PREVALENCE OF ALTERNATIVE MEDICINE USE AMONG CHILDREN AGED 1 MONTH TO 16 YEARS SEEKING CARE AT OLA DURING CHILDREN'S HOSPITAL (ODCH) FREETOWN, SIERRA LEONE.

Principal Investigator:

Dr Samuel Amara Kafoe

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Department of Peadiatrics and Child Health

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DECLARATION

I declare that this dissertation is my work and has not been published or presented for a degree in any other institution

Signature:  **Date:** 9/7/2022

Dr. Amara Kafoe

SUPERVISORS' APPROVAL

This dissertation proposal has been presented with our full approval as supervisors:

Professor Ezekiel Wafula, MBChB, MMed, MPH

Professor of Paediatrics, Department of Paediatrics and Child Health, Faculty of Health Sciences, University of Nairobi.

Signature:  **Date:12th July 2022**

Dr. Beatrice Mutai, (MBChB, MMed)

Lecturer, Department of Paediatrics and Child Health, Faculty of Health Sciences, University of Nairobi

Signature:  **Date:** 12th July 2022

COLLABORATING INSTITUTIONS

1. The University of Sierra Leone
2. Ola During Children Hospital

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LIST OF ABBREVIATION

AM - Alternative medicine

NCCIH National Centre for Complementary and Integrative Health

ODCH – Ola During Children Hospital

PCMH – Princess Christian Maternity Hospital

SSA Sub-Saharan Africa

UoN - University of Nairobi

WHO - World Health Organization

OPERATIONAL DEFINITIONS

1. **Alternative medicine:** This refers to a set of medical practices that are outside conventional medical practices.
2. **Conventional medicines:** These are medicinal drugs or products used within the formal systems for the treatment or prevention of diseases or to restore, correct, or modify physiological function.
3. **Herbal medicines:** These include herbs, herbal materials, herbal preparations, and finished herbal products as active ingredients, parts of plants, other plant materials, or combinations thereof. In some countries, herbal medicines may contain, by tradition, natural organic or inorganic active ingredients that are not of plant origin (e.g. animal and mineral materials).
4. **Indigenous traditional medicine: C**omprises medical aspects of traditional knowledge that developed over generations within the folk beliefs of various societies before the era of modern medicine.
5. **Traditional medicine:** Traditional medicine has a long history. It is complete knowledge, skill, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment of physical and mental

ABSTRACT

Background: Alternative medicine (AM) refers to a set of medical practices that are outside conventional medical practices. They include herbs, spiritual healing, traditional manipulation, bone setting.

The reasons for using alternative medicines over conventional medicines are varied depending on setting and include dissatisfaction with conventional medicines, previous positive experiences, and family traditions. Studies in Turkey, Germany, Saudi Arabia, and Africa have reported a great increase in the use of AM before seeking conventional medical care. There is however limited data on the prevalence of use, formulation types, and clinical outcomes of children who use AM before presenting to hospitals in Sierra Leone.

Broad objective: To determine the magnitude and types of alternative medicine use among children aged 1 month-16 year seeking services at ODCH Freetown Sierra Leone.

Study design and site: This was a cross-sectional study design that recruited participants aged 1 month-16 year seen at Ola During Children Hospital.

Participants and Methods: The target population included children aged 1 month – 16 years seen at the children's ward and the outpatient department at ODCH. The study adopted a consecutive sampling technique where 253 participants were recruited. A structured questionnaire was administered to all caregivers and guardians of children aged between 1 month – 16 years. Chi-square test and logistic regression analysis was used to describe associations.

Results: The median age of caregivers was 27(1QR 22,34) years, and 90% were female. Sixty – six percent were Muslim, 64.4% were married and 61.7% were residing outside the western area. The prevalence of AM use among children in the past year was 77.5%. The majority (76%) had used herbs, 16.8% resorted to spiritual healing, 4.6% had used traditional manipulation and 2.6% had used bone settings. The types of herbs commonly used were roots (65.8%) leaves, stems and flowers (24.7%), barks (28.1%), tubers (7.7%), fruits and seeds (5.1%), and rhizomes (3.6%) Forty-eight percent of the herbs were administered orally, 25.5% topically, 23% through smoking. On multivariable analysis residing outside western area, (aOR=1.815, 95%CI:1.121-2.871), duration of stay in current location 1 to 5 years, (aOR =5.76, 95%CI: 3.561-7.561) and 11 to 15 years, (aOR=4.512, 95%CI: 1.154-6.432) and birth order, (aOR=2.105, 95%CI: 1.015-4.366) were independently associated with AM use.

Conclusion and recommendation: The findings have shown that AM use is high among children in Freetown and, residing outside western area, longer duration of stay in current location and birth order are independently associated with higher AM use. There is a need for analytic studies looking at the composition, side effects, and morbidity associated with AM use.The ministry of Health (Sierra Leone) to evaluate if there is a role of AM alongside conventional medical therapy.

CHAPTER ONE
INTRODUCTION

1.1.Background

According to National Center for Complementary and Integrative Health (NCCIH), alternative medicine (AM) refers to therapeutic approaches that are utilized to treat diseases but they do not have biological plausibility and they are untested scientifically to show their efficacy in disease management (1). The commonly applied alternative medicines include herbs or supplements, lifestyle therapies such as diet, exercise and environments, chiropractic, acupuncture, massage, and body work, yoga, homeopathy, biofield therapies such as therapeutic touch, healing touch among others (2). Caregivers are more likely to adopt alternative medicine mainly because they are easily accessible and cheap compared to conventional medicine.

The uptake of alternative medicine has been on the rise globally. The World Health Organization (WHO) Africa region and South East Asia report the existence of national regulations on AM use in many (>80%) countries in the region (3). In America, 43% of the states have laws and regulations on AM use while in the Eastern Mediterranean, 57% of the countries have developed these laws (4). In the United States, around 12% of children less than 18 years and 38% of adults reported use of some form of alternative medicine annually (5).In Africa, the use of alternative medicine is on the increase, most commonly amongst children with chronic illnesses such as epilepsy, asthma, and sickle cell anemia (12). In a study conducted in Nigeria, it was found that alternative medicine was used in 89% of all patients with sickle cell anemia with herbal products most commonly used at 63%. Relatives, friends, and neighbors influenced the adoption of alternative medicine in 85% of cases (6).

The use of alternative medicine in Sub-Saharan Africa has increased significantly in recent years with more than 60% of the population across different countries using alternative care to treat disease (7). Biological-based therapies such as herbal therapy are the most common alternative medicines used in Sub-Saharan Africa, followed by faith-based healing methods such as prayers and spirituality. Mind-body therapies such as massage, traditional bone setting, relaxation, meditation, and yoga have also been highly embraced (8).

The continued sensitization and mobilization by the World Health Organization (WHO), increase in lifestyle diseases and the awareness of the limitations of conventional medicine have led to the emergence of holistic preventive health, and integration of medical approaches (15). The use of AMs is rapidly growing in popularity since the last decade, with its utilization rates increasing globally and amongst all age groups (11). There is however limited data on the prevalence of use, formulation types, and clinical outcomes of children who use alternative medicines before presenting in hospital. In Sierra Leone, the prevalence of using a traditional treatment for malaria (fever) and diarrhea was estimated between 22-31% (9). However, since this assessment was only limited to malaria and fever, the prevalence of AM in Sierra Leone may differ if a wider array of health-related issues is included. Similarly, knowledge of the characteristics and formulation of AM still inadequate.

CHAPTER TWO

2.1. Alternative medicine use globally

Alternative medicine has been used to varying degrees in different parts of the world since ancient times. However, it is essential to understand the different types that have been largely utilized across different parts of the world. Alternative medicine practices mainly focus on stimulating the body's ability to heal through energy alignment, herbal supplementation as well as other balancing techniques (3). According to Alamosa et al., the techniques used in alternative medicine have been less invasive than the traditional medical practices which show that they do not rely on either surgery or conventional medications (10). The frequency of utilization of alternative medicine is increasing worldwide with documented use in Africa and the global population with proportions between 20 to 80%. Herbal medicine has been the most commonly used in most African and Asian settings.

Middle-income countries have reported a higher uptake of alternative medicine (11). Oyebode et al. conducted a survey study investigating the use of alternative medicine in middle-income countries revealed that alternative medicine use was highest in India with 12% of the people reporting alternative medicine as their primary source of care during the previous three years while 19% reported high use in the previous 12 months (12). However, in contrast to these findings, less than 3% of people in China, Mexico, Ghana, and South Africa reported continued use of alternative medicine. The associated factors to the utilization of alternative medicine included low income, less education, and residing in rural areas (10).

2.1.1. Herbal medication

Herbal products, botanical products, and phytomedicines are items manufactured from botanicals, or plants, that are used to treat ailments or preserve health. Herbal products have been used in the treatment of various diseases. An herbal supplement is a plant-based substance intended only for internal consumption. Unlike conventional medications, herbal supplements do not need to be standardized to ensure batch-to-batch consistency. On a supplement label, the term "standardized" may be used by some manufacturers, although it does not always signify the same thing from one manufacturer to the next. Roots constitute the most common parts used in herbal medicine. There are different parts and types of roots that are targeted. The most preferred include fleshy and woody roots which can either be boiled or chewed raw. Garlic and onions are common bulbs that have

been effectively utilized for their medicinal value. Rhizomes such as ginger and Tumeric have been largely utilized in the treatment of respiratory issues (15). Tubers have also been most preferred with sweet potatoes despite being utilized as food, they also have medicinal value. Yams such as *Dioscorea dumetorum (ona-(Igbo))* have been largely utilized for diabetes while *Gloriosa superba* has been used to treat cancer. The leaves, stems, and flowers of many plants are also medicinal. Fruits and seeds have also been found to contain crucial oils which are key in controlling disease spread. The sale of herbs has been a major source of income for many individuals who effectively understand the level of care and maximum efficacy (17).

Mode of action of some herbal supplement

Herbal Supplement	**Action**
Echinacea	Often used to strengthen the body's immune system, echinacea is also considered a prevention against colds and flu.
Feverfew	The pain-relieving properties of feverfew have been used for migraine headaches, as well as for menstrual cramps.
Garlic	Garlic is generally used for cardiovascular conditions, including high cholesterol and triglyceride levels associated with the risk of atherosclerosis.
Ginseng	Used as a general tonic to increase overall body tone, ginseng is considered helpful in elevating energy levels and improving stress resistance.
Goldenseal	This herb, native to America, is popular for its healing properties and antiseptic, or germ-stopping, qualities. Often used for colds and flu, it is also popular for soothing the nose lining when it is inflamed or sore.
Green tea	This herb is used to combat fatigue, prevent arteriosclerosis and certain cancers, lower cholesterol, and aid in weight loss.
Hawthorn	Hawthorn is popularly used for several heart-related conditions and is supportive in the treatment of angina, atherosclerosis, heart failure, and high blood pressure.

Herbal medicine is an essential part of alternative medicine, especially in the African setting. It is the oldest and still widely used system of medicine globally. It is used in all societies as well as all cultures. The World Health Organization defines herbal medicine as products that contain plants or parts of pants that are used for medicinal purposes. There are different parts of plants that are used for herbal medicines which are commonly known by traditional healers in African settings (3). Herbal medicine is organized in two major groups which include organized and unorganized drugs. Organized drugs are obtained from a cellular structure such as bark roots and leaves. Unorganized drugs on the other hand include acellular portions of plants such as exudates, oil, or gels. Thus, when compared to modern medicine, herbal medicine is largely preferable because of its availability and cheaper cost. Individuals within the African communities are exposed to these herbal medicines and are often advised to try them before seeking hospital-based care (13). Even though there is some form of consultation that occurs when using curative herbs, there is fairly good knowledge of these drugs particularly in rural areas where they are in plenty. However, there is a lack of consistency among traditional healers on the correct procedures utilized to achieve an optimum positive outcome (14). World Health Organization estimates that more than 80% of the African population is highly reliant on herbal medicine (15). In West Africa especially in rural areas, the use of herbal medicine has continued to form a key part of primary care owing to high positive outcomes on different health conditions. Most of these herbal medications can cure more than one condition making them preferred among many individuals (16).

2.1.1. Plant parts used in herbal medicine in Africa

In a study conducted in Australia by Shewamene et al., among immigrants in Australia, it was identified that the use of alternative medicine was high and continued to be effectively used among African women's resettlements in Australia. The findings from the study also revealed that 73% of women use alternative medicine majorly for reproductive health purposes while 77% asserted using alternative medicine for maternal wellbeing. The identified associated factors included lower education level, older age above 35 years, and low income among immigrants (18).

Mwaka et al. In a s systematic and meta-analysis study that included 12 published articles revealed that around 75% of the articles included in the analysis were from Sub-Saharan Africa. The findings revealed that the median prevalence of alternative medicine use was 60% while the disclosure percentage was 32%. The reasons that were given for use of alternative medicine

included psychological wellbeing, treatment of higher levels of toxicity, treatment of cancer as well as easing pain (19).

2.1.2. Utilization of herbal medicine

Herbal medicine is the most widely used alternative formulation globally. World Health Organization reports that approximately 80% of the population in developing countries have reported the use of herbal medicine at some point in time for different health problems. The majority of these cases are in South Asia and Africa. Countries especially in Asia have an improved system in the management of alternative medicine use. Countries such as China have elaborate alternative medicine which has been utilized over many years (20).

In a cross-sectional study conducted in Cambodia, 27% of the patients reported at least one consultation with alternative medicine use with 89% reporting use of herbal medicines, 36% of which were obtained from drug or folk stores while 29% were from herbalists. Among the herbal users, 55% reported that the herbs were helpful. Herbal medicines are broadly used among chronic disease patients in Cambodia (21). Similarly, in another study conducted in Southwest Nigeria, it was found that many men, (89%) used herbal medicine compared to78% of women with affordability cited as the major reason for uptake of herbal medicine. The results further showed that 90% of the patients knew that herbal medicine used was uncertified although this did not hinder their uptake (22).

According to a study conducted in Kenya, investigating the use of herbal medicine, it was found that 89.4% of mothers who participated in the study reported using herbal medicine in children under the age of five years. The study further revealed that 26% used herbal medicine to treat gastrointestinal diseases, 19% used it to treat respiratory disorders, 16% treated skin diseases and trauma while11% used herbal medicine to treat malaria. In the study, the common herbs used were Erythrina Abyssinia (35.1%) and Amaranthus hybridus (32.9%). There were also other reports of complementary use of herbal medicines with the conventional medication which was reported among 50% of herbal medicine users (23).

Another study conducted in Kenya examining the use of plant-based antimalarials showed that the preparation used included trees, herbs, roots, and shrubs while 5% of patients utilized infusion (24). Nguta et al in a study conducted in Msambweni, Kenya on antimalarial herbal remedies found that there were more than 24 species of herbs that were being used to treat malaria. The commonly

used herbs included Labiatae, Rutaceae, and Liliaceae families had 11% of the plant species reported and represented the species that are most commonly used (25).

2.2. Immediate consequence/ outcomes related to prior use of alternative medicine

The uptake of alternative medicine has been associated with varied outcomes for different conditions. The efficacy of alternative medicine has not been scientifically proven although users have reported increasing positive outcomes. According to Erlewyn-Lajeunesse, there are concerns regarding the variable effects of unregulated herbal products including life-threatening conditions such as hepatotoxicity, echinacea, developmental delays, anemia, seizures, respiratory depression, and encephalopathy (26). The level of toxicity depends on the nature of the AM constituents and ingredients. An example of these ingredients is vincetoxins, which are largely found in mistletoe and are both cytotoxic and cardiotoxic (21).

Headache, nausea, vomiting, diaphoresis, sleeplessness, vertigo, agitation, psychosis, hypertension, tachycardia, palpitations, seizures, tremors, and rhabdomyolysis are all side effects of sympathomimetics like ephedra, which stimulate both alpha and beta receptors. Because of the pharmacology of ephedra, patients who present with toxicity impacting numerous organ systems, such as the cardiovascular (CV) system and the central nervous system, may present with ephedra toxicity (CNS). Ephedrine is quickly absorbed and has a half-life of around 5 hours before it is eliminated (4). Flavonoids, which are similar to folic acid and have free radical scavenging qualities, and terpenoids are the active ingredients in ginkgo. One such terpenoid of concern is ginkgolide B, a strong inhibitor of platelet-activating factors.

Dermatologic, neurologic, and hepatic dysfunction are the most common side effects of kava use and abuse. The plant's pharmacologically active ingredients are principally a group of lipid-soluble alpha-pyrones known as kavalactones. There has not been any evidence of a specific dosage response, but there does appear to be a strong temporal relationship between pathology and intake. The precise mechanism of action of kava on the central nervous system is unknown. Blockade of serotonin and norepinephrine reuptake, sodium channel blockade, suppression of monoamine oxidase type B, and blockade of dopamine receptors are among the hypotheses (5).

While comfrey contains vital minerals, it also includes pyrrolizidine alkaloids, which can be harmful. The pyrrolizidine alkaloids are bio-transformed into pyrroles in the liver, which bind to cellular macromolecules and cause toxicity. Pyrrolizidine alkaloids generate a cirrhosis-like

pattern and centrilobular necrosis pathologically. Central veins were frequently unidentifiable in one set. The remaining veins have significant subendothelial edema and partial or total luminal blockage. Centrilobular hepatic necrosis and efferent vein blockage are the disease's hallmarks (4). The hepatic veins were dilated and empty in some cases at biopsy, but they were always coupled with extremely congested sinusoids in the pericentral zone.

Possible herb-drug interactions

Herbal agent	Interacting drugs	Clinical effect
Danshen (*Salvia miltiorrhiza*)	Warfarin	Bleeding
Dong quai	Warfarin	Bleeding
Ephedra	Caffeine, decongestants	Sympathomimetic toxidrome (hypertension, tachycardia, CNS, CVS stimulation)
Garlic	Warfarin	Lowers blood levels
	Chlorpropamide	Hypoglycemia
Ginkgo biloba	Aspirin, clopidogrel, dipyridamole, ticlopidine, warfarin, heparin	Bleeding
	Thiazide diuretic	Elevated blood pressure
	Trazodone	Coma
	Morphine	Lack of effect
Ginseng	Warfarin, ethanol	Lowers blood levels
	Phenelzine	Induces mania
Kava	Benzodiazepines, sedative-hypnotics	CNS depression
	Levodopa	Increased "off" periods
St. John's wort	Antidepressants	Serotonergic stimulation (theoretical)
	Cyclosporin	Decreased effect (cytochrome p450 inducer)
	Digoxin	Decreased serum level
Valerian	Anxiolytics	CNS sedation

Source (Bryant et al., 2005).

In a qualitative study conducted in Uganda, 60% of the study participants reported the use of alternative medicine. The findings further revealed that the majority of the participants who reported alternative medicine use had larger ulcers, and worse visual acuity at presentation as well as at three months. Thus patients who use alternative medicine reported more severe signs and symptoms at clinical presentation (27). However, alternative medicine use has also been associated with positive immediate outcomes. Okello and Kang in a study conducted in Uganda exploring the use of antimalarial herbal plants in the treatment of malaria reported a high cure rate at 95%

with only less than 5% of plant species giving negative results when tested for antimalarial activities (28).

Hasan et al. sought to investigate the perceived efficacy of alternative medicine among Malaysian patients with diabetes mellitus. The findings showed that 50% of the patients were using a combination of both conventional treatments for diabetes and alternative medicine. Herbal medicine was the most commonly used alternative medicine at 65%. The study further revealed that 63% of patients reported high quality and safety of alternative medicine. Around 44% of the patients reported improved condition as a result of using alternative medicine (29). The same author in another study on the use of alternative medicine among patients with chronic diabetes revealed that about 56% of the patients with chronic diabetes perceived their health condition to have improved after beginning alternative medicine while 18% perceived their health condition to have become worse (30).

Bardia et al. conducted a systematic review investigating the use of alternative medicine and its efficacy. The study reviewed published peer-reviewed articles that had adopted randomized control trials using alternative medicine for pain management in cancer patients. A total of 18 trials were identified. Many of the studies reviewed showed immediate postintervention or short-term benefit following the commencement of alternative medicine, including acupuncture, herbal medicine, massage, healing touch, and music. The studies also showed a reduction in cancer pain among patients after a massage or on listening to music (31).

2.3. Patient's factors associated with alternative medicine use in children

The use of nonconventional medicine for the diagnosis, prevention, and/or treatment of pediatric conditions is a reality. Alternative medicine has been used in the management of many medical conditions among children including asthma. Philp et al. assessed the use of alternative medicine in pediatric asthma treatment. The findings showed that maternal level of education, religion, and history of AM usage was significantly associated with the use of alternative medicine in children (32).

Other factors associated with alternative medicine use include the distance from health facilities as well as poor health systems and social-cultural beliefs (27). The use of herbal medicine in the African setting is of significance considering that it is often the main method of treatment before the commencement of conventional medication. In a study conducted in Kenya by Nzuki et al

investigating the use of herbal medicine among children below five years in Tharaka Nithi County, it was found that education level, occupation, monthly income, and caregiver residence were major factors associated with the utilization of herbal medicine (23).

A cross-sectional study conducted in Ethiopia by Asrat et al assessing factors associated with parental use of alternative medicine among children found that 71% of parents had used alternative medicine for their children in 12 months. Parents who could not read and write, parents with low monthly income, and those with easy access to traditional medicine were highly likely to use alternative medicine (33). Hu et al. conducted a cross-sectional study investigating associated factors with the use of alternative medicine in the population with hypertension in Japan. The findings revealed that there was no major difference between alternative medicine users and non-users in age, marital status, individual health wellbeing, lower income, lower education level as well as longer duration of hypertension (34).

Similarly, several factors have been shown to influence parents' ability to administer alternative medicine to children. Within the Sub Saharan African context, these range from own beliefs and use of the AMs to other factors such as their social settings, religious beliefs and practices, education, income and economic status, child's age, and female gender (8). The use of AMs is not significantly different amongst developed nations compared to African settings (35). Whereas most of the AMs used in the developed nations could be classified mostly as processed herbal remedies and immune boosters, in the African context, they are not processed and are used in their original state. In Ethiopia for example, there are reports of the use of wild herbal remedies, directly mixed and administered for treatment (36). Given the unregulated nature of such treatments and remedies, they may have mixed outcomes and consequences, sometimes either leading to a resolution of the health condition or other adverse effects (37). These positive or negative consequences of AMs need to be investigated and well understood.

According to WHO, the use of AM is often under-estimated. It is very crucial in managing lifestyle diseases, especially in aging populations, and the organization is currently in the process of setting up the WHO Traditional Medicine Strategy (3). The use of AM has been described for various conditions in children such as asthma and inflammatory bowel syndrome with the majority of females perceiving benefits from their use. Provision of guidelines on use by WHO will ensure safe, qualified, and effective AM services that appropriately integrate them into health systems

(38). The inherent toxic effects of herbal medicine and toxicities induced by contaminants are some of the adverse health effects of herbal treatment. Most of the developing countries report a low incidence of adverse effects because consumers regard them as safe.

Table 1:Summary of literature

Author, study title, Setting, Year	**Study design**	**Study population, Sample size**	**Outcomes**
Shewamene et al (2020), Use of traditional and complementary medicine for maternal health and wellbeing by African migrant women in Australia: a mixed-method study.	Mixed methods study	African migrants in Australia Questionnaires were completed by 319 women and 15 in-depth interviews were conducted.	73% of women use some form of traditional and complementary medicine for maternal health and wellbeing purposes, 77% reported that maintaining their maternal health and wellbeing was the most common reason for use. The associated factors with the use of alternative medicine included age greater than 35 years, lower level of education, parity, and lower-income.
Mwaka et al (2020), (2020). Traditional and complementary medicine use among adult cancer patients undergoing conventional treatment in Sub-Saharan Africa: A scoping review on the use, safety, and risks.	Systematic review	A total of 96 published articles and abstracts, as well as 23 articles on full text, were assessed where only 12 articles fulfilled the predefined eligibility criteria	The median prevalence of alternative medicine use was 60% while the disclosure percentage was 32%. In evaluating the reasons for alternative medicine use. Most used AM to get rid of cancer symptoms, especially pain, cure cancer, improve physical and psychological well-being, treat toxicity of conventional cancer therapies, and improve immunity.

Nzuki, (2016). Utilization of Herbal Medicine Among Children Under 5 Years of Age in Tharaka Nithi County, Kenya.	Cross-sectional study	Children below under 5 years n = 223	, 89.4% of mothers who participated in the study reported using herbal medicine in children under the age of five years. The study further revealed that 26% used herbal medicine to treat gastrointestinal diseases, 19% used it to treat respiratory disorders, 16% treated skin diseases and trauma while11% used herbal medicine to treat malaria. The most commonly used herbs were Erythrina abyssinica (35.1%) and Amaranthus hybridus (32.9%). Concomitant use of herbal medicines with conventional medication was reported by 50.2% of herbal users.
Busari et al. (2017) High prevalence of complementary and alternative medicine uses among patients with sickle cell disease in a tertiary hospital in Lagos, South West, Nigeria.	Cross-sectional study design	Sickle cell disease patients attending Lagos University Hospital n = 200	The majority of the SCD patients were 1-10 years old. AM was reportedly used by 88.5% of the respondents. Biological (herbal) products 156; 62.9% were the most commonly used CAM, followed by alternative medical systems 52; 20.9% and mind-body interventions 30; 12.1%. Relations, friends, and neighbors influenced 85.2% of AM users by recommending AM to them.
Diaz et al. (2013). Healthcare seeking for diarrhoea,	Mixed methods study	Children attending hospital	, use of traditional treatments was significantly associated with not seeking outside care for all three

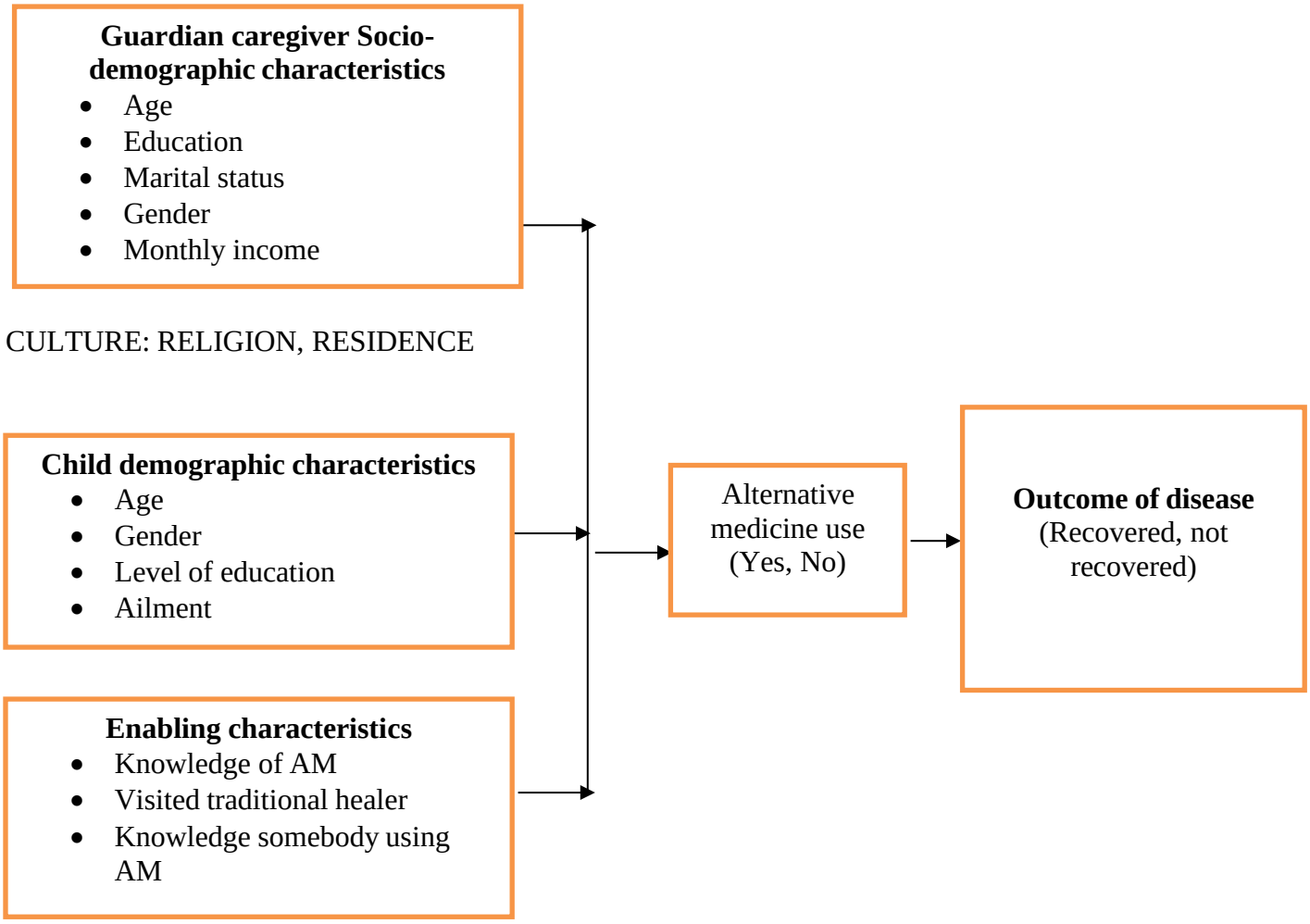
malaria, and pneumonia among children in four poor rural districts in Sierra Leone in the context of free health care		n = 5951	conditions (malaria, diarrhoea, and pneumonia). Traditional treatments were used due to preferences for locally available treatments and barriers to facility care that remain even after FHCI
Aula (2011) Prevalence and patterns of herbal Medicine use among children aged 0-12 years admitted to Kisii level 5 hospital	Hospital-based cross-sectional survey utilizing both qualitative and quantitative data	260 caregivers of children between 0 to 12 years.	The findings revealed that 62.3% of caregivers had continuously used alternative medicine for current illness of 35% had received more than one dose. Some of the health workers believed that some of the illnesses could only be treated with herbal medicine.

2.4. Conceptual Framework Narration

The conceptual framework as shown below sought to develop an understanding of the frequency of use and factors associated with alternative medicine use while also taking into consideration intervening variables that are likely to influence individual focus on alternative medicine use. The independent variables in this study included predisposing factors (such as socio-demographic characteristics and health-related attitudes), enabling characteristics (such as resources – income), and needs characteristics (perceived needs for health services).

The intermediate variable was alternative medicine use. The dependent variable consisted of child health outcomes (recovered or sought conventional help). The interplay between independent variables and the intermediate variables was analyzed. Likewise, the relationships between the independent and dependent variables were analyzed. This conceptual framework, therefore, allows us to analyze the relationships between the independent and intermediate variables and also between the independent and dependent variables.

2.5. Conceptual Framework



Source (Author, 2021)

Figure 1: Conceptual Framework

2.6. Study justification

Previous studies have reported increased AM use, especially in developing countries, with potentially harmful side effects as well as adverse interactions with medications. Data is lacking on the use of AM in children and caregiver understanding about the chemical composition, and correct dosing. The use of AM has also been associated with delays in seeking conventional medical care. There is however limited knowledge on the prevalence of AM use amongst sick children in Sierra Leone. Findings from this study will provide an understanding of the prevalence of AM use among children seeking health services at ODCH (Freetown, Sierra Leone). Understanding the factors associated with AM use among children will provide a guide for interventions targeting appropriate mitigation and preventive action to ensure better treatment outcomes. Given the acceptability and cost-effectiveness of the use of AM in children in other settings, findings from this study will guide the introduction and implementation of strategies for monitoring alternative medicine use in Freetown.

2.7. Research question

What is the prevalence of alternative medicine use among children aged 1 month-16 year seeking services at Ola During Children Hospital?

2.8. Objectives

2.8.1. Primary objective

To determine the prevalence of alternative medicine use among children aged 1 month-16 year seeking services at ODCH Freetown Sierra Leone.

2.8.2. Secondary objectives

1. To describe the different types of AM used by children.
2. To describe patient factors associated with AM use among children (aged 1 month-16 years admitted at ODCH Freetown).

CHAPTER THREE
METHODOLOGY

3.1. Study design

This was cross-sectional health facility-based study. Using this study design, information on AM use and associated factors were obtained from study participants at the same point in time.

3.2. Study area

This study was conducted in Ola During, Freetown Sierra Leone. Ola During Children's hospital is located in the same compound as the Princess Maternity Christian Hospital which is the country's main major referral maternity hospital. Ola During Children's hospital is situated in the Fourah Bay Community along the Fourah Bay Road, off the left-wing of the country's major seaport, Queen Elizabeth II. The hospital provides health services to children from different ethnic groups within Sierra Leone as well as foreigners. It's the largest pediatric referral hospital found in the eastern part of Freetown Sierra Leone. The hospital is also the main post-graduate and undergraduate teaching hospital with 200 beds including 11 ICU bed facilities. The hospital inpatient department includes two general wards as well as a Special Care Baby Unit (SCBU) and a therapeutic feeding unit. Averagely there are approximately 100 children seen at the hospital outpatient clinic daily and 15 admitted in various pediatric wards

Figure 2:Map of sierra Leone

3.3. Study population

The study population comprised children aged 0-16 years seeking care in both inpatient and outpatient clinics at ODCH.

3.3.1. Inclusion Criteria

Children aged 1 month - 16 years presenting for outpatient clinic services or admitted to the Paediatrics ward at ODCH who provided informed consent for participation**.**

3.3.2. Exclusion criteria

Children aged 1 month-16 years either presenting to the outpatient department or admitted at ODCH:

Whose caregivers withhold consent

Who do not have a caregiver with them at admission.

3.4. Sample size determination

According to a study conducted in Sierra Leone by Diaz et al in 2013 investigating the use of alternative medicine and health-seeking behavior among patients, it was found that 81.6% were using alternative medicine and seeking care in a hospital setting (9).

The sample size formula for determining prevalence

$n= Z^2p(1-p)/e^2$

was used to determine the number of children to include in this study. Where n is the minimum samples size, p is the estimated proportion of children who use alternative medicine and were seeking healthcare was (81.5%), e is the margin of error (5%) and Z is the standard normal at 95% which is 1.96. Hence;

- $n = \frac{1.96*1.96*0.816*0.184}{0.05*0.05}$
- $\frac{0.5768}{0.0025} = 230$
-
- An additional 10% (23) was added to account for possible non-response
- The final sample will be 230+23=253
- 253 participants.

The ratio of inpatient to outpatient at the ODCH is 1:3.

Thus, in ensuring that the sample size is representative of the population, the sample included 85 inpatients and 168 outpatients.

3.5. Sampling technique

The study adopted a consecutive sampling technique. The respondents were recruited as they came into the facility until the sample size was achieved. Only respondents who meet the inclusion criteria were included in the study. Weighted samples were obtained from both the outpatient clinic and the wards based on the patient load to ensure we obtain representative samples from both units.

3.6. Research assistants Recruitment

The researcher recruited four research assistants to help in the data collection. The research assistants had a nursing certificate and have worked previously as research assistants. The research assistants were trained to ensure they understood the objectives of the study and study procedures

3.7. Data collection instrument

A structured questionnaire was administered to all caregivers and guardians of children aged between0 – 16 years. The questionnaires were administered by the principal investigator with the help of four research assistants. Data were obtained on participants' sociodemographic characteristics including age, sex, education level, religion, marital status, history of AM use, type of AM use, and clinical symptoms and signs for which AM use was sought.

3.8. Data collection procedure

Approval to conduct the study was sought from KNH-UoN Ethics, Sierra Leone Ethics, and permission was sought from Ola During Children Hospital administration to conduct the study within the facility. Four research assistants with a nursing background were recruited two of whom collected data from inpatient respondents while the other two collected data from outpatient participants. The research assistants were fully trained on research conduct and ethics to ensure that they effectively understand the purpose of the study and the underlying questions and how to obtain data in a standardized manner. A proportionate sampling technique was adopted to ensure representative samples were obtained from both inpatients and outpatient. The outpatients were targeted on the daily basis at the outpatient clinic between 0800 to 1700 hours GMT. Once the potential respondents entered the outpatient clinic or are admitted, either of the research assistants approached them and assessed whether the patient meets the inclusion criteria. The study procedure was explained to caregivers of eligible children and informed consent was sought and only those who consented were enrolled in the study.

For the inpatient population, the respondents were targeted at the admission where they were required to consent and be recruited into the study. The patients were targeted as they come into the outpatient clinic as well on admission to the pediatric wards. Once an eligible respondent consented and was recruited, A structured interviewer-administered study questionnaire was used to obtain information on:

Participants' characteristics: age, sex, socioeconomic status, religious beliefs and practices, education

AM use within the last one year ,and the types of AM used.

The research assistants recruited at least 12 participants daily. The study data collection process took approximately three weeks.

3.9. Data Quality and control of errors

The research assistants were trained on standardized data collection following recruitment. A structured study questionnaire pre-programmed onto a tablet/ phone was used to obtain data.

3.10. Data management and analysis

All study data were stored in CommCare software cloud servers and downloaded onto Microsoft excel and later to Stata version 14 for cleaning and coding. Descriptive statistics and frequency distribution were used to describe background characteristics and prevalence of AM use. Association between various participant characteristics and alternative medicine use was assessed using chi-square test and logistic regression analysis. Statistical level of significance was defined at p-values <0.05.

The prevalence of Alternative medicine use

The prevalence of alternative medicine was calculated as a proportion with a 95% confidence interval of children who have used alternative medicine.

$$\%\text{prevalence of AM use} = \frac{\text{the population who have used alternative medicine}}{\text{Total sample population}} * 100$$

Short-term outcomes among children with a history of prior use of alternative medicine.

The short-term outcomes of children (recovered and did not recover) were analyzed descriptively using frequencies (n) and percentages (%).

Patient's factors associated with alternative medicine use in children age 0-16 years seeking care at ODCH Freetown.

A Chi-square test for association was used to determine the categorical factors associated with AM use. An independent t-test was used to determine whether there is a significant difference between continuous independent variables and AM use.

3.11. Ethical Consideration

This study proposal was submitted to the University of Nairobi (UoN) institutional review board (IRB) for approval before any study procedures can begin. Ethical approval was also be sought from the Sierra Leone ethics and scientific review committee. Permission was obtained from Ola during Children's Hospital in Sierra Leone to enable the conduct of the study with health workers and managers. A written informed consent and assent form was administered to study participants

before enrollment. For Children below 6 years, the consent form was administered to parents who responded to the questionnaire. Children above 6 years filled the assent form which was signed by their parents or guardians' who also provided informed consent. To ensure confidentiality and privacy, the data obtained from the respondents was only used for the research purpose and no personal identifiers were obtained in the course of the study to protect the identity of all participants. Participation in the study was voluntary and no individual was coerced to participate in the study. Covid-19 protocols as instituted by the Ministry of Health and Sanitation were adhered to throughout the data collection process.

3.12. Risk and benefits

There was no anticipated risk to participants in this study. No investigational products were provided to the study participants. This study utilized de-identified and anonymized participant information with minimal possible risk to the breach of confidentiality or privacy.

The outcome of this study is beneficial to children in Sierra Leone in terms of the development of guidelines and policies on CAM and for guiding practice.

3.13. Dissemination of results

The results of this study will be shared with scientific communities through submission for publication in a peer-reviewed journal. Further, evidence from this study will be presented to the health authorities in Sierra Leone through workshops and conferences and appropriate summaries shared with policymakers, health workers, and managers of Ola During Children's Hospital and the participating health facilities.

CHAPTER FOUR: RESULTS

4.1. Introduction

The study sought to describe the prevalence, types, short-term outcomes, and factors associated with alternative medicine use among children aged 1 month -16 years seeking care at ODCH Freetown Sierra Leone. A total of 310 children were screened, 37 did not meet the inclusion criteria, 15 caregivers declined to consent and 5 medical records were incomplete. Thus 253 entries were included in the analysis representing a 100% response rate.

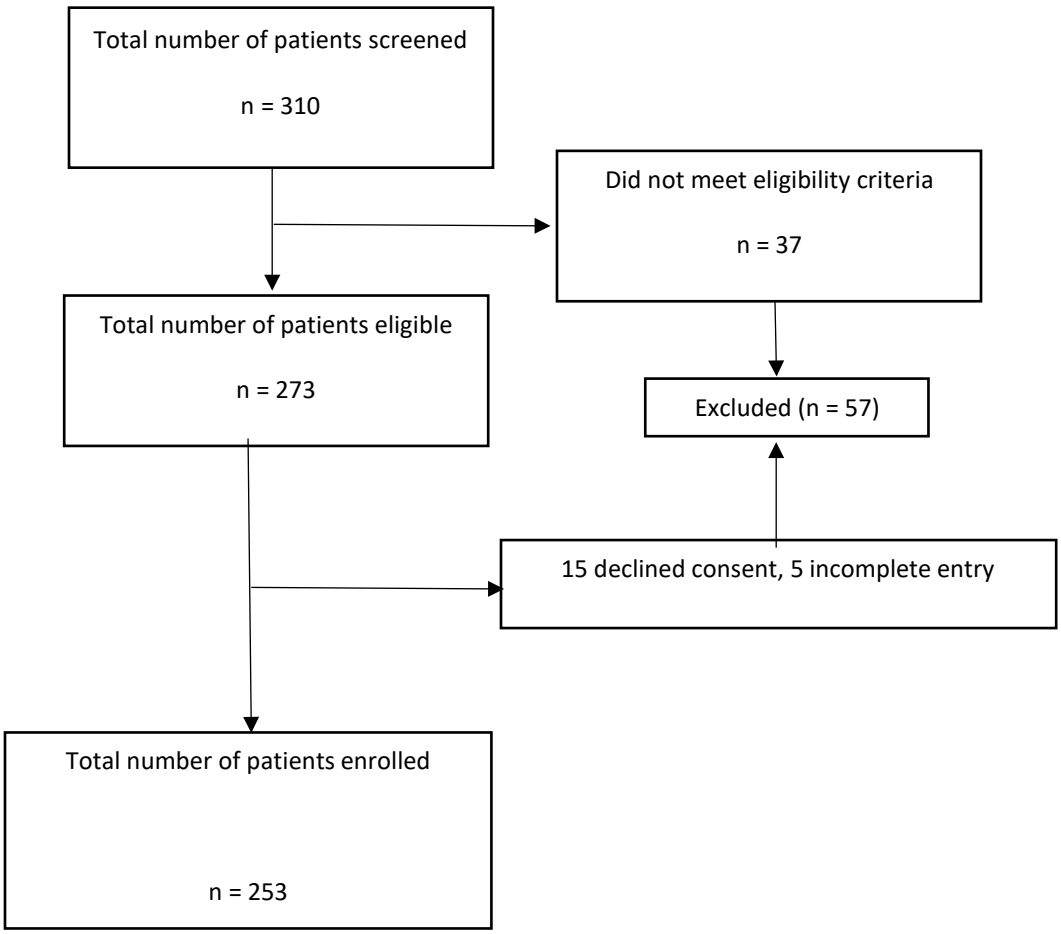


Figure 3:Study flow chart

4.2. Descriptive analysis

4.2.1. Socio-demographic characteristics of children age 1 month --16 years seeking care and their caregivers at ODCH Freetown Sierra Leone.

The caregiver characteristics assessment revealed that the median age was 27(IQR 22,34) years, 90% (228) of them were female. In assessing religion, 66.8% (169) were Muslim, 64.4% (163) of the respondents were married. The assessment of the residence revealed that 61.7% (156) were residing outside the western area. The Western area in this context is the urban area while outside western area describe rural area. On demographic characteristics of the children, 52.6% (133) were male with a median of 8 (IQR 2,11) years. Further to this 53% (134) of the children were not first-borns as shown in Table 2.

Table 2:Socio demographic characteristics of caregivers and children aged 1 month-16 year seeking care at ODCH Freetown Sierra Leone.

Demographic characteristics	Frequency	Percent
Age Median (IQR) years	27(22 -34)	
Gender		
Male	25	9.9
Female	228	90.1
Marital status		
Single	88	34.8
Married	163	64.4
Divorced/Separated	2	0.8
Level of education		
No formal education	76	30
Primary	46	18.2
Secondary	102	40.3
Tertiary	29	11.5
Employment status		
Formal employment	42	16.6
Self-employed	105	41.5
Unemployed	106	41.9
Average monthly income		
<100USD	213	84.2
100-200 USD	37	14.6
> 200 USD	3	1.2
Residence		
Outside western area	156	61.7
Western area	97	38.3
Length of stay in the current location		
Less than 1 year	5	2
1 - 5 years	6	2.4
6 - 10 years	6	2.4
11 - 15 years	38	15
More than 15 years	198	78.3
Religion		
Christian	84	33.2
Muslim	169	66.8
Have Medical insurance		
Yes	12	4.7
No	241	95.3
Children's characteristics		
Age((Median(IQR))	8(2 - 11)	
Gender of the child		
Male	133	52.6
Female	120	47.4
Birth order		

First child	Yes	119	47
	No	134	53

4.2.2. Hospital diagnosis for the current visit.

Diagnosis in the hospital showed that 67.2% (111) of the children were diagnosed with severe malaria, 16.4% (27) were diagnosed with pneumonia and 6.3% (10) were diagnosed with typhoid as shown in Figure 4.

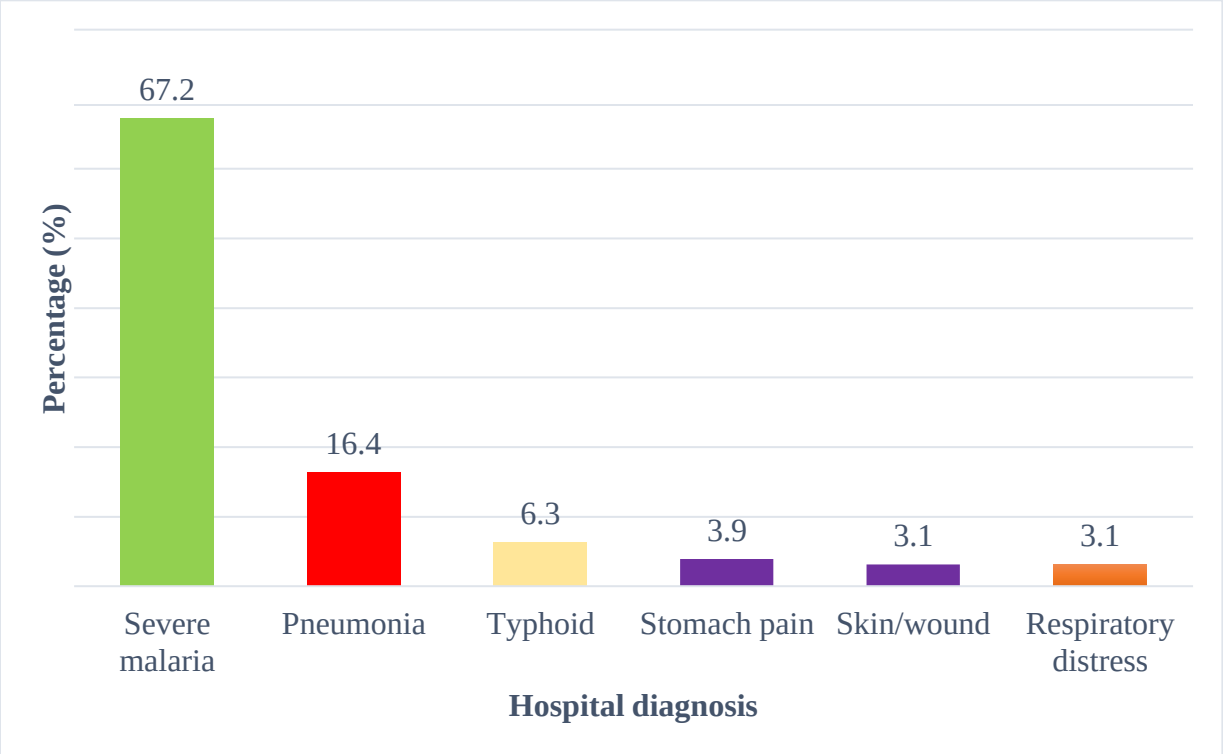


Figure 4: Hospital diagnosis

4.3. Primary objective: Use of alternative medicine among respondents in children age 1 month – 16 years seeking care at ODCH Freetown Sierra Leone.

The findings revealed that 77.5% (196) of the respondents had their children use alternative medicine at least once in the past year shown in Figure 5.

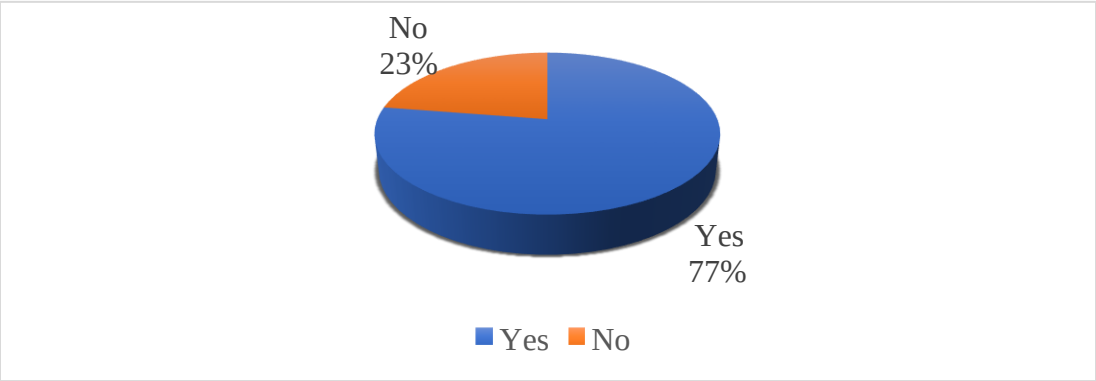


Figure 5:Use of alternative medicine among respondents in children age 1 month – 16 years seeking care at ODCH Freetown Sierra Leone.

4.3.1. Prevalence of AM use based on age group

The findings have shown as presented in Figure 6 that, 79.4% of school-age and 70.1% of children less than five years had used AM in the past year.

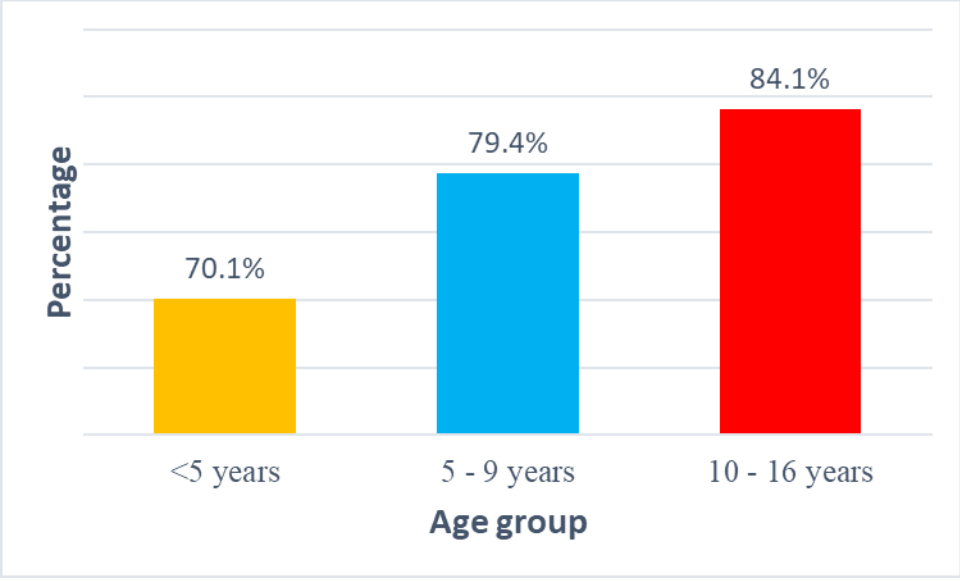


Figure 6:Prevalence of AM use based on age group

4.4. Secondary objective 1: Types of AM used by study respondents seeking care at ODCH Freetown Sierra Leone

The result from the analysis found that 76% (149) of the respondents had used herbs, 16.8%(33) had used spiritual healing, 4.6% (9) had used traditional manipulation while 2.6%(5) had used bone setting as shown in Figure 7.

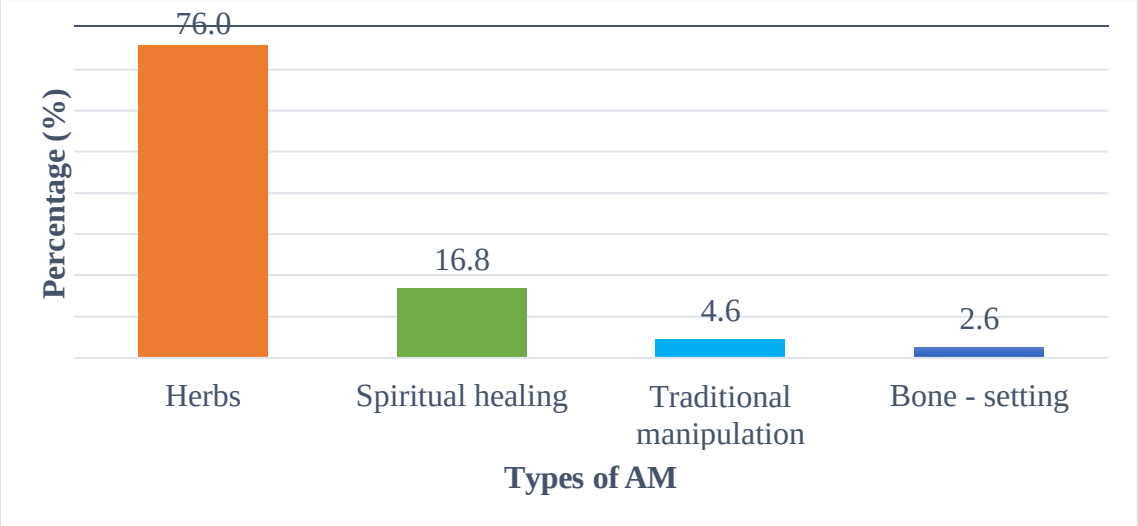


Figure 7:Types of AM used by study respondents

4.4.1. Knowledge on AM use as reported by caregivers

Plants Parts Used for AM in children

The results as shown in Figure 8 revealed that 65.8% (129) were using roots, 24.7% (68) used leaves, stems, and flowers, 28.1%(55) used the bark, 7.7% (15) used tuber, 5.1%(10) used fruits and seeds while 3.6% (7) used rhizomes.

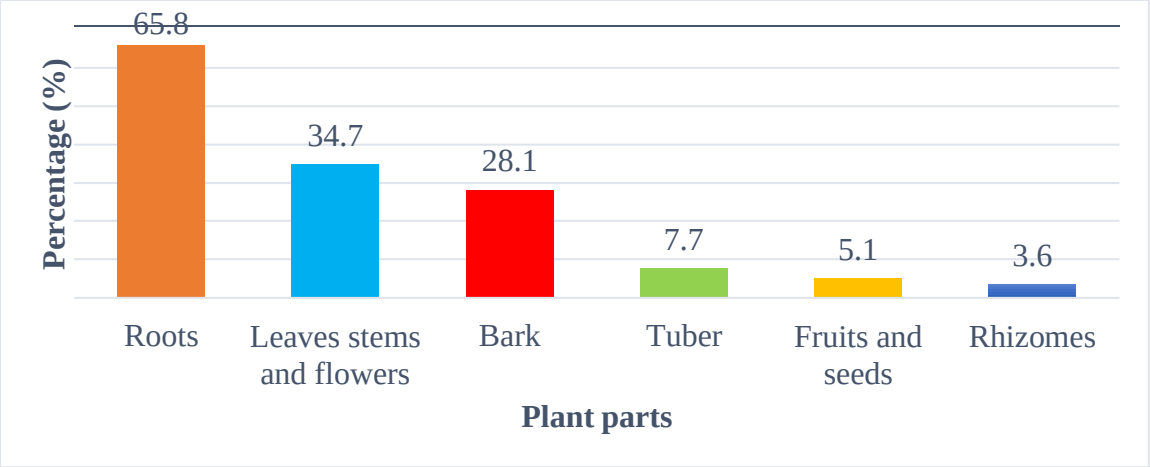


Figure 8:Plant parts used as AM by children

4.4.2. Methods of administration, ailment targeted and caregiver perceptions on AM efficacy

In investigating the method of administration, 48%(94) of AMs were administered orally, 25.5% (50) were administered topically, 23%(45) were administered through smoking. The most common ailments targeted were malaria and typhoid accounting for 66.1%(121) of all ailments targeted as shown in Table 3.

Table 3:Method of administration, frequency of use, and ailment targeted

	Frequency	Percent
Method of administration		
Oral	94	48
Nasal	3	1.5
Smoking	45	23
Topical	50	25.5
Steaming	4	2
Ailment targeted by AM use		
Stomach (including gastritis, dyspepsia)	38	20.8
Skin/wound	11	6
Respiratory (e.g. cough, cold and sore throat)	10	5.5
Pain/Arthritis [f] Brain (e.g. headache, poor memory)	3	1.6
Malaria and typhoid	121	66.1

Factors associated with alternative medicine use

4.5. Secondary objective 2:The patient/caregiver factors associated with alternative medicine use in children age 1-16 years seeking care at ODCH Freetown

4.5.1. Bivariate analysis

Bivariable analysis was conducted to investigate factors associated with AM use among as shown in Table 4. The findings revealed that gender, residence, length of stay in the current location, religion, age of the child, and birth order was significantly associated with AM use. Male caregivers were 7.8 times more likely to use AM compared to female caregivers, (OR=7.814, 95%CI:3.033-9.080). Caregivers who were residing outside the western area were 5.7 times more likely to use AM in the past year compared to those from the western area, (OR =5.7, 95%CI: 3.008, 10.948). Length of stay in current location between 1 and 5 years (OR =8.081, 95%CI: 4.297-12.511), 11 to 15 years, (OR=6.67, 95%CI:3.042-8.651) and more than 15 years (OR=2.486, 95%CI:1.135 -5.446) were associated with AM use. Muslim caregivers were 1.648 times more

likely to use AM (OR =1.648, 95%CI: 1.898-3.026). Children who were aged between 0 and 9 years were 1.863 times more likely to use AM compared to those aged between 10 and 16 years, (OR =1.863, 95%CI:1.455-3.636). Caregivers with children who were firstborns were 1.9 times more likely to have used AM, (OR =1.89, 95%CI:1.024-3.481).

Table 4:Patient/caregiver factors associated with alternative medicine use

	Use AM			
Characteristics	**Yes n (%)**	**No n(%)**	**OR(95%CI)**	**p-value**
Caregiver age				
<30 years	103(52.6)	38(66.7)	Ref	
30 - 39 years	84(42.9)	19(33.3)	0.86(0.66,1.26)	0.141
=>40 years	9(4.5)	0	0.65(0.22,10)	0.411
Gender				
Male	24(12.2)	1(1.8)	7.81(1.03,12,08)	0.046
Female	172(87.8)	56(98.2)	Ref	
Marital status				
Single	68(34.7)	20(35.1)	Ref	
Married	126(64.3)	37(64.9)	0.97(0.33,0.89)	1.241
Divorced/Separated	2(1)	0	0.141(0.01,0.56)	1.011
Level of education				
No formal education	63(32.1)	13(22.8)	Ref	
Primary	33(16.8)	13(22.8)	1.79(0.47,6.80)	0.394
Secondary	74(37.8)	28(49.1)	3.41((0.88,13.26)	0.076
Tertiary	26(13.3)	3(5.3)	3.28(0.92,11.70)	0.067
Average monthly income				
<100USD	168(85.7)	45(78.9)	Ref	
100-200 USD	25(12.8)	12(21.1)	0.56(0.23,0.86)	0.511
> 200 USD	3(1.5)	0	0.34(0.12,0.67)	0.618
Residence				
Outside western area	139(70.9)	17(29.8)	5.74(3.01,10.10.95)	p<0.001
Western area	57(29.1)	40(70.2)	Ref	
Religion				
Muslim	141(71.9)	34(59.6)	1.65(1.90,3.03)	0.001
Christian	55(28.1)	23(40.4)	Ref	
Period of stay in the current location				
Less than 1 year	2(1.02)	3(5.3)	Ref	
1 - 5 years	1(0.5)	5(8.8)	8.081(1.30,12.51)	0.025
6 - 10 years	0	6(10.5)	6.67(3.04,8.65)	0.003
11 - 15 years	26(13.2)	12(21)	2.49(1.14,5.45)	0.023
More than 15 years	167(85.2)	31(54.4)	1.21(0.82, 1.21)	0.056
Age of child				
<5 years	68(34.7)	29(50.8)	Ref	
School age	54(27.6)	14(24.6)	2.25(1.10,4.62)	0.026
Adolescent	74(37.7)	14(24.6)	1.37(0.60,3.11)	0.45
Child gender				
Male	108(55.1)	25(12.8)	1.57(0.867,2.85)	0.136
Female	88(44.9)	32(87.2)	Ref	
Birth order				

First child Yes	99(50.5)	20(35.1)	1.89(1.02,3.48)	0.042
No	97(49.5)	37(64.9)	Ref	

4.5.2. Factors independently associated with AM use among parents/caregiver of children 1 month – 16 years seeking care at ODCH Freetown

4.5.3. Multivariable analysis

A multivariable model developed to control for potential confounders revealed that being male, (aOR=2.11, 95%CI: 1.651-3.561), residing outside western area, (aOR=1.815, 95%CI:1.121-2.871), duration of stay in current location 1 to 5 years, (aOR =5.76, 95%CI: 3.561-7.561) and 11 to 15 years, (aOR=4.512, 95%CI: 1.154-6.432) and birth order, (aOR=2.105, 95%CI: 1.015-4.366) were independently associated with AM use as shown in Table 5.

Table 5:Factors independently associated with AM use among parents/caregiver of children 0 – 16 years seeking care at ODCH Freetown

Characteristics	**AM use - Yes**	**AM use- No**	**aOR (95%CI)**	**P-value**
Gender				
Male	24(96)	1(1.8)	2.110(1.651,3.561)	0.043
Female	172(12.2)	56(98.2)	Ref	
Residence			1.815(1.12, 2.871)	
Outside western area	139(70.9)	17(29.8)	Ref	P<0.001
Western area	57(29.1)	40(70.2)		
Duration of stay in the current location				
Less or equal to 5 years	3(1.5)	8(14.0)	Ref	
6 - 10 years	0	6(10.5)	5.761(3.561,7.561)	**0.032**
11 - 15 years	26(13.3)	12(21.1)	4.512(1.154,6.432)	**0.037**
More than 15 years	167(85.2)	31(54.4)	2.327(0.975,5.554)	0.057
Religion			1.239(0.585,2.624)	
Muslim	141(71.9)	34(59.6)	Ref	0.575
Christian	55(28.1)	23(40.4)		
Child age				0.041
<5 years	68(34.7)	29(50.8)	Ref	0.451
School age	54(27.6)	14(24.6)	1.81(1.316,2.1110)	
Adolescent	74(37.7)	14(24.6)	1.65(0.811,1.721)	
Birth order			2.105(1.015,4.366)	
First child Yes	99(50.5)	20(35.1)	Ref	0.046
No	97(49.5)	37(64.9)		

4.6. Notification of healthcare providers on alternative medicine use by caregivers

The findings revealed that 90% (177) of the caregivers who reported AM use among children in the past notified their healthcare providers about the use while 10%(19) did not inform healthcare providers about the use of AM as shown in Figure 9.

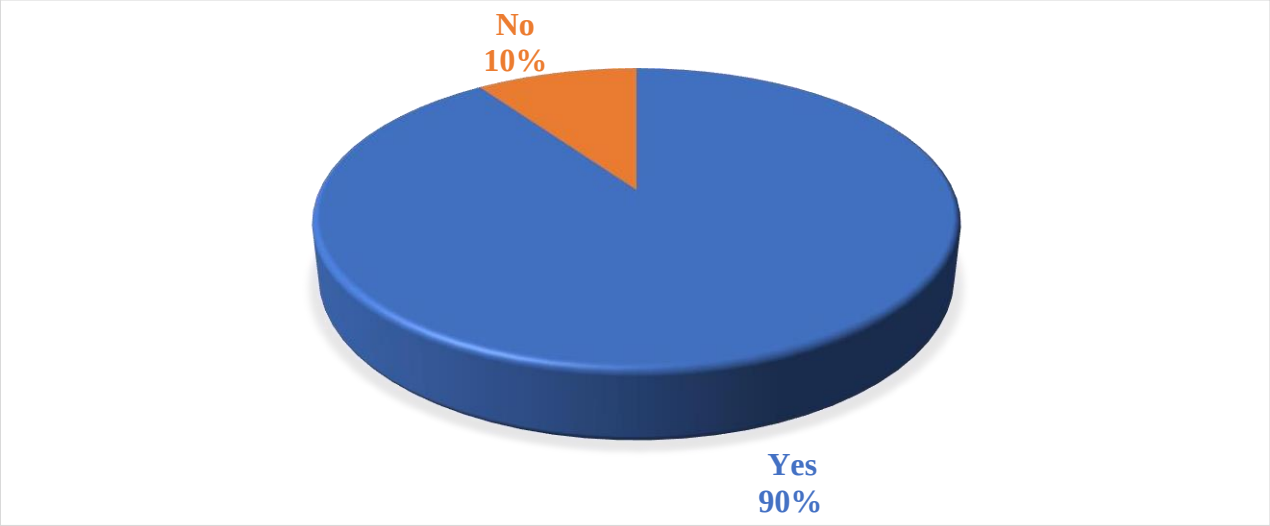


Figure 9:Awareness of healthcare providers on respondent use of alternative medicine in the past.

4.6.1. Crosstabulation between demographic characteristics and notification on AM use

The study also sought to investigate the difference in the notification of healthcare providers on the use of AM based on caregiver characteristics as shown in Table 6. The findings revealed that 84.1%(53) of those with no formal education and 100% (26) of those with tertiary level education notified their healthcare providers on the use of alternative medicine. Of those who had medical insurance 63.6%(7) notified their healthcare providers on AM use compared to 91.9%(122) of those who did not have medical insurance and notified their healthcare providers on AM use.

The findings revealed that, average monthly income ($100 - $200), OR = 1.21, 95%CI: 1.01,2.45, p =0.045) and average monthly income of >$100, (OR =2.5, 95%CI: 1.41,4.51, p =0.014), caregivers with medical insurance were 6 times more likely to notify their healthcare providers about AM use, OR =6.48, 95%CI:1.7,24.66, p =0.006) as shown in Table 6.

Table 6:Crosstabulation between caregiver characteristics and notification on AM use

Characteristics	**Made healthcare providers aware of AM use**			
	Yes	**No**	**OR (95% CI)**	**P value**
Caregiver age				
<30 years	96(93.2)	7(6.8)	Ref	
30 - 39 years	73(86.9)	11(13.1)	0.5(0.06,5.35)	0.634
=>40 years	8(88.9)	1(11.1)	1.21(0.14,10.60)	0.866
Gender				
Male	22(91.7)	2(8.3)	1.21(0.26,5.58)	0.81
Female	155(90.1)	17(9.9)	Ref	
Marital status				
Single	62(91.2)	6(8.8)	Ref	
Married	113(89.7)	13(10.3)	0.56(0.21,0.87)	0.671
Divorced/Separated	2(100)	0	0.34(0.01,0.56)	0.551
Level of education				
No formal education	53(84.1)	10(15.9)	Ref	
Primary	30(90.9)	3(9.1)	0.67(0.31,0.98)	0.881
Secondary	68(91.9)	6(8.1)	1.3(0.41, 2.51)	0.773
Tertiary	26(100)	0	0.91(0.34, 1.51)	0.561
Average monthly income				
<100USD	151(89.9)	17(10.1)	Ref	
100-200 USD	24(96)	1(4)	1.21(1.01,2.45)	**0.045**
> 200 USD	2(66.7)	1(33.3)	2.5(1.41,4.51)	**0.014**
Residence				
Outside western area	127(91.4)	12(8.6)	1.2(0.34,3.81)	0.451
Western area	50(87.7)	7(12.3)	Ref	
Duration of stay in the current location				
Less than 10 years	0	3(100)	Ref	
11 - 15 years	24(92.3)	2(7.7)	1.81(1.21,4.41)	**0.034**
More than 15 years	153(91.6)	14(8.4)	2.31(2.11,3.21)	**P<0.001**
Religion				
Christian	55(91.7)	5(8.3)	Ref	
Muslim	122(89.7)	14(10.3)	1.3(0.33,3.21)	0.541
Medical insurance				
Yes	7(63.6)	4(36.4)	6.48(1.7,24.66)	**0.006**
No	170(91.9)	15(8.1)	Ref	
Child age				
0 - 9 years	113(92.6)	9(7.4)	Ref	
10 - 16 years	64(86.5)	10(13.5)	0.56(0.23,1.56)	0.451
Child gender				
Male	98(90.7)	10(9.3)	Ref	
Female	79(89.8)	9(10.2)	0.56(0.43,1.61)	0.811

Birth order				
First child Yes	95(96)	4(4)	Ref	
No	82(84.5)	15(15.5)	0.67(0.33,0.67)	0.611

4.7. The short-term outcomes among children with a history of prior use of alternative medicine

4.7.1. Short-term outcomes following AM use

When caregivers were asked whether their children recovered fully or sought conventional care in hospitals following AM use, 65% (n = 164) reported that children had not recovered and sought conventional care even after using alternative medicine as shown in Figure 10.

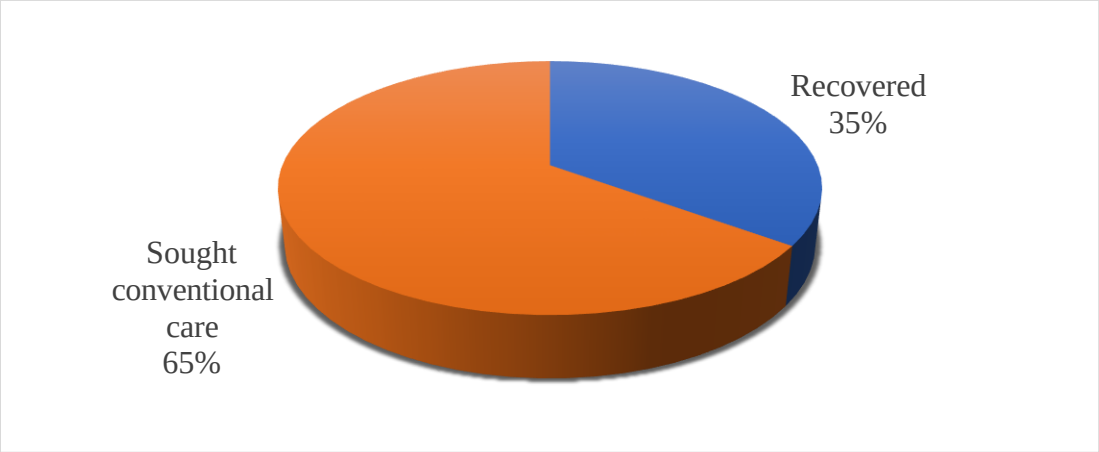


Figure 10:Short term outcomes

4.7.2. Respondents perception of AM use

The majority of the respondents, 83.7%(164) disagreed with the statement that AM is more efficacious compared to conventional medicine, 91.8% (180) of the respondents disagreed with the statement that AM is safer than conventional medicine, and 81.1%(159) of the respondents had not experienced any side effects as shown in Table 7. The respondent's overall perception of AM use was 85.5%.

Table 7:Respondents perception on AM use

Caregivers' Perception of AM use	Frequency	Percent
AM more efficacious than conventional medicine		
Agree	23	11.7
Disagree	164	83.7
Neutral	9	4.6
AM safer than conventional medicine.		
Agree	14	7.1
Disagree	180	91.8
Neutral	2	1.0
Experience unwanted side effects		
Rarely	159	81.1
On several occasion	24	12.2
Never	13	6.6

CHAPTER FIVE: DISCUSSION

The study assess the prevalence, types, as well as factors associated with alternative medicine use among children between 1 month and 16 years. The findings from the current study revealed that the prevalence of alternative medicine use in the past year was 77.5%. further assessment established that majority of AM use was among adolescents. Higher AM use among adolescents could be attributed to increased exposure to common conditions that are majorly managed using alternative medicine such as malaria, pain and chronic diseases. In Sierra Leone, the use of alternative medicine always precedes conventional medicine use which explains high alternative medicine use among the study respondents (9). These findings however contrast those from a study conducted in Kenya by Nzuki which revealed that 89.4% of caregivers revealed using alternative medicine in children under five years (23). Our current study setting is urban in a referral hospital while the study in Kenya was conducted in a rural setting where the use of alternative medicine is high due to easy accessibility. Similarly, Pearson et al. in Cambodia revealed that 89% of patients had reported use of herbal medicines in Phnom Penh which is the most populous city in Cambodia (21). The findings from our study are also comparable to Aina et al. in a study conducted in Nigeria found herbal medicine use was higher in men 86% compared to 78% among women (22). The prevalence from our current study was higher than the prevalence observed in a study conducted by Mwaka et al including 12 published studies with 75% including studies from Sub-Saharan Africa, it was found that the prevalence of alternative medicine use was 60%. However, in their study, alternative medicine was majorly used to ease pain, treatment of cancer as well as control the high level of toxicity which contrast findings from our study which revealed that AM is used majorly for malaria, typhoid, and pneumonia (19). Another study conducted by Aula (2011) also found lower use of alternative medicine considering that 62.3% of the caregivers asserted that they had used alternative medicine for the current illness with 35% using herbal medicine more than once (47).

The findings from the present study also revealed that majority of the respondents were using herbs, 76%, 16.8% had used spiritual healing, 4.6% had used traditional manipulation while 2.6%(5) had used bone setting. Herbal use has been the most common alternative medicine type used in most studies. These findings are comparable to a study conducted in Nigeria by Akande-Sholabi et al. who found that 76.8% had reported use of herbal medicine (39). These findings however higher compared to a study conducted in Thailand by Peltzer and Pengpid who found

that 40% of the respondents reported the use of herbal medicine (43). In a study conducted by Nzuki, the prevalence of herbal medicine use was higher compared to our study with a reported 89.4% using herbal medicine (23).

The results from our study have also established that the most common parts of plants used in alternative medicine were roots (65.8%), followed by leaves, stems, and flowers (34.7%) and 28.1% used plant barks. A study conducted in Western Kenya by Mbuni et al. revealed that roots (35.9%) represented the most commonly used parts of the plant (44). The commonly used method of preparation was decoction (54.9%). These findings however contrast those from a study conducted in Kenya which revealed that fruits and healing vegetables are employed in the treatment of most medical conditions (45). This could be as a result of the fact that their study focused on herbalists from a single community in Kenya where only certain types of herbs were available.

The present study also showed that the common method of administration was oral (48%) and Topical (25.5%). Most of the alternative medicine used in African settings are normally cooked before they are consumed (23). The findings have also shown that roots were the commonly used part of plants hence explaining why the common method of administration was oral. These findings are comparable to a study conducted in Kenya by Holland who found that boiling and soaking/steeping the herbs to make a drinkable tea was most common, followed by grinding and pounding to make a powder either for oral consumption (46).

Most of the caregivers who were involved in the study were Muslims. Sierra Leone is a predominantly Islamic country which explains the higher number of Muslims who were enrolled in the study. These findings are comparable to a previous study conducted in Sierra Leone by Diaz et al.(9). The majority of the children presenting in the hospital were aged less than 5 years and were highly vulnerable to diverse illnesses which increases their health-seeking behavior. These findings are comparable to a study done in Malawi by Lungu et al. who found that health-seeking behavior in children below five years was higher due to the high risk of vulnerability among children under five years (42).

Factors associated with alternative medicine in children in the present study revealed that residence, length of stay in the current location, religion, age of the child, and birth order was significantly associated with AM use. The residence was also a significant factor associated with

AM use. Respondents who reside in rural areas were 5.7 times more likely to use AM compared to those who reside in urban areas (western area of Sierra Leone). The use of alternative medicine is commonly high in rural areas because of easy accessibility. Our results have also shown that the common part of the plant used was roots which are difficult to obtain in urban areas (44). A study conducted in Tharaka Nithi by Nzuki revealed that education level, occupation, monthly income, and caregiver residence were significantly associated with AM use (23). The findings from the present study also revealed that child age and birth order were significantly associated with AM use. These findings are comparable to a study conducted by James et al. (8).

Similarly, several factors have been shown to influence parents' ability to administer alternative medicine to children. Within the Sub Saharan African context, these range from own beliefs and use of the AMs to other factors such as their social settings, religious beliefs and practices, education, income and economic status, child's age, and female gender which revealed that caregivers of younger children were more likely to use AM (8). The multivariable analysis found that being male, residing outside the western area, duration of stay in current location 1 to 5 years, and 11 to 15 years and birth order were independently associated with alternative medicine use.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

1. Prevalence of AM use in the past year was high at 77.5%.

2. Majority of the children used herbal forms of AM with only a small number resorting to spiritual healing.

3. Children with male caregivers, those residing outside the western area, and those that are first born children were more likely to use AM.

6.2. Recommendations

Because of the high level of AM medicine use:

1. There is a need for analytic studies looking at the composition, side effects, and morbidity associated with AM use.

2. Studies to determine any delays in seeking conventional medical care associated with patients' preference to choosing AM medicine.

3. The ministry of Health (Sierra Leone) to evaluate if there is a role of AM alongside conventional medical therapy.

6.3. Limitations of the study

This was a hospital based study, prevalence of AM use among those who did not attend hospital at this time cannot be assess

The study was cross-sectional, so causal conclusions can be drawn.

The information obtained was based on caregiver memory hence subject to recall bias.

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APPENDICES

Appendix I: Workplan

Number	Activity	Estimated Time
1	Proposal Development and presentation	Dec 2020 to April2021
2	Submission of proposal for ethical approval	May 2021 – August 2021
3	Pretesting and seeking permission	September 2021
4	Data Collection	September - October 2021
5	Data Analysis	October 2021
6	Thesis Writing	November 2021
7	Thesis submission	November 2021

Appendix II: Budget

Category	Remarks	Units	Unit cost	Total (Kshs)
Proposal Development	Printing drafts	500 pages	5	2,500
	Proposal copies	10 copies	350	3,500
Data Collection	Stationary Packs (Pens, Paper and Study Definitions)	20	100	2000
	Research assistants	3	8000	24000
Data Analysis	Statistician	1		30,000
Thesis Write Up	Computer services			5000
	Printing drafts	1000 pages	5	5000
	Printing thesis	10 copies	500	5000
Contingency funds				20,000
Total				**95,000**

Appendix III: Parental Consent form

Introduction

My name is Dr. Samuel Kafoe, I am a post-graduate student and a pediatrics registrar at Kenyatta National Hospital undertaking a Master's degree in pediatrics and child health, in the school of Medicine, Department of Pediatrics and Child Health, University of Nairobi. Am Conducting a study on **Alternative Medicine Use Among Children Aged 1 month To 16 Year Seen at Ola During Children's Hospital (ODCH) Freetown, Sierra Leone.**

This study is being conducted with the permission of Kenyatta National Hospital- the University of Nairobi and the Ethics and research committee (KNH-UON ERC Protocol no .....).

Study background

The uptake of alternative medicine has been on the rise globally. The World Health Organization (WHO) Africa region and South East Asia report the existence of national regulations on AM use in many (>80%) countries in the region. In Africa, the use of alternative medicine is on the increase, most commonly amongst children with chronic illnesses such as epilepsy, asthma, and sickle cell anemia.

The study objective

To describe the prevalence, types, short-term outcomes, and factors associated with alternative medicine use among children aged 1 month -16 years seeking care at ODCH Freetown Sierra Leone.

Study procedures

A trained research assistant will approach you and seek your consent as long as you meet the inclusion criteria. If you consent you will be recruited and asked a few questions. Once recruited, the research assistant will ask you socio-demographic questions and the use of alternative medicine.

Voluntariness of participation

Participant in the study is purely voluntary. You will not be coerced into participating in the study against your will. The research assistant will guide you in understanding your right to participate or not participate.

Confidentiality

All responses will be treated as strictly confidential, and no participant's results will be individually but only in aggregate form.

Participation in this study is voluntary, and there will be no monetary compensation.

The participants also reserve all the rights to withdraw themselves and their data from the study at any time.

Benefits

- The findings will help understand the current use of alternative medicine.
- It will also help determine the outcomes of alternative medicine treatment.
- The findings will inform policy regarding the use of alternative medicine.

Risks, stress, and discomfort

- There will be no major risks or discomfort during the data collection.
- Note: should any of the above occur, feel free to contact Dr. Samuel Amara Kafoe

The right to withdraw

Remember, your participation is entirely voluntary. Should you consider changing your mind midway, you have the right to do so and you shall not suffer any consequence whatsoever.

Sharing of results

The results of this study may be presented during scientific and academic forums and may be published in scientific medical journals and academic papers.

Participants consent

I confirm that the researcher has explained fully the nature of the study and the extent of activities which I will be asked to undertake and that I have received an information sheet. I confirm that I have had an adequate opportunity to questions about this study. I understand that my participation is voluntary 'and that I may withdraw at any time during the study, without having to give a reason. I agree to take part in this study by filling in the questionnaire.

Participant:

Name……..sign…….…… Date……..…

Researcher/Research Assistant:

Name……. …… sign…….. ……Date……...

In case of any issues or challenges related to this study, please contact me on 0741 871 018 or kafoesamuel@gmail.com, my supervisor Beatrice Mutai on, 0708552909, KNH/UON ERC Secretariat on Tel.2726300 ext 44102, uonknherc@uonbi.ac.ke or Sierra Leone Ethics at the Secretariat Connaught Hospital, Freetown williettav@yahoo.com.

Thank you for sparing your precious time dedicated to participating in this study exercise.

Appendix IV: Assenting Form

Project Title: **Alternative Medicine Use Among Children Aged 0 To 16 Years Seen at Ola During Children's Hospital (ODCH) Freetown, Sierra Leone.**

Investigator(s): Dr. Samuel Kafoe

We are doing a research study about alternative medicine use among children aged 0 to 16 years. Permission has been granted to undertake this study by the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee (KNH-UoN ERC Protocol No. P205/3/2021)

This research study is a way to learn more about people. At least 253 children will be participating in this research study with you. If you decide that you want to be part of this study, you will be asked to give information on alternative medicine use.

There are some things about this study you should know. A trained research assistant will approach you and seek your permission as long as you meet the inclusion criteria. If you consent you will be recruited and asked a few questions. Once recruited, the research assistant will ask you socio-demographic questions and the use of alternative medicine.

Not everyone who takes part in this study will benefit. A benefit means that something good happens to you. We think these benefits might be knowledge on alternative medicine and guidance on good practices when using alternative medicine. If you do not want to be in this research study, we will tell you what other kinds of treatments there are for you.

When we are finished with this study we will write a report about what was learned. This report will not include your name or that you were in the study. You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. Your parents know about the study too. If you decide you want to be in this study, please sign your name.

I,_____, want to be in this research study.

Signature_____Date _____

Appendix IV: Questionnaire

Section A: Sociodemographic information

1. Contact information *

Mark only one oval.

- ◯ Western Area Urban
- ◯ Outside of Western Area Rural

2. Religion *

Mark only one oval.

- ◯ Christian
- ◯ Muslim
- ◯ Other: _____

3. What is your age range? *

_____

4. What is your gender? *

Mark only one oval.

- ◯ Male
- ◯ Female

5. Marital status *

Mark only one oval.

- Single
- Married
- Divorced/Separated

6. What is the gender of the child currently being admitted? *

Mark only one oval.

- Male
- Female

7. What is the current age of this child? *

_____

8. Is this your first child you have given birth to: *

Mark only one oval.

- No
- Yes

9. What is your perceived health status of current child? *

Mark only one oval.

- Healthy
- Sick

10. How long have you lived in the Sierra Leone? *

Mark only one oval.

- Less than 1 year
- 1-5 years
- 6-10 years
- 11-15 years
- More than 15 years

11. Level of education *

Mark only one oval.

- Primary
- Secondary
- College
- University
- Non-formal

12. What is your approximate average monthly household income? *

Mark only one oval.

- <1 million Leones
- 1-2 Million Leones
- > 2 Million Leones

Section B: Use of alternative medicine

13. Has your child taken any form of alternative medicine in the past one year? *

Mark only one oval.

- ◯ Yes
- ◯ No

14. if yes in 13, have you made your primary care provider aware of child usage of alternative medicine?

Mark only one oval.

- ◯ Yes
- ◯ No

15. Do you have medical insurance? *

Mark only one oval.

- ◯ Yes
- ◯ No

16. if yes in 13, what other forms of alternative medicine modalities have you used (select that apply)?

Check all that apply.

- ☐ Herbs
- ☐ Spiritual healing
- ☐ Bone-setting
- ☐ Traditional manipulation
- ☐ Chiropractor
- ☐ Acupuncture/massage/acupuncture

Other: ☐ _____

17. if yes in 13, what is/are plant part used as alternative medicine?
Check all that apply.

	Tick where applicable
Roots	☐
Bulbs	☐
Rhizomes	☐
Tuber	☐
Bark	☐
Leaves stems and flowers	☐
Fruits and seeds	☐

18. if yes in 13, what was the method of administration *

Check all that apply.

- ☐ Oral
- ☐ Topica
- ☐ Nasal
- ☐ Rectal
- ☐ Smoking
- ☐ Steaming

19. if yes in 13, how often do you use alternative medicine? *

Mark only one oval.

- ◯ Daily
- ◯ At least once a week
- ◯ At least once a month
- ◯ At least once a year
- ◯ At least once in the past five years
- ◯ Rarely

20. if yes in 13, for what ailments or disease conditions did you take alternative medicine product

Check all that apply.

- ☐ Malaria and typhoid
- ☐ Heart (e.g. high blood pressure, high cholesterol)
- ☐ Skin/wound
- ☐ Diabetes
- ☐ Respiratory (e.g. cough, cold and sore throat)
- ☐ Pain/Arthritis [f] Brain (e.g. headache, poor memory)
- ☐ Stomach (including gastritis, dyspepsia)
- ☐ Kidney
- ☐ Psychiatry (e.g. depression, insomnia)
- Other: ☐ _____

21. if yes 13, what was the final diagnosis in hospital? *

_____

22. Alternative medicine efficacious than conventional medicine *

Mark only one oval.

- Agree
- Neutral
- Disagree

23. Alternative medicine safer than conventional medicine. *

Mark only one oval.

- Agree
- Neutral
- Disagree

24. How often have you experienced unwanted side effects with alternative medicine? *

Mark only one oval.

- Rarely
- On several occasions
- Never

25. If you experienced side effects from alternative medicine, please describe the episode. *

_____

26. Where did you obtain or buy the alternative medicine from (please, select all that apply)? *

Check all that apply.

- Local stores
- Place of worship
- Friends and family
- Herbal stores
- Other: _____

27. How did you learn about the alternative medicine (select all that apply)? *

Check all that apply.

- [ ] Books/Magazines
- [ ] Friends/Family
- [ ] Internet
- [ ] Other: _____

Appendix V: Curriculum Vitae

Kenyatta National Hospita
BLOCK M10 Nairobi Kenya
+2254-741-871-018

kafoesamuel@gmail.com

Dr. Samuel Amara. Kafoe

OBJECTIVE

To provide a high standard of quality specialized care with genuine compassion to all patients irrespective of their race, age creed, or background about the medical code of ethics and professionalism.

SKILLS & ABILITIES

Ability to work in a team, and to listen to others' views.

Ability to work independently and under extreme pressure to meet tight deadlines.

Result oriented

Strong leadership and negotiation skills.

Able to provide motivation support and empower others.

Able to manage change.

EXPERIENCE

EBOLA TREATMENT UNIT – DOCTOR, INTERNATIONAL MEDICAL CORPS (IMC).

November 2014 to September 2015.

RESPONSIBILITIES:

Working and collaborating with other medical staff on admission, rounding on the patient, medication and lab draws, planning discharges and referrals according to the guidelines available protocol

Supervise and monitor adherence to infection prevention control(IPC) protocols and the correct use of personal protective equipment (PPE)

Train Doctors clinical officers and nurses on the treatment protocols.

Ensure proper patient records and data collection process followed.

Liaise with other senior IMC Staff o train non-medical staff on IPC and PPE procedures.

Monitor and coordinate emergency program activities assign for the

Project.

Anticipate changing needs and emergencies work with other colleagues to establish corrective measures when/ if problems arise.

Any other duties relevant to this position as requested by the supervisor.

MINISTRY OF HEALTH AND SANITATION SIERRA LEONE, MEDICAL OFFICER EBOLA TREATMENT UNIT.

SEPTEMBER TO NOVEMBER 2014

RESPONSIBILITIES:

Examine, diagnose and manage the patient in the out-patient clinic according to the guideline and available protocol.

Facilitate training on Ebola response curriculum as part of the training team composed of personnel to deliver a high learning experience; delivering the fool curriculum content in a way that is effectively internalized by the student.

Prepare and deliver training modules presentation on Ebola transmission, donning and doffing PPE, ETC safety management.

Ensure the student evaluation form process is performed.

Contribute to the development and adaptation of pedagogic material as required.

Remain up to date with the latest information concerning EVD and its social impact on communities and the country at large.

Maintain a high professional standard at all times.

MINISTRY OF HEALTH AND SANITATION SIERRA LEONE, MEDICAL OFFICER IN THE NATIONAL

REFERRAL HOSPITAL.

NOVEMBER 2013 TO SEPTEMBER 2014;

Rotation in the following department; internship program,

OBSTETRICS AND GYNAECOLOGY

PAEDIATRICS

MEDICINE

SURGERY

RESPONSIBILITIES:

Working closely with the consultant/specialist in the clinical management and treatment of patients including;

Clerking of the patient;

Undertaken ward rounds and sitting antenatal and family planning clinic;

Assisting and undertaking major and minor surgical procedures under the supervision of the consultant.

Management of obstetrics emergencies;

Delivery health talk to pregnant women as part of the Government of Sierra Leone free health care initiative for pregnant women;

Undertaken on calls and night duties including monitoring severely sick and complicated cases;

Setting up intravenous lines;

Presentations at ground rounds

Teaching and mentoring of junior staff;

Correlating and interpreting of laboratory and X-ray

EDUCATION

UNIVERSITY OF NAIROBI DEPARTMENT OF PAEDIATRICS AND CHILD HEALTH

SEPT 2018 TO DATE

Christian Internal Medicine Residency Specialization Program Cameroon

Internist in Training 2015 –July 2018

COLLEGE OF MEDICINE AND ALLIED HEALTH SCIENCES, UNIVERSITY OF SIERRA LEONE

Bachelor of Medicine Bachelor of Surgery

Cert; Post Ebola Training of Trainers, **WHO** 2015

Cert. Ebola Case Management, Training of Trainers, **IOM** 2014

Government Secondary School Kenema

Cert, West Africa Senior Secondary School Certificate Examination 2003

COMMUNICATION

English and French

IT Proficiency; Microsoft Office, including Word, Excel, PowerPoint Outlook, and Internet Explorer

LEADERSHIP

Hospital Coordinator Junior Doctors of Sierra Leone 2014 to September 2015

REFERENCES

PROF. WAMALWA

Chairman pediatrics department university of Nairobi

0721239493

Email- Dalton.wamalwa@uonbi.ac.ke

DR Beatrice Mutai

0708552909

Email- mutaibc@gmail.com

Appendix VI: Request for Review letter

Dr. Samuel Amara Kafoe

Pediatrics and Child Health
University of Nairobi
NAIROBI.
25th /03/2021

THE RESEARCH AND ETHICS REVIEW COMMITTEE,
KNH/UON

PO BOX 20723- 00202

NAIROBI,

Dear sir/ madam,

RE: REQUEST FOR AUTHORITY TO CONDUCT RESEARCH

I am a student at the University of Nairobi Undertaking a Master of Medicine (M.Med) in the Department of Pediatrics and Child Health.

I am kindly requesting your authorization to research on the
Alternative Medicine Use Among Children Aged 1month To 16 Years Seeking Care at Ola During Children's Hospital (ODCH) Freetown, Sierra Leone.
as part of my academic requirements.

Please find attached a copy of my research proposal for your perusal.

Thank you in advance

Yours faithfully;

Dr. Samuel Amara Kafoe

REG NO. **H58/12554/2018**

ALTERNATIVE MEDICINE USE AMONG CHILDREN AGED 0 TO 16 YEARS SEEKING CARE AT OLA DURING CHILDREN

By Dr. Samuel Amara Kafoe Peadiatrics and Child Health (Medicine)

ORIGINALITY REPORT

14%	11%	10%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	journals.plos.org Internet Source	1
2	www.intechopen.com Internet Source	1
3	gh.bmj.com Internet Source	1
4	link.springer.com Internet Source	1
5	worldwidescience.org Internet Source	1
6	ir-library.ku.ac.ke Internet Source	1
7	welbodipartnership.blogspot.com Internet Source	1

Magalie El Hajj, Doreen Chilolo Sitali, Bellington

Appendix VIII: Approval from Sierra Leone Ethics

GOVERNMENT OF SIERRA LEONE
Office of the Sierra Leone Ethics and Scientific Review Committee
Directorate of Training and Research
5th Floor, Youyi Building Brookfields, Freetown
Ministry of Health and Sanitation

14th September, 2021

Principal Investigator

To: **Dr Samuel A Kafoe** (M.Med Student)
School of Medicine
Department of Paediatrics and Child Health
University of Nairobi, Kenya
kafoesamuel@gmail.com

Study Title: **Alternative Medicine Use among Children aged 0 to 16 Years Seeking Care at the Ola During Children's Hospital (ODCH) Freetown, Sierra Leone.**

Version: 1.0 of 25 March, 2021

Supervisor: **Professor Ezekiel Wafula**
Department of Paediatrics and Child Health
University of Nairobi, Kenya

Submission Type: First protocol version submitted for review

Study Location: Ola During Children's Hospital (ODCH)

Committee Action: Expedited Review

Approval Date: 14 September, 2021

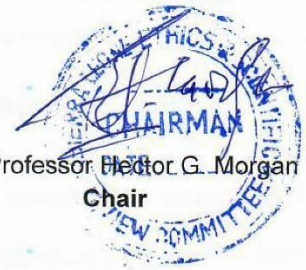
The Sierra Leone Ethics and Scientific Review Committee (SLESRC) having conducted an expedited review of the above study protocol and determined that it presents minimal risk to subjects, **hereby grants ethical and scientific approval for it to be conducted in Sierra Leone.** The approval is valid for the period, **14 September, 2021 – 13 September, 2022.** It is your responsibility to obtain re-approval/extension for any on-going research prior to its expiration date. The request for re-approval/extension must be supported by a progress report.

For further enquiries please contact: efoday@mohs.gov.sl

GOVERNMENT OF SIERRA LEONE
Office of the Sierra Leone Ethics and Scientific Review Committee
Directorate of Training and Research
5th Floor, Youyi Building Brookfields, Freetown
Ministry of Health and Sanitation

Review Comments

- **Amendments:** Intended changes to the approved protocol such as the informed consent documents, study design, recruitment of participants and key study personnel, must be submitted for approval by the SLESRC prior to implementation.
- **Termination of the study:** When study procedures and data analyses are fully complete, please inform the SLESRC that you are terminating the study and submit a brief report covering the protocol activities. Individual identifying information should be destroyed unless there is sufficient justification to retain, approved by the SLESRC. All findings should be based on de-identified aggregate data and all published results in aggregate or group form. A copy of any publication be submitted to the SLESRC for its archive.
- ***Change contact address for the Sierra Leone Ethics Committee under participants consent to: Fifth Floor, Youyi Building, East Wing; Tel No.: +23276 629251***



Professor Hector G. Morgan
Chair

For further enquiries please contact: efoday@mohs.gov.sl

Appendix IX: Approval from KNH-UoN Ethics

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/282

13th August , 2021

Dr. Samuel Amara Kafoe
Reg. No.H58/12554/2018
Dept. of Paediatrics and Child Health
School of Medicine
College of Health Sciences
University of Nairobi

APPROVED 13 AUG 2021 KNH/UoN-ERC

Dear Dr. Kafoe

RESEARCH PROPOSAL: ALTERNATIVE MEDICINE USE AMONG CHILDREN AGED 0 TO 16 YEARS SEEKING CARE AT OLA DURING CHILDREN'S HOSPITAL (ODCH) FREETOWN, SIERRA LEONE (P205/3/ 2021)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH-UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 13th August 2021 – 12th August 2022.

This approval is subject to compliance with the following requirements:

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

Protect to discover

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

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

Yours sincerely,

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

c.c. The Principal, College of Health Sciences, UoN
The Senior Director, CS, KNH
The Chair, KNH- UoN ERC
The Assistant Director, Health Information, KNH
The Dean, School of Medicine, UoN
The Chair, Dept. of Paediatrics and Child Health, UoN
Supervisors: Prof. Ezekiel Wafula, Dept. of Paediatrics and Child Health, UoN
Dr. Beatrice Mutai, Dept. of Paediatrics and Childe Health, UoN