KNOWLEDGE, PERCEPTION AND SELF–MEDICATION PRACTICES FOR MANAGEMENT OF MALARIA AMONG UNDERGRADUATE STUDENTS OF UNIVERSITY OF IBADAN, NIGERIA

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APRIL, 2015

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DEDICATION

This project is dedicated to God Almighty

With HIM, everything is possible

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All thanks and adoration be unto almighty Allah the master planner that perfects all things, who made this MPH a sterling success

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ABSTRACT

Malaria affects the health and wealth of nations and individuals alike. In Africa today, malaria is understood to be both a disease of poverty and a cause of poverty. One of the important items of the Millennium Development Goals (MDGs) is to halt and afterwards begins to reverse the incidence of malaria and other major diseases by 2015. In other to achieve the goal of halting malaria transmission, there is need for the general populace to indulge in practices that will have strong influence on malaria control. Practices like understanding the importance of diagnosis before treatment, need for accurate dosing and appropriate drug use and understanding malaria transmission. Thus, the knowledge, perception and self-medication practices for management of malaria among undergraduate of University of Ibadan was explored by this study.

A cross-sectional study was conducted among consenting 302 students using a multistage proportionate sampling technique, A validated self administered semi–structured questionnaire used for the data collection which included a 51-point knowledge scale on malaria and malaria medicine and a 10-point scale on perceptions relating to malaria, 39 points and above was categorised as good scores,26-38 point was categorised as fair score and <25 as poor score and 10 point perception scale was used for the perception scoring, 5-0 point was regarded as fairly favorable score and 6-10 points was regarded as highly favorable score, data were analyzed using descriptive statistics, chi-square with level of significance set at p=0.05 level of significance

Respondents' age was 21.5±3.4years and male accounted for 63.6% of the sample. Majority of the respondents were Christians (84.0%) with 2.3% as Eckankar. The knowledge score of respondents was 22.2± 8.2, (5.6%) had good level of knowledge, while (51.3%) had fair knowledge. Few (14.6%) of the respondents were able to correctly mention plasmodium as a cause of malaria. Very few (14.6%) believed that dirty environment could cause malaria. Almost all the respondents (95.0%) were unaware that malaria could be transmitted from mother to baby during pregnancy, awareness about arteminsinin based combination therapy was low (44.4%). Less than half of the respondents (41.4%) stated that chloroquine is still very effective for malaria treatment. Majority of the respondents (72.5%) perceived that it is not only students who lived off campus that needs to be worried about malaria. Few respondents (11.6%) believed that

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malaria goes away on its own even if not treated, however (19.9%) perceived herbs and concoction to be more effective for treating malaria.

Majority of the respondents reported to have treated themselves without seeing a health worker Coartem was the most commonly used medicine among the respondents, many of them reported that they usually did not complete their malaria dosage. Hence health education, counseling and advocacy were recommended on malaria treatment and management

Keyword: Malaria, University students, Management pattern, anti-malaria.

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CERTIFICATION

I certify that this project was carried out by Adewole, Aminat Adetooke in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria.

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GLOSSARY OF ABBREVIATIONS

FMoH	Federal Ministry of Health
NMCP	National Malaria Control Programme
ACT	Arteminsinin based Combination Therapy
MDGS	Millennium Development Goals
UNDP	United Nation Development Programme
WHO	World Health Organization
NATP	National Anti-malaria Treatment policy
ITN	Insecticide Treated Nets
IRS	Indoor Residual spray
NMIS	National Malaria Indicator Survey
LBW	Low Birth Weight
DALYs	Daily Adjusted Life Years
GDP	Gross Domestic Product
GNP	Gross Net Product
RBM	Roll Back Malaria
NHIS	National Health Insurance Scheme

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CHAPTER ONE

INTRODUCTION

1.1 Background

Malaria affects the health and wealth of nations and individuals alike in Africa, malaria is understood to be both a disease of poverty and a cause of poverty Annual economic growth in countries with high malaria transmission has historically been lower than in countries without malaria. The disease is commonly associated with poverty and may also be a major hindrance to economic development in tropical and subtropical regions because rainfall, warm temperatures, and stagnant waters provide habitats that are ideal for mosquito breeding (Zewdie and Gedfaw (2013)

Malaria is endemic throughout Nigeria. The Sahel regions and the high mountain area of the plateau states experience slightly lower rates of transmission malaria parasites. Malaria currently accounts for nearly 110 million clinically diagnosed cases per year, 60 percent of outpatient visits, and 30 percent hospitalizations. An estimated 300,000 children die of malaria each year. It is also believed to contribute up to 11 percent maternal mortality, 25 percent infant mortality, and 30 percent under-five mortality. It is estimated that about 132 billion Naira lost to malaria annually in the form of treatment costs, prevention and loss of work time in Nigeria (FMOH and NMCP, 2009(Okafor & Oko-ose, 2012)

In Nigeria, malaria is said to account for not less than 70% of all hospital and clinic attendances daily and 60%of all pediatric admissions and antenatal related morbidities(Olaogun et al., 2005; Ajayi, and Falade,2006; Dada and Omokhodion, 2007).

Apart from the incapacitating effect of malaria attack, the direct economic costs of malaria that result from absence from school and treatment are enormous if quantified and the overall economic impact is likely to be more substantial .This is in terms of cost of drugs and treatment, school absenteeism which could affect general performance and lead to poor grades. The effect on investment in education should not be undermined. Loss in lecture days represents a huge loss on academic standard and loss on the family, community and nations investment in education. (Okwa & Ibidapo, 2010)

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Fernando et al (2003) reported that malaria has adverse impact on school performance. Cost of illness is represented by cost of treatment and time loss by the patient and the caregiver and psychosocial costs are difficult to compensate.

Management modalities for malaria related Illnesses among Nigerians are generally influenced by diverse socio-cultural factors which culminate into a particular treatment option by individuals and care givers , Malaria control in a community could be influenced to a large extent by the rate of utilization of available healthcare facilities, types of drugs used for self medication and pattern of intake, and level of care and importance attached to febrile illnesses generally (Jombo, Mbaawuaga , Denen Akaa , Alao, Peters, Dauda,, Okwori, Akosu, Etukumana and Yaakugh 2010).

The control of falciparum malaria is becoming increasingly challenging in many developing areas of the world including Nigeria not only because Plasmodium falciparum have developed resistance to commonly used antimalarial drugs, but also due to individual and household drug use pattern. Alternative drugs like Amodiaquine and Sulfadoxine-pyrimethamine were being used in other parts of Africa. However, many African countries are seeking evidence to change from these alternatives to combination therapies hence change to artemisinin and Artemisinin Combination Therapy (ACT).(Ezugbo-Nwobi, Obiukwu, 2011)

Anti-malarial drug resistance remains an important factor militating against the successful control of malaria in most endemic areas including Nigeria. Chloroquine used to be the most important anti-malarial but the drug is no more recommended because P. falciparum has developed resistance to it (Nuwaha, 2001;Ogungbamigbe et al., 2008).

Currently, the most effective new drugs are artemisinin and related compounds being used in a combination known as Artemisinin Combination Therapy (ACT) to delay the development of resistance against the drug. Inappropriate dosing and indiscriminate use of chloroquine was among the factor that was believed to be responsible for chloroquine resistance as there was little incentive to improve the way the drug was used. In other to protect the ACTs that are currently in use, there is need to monitor the existing treatment practices so as to be sure that patients are not engaging in practices that will encourage the development of drug resistance parasite strain(Adetola, Aishat, & Olusola, 2014)

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Although, Jaja clinic exists for handling the health challenges of staff and students including malaria. Anecdotal information reveals that many students treat themselves within the context of primary health care, (Anumudu et al., 2006) reported that the students treated themselves with anti-malaria drugs when they were sick and more severe cases, and cases which did not at first respond to self medication with single or combinations of drugs were further treated at the hospital, however the practice is yet to be fully explored systematically and this constitute the focus of this study

1.2 Statement the of problem

Malaria is endemic throughout Nigeria with perennial malaria transmission and is responsible for 60% outpatient visits to health facilities, 30% childhood deaths 25% of deaths in children under one year, and 11% of maternal deaths (4,500 die yearly). The financial loss due to malaria annually is estimated to be 132 billion Naira in the form of treatment cost, prevention and loss of man-hours. (Adedotun, Morenikeji, & Odaibo, 2010)

The control of falciparum malaria is becoming faced with challenges in many developing areas of the world including Nigeria not only because Plasmodium falciparum have developed resistance to chloroquine, but also due to individual and household drug use pattern. However, this development led to the adoption of arteminsinin based combination therapy (ACT) (Ezugbo-Nwobi, et al,2011)

People seek treatment for malaria from a wide range of sources ranging from itinerant drug sellers to hospitals; they often resort to the unregulated private commercial sector, where treatment may be inappropriate, although access costs may be lower recourse to multiple providers is therefore common, and patients often begin with self-treatment using drugs obtained through the commercial sector, and then seek care from formal health providers when no improvement is noticed (Onwujekwe, Uzochukwu, Nkem, Nkoli, Nwobi and Shu 2009)

One of the important goals of the millennium development goals (MDGs) is to halt and afterwards begins to reverse the incidence of malaria and other major diseases by 2015 (UNDP, 2013). In other to achieve the goal of halting malaria transmission, there is need for the general populace to indulge in practices that will have strong influence on malaria control. Practices like understanding the importance of diagnosis before treatment, need for accurate dosing and

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appropriate drug use and understanding malaria transmission. Youths, to which the tertiary institution students belong, are the future of any society and their understanding of the disease and its control will give an indication as to how successful the future elimination of malaria will be (Ojurongbe et.al2014)

In sub Saharan Africa, studies have shown that most families first seek treatment for mild febrile illnesses in the retail sector rather than through public health services particularly in populations with inadequate access to health services, self-medicating with drugs purchased at retail locations is a common practice.(Andria, Smith, Menya, Obala, Simiyu, Khwa-Otsyula, and O'Meara 2012,)

Anti- malarial drug resistance remains an important factor militating against the successful control of malaria in most endemic areas including Nigeria chloroquine used to be the most important anti-malarial but the drug is no more recommended because P. falciparum has developed resistance to it (Nuwaha, 2001;Ogungbamigbe et al.,2008).

Poor perceptions about malaria and poor malaria drug treatment practices have contributed to widespread resistance of *Plasmodium falciparum* malaria to commonly used monotherapy such as chloroquine and sulfadoxine-pyrimethamine leading to challenges in the control of malaria, Artemisinin-based combination therapy (ACT) has been demonstrated to remarkably improve treatment efficacy and are currently recommended by the World Health Organization to overcome the problem of drug resistance and for effective control of malaria.(Kwaku LivesyZandoh, Owusu, Awini, Sulemana, Abubakari, Etego, Adda, Boahen, Segbaya, Mahama, Plange, Chandramohan, Agyei, Seth,2010)

Undergraduates of university of Ibadan resort to self care practice before going to a formal health care facility for treatment when they experience malaria, this involves self medication. Management of malaria through self medication in primary health care is allowed provided it it done rationally. However there is paucity of information knowledge, perception and use of anti-malaria medicines for the primary health care management of malaria among undergraduates of the university of Ibadan.(Anumundu et al 2006)

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1.3Justifications for the study

The effect on investment in education should not be undermined. Loss in lecture days represents a huge loss on academic standard and loss on the family, community and nations investment in education. Fernando et al (2003) reported that malaria has adverse impact on school performance. Cost of illness is represented by cost of treatment and time loss by the patient and the caregiver and psychosocial costs are difficult to compensate.

This study will therefore provide the baseline information on the knowledge, perception and pattern of use of malaria medicine among undergraduate students' of University of Ibadan which could be used for developing educational programmes for enhancing their capabilities to be involved in self medication in primary health with special reference to malaria management. The results will also be useful for formulating policies relating to rational self medication in primary health care within the context of malaria control and prevention among students of the university of Ibadan

1.4 Research questions

1. What is the level of knowledge of undergraduate students of University of Ibadan on causes, recognition and mode of treatment of malaria
2. What is the level of knowledge of undergraduate student of University of Ibadan on the dosage of the common anti-malaria drugs/ medicine
3. What are the perceptions of the students relating to medicines for the treatment of malaria
4. What are the types of malaria medicines used by the students for the management of malaria
5. What are the practices of University of Ibadan undergraduate students concerning medicine use for malaria

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1.5 Objectives of the study

Broad objective

The broad objective of this study was to describe the knowledge, perception and pattern of use of medicine for primary health care management of malaria among undergraduate students of University of Ibadan

Specific objective

1. To assess the knowledge of undergraduate students of University of Ibadan on causes, recognition and mode of treatment of malaria.
2. To assess the knowledge of undergraduate student of University of Ibadan on the dosage of the common anti-malaria drugs/ medicine
3. To document the perception of the students relating to medicines for the treatment of malaria
4. To document the types of malaria medicines used by the undergraduates students for the management of malaria
5. To describe the practices of University of Ibadan undergraduate students concerning use of malaria medicines.

1.6 Study variables

The key dependent variable are the knowledge, perception and practice relating to malaria and medicines for treating it, while the independent variables includes the socio-demographic (age, sex, religion course of study),special references to knowledge the following issues will be;

- Recognition of signs and symptoms of complicated and uncomplicated malaria
- Knowledge on types of malaria,
- Treatment approaches for malaria,

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- Knowledge on necessity of diagnostic test before treatment,
- Awareness on the guideline for treatment of malaria,
- Awareness on the types of drugs used for malaria treatment and their dosages

The perception related issues that will be investigated include the following;

- Perceived susceptibility and severity of malaria
- Belief about importance of treating malaria
- Willingness to conduct test before treatment,
- perception of the national guideline on malaria treatment,

The practices that will be investigated include the following;

- Sources of treatment
- Sources of modern medicines prescribed for treatment
- types of malaria medicines used for treating malaria and other anti-malaria medicine use practice

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CHAPTER TWO

LITERATURE REVIEW

2.1 Causes, Mode of Transmission and Endemicity of Malaria in Nigeria

2.1.1 Causes of malaria

Scientific cause of malaria

Malaria is an infection caused by parasite plasmodium; there are four species which can infect man. These are Plasmodium falciparum, vivax, malariae and P. ovale. P. falciparum and P. vivax are the most common. Mixed infections with two or more of the Plasmodium species are common. P. falciparum is responsible for the most severe, often fatal forms of malaria. It is deeply entrenched in tropical Africa. P vivax is the commonest species in America and Asia while P.malariae and P. ovale rarely occur. The disease is transmitted by female Anopheles mosquitoes. The infection may be acquired wherever there are human hosts carrying the parasites and sufficient Anopheline mosquitoes, together with condition of temperature and humidity that favors the development of parasite in the mosquitoes(Christiana, 2004)

Human Malaria is a parasitic disease caused by protozoan of the phylum apicomplexan, class sporozoan and subclass coccidian. These haemosporinas or haematozoans of the family plasmodidae and genus Plasmodium are exclusively parasitic and without locomotory organelle. Of the four species of Plasmodium parasitizes man of which P. falciparium is the most virulent of the malaria parasite (Okwa & Ibidapo, 2010)

P. falciparum is the most predominant parasite specie accounting for about 98% of malaria cases in the country. P. malariae usually occurs as a mixed infection with P. falciparum. Anopheles gambiae is the main vector of malaria in Nigeria, but An. funestus and An. arabiensis are also commonly encountered. An. melas is found in coastal regions(NATP, 2005)

The diagnosis of malaria is made with certainty on identification of the malaria parasite in blood films of patients together with other symptoms associated with the disease.(Christiana, 2004)

Perceived causes of malaria

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Malaria beliefs and practices are often related to culture, and can influence the effectiveness of control strategies thus, local knowledge and practice related to malaria is important for the implementation of culturally appropriate, sustainable, and effective interventions.(Singh, Musa, Singh, & Ebere, 2014)

A study done in Iganga, Kenya O observed that perceived causes of malaria were: drinking dirty water, raw fruits, poor sanitation, cold environment, splenomegally, worms, and Tsetse fly. More or less the same responses were observed in Mpigi district Kenya in a study by Luanniale and Rajais (1996). These misconceptions certainly have implications for community's malaria preventive behaviors and practices. A study done by Njama, D et 'al (2003) in Kampala city also indicated that 90% of the caregivers knew that mosquitoes cause malaria although they equally indicated other perceived causes such as drinking unboiled water (36%) and respiratory illnesses (14%) (Batega, 2004)

Similarly a study done in Oyo state among farmers to assess their level of knowledge indicates that the perceived causes of malaria causes are misperceived. Consumption of contaminated food or water (35.4%) topped the list of such misconception followed by "staying for a long time in the sun" (20.0%). Only 12.4% could correctly link mosquito with the possible occurrence of malaria. Clearly, respondents' knowledge of the cause of the disease in the scientific par lance is abysmally low.(Oladepo, Tona, Oshiname, & Titiloye, 2010)

A study done among tertiary student in Nigeria on perception to malaria treatment shows that the knowledge of the respondents on the different causes of malaria. Most (81%) of the students are aware that mosquito bite could result into malaria infection. Surprisingly very few (14.6%) believed that dirty environment could cause malaria.(Adetola et al., 2014) '

Similarly a study done among university of lagos undergraduates student on malaria reveals, 58.3% knows the cause of malaria while the remaining 41.7% do not know and gave several causes, of which sunlight was most mentioned (25%) (Okwa & Ibidapo, 2010)

2.1.2 Mode of transmission of malaria

Malaria is characterized by a stable, perennial, transmission in all parts of the country. Transmission is higher in the wet season than in the dry season. This seasonal difference is more striking in the northern part of the country.(NATP, 2005)

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Due to availability of favorable conditions for the vector to develop and multiply, malaria tends to predominantly occur in rural areas. However, studies documented increased malaria transmission in urban areas. This could be associated with the rapid growth of cities coinciding with lack of proper sanitation, poor housing and poor drainage of surface water that facilitate human-mosquito interaction and subsequent malaria transmission .(Abate, Degarege, & Erko, 2013) ,

Similarly a malaria study conducted in Kebbi state among rural dwellers indicates that respondent correctly stated that mosquitoes which has bitten a malaria patient, was the mode of transmission, while most 139 (74.3%) reported by bites of any mosquito. Plasmodium organism as the main cause of malaria was correctly identified by only 18 (9.6%). Majority of them, 103 (55.1%) reported mosquito bite as cause of malaria.(Singh et al., 2014)

A study among student of university of lagos on malaria reveals that Surprisingly, 41.7% of the participants do not link mosquitoes to malaria. This is in line with the study of Elzubier et al (1997) who reported that there existed wrong misconceptions about malaria even among students. (Okwa & Ibidapo, 2010)

2.1.3 Endemicity of malaria

Endemicity (or disease intensity) is a measure of disease prevalence in a particular region and prevalence is the proportion of people infected at a given point in time. We predict the prevalence of malaria parasites at different locations to provide estimates of endemicity.(WHO, 2014)

Globally, an estimated half of world populations are at risk of malaria. Malaria is endemic in Africa with an estimated 80% of cases and 90% of deaths of the global burden occurring there, especially amongst children and pregnant women. Together, the Democratic Republic of the Congo and Nigeria account for over 40% of the estimated total of malaria deaths globally. Malaria is a major public health problem in Nigeria with an estimated 100 million malaria cases and over 300,000 deaths(Singh et al., 2014)

The World Bank ranked malaria as a leading cause of most disability-adjusted life years in Africa with an estimated 35 million future life-years lost from disability and premature deaths .

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The loss of growth in countries with endemic malaria is estimated at about 12 billion US Dollars annually. This has contributed to the cycle of poverty in sub-Saharan Africa (Asante et al., 2010)

Malaria is one of the world's most devastating diseases. Nearly 500 million people suffer from acute malaria each year, the majority of which are children. About one million people worldwide die yearly from the disease; about 3,000 daily, of which 90% are from sub Saharan, Africa is worst hit due to a combination of factors, which include weak health care systems, large population movement, deteriorating sanitation, climatic changes, increasing drug resistance and uncontrolled developmental activities. (Wagbatsoma, Obomighie, & Nwokike, 2004)

Endemicity is measured as the percent of people in a community who are infected with malaria parasites at a given point in time. In the lowest risk class (≤5%), control with ITNs is relatively easy. In the intermediate risk class (>5% to <40%), models predict that malaria can be controlled if everyone uses an ITN every night. In high risk areas (≥40%), additional measures, in combination with universal coverage of ITNs, are required to control malaria(WHO, 2014)

Every year, malaria causes clinical illness, often very severe in 300-500 million people and over a million people die from it. It threatens 2.2 billion people, about 40% of the world's population, undermining the health and welfare of the families, endangering the survival, straining both national and people's scarce resources (Kigodi, 2006)

Nigeria spends about 6 billion Naira annually to treat malaria and about 46% of an average household's income is expended on malaria treatment, hence the disease is a major cause of poverty in Nigeria (Anumudu et al., 2006) Tropical areas including Nigeria have the best combination of adequate rainfall, temperature and humidity allowing for breeding and survival of anopheles mosquitoes and Nigeria therefore has one of the largest population at risk of malaria in Africa and around the world.(Adetola et al., 2014)

Weak health services, increased migration of people from malarious rural areas to urban areas, limited tradition of indoor residual insecticide spraying (IRS) and bed net use, increased number of man-made mosquito breeding sites, and unplanned irrigation schemes and water collection reservoirs my hasten the spread of the disease(Abate et al., 2013)

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2.2 Recognition, types and persons at risk of malaria

2.2.1 Signs and symptoms of malaria

Malaria is an acute febrile illness. In a non-immune individual, symptoms appear seven days or more (usually 10–15 days) after the infective mosquito bite. The first symptoms – fever, headache, chills and vomiting – may be mild and difficult to recognize as malaria. If not treated within 24 hours, P. falciparum malaria can progress to severe illness often leading to death. Children with severe malaria frequently develop one or more of the following symptoms: severe anaemia, respiratory distress in relation to metabolic acidosis, or cerebral malaria. In adults, multi-organ involvement is also frequent. In malaria endemic areas, persons may develop partial immunity, allowing asymptomatic(WHO, 2013)

The clinical symptoms of malaria are caused by the development of the parasite in red blood cells. The principal symptom of malaria is fever. Others are headache and in acute cases, paroxysm, high fever, chills, fatigue, chest and abdominal pain and nausea. In malignant malaria, enlargement of the spleens, kidneys and liver occurs. P. falciparum malaria is the most dangerous form of the disease resulting in life threatening complications such as anaemia, cerebral malaria, renal disease, black water fever, pulmonary edema and dysenteric malaria. The disease also impairs physical and mental development in children, as such a major cause of death due to anemia in young children Additionally, malaria infection among students has resulted to absenteeism, leading to poor academic performances, among students,(Ezugbo-Nwobi, Obiukwu, 2011)

Similarly a study done among health workers in Uganda to measure their diagnostic knowledge of recognition of signs and symptoms of malaria indicates that the symptoms most frequently reported by suspected malaria patients presenting to the health facility were headache (84%), fever (79%), joint pain (73%), loss of appetite (64%), vomiting (55%), and general weakness (55%). (Ndyomugyenyi, Magnussen, & Clarke, 2007)

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Knowledge about sign and symptoms malaria

A study conducted in Enugu among patent medicine vendors on recognition of signs and symptoms of malaria indicate that they identified them to be fever, head- ache, weakness and restlessness for mild malaria, others include discoloration of urine and skin, cold, vomiting, loss of appetite, stomach upset, dreaming, they also give high temperature (hyperperexia),convulsion also jaundice is a noted sign of complicated malaria that differentiate it to uncomplicated malaria(Okeke, Uzochukwu, & Okafor, 2006)

Similarly Diala reported that health care provider interviewed correctly identified signs and symptoms of malaria, including headache, fever, loss of appetite, chills, general body weakness, vomiting, and abdominal discomfort. (Diala, Pennas, Marin, & Belay, 2013)

2.2.2 Types of malaria

Signs and symptoms of uncomplicated malaria

The symptoms and signs associated with uncomplicated malaria included fever, chills, excessive weakness, anorexia, vomiting, excessive sleep, 'stretching of the body', concentrated urine, headache and dull looking eyes(Ajayi et al., 2008)

Signs and symptoms of complicated malaria

For severe or complicated malaria, observable signs and symptoms includes For severe malaria, they mentioned very high fever, convulsion/fits, restlessness, prostration, excessive vomiting and weakness, yellow eyes and dark colored urine. Also complicated malaria is suspected when a febrile child is not responding to the treatment first given(Ajayi et al., 2008.).

2.2.3 Persons at risk of malaria

According to the Nigeria Malaria Indicator Survey (NMIS)2010, almost everyone in the country is at risk for malaria transmission except the minority (3%) located at an altitude 1,200 to 1,400 meters, where the transmission risk is relatively low. The duration of the malaria transmission season decreases from the South to North(Kyu, Georgiades, Shannon, & Boyle, 2013)

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Malaria is endemic throughout Nigeria, Sahel regions and the high mountain area of the plateau states experience slightly lower rates of transmission malaria parasites. Malaria currently accounts for nearly 110 million clinically diagnosed cases per year, 60 percent of outpatient visits, and 30% hospitalizations(Okafor & Oko-ose, 2012)

The most vulnerable groups, as have been observed, are the children aged below 5 years and the pregnant women, due to their comparative lower immunity status. These two groups share the country's half the malarial burden. It is estimated that the pregnant women are four times more likely to suffer from complications of malaria than non-pregnant women. Malaria is a cause of pregnancy loss, stillbirth, low birth weight, and neonatal mortality. Individuals with sickle cell and other low immune group are also at higher risk (Mazumdar & Mazumdar, 2010)

However studies have shown that malaria is more catastrophic in some categories of individuals that the other, these people includes

1. Pregnant women
2. Children of under five
3. Sickle cell anemia patient
4. Foreigners travelling from low endemic region to high endemic regions
5. People living with HIV/AIDS

Pregnant women

Each year, more than 30 million African women in malaria endemic areas become pregnant and are at risk of infection with *Plasmodium falciparum*. This results in high prevalence of patent parasitemia and clinical malaria in pregnancy. In southwest Nigeria, past studies reported malaria parasite prevalence of between 60% and 72% among pregnant women. Malaria during pregnancy causes up to 10,000 maternal deaths each year and contributes to high rates of maternal morbidity including fever and severe anemia, especially in first time mothers. It is also a cause of low birth weight and placental parasitaemia . between 75,000 to 200,000 infant deaths annually are attributable to malaria infection in pregnancy. A recent study estimated that malaria may contribute to 3–5% of maternal anemia, 8–14% of low birth weight (LBW) and 3–8% of infant mortality. The harmful impact of malaria is most apparent in the first and second

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pregnancies of most pregnant women living in areas of relatively stable transmission(Akinleye, Falade, & Ajayi, 2009)

It can be expected that 1-50% of pregnant women may carry malaria parasitaemia, especially in the placenta, without noticing it. At this period, unfortunately, the subclinical infection still poses a great danger to both the mother and the fetus. The principal impact of malaria infection in pregnancy is due to the presence of parasites in the placenta causing maternal anemia (potentially responsible for maternal death when severe) and low birth weight (LBW), a major predictor of infant and neonatal mortality (Agomo & Oyibo, 2013)

Under five children

Malaria infection during the first five years of life is a major public health problem in tropical and subtropical regions throughout the world. The consequences of severe malaria include coma and death if untreated, young children are especially vulnerable (Olasehinde, Ajayi, Taiwo, Adekeye, & Adeyeba, 2010)

Children younger than five years of age are the most vulnerable to malaria infection and it is reported that more than 250,000 children in this age group die from malaria-related complications every year in Nigeria (FMoH, 2009: 10) representing 30% of infant mortality and 25% of the global malaria deaths in children (Zyl-schalekamp, 2013)

An estimated 300,000 children die of malaria each year. It is also believed to contribute up to 11 percent maternal mortality, 25 percent infant mortality, and 30 percent under-five mortality. (Okafor & Oko-ose, 2012)

The overall fatality rate for all cases of malaria can be as high as one in ten. For reasons that are poorly understood, but which may be related to high intracranial pressure, children with malaria frequently exhibit abnormal posturing, a sign indicating severe brain damage. Malaria has been found to cause cognitive impairments, especially in children. Malaria causes widespread anemia during a period of rapid brain development and also direct brain damage and this neurologic damage results from cerebral malaria to which children are more vulnerable. Over the longer term, developmental impairments have been documented in children who have suffered episodes of severe malaria.(Olasehinde et al., 2010)

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Sickle cell Anemia patients

Individuals, both children and adults, with sickle cell anemia are widely recognized to be at increased risk of sickle cell crisis from malaria infections. It is recommended that children with known sickle cell anaemia be given chemoprophylaxis. The most common prophylactic agent is proguanil.(NATP, 2005)

Foreigners travelling from low endemic region to high endemic regions

Non-immune visitors to areas of malaria transmission are considered to be at high risk of malaria infection. In addition to the provision of information concerning effective measures to reduce human mosquito contact, non-immune visitors to Nigeria should also be given chemoprophylaxis.(NATP, 2005)

Human immunity is another important factor, especially among adults in areas of moderate or intense transmission conditions. Partial immunity is developed over years of exposure, and while it never provides complete protection, it does reduce the risk that malaria infection will cause severe disease.(WHO, 2013)

2:3 prevalence of malaria in Nigeria especially among persons in educational institutions

2:3:1 prevalence malaria in Nigeria

Malaria is a public health problem in more than 90 countries. Each year, between 300 and 500 million new cases are reported worldwide. According to the Roll Back Malaria Campaign of the World Health Organization (WHO), 90 percent of the more than one million deaths worldwide caused by malaria every year take place in Africa, and malaria constitutes 10 percent of the continent's overall disease burden.(Buabeng, Duwiejua, Dodoo, Matowe, & Enlund, 2007)

Malaria remains a major global public health and development challenge. It caused 216 million cases and 655,000 deaths worldwide in 2010, of which 81% of the cases and 91% of the deaths were from sub-Saharan Africa.(Abate et al., 2013)

Nigeria is known for high prevalence of malaria and it is a leading cause of morbidity and mortality in the country. Available records show that at least 50 per cent of the population of Nigeria suffers from at least one episode of malaria each year and this accounts for over 45 per

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cent of all outpatient visits the disease accounts for 25 per cent of infant mortality and 30 per cent of childhood mortality in Nigeria thereby imposing great burden on the country in terms of pains and trauma suffered by its victims as well as loss in outputs and cost of treatments(Olasehinde et al., 2010)

Malaria is the commonest cause of outpatient consultation and a major cause of morbidity and mortality in Nigeria 1 it accounts for about 1 million episodes annually with mortality rate of 0.15%.2 Falciparum malaria remains a leading cause of morbidity and mortality among Nigerian children. 3 About 95-99% of the adult population carries the malaria parasite with less than 30% of this number coming down with illness.(Anumudu et al., 2006)

The Plasmodium species P. falciparum is the most prevalent species in Nigeria accounting for about 98% of malaria cases in the country Steffen et al. also reported that 80-95% of malaria infections in tropical Africa are caused by P. falciparum(Agomo & Oyibo, 2013)

2:3:1 prevalence of malaria among persons in educational settings

P. falciparum malaria is the most dangerous form of the disease resulting in life threatening complications such as anemia, cerebral malaria, renal disease, black water fever, pulmonary edema and dysenteric malaria The disease also impairs physical and mental development in children, as such a major cause of death due to anemia in young children . Additionally, among students, malaria infection has resulted to absenteeism, leading to poor academic performances(Ezugbo-Nwobi, Obiukwu, 2011)

Salako (2002) stated that malaria is the commonest cause of work and school absenteeism in the country. It is the commonest cause of outpatient attendance in Nigeria. The commonest complaint of students for absenteeism has always been malaria.

A study done among primary school students in Ebonyi state to determine the prevalence of *P falciparum* reveal that the parasite rate of 40.08 % was quite high, indicating a high degree of malaria parasitaemia among primary school children in Ebonyi State. (Christiana, 2004)

Similarly a study done among students of Nnamdi Azikwe University to determine malaria parasite prevalence indicates that out of the 800 students who were tested for malaria parasite infection, a prevalence rate of 64% was obtained. (Ezugbo-Nwobi, Obiukwu, 2011)

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However, a study done among undergraduates of University of Ibadan indicate that malaria parasites were only detected in 19 of 109 samples (17%) examined for malaria parasites in thick blood films. (Anumudu et al., 2006)

2.4 The physical, psychological, social and economic effects of malaria among persons in educational settings

2:4:1 The psychological effects of malaria among students

The effects of malaria on mental and cognitive development of children have hardly been evaluated in controlled studies. Neurologic effects of malaria have been studied in subjects who have recovered from cerebral malaria. Such studies have revealed psychological as well as neurologic sequelage including learning disabilities among post-cerebral malaria subjects

While cerebral malaria is a special case, a relatively rare manifestation of the disease occurring in less than 1% of childhood infections in Africa, and even fewer elsewhere, long-term neuropsychiatric effects of general, apparently uncomplicated, malarial infections in adults have also been documented(S D Fernando et al., 2003).

The results of a study done to demonstrate the impact of malaria recurrent episodes among primary school students in Colombia indicates that malaria infections have an adverse impact on the school performance of children. The school performance of 571 children followed-up over a period of six years was assessed in two subject areas, language and mathematics, through two series of independent examinations. When potential confounders were controlled for, malaria infections were found to be a major predictor of these children's school performance.(S D Fernando et al., 2003)

Malaria has been found to cause cognitive impairments, especially in children. Malaria causes widespread anemia during a period of rapid brain development and also direct brain damage and this neurologic damage results from cerebral malaria to which children are more vulnerable. Over the longer term, developmental impairments have been documented in children who have suffered episodes of severe malaria (G.I olasehinde et al 2010)

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There exists an important hidden burden of malaria, namely, that of cognitive impairment and effects on school performance resulting from malaria infection in children. This effect could be postulated to have a long- lasting impact on patients' lives preventing them from achieving their full potential. This impact is difficult to summarize in terms of DALYs or traditional cost evaluation methods of estimating direct losses due to illness. However, given the large number of infections occurring worldwide annually, and the potential impact on lives of patients and family, this hidden burden is likely to be considerable (Sumadhya D Fernando, Rodrigo, & Rajapakse, 2010).

2:4: The physical effects of malaria among students

In a study, school absenteeism due to malaria was as high as 28% (Najera and Hempel, 2006). In another study in Kenya, primary school students miss 11% of school days per year due to malaria and secondary school miss 4.3% of school days (Leighton and Foster 1993). Another study attributed 13-50% of medically related school absenteeism to malaria (Sachs and Malaney, 2002).

Leighton and Foster (1993) also reported that Nigerian school children miss an estimated 3-12 schooldays per year which is 2-6 % of school year. Apart from the incapacitating effect of malaria attack, the direct economic costs of malaria that result from absence from school and treatment are enormous if quantified and the overall economic impact is likely to be more substantial (Greenwood and Mutabingwa, 2002). This is in terms of cost of drugs and treatment, school absenteeism which could affect general performance and lead to poor grades.

The effect on investment in education should not be undermined. Loss in lecture days represents a huge loss on academic standard and loss on the family, community and nations investment in education. Fernando et al (2003) reported that malaria has adverse impact on school performance. Cost of illness is represented by cost of treatment and time loss by the patient and the caregiver and psychosocial costs are difficult to compensate.

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Absenteeism, poor performance, examination failure, dropouts and even deaths were observed among school going adolescents and learning may be impaired by as much as 60% among school children due to malaria (Mushtaq Ahmed, Rafaqat BOTA, Muhammad Salah Jaamali, Adnan Aziz, 2013)

2:4:4 the economic and social effects of malaria

It is estimated that in Africa, malaria is responsible for over one million deaths yearly of infants and young children. The loss of the daily labor cost, coupled with cost of treatment and high mortality associated with the disease make malaria one of the main diseases retarding development in Africa. By adversely affecting people's health, strength and productivity, malaria further marginalizes and impoverishes them.(Ekpenyong & Eyo, 2008)

Africa accounts for 60% of the world's 350–500 million clinical malaria cases and a total malaria cost of US$12 billion according to World Health organization (WHO) estimate in 2000 . Households in Africa spend between $2 and $25 on malaria treatment and between $15 and $20 on prevention each month with consequent loss of resources. The human and economic costs associated with declining quality of life, consultations, treatments, hospitalizations and other events related to malaria are enormous and often lead to low productivity and lost incomes Malaria is deemed as not only a public health problem but also a deterrent to the socioeconomic growth of a country (Onwujekwe et al., 2013)

The cost of malaria to Africa is estimated at $12.5 billion per year, which represents 1.3 percent of affected countries economic growth (GDP). In some countries, malaria accounts for up to 40 percent of total health expenditure and 20-50 percent of hospital admissions. Productivity is reduced and staff turnover increased by illness-related absenteeism and children's education is severely disrupted. Rural and poor populations carry the overwhelming burden of malaria because access to effective treatment is extremely limited. In rural areas, infection rates are highest during the rainy season - a time of intense agricultural activity. Research indicates families affected by malaria harvest 60 percent less crops than other families.(malaria consortium, 2014)

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One of the major public health challenges in Nigeria is the very high prevalence of malaria. Malaria accounts for about 110 million clinical cases annually in the country. As reported by the most recent estimates, nearly half the Nigerian population annually experience one episode of malaria and the majority of outpatient visits made to the government health facilities can be attributed to malaria, while the disease tolls around 30 percent of the hospital admission. (Mazumdar & Mazumdar, 2010)

In Nigeria, malaria impacts on development of the country as it causes death, reduces human work capacity or productivity in all sectors including the agricultural sector. Malaria reduces Nigeria's GNP by 1.0% annually ($348 Million), and 25.0% of household income is expended on malaria control and treatment. (Oladepo et al., 2010),

The economic burden of malaria illness on households' accounts for almost 50% of total economic burden of illnesses in malaria holo-endemic communities. Also, living in malaria-endemic regions places an economic burden on households even if they do not actually suffer an episode of malaria and reducing malaria improves households' living standards. How- ever, it has been noted that poor people bear a disproportionate burden of the disease and have poor health seeking habits(Onwujekwe et al., 2009)

2:5 knowledge and perception of malaria in endemic communities

2:5:1 knowledge about causes of malaria

A study done in university of Benin to examine the home management of malaria in an academic environment shows that there is poor knowledge on the cause of malaria However, the poor knowledge of the cause of malaria among the population is surprising. Contrary to opinions, a minimum of secondary education improved knowledge on health matters. The low level of knowledge about the cause of malaria in a citadel of learning of this nature is an indication that outside the area of specialization, individuals do not show interest even in matters affecting their health(Wagbatsoma et al., 2004)

However a similar study done in 2010 among tertiary students in southwest Nigeria reveals that s the general awareness about malaria is not a problem among the study population. In all, 81% of the population are aware that malaria is as a result of mosquito bite and 14.6% also associated

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malaria with dirty environment. A mere 4.4% of the respondents associated the causes of malaria with too much sun(Adetola et al., 2014).

2:5:2 knowledge about signs and symptoms of malaria

A study done at University of Benin among the academics to study home management of malaria indicates that the respondents were knowledgeable on the common signs/symptoms of malaria such as fever, weakness, headache, body pains, vomiting and loss of appetite were the common features recognized,(Wagbatsoma et al., 2004)

A study done among tertiary student in southwest Nigeria, to explore their knowledge and perception to malaria shows that the study participants were quite knowledgeable about the symptoms of uncomplicated malaria. Malaria is described as a manifold symptom complex and fever is perceived as the leading symptom of malaria. In the study, 26.4% of the respondents attributed fever as a major symptom of malaria and another 8.2% attributed chills and shivering which could also be associated with fever. although the perception of symptoms such as convulsions (13.1%), unconsciousness (13.5%) and anaemia (7.9%) as part of severe malaria was not common as a response to complication of malaria in this study. Whether severe malaria with complications such as convulsions or unconsciousness are perceived as a completely different illness entities in themselves within the local concept of febrile illnesses cannot be explained through the data. (Adetola et al., 2014)

2:5:3 perceived causes of malaria

A study carried out in Oyo in 2010 reported that It was widely perceived that mosquito bite was the cause of malaria (93.2%). In 71 households (37%), intense sunshine was identified as the cause of malaria. Other reported causes of malaria were cold weather (2.1%), flies (1%) and stress (34.4%). Very few (1%) household heads replied not knowing the cause of malaria(Adedotun et al., 2010)

Similarly a study conducted among patient medicine seller in Enugu about malaria revealed that some of the PMS have more than one perception about the cause of malaria. Thus, while ten of them felt that mosquitoes were the main cause of malaria, six and four felt that it was due to the sun and drinking bad water, respectively. Less than four sellers also attributed malaria to bad

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food, cold and body contact. When asked to state how the sun causes malaria,of them said "the sun can cause malaria when it shines directly on the child".(Okeke et al., 2006)

2:5:4 perceived severity of malaria

Malaria was identified as the most disturbing disease affecting both children and adults in the endemic rural area of Ghana(Asante et al., 2010).

A qualitative study of the feasibility and community perception on the effectiveness of artemether-lumefantrine use in the context of home management of malaria in south-west Nigeria shows that the caregivers perceives malaria in children to be a serious problem in the community and the general consensus among the participants was that it kills children fast if care is not sought promptly. A young mother said: "malaria is a major health problem because if it stays long in the body it drains the child's blood(Ajayi et al., 2008)

2:6 self care approach to the management of malaria with special reference to the use of ACT

2:6:1 self care approach concept

Prompt access to effective malaria treatment is central to the success of malaria control worldwide. The Roll Back Malaria (RBM) partnership has set for 2010 a target of ensuring that 80 percent of those suffering from malaria have prompt access to, and are able to correctly use, affordable and appropriate treatment within 24 hours of symptoms onset. Most African countries are far below these targets, with only a minority of fevers being treated promptly and effectively. The 2008 World Malaria Report states that between 2006 and 2007, only 38 per- cent of fevers reported among children under five were treated with anti-malarials, and only three percent were treated with artemisinin-based combination therapy (ACT),the official first-line anti-malarial for uncomplicated malaria in over forty African countries. The number of fevers treated promptly and effectively prior to the policy change from monotherapies to ACT was equally low (Chuma, Okungu, & Molyneux, 2010)

Because of the lack of access to health care facilities, many residents of sub-Saharan Africa receive their initial treatment for febrile illnesses at home using herbal medicines, oral antipyretics, or anti-malarial drugs purchased without prescription in local shops. Even when

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malaria is suspected and anti-malarial drugs are used, patients rarely take an adequate course of treatment and many only visit a health centre or hospital after the illness has failed to respond to several days of self-treatment(Ruebush, Kern, Campbell, & Oloo, 1995)

In the rural areas of Africa, including Nigeria, more than two third of malaria episodes are self-treated, while about Most half are self-treated in urban areas.5 (96%) of the treatments, according to Umeh, are promptly administered within 24 hours. Unfortunately, only about 14.3% correctly administer the anti-malarial drugs. The nearer the treatment venue is to the home the more likely the treatment will start early. The earlier the treatment starts the better for reduction of complications and eventual death.(Wagbatsoma et al., 2004)

However there have been concerns that most malaria self-treatment practices are inadequate, inappropriate and ineffective have been expressed in relation to Tanzania and elsewhere. In fact, self-care increases the chances of using unnecessary medicines while delaying seeking of appropriate treatment of the illness, which may exacerbate and complicate the disease. In this regard, the role of self-care in the development of drug resistance, especially to anti-malarial drugs, cannot be underestimated (Metta, Haisma, Kessy, Hutter, & Bailey, 2014)

Self-medication is widely practiced worldwide and often considered as a component of self-care. However, unlike other components of self-care, self-medication has the potential to do good as well as cause harm since it involves the use of drugs. The World Health Organization (WHO) has appropriately pointed out that responsible self-medication can help prevent and treat diseases that do not require medical consultation and provides a cheaper alternative for treating common illnesses. The practice of self-medication must be based on authentic medical information otherwise irrational use of drugs can cause wastage of resources, increased resistance of pathogens, and can lead to serious health hazards such as adverse drug reaction and prolonged morbidity. In developing countries like India, self-medication is a common practice as it provides a low-cost alternative for people who cannot afford the high cost of clinical service and also as many drugs are dispensed over the counter without prescription from a registered medical practitioner.(Banerjee & Bhadury, 2012)

A study done in Tanzania to evaluate the self treatment of malaria among adults reveals that the respondents sees malaria care seeking as a process that entails different activities at different levels. The participants expressed concerns about the cost of using health care facilities, frequent

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shortages of medicines, and the attitudes and practices of health care workers, noting that factors such as these affect their health-seeking behavior and discourage them from using the services of health care facilities. (Metta et al., 2014)

Self diagnosis

The correct diagnosis of malaria is indispensable in ensuring that malaria sufferers are treated appropriately. The government, in line with WHO recommendations, advises people who suspect they have malaria to take a malaria test before receiving treatment, in the form of either microscopy or a rapid diagnostic test.

In a study done in south eastern tanzania majority of the participants had been residents of the study communities for many years. As malaria has been endemic in the region, the people have learned to live with it by developing cultural schemas for self-care. In which some participants reported self-medicating with anti-malarial drugs as soon as they had symptoms based on their strong perception that malaria was the cause.(Metta et al., 2014)

"When I had that fever I knew completely it is malaria due to how I was feeling … that cold, headache and joint pains all these were severely paining, I knew it will only be malaria and nothing else… so I decided to use anti malaria and I am doing well". Salome, female, 66 years.

Self treatment

William Osler once commented, "The desire to take medicine is perhaps the greatest feature which distinguishes man from animals". This desire is perhaps the key factor for the practice of self-medication which can be defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, prescription or surveillance of treatment.(Banerjee & Bhadury, 2012)

However, most of the early treatments for fever in most developing countries occur through self-medication with anti-malarial drugs bought from patent medicine sellers (PMS). In Nigeria, PMS are usually the first choice in health care and a recognized primary source of orthodox drugs for both rural and urban populations, especially the poor. In addition to selling drugs, they are also a major source of advice about illness and drug therapy (Okeke et al., 2006).

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The reasons for preferring drug shops include geographical accessibility, shorter waiting times, more reliable drug stocks, longer opening hours, greater confidentiality, more personable social interaction, ease of seeking advice, lower cost and flexible pricing policies and no separate fee charged for advice. However, one of the problems associated with home management and self medication with drugs from these sellers is that in most cases, neither the drug seller nor the consumer is aware of the correct dosage and duration of treatment .(Okeke et al., 2006)

A study done among tertiary students in South-West Nigeria on perception to malaria treatment reveal that a number of the respondents still rely on the use of drugs that are no more recommended by WHO for the treatment of malaria. For example the use of sulfadoxine-pyrimethamine (Fansidar and Amalar) and chloroquine in the study was high (38.7%) when compared to the use of artemeter-lumefantrine (Coartem and Lonart 32.4%) (Adetola et al., 2014)

Similarly a study done in Tanzania among adult to explore their perception of malaria treatment, the Individuals' previous experiences in managing similar conditions seem to have informed their self-medication decisions. There appears to be a large reservoir of medical knowledge in the community on malaria and its treatments. This might be due to the social marketing interventions in the area, coupled with individuals' multiple exposure to bouts of the disease and to its treatments. Thus, self-diagnosis and self-prescription were often reported by the study participants:

"… so after feeling that condition… I thought it is better I buy that amodiaquine because it is a medicine that I am used to and whenever I have a malaria condition like now .when I just use it my condition becomes better. I could have bought other medicines but there was no need because my medicine which I am used to was available". (Metta et al., 2014)

Self referrals

Self-referral for a malaria test the perceived severity of symptoms and the increased susceptibility to malaria triggered the need for a test. Majority of IDI participants indicated they obtained malaria tests from private laboratory diagnostic facilities. Only a few of the interviewees went to a health care facility for a laboratory test after painkillers failed to relieve their pain. These private laboratory facilities are found within the catchment area of the study

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communities, and are managed by trained laboratory practitioners equipped to diagnosis conditions such as malaria using a blood sample, and examination of other illnesses using urine and stool samples. At the time of this study, most of these facilities were using microscopic diagnostic tests for malaria that cost 0.64$ (Tshs 1,000). The interviewees reported referring themselves to these facilities to confirm their self-diagnosis before deciding on which medicine to use. The perceptions that some malaria symptoms resemble those associated with a urinary tract infection (UTI) or typhoid were among the reasons cited for choosing to take a malaria test. The participants observed that self- diagnosis could lead to wrong choice

2.7 Conceptual framework

A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas (ASK.COM, 2014 and Zapmeta, 2013). Zapmeta went further to say that Strong conceptual frameworks capture something real and do this in a way that is easy to remember and apply (Zapmeta, 2013)

This study will make use of the precede model as it offered the identifying factors that are linked to knowledge and utilization of medicine in the treatment of malaria, it was developed by Green and Kreuter in 1970

The PRECEDE acronym stands for predisposing, reinforcing and enabling causes, the factors can be organized into three key typologies; predisposing factors, enabling factors and reinforcing factors ,the predisposing factors those which are related to knowledge, attitude, beliefs, norms, culture and perceptions. The Enabling factors are those due to resources such as skill, time, money, drug, supplies etc while the Reinforcing factors are those related to the influence by significant others. These typologies of factors can influence behaviors positively and negatively,

The conceptual frame work that can be applied to this study again is the precede model. This model throws light on the determinants of human behaviour. This model was put together by a group of Health Promotion and Education professionals trained in the US amongst who are Marshal Kreuter and lauris

Green (Sharma and Romas, 2012). According to this model, the determinants of any given behaviour can be divided into three factors;

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1. Predisposing factors
2. Enabling factors
3. Reinforcing factors

Predisposing Factors: Refers to issues that are cognitive in nature such as presence or absence of knowledge, believes, attitudes, etc

Enabling Factors: Are related to resources and include time, money, skill, personnel, services, facilities.

Reinforcing Factors: Simply refers to the influence of significant others such as friends, parents, siblings, religious leaders, political leaders, peers, etc.

The precede model can also be used to plan an intervention (Sharma and Romas, 2012). Strongin went further to explain that multiple levels of factors such as ones mentioned above (predisposing, reinforcing, and enabling factors) could be examined in explaining instances such as drug adherence (Strongin, 2008).

Once health communications planners identify a health problem, they can use a planning framework such as preceed model. This planning systems can help identify the theories most appropriate for understanding the problem or situation. Thus, planners use the theories and models within the construct of a planning framework (National Cancer Institute, 1995).

The adaption of the PRECEEDE framework for the use of malaria medicine among undergraduate students university of Ibadan

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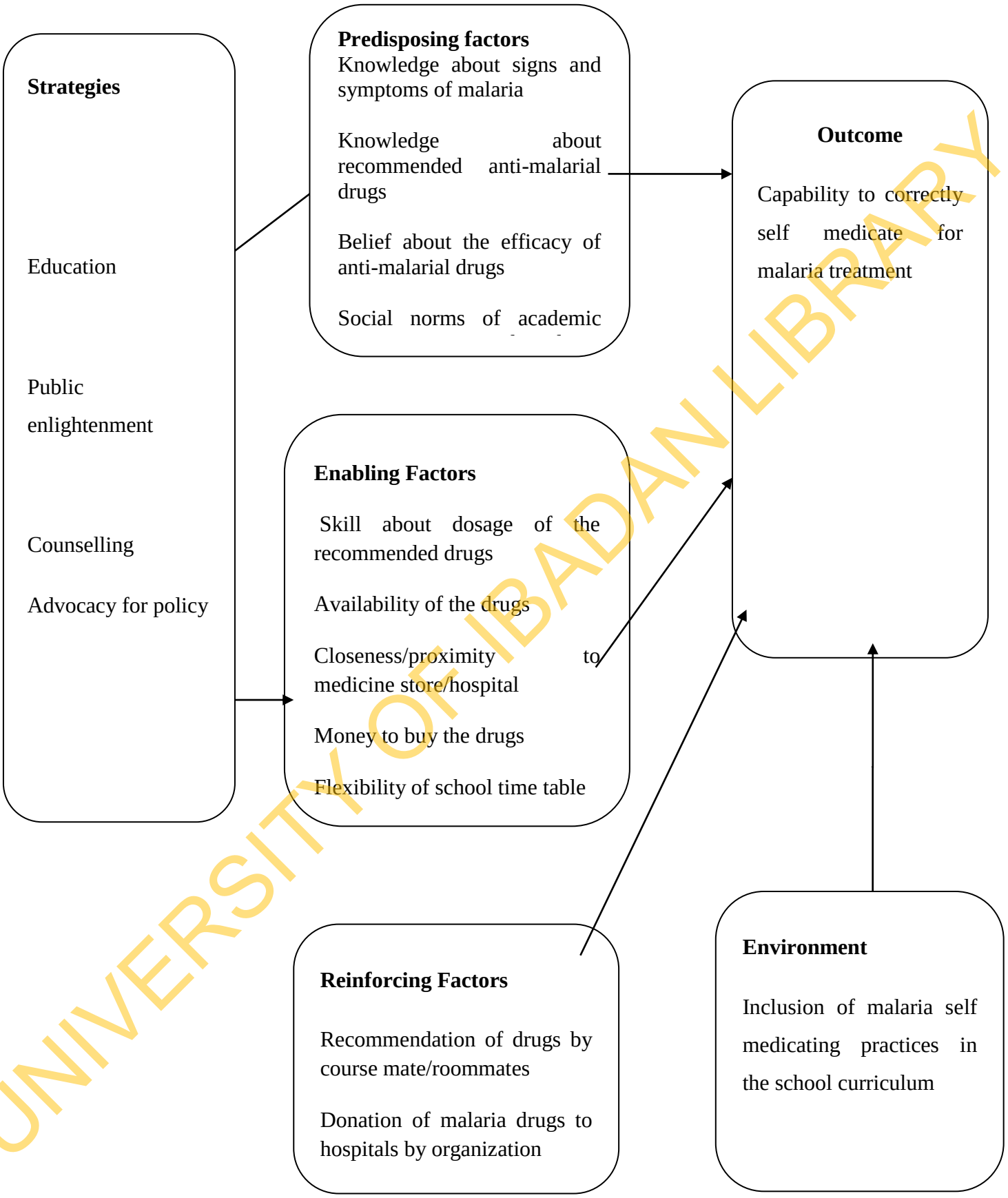

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CHAPTER THREE

METHODOLOGY

This section deals with the research design, study population, sampling technique, methods and instruments for data collection, procedure for data collection and data analysis.

3.1 Study design and scope

The study was a descriptive cross sectional in design. It was designed to investigate the self treatment practice for malaria among undergraduate students of University of Ibadan

3.2 Study setting

This study was carried out at the University of Ibadan, The institution **(UI)** is the oldest and one of the most prestigious Nigerian universities, The origins of the university are in Yaba College, founded in 1932 in Yaba, Lagos as the first tertiary educational institute in Nigeria. Yaba College was transferred to Ibadan, and it becoming the University College of Ibadan, in 1948. The university was transferred to present site on 17 November 1948. The site of the university was leased to the colonial authorities by Ibadan native chiefs for 999 years. The first students began courses in January of that year. Arthur Creech Jones, then Secretary of State for the Colonies, inaugurated the new educational institution. The university was originally instituted as an independent external college of the University of London, Some of the original buildings were designed by the English modernist architects Maxwell Fry and Jane Drew. A 500-bed teaching hospital was added in 1957. The University of Ibadan became an independent university in 1962.Sir Abubakar Tafawa Balewa, first Prime Minister of independent Nigeria, became the first Chancellor of the independent university. The first Nigerian vice chancellor of the university was Kenneth Dike, after whom the University of Ibadan's library is named. The University has residential and sports facilities for staff and students on campus, as well as separate botanical and zoological gardens (university of Ibadan, 2002)

Halls of residence

The institution has 12 halls of residence. Nine out of the halls of residence are for undergraduate students (see table 3.1 for details). Post-graduate students are accommodated in two halls of residence, namely; Abdulsalam Abubakar hall (also known as New PG hall) and Tafawa Balewa hall. The Obafemi Awolowo hall accommodates both undergraduate and post-graduate students.

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Out of the 10 halls of residence available for undergraduates, females are accommodated in 4 halls of residence. These include Queen Elizabeth II hall, Queen Idia hall, Alexander Brown Halland ObafemiAwolowo Hall.

The University Health centre

The Health services of the University is NHIS Accredited comprehensive primary health centre with strong emphasis on community health programmes, renewed and strengthened partnership with CCH and NGOS. The UHS embarked on a comprehensive staff medical screening of all members of staff in 2011, and has since then regularly paid faculty Health visits aimed at providing works place wellness as well as disseminating information on prevailing public health problems.

The University Management has just added a building to the Jaja Clinic Complex to provide facilities for a dental Clinic and a maternity centre in addition to the three health posts established in the Morondiya Campus of the DLC, Abadina and Independence Hall. The sick bay has been renovated and made more comfortable with the installation of TV sets, orthopaedic mattresses and insecticide treated mosquito nets. A bus ambulance and a modern blood chemistry analyzer have been purchased, while water and electricity are constant in the Clinic. Documentation has been computerized, and this ensures a reduction in waiting-time. To further strengthen the wellbeing of the members of the University Community, the UHS registered, screened and trained food handlers on Campus, while the influx of water and bread into the campus is being regulated.(U.I annual reports 2012)

There are thirteen faculties altogether: Arts, Science, Agriculture and Forestry, Social Sciences, Education, Veterinary Medicine, Technology, Law, Public Health and Dentistry, clinical sciences, and basic medical sciences and with a population of more than 13,000 students as at may, 2014.details of students distribution in each faculties are shown in table 3.1 below

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Table 3.1 showing the distribution of students in each faculties for 2013/2014 academic sessions

Category of faculty	Name of faculty	Number of male students	Number of female students	Total number of student
Science based	Science	1437	828	2265
	Technology	1079	211	1290
	Basic medical science	235	259	494
	Clinical science	573	530	1103
	Public health	47	92	139
	Dentistry	95	102	197
	Pharmacy	161	188	349
	Agric &forestry	618	621	1239
	Veterinary medicine	243	150	393
Art based	Law	282	421	703
	Arts	697	1178	1875

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	Education	749	963	1712
Social science	Social science	819	721	1540
Total	13 faculties	7035	6264	13299

Source; Academic planning unit

3.3 Study Population.

The study population comprised of both male and female undergraduate students of the University of Ibadan.,

Inclusion and exclusion criteria

One of the criteria for this study was a study participant must be either male or female undergraduate student of University of Ibadan who is running a programme presently in the university, these criteria automatically exclude students on the distance learning programme of the university as well as the post graduate student

3.4.1 Sample size determination

The sample size (n) for the study was determined by using Lwanga and Lemeshow(1991) sample size formula:

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

Where n= required minimum sample size

Z= confidence limit of survey at 95% (1.96)

P= Proportion of malaria prevalence among students (Anumundu 2006)

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

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$n = \frac{1.96^2 \times 0.23 \times 0.77}{0.05^2} = 272$

A non-response rate of 10% of 272 (27.2)was added to the calculated sample size to increase the sample size to 302, In order to address any possible case of incomplete response.

3.4.2 Sampling Procedure

A multi stage sampling techniques was used in selecting the sample size

First stage sampling level

There are 13 faculties of the university of Ibadan with undergraduate, the 13 faculties were first stratified in three majors science based, art based and the social sciences, the science based faculties are science, technology, basic medical science, clinical science, public health, dentistry

Pharmacy, agric and forestry and veterinary medicine

The art based faculties are law, arts and education, while the social science based has only one faculty, table 3.2 below summarizes the details of the faculties selected and number of students selected in each faculties

The nine science based faculties were further differentiated into health related sciences and non health related sciences, the health related sciences were ;basic medical science, clinical science, public health, dentistry, pharmacy and veterinary medicine on the other hand the non health related faculties were science, technology agric and forestry

Three faculties were randomly selected by balloting from the six health related sciences to ensure fair and adequate representation of respondents and two from the three non health related, the social science was purposively selected being only one faculty and two faculties was randomly selected from the three arts based faculties, making the total faculty selected to be nine in total, the sum total of students in the faculties selected equals (10858)

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Faculties selected (* *)

1. clinical science (1103)
2. pharmacy (349)
3. basic medical science(494)
4. science(2265)
5. agric(1239)
6. law(703)
7. arts(1875)
8. social sciences(1540)
9. technology(1290)

Total=10858 (***figures culled from records sourced from academic planning unit)*

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Table 3.2 showing distribution of selected faculties and number of students selected in each faculty

S/N	Faculties	Number of students in selected faculties*	Proportion of respondents to be selected per faculty	Number of students in selected department*	Proportion of respondents to be selected in selected dept
1	Clinical sciences	1103	1103x302 =31 10858	Medicine =828	828x31 1103 =23
				Physiotherapy=123	123x31 1103 =4
				Nursing=152	152x31 = 4 1103
2	Pharmacy	349	349x302 10858 =10	Pharmacy=349	10
3	Basic medical science	494	494x302 10858 =14	Biochemistry =240	240x14 494 =7
				Physiology =245	245x14

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					494 =6
				Medical laboratory science =9	9x14 494 = 1
4	Sciences	2265	2265x302 10858 =63	Chemistry =369	369x63 812 =28
				Computer science=228	228x63 812 =18
				Statistics =215	215x63 812 =17
5	Agric	1239	1239x302 10858 =34	Agric econs =138	138x34 381 =17
				Crop production=32	32x34 381 =4
				Forestry =111	111x34 381 =13
6	Law	703	703x302 10858 =19	Law =703	19

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7	Arts	1875	1875x302 10858 =52	Communication and language =254	254x52 737 =18
				Theatre arts =265	265x52 737 =19
				Linguistics =215	215x52 737 =15
8	Social sciences	1540	1540x302 10858 =43	Psychology =352	352x43 994 =15
				Sociology =351	351x43 994 =15
				Political science =291	291x43 994 =13
9	Technology	1290	1290x302 10858 =36	Electrical electronics =205	205x36 509 =14
				Industrial production =139	139x36 509 =10
				Petroleum engineering =165	165x36

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					509 =12
Total	9 faculties	10858	302		302

Source; records from academic planning unit

Second stage

Proportional sampling methods was used to select the proportion of respondents to be picked in each faculty as summarized in table 3.2 above

Third stage

Three department were randomly picked from each selected faculty except pharmacy and law which has only one department each, details of selection is summarized in table 3.2 above

Fourth stage

Proportionate sampling was used to select number of students to recruited in each department selected

3.5 Method of data collection

The data were obtained using self –administered semi-structured questionnaire instrument which was developed based on the research objectives, review of literature and consultation with my research supervisor and experts in the field of malaria and health promotion and education generally.

The focuses of each of the sections are as follows

Section A; The socio demographic characteristics

Section B; Knowledge on signs and symptoms of malaria,

Section C; Knowledge about medicines used for the treatment of malaria

Section D Perceptions relating to the use of anti-malaria medicine

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Section E Practices related to malaria medicine

3.6.1 Validity of the Study

The draft instrument which was developed after consulting relevant literatures was subjected to peer and expert reviews, particularly experts in public health and comments from supervisor was used to further perfect the instruments.

3.6.2 Reliability of the study

Reliability was ensured through the use of Cronbach Alpha statistical test on the pre-test study, Cronbach's alpha is a measure of internal consistency, that reveals, how closely related a set of items are as a group. The validity and reliability of the instruments was ensured by conducting a pre-test among thirty-eight (10% of minimum sample size) undergraduates students of Obafemi Awolowo University(O.A.U) ile-ife, which has similar characteristics but geographically distance from the main study location Cronbach's Alpha 0.876 was obtained which imply the instrument was reliable

3.7 Data management analysis and presentation

The data collected was checked for completeness and accuracy in the field. A Serial number was assigned to each questionnaire for easy identification and for correct data entry and analysis. respondents knowledge was assessed on a 51 point knowledge scale and scores were categorized as follows, >20,21-35 and 35 and above as poor, fair and good scores respectively, the data were analysed using descriptive statistics, chi square and t test at α=0.05 level of significance

3.8 Ethical Consideration

Approval and permission was obtained from the appropriate authority on getting to the respondents lecture room before administering the questionnaire to respondents who wants to participate in the study voluntarily

Informed consent was obtained from the study participants. Participants had the choice of participating or withdrawing their consent freely at any time. Confidentaility of each participant's response was maintained during and after the collection of data, only registration numbers was assigned to each questionnaire and no name was required on the questionnaire

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3.9 Limitation of the study

The study was conducted at a time the respondents were writing their examination and thus made it quite hard to convince them to participate but after establishing rapport and orientating them on the immense advantage they will be contributing by participating to University of Ibadan and knowledge at large they were quite willing and voluntarily participated in the study

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CHAPTER FOUR

RESULT

4.1Sociodemographic information

Three hundred and two questionnaires were retrieved and analyzed, this accounts for 86% respondents rate of the three hundred and fifty questionnaires administered. The mean age of respondents was 21.6 ±3.42 years. The other socio-demographic characteristics of respondents are shown in table 4.1.1 Male accounted for 63.6% of the sample. Respondents aged group category16-20 had the highest proportion 45. 7% followed closely by those aged 21-25 (44.4%) Most (93%) respondents were single, Majority of the respondents were Christians (84%). The Yoruba's constitutes 76.5% about 3 in 4 respondents

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Table 4.1.1: Demographic information of respondents *N=302*

Characteristics		**Frequency No's n=302**	**Percentage (%)**
Sex	Male	192	63.6
	Female	110	36.4
Age(years)	16-20	138	45.7
	21-25	134	44.4
	26-30	26	8.6
	31-35	4	1.3
Marital status	Single	281	93
	Married	20	6.6
	Separated	1	0.3
Religion	Christianity	255	84.4
	Islam	39	12.9
	Traditional	1	0.3
	Eckarcar	7	2.3
Ethnicity	Yoruba	231	76.5
	Igbo	44	14.6
	Hausa	5	1.7
	Edo(Owan,Ishan)	12	4.0

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Fig 4.1.1.below highlights the details of the faculty and department of the respondents most of the respondents are from the faculty of science sixty-three (20%) followed by respondents from faculty of arts fifty two(17.6%),faculty of basic medical science and clinical science have the least frequencies accounts for only(4.6% and 3.3%) respectively, the respondents cuts across total of twenty three department with the department of chemistry and medicine having the highest proportion (9.6 and 7.3% respectively)(see table 4.1.2 for distribution of department)

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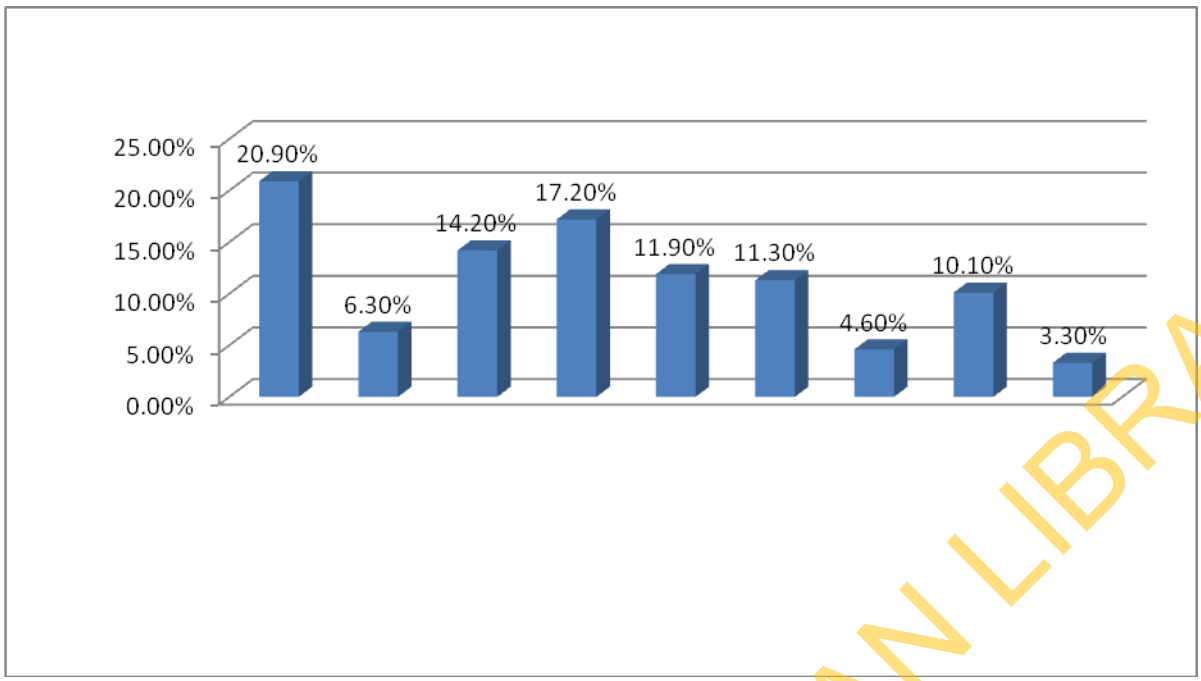

Fig 4.1.1 showing the distribution of respondents per faculty

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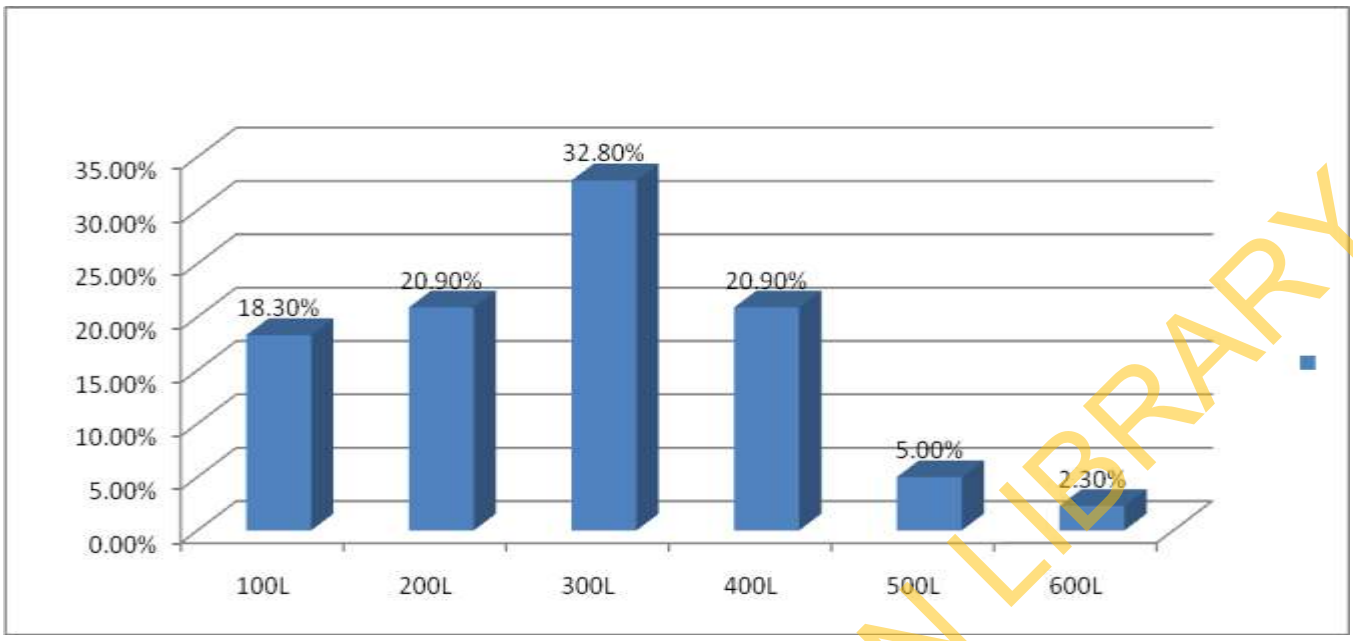

Fig 4.1.2 showing the distribution of respondents per level

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Table 4.1.2 showing the distribution of respondents per departments

Characters	Departments	Frequency No's	Percentage (%)
	Political science	13	4.3
	Sociology	15	5.0
	Psychology	15	5
	Computer sciences	17	5.6
	Chemistry	29	9.6
	Statistics	17	5.6
	Electrical electronics	14	4.6
	Industrial production	10	3.3
	Petroleum engineering	12	4.0
	Law	19	6.3
	Pharmacy	10	3.3
	Biochemistry	7	2.3
	Physiology	7	2.3

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	Medical laboratory science	1	0.3
	Theater arts	19	6.3
	Linguistics	15	5.0
	Communication and language arts	18	6.0
	Medicine	22	7.3
	Nursing	4	1.3
	physiotherapy	4	1.3
	Crop production	4	1.3
	Agric economics	17	5.6
	Forestry	13	4.3

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4.2.1 Causes of malaria

Table 4.2.1 below shows the respondents knowledge on causes of malaria, slightly over half (54%) perceived dirty environment as a cause of malaria. The proportion of those who were able state correctly that *plasmodium germ* is the cause of malaria constituted 42% for details see table 4.2.1 below

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Knowledge on signs and symptoms of malaria

*Table 4.2.1; (perceived Causes of malaria) *** ***N=302***

Perceived causes	**Response**	**Frequency(No's)**	**Percentage (%)**
Dirty environment	Yes	163	54
	No	139	46
The gods	Yes	6	2
	No	296	98
Stress	Yes	46	14.2
	No	250	85.8
Mosquito*	Yes	246	81.5
	No	56	18.5
Plasmodium*	Yes	173	57.3
	No	129	42.7
Working under sun	Yes	19	6.3
	No	293	93.7

*Correct responses

**multiple responses were allowed

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4.2.2 Transmission of malaria

Most respondents (96.7%) stated that malaria is transmitted through the bite of mosquito, most respondents (95%) were not aware that malaria can be transmitted from mother to baby during pregnancy (see table 4.2.2 for details)

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*Table 4.2.2; (Transmission of malaria) *** **N=302**

Characteristics	Responses	No's	(%)
Bite of mosquitoes*	Yes	292	96.7
	No	10	3.3
Blood transfusion	Yes	41	13.6
	No	261	86.4
Living in the same apartment with infected person	Yes	25	8.3
	No	277	91.7
Mother to baby during pregnancy*	Yes	15	5
	No	287	95
Sharing needles and syringe	Yes	15	5
	No	287	97

**Multiple responses were allowed

*correct answers

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4.2.3; (symptoms of uncomplicated malaria)

Table 4.2.3 reveals that majority (73.5%) of respondents reported headache as a major sign of malaria the other listed symptoms of malaria include chills(38.4%),muscle/joint pains(35.8%) and high body temperature (73.2%),(see table 4.2.3 for details)

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*Table 4.2.3 (Perceived symptoms of uncomplicated malaria)***

Characteristics	Responses	No's	Percentage (%)
Headache	Yes	222	73.5
	No	80	26.5
Fever chills	Yes	116	38.4
	No	186	61.6
Loss of appetite	Yes	170	56.3
	No	132	43.7
Stomach ache	Yes	28	9.3
	No	274	90.7
Muscle or joint pain	Yes	108	35.8
	No	194	64.2
Itching of the body	Yes	17	5.6
	No	285	94.4
High body temperature	Yes	221	73.2
	No	81	26.8
Nausea and vomiting	Yes	95	31.5
	No	207	68.5

**Multiple responses were allowed

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4.2.4; symptoms of complicated malaria

Only 23.5% of the respondents were able to recognize anemia as a symptoms of complicated malaria, the proportion of those who listed convulsion as a symptom of complicated malaria was 25.8% (see table 4.2.4 for details)

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*Table 4.2.4; (Symptoms of complicated malaria) *** ***N=302***

Characteristics	**Responses**	**Frequency No's**	**Percentage (%)**
Anaemia	Yes	71	23.5
	No	231	76.5
Hyperpyrexia	Yes	227	75.2
	No	75	24.8
Internal bleeding	Yes	9	3
	No	292	97
Convulsion	Yes	78	25.8
	No	224	74.2
Chest pain	Yes	27	8.9
	No	275	91.1
Jaundice	Yes	36	11.9
	No	299	88.10

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4.2.5; Ever heard of the arteminsinin based combination therapy

Less than half (44.7%) of respondents were aware of the arteminsinin combination therapy(ACT).The major sources of information of ACT included doctor (27.3%) pharmacist 24.2%),health facility (12.9%) and newspaper (17.5%) (See table 4.2.5 for details).

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Table 4.2.5 awareness and sources of information of arteminsinin based combination therapy) **

Characteristics	**Responses**	**No's (%)**	**Percentage (%)**
Ever heard of ACT(N=299)	Yes	134(44.4)	44.4
	No	165(55.3)	55.3
***Sources of information*(N=302)**			
Doctor	Yes	83	27.5
	No	219	72.5
Pharmacist	Yes	74	24.2
	No	229	75.8
Health facility	Yes	39	12.9
	No	263	87.1
Working place	Yes	21	7.1
	No	281	93
Newspaper	Yes	53	17.5
	No	249	82.5
Radio	Yes	58	19.2
	No	244	80.8
Television	Yes	70	23.2
	No	232	76.8
Patient medicine vendors	Yes	26	8.6
	No	276	91
Nurses	Yes	25	8.3
Drug hawkers	Yes	13	4.3
	No	289	95.7
Magazine	Yes	37	12.3
	No	265	87.7
Others	Classes	9	3
	Internet	22	7.3

** Multiple responses were allowed

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Awareness and knowledge about medicines used for malaria

4.3.1; Drugs if used for treating malaria

Table 4.3.1 summarizes the respondents knowledge about medicines used in treating malaria, chloroquine was mentioned by 71.9%. arthemeter lumenfantrine was also majorly mentioned by (59.9%) .Septrin (24 .2%) and ampiclox (18.9%) were wrongly listed as medicines for treating malaria (see table 4.3.1 for details)

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Table 4.3.1; Drugs used for treating malaria **N=302**

Variables		**Frequency No's**	**Percentage (%)**
Arthemether-lumenfantrine	Yes	181	59.9
	No	35	11.6
	No response	86	28.5
Amodiaquine-artesunate(larimal,dart,malmed)	Yes	176	58
	No	36	11.9
	No response	90	29.8
Artesunate sulphamethoxine &pyrimethamine (co-arinate,farenax	Yes	179	59.3
	No	35	11.60
	No response	88	29.10
Arthemether-quinine(mefloquine,artequine)	Yes	136	45
	No	43	4.2
	No response	123	40.7
Septrin	Yes	73	24.2
	No	95	31.5
	No Response	134	44.4
Paracetamol	Yes	152	50.3
	No	72	23.8
	No response	78	25.8
pyrimethamine-sulphadoxine(fansidar)	Yes	146	48.3
	No	37	12.3
	No response	119	39.4
Chloroquine	Yes	217	71.9
	No	26	8.6
	No response	59	19.5
	Yes	160	53

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Quinine	No	44	14.6
	No response	98	32.5
Ampiclox	Yes	57	18.9
	No	116	38.4
	No response	129	42.7
Halofantrine	Yes	54	17.9
	No	93	30.8
	No response	155	51.3

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4.3.2 Malaria medicines if arteminsinin based combination therapy

Respondents knowledge about arteminsinin based malaria medicines is contained in table 4.3.2 several respondents (34.8) wrongly listed fansidar as an arteminsinin based drugs while (53.6%) correctly listed coartem as an arteminsinin based drug,(see table 4.3.2 for details)

Table 4.3.2; respondents knowledge of arteminsinin based drugs ***N=302***

Variables		**Frequency (No's)**	**Percentage (%)**
Camoquine	Yes	96	31.8

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	No	47	15.2
	No response	159	52.6
Nivaquine	Yes	67	22.1
	No	66	21.9
	No response	179	56.0
Quinine	Yes	100	33.1
	No	48	15.9
	No response	154	51
Fansidar	Yes	105	34.8
	No	57	18.9
	No response	140	46.4
Halfan	Yes	42	3.9
	No	82	27.2
	No response	178	58.8

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Coartem	Yes	162	53.6
	No	24	7.9
	No response	116	38.4

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4.3.3; malaria not getting cured after treatment

More than half of the respondents (60.6%) are aware that there has been situations in which malaria does not get cured after treatment, although twelve respondents (4%) could not respond when asked the questions

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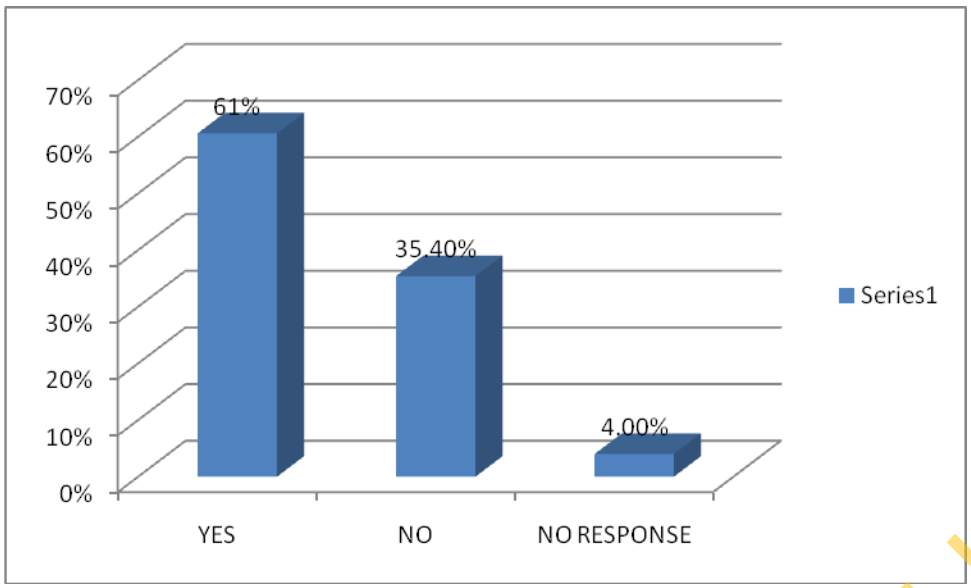

Figure 4.3.3; malaria not getting cured after treatment

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4.3.4; medicines no longer effective for treating malaria

Respondents were asked about malaria drugs that are no longer effective slightly over half (58.6%) of the respondents were aware that chloroquine is no longer effective for treating malaria. A small proportion(14.2%) listed coartem as an anti-malaria which is no longer effective for treating (see table 4.3.4 for other listed medicines)

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Table 4.3.4; knowledge of respondents about medicines no longer effective for treating malaria

variable		Frequency (No's)	Percentage (%)
Camoquine	Yes	84	27.8
	No	218	72.8
Coartem	Yes	43	14.2
	No	259	85.8
Chloroquine	Yes	177	58.6
	No	126	41.4
Nivaquine	Yes	82	27.2
	No	220	72.8

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4.3.5 Knowledge related to anti-malaria medicines

Few respondents (14.9%) believed chloroquine to still be the most effective drug for treating malaria, while (68.5%) were aware that coartem is now the new drugs recommended for treating malaria, many respondents (41.7%) stated that coartem can only be used when prescribed by a health worker, (table 4.3.5 for details)

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Table 4.3.5; Knowledge of respondents relating to medicines for treating malaria

variable		Frequency (No's)	Percentage (%)
Chloroquine still the most effective medicine recommended	True	45	14.9
	False	159	52.6
	Do not Know	82	27.2
	No response	16	5.3
Coartem is now the new drug used in place of chloroquine	True	207	68.5
	False	15	5
	Do not know	60	19.9
	No response	20	6.6
The most effective malaria drugs recommended for sickle cell is proguanil	True	24	7.9
	False	15	5
	Do not know	237	78.5
	No response	26	8.6
It is safe for women who are pregnant from 3-6month to take coartem	True	46	15.2
	False	53	17.5
	Do not know	175	57.9
	No response	28	9.8
Coartem can only be used for treating malaria when prescribed	True	126	41.7
	False	68	22.5
	Do not Know	87	28.8
	No response	21	7

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4.3.6; Knowledge relating to dosage of malaria medicines

Table 4.3.6 reveals that less than half of the respondents (42.4%) were able to give accurately the dosage for 24pack of coartem for day 1,for day 2, respondents(41.1%),however, for 6 tablets per pack coartem, aside (21.9%) respondents that gave wrong responses (42.7%) respondents could not respond when asked the dosage of the drug for day 3(see table 4.3.6 for details of other dosage responses)

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Table 4.3.6; Dosage of malaria medicine

Variable	Day	Category of responses	Frequency (No's)	Percentage (%)
Coartem 24 per pack	Day 1	Correct	122	42.4
		Incorrect	66	66
		No response	108	35.8
	Day 2	Correct	124	41.1
		Incorrect	70	23.2
		No response	108	35.8
	Day 3	Correct	124	41.1
		Incorrect	69	22.8
		No response	109	36.1
Coartem 6 per pack	Day 1	Correct	108	35.8
		Incorrect	66	21.9
		No response	122	42.4
	Day 2	Correct	107	35.4
		Incorrect	66	21.9
		No response	129	42.7
	Day 3	Correct	107	35.4
		Incorrect	66	21.9
		No response	129	42.7
Artequine	Day 1	Correct	90	29.8
		Incorrect	41	13.6
		No response	171	56.6
	Day 2	Correct	91	30.1
		Incorrect	40	13.2
		No response	171	56.6
	Day 3	Correct	91	30.1
		Incorrect	40	13.2
		No response	171	56.6

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4.3.7 Knowledge score category

Mean knowledge score of respondents was 22.2 points out of a maximum of 51 points , only (5.6%) respondents had good knowledge, slightly over half(51.3%) of the respondents had fair knowledge, while the rest of the respondents(43.9%)had poor knowledge relating to malaria and medicines for treating it.

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N=302

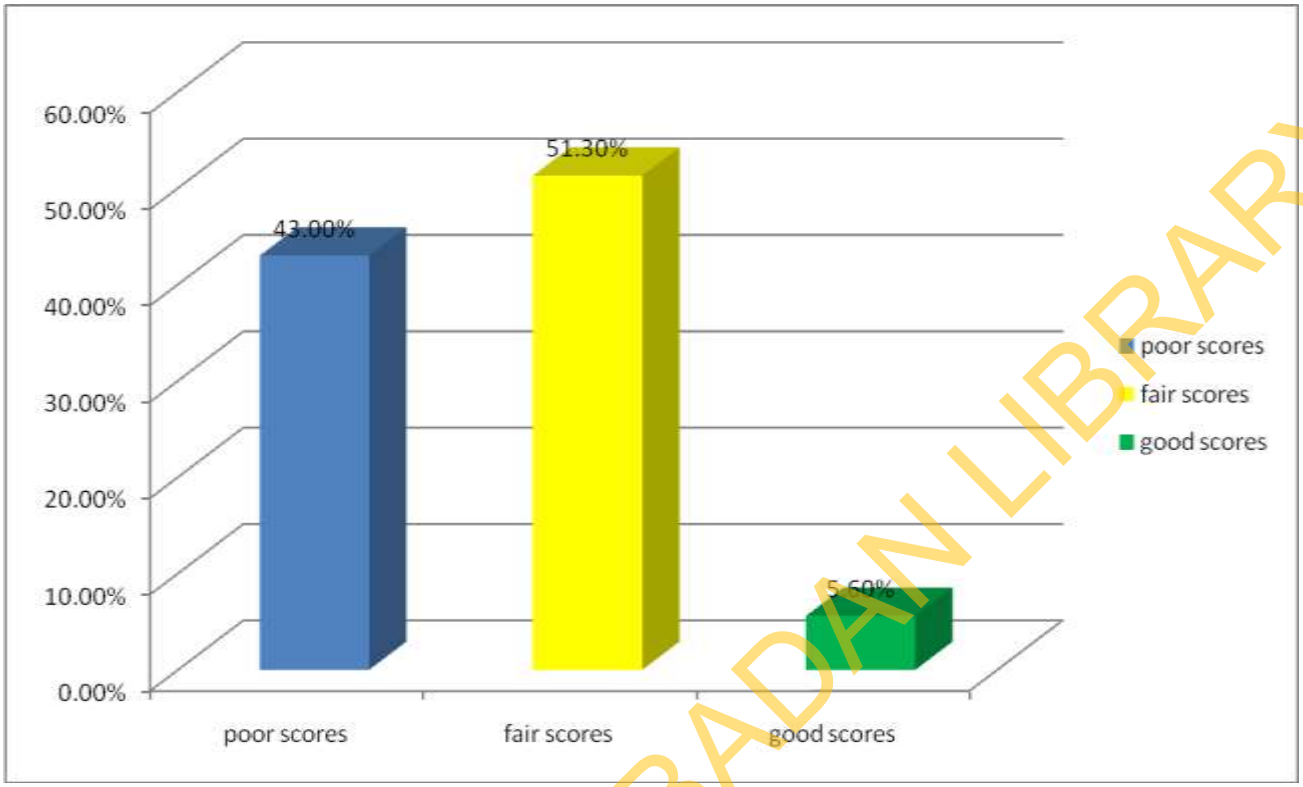

Figure 4.3.7; knowledge score category

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Perception relating to use of anti-malaria medicines

4.4.1 Perception relating to malaria

Table 4.4.4 highlights the respondents perception to malaria, majority (72.5%) disagree with the perception that only students who lived off campus needs to be worrying about malaria. However hundred and thirty four respondents believed that it is wrong for one to treat oneself for malaria furthermore (39.1%) respondents believed chloroquine to be still very effective for treating malaria, a few respondents (11.6%) respondents however believed that malaria goes away on its own even if not treated, meanwhile (19.9%) respondents believed that herbs and concoction are more effective for treating malaria (see table 4.4.1 for other perceptions)

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Table 4.4.1; perception statements relating to malaria **N=302**

Perception statements	**Responses**			
	Agree (%)	Can't say (%)	Disagree (%)	No response (%)
Only few students who live off campus need to be worrying about malaria	16 (5.3)	37 (12.3)	219(72.5)	30 (9.9)
Malaria goes away on its own (even if not treated) after few days	36(11.9)	50(16.6)	187(61.9)	29(9.6)
Malaria is not really serious as people think of it	21 (7)	31(10.3)	211(69.9)	39(12.9)
The new anti-malaria medicines are too expensive	83(27.5)	102 (33.8)	83 (27.5)	34(11.3)
One should wait for two or three days for observed symptoms of malaria to persist before treating one self	78(25.8)	41 (13.6)	151 (50)	32 (10.6)
It is not proper for one to treat his/herself when one has malaria	134(44.4)	41(13.6)	90(30.1)	36(11.9)
Chloroquine is still very effective for treating malaria	69(22.8)	118(39.1)	82(27.2)	33(10.9)
Combining herbs with drugs will ensure that malaria goes away completely	55(18.2)	106(35.1)	106(35.1)	35(11.6)
Herbs concoction are more effective for the treatment of malaria compared with western medicine	60(19.9)	110(36.4)	101(33.4)	31(10.3)
Self medication involving malaria drugs should never be practiced by students	157 (52)	44(14.6)	69(22.8)	32(10.6)

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4.4.2 Perception score category

Very few respondents (9.3%) had highly favorable perception of malaria while the rest (90.7%) had fairly favorable perception, see fig 4.4.2 for details

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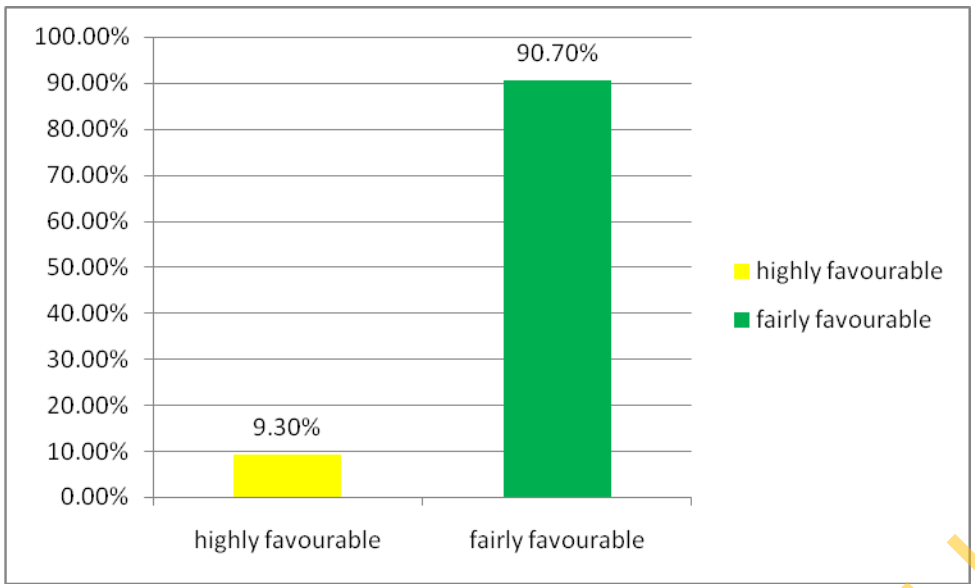

Figure4.4.2 perception score

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Malaria experiences and pattern of anti-malaria drug usage

4.5.1 Malaria experiences

(4.6%) respondents reported that they had never experienced malaria, most (94.6%) respondents reported that they had ever experienced malaria; see table 4.5.1 for details

Table 4.5.1; Ever experienced malaria **N=302**

Responses	No's (%)
Yes	286 (94.7)
No	14 (4.6)
No response	2 (0.7)

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4.5.2; malaria experiences in a year

Table 4.5.2 detailed the frequency of malaria episodes experienced in a year among respondents, some (32.1%) reported that they have experienced malaria episodes twice a year while only -one (10.3%) experienced no malaria episodes within a year, frequency of episodes are shown in figure 4.5.2

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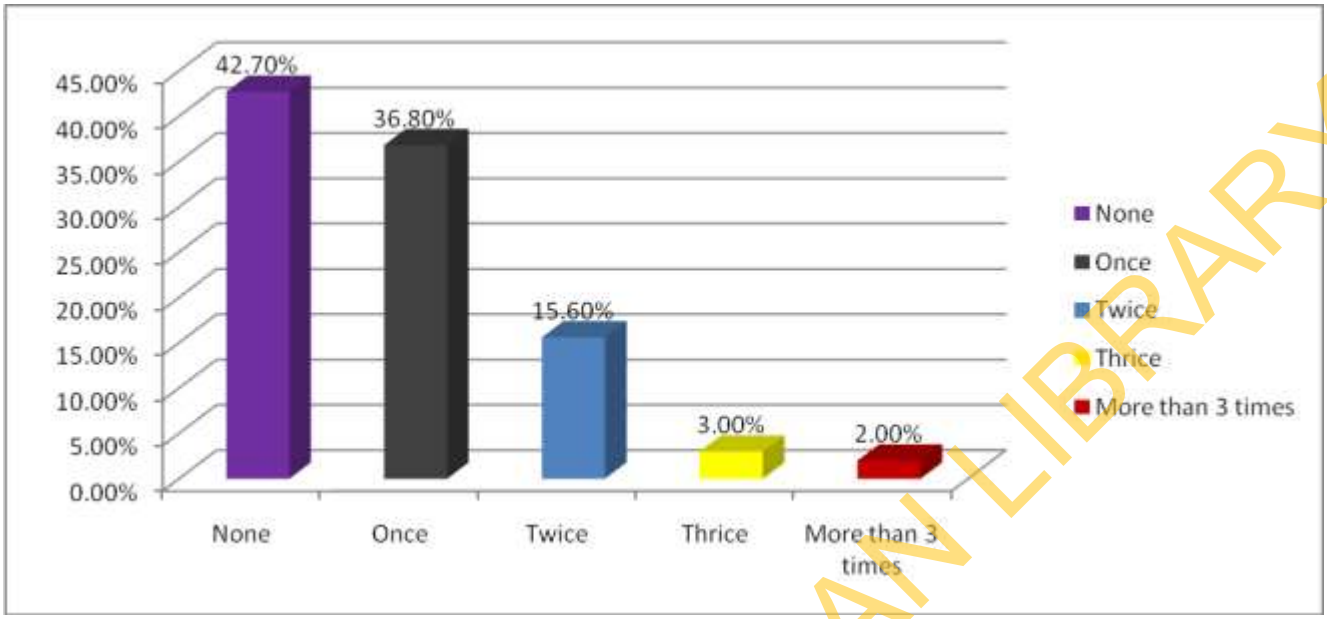

Figure 4.5.2 Frequency of malaria in a year

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4.5.3; malaria experiences last six months

Respondents were asked the number of times they experienced malaria in the last six months preceding the study, several of them (36.8%)have experienced it once while forty-seven respondents(15.6%) have experienced it twice, but many respondents(42.7%) claimed they did not experienced malaria episodes in the last six months(see fig 4.5.3 for details)

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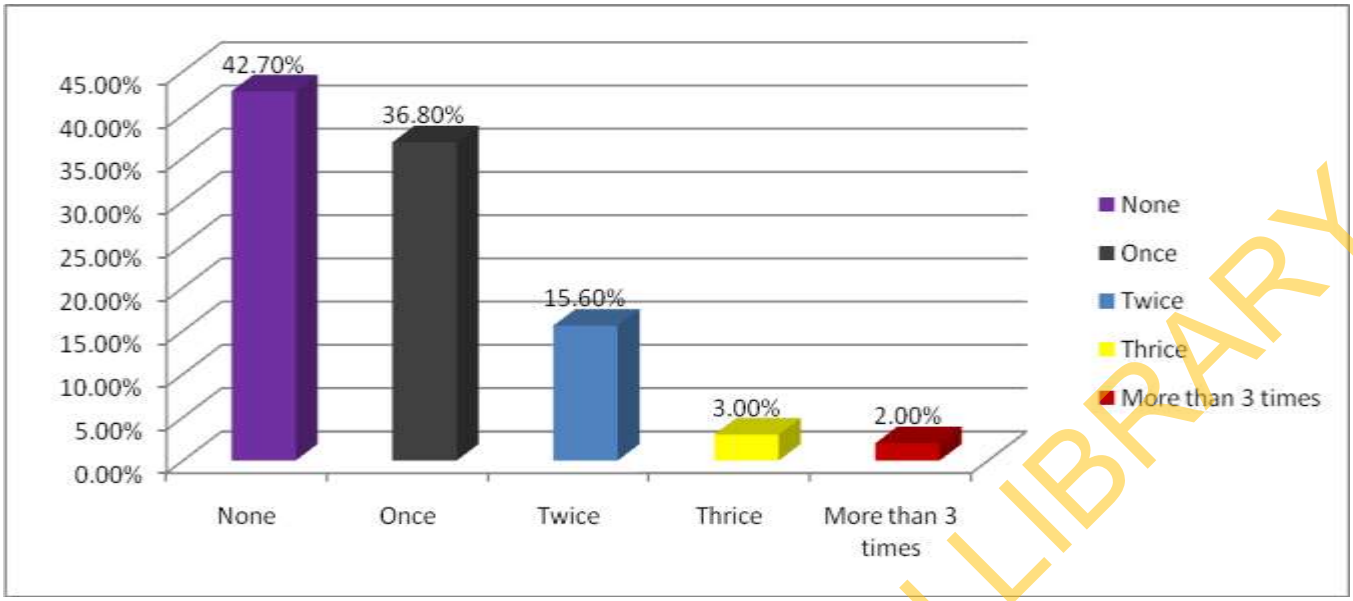

Figure 4.5.3; Malaria experiences last six months

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4.5.4 Ever treat yourself without seeing a health worker

Majority (78.8%) of respondents had treated themselves for malaria without seeing a health worker, see table 4.5.4 for details)

Table 4.5.4; ever treat yourself without seeing a health worker

Ever treated self	No's (%)
Yes	238 (78.8)
No	63 (20.9)
No response	1 (0.3)

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4.5.5; Malaria medicines ever used

Malaria medicines ever used by respondents includes coartem/lonart(53%), paracetamol (55%), chloroquine(30.1%), halfan(6.3%),and ampiclox (18.2%) (See table 4.5.5 for details)

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Table 4.5.5; malaria medicines ever used

Variable		Frequency (No's)	Percentage (%)
arthemether-lumenfantrine (coartem/lonart)	Yes	161	53
	No	73	24.2
	No response	68	22.4
AmodiaquineArtesunate(larimal,dart,malmed)	Yes	68	22.5
	No	122	40.4
	No response	112	37.1
artesunate sulphamethoxine &pyrimethamine (co-arinate,farenax	Yes	82	27.2
	No	114	37.7
	No response	106	35.1
arthemether-quinine(mefloquine,artequine)	Yes	35	11.6
	No	135	44.7
	No response	132	43.7
arthemeter(arthemether)	Yes	56	18.5
	No	110	36.4
	No response	136	45
Paracetamol	Yes	166	55
	No	53	17.5
	No response	83	27.5
Fansidar	Yes	66	21.9
	No	111	36.8
	No response	125	41.4
Chloroquine	Yes	91	30.1
	No	103	34.1

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	No response	108	35.8
Quinine	Yes	44	14.6
	No	130	43
	No response	128	42.4
Ampiclox	Yes	55	18.2
	No	121	40.1
	No response	126	40.7
Halfan	Yes	19	6.3
	No	147	48.7
	No response	136	45
Chinese Medicines	Yes	15	5
	No	150	49.7
	No response	137	45.4

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4.5.6; Source of getting anti-malaria drugs

When respondents were asked source of getting the anti-malaria drugs that they have ever used before,(22.2%) reported that they gets their herbs from a herbalist while (7.9%) gets their herbs from a patent medicine store. Pharmacy accounted for the largest source of getting chloroquine (26.6%) and fansidar (27.5%),most (75.2% respondents could not respond to source of getting Chinese drugs for treating malaria probably because they don't use it for treating malaria,(see (table 4.5.6 for details of the sources of purchasing other medicines)

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Table 4.5.6; Respondent's source of getting anti-malaria drugs

Variables		Frequency (No's)	Percentage (%)
Herbs	Patent medicine	24	7.9
	Pharmacy	11	3.6
	Private hospital	6	2.0
	Clinic	2	0.7
	Government hospital	1	0.3
	Herbalist	67	22.2
	No response	191	63.2
Chloroquine	Patent medicine	25	8.3
	Pharmacy	80	26.6
	Private hospital	14	4.6
	Clinic	18	6.0
	Government hospital	14	4.6
	Parent	7	2.3
	No response	144	47.7
Fansidar	Patent medicine	23	7.6
	Pharmacy	89	27.5
	Private hospital	23	7.6
	Clinic	14	4.6
	Government hospital	8	2.6
	Parent	6	2.0
	No response	139	46
Camoquine	Patent medicine	11	3.6
	Pharmacy	60	19.9
	Private hospital	14	4.6
	Clinic	17	5.6
	Government hospital	4	1.3
	Parent	8	2.6
	No response	188	62.3
Quinine	Patent medicine	14	4.6
	Pharmacy	52	17.2
	Private hospital	19	6.3
	Clinic	18	6.0
	Government hospital	4	1.3
	Parent	11	3.6
	No response	184	60.9
Coarsucam	Patent medicine	4	1.3
	Pharmacy	36	11.9
	Private hospital	15	5.0
	Clinic	11	3.6
	Government hospital	3	1.0
	Parent	13	4.3
	No response	220	72.8
Artequine	Patent medicine	3	1.0

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	Pharmacy	43	14.2
	Private hospital	15	5
	Clinic	10	3.3
	Government hospital	7	2.3
	Parent	11	3.6
	No response	213	70.5
Coartem	Patent medicine	14	4.6
	Pharmacy	132	43.7
	Private hospital	13	4.3
	Clinic	20	6.6
	Government hospital	12	4.0
	Parent	8	2.6
	No response	103	34.1
Chinese Medicines	Patent medicine	10	3.3
	Pharmacy	18	6.0
	Private hospital	8	2.6
	Clinic	6	2.0
	Government hospital	5	1.7
	Parent	27	9.3
	No response	227	75.2
Paracetamol	Patent medicine	34	11.3
	Pharmacy	109	36.1
	Private hospital	11	3.6
	Clinic	13	4.3
	Government hospital	5	1.7
	Parent	9	3.0
	No response	121	40.1

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4.5.7 Respondents health seeking behavior upon noticing signs and symptoms of malaria

When respondents were presented with the questions on actions first taken upon noticing signs and malaria, many (42.7%) reported that they went to the nearest patent medicine store to buy drugs only 20.9% visited the Jaja clinic for treatment, the details of actions taken are summarized in figure 4.5.7

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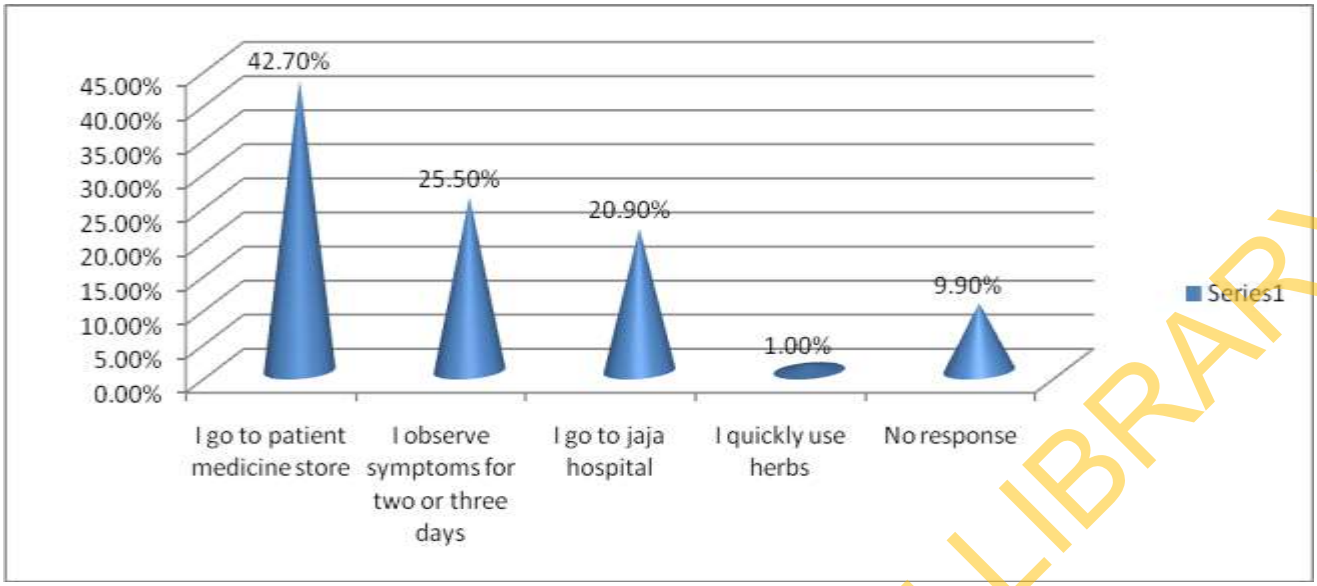

Figure 4.5.7; statements that best explains action first taken upon noticing signs and symptoms of malaria

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4.5.8; action taken after treatment with western medicine and malaria without improvement

Respondents were asked about the action taken upon treating malaria with western medicine and it did not go away, many respondents (46.7%) went to their physician, (see details in table 4.5.8)

Table 4.5.8; action taking after treating with western medicine and malaria does not go away

N=302

Action taken	No's (%)
Rest	56 (18.5)
Go to my physician	141 (46.7)
Pray to God	36 (11.9)
It usually goes away	63 (20.9)
Use herbs	6 (2.0)

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4.5.9; Frequency of visitation to jaja to treat malaria

Respondents were asked about the frequency of their visit to Jaja hospital for malaria treatment, many respondents (44.4%) said they never go to Jaja hospital for malaria treatment, some (32.8%) rarely visit Jaja clinic (13.2%) always visit jaja hospital for malaria treatment,(see table 4.5.9 for details of actions taken by respondents)

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Table 4.5.9; frequency of visitation to Jaja to treat malaria *N=302*

Frequency of visit	No's (%)
Never goes	134 (44.4)
Rarely goes	99 (32.8)
Always goes	40 (13.2)
Sometimes goes	29 (9.6)

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4.6.0 Main malaria medicine now used

Table 4.6.0 summarizes the main malaria medicine now used. Over half (52.0%) now used only coartem, only 2.0% were still using chloroquine. (see details in table 4.6.0)

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Table 4.6.0 main malaria medicine now use **N=302**

Medicines	Frequency (No's)	Percentage (%)
Coartem/arthemther lumenfantrine/lonart	157	52
Combisunate	2	0.7
Herbs	3	1.0
Chloroqine	6	2.0
Amalar/fansidar	13	4.3
Anointing oil/spiritual items	2	0,7
Paracetamol	17	5.6
P-Alaxin	6	2.0
Metakelfin	1	0.3
Halfan	1	0.3
No response	94	31.1

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4.6.1 Still Using Chloroquine

Majority of the respondents (80.5%) stated that they were no longer using chloroquine. Proportion of respondents who were still using chloroquine was (16.2%) see table 4.6.1 for details

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Table 4.6.1 If still uses chloroquine **N=302**

If still uses chloroquine	No's (%)
Yes	49 (16.7%)
No	243 (80.5)
No response	10 (3.3)

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4.6.2 Reasons for using chloroquine

The users of chloroquine were asked about the reasons why they were still using the drug. (4.6%) claim it was recommended by their health worker while seventeen respondents (4.6%) claim they used it because it is very cheap,table 4.6.2 below summarizes the reasons for using chloroquine

Table 4.6.2 reasons for using chloroquine *N=54*

Variables	Frequency (%)
it is generally acceptable	14 (25.9)
it is very cheap	17 (31.4)
it is readily available	9 (16.7)
it was recommended by doctor or health worker	14 (25.9)

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4.6.3 Drugs preferred for treating malaria

The drugs preferred by respondents for treating malaria are contained in table 4.6.3, the drug that topped the list was coartem (37.19%) followed by herbs (16.2%), the details are contained in the table 4.6.3

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Table 4.6.3 Drugs preferred for treating malaria **N=302**

Variables	No's (%)
Herbs	49 (16.2)
Chloroquine	15 (5.0)
Fansidar	42 (13.9)
Camoquine	7 (2.3)
Quinine	6 (2.0)
Arteq	7 (2.3)
Coartem	112 (37.1)
chinese medicine	2 (0.7)
paraceetamol,alabunkun	13 (4.3)
no response	49 (16.2)

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4.6.4 Respondent responses about completion dosage for anti-malaria drugs

Respondents were asked whether they complete their dosage of the anti-malaria drugs they use s most (64.3%) respondents usually completes their dosage and (35.7%) reported that they don't complete dosage (see details in 4.6.4)

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Table 4.6.4; Respondents response about completion of malaria dosage **N=294**

Responses	Frequency (No's) N=294	Percentage (%)
Yes	189	(64.3)
No	105	(35.7)

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4.6.5 Reasons for not completing dosage

The reasons for not completing their anti-malaria drugs are shown in table 4.6.5 below, 54.9% respondents claim since their malaria symptoms have gone, although (18.1%) claims because it is too bitter and (17.1%) claim they have side effects from it, other reason are shown in table 4.6.5 below

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Table 4.6.5 Reasons for not completing dosage **N=111**

Variables	Frequency (No's)	Percentage (%)
I have side effects	19	17.1
They are too bitter	20	18.1
Since My Malaria Have Gone	61	54.1
They are expensive so i keep for other episodes	1	1
I use local herbs to compliment it	10	9

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4.6.6 Test of Association between course of study and level of knowledge using chi square

The study goes further to test the association between course of study of respondents and level of knowledge about malaria and malaria drugs, the study shows that the association between course of study and level of knowledge about malaria and malaria drug is significant ($p<0.00$) it was revealed that out of the total seventeen respondents that had good knowledge score sixteen of them (94.1%) are from the science oriented faculties, while out of the total one hundred and fifty five that had fair knowledge score(69.7%) are also from the science faculties and out of the one hundred and thirty that had poor knowledge score only (64%) are from the science faculty,(details of test of association are highlighted in table 4.6.6)

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Table 4.6.5 showing association between course of study and knowledge using chi square

Score ranking category	**Faculty grouping**			**Total**	P	X^2	df
	Science based	Art based	Social science based				
Poor scores (%)	64 (49.2)	41(31.4)	25(19.2)	130	0.000	20.46	4
Fair scores (%)	108(69.7)	29(18.7)	18(11.6)	155			
Good scores (%)	16(94.1)	1(5.9)	0(0)	17			
Total	188	71	43	302			

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CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

Socio-demographic characteristics and related information

The age of respondents ranged from 16-35years with a mean of 21.59years ± 3.42 almost half (45.7%) of the respondents were young persons aged 16-20 years; this is also similar to the findings of Adetola et al. (2014) in a study on Perception and Treatment Practices of malaria among tertiary institution students in Oyo and Osun States, Nigeria reported that 89.4% of the respondents were in the age group 15-25 years.

Knowledge on signs and symptoms of malaria

Less than half of the respondents were able to correctly identify plasmodium parasite as cause of malaria ,this is also similar to findings in a study conducted among undergraduates students in university of Lagos it was reported that, 58.3% of the respondents knows the cause of malaria.(Okwa & Ibidapo, 2010)

Some of the incorrect causes of malaria mentioned by respondents included dirty environment while a few believed the gods are responsible for malaria. A few perceived stress to be the cause of malaria, this also similar to the findings of Adetola et al (2014) who reported that Surprisingly very few (14.6%) believed that dirty environment could cause malaria. Similarly Wagbatsoma et al (2004) also reported in the study conducted in academic community of university of Benin, that knowledge of the cause of malaria was generally poor. (61.7%) had incorrect knowledge of the cause of malaria. Incorrect causes of malaria proffered included hard work, long exposure to sunlight, bacteria and flies, among others.

The findings of the study revealed that almost all the respondents are unaware that malaria can be transmitted from mother to baby during pregnancy, these findings could be attributed to the fact that majority of the respondents were males (63.6%) and they may not be quite grounded on matters relating to maternal and child health. Furthermore this gap in knowledge about malaria transmission was also documented by Singh et al(2014) who reported that 8.1% of the respondents in a study conducted on knowledge ,attitude and practice to malaria in northern communities in Kebbi state stated that they did not know the mode of transmission (Singh et al., 2014)

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Many respondents were able to state correctly the signs and symptoms of uncomplicated malaria a correctly, signs and symptoms of malaria stated includes headache (73.5%),fever chills (38.4%) high body temperature (73.2%) and loss of appetite (56.3%),this also similar to the findings of Wagbatsoma et.al (2014) reported that the respondents in a study conducted on home management of malaria in an academic community of Benin among were knowledgeable on the common signs/symptoms of malaria. Fever, weakness, headache, body pains, vomiting and loss of appetite were the common features recognized,

Majority of respondents (74.2%) could not attribute convulsion to a complicated malaria, also 76.1% respondents could not relate anemia to complicated malaria while 88.1% of the respondents do not know jaundice as a major sign of complicated fever, previous study of Adetola et al(2014) reported that knowledge of the severe symptoms of malaria was poor among the respondents of the study conducted on knowledge and perception in tertiary institutions in southwest he further reported that the respondents do not perceive symptoms such as convulsions , unconsciousness and anemia as part of severe malaria

Knowledge about medicines used for treating malaria

Doctors and pharmacist constitute major sources of information among the 4.4%) that were aware of the Arteminsinin based combination therapy. A few were aware of it through television (23.2%); this findings corroborates the study done on Community perceptions and home management of malaria in selected rural communities of Ogun state, Nigeria among pregnant women and mothers of under five it was reported that it is apparent that many people did not know about ACT (Adeneye, Jegede, Mafe, & Nwokocha, 2013)

Less than half of the respondents stated that chloroquine is still very effective for malaria treatment. similar findings of Chloroquine usage have been documented in a study done by Ashikeni, Envuladu, Envuladu, & Zoakah, 2013 on knowledge , attitude and practices on malaria among the rural communities in Kebbi state, Northern Nigeria who reported that despite growing resistance to chloroquine in most parts of the country it was still in use by majority of the women.

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Many respondents (41.1%) were able to correctly give the dosages for the 24 per pack coartem drug, however the 6 per pack coartem was different as some respondents (21.9%) gave wrong dosage responses and many respondents (35.8%) could not answer dosage questions, this could be probably due the fact that the coartem 6 per pack is not majorly used and marketed like the coartem 24 per pack.

This study has revealed that many respondents (43.9%) have poor knowledge while(51.3%) had fair knowledge about signs and symptoms of malaria, likewise about medicines used for malaria, previous studies have also reported this (Wagbatsoma et al., 2004) reported poor knowledge of the cause of malaria in a study conducted in academic community of Benin. However, the poor knowledge of the cause of malaria among the population is surprising. Contrary to opinions, a minimum of secondary education improved knowledge on health matters. The low level of knowledge about the cause of malaria in a citadel of learning of this nature is an indication that outside the area of specialization, individuals do not show interest even in matters affecting their health

Test of association

The study goes further to test the association between course of study of respondents and level of knowledge about malaria and malaria drugs. the study shows that the association between course of study and level of knowledge about malaria and malaria drug is significant it was revealed that out of the total seventeen respondents that had good knowledge score sixteen of them (94.1%) are from the science oriented faculties, while out of the total one hundred and fifty five that had fair knowledge score(69.7%) are also from the science faculties and out of the one hundred and thirty that had poor knowledge score only (64%) are from the science faculty, this can be majorly attributed to their lectures, personal readings as well as assignment which can be inclined in line of the study such that the topic of study is not totally alien to them unlike their other counterparts from the other faculty whose their course of study is not related to the subject of the study

Perception relating to malaria

The study has revealed that few respondents (25.8%) believed one should wait for observed symptoms of malaria to persist before treatment. This similar to the findings of Anumundun

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(2006) among undergraduates of university of Ibadan that (52.5%) delayed for one to three days before initiating treatment.

Some (39.1%) respondents perceived chloroquine to be still very effective for treating malaria, Similar perception was documented by Adetola (2014) who reported that a number of the respondents still rely on the use of drugs that are no more recommended by WHO for the treatment of malaria. For example the use of sulfadoxine-pyrimethamine (Fansidar and Amalar) and chloroquine in the study conducted among tertiary students on malaria perception and treatment in south west was high (38.7%)

However (19.9%)perceived herbs and concoction to be more effective for treating malaria. furthermore a similar study also corroborated this perception that there is reported increase in self medication, patronage to patent medicine stores, traditional medicine and non compliance to medical prescriptions in most malaria endemic regions,,(Iriemenam, Dosunmu, Oyibo, & Fagbenro-Beyioku, 2011)

The study has shown that only few respondents (90.7%) had a fairly favorable perception about malaria, this includes believing that one should not treat oneself for malaria, (44.4%) perceiving that chloroquine is still effective for treating malaria, (22.8%),the new anti-malaria medicines are too expensive e.t.c similar fairly favourable perception has been documented by previous study done in Tanzania on Recognition, perceptions and treatment practices for severe malaria in rural Tanzania. The perception that an injection would be fatal for the convulsing children has been reported (Warsame et al., 2007)

Use of malaria medicines

The results of this study has shown that some of the respondents (32.5%) had experienced more than one episodes of malaria year prior to the study though, Adetola (2010) reported similar malaria episodes frequency in a study done among undergraduates students of university of Lagos on the malaria situation, perception of cause and treatment in a Nigerian University it was reported that about a third of the volunteers suffered malaria attacks once a year, though a few claimed never to have malaria.(Okwa & Ibidapo, 2010)

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Majority of the respondents reported to have treated themselves without seeing a health worker. this finding also corroborated with the findings on actions taken once they notice any signs and symptoms of malaria in which some respondents (42.7%) reported to go to patent medicine store to buy drugs once they notice any signs and symptoms of malaria, this self care approach to malaria treatment has been documented in previous literature. Adetola et al.(2014)reported that high number of respondents (32.5%) who were reported to have received antimalarials without prescription from a medical personnel. Although he further reported that higher number (60.8%) of the participants takes drug indiscrimately without confirming their malaria status through laboratory diagnosis. Similarly(Anumudu et al., 2006) reported that the undergraduate students of university of Ibadan treated themselves with anti-malaria drugs when they were sick and more severe cases, and cases which did not at first respond to self medication with single or combinations of drugs were further treated at the hospital, this was also revealed from the study as some respondents (46.7%) reported to go to their physician after treating malaria and the disease does not go

Some of the respondents used herbal medicines purchased from herbalist, some of other items apart from medicines that were used for treatment of malaria among the respondents were anointing oil and spiritual concoctions, similar reported use of herb use among university student was documented in study done on prevalence of malaria parasites among Nnamdi Azikwe university students and anti-malaria drug use it was reported that although the drugs were affordable and within reach of the students, some of the students used native herbs which include mixture of crude extracts of Azardirachta indica and Morida lucida leaves in treating malaria.(Ezugbo-Nwobi, Obiukwu, 2011) ,Furthermore a similar studies done among undergraduates of university of Lagos reported that local remedies mentioned such as lemon grass and agbo iba were used in the treatment of malaria among the students (Okwa & Ibidapo, 2010)

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Coartem was the most commonly used medicine among the respondents and this was also corroborated as their drug of preference also. the use of artesunate combination drugs was documented by (Okwa & Ibidapo, 2010) who reported that Artesunate (33.1%) was the most mentioned, among the nine drugs mentioned in a study conducted among undergraduates of university of Lagos

About one-third of the respondents reported that they usually do not complete their malaria dosage, the reasons responsible for this cannot be properly explained but can be attributed to their lack of proper education and wrong perceptions and believes they hold on to about malaria as documented in the findings of the study

Implication for health promotion and education

Findings from this study reveal the need for health promotion and education approaches that will be used to tackle the various issues earlier discussed upon and they includes;

Public enlightment should be use to ensure awareness about recommended drugs, dosage, as well as increase the level of knowledge of the respondents and their attitude. BCC increases the likelihood of a good return on investment for malaria programmes. It increases the likelihood that nets are used, ACT and SP are not wasted, and that IRS programmes reach their target coverage levels. BCC is used in malaria control to encourage families to hang and use their nets regularly, care for them and repair them when they're torn,(Koenker et al., 2014)

Counseling approach can be properly utilized to encourage those who doesn't usually complete their dosage to do so as well and also essential for the majority of the students who had wrong perception towards malaria

Training should be ensured for all the category of people involved in the treatment of malaria, firstly for the health workers to always recommend arthemether lumenfantrine drugs as their first drug of choice instead of chloroquine as reported in this study, secondly there is need to train and empower the patent medicine vendors for case recognition and use of rapid diagnostic kit for malaria before supplying drugs to their patients as most of the respondents source their drugs them and lastly the university students and even the entire population need to be train, empower and orientate on case recognition, proper self care treatment as well as referrals approaches in malaria treatment

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Advocacy should be done to aid special subsidized prices for malaria drugs and treatment for the students inside and around the university area so as to make the recommended malaria drugs affordable, accessible and available for them

Policy intervention firstly there is need for the university of Ibadan to includes some health issues that has malaria as a topic in the general studies for the entire year one student entering the school such that it will bridge the knowledge gap between the science students and non science students and thus build everyone s knowledge on matters affecting their health

Secondly policy formulation to aid the availability, affordability and orientation of arthemether lumenfantrine to all "drug shop and sources" so as to make it available as well as affordable for the entire population most especially student who will always consider the cheapest and most available when purchasing drugs also there is need to make the rapid diagnostic kits available to most especially patient medicine stores across the nation so as to prevent indiscriminate drug use without status of malaria confirmation

Conclusion

The research explored the knowledge, perception and use of medicines for the primary health care management of malaria among undergraduate students of University of Ibadan. Undergraduate students have poor knowledge on malaria and medicines used for the treatment of malaria although some of the respondents knows the symptoms of uncomplicated malaria, some could not recognize the symptoms of complicated malaria while knowledge of correct dosage of the recommended arthemther lumenfantrine was also lacking among the respondents .Some respondents perceived chloroquine to be effective for treating malaria and a few believed malaria will go away on its own even if not treated, Many of the respondents self medicate for the treatment of malaria without seeing a health worker by purchasing drugs at a patent medicine store, some of the respondents have had malaria a year preceding the study. Even though coartem is the major drugs use and preferred some of the respondents still uses chloroquine to treat malaria. The study shows the need for important public enlightment and training to educate the student as well as shape their perception as regards to malaria. However there is also need for proper advocacy and policy intervention to aid availability, affordability and use of the recommended medicine

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Recommendations

1. There is need for the university of Ibadan management to include health issues in the general studies course offered by every year one student so as to increase their level of knowledge on malaria and matter affecting their health generally.
2. The university should conduct a public enlightment programs in forms of lectures, symposium, posters ,handbill for the entire students about malaria and actions to be taken to prevent as well as to treat it
3. Federal Ministry of Health should also increase the awareness on the need to stop using chloroquine as well as herbs for the treatment of malaria or even combining herbs with medicines

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REFRENCES

Abate, A., Degarege, A., & Erko, B. (2013). Community knowledge , attitude and practice about malaria in a low endemic setting of Shewa Robit Town , northeastern Ethiopia. *BMC Public Health*, *13*(1), 1. doi:10.1186/1471-2458-13-312

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

Adedotun, A. A., Morenikeji, O. A., & Odaibo, A. B. (2010). Knowledge, attitudes and practices about malaria in an urban community in south-western Nigeria. *Journal of Vector Borne Diseases*, *47*, 155–159.

Adeneye, A. K., Jegede, A. S., Mafe, M. A., & Nwokocha, E. E. (2013). Community perceptions and home management of malaria in selected rural communities of Ogun state , Nigeria. *International Journal of Malaria Research and Reviews*, *1*(August), 22–34.

Adetola, O. T., Aishat, I. I., & Olusola, O. (2014). Perception and Treatment Practices of malaria among tertiary institution students in Oyo and Osun States , Nigeria. *Journal of Natural Sciences Research ISSN 2224-3186 (Paper) ISSN 2225-0921 (Online) Vol.4, No.5, 2014*, *4*, 33–42. Retrieved from \nwww.iiste.org

Agomo, C. O., & Oyibo, W. A. (2013). Factors associated with risk of malaria infection among pregnant women in Lagos, Nigeria. *Infectious Diseases of Poverty*, *2*, 19. doi:10.1186/2049-9957-2-19

Ajayi, I. O., Falade, C. O., Olley, B. O., Yusuf, B., Gbotosho, S., Iyiola, T., … Pagnoni, F. (2008). A qualitative study of the feasibility and community perception on the effectiveness of artemether-lumefantrine use in the context of home management of malaria in south-west Nigeria. *BMC Health Services Research*, *13*, 1–13. doi:10.1186/1472-6963-8-119

Akinleye, S. O., Falade, C. O., & Ajayi, I. O. (2009). Knowledge and utilization of intermittent preventive treatment for malaria among pregnant women attending antenatal clinics in primary health care centers in rural southwest, Nigeria: a cross-sectional study. *BMC Pregnancy and Childbirth*, *9*, 28. doi:10.1186/1471-2393-9-28

Anumudu, C. I., Adepoju, A., Adediran, M., Adeoye, O., Kassim, A., Oyewole, I., & Nwuba, R. I. (2006). Malaria Prevalence and Treatment Seeking Behaviour of Young Nigerian Adults, *5*(2), 82–88.

Asante, K. P., Abokyi, L., Zandoh, C., Owusu, R., Awini, E., Sulemana, A., … Owusu-agyei, S. (2010). Community perceptions of malaria and malaria treatment behaviour in a rural district of Ghana : implications for artemisinin combination therapy.

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

Banerjee, I., & Bhadury, T. (2012). Self-medication practice among undergraduate medical students in a tertiary care medical college, West Bengal. *Journal of Postgraduate Medicine*, *58*, 127–31. doi:10.4103/0022-3859.97175

Batega, D. W. (2004). knowledge attitudes and practices about malaria treatment and prevention in uganda :, (February), 0–44.

Buabeng, K. O., Duwiejua, M., Dodoo, A. N. O., Matowe, L. K., & Enlund, H. (2007). Self-reported use of anti-malarial drugs and health facility management of malaria in Ghana. *Malaria Journal*, *6*, 85. doi:10.1186/1475-2875-6-85

Christiana, O. (2004). endemicity of malaria among primary school children in ebonyi state , nigeria, *1*, 155–159.

Chuma, J., Okungu, V., & Molyneux, C. (2010). Barriers to prompt and effective malaria treatment among the poorest population in Kenya. *Malaria Journal*, *9*, 144. doi:10.1186/1475-2875-9-144

Diala, C. C., Pennas, T., Marin, C., & Belay, K. a. (2013). Perceptions of intermittent preventive treatment of malaria in pregnancy (IPTp) and barriers to adherence in Nasarawa and Cross River States in Nigeria. *Malaria Journal*, *12*, 342. doi:10.1186/1475-2875-12-342

Ekpenyong, E. A., & Eyo, J. E. (2008). Malaria Control and Treatment Strategies among School Children in Semi-urban Tropical Communities Estrategias de Control y Tratamiento de la Malaria entre Escolares de Comunidades Tropicales Semiurbanas, *57*(5), 2–7.

Ezugbo-Nwobi, Obiukwu, U. (2011). Prevalence of Malaria Parasites among Nnamdi Azikwe University Students and Anti-Malaria Drug Use. *African Research Review*, *5*(21), 135–144.

Fernando, S. D., Gunawardena, D. M., Bandara, M. R. S. S., Silva, D. D. E., Carter, R., Mendis, K. N., & Wickremasinghe, A. R. (2003). the impact of repeated malaria attacks on the school performance of children, *69*(november 1997), 582–588.

Fernando, S. D., Rodrigo, C., & Rajapakse, S. (2010). The “hidden” burden of malaria: cognitive impairment following infection. *Malaria Journal*, *9*, 366. doi:10.1186/1475-2875-9-366

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

Iriemenam, N. C., Dosunmu, A. O., Oyibo, W. A., & Fagbenro-Beyioku, A. F. (2011). Knowledge, attitude, perception of malaria and evaluation of malaria parasitaemia among pregnant women attending antenatal care clinic in metropolitan Lagos, Nigeria. *Journal of Vector Borne Diseases*, *48*, 12–17.

Kigodi, K. N. (2006). malaria and anti-malarial drugs utilisation among adults in a rural coastal community of tanzania : knowledge , attitude and practice study, *14*(1), 4–10.

Koenker, H., Keating, J., Alilio, M., Acosta, A., Lynch, M., & Nafo-traore, F. (2014). Strategic roles for behaviour change communication in a changing malaria landscape, 2–5.

Kyu, H. H., Georgiades, K., Shannon, H. S., & Boyle, M. H. (2013). Evaluation of the association between long-lasting insecticidal nets mass distribution campaigns and child malaria in Nigeria. *Malaria Journal*, *12*, 14. doi:10.1186/1475-2875-12-14

Lwanga S.K &lemeshow(1991)Sample size determination in Health studies WHO library library,ISBN 92-41544. world Health Organization 1991

malaria consortium. (2014). malaria_consortium hiv/aids.

Mazumdar, P. G., & Mazumdar, S. (2010). Prevention and Treatment of Malaria in Nigeria : Differential and Determinants from a Spatial View.

Metta, E., Haisma, H., Kessy, F., Hutter, I., & Bailey, A. (2014). " We have become doctors for ourselves ": motives for malaria self-care among adults in southeastern Tanzania, *13*(1), 1–13. doi:10.1186/1475-2875-13-249

Mushtaq Ahmed, Rafaqat BOTA, Muhammad Salah Jaamali, Adnan Aziz, T. I. (2013). Original Research Paper. *International Journal of Tropical Medicine and Public Health*, *2*(1).

natp. (2005). federal republic of nigeria national antimalarial treatment federal ministry of health, (february).

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

Ndyomugyenyi, R., Magnussen, P., & Clarke, S. (2007). Diagnosis and treatment of malaria in peripheral health facilities in Uganda: findings from an area of low transmission in south-western Uganda. *Malaria Journal*, *6*, 39. doi:10.1186/1475-2875-6-39

Okafor, F. U., & Oko-ose, J. N. (2012). Prevalence of malaria infections among children aged six months to eleven years (6 months-11 years) in a tertiary institution in Benin City , Nigeria, *1*(10), 273–279.

Okeke, T. A., Uzochukwu, B. S. C., & Okafor, H. U. (2006). An in-depth study of patent medicine sellers' perspectives on malaria in a rural Nigerian community. *Malaria Journal*, *5*, 97. doi:10.1186/1475-2875-5-97

Okwa, O. O., & Ibidapo, A. C. (2010). The Malaria situation , perception of cause and treatment in a Nigerian University, *1*(July), 213–222.

Oladepo, O., Tona, G. O., Oshiname, F. O., & Titiloye, M. A. (2010). Malaria knowledge and agricultural practices that promote mosquito breeding in two rural farming communities in Oyo State, Nigeria. *Malaria Journal*, *9*, 91. doi:10.1186/1475-2875-9-91

Olasehinde, G. I., Ajayi, A. A., Taiwo, S. O., Adekeye, B. T., & Adeyeba, O. A. (2010). prevalence and management of falciparium malaria among infants and children in ota , ogun state , southwestern nigeria. *african journal of clinical and experimental microbiology*, *11*(3), 159–163.

onwujekwe, O., Uguru, N., Etiaba, E., Chikezie, I., Uzochukwu, B., & Adjagba, A. (2013). The economic burden of malaria on households and the health system in Enugu state southeast Nigeria. *PLoS ONE*, *8*. doi:10.1371/journal.pone.0078362

Onwujekwe, O., Uzochukwu, B., Dike, N., Okoli, C., Eze, S., & Chukwuogo, O. (2009). Are there geographic and socio-economic differences in incidence, burden and prevention of malaria? A study in southeast Nigeria. *International Journal for Equity in Health*, *8*, 45. doi:10.1186/1475-9276-8-45

Ruebush, T. K., Kern, M. K., Campbell, C. C., & Oloo, A. J. (1995). Self-treatment of malaria in a rural area of western Kenya. *Bulletin of the World Health Organization*, *73*, 229–236.

AFRICA DIGITAL HEALTH REPOSITORY PROJECT

UNIVERSITY OF IBADAN LIBRARY

Singh, R., Musa, J., Singh, S., & Ebere, U. V. (2014). Knowledge , Attitude and Practices on Malaria Among the Rural Communities in Aliero , Northern Nigeria, *3*(1), 3–8. doi:10.4103/2249-4863.130271

Wagbatsoma, V. A., Obomighie, J. E., & Nwokike, N. H. (2004). Home management of malaria in an academic community — University of Benin , Benin City , Nigeria, *3*(1), 73–80.

Warsame, M., Kimbute, O., Machinda, Z., Ruddy, P., Melkisedick, M., Peto, T., … Gomes, M. (2007). Recognition, perceptions and treatment practices for severe malaria in rural Tanzania: Implications for accessing rectal artesunate as a pre-referral. *PLoS ONE*, *2*. doi:10.1371/journal.pone.0000149

WHO. (2013). WHO _ Malaria details.

WHO. (2014). Malaria Endemicity – Malaria Atlas Project.

Zyl-schalekamp, C. Van. (2013). Perceived Threat of Malaria and the Use of Insecticide Treated Bed Nets in Nigeria, *17*, 25–44.

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APPENDICES 1

QUESTIONNAIRE

KNOWLEDGE, PERCEPTION AND USE OF MEDICINES FOR THE PRIMARY HEALTH CARE MANAGEMENT OF MALARIA, AMONG UNDERGRADUATE STUDENTS OF UNIVERSITY OF IBADAN

Dear Respondents,

My name is **ADEWOLE AMINAT A,** a postgraduate student of the department of Health Promotion and Education, Faculty of public Health, College of Medicine, University of Ibadan. The purpose of this study is to investigate the **knowledge**, **perception and use of medicine for the primary health care management of malaria among undergraduate students of university of Ibadan**. The findings from this study will help in the design of programs and formulation of policies aimed at designing malaria control programs and interventions in our universities. Your identity, responses and opinion will be kept strictly confidential and will be used for the purpose of this research only. Please note that you do not have to write your name on this questionnaire, also try and please give honest answers to the questions asked as much as your maximum co-operation will assist in making this research a success.

Would you want to participate in the study? **(1) YES** ☐ **(2) NO** ☐

Thank you very much.

Office Use Only _____ _____

Interviewer's name: _____ **Serial Number**

Important Instruction(s): Please Do Not Write or Supply Your Name

Section A; socio-demographic characteristic

Instructions; in this sections, please tick (√) the appropriate box(es) that correspond(s) to your answer(s) or complete the spaces provided

1. **Faculty;** ----------
2. **Department**; ----------

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3. Level of study 1.100 level { } 2. 200level { } 3.300level { }
4. 400 level { } 5. 500 level { } 6.600 level { }

4. Religion 1.christianity { } 2. Islam { } 3.Traditional { } 4.others ----------

5. Ethnic group 1. Yoruba { } 2.Igbo { } 3.Hausa { } 4.others (specify) ----------

6. Age as at last birthday ----------

7. Gender 1Male { } 2 Female { }

8. Marital status 1.married { } 2.single { } 3.divorced { } 4.separated { }

SECTION B; knowledge on signs and symptoms of malaria,

(You may tick (√) more than one that you feel is (are) correct)

9.	What do you think are the causes of malaria	Tick(√)
a	Dirty environment	
b	The gods	
c	Stress	
d.	Mosquito	
e	Plasmodium\germ in mosquito	
f	working under the sun	

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g	Others(specify)

10	Through which of the following can malaria be passed on or transmitted	Tick()
a	Through the bite of mosquitoes	
b.	Through blood transfusion	
c.	Living in the same apartment with infected person	
d.	From mother to baby during pregnancy	
e.	Sharing needles and syringes with other infected person	
f	Others(Specify)	

11	What are the major symptoms for recognizing someone with uncomplicated malaria?	Tick(√)

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a	Headache	
b.	Fever chills	
c.	Loss of appetite	
d.	Stomach ache	
e.	Muscle or joint pain	
f.	Itching of the body	
g.	High body temperature	
h.	Nausea and vomiting	
I.	Others (specify)	

12	What are the major symptoms of complicated malaria	Tick
a.	Anaemia	
b.	Hyperpyrexia (high temperature)	
c.	Internal bleeding	
d.	Convulsion	
e.	Chest pain	

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f	Jaundice	
g	Others (specify)	

(13) Ever heard of the Arteminsinin based Combination Therapy (ACT)?

(1) YES ☐ (2) NO ☐

If YES continue to 14, if NO skip question 14

(14) What is (are) your sources of information about the term Arteminsinin based Combination Therapy; you may tick (√) one or more options that applies to you in table (1; 1) below

Source	Tick (√)
Doctor	
Pharmacy	
Health facility	
Working place	
Newspapers	
Radio	
Television	

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Patient medicine vendors	
Nurses	
Drug hawkers	
Magazine	
Others specify	

SECTION C; Awareness and knowledge about medicines used for the treatment of malaria

(15)Table (1.2) below contains list of medicine; Indicate by ticking (√) whether it is a drug used for treating malaria or not

Medicines	**Yes**	**No**
a)arthemether-lumenfantrine		
b**)**amodiaquine- artesunate(larimal,dart,malmed)		
c)artesunate sulphamethoxine &pyrimethamine (co-arinate,farenax		
d)arthemether-quinine(mefloquine,artequine)		
e)septrin		

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f)paracetamol		
g)pyrimethamine-sulphadoxine(fansidar)		
h)chloroquine		
i)quinine		
j)Ampiclox		
k)Halofantrine (halfan)		

(16)Table (1; 3) below contains lists of medicines used for the treatment of malaria, for each tick (√) to Indicate whether it is an arteminsinin based medicine or not

Medicines	**Yes**	**No**
a)Camoquine		
b) Nivaquine		
c)Quinine		
d)Fansidar		
e) Halfan		

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f) Coartem		
g)Halofantrine (halfan)		

(17) Have you heard that there are malaria cases that do not get cured or treated even after using some anti-ma medicine

(1) YES (2) NO

(18) Which of the following medicines are no longer effective for the treatment of malaria in Nigeria**?**

(You can tick(√) more than one that you are aware of).

1. Camoquine 2.Coartem 3. Chloroquine 4. Nivaquine

(19) Table (1;4) below contains statements relating to the treatment of malaria; for each tick (√)whether it is true or false ,if you are not sure tick "don't know".

S/n	Statement	True	False	Do not know
19.1	Chloroquine is still the most effective Medicine recommended for the treatment of malaria in Nigeria.			
19.2	Coartem,(artemether lumenfantrine) is now the new drug used in place of chloroquine for the treatment of malaria in Nigeria			
19.3	The most effective anti-malaria drug			

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	recommended for sickle cell anaemia patient is proguanil(paludrine)			
19.4	It is safe for women who are pregnant from 3-6 month to take coartem,(arthemther lumenfantrine)			
19.5	Coartem,(artemether lumenfantrine), can only be used for treating malaria when it is prescribed by a health worker			

(20 a)The 24 tablets pack of Coartem, lumartem, lonart, for adult is taken in three days, please complete the table (1;5) below to indicate how the tablets will be taken on day 1,day 2,and on day 3.

Days	How 24 tablets will be taken
Day 1	
Day 2	
Day 3	

(20b)The 6 tablets pack of Coartem,lonart,amatem for adults is taken in three days please complete table(1;6) below to indicate how the tablets will be taken on day 1, day 2,and day 3.

Day	Number of tablets to take
Day I	

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Day 2	
Day 3	

(20c)The Coarsucam / ascoaquine anti-malaria medicine comes in 12 tablets per pack for adult, please complete table (1; 7) below to indicate how the 12 tablets are to be taken

Days	How 12 tablets will be taken
Day 1	
Day 2	
Day 3	

(20d)The artequine anti-malaria medicine comes in 6 tablet per pack for adult, please complete table (1; 8) below to indicate how the 6 tablets are to be taken

Days	How 6 tablets will be taken
Day 1	
Day 2	
Day 3	

SECTION D; PERCEPTION RELATING TO THE USE OF ANTI-MALARIA MEDICINES

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(21) Kindly respond to each of the following statements in the table below by ticking (√) the statements that agrees with you

S/NO	STATEMENT	AGREE	I CAN'T SAY	DISAGREE
21a)	Only few student who live off campus need to be worrying about malaria			
21b)	Malaria goes away on its own (even if not treated) after a few days			
21c)	Malaria is not really serious as people think of it			
21d)	The new anti-malaria medicines are too expensive			
21e)	One should wait for two or three days for observed symptoms of malaria to persist before treating oneself			
21g)	It is not proper for one to treat his/herself when one has malaria			
21h)	Choloroquine is still very effective for Treating malaria			
21i).	Combining herbs with drugs will ensure that malaria goes away completely			

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21j).	Herbs, concoction are more effective for the treatment of malaria compared with western medicine			
21k).	Self medication involving malaria drugs should never be practice by students			

SECTION D; PATTERN OF ANTI-MALARIAL DRUG USE

For each suitable answer, please tick (√)

(22)Have you ever experienced malaria? 1 Yes ☐ 2 No ☐

(23)Based on your experience, how many times do you normally experience malaria in a year?

(1)None ☐ (2) once ☐ (3) Twice ☐ (4) thrice ☐ (5) more than three times ☐

(24)How many times did you have malaria within the last six months?

(1)None ☐ (2) once ☐ (3) Twice ☐ (4) thrice ☐ (5) more than three times ☐

(25) Have you ever treated yourself of malaria without seeing a health worker?

(1) Yes ☐ (2) No ☐

(26)Which of the following medicines have you ever used on your own (that you bought on your own) for treating malaria

Malaria medicine	Yes	No
26a)arthemether-lumenfantrine (coartem/lonart)		
26b)amodiaquine-		

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artesunate(larimal,dart,malmed)		
26c)artesunate sulphamethoxine &pyrimethamine (co-arinate,farenax		
26d)arthemether-quinine(mefloquine,artequine)		
26e)arthemeter(arthemether)		
26f)paracetamol		
26g)pyrimethamine-sulphadoxine(fansidar)		
26h)chloroquine		
26i)quinine		
26j)Ampiclox		
26k)Halofantrine (halfan)		
26l)Chinese medicines(GNLD,Tianshi		

(27) Indicate your source of getting the following anti-malaria drugs if you have ever used them before

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DRUGS	SOURCES					
	Patent medicine	Pharmacy	Private hospital	Clinic	Government hospital	others
27a)Herbs(traditional medicines						
27b)Chloroquine						
27c)Fansidar						
27d)Camoquine						
27e)Quinine						
27f)Coarsucam						
27g)Arteq						
27h)Coartem/lonart						
27i)Chinese medicines(tianshi,GNLD)						
27j)Paracetamol,Boska,Alabukun						

(28) Which of the following statement best explains what you do first upon noticing signs and symptoms of malaria?

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(1) I go to the nearest patient medicine store to buy drugs ☐

(2) I observe the symptoms for two or three days to be sure its malaria ☐

(3) I go to Jaja clinic ☐ (4) I quick ☐ e herbs and concoction to ensure it goes away completely

(6) I treat myself using coartem, lumartem drugs

(29)What do you usually do after treating yourself with western medicines and the disease does ☐

Not go away (a) rest ☐ t (b) visit the doctor ☐ (c) pray to God ☐ (d) it has never happen before

(e) Use herbs ☐

(30) How often do you go to Jaja clinic for care once you notice that you may be having malaria?

Frequency of visit	**Tick**
20a)Never goes	
30b)Rarely goes	
30c)Always goes	
30d)Goes there sometimes	

(31)Which main malarial medicine do you now use whenever you have malaria?

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(32)Do you still use chloroquine to treat yourself whenever you have malaria?

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(1) Yes ☐ (2) No ☐

(33) If you still use Choloroquine in treating malaria, what are your reasons? Tick (√) one or

More appropriate optic☐ ☐ ☐

(1) It is generally acceptable (2) it is very cheap (3) it is readily available

(4) It was recommended by doctor or health worker ☐(

(34) Below is a list of drugs used in treating malaria which of them do you prefer most in treating malaria

Anti- malaria drugs	Tick (√)
34a)Herbs(traditional medicines	
34b)Chloroquine	
34c)Fansidar	
34d)Camoquine	
34e)Quinine	
35f)Coarsucam	
34g)Arteq	
34h)Coartem	
34i)Chinese medicines(tianshi,GNLD)	

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34j)Paracetamol,Boska,Alabukun	

(35) Do you always complete the dosage for anti-malaria drugs? (1) Yes ☐ (2) No ☐

(If yes to question 35, skip question 36).

(36) If you don't always com ☐ the anti-malaria dosage why? Tick to indicate your reason

(1) I have side effects from it (2 ☐ y are too bitter ☐

(3) Since my malaria symptoms have gone

(4) They are expensive so I keep the rest for another malaria episode ☐

(5) I use local herbs to compliment it ☐

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