacaceae	Bark
Egbesi	*Nauclea latifolia*	Rubiaceae	Root
Ponpola	*Bombax buonopozense*	Bombacaceae	Bark
Okuku	*Pteleiopsis suberosa*	Combretaceae	Bark

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Table 4.7 Components of herbal remedy for diarrhea

Local name	Botanical name	Family	Part used
Idi	*Axonosus comressus*	Cobretaceae	Stem
Ayin	*Anogeiessus leiocarpus*	Combretaceae	Stem

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4.1.6 Perception about continuous use of herbal remedies

All the respondents were of the opinion that use of herbal remedies for an infant is not continuous. They claimed it will get to a stage when mothers will stop using herbal remedies for their infants. Meanwhile, they had different opinions about things that can make a mother stop using herbal remedies for her child. Majority of the respondents claimed that mothers stop using herbal remedies when the herbal remedies lose their potency. Some were of the opinion that mothers stop using herbal remedies for their infants after spending some time indoors while other stop after seeing the desired effect of such herbal remedies in their children. Nevertheless, one of the respondents claimed that mothers might stop using herbal remedies for their infants because of the side effects experienced by the infants or when the mothers have lost interest in the use of herbal remedies *"One has to stop for a while, and later prepare another one in case of accidental drinking of unclean water which the body may react to. After taking the herbal remedies, everything will become normal. But herbal remedies is effective than orthodox drugs. If the mother uses herbal remedies in excess, it can cause side effect, the body reacts to it. For example over-dosage can lead to stooling or cause another side effect. She will say she does not want to use it again because of what she experienced when last she took it"* (KII 2).

4.1.7 Perception about side effects of herbal remedies

Some of the respondents were of the opinion that herbal remedies do not have side effects inasmuch as some conditions attached to the usage of herbal remedies are observed. Whereas, some of the respondents claimed that herbal remedies do not have side effect regardless of any condition. The conditions meant to be fulfilled as mentioned by the respondents are: proper compounding by the herb sellers, adherence to instruction on usage by mothers (especially dosage) and body reaction to the herbal remedies Moreover, some of the respondents opined that side effects are common to all herbal remedies if those conditions earlier mentioned are not met while others were of the opinion that side effects are peculiar to some herbal remedies. e.g. anticonvulsant herbal remedies (*agbo ile tutu*). The common side effects mentioned by the respondents are: stooling, vomiting and rashes. Meanwhile, some of the respondents said it is normal for a child to stool when taking herbal remedies. Also, the respondents were of the opinion that there are no herbal remedies with severe side effect. *"Herbal remedies do and do*

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not have side effects. If one explains how parent should use it for the child so that it will not be too much for the child to the extent of affecting the child. If the mother uses it as instructed, it cannot have side effect. But if she uses more than what is recommended, it will be too much for the baby. The baby may be vomiting or stooling when the mother uses what she is not supposed to use i.e. overdose. It is just like orthodox drugs. All herbal remedies can have side effects, but if one takes to instruction on usage, it will not have side effects. There are no herbal remedies with severe side effect" (KII 7). But one of the respondents was of the opinion that not adhering to instruction on herbal remedies usage could make the side effect severe. *"Side effect is not common to all the herbal remedies but are restricted to some e.g. agbo ile tutu. If one does not adhere to instruction, the baby will stool, vomit and become weak to the extent that he will be hospitalized" (*KII 2).

4.1.8 Sources of information on herbal usage

Majority of the respondents were of the opinion that mothers could get information about herbal remedies they use for their infants from mothers-in-law, their own mothers, relatives, friends, herb sellers and neighbours.

4.1.9 Sources of recommendation on herbal usage for infants

Different sources of recommendation were mentioned by the respondents which include: herb sellers, grandmothers, friends, mothers-in-law, and *"olomo wewe'* (those that take delivery at home).

4.1.10 Perceptions about safety of herbal remedies for the infants

Majority of the respondents were of the opinion that herbal remedies are safe for infants inasmuch as the mother takes to instruction on usage. Some of them opined that herbal remedies are safe for infants if the mothers patronize experts while others said safety of the herbal remedies depends on the mothers' ability to explain the details of what is wrong with the babies. *"There is no danger in herbal remedies usage. You are the one to describe what is wrong with you and they must compound herbal remedies based on what you described. For example I used to have menstrual pain. This means they will compound herbal remedies that will cure it. Not that something is not wrong with you and you are asking for herbal remedies for such a thing.*

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There is no danger in herbal remedies. if you use herbal remedies you will be okay, one will be strong till old age" (KII 3).

4.1.11 Perception on efficacy of herbal remedies

All the respondents were of the opinion that herbal remedies are efficacious; preventing babies from falling sick, curing sicknesses in babies as well as making them to be hale and hearty. Some of them even said herbal remedies are more efficacious than orthodox medicine. Majority of the respondents opined that efficacy of herbal remedies has led to its wide use home and abroad. However, some of the respondents attached some conditions to the efficacy of the herbal remedies such as: competence of the herb sellers. *"If properly compounded, herbal remedies are efficacious. It depends on how competent an herb seller is. Some herb sellers will not ask for the details of the buyer's complaint before compounding the herbal remedies such herbal remedies might not be effective. But if one asks for the details, it will guide one in picking the right thing"* (KII 6).

In addition, some of the respondents were of the opinion that all herbal remedies are efficacious in children while others opined that there are some herbal remedies which are very effective in infants. Such include herbal remedies for malaria and skin diseases.

4.1.12 Suggestions to mothers on the use of herbal remedies for infants

Different suggestions were given to the nursing mothers by the respondents. All the respondents encouraged mothers not to depend solely on orthodox medicine but should also use herbal remedies for their infants. They encouraged mothers to bring their babies to herb sellers for proper examination. To crown it all, the respondents advised mothers to keep to instructions given by herb sellers on herbal remedy usage for their infants in order to promote effectiveness and prevent side effects.

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4.2. Quantitative analysis

The survey results are arranged and presented as follows: socio-demographic characteristics of respondents; practices of herbal remedy usage for infants, general sources of information on herbal remedy usage, factors influencing use of herbal remedies for infants, perceived safety of herbal remedies in infants and perceived efficacy of herbal remedies in infants.

4.2.1 Socio-Demographic Characteristics of Respondents

The socio-demographic characteristics of the respondents are represented in table 4.8. The mean age of respondents was 27.9± 6.1 with the minimum and maximum ages being 17 and 60 years respectively. More (46.5%) of the respondents fell within the age category of 26-35 years followed by 42.4% respondents who were aged 16-25 years. Almost all (96.8%) of the respondents were married while 2.4% were unmarried. More than half (57.9%) of the respondents were of the Islamic faith while 41.8% were Christians. Almost all (93.8%) the respondents were of the Yoruba ethnic group.

Slightly less than half (49.7%) were traders, 36.2% were artisans and 5.3% were civil servants. More than half (58.5%) of the respondents earned between ₦0 and ₦10000, 20.9% earned between ₦11000 and ₦20000 and 11.2% of the respondents earned between ₦21000 and ₦30000. Slightly above one-third (33.5%) of the infants were between 4 and 5 months in age, 24.1% were between 10 and 12 months and 20.6% of the infants fell between the age bracket of 1- 3 months. More than half (52.1%) of the respondents had male infants.

Majority (71.2%) of the respondents had secondary school education while 21.2% had tertiary education. Most (97.1%) of the respondents reported no history of illness in the family, 1.2% reported neonatal jaundice and very few reported asthma (0.3%) and sickle cell disease (0.3%).

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Table 4.8: Socio-Demographic Characteristics of the Respondents N=340

Characteristics		No	%
Age	16-25	114	42.4
	26-25	158	46.5
	36-45	35	10.3
	46-55	1	0.3
	56-65	2	0.6
Marital status	Unmarried	8	2.4
	Married	329	96.8
	Widowed	3	0.9
Religion	Islam	197	57.9
	Christianity	142	41.8
	Traditional	1	0.3
Ethnicity	Yoruba	319	93.8
	Hausa	7	2.1
	Igbo	6	1.8
	Others*	8	2.4
Occupation	Civil servants	18	5.3
	Trading	169	49.7
	Artisan	123	36.2
	Others**	30	8.8
Average monthly income	0-10000	199	58.5
	110000-20000	71	20.9
	21000-30000	38	11.2
	31000-40000	14	4.1
	41000-50000	14	4.1
	51000 and above	4	1.2
Highest level of education	No formal education	4	1.2
	Primary	22	6.5
	Secondary	242	71.2
	Tertiary	72	21.2
Age of infants	Less than 1 month	5	1.5
	1-3months	70	20.6
	4-6months	114	33.5
	7-9months	69	20.3
	10-12months	82	24.1
Gender of infants	Male	177	52.1
	Female	163	47.9
Family medical history	Neonatal jaundice	4	1.2
	Asthma	3	0.9
	Sickle cell disease	3	0.9
	None	330	97.1

*others include Ebirra 3(0.9%), Egede 2(0.6%), Edo 2(0.6%) and Isoko 1(0.3%); ** Others include apprentice (3.5%), private employees (2.6%), student (2.4%), and full house wife (0.3%)

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4.2.2 Practice of herbal remedy usage

Table 4.9 highlights the practice of herbal remedy usage by the respondents. All (100.0%) the nursing mothers were users of Herbal remedies for their infants. Majority (86.8%) of the respondents first used herbal remedies for their infants when they were less than six months of age while 13.2% first use herbal remedies for their infants between age six months and above. When respondents were asked if they were currently using herbal remedies for their infants, above half (55.0%) of the respondents were not using herbal remedies for their infants while less than half (45.0%) of the respondents were using herbal remedies for their infants.

Among respondents who claimed not to use herbal remedies for their infants as at the time of conduct of this research when asked to give reasons for not using herbal remedies, less than half (43.3%) claimed to have seen the desired, while about one quarter (25.7%) of the respondents indicated that their infants were not sick. Majority of the respondents (80.0%) did not think that herbal remedies could have side effects while 20.0% thought herbal remedies could have side effects. Almost all the respondents (98.2%) declared their infants had never experienced side effects of herbal remedies while 1.8% indicated that their infants had experienced side effect. Majority of the respondents 66.7% who indicated that their infants had experienced side effects reported stooling as the side effect experienced.

Almost all (96.5%) of the respondents reported the use of herbal mixture (polyherbal), 2.4% used single herbs while 1.2% of the respondents used both single herbs and herbal mixture. Among the respondents who used herbal mixture, less than half (43.2%) of them used only one herbal mixture, 34.4% used two different types and less than one percent (0.3%) of them used five and above herbal mixtures for their infants. More than one third (35.2%) of the respondents used two different herbal mixture, one fifth (20.5%) of them used more than two different herbal mixtures, 13.3% of them has used "*agbo jedijedi*", 11.1% of them used *agbo kokoro* and 1.8% of them did not know the name of the herbal remedies they used for their infants. Table 4.10 contains the types and names of herbal remedies used by the respondents.

Table 4.11 summarizes the purpose for using herbal remedies. When asked about whether the herbal remedy was for health maintenance of their infants, one fifth (20.0%) of the respondents

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indicated that they used the herbal remedies for maintenance of health of their infants while majority (79.7%) of the respondents did not use herbal remedies for health maintenance. Likewise, majority (67.9%) of the respondents indicated that they used herbal remedies for the prevention of diseases in infants while 32.1% did not use it for prevention of diseases in infants. Moreover, more than half (54.4%) of the respondents indicated that they used herbal remedies for the treatment of diseases/illnesses of infants while only less than half (45.2%) of the respondents indicated non-use of herbal remedies for the treatment of diseases in infants.

Sources of recommendation for the types of herbal remedies used by the respondents are presented in table 4.12. Mothers-in-law were the sources of recommendation for the majority (65.2%) of the respondents who indicated that they used herbal remedies for the health maintenance of their infants, less than one fifth (17.5%) of the respondents recommended herbal remedy use for themselves. Majority (62.4%) of the respondents who indicated use of herbal remedies for prevention of disease in their infants got recommendation from their mother-in-law, 17.9% were self-directed and 15.3% of the respondents got recommendation from their relatives. Mothers-in-law were the sources of recommendation for the more than half (56.2%) of the respondents who indicated that they used herbal remedies for the treatment diseases in their infants, less than one fifth (18.3%) of the respondents recommended herbal remedy use by themselves.

Table 4.13 presents the diseases respondents used herbal remedies to prevent in their infants. Less than half of the respondents (43.9%) used herbal remedies to prevent two or more disease condition in infants, 23.0% of the respondents used herbal remedies to prevent pile (haemorrhoid) while ten percent (10%) of the respondents used herbal remedies to prevent skin diseases. Only 1.3% used herbal remedies for the prevention of teething problems in infants.

The diseases respondents used herbal remedies to treat in their infants are contained in table 4.14. Less than one third (29.7%) of the respondents used herbal remedies in the treatment of two or more different disease condition in infants, 22.1% of the respondents used herbal remedies for the treatment of "*oka ori*" (fontanel) while only 1.9% of the respondents used herbal remedies for the treatment of teething problem in infants. Less than half (46.8%) of the respondents used herbal remedies for prevention only, 24.7% of the respondents used herbal

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remedies for treatment only while one tenth (10%) of the respondents used herbal remedies for both prevention and treatment of diseases in their infants.

Table 4.16 highlights the perceived outcome of the use of herbal remedies by the respondents. More than half of the respondents indicated that their infants did not fall sick when they used herbal remedies for their infants, 38.5% declared that their infants were totally cured of their illnesses, less than one percent (0.9%) indicated that the health condition of their infants did not get better after using herbal remedies for their infants.

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Table 4.9: Herbal remedy usage by respondents

Use of Herbal remedy		N	%
Whether child had ever taken herbal medicine before	Yes	340	100
	No	0	0
Age of child when mothers first gave him/her herbal medicine	Less than six months	295	86.8
	Six months and above	45	13.2
Whether child using any herbal remedy presently	Yes	153	45.0
	No	187	55.0
Reasons why child is not using any herbal remedy	He/she is not sick	48	25.7
	I have seen the desired effect	81	43.3
	The herbal remedy has lost its potency	14	7.5
	I do not have interest in its use any longer	13	7.0
	The herbal remedy has been exhausted	4	2.1
	I did not see the desired effect	6	1.8
	He/she has passed the stage to use herbal remedies	19	10.2
	Health workers discouraged me	1	0.3
	My child reacted to the herbal remedy	1	0.3
Whether herbal remedy can have side effect	Yes	68	20.0
	No	272	80.0
Whether child has ever experienced any side effect of herbal remedies	Yes	6	1.8
	No	334	98.2
side effects experienced by your child	Stooling	4	66.7
	Rashes	1	16.7
	Cough	1	16.7

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Table 4.10: Types of herbal remedies used

		No	%
Types of herbal remedies ever or currently used	Single herb	8	2.4
	Herbal mixture (polyherbal)	328	96.5
	Both	4	1.2
Number of single herb used	One	12	3.5
	None	328	96.5
Number of herbal mixture used	One	147	43.2
	Two	117	34.4
	Three	60	17.6
	Four	7	2.1
	Five and above	1	0.3
Names of herbal mixtures used	*Agbo jedijedi*	44	13.3
	Agbo inu iwo	21	6.3
	Agbo kokoro	37	11.1
	Agbo oka ori	28	8.4
	Agbo ile tutu	3	0.9
	Agbo iba	3	0.9
	Agbo eyin	2	0.6
	Agbo igbona/ita	1	0.3
	Agbo idagbe	1	0.3
	Agbo jaundice	1	0.3
	Double combination*	117	35.2
	Multiple combination*	68	20.5
	I don't know the name of the herbal remedy	6	1.8

*indicates combination of any of the herbal mixture

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Table 4.11: What herbal remedies was used for

Question on purpose		N	%
Is the herbal remedy ever or currently used for the health maintenance of your child	Yes	69	20.3
	No	271	79.7
Is the herbal remedy ever or currently used for the prevention of diseases/illness in your child	Yes	231	67.9
	No	109	32.1
Is the herbal remedy ever or currently used for the treatment of diseases/illness of your child	Yes	155	45.6
	No	185	54.4

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Table 4.12: Sources of recommendation of herbal remedies (for the health maintenance, prevention and treatment of illnesses infants)

Sources of recommendation	What the herbal remedies were used for		
	Maintenance (N= 69) (%)	Prevention (N= 231) (%)	Treatment (N=155) (%)
Mother-in-law	45 (65.2)	143 (62.4)	86 (56.2)
Friends	4 (5.8)	5 (2.2)	6 (3.9)
Self	12 (17.4)	41 (17.9)	28 (18.3)
Elewe omo (herb sellers)	1 (1.4)	3 (1.3)	4 (2.6)
Relatives	6 (8.7)	35 (15.3)	25 (16.3)
Neighbours	1 (1.4)	2 (0.9)	4 (2.6)

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Table 4.13: Disease prevented by Herbal remedies in infant

Diseases	**N**	**%**
Malaria	5	2.2
Colic pain	19	8.3
Convulsion	5	2.2
Pile	53	23.0
Teething	3	1.3
Skin diseases	23	10.0
"*oka ori*"	21	9.1
Two or more different disease condition	101	43.9

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Table 4.14: Disease treated/cured by Herbal remedies in infant

Diseases	**N**	**%**
Malaria	5	3.2
Colic pain	10	6.2
Convulsion	2	1.3
Measles	8	5.2
Diarrhea	4	2.6
Pile	10	7.1
Teething	3	1.9
Skin diseases	28	18.2
Cough	2	1.3
"*oka ori*" (fontanel)	34	22.1
Two or more different disease condition	47	30.5

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Table 4.15: Purpose of use of herbal remedies for infants

Purpose of use	N	%
Maintenance only	6	1.8
Prevention only	156	46.8
Treatment only	84	24.7
Maintenance and prevention	21	6.2
Maintenance and treatment	18	5.3
Prevention and treatment	34	10.0
Maintenance, prevention and treatment	18	5.3

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Table 4.16: perceived outcome of use of herbal remedies for infants

Outcome of use of herbal remedies	N	%
My child did not fall sick	185	54.4
My child was totally cured of his/her illness	131	38.5
There was a little improvement in the health condition of my child	21	6.2
The health condition of my child did not get better	3	0.9

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4.2.3 General sources of information on the use of herbal remedy

Table 4.17 summarizes general sources of information on the use of herbal remedies by respondents. Nearly one third (33.4%) of the respondents got information on the use of herbal remedies from their mother-in-law, 26.1% got information from their relatives and 11.9% of the respondents got information on the use of herbal remedies from their neighbours. Moreover, 9.9% got information from *elewe omo* (herb sellers) while 2.2% got information from the hospital staff.

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Table 4.17: Multiple responses of respondents on general sources of information on the use of herbal remedies (n=763)

Source of information	N	%
Friends	76	9.9
Mother in law	255	33.4
Relatives	199	26.1
Media	34	4.5
Open market advertisement	31	4.1
Neighbours	91	11.9
Herbal practitioner	60	7.9
Hospital staff	17	2.2

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4.2.4 Factors influencing use of herbal remedies.

Table 4.18 shows result on the factors influencing use of herbal remedies for infants by nursing mothers. Less than one third (29.8%) of the respondents used herbal remedies for their infants because they believe in nature, one quarter (25%) of the respondents used herbal remedies for their infants because of the influence of their friends and/ relatives. Moreover, 14.6% of the respondents indicated accessibility and availability as factors that influenced them to use herbal remedies for their infants, less than one fifth 12.9% of the respondents used herbal remedies because of the their perceived safety and effectiveness. Meanwhile, only 1.6% of the respondents indicated that they used herbal remedies for their infants because of the low standard of service rendered in the hospital.

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Table 4.18: Respondents multiple responses to factors influencing use of herbal remedies N=885

Factors influencing use of herbal remedies for infants	No	%
I used herbal remedies for my child because they are readily available and accessible	129	14.6
I used herbal remedies for my infant because they are cheaper than prescription medication	41	4.6
I used herbal remedies for my infant because they are safe and effective	114	12.9
I used herbal remedies for my child because my friends, relatives influenced me	221	25.0
I used herbal remedies for my infant because attitudes of health workers are not encouraging	21	2.4
I used herbal remedies for my child because I do not have enough money for doctor's consultation	17	1.9
I used herbal remedies for my child because the quality of service rendered in the hospital is below standard	14	1.6
I used herbal remedies for my infants because I believe in nature	264	29.8
I used herbal remedies for my child because the sickness of my baby is beyond what orthodox medicine can cure	42	4.7
I used herbal remedies for my infant because prescription medications have side effects	22	2.5

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4.2.5 Perception of safety of herbal remedies for infants

Table 4.19 contains results on perception of safety of herbal remedies in infants. With regards to perception statement that herbal remedies are safer for infants than orthodox medicine, above one third (37.4%) of the respondents agreed, 30.3% of the respondents were undecided while 26.8% of disagreed. More than half (55.3%) of the respondents agreed with the statement that herbal remedies could not be toxic to the body of infants, less than one quarter (23.5%) of the respondents disagreed with the statement while 10.9% of the respondents were undecided about the statement.

Slightly above half (50.6%) of the respondents agreed with the statement that herbal remedies do not interact with any other drug, 27.1% of the respondents disagreed while 17.1% of the respondents were undecided on the statement. On the perception statement "herbal remedies do not have side effects", more than half (59.4%) of the respondents agreed, about one quarter (25.6%) of the respondents disagreed and less than one tenth (8.2%) of the respondents strongly agreed that herbal remedies do not have side effects.

Majority (67.6%) of the respondents agreed that herbal remedies cannot worsen a child's health condition. 12.9% of the respondents disagreed while 10.9% strongly agreed with the statement. More than half of the respondents agreed with the perception statement that herbal remedies cannot be overdosed for children, 32.9% of the respondents disagreed while 6.5 % strongly agreed with the statement.

Less than half (40%) of the respondents disagreed with the statement "herbal remedies can interfere with laboratory test, 27.6% agreed while 25.9% were undecided about the statement. On the perception statement "herbal remedies can cause illnesses in children, less than half (43.8%) disagreed, 27.6% agreed and 14.4% of the respondents were undecided. Less than half (42.6%) of the respondents disagreed with the perception statement "herbal remedies can cause death", 31.8% strongly disagreed and 13.2% of the respondents were undecided.

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Table 4.19: Respondents' perception on safety of herbal remedies for infants

Perception Statements	Strongly disagree (%)	Disagree (%)	Undecided (%)	Agree (%)	Strongly agree (%)
Herbal remedies are safer for infants than orthodox medicine	6 (1.8)	91 (26.8)	103 (30.3)	127 (37.4)	13 (3.8)
herbal remedies could not be toxic to the body of infants	8 (2.4)	80 (23.5)	37 (10.9)	188 (55.3)	27 (7.9)
herbal remedies do not interact with any other drug	10 (2.9)	92 (27.1)	58 (17.1)	172 (50.6)	8 (2.4)
Herbal remedies do not have side effects	10 (2.9)	87 (25.6)	13 (3.8)	202 (59.4)	28 (8.2)
Herbal remedies cannot worsen child's health condition	5 (1.5)	44 (12.9)	24 (7.1)	230 (67.6)	37 (10.9)
Herbal remedies cannot be overdosed for children	16 (4.7)	112 (32.9)	7 (2.1)	183 (53.8)	22 (6.5)
Herbal remedies can interfere with laboratory test	14 (4.1)	136 (40)	88 (25.9)	94 (27.6)	8 (2.4)
Herbal remedies can cause illnesses e.g. allergy, cancer among children	37(10.9)	149 (43.8)	49 (14.4)	94 (27.6)	11(3.2)
Herbal remedies can cause death in children	108 (31.8)	145 (42.6)	45 (13.2)	33 (9.7)	9 (2.6)

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4.2.5.1 Categorisation of perception relating to safety of herbal remedies by selected socio-demographic characteristics

The categorization of perception relating to safety of herbal remedies by occupation is presented in table 4.20. Almost all civil servants had poor perception of safety while 97.6% of respondents who were traders also had poor perception. Similarly, 95.9% of respondents who were artisans had poor perception. The Fishers exact test showed that there was no significant relationship between perception relating to safety of Herbal remedies and occupation of respondents.

Table 4.21 shows the categorization of perception relating to safety of herbal remedies by highest level of education. Almost all respondents who had primary education (95.5%), secondary education (97.5%) and tertiary education (95.8%) had poor perception of safety of herbal remedies. The Fishers exact test showed that there was no significant relationship between perception relating to safety of herbal remedies and highest level of education of respondents.

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Table 4.20: Categorisation of perception of safety by occupation

Occupation	Perception Categories		Total	**X^2	df	P-Value
	Poor (%)	Good (%)				
Civil servant	17 (94.4)	1 (5.6)	18 (5.3)	3.873	6	0.761*
Trader	165 (97.6)	4 (2.4)	169 (49.7)			
Artisan	118 (95.9)	5 (4.1)	123 (36.2)			
Private employee	9 (100.0)	0 (0.0)	9 (2.6)			
Apprentice	12 (100.0)	0 (0.0)	12 (3.5)			
Student	8 (100.0)	0 (0.0)	8 (2.4)			
Housewife	1 (100.0)	0 (0.0)	1 (0.3)			
Total	330 (97.1)	10 (2.9)	340 (100)			

***Not significant at P<0.05**

****Fishers exact was used**

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Table 4.21: categorization of perception on safety by highest level of education

Highest level of education	Perception Categories		Total	**X^2	Df	P-Value
	Poor (%)	Good (%)				
No formal education	4 (100.0)	0 (0.0)	4 (1.2)	2.087	3	0.481
Primary	21 (95.5)	1 (4.5)	22 (6.5)			
Secondary	236 (97.5)	6 (2.5)	242 (71.2)			
Tertiary	69 (95.8)	3 (4.2)	72 (21.2)			
Total	330 (97.1)	10 (2.9)	340 (100.0)			

***Not significant at P<0.05**

****Fishers exact was used**

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4.2.6 Perception of respondents towards efficacy of herbal remedies in infants

Table 4.22 shows the result of perception of efficacy of herbal remedies in infants. On the perception statement "Herbal remedies are more effective in children than orthodox medicine" 36.8% of the respondents agreed, 32.9% were undecided and 20.3% disagreed with the statement. Majority (62.6%) of the respondents agreed with the perception statement "herbal remedies are fast acting", 13.2% disagreed and 13.5% were undecided about the statement.

Majority (61.2%) of the respondents disagreed with the statement "herbal remedies are the only cure for inflicted diseases in children", less than one fifth (16.8%) of the respondents agreed while 13.5% of the respondents were undecided. Less than half (47.6%) of the respondents disagreed with the perception statement "herbal remedies can be used to treat many medical condition in children at a time", 27.4% disagreed and 11.8% strongly disagreed

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Table 4.22: Respondents' perception towards efficacy of herbal remedies in infants

Perception statements	Strongly disagree (%)	Disagree (%)	Undecided (%)	Agree (%)	Strongly agree (%)
Herbal remedies are more effective in children than orthodox medicine	12 (3.5)	69 (20.3)	112 (32.9)	125 (36.8)	22 (6.5)
Herbal remedies are fast acting	12 (3.5)	45 (13.2)	45 (13.2)	213 (62.6)	25 (7.4)
Herbal remedies are the only cure for inflicted diseases in children	24 (7.1)	208 (61.2)	46 (13.5)	57 (16.8)	5 (1.5)
Herbal remedies can be used to treat many medical conditions in children at a time	40 (11.8)	162 (47.6)	26 (7.6)	93 (27.4)	19 (5.6)

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4.2.6.1 Categorisation of perception relating to efficacy of herbal remedies by selected socio-demographic characteristics

Table 4.23 summarizes categorization of perception relating to efficacy by religion. Almost all (94.4%) respondents who were of Islamic faith had poor perception. Similarly, 95.1% of Christian respondents had poor perception of safety of herbal remedies. The fishers exact test showed that there was no significant relationship between perception relating efficacy of herbal remedies and religion of respondents.

The categorization of perception relating to efficacy by ethnicity is presented in table 4.24. Almost all (96.2%) Yoruba respondents had poor perception while majority (71.4%) of Hausa respondents had poor perception. The fishers exact test showed that there was no significant relationship between perception relating efficacy of herbal remedies and ethnicity of respondents.

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Table 4.23: Categorization on efficacy by religion

Religion	Perception Categories		Total
	Poor (%)	Good (%)	
Islam	190 (94.4)	7 (3.6)	197 (57.9)
Christianity	135 (95.1)	7 (4.9)	142 (41.8)
Traditional	1 (100.0)	0 (0.0)	1 (0.3)
Total	330 (97.1)	10 (2.9)	340 (100.0)

****X^2 = 1.934, p = 0.603, df = 2**

***Not significant at P<0.05**

****Fishers exact was used**

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Table 4.24: categorization of perception on efficacy by ethnicity

Ethnicity	Perception Categories		Total
	Poor (%)	Good (%)	
Yoruba	307 (96.2)	12 (3.8)	319 (93.8)
Hausa	5 (71.4)	2 (28.6)	7 (2.1)
Igbo	6 (100.0)	0 (0.0)	6 (1.8)
Egede	2 (100.0)	0 (0.0)	2 (0.6)
Isoko	1 (100.0)	0 (0.0)	1 (0.3)
Edo	2 (100.0)	0 (0.0)	2 (0.6)
Ebirra	3 (100.0)	0 (0.0)	3 (0.9)
Total	326 (95.9)	14 (4.1)	340 (100.0)

X^2 =10.431, df = 6, p = 0.179

***Not significant at p<0.05**

****Fishers exact was used**

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CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Socio-demographic characteristic of respondents

The results of this study showed as expected that, almost all (96.8%) of the respondents were married because the study was carried out among nursing mothers. Almost all (93.8%) of the respondents were from Yoruba ethnic group. This could be related to the fact that the study area is located in the south –western region of the country where the predominant ethnic group are Yoruba's. This is similar to a study carried out by Olowookere and Olajide (2013). Majority (71.2%) of the respondents had secondary education. This finding is in line with Nwaiwu and Oyelade's (2016) study that reported secondary education as the predominant level of education attained by nursing mothers. The findings of the study also showed 1.5% of the children of the nursing mothers were less than one month. This supports the findings from the study by Odincho (2015) that reported that newborns are not spared in the usage of herbal remedies.

5.2 Practice of herbal remedy usage

Majority (86.8%) of the respondents gave their infants herbal remedies when they were less than six months. Although this finding corroborates a study by Sanusi, Leshi and Agada (2016) that reported introduction of herbal drinks to infants in the first six months, it is contrary to the recommendations of WHO and UNICEF (WHO, 2002) that every infant should be exclusively breastfed for the first six months of life. This could be as a result of pressure from significant others. From the KII conducted among herb sellers, they viewed use of herbal remedies for infants as a norm, because it has been in practice from time immemorial. So, once a baby is delivered parents expected to prepare herbal remedies for him/her. This they do before or after eight day of life.

Findings from the study showed that 20% of the respondents the used of herbal remedies for health maintenance, 67.9% used of herbal remedies for prevention of diseases and 54.4% indicated that they used herbal remedies for the treatment of diseases in their infants. This corroborates a study carried out by Johnston (2000) and Harnack et al (2001), which identified health maintenance and prevention of disease as prominent reasons for herbal use. The finding is

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also in line with findings from another study by Aydin et al, (2008) which indicated prevention and treatment of diseases as purposes for which herbal remedies were used.

Forty four (13.3%) of the respondents used *Agbo jedijedi* and thirty seven (11.1%) used agbo kokoro for their infants. This is in line with the study carried out by Nwaiwu and Oyelade (2016). The findings from the qualitative aspect of this study showed that "*agbo jedi*", "*agbo iba*"," *agbo oka-ori*", "*agbo*" jaundice, *agbo* measles, "*agbo idagbe*", "*agbo inu iwo*", *and* "*agbo kokoro ara*". Interestingly, the study revealed that 1.8% of the respondents did not know the name of the herbal remedy used for their infants probably because the herbal remedies are supplied by the mother-in-law, so the mothers do not bother to make enquiry about what is being used for their infants. This corroborates findings by Arcury et al (2007) in which some respondents indicated that they did not know the name of herbal remedy used. The diseases that elicited use of herbal remedies as revealed in this study include: malaria, skin diseases/rashes, convulsion, colic pain, diarrhea, measles, pile/haemorrhoid, cough, "*oka ori*" (fontanel) and jaundice. This confirms findings from other studies (Aworinde and Erinoso 2015, Nwaiwu and Oyelade 2016 and Shosan et al, 2014).

For the three categories of purposes for using herbal remedies that is maintenance, prevention and treatment of illnesses, mother-in-law ranked highest as the source of recommendation indicated by the respondents (65.2%,62.4% and 56.2% respectively), followed by self (17.4%,17.9% and 18.3% respectively) and relatives (8.7%, 15.3% and 16.3% respectively. This finding corroborates findings from a study carried out by Sim et al (2013), which reported that family, friends and self were the most common source of recommendation for herbal remedy usage. Meanwhile this finding is contrary to the findings in the qualitative aspect of the study where the majority of the respondents claimed that herb sellers are the ones who recommend herbal remedy use most.

Majority (80%) of the respondents did not believe that herbal remedies could have side effects. This confirms findings from other studies (Oreagba, et al, 2011). This could be related to the low level of education of the mothers. Findings from the study showed that very few (1.8%) of the respondent indicated that their infants had experienced side effects of herbal remedies. This finding is similar to that of Nwaiwu and Oyelade (2016), where only 4% of the respondents

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reported side effects after the use of herbal remedies in infants. This could be as a result of the belief that herbal remedies do not have side effect. So if there is any side effect it might not be associated to the herbal remedy use. In the KII conducted, majority of the herb sellers believed that side effects are only peculiar to "*agbo ile tutu*" while some believed that side effects only surface when mothers do not adhere to instructions on the usage of such remedies (dosage). The side effects experienced by the infants according to this study included stooling, rashes and cough. This is in contrast to the study carried out by Nwaiwu and Oyelade (2016) and Shosan et al (2014) which reported vomiting as the side effect experienced by the infants after intake of herbal remedies. In the qualitative aspect of the study, majority of the herb sellers perceived stooling and vomiting following taking herbal remedies a normal phenomenon. In fact, to them it is a good sign that the child has excreted the causative agent of a particular health condition.

In this study, the respondents perceived some outcome of the use of herbal remedies. This included child not falling sick (54.4%), total cure of infant's illness (38.5%), little improvement of child's health (6.2%) and (0.9%) reported the health condition of child did not get better. This is in line with the study carried out by Oshikoya, Senbanjo, Soipe and Njokanma (2009). These findings imply that herbal remedies are effective for the purposes which they were used for.

5.3 Sources of information on herbal remedy usage

Findings from this study revealed that over one third (33.4%) of respondents got information about herbal remedy usage from mother-in-law. Slightly above one quarter (26.1%) of the respondents indicated they got information about herbal remedy usage from their relatives. Only 2.2% got information from the hospital staff. This finding is similar to findings from a study conducted by Oshikoya, Senbanjo, Soipe and Njokanma (2009) who found out that only 1% of respondents got to know about use of herbal remedies from hospital staff. Almost all the herb sellers in the qualitative study also mentioned mother-in-law, relatives and friends as sources of information on the use of herbal remedies.

5.4 Perceived factors influencing use of herbal remedies

In this study, less than one third (29.8%) of the respondents used herbal remedies for their infants because they believe in nature. One quarter (25%) of the respondents used herbal remedies for

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their infants because of the influence of their friends and/ relatives. This corroborated findings from Oshikoya, Senbanjo, Soipe and Njokanma (2009) which reported influence of relatives, friends and neighbours as factor that made the respondents use CAM for their children.

Moreover, 14.6% of the respondents indicated accessibility and availability as factors that influenced them to use herbal remedies for their infants and just few (2.4%) indicated they used herbal remedies for their infants because of the attitudes of health workers which were discouraging. This supports findings from the study by Olowookere and Olajide (2013). Meanwhile, only 4.6% of the respondents indicated that they used herbal remedies for their infants because they are cheaper than prescription medication. This is in line with the findings from the qualitative aspect of the study where the herb sellers reported that financial constraint is not the reason for herbal remedy usage rather, effectiveness of the herbal remedies.

5.5 Perception on safety of herbal remedies for infants

In this study, slightly above half (50.6%) of the respondents agreed with the statement that herbal remedies do not interact with any other drug. This supports findings from a study by Fakeye, Adisa and Musa (2009) which also reported that 47.0% of the respondents did not believe that there could be interaction between herbal remedies and allopathic drugs when used concomitantly. The qualitative aspect of this study also showed that herb sellers are of the opinion that herbal remedies do not react with conventional medicine. They believe that one does not disturb the other. Findings from this study also revealed that more than half (59.4%) of the respondents agreed with the perception statement “herbal remedies do not have side effects” this is supported by findings from Oreagba, Oshikoya and Amarache, (2011). Also, this study revealed that above one third (37.4%) of the respondents agreed that herbal remedies are safer for infants than orthodox medicine. The finding is in line with the study carried out by Sim et al (2013).

5.6 Perceived efficacy of herbal remedies

This study showed that above one third 36.8% of the respondents agreed that herbal remedies are more effective in children than orthodox medicine. This finding corroborates a study by Fakeye, Adisa and Musa (2009) which also reported that a high percentage of women used herbal

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remedies because they believe that herbal remedies are more effective than conventional medicine.

In the qualitative aspect of this study, all the herb sellers perceived that herbal remedies are more effective than orthodox medicine citing example of total cure of fibroid with the use of herbal remedies but possibility of recurrence with surgical intervention.

The findings from the study revealed that majority (61.2%) of the respondents disagreed that herbal remedies are the only cure for inflicted diseases in children. This is in contrast to a study by Aydin et al (2008) where (4.1%) of the respondents thought that herbal medicine could be used for some untreatable diseases.

5.7 Implications of the findings for Health Promotion and Education

The findings of this study have health promotion and education implications as they reveal the need for combination of health education strategies which could be used in addressing poor perception of nursing mothers and herb sellers about safety and efficacy of herbal remedies for infants. Health education is a combination of learning experiences designed to facilitate voluntary adaptation of behaviour conducive to health (Green, Kreuter, Deeds and Patridge, 1980). It is concerned with reinforcing and changing knowledge, attitudes and behavior of people through effective communication of factual information in order to achieve optimum wellbeing. According to Green, (1980), health promotion is defined as any combination of health education and related organizational, political and economic interventions designed to facilitate behavioural and environmental changes that improve health. Therefore, health education principles, strategies and methods could be employed to address negative findings identified in this study in the following ways:

The findings from this study affirm that infants are not spared in the usage of herbal remedies. The study revealed that herbal remedies are effective in infants as majority of the users got the desired outcome of use. But there is an apparent poor perception of safety of herbal remedies for infants by nursing mothers and herb sellers. This makes both the nursing mothers and the herb sellers to gloss over some things that could have negative consequences on the health of infants. This situation therefore suggests a need for training strategy to address issues associated with the

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use of herbal remedies especially in infants. This will afford the herb sellers access to current information on the adverse effects of herbs. Meanwhile before conducting the training, there is need for needs assessment in order to ensure the appropriateness of the training. The training objective should focus on the safety of herbal remedies. Also health care workers (especially midwives) should be trained on the safety of herbal remedies so as to conduct step down training for prospective mother's right from the time of pregnancy during antenatal visit. This will help them to have adequate information on the safety of herbal remedies even before the arrival of their babies and they will be able to take necessary precautions.

Also, health promotion interventions such as public awareness of safety of herbal remedies especially in infants and young children will be effective in correcting the wrong notions of the masses about their perception of safety of the herbal remedies. Settings like churches, mosques, workplace and markets, where a very large number of people (who are sources of information and recommendation on herbal remedy usage) could be reached should be used. Channels of communication like radio (in form of jingles), newspapers, television, posters and handbills could as well be used. Furthermore, there should be advocacy for women empowerment. This will help women in taking positive decision in the care of their children.

Moreover, the government through the Federal Ministry of Health should involve religious bodies in issues that are related to health. There is need for religious leaders to be properly educated on the safety of herbal remedies especially among infants. This will help in disseminating accurate information on safety of herbal remedy usage to their followers and could therefore be a very helpful means of minimizing potential adverse effects of herbal remedies.

Lastly, this study revealed that herbal remedies have proved to be effective for the purposes for which they were used. Therefore, more researches should be carried out on the efficacy of the herbs in infants in order to have scientific backing. This will help in further integration of herbal medicine into modern medicine.

5.8 Conclusion

Findings from this study revealed that the use of herbal remedies is common in infants. The study also revealed that the herbal remedies were used for the purposes of prevention and

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treatment of illnesses/diseases and maintenance of health in infants. The diseases herbal remedies were used to prevent/treat in infants as revealed by this study included malaria, diarrhoea, haemorrhoid, spasmodic colic pain, measles, jaundice, convulsion, skin diseases and teething problem. Also the herbal remedies were perceived to have beneficial effects of disease prevention and curative. Moreover, the study showed the influence of significant others (mother-in-law, relative and friends) on the decision of nursing mothers to use herbal remedies for their infants. Furthermore, the study showed that the nursing mothers have poor perception about safety and efficacy of herbal remedies.

5.9 Limitation

This study is limited because non users of herbal remedies were not included so cannot be generalized to cover all nursing mothers in Ibadan South East LGA. Also, the study only captured the reported information from the herb sellers who might not be divulging all the required information and their responses could not be independently verified.

5.10 Recommendation

Based on the findings from this study, the following recommendations are offered:

1. There is need for public enlightenment on safety and efficacy of herbal remedies. This could be done in different settings like religious places, workplace and markets. Media would also be helpful in the dissemination of information on safety and efficacy of herbal remedies.
2. Health care providers should be adequately equipped with latest information on safety and efficacy of herbal remedies so as to be able to advise mothers appropriately on the use of herbal remedies for their infants.
3. Herb sellers should be health educated on safety of herbal remedies. Findings from studies on safety of herbal remedies should be relayed to them. This will guide them in compounding safe herbs for the infants.
4. There should be further studies on the components of the herbal preparations used for infants in order to evaluate effects of their pharmacological compounds in infant.

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5. Herbal medicine should further be integrated into modern medicine since there is perceived efficacy of the herbal remedies.

5.11 Suggestion for further Research

Studies on Use of herbal remedies for infants by nursing mothers (both users and non-users) should be carried out in the whole of Oyo State so that findings could be generalized and effective solutions proffered. Also, ethno-botanical survey of the plants identified in this study should be carried out in order to ensure their safety.

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APPENDIX I

KEY INFORMANT INTERVIEW GUIDE

My name is Adeosun Florence O. a Masters student of Public Health from the department of Health Promotion and Education (Population and Reproductive Health Track), University of Ibadan. I am presently carrying out a research on USE OF HERBAL REMEDIES FOR INFANTS BY NURSING MOTHERS IN IBADAN SOUTH EAST LOCAL GOVERNMENT AREA OF OYO STATE.

The information gathered from the study can provide evidence that is useful in addressing the issue of infant mortality in Ibadan South East Local Government of Oyo State. You are invited to participate in this research which involves providing answers to the questions below. Your views will not be used against you in any way. Your identity, responses and opinions will be kept confidential. Information provided will be used for research purposes only. Also research is risk free and participation is entirely voluntary. You are encouraged to feel free and give honest responses. Thanks for accepting to contribute to this study.

Kindly show by using any of the two boxes, that your participation in this study is voluntary.

I will participate and sign	I will participate but not sign

SOCIODEMOGRAPHIC DATA

1. Age as at last birthday
2. Occupation
3. Ethnicity
4. Religion
5. Level of education
6. income

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QUESTIONS

1. What do you know about herbal usage for infants? Probe for age at which mothers commence using herbs for their infants.
2. What category of mothers usually consult you?
3. Why do mothers use herbal remedies for their infants?
4. What type of herbal remedies do mothers use for their infants? Probe for maintenance, prevention and treatment.
5. What are the herbal remedies commonly used for infants? Probe for the indications for using such remedies and their components.
6. What is your view about using herbal remedies continuously? /what are those things that can make a mother stop using herbal remedies for her child?
7. What can you say about side effects of herbal remedies given to the infants? Probe for herbal remedies with moderate, severe and without side effects.
8. How do you think nursing mothers get information about herbal remedies they use for their children?
9. Who usually recommend herbal remedies for the nursing mothers?
10. What are your perceptions about safety of herbal remedies for the infants?
11. What can you say about efficacy of herbal remedies for the infants? Probe for the herbal remedies that are mostly efficacious.
12. What suggestions can you give to mothers on the use of herbal remedies?

Thank you for your time.

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APPENDIX II

QUESTIONNAIRE

USE OF HERBAL REMEDIES FOR INFANTS BY NURSING MOTHERS IN IBADAN SOUTH EAST LOCAL GOVERNMENT AREA

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENT

1. AGE (as at last birthday)_____
2. OCCUPATION (1) Civil servant (2) trading (3) artisan (4) others pls specify_____
3. RELIGION (1) Islam (2) Christianity (3) traditional
4. ETHNICITY (1) Yoruba (2) Hausa (3) Igbo (4) others pls specify
5. MARITAL STATUS (1) single (2) married (3) widowed
6. HIGHEST LEVEL OF EDUCATION (1) No formal education (2) primary (3) secondary (4) tertiary
7. GENDER OF YOUR BABY: (1) male (2) female
8. AGE OF YOUR BABY (IN MONTHS) _____
9. FAMILY MEDICAL HISTORY (1) asthma (2) sickle cell disease (3) neonatal jaundice (4) convulsion (5) others pls specify (6) none
10. AVERAGE MONTHLY INCOME FROM ALL SOURCES _____Naira

SECTION B. PRACTICE OF HERBAL REMEDIES USAGE

I will ask you some questions about your child named _____

11. Has your child _____ ever taken herbal medicine before? (1) Yes (2) No
12. How old was your child _____ when you first gave him/her herbal medicine? _____
13. Is your child _____ using any herbal remedy presently? (1) Yes (2) No

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14. Common herbs ever or currently used for infants and their purposes/indications. Kindly fill the table appropriately

	14(a) Types of herbal remedies ever or currently used for your child		(b).is the herbal remedies ever or currently used for the health maintenance of your child?	(c).Source of recommendation of HR for health maintenance 1. Mother-in-law 2. Friends 3. Self 4. Elewe omo 5. Relatives Others_____	(d)i. is the herbal remedy ever or currently used for the prevention of diseases/illnesses of your child? 1. Yes 2. no (d) ii. if your answer is yes, which of the following disease was it used to prevent?	(e).Source of recommendation of HR for prevention of diseases 1. Mother-in-law 2. Friends 3. Self 4. Elewe omo 5. Relatives Others _____	(f)i.is the herbal remedy ever or currently used for the cure of diseases/illnesses in your child? 1. yes 2. no (f)ii. if your answer is yes, which of the following disease was it used to treat?	(g).Source of recommendation of HR for treatment of diseases 1. Mother-in-law 2. Friends 3. Self 4. Elewe omo 5. Relatives Others _____	(h). what was the outcome of use of the HR for your child?
	Single herb	Herbal mixture	1. yes 2. no		(1)Burns(2) diarrhea (3) constipation (4) jaundice (5) malaria (6) cough (7) runny nose/catarrh, (8) measles (9) boil (10) teething (11) rashes (12) sleep disorder (13) heartburn (14) cold, (15) vomiting (16) colic (17) chicken pox (18) pile (19) convulsion (20)others		(1)Burns(2) diarrhea (3) constipation (4) jaundice (5) malaria (6) cough (7) runny nose/catarrh, (8) measles (9) boil (10) teething (11) rashes (12) sleep disorder (13) heartburn (14) cold, (15) vomiting (16) colic (17) chicken pox (18) pile (19) convulsion (20)others		1. My child did not fall sick 2. My child was totally cured of his/her illness/disease 3.There was a little improvement in the health condition of my child 4. The health condition of my child did not get better
i.									
ii.									
iii.									
iv.									
v.									
vi.									
vii.									
viii.									
ix.									
x.									

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15. If your answer to question 13 is no give reasons

(a) _____

(b) _____

(c) _____

16. Do you think herbal remedies can have side effects? (1) Yes (2) No

17. Has your child ever experienced any side effect of herbal remedies used? (1) Yes (2) No

18. If your answer to question 18 is yes, what was/were the side effect(s) experienced by your child?

(a)_____

(b) _____

(c)_____

SECTION C. General Sources of information about herbal remedies

Generally, how did you get information about the herbal remedies? Pls. tick as appropriate

	I got the information from----------	Yes	No
19	Friends		
20	Mother-in-law		
21	Relatives		
22	Media		
23	Open market advertisement		
24	Neighbours		
25	Herbal practitioner (elewe omo)		
26	Hospital staff		

SECTION D. FACTORS INFLUENCING USE OF HERBAL REMEDIES FOR INFANTS: please tick as appropriate

	I used herbal remedies for my baby because……..	Yes	No
27	They are readily available and accessible		
28	They are cheaper than prescription medications		
29	They are safe and effective than prescription medications		
30	My friends, relatives influenced me		
31	Attitudes of Health care workers in the hospitals are not encouraging		
32	I do not have enough money for doctor's consultation in the hospital		
33	The quality of service rendered in the hospitals is below standard		
34	I believe in nature		

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35	The sickness of my baby is beyond what orthodox product can cure		
36	Prescription medications have side effects		

SECTION E. PERCEIVED SAFETY OF HERBAL REMEDIES. Please tick (√) one per row

	Statement on perceived safety of herbal remedies.	Strongly disagree	Disagree	undecided	agree	Strongly agree
37	Herbal remedies are safer for infants than orthodox medicines					
38	Herbal remedies could not be toxic to the body of infants					
39	Herbal remedies do not interact with any other drug					
40	Herbal remedies do not have side effects					
41	Taking herbal remedies cannot worsen child's health condition					
42	Herbal remedies cannot be overdosed for children					
43	Herbal remedies can interfere with laboratory test					
44	Herbal remedies can cause illness e.g. allergy, cancer among children					
45	Herbal remedies can cause death					

SECTION F. PERCEIVED EFFICACY OF HERBAL REMEDIES. Please tick (√) one per row

	Statements on perceived efficacy of herbal remedies	Strongly disagree	Disagree	undecided	agree	Strongly agree
46	Herbal remedies are more effective in children than orthodox medicine					
47	Herbal remedies are fast acting					
48	Herbal remedies are the only cure for inflicted diseases in children					
49	Herbal remedies can be used to treat many medical conditions in children at a time					

Thank you for your time.

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APPENDIX III

INFORMED CONSENT FORM

Part 1

Dear respondent,

My name is Adeosun Florence O. a Masters student of Public Health from the department of Health Promotion and Education (Population and Reproductive Health Track), University of Ibadan. I am presently carrying out a research on Use of Herbal Remedies for Infants by Nursing Mothers in Ibadan South East Local Government area of Oyo state.

It is expected that the outcome of this study may provide evidence that is useful in addressing the issue of morbidity and mortality among infants. You are invited to participate in this research which involves providing answers to the questions below. Information provided will be kept confidential and used for research purposes only. Also research is risk free and participation is entirely voluntary.

Thanks for your anticipated cooperation.

Part II

I have read the information above concerning the study and I understand what will be required of me if I take part in the study. I agree to take part in the study

……..

Respondent's signature/thumb print

Date……

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IWE IBEERE

AWON IBEERE LORI LILO EGBOOGI FUN AWON OMODE LATI OWO AWON IYA OLOMO NI IJOBA IBILE GUSU ILAOORUN IBADAN (IBADAN SOUTH EAST LOCAL GOVERNMENT).

FÓÒMÙ FUN ÈRÒ

Apa kinni

Oruko mi ni Adeosun Florence Olufunmilayo. Mo je akeko ti o fe gba oye imo ijinle keji ni ile iwe giga fasiti Ibadan. Mo n se iwadi nipa LILO EWE ATI EGBOOGI FUN AWON OMODE LATI OWO AWON IYA TI O WA NI IJOBA IBILE GUSU ILA OORUN (SOUTH EAST LGA) TI IPINLE OYO.

A n reti pe abajade iwadi yii yoo pese eri ti o wulo ti a le lo lati mu adinkun de ba aisan ati iku laarin awon omode. Mo n pe yin lati kopa ninu iwadi yii nipa pipese idahun si awon ibeere ti o tele abala yii. Eti keta ko nigbon awon alaye ti e ba fun wa ati wipe iwadi nikan ni a o lo awon alaye naa fun.

Apa keji.

Mo ti ka awon alaye ti a se soke nipa iwadi bee si ni ohun ti a n beere lowo mi ti mo ba fe kopa ninu iwadi naa ye mi. Mo faramo lati kopa ninu iwadi naa.

Fifi owo si iwe /ika tite oludahun

Deeti ----------

ABALA A: ADAMO OLUDAHUN

1. OJO ORI YIN (ni ibamu pelu ayeye ojo ibi ti ẹ se gbeyin) _____
2. ISẸ (1) osise ijoba (2) onisowo (3) onise owo (4) omiran (e jowo daruko won) _____
3. ẸSIN (1) Isilamu (2) Igbagbo (3) Ibile
4. ẸYA (1) Yoruba (2) Hausa (3) Igbo (4) omiran (e jowo daruko won) _____
5. IPO ILOKO (1) mo n dagbe (2) mo wa lodẹdẹ oko (3) opo
6. IBI TI Ẹ KAWE DE (1) n ko lo si ile iwe rara (2) ile eko alakobere (3) ile eko girama (4) ile eko giga
7. IMO AKO TABI ABO OMO YIN: (1) okunrin (2) obinrin
8. OJO ORI OMO (NI OSU) _____
9. AISAN TO WA NINU ẸBI (1) iko semisemi (2) arun foni ku fola dide (3) ofeefe oju ati ara (4) giri (5) omiran e jowo daruko won_____ (6) kosi

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10. OWO TI Ẹ N RI LOSU (lati orisun gbogbo) _____ (naira)

ABALA B. LILO EGBOOGI FUN OMODE

Mo fẹ bi yin ni awon ibeere kan nipa omo yin _____

11. N jẹ omo yin _____ ti lo egboogi/agbo ri? (1) Bẹẹni (2) Bẹẹko

12. Kinni ojo ori omo naa nigba ti ẹ koko lo egboogi fun un? _____

13. Se omo yin n lo egboogi lowolowo? (1) Bẹẹni (2) Bẹẹko

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	(a). Orisirisi Egboogi ti e ti lo tabi ti e n lo lowo fun omo yin		(b). Orisi egboogi fun ki ara omode le ji pepe	(d). Eni ti o so pe ki n lo egboogi imarajipepe fun omode: 1. Iya oko mi 2. Awon ore mi 3. Emi funrami 4. Elewe omo 5. Awon ebi mi Awon miran _____	(e)i. N je egboogi ti e ti lo tabi ti fun omo yin wa fun didena aisan to maa n se awon omode? i. beeni ii. beeko (e)ii. Ti idahun yin ba je beeni ewo ninu awon aisan wonyi ni agbo naa n dena?	(ẹ). Eni ti o so pe ki n lo egboogi ti o n dena aisan ti o maa n se omode : 1. Iya oko mi 2. Awon ore mi 3. Emi funrami 4. Elewe omo 5. Awon ebi mi Awon miran _____	(f)i. N je egboogi ti e ti lo tabi ti fun omo yin wa fun awotan aisan to maa n se awon omode? i. beeni ii. beeko (e)ii. Ti idahun yin ba je beeni ewo ninu awon aisan wonyi ni agbo naa n wosan?	(g). Eni ti o so pe ki n lo egboogi fun iwosan aisan ti o nse omode: 1. Iya oko mi 2. Awon ore mi 3. Emi funrami 4. Elewe omo 5. Awon ebi mi Awon miran _____	(gb). Kinni abajade lilo egboogi fun omo yin?
	i. Orisi kan	ii.Agbo			(1)ina (2) igbe gbuuru (3) airigbeya (4) ofeefe oju ati ara (5) iba (6) iko (7) ofinkin, (8) igbona/ita (9) oowo (10) eyin (11) eela (12) airoorun sun (13) isuke (14) otutu (15) ebibi (16) inu iwo (17) igbona (18) jedijedi (19) giri (20) awon omiran _____		(1)ina (2) igbe gbuuru (3) airigbeya (4) ofeefe oju ati ara (5) iba (6) iko (7) ofinkin, (8) igbona/ita (9) oowo (10) eyin (11) eela (12) airoorun sun (13) isuke (14) otutu (15) ebibi (16) inu iwo (17) igbona (18) jedijedi (19) giri (20) awon omiran _____		1.omo mi ko saisan 2. awotan aisan ti o n se omo mi 3.iyato die de ba ilera omo mi 4. ilera omo mi ko yato
i									
ii									
iii									
iv									
v									
vi									

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15. Ti idahun yin si ibeere ketala ba je bẹẹko, kinni idi?

(a) _____

(b) _____

(d) _____

16. N je e lero pe awon egboogi le ni ipa buruku ninu ara omode/se owo odi lara omo? (1) Bẹẹni (2) Bẹẹko

17. N je omo yin ni iriri ipa buruku egboogi ri? (1) Bẹẹni (2) Bẹẹko

18. Ti idahun yin si ibeere ketalogun ba je bẹẹni, kinni irufe iriri bee?

(a)_____

(b) _____

(d) _____

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ABALA D. Orisun imo nipa egboogi

Ni gbogbogbo, bawo ni ẹ se gbo nipa egboogi? Ẹ jowo ẹ dahun bi o ba se yẹ

	Mo gbo nipa egboogi nipase----------	Bẹẹni	Bẹẹko
19	Awon ore		
20	Iya oko mi		
21	Awon ebi		
22	Lori afefe		
23	Ipolowo itagbangba ninu oja		
24	Aladugbo		
25	Elewe omo		
26	Awon eleto ilera		

ABALA E Awon ohun to n se okunfa lilo egboogi fun awon omode: E jowo ẹ dahun bi o ba se yẹ

	Mo n lo egboogi fun omo mi nitori ……..	Bẹẹni	Bẹẹko
27	Won wa larowoto		
28	Won ko won to oogun oyinbo		
29	Won wa lailewu ju oogun oyinbo lo		
30	Ipa awon ore/ebi		
31	Ihuwasi awon eleto ilera ko wu ni lori		
32	N ko ni owo ti mo fi le ri dokita ni ile iwosan		
33	Itoju ni ile iwosan ko kun oju osuwon		
34	Mo nigbagbo ninu isẹda		
35	Aisan to n se omo mi ko n se ohun ti oogun oyinbo le wo		
36	Awon oogun oyinbo le ni ipa buruku ninu ara		

ABALA Ẹ. Erongba nipa ailewu egboogi: E jowo ẹ dahun nipa fifi ami (√) si iwaju ibeere kookan.

	Gbolohun lori erongba nipa ailewu egboogi	N ko faramo rara	N ko faramo	N ko le so	Mo faramo	Mo faramo gan an
37	Egboogi wa lailewu fun awon omode ju oogun oyinbo lo					
38	Egboogi ko le fa majele si ara omode					
39	Egboogi ko le ni ibasepo pelu oogun miran					
40	Egboogi ko ni ipa buruku ninu ara					

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41	Lilo egboogi ko le mu ki ilera omo buru sii					
42	Eniyan ko le lo egboogi ni aloju fun omode					
43	Egboogi ko ni ipa lori awon ayewo ara					
44	Egboogi le fa aisan bii, ara yiyun, aisan jejere ninu omode					
45	Egboogi le fa iku					

ABALA F. ERONGBA NIPA IPA EGBOOGI: E jowo ẹ dahun nipa fifi ami (√) si iwaju ibeere kookan

	Gbolohun lori ipa egboogi	N ko faramo rara	N ko faramo	N ko le so	Mo fara mo	Mo faramo gan an
46	Egboogi munadoko ju oogun oyinbo lo					
47	Egboogi maa n tete sise					
48	Egboogi nikan ni o le se awotan aisan ti won ba fi se eniyan					
49	A le lo egboogi kan soso lati fi toju orisirisi aisan.					

Ẹ see fun akoko ti ẹ fi silẹ.

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