HEALTH SEEKING BEHAVIOURS FOR MALARIA TREATMENT: A STUDY AMONG INTERNATIONAL STUDENTS IN THE UNIVERSITY OF GHANA LEGON.

BY

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DECLARATION

I, Lwenge Mathias, declare that this dissertation is as a result of my independent investigations from the study population. Where it is indebted to others acknowledgement has already been made in form of references. The outcome of this dissertation is an honest independent work done by the researcher with the help of the supervisor. A full list of the references used has been attached. I further declare that it has neither in full or in part been presented for any degree or award in this University or elsewhere.

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Dr Phyllis Dako-Gyeke ...................................................... ......................................................

ACADEMIC-SUPERVISOR SIGNATURE DATE
DEDICATION

This dissertation is dedicated to my family members Miss Nambi Ruth my wife, my children, Katumba (Joseph, Martha and Mariam), my parents Mr Katumba Experito and Miss Namusisi Eflansi for their psychosocial support rendered to me during this programme.

It is also dedicated to my sponsors P4HPT whose financial support has enabled me to complete the programme.

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LIST OF ABBREVIATIONS

ACTs: Artemisinin Combination Therapies.

CDC: Centre for Disease Control.

CHPS: Community Based Health Planning Services.

FGD: Focus Group Discussion.

GHS: Ghana Health Service.

GMCP: Ghana Malaria Control Program.

HBM: Health Belief Model.

IPO: International Programs Office.

IPT: Intermittent Presumptive Treatment.

P4HPT: Partnering for Health Professionals Training.

RDT: Rapid Diagnostic Test.

SDGs: Sustainable Developmental Goals.

UG: University of Ghana.

WHO: World Health Organization.
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OPERATIONAL DEFINITIONS

Febrile: This means feverish and when an individual’s body is touched by another person he or she is hot.

Health seeking behaviours: This is the action or inaction identified by International students when they have an illness condition and the necessary steps taken to rectify those health conditions such as malaria in this context.

International student: A person who is coming from any other country or nation other than Ghana undertaking any course or academic program at the University of Ghana during the study period and registered by the International Programs Office (IPO) for the University of Ghana.

Malaria treatment: The process of giving medical care or attention to an individual suffering from malaria signs and symptoms.

Malaria: A febrile parasitic disease caused by Plasmodium transmitted from one person to another through bites of an infected female Anopheles mosquito.

Personal characteristics: These are individual characteristics such as sex, age, a course offered, level of the course undertaken, residence status, country of origin.

Sources of health care: These are places where individuals go to seek for malaria treatment such as hospitals, pharmacies, private clinics, churches, herbalists.
ABSTRACT

Malaria is one of the most challenging Public Health issues in the developing world. To combat malaria effects in highly endemic areas, several interventions are employed by stakeholders. A questionnaire-based descriptive cross-sectional study was carried out to assess health-seeking behaviours for malaria treatment among international students in the University of Ghana, Legon. A systematic sampling method was used to select 264 International students. Consent was sought from participants, privacy and confidentiality were observed during the interviews. Ethical clearance was by Ghana Health Service Ethics Review Committee. Data were analyzed using SPSS version 20.0. Chi-square test and binary logistic regression were run to determine associations between independent factors and health-seeking behaviours for malaria treatment. Eighty-seven (87%) were residing on campus, (51.1%) males, (72%) from African countries, 63.3% supported by their families, and 54.2% had health insurance. Respondents had a high score of 76.3% for knowledge about malaria. The main sources of malaria information included the following; school (79.6%), media (61.4%) and health facility (58.3%). Most of the respondents (35.2%) first used antimalarial only from the pharmacy, 26.9% took antimalarial with painkillers, 24.2% took only painkillers and (13.6%) first used herbs/prayers/warm bath. The majority, (57.6%) utilized health facility as a source of the second line of care as compared to 38.3% who sought further care from pharmacies. Factors such as health insurance (P=0.016), the continent of residence (P=0.05), accessibility of health services (P=0.006) and waiting time (P=0.001) had a significant association with the health-
seeking behaviours of the respondents. Students who had health insurance (64.3%) were more likely to go to the health facility than those without health insurance (35.7%).

Health facility is used more as a second-line option after self – medication failure. This practice by students leads to the abuse of these antimalarial thus, a need to provide more education to students on seeking appropriate care and treatment of malaria-related symptoms.
CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Globally, malaria continues to present as a major Public Health challenge (WHO, 2013). Despite extensive efforts made to control Malaria, it was reported to be prevalent in about 91 nations in 2016. According to the World Malaria Report (2015), there were 214 million cases of malaria and 438,000 malaria deaths reported to have occurred worldwide in 2015. About 1.2 billion people were considered to be at a high risk of contracting malaria each year (WHO, 2016).

In Africa, malaria is reported to carry a burden of up to 90%, thus presenting as a leading communicable disease seen at health facilities in Sub- Saharan Africa (Abreha et al., 2014). The disease disproportionately affects people living in Africa. It has been known to contribute to a burden of (77%) of all registered deaths in 2012 (WHO, 2013). In 2012, about 40% of all malaria cases in health facilities in Africa were not confirmed by the rapid diagnostic test (WHO, 2013).

Many African countries are burdened with malaria. The WHO 10 highly burdened countries in terms of malaria morbidity and mortality in 2012. These countries were Cameroon, Tanzania, Burkina Faso, Cote d'Ivoire, Democratic Republic of Congo, Mozambique, Niger, Nigeria, Uganda and Ghana (Berg, 2012).
In Ghana, malaria was recorded up to 11.4 million outpatient cases in 2013, with a marked decline to 8.4 Million in 2014. The 23.6% decline in malaria incidence in 2014 was still devastating and requires more input for further reduction of the new cases (GHS Annual Report, 2015). In the treatment of unconfirmed malaria cases, caretakers and health workers are propelled to rely on presumptive treatment mostly based on the presence of fever. Yet, all fevers are not due to malaria. As a result, the reliance on presumptive treatment could lead directly to high rates of overtreatment and loss of lives which could also cause the resistance of the malaria parasites to available effective antimalarial drugs (Parsel et al., 2017).

Disproportionality of risk of getting malaria also exists across socioeconomic levels with those in low socioeconomic levels mostly at risk. Other known groups include those who are non-natives particularly, individuals hailing from non-endemic areas or other endemic areas with a less virulent Plasmodium species than those in Ghana (Harris, Straker, & Pollock, 2017). Malaria-like other tropical diseases are better controlled or treated through an early diagnosis and treatment. The World Health Organization (2010), recommends that all suspected cases of uncomplicated malaria be confirmed diagnostically before any treatment is administered.

Health seeking behaviour is a chain of collective measures that are undertaken by individuals to cure any perceived ill health. Therefore, once an individual identifies that he or she is unwell due to symptoms and signs suggesting malaria he or she does whatever is required to get well. All the measures adopted and processes followed to access treatment are known as health-seeking behaviour (Mahmood et al., 2009).
Malaria in Ghana contributes to 32.5% of all outpatients in health facilities (Amponsah et al., 2015). This is more reported among children below the age of 5 years with 48.8%. This has an impact on the country's economy since managing malaria patients is costly in terms of money and time (Amponsah et al., 2015). Although health seeking behaviours are known to have improved in Ghana, seeking treatment from health facilities remains low (WHO, 2010).

1.2 Statement of the problem

Malaria presents as a devastating Public Health crisis in developing countries with particular endemicity in Africa. The disease presents a particular problem for Ghana which is considered as a hyper-endemic area. Everyone in Ghana is at a high risk of infection of malaria (Fenny et al., 2014). The University of Ghana attracts many International students with diversity in terms of language and culture. Many of these students hail from no or low malaria-endemic areas where health systems are quite different from that of Ghana.

In most parts of Sub-Saharan Africa, the commonest response to management of fever among individuals is buying drugs from a drug store or pharmacy. This is done against the instructions of a well-qualified health worker such as Medical officer, Physician Assistant among others (Cohen et al., 2015). Many individuals prefer to seek for care from the retail sector. This is presumed that they will avoid long waiting time to receive care, numerous stock out of drugs and travelling long distances to health facilities to seek for health care for malaria treatment (Cohen et al., 2015).
A study that was carried out among Nigerian University students, revealed that (66%) used a combination of drugs including antimalarial drug purchased from pharmacies, (2.9%) don't use any medication to treat any malaria-related symptoms. Some, 12% sought health care from formal health care facilities such as a hospital where treatment is presumed to be delivered by a qualified health worker with a prescription after clear history taking and examination of a patient, carry out RDT or microscopy for malaria (Adeyemo, 2014).

Many approaches to malaria control involve reducing the chances of infection. However, little is known of the health-seeking behaviours of students, especially those who are natives of non-endemic and less virulent areas compared to that of Ghana. International students have particularly been so much burdened by the condition (Recht et al., 2017).

Malaria, as one of the environmental related vector disease, emerged number one among the first ten diseases that students at the University of Ghana had suffered from during their stay at the campus in the 2007/2008 academic year. This accounted for 37% of all cases reported to the University's health facilities (Mahamah, 2009). Diagnosis of malaria was mainly based on the clinical manifestation of the patient at the OPD without any laboratory intervention such as microscopy and RDT. It is critical that efforts are made to increase consumer utilization of the formal healthcare system. In order to do this, more complex understandings of the consumer culture for malaria-related services and treatment is necessary (Mahamah, 2009).

Treatments received by individuals depend on several factors including the appropriate way for identification of malaria symptom and formal testing in medical laboratories.
Therefore, it was the aim of this research to understand health-seeking patterns for malaria treatment at the University of Ghana, with particular focus on International students. International students are among the groups of people who are at a risk of being burdened with malaria due to an increased number of imported malaria, with Sub-Saharan Africa carrying the highest risk (Pavli et al., 2010). They tend to think that they have immunity against malaria and feel reluctant to exercise behaviours that will help them prevent or control malaria, such as adhering to antimalarial chemoprophylaxis recommendations and other preventive measures. This requires an initiative of correcting such misconceptions by raising awareness to these international students to get to know that they are not excluded among those who are at risk of acquiring this highly fatal and yet preventable parasitic disease through appropriate treatment (Pavli et al., 2010).

International students tend to take antimalarial drugs to prevent malaria as they get prepared to travel from their home countries to other countries such as Ghana to pursue their studies. Drugs such as fansidar or sulphadoxine pyramethamine is commonly used for prophylaxis. The Ghana National Malaria Control Programme (NMCP) aimed at reducing the malaria disease burden by 75% by 2015. Interventions to achieve this target include indoor residual spraying, use of insecticide- treated bed nets, artemisinin-based combination therapies, and intermittent preventive treatment of malaria and these should not be exonerated from international students (Afudego, 2011).

It is not known whether they purchase medicines from stores, utilize public health services, traditional healers or available University facilities or seek other services elsewhere such as paid clinics. There was, therefore, the need to examine the reasons for the choice of services towards the treatment of malaria. Thus, the knowledge, the anticipated cost of
malaria treatment, the patient's judgment of the intensity of the sickness and accessibility to health facilities were assessed. This study, therefore explored health – seeking behaviours of international students for malaria treatment.

1.3 Justification of the study

Increased health-seeking behaviours of University students will improve the utilization of health care services provided by the University health facility. This study identified perceived barriers to health-seeking behaviours from the University health facilities and other facilities that provide health-based insurance services to those who have health insurance. Such barriers are presumed to be inadequate knowledge of student's own health regarding malaria symptoms, transmission, preventive measures, inadequate health care services available, time factor, cost implication factors and attitude of health workers.

This study used a theory of Health Belief Model (HBM) to understand the health-seeking behaviours for malaria treatment among International students. There is a need to express a lot of care through empathy and clear understanding of the student's sick role during malaria illness. This is through the proper use of evidence-based health information, education and communication, (IEC) which can help to improve on the health-seeking behaviours for malaria treatment of International University students. The inadequate information about health-seeking behaviours of international students motivated the researcher to conduct the study.
1.4 Study Objectives

1.4.1 General objective

To assess health-seeking behaviours for malaria treatment among International students in the University of Ghana, Legon.

1.4.2 Specific objectives

1. To determine personal characteristics that influence health-seeking behaviours for malaria treatment among International students in the University of Ghana.

2. To identify sources of information about malaria treatment by International students at the University of Ghana.

3. To identify actions and sources of care used by International students at the University of Ghana for addressing malaria treatment.

4. To ascertain factors affecting health-seeking behaviours for malaria treatment among University International students.

1.5 Conceptual Framework of Health Seeking Behaviours for Malaria Treatment

The researcher employed the Health Belief Model (HBM) based on Rosenstock et al. (1994) to develop the conceptual framework of this study. It is an individual value expectancy theory which can be used in the designing Health Promotion Interventions. It aims at determining individuals health behaviour by concentrating on the attitudes and beliefs of an individual towards illness and the suspicious outcomes of a particular behaviour (Taylor et al., 2006).
The model assumes that transformation of human behaviour happens to base on six key components or concepts; perceived susceptibility, severity, benefits, barriers, threats and self-efficacy and cues to action (Marzano et al., 2012). These key concepts are explained as follows:

**Perceived susceptibility**: This states that there are enough grounds for an individual to accept that a particular health condition could affect him or her. The person recognizes that he is at a high risk of contracting malaria. Failure to use preventive measures that are available stands higher chances of developing malaria. This requires International students to perceive that they are at risk of contracting malaria due to mosquito bites that transmit malaria. This is due to the fact that most of them are coming from no or low malaria-endemic areas to Ghana, where malaria is highly endemic. According to the study carried out in the western part of Ethiopia exploring the caregivers' perception and health-seeking behaviours. It was focused on persistent vomiting, diarrhoea, poor appetite, fever, anaemia, convulsions, chills and joint pains were associated with the perceived susceptibility that they were at risk of such conditions (Mitiku & Assefa, 2017).

**Perceived severity**: This looks at the individual's evaluation of the seriousness of the likely outcome of malaria if he or she happens to delay in seeking medical attention that is appropriate. Malaria is taken to be a serious disease and worries many individuals once they discover that they have malaria signs and symptoms. Many of them fear the associated complications of malaria such as anaemia, dehydration, jaundice, convulsions and unconsciousness among others as being so dangerous which may result in death, especially among those from low endemic compared to those from known highly endemic areas for
malaria. In addition, once these complications are experienced, the cost of treatment becomes high and the longer time taken is required for treatment (Mitiku & Assefa, 2017).

**Perceived benefits:** This employs the subjective understanding of the positive benefits following the uptake of a given health action. This counterbalances a perceived threat when one seeks for health care for malaria treatment; he or she perceives that going early to a qualified health worker for malaria treatment, the severity of malaria will not be worse as compared when he or she goes late to the health facility. This can be as a result of many interrelated factors with health motivation of an individual as a key concept in adopting a given behaviour.

**Perceived threat:** once an individual gets to know clearly the possible outcome of malaria that can lead to mental confusion or even death. This makes an individual do all that is necessary or possible to seek a better solution such as seeking early diagnosis and treatment of malaria. This can prevent him from such un-desirable outcomes due to malaria. He or she will choose to seek care from an appropriate source such as health facility or hospital where he knows that such threats can be put to an end or prevented by providing appropriate treatment for malaria (antimalarial drugs).

**Perceived barriers.** This looks at perceived negatively valued aspects of taking the action or overcoming anticipated barriers to taking it. These could be individual factors that may hinder one from adopting the behaviour. For example, drugs are not effective to treat malaria, malaria subsides by itself without treatment, health facility is far from where people live, no money to get to health facility, traditional healers can treat the person with malaria, disease is not serious enough, home treatment is sufficient to treat malaria and
long waiting time at health facility for malaria treatment or even getting advance side
effects resulting from the use of drugs that treat malaria.

**Self-efficacy.** This is having self-confidence or an individual's ability to execute a given
behaviour (Bandura, 1977). For example, distinguishing malaria from other illnesses based
on the level of knowledge about symptoms and signs of malaria including consulting
qualified formal health workers for fever as a major sign of malaria, ability to use ITN to
reduce the possibility of acquiring malaria or transmitting malaria to other people, closing
windows and doors early, putting up the fine nets in the windows, clearing stagnant water
which act as breeding sites for malaria.

Cues to action include triggering factors like source of information about health care for
malaria or knowledge about malaria-related messages via television, radio, mobile phones,
advice from health workers, peers, health extension workers, family members and a history
of the death of a close relative due to malaria.

With the construct of susceptibility as in the Health Belief Model, the adopted framework
considers International students to have a greater risk of acquiring malaria, since they are
non-natives with some of them coming from no or low malaria endemic areas as compared
to those from neighboring countries like Nigeria, Uganda, Togo, Kenya, Rwanda among
others, known to have almost similar incidences of malaria. Despite the fact that they are
from African countries similar to Ghana in terms of malaria endemicity the study included
them as International students since the University of Ghana treats them as International
students.
Perceived barriers that hindered university students in a study conducted in Nigeria about their health-seeking behaviours from the hospital, were long waiting time in the University facility, attitude and skills of health workers at the hospital and quality of services were the barriers to the use of formal health facility like hospital and clinics (Afolabi et al., 2013).

This conceptual framework helps us to understand the factors in terms of accessibility, affordability, availability, efficacy and time taken to receive the service from the sources of care. This is based on the meaning of affordability as expounded by Mills et al. (2012) as the ability of an individual to pay for the health care services rendered to him/her including physical examination, transport, blood tests and medication for management of malaria. Accessibility means an ability to find the source of care that is needed to control malaria based on the preference within the time an individual is comfortable with. This can be measured in terms of time spent to reach the source of care and time spent while waiting for the healthcare service. In addition, availability is explained as whether services that are needed to control malaria are ever present all the time to meet the demands of an individual (Haggerty & Martin, 2005). Efficacy also is how faster and effective the remedy or care sought for treatment of malaria is concerned (Tabi et al., 2006).
Figure 1: Conceptual framework. Adopted from (Rosenstock et al, 1994)
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

The earlier chapter looked at the background of the research, statement of the problem, research objectives and the implication of undertaking this study. This chapter critically reviews the already existing literature on the health-seeking behaviour for malaria treatment. The literature reviewed is on knowledge about malaria, sources of health information, actions and sources of health care and factors affecting health-seeking behaviours for malaria treatment.

2.2 Overview of malaria

Malaria is a febrile disease caused by protozoa known as Plasmodium. The common species of Plasmodium include falciparum, malariae, vivax, ovale. A fifth species has been reported in South-Eastern Asia known as p. knowlesi. It is transmitted through a bite of an infected female anopheles mosquito with Plasmodium (Wilson et al., 2013). Following inoculation of Plasmodium into the human host, during its course of feeding on human blood, the human being gets infected with malaria. This infection affects the red blood cells. Plasmodium falciparum and vivax are the most common and more virulent species in sub-Saharan Africa compared to other species (Olasehinde et al., 2010).
In Ghana, Plasmodium falciparum is the major parasite causing malaria and its implications in about 80-90% of cases especially in children below 5 years and expectant mothers, Plasmodium malariae causes about 10-20%, whereas Plasmodium ovale is the least with only 1%. On the other hand, Plasmodium vivax has so far not been reported in Ghana (Ghana MCP, 2013).

Malaria is divided into two main forms based on the Ghana protocol for managing malaria; complicated malaria and uncomplicated. Any individual to be diagnosed as having complicated malaria which is commonly due to P. falciparum should have a positive blood smear or Rapid Diagnostic Test (RDT) for malaria parasites (Ekong et al., 2013). There must be one or more of these clinical features; coma, severe anemia, renal failure, pulmonary edema, acute respiratory distress syndrome, circulatory shock, disseminated intravascular coagulation, extemporaneous bleeding, metabolic acidosis, hemoglobinuria, jaundice, repeated generalized convulsions and parasite load of greater than 5 percent in blood (Fenny et al., 2014).

Regarding uncomplicated malaria, there should be a positive RDT or microscopy for malaria parasites in the blood. There must be with one or more of the following symptoms; fever, headache, joint pains, vomiting, diarrhoea, general body weaknesses among others. The signs include; high temperatures above 37.6 degrees centigrade, pallor, dehydration, blackwater fever, jaundice among others (Wilson et al., 2013). However, these symptoms and signs are not only specific to malaria, there are numerous health conditions that are known to manifest in the same way. Therefore, it is important to seek for health care from a formal health facility (Hay et al., 2009).
This health facility is presumed to be equipped with human resources who have been trained to take an appropriate history about the illness, examine the patient and be able to examine the blood through RDT or microscopy and be able to offer appropriate medication for malaria depending on the severity (CDC, 2009). According to Fenny et al. (2014), the control of malaria in Ghana intended to reduce its negative implications by 75% in the year 2015. Interventions such as prompt and early diagnosis of malaria with timely treatment are some of the core components to prevent and control this disease and its implications. This should be done within a 24hours of onset of symptoms related to malaria such as fever among others and it should be from a formal source such as clinic or hospital (Abreha et al., 2014).

An initiative of 3Ts (Test, Treat and Track) was introduced and launched by Global Malaria Control Program of WHO in April 2012, with an aim of improving the testing and provision of anti-malarial drugs based on results and proper case reporting. Upon the “3Ts” it led to the revision of the guidelines for treatment of malaria in the year 2010 by WHO, that all cases must be tested and get treatment basing on obtained results from RDT or microscopy (Baiden, et al., 2014).

Based on the WHO guidelines in the control and treatment of malaria, the first line drug used in the treatment for malaria due to Plasmodium falciparum is Artemisinin-based Combination Therapy commonly referred to as ACTs and this is for simple malaria with no complications (Asante et al., 2010).
Once complications for malaria appear, like renal failure, liver failure, unconsciousness, convulsions among others, then the management requires a second line treatment which is quinine preferably administered through parenteral route such intravenous infusion or intramuscular injection. Though the intramuscular route is no longer recommended because of increased risks of damaging the sciatic nerve and injection abscesses (WHO, 2015). To reduce morbidity and mortality due to tropical endemic diseases such as malaria one needs to receive prompt diagnosis and treatment which in turn it can also help in the reduction of the rate of malaria transmission to susceptible hosts (WHO, 2016).

According to WHO guidelines for treatment of malaria in 2015, it was stated that when an individual goes for a biomedical diagnosis for malaria he/she is likely to get results within 30 minutes while using microscopy. While using a rapid diagnostic test it is less than 10 minutes (Asante et al., 2010). In most cases where RDT or microscopy for malaria diagnosis is not possible many individuals based on a number of symptoms for malaria to diagnose malaria and offer treatment (Hansen et al., 2015).

The biggest challenge is that the initial presentation of malaria is synonymous to other infections such as a headache, general malaise, abdominal pain, joint pains, fever, chills, rigours, vomiting, and loss of appetite (Moody, 2002). At this stage of malaria, an individual can improve appropriately if he or she seeks for urgent medical attention before the disease progresses to severe form, where a number of organs are destroyed and cannot function well thus the term complicated malaria (WHO, 2015).
Factors such as poor waste management, drainage systems which are blocked by a lot of rubbish which is crudely dumped into trenches that block waste water making it stagnant and act as breeding sites for the mosquitoes. Female Anopheles mosquitoes that are known to transmit Plasmodium do breed from clean standing water both outside and indoors as long as it is not covered unlike dirty water basing on the research that was conducted to establish where mosquitoes breed. Other sites for mosquito breeding are; birdbaths, eaves and drains (Asante et al., 2010).

The core components for interventions in the control of malaria according to world malaria control program as per WHO include sleeping under ITNs, eliminating breeding sites, DDT spraying, closing windows and doors early, personal protection with long clothes, prophylaxis with appropriate drugs like fansidar, use of mosquito repellants, indoor residual spraying or house fumigation among others (WHO, 2016).

Knowledge of malaria transmission and use of antimalarial drugs for prophylaxis among young adults of Ibadan university students in Nigeria was because most of them had exposure to malaria which did not transform into illness. Both residents and non-resident university students had the same prevalence of malaria and they did not use the health facility to manage malaria-related symptoms (Anumudu et al., 2006).
Knowledge about the causes, prevention and control of malaria among community members in Sub-urban areas of Accra, was high. Unfortunately, their practices were not appropriate as they could not perfectly put what they seem to know to practice, though more than 90% of the community members knew that malaria is preventable and can affect everybody at the same time fatal to everyone if not treated well (Appiah et al., 2011).

In a study carried out in Dangme-East district of the Greater Accra Region, between 2007 and 2008, trained school teachers designed participatory health education activities and led school children to the dissemination of messages related to malaria to their communities (Ayi et al., 2010). There were many misconceptions about malaria causes that were corrected after the intervention of providing health education on issues regarding malaria and treating mosquito bed nets improved from 21.5% to 50% as a result of health education on malaria control and prevention. This improved their knowledge since these children acted as a media to promote health among their communities, then these at the higher level of education once are given information on malaria they are more likely to ensure proper dissemination and application of the learnt facts into practice (Ayi et al., 2010).

In a study carried out among pharmacy students from various universities such as the University of Sargodha, GC University of Faisalabad, and the University of Lahore, knowledge about self-medication with dietary supplements was assessed including their attitudes and prevalence. It was revealed that the knowledge of these students was satisfactory this implies that these students had knowledge on the prevention of the disease and their signs and symptoms leading to self-medication practices (Arshad et al., 2017).
2.3 Sources of information about malaria

This looks at places, avenues or sites where individuals acquire knowledge regarding malaria such as media, schools, friends, hospitals, clinics, health workers among others. These tend to influence health-seeking behaviours for malaria treatment among individuals through raising awareness and may be used for community mobilization to take action on issues like exercising preventive measures for malaria-like clearing bushes, clearing stagnant water. University students in Australia were assessed about the sources of information. Majority of the students (73%) got health information from health workers as general practitioners in hospitals. This study further revealed 41% of the students getting information from media through the use of the internet.

In the same study, 60% utilized friends and family members as a source of health information. It was also revealed that internet delayed 28% of the university students to seek for medical attention since most of the information uploaded on the internet tend to be misleading in most cases which paused a need to assess this source of health information. This can assist in evidence-based communication with students so that they are careful while using media to seek information regarding their health status (Kam et al., 2010). According to the Ghana Malaria Indicator Survey in 2016, about 21.9% of women received a message about ACTs or messages related to malaria signs and symptoms from television, whereas 9.5% got the information from the radio. This indicates that media does a lot in the promotion of health of individuals through good health messages that concern their health. In addition, leaflets and billboards have been highlighted in Ghana to be some of the media of disseminating health information on malaria treatment which has contributed to increased use of ACTs in the management (DHS, 2017).
The main source of information related to health in a study conducted among pharmacy students regarding self-medication was; media (21%), pharmacists (20%) among others (Arshad et al., 2017). Regarding general information on malaria, television contributed to 38%, radio (33%) and health facilities were 26%. It was further noted that 30% of the women were getting exposure to general information regarding malaria from advertisements encouraging them to do an RDT test before any medication. Through musicians like Kwabena Kwabena, messages such as the use of ITNs was observed in 28% of the women in Ghana. Such general information is on transmission, cause, signs and control or prevention of malaria (DHS, 2017).

2.4 Health seeking behaviours for malaria treatment

According to the malaria indicator survey in 2016 for Ghana, a number of sources of health care were identified and these included government hospital (24.8%), pharmacy (14.5%) with traditional healers (0.3%). A good number (91.4 %) of the University students in South Western Nigeria were involved in self-medication whenever they could felt unwell.

The prevalence of self-medication was found out to be (46.3 %) as far as the use of antimalarial drugs to treat themselves was concerned. It was revealed that 29.1% got medication from community pharmacies, 11.5% used drugs whose friends had kept and only 3% of the university students had some drugs that were left from previous episodes of illnesses that they had suffered before and could not complete the prescribed medication (Osemene & Lamikanra, 2012). In a study that was carried out in Eastern Uganda on health-seeking behaviours among caretakers of children with malaria-related symptoms, a significant proportion of self-medication at home or at informal health facilities without access to a formal diagnosis for malaria was established. These are usually sought with no
thorough history taking, examination and RDT or microscopy for the blood malaria parasites. This is particularly a common behaviour to groups of persons who rarely have the time to carry out the required tests to confirm the presence of malaria parasite before initiation of any treatment. Students who are always attending lectures and reading up to late hours in the night which predisposes them to mosquito bites yet some are from low or no malaria-endemic nations and may have no immunity against malaria are at a high risk (Katrina et al., 2014). A study that aimed at determining the prevalence and characteristics of self-medication was carried out among students at Kasapa University campus of the University of Lubumbashi in DRC. It was revealed that 99% of the students treated themselves. Quinine was utilized in form of tablets by 79.4% and paracetamol as a painkiller was used by 97.5% to manage fever, headache and other related symptoms to malaria (Chiribagula et al., 2015).

In Nigeria students prefer self-medication and sometimes seeking medical attention from community pharmacies without any prescriptions rather than attending to public health facilities such as those of their institutions like University hospitals and this was observed in 24.7% of the University students preferred community pharmacies. During their study about health-seeking behaviours and perception of students in health care services in universities of Nigeria revealed that 37.5% of the students sought assistance from their colleagues who were in academic courses related to health, and others took personal initiatives to take care of their health but to make it worse others decided not to seek for any medical attention (Afolabi et al., 2013).
It was further noted that increased self-medication 60% males as compared to females on dietary supplements is influenced by media among university students studying pharmacy in Punjab, Pakistan and this was attributed to the fact that they are taught at school a number of related conditions including their signs and symptoms which contributes to increased self-medication (Arshad et al., 2017) and all cases that are suspected to have malaria are confirmed by use of parasite-based diagnostic test either by RDT or microscopic examination before any medication is given to an individual.

Mono-therapy, where individuals reported in a qualitative study in Tanzania, was severally mentioned by participants during a Focus Group Discussion where people were treating themselves with one antimalarial drug due to their perceived effectiveness and availability of that particular drug. And they reported their fears of side effects following the use of Artemether-Lumefantrine which is a perceived barrier and they doubted the effectiveness of the combined regimen which led to them seeking for local herbs. (Metta, 2016).

Currently, the strategy of managing malaria as per the study carried out in Great Comoro is the use of Artemisinin Combination Therapies (ACTs). However sustainability of this strategy is conceded by the increased level of uncontrolled exchange between the Comoro Islands and their neighbours, increasing the danger of introducing ACT-resistant strains, the use of great quantities of pesticides for agriculture associated with mosquito resistance making eradication of malaria quite difficult (Chakir et al, 2017).
According to Okwa, Bello, & Olundegun, (2011) in the study carried out in Nigeria Lagos in two tertiary institutions, most of the individuals do uphold that malaria is preventable and it is treatable using a combination of drugs. However, some individuals think that malaria is not transmissible from one person to another and fever is the most mentioned symptom of malaria that people use to recognize that they have malaria (Chakir et al., 2017). And it was also noted in the same study that about 92.6 % of the students from two institutions have had malaria in the past one year.

According to Chinweuba et al., (2017), in a study that explored treatment-seeking behaviours of pregnant undergraduate students residing in university hostels, South-East Nigeria. Half (50.6%) of the university students who were pregnant sought care from a hospital for screening and treatment of malaria-related symptoms whereas 28.1% bought antimalarial drugs from pharmacies or drug shops to manage malaria-related symptoms. According to MacKian (2003), health seeking behaviours are referred to as activities that are carried out by individuals who have a medical or health challenge or seem to be unwell so as to have better solutions to their problems.

In a Portuguese-Angolan comparative study where the rational use of drugs was assessed among university students and scholars and it was revealed that those from Angola exhibited irrational use of drugs to treat various illnesses which necessitated urgent health education to improve on their health-seeking behaviours as compared to those from Portugal (Deye et al, 2016).
A study among students at the University of Ghana, where their health-seeking behaviours were explored while assessing the environmental sanitation and diseases. It was revealed that (80%) of the students became sick from various diseases while at the campus since the time of their admission at the University of Ghana while pursuing different courses. Since his study among students at the University of Ghana, its major objective was not about health-seeking behaviours for malaria treatment which also did not disaggregate the data looking at different students from different regions of the world where some are of low or no malaria-endemic areas. This motivated the researcher for this project to study International students' ways of seeking for care in case of malaria as one of the commonest disease burdens in sub-Saharan Africa where the University of Ghana is part of this region (Mahamah, 2009).

It was further noted that 50% of the students sought care from the University health facilities where most of them were males constituting 60% of those who attended health facility implying that 40% were females. However, this study did not elaborate whether they sought care from pharmacies or other forms of treatment utilized by the students, which this study is aiming at exploring so as to know whether students use hospital or clinics or pharmacies when they experience symptoms related to malaria.

Various reasons as to why 46% of university students fell sick at one time while at the University and did not seek medical attention from the University health facilities were self - medication accounting to 37%, whereas 29% of the students attributed it to long waiting time taken to obtain the service they needed when they got sick (Mahamah, 2009).
A study that was carried out in Eastern Uganda revealed that 76% believe that fever should first be treated from home before you seek for medical attention and 24% use herbs or medicines that are stored in their houses and 41% sought care from nearby pharmacies or drug shop to buy biomedical drugs. However, majority (60%) agree that if you have a negative biomedical diagnostic test for malaria you can take medications as long as one has symptoms suggesting malaria and only 35 % tend to seek care from a formal biomedical health facility (Katrina, 2014). In a qualitative study that was carried out in South Eastern Tanzania about health-seeking behaviours for malaria diagnosis, it unpinned a number of issues such as self-treatment of malaria as a common practice among adults where many of them started with painkillers as soon as they identified that they have symptoms suggesting malaria. Persistence of malaria led to them seeking a number of self-care which made them seek for malaria tests in addition to the convenience of private laboratory facilities and drug shops motivated their use for malaria tests and for obtaining anti-malarial drugs (Metta, 2016).

During the Ghana malaria indicator survey of 2016, 34% of women reported having experienced symptoms related to malaria within the last 12 months prior to the survey. Eighty-five of these women sought care or advice regarding their treatment of malaria-related symptoms (NMCP, 2014). A study that was carried out to establish the social aspects of malaria among students in two tertiary institutions in Lagos, Nigeria. Majority of the students 44.1% female students from Adeniran Ogunsanya College of Education in Nigeria and 38.1% males from Lagos State University preferred self-medication as far as treating malaria is concerned. In both tertiary institutions, the second option was seeking care from biomedical doctors following the failure of self–medication and this was seen
mostly in female students than male students. Prayer was sought by 6% of students in Adeniran Ogunsanya College of Education (Okwa et al., 2011).

It is believed that if an individual has adequate information on health care services that are available he or she is likely to be persuaded to seek for such services unlike when one has inadequate information (Mosadeghrad, 2014). Different sources of care for different conditions are depending so much on the patient or client's preference for example in a study carried out in Bongo rural Ghana on health care providers' contribution to health care delivery. It was revealed that individuals can decide to go to conservative healers and untrained health professionals than going to a health facility with trained practitioners (Aniah, 2015).

2.5 Factors affecting health-seeking behaviours for malaria treatment.

Health seeking depends on a number of factors and varies from individuals to individuals, for example, the commonest factor is client satisfaction as far as the services provided are concerned. Once one is able to get well out of the illness he or she is suffering from, then he is satisfied with the services.

This is also related to the quality of services delivered to clients, this has been demonstrated in form of communication between the clients and health care providers and once they are able to relate well to each other, then it will improve the health-seeking behaviours (Ofosu-Kwarteng, 2012).
For any country to contribute to broader development as per the SDGs by the year 2030, WHO has advocated for them to have a strategy of political will and intersectoral collaboration so as to be able to eliminate malaria in those highly malaria-endemic countries (Canavati et al., 2016). In Ghana, 68% of hospital admissions are due to malaria which is rated as the leading cause of morbidity and mortality. More so based on the report published by the Department for International Development in 2011 there were an estimated 3.2 million cases of malaria in 2008. (Sayang et al., 2009). It was projected that by the year 2015 universal coverage of ITNs use would be 80% of the entire population which was not achieved due to a number of challenges such as inadequate ITN stock, distribution problems and cultural barriers in a number of communities which has contributed to the endemicity of malaria.

Long waiting time has been pointed out in Laos (Southeast Asia) as one of the factors that discourage individuals (female sex workers) from seeking services from health facilities and sometimes it is coupled with failure to see a health care provider or even fail to get the medication or services that one went for. In some cases information regarding those services where one can easily get them from is also lacking and there is inability to pay for the services (Phrasisombath et al., 2012).

Some other factors that promote self-medication are cost implications (17%) and convenience (27%) these were observed among pharmacy students while they were assessing self-medication in Pakistan. The costs associated with accessing treatments from the health facilities prompted many individuals to go for self-medication rather than going to a health facility coupled with individual characteristics and the limitations of the existing health care facilities (Metta, 2016).
This implies that the lower the cost of a drug the more the individual is likely to use it and any other service once it is affordable then many individuals will seek for the service and also the issue of convenience in terms of accessibility and quick service will promote health-seeking behaviours from such facilities (Arshad et al., 2017). There are a number of factors as reported in Tanzania while carrying out a qualitative study concerning health-seeking behaviour for malaria treatment include poor patient to health care provider relationship, inaccessibility of medicine (Metta, 2016). Limited numbers of laboratories that can diagnose malaria following standard operating procedures were less than 14%, inadequate funds, inadequate public confidence in use of first-line drugs for treatment of malaria and inadequate knowledge of health workers who knew proper prescription of drugs that are used for treating malaria were some of the factors affecting health-seeking behaviours (Sayang et al., 2009).

Since the year 2005 when NHIS was introduced in Ghana, it has been one of the factors that can promote the use of health facility, both inpatient and Out-Patient Department (OPD). However, it is likely to lead to work overload to health workers who are taking care of these patients since the majority of the population can afford the services (Fenny et al., 2014). Subsidizing the cost of ACTs which leads to a reduced price tend to increase the use of such medicines among patients who are suspected to have symptoms related to malaria irrespective of their economic status. In a systematic review, it was revealed that every 1(one) dollar decrease in cost of ACTs, was related to a 24% point increase in the portion of suspected malaria patients buying ACTs to relieve the malaria-related symptoms (Morris et al., 2015).
According to Chiribagula et al., (2015) self–medication was acceptable to the community of the entire University of Lubumbashi in DRC basing on the effectiveness of the action taken in managing the symptoms like fever, headache among others.

It has been reported that once an appropriate diagnosis is made by following the protocol for management of malaria in Ghana, the cost is reduced by 50% to 100% because once the RDT test is negative there is no need of issuing antimalarial drugs to the patient, even healthcare providers feel reluctant to issue drugs to patients with negative results (Baiden et al., 2014). Among other factors that influenced this practice were having simple symptoms easy to manage, preference, saving time and money to receive health care. Accessibility of the health facility was one of the major factors that influenced health-seeking behaviour for treatment of malaria-related symptoms among university pregnant students residing in hostels of South Eastern Nigeria. Among other factors identified was knowledge of malaria, academic timetable and ability to make a decision. This led to a solution of raising awareness about the irrational use of drugs through lectures for all fresh students at the university (Chinweuba et al., 2017).

Availability and accessibility of pharmacies near the students are some of the factors that contribute to self-medication by purchasing drugs especially herbs or dietary supplements from pharmacies. This was revealed among pharmacy university students in Pakistan while studying their knowledge and attitude about self -medication (Arshad et al., 2017). A study that was carried out in western Delta of Nigeria 70.8% of the University students were infected with P. falciparum parasites and it was more in females compared to male students. However, there was no statistical significance as far as the severity of malaria is concerned in relation to blood group of an individual meaning that irrespective of your blood group
(ABO), the degree of severity does not differ. In this study, therefore, it was recommended that malaria prophylaxis and treatment measures should be offered in the same way to all blood groups (Otajevwo & Igoniwari, 2014).

Individuals who travel from low malaria-endemic areas like China to African countries are highly susceptible to acquiring malaria compared to those who are natives of that particular country. This was seen in a study carried out in China among the Chinese who were working in African countries and discovered that the incidence of malaria was high among them. This was attributed to a number of factors such as health beliefs held by the Chines’ population, structural, social, environmental, and economic context within which malaria prevention decisions are made. This study led to an invasion of pre-travel advice and check on the destination country whether it is a high malaria rate county so that the person should take high compliance with the preventive precautions before he goes to any malaria-endemic country (Wu et al., 2017).

According to the study conducted in rural facilities of Ghana, it was discovered that 45.5% of patients who tested negative received anti-malarial drugs. This was attributed to the fact that some of the health workers don't want to stick to the guidelines in the protocol for treating malaria in Ghana (Chandler et al., 2010).

In Ghana, the level of education of an individual has an effect on the prevalence of malaria whereby during the malaria indicator survey 2016, it was discovered that malaria prevalence is reduced by 30% among children whose mothers have a high level of education as compared to 5% among the children of those mothers with low education level. It is also associated with the income levels of mothers where it is decreased by 37%
among those with wealthier mothers 2% among those lowest wealth quintiles. This is attributed to the fact that they can afford treatment and other preventive interventions for control of malaria (DHS, 2017).

The report also noted that majority of the university students are single to 56% and the remaining 44% are said to be in the union either in a relationship or divorced or married. Usually, studies show that male university students are usually more compared to female university students. Osemene & Lamikanra, (2012) found revealed in their study on the prevalence of self-medication in southwestern Nigeria that self-medication was more pronounced in female university students especially those aged between 25 to 44 years of age. The level of study at the university also accounted for the prevalence of self-medication as it was more among undergraduates as compared to graduate students.

According to a study carried out in Bongo district rural Ghana on the contribution of health providers to health care delivery, many individuals once he or she is treated once he does not want to come back the next time. This is because they tend to copy the treatment given for the illness and once he gets sick again he uses the same treatment. However, the study revealed that they use herbs so much from traditional healers thinking that the disease is supernatural and cannot be treated with modern medicines (Aniah, 2015).

2.6 Malaria treatment in Ghana

According to the Ghana malaria indicator survey 2016, National malaria prevalence has decreased between 2014 and 2016, from 27% to 21% (DHS, 2017). It was estimated according to world malaria report, (2016) that estimated a change in malaria incidence and mortality rates from (2010-2015), for Ghana was between 20-40% (WHO, 2016).
Ghana is identified as one of the high malaria-transmission states and according to National Malaria Program, it is trying so much to come up with a number of sentinel sites all over the country. This enables to test all cases with fever to confirm the presence of malaria parasites before they are subjected to any treatment. In addition to that intervention, they have also carried out research to establish simple tools that can be used to monitor the problem of malaria in Ghana (Baiden et al., 2014).

In 2014, Ghana like any other highly malaria-endemic countries also adopted the 3T (Test, Treat and Track) by WHO that recommends all individuals suspected of malaria to get tested by formal diagnostic means (RDT or Microscopy) from a formal health facility before receiving any treatment for malaria (Baiden et al., 2014). The 3T approach encourages all individuals who ever presents with fever and other malaria-like symptoms to seek formal health care early so as to prevent complications related to malaria (WHO, 2016). In 2013, there was an increase from 18% in 2007 to 35% in the cases of malaria managed based on the 3T approach (GMCP, 2013). Furthermore, it was noted by GHS 2014 Annual report that OPD malaria tested cases rose from 42.9% in 2011 to 74.3% in the year 2014.

In Ghana Malaria is said to be prevalent or endemic in almost all regions. It is believed that those who are in highly endemic regions have some degree of immunity to malaria after a given period of time of exposure. However, being asymptomatic leads to increased transmission of malaria from infected individuals to others and many people have hyperparasitaemia without showing signs and symptoms related to malaria. (Doolan et al. 2009).
Malaria is more prevalent in children aged 18-59 months of age with 25% of all cases of malaria and it is lower in those aged 18-23 months of age with 16%. More in rural areas as compared to urban areas of Ghana with 28% and 11% respectively. The Eastern and central parts of Ghana have the highest prevalence of malaria with 30% and in the Greater Accra region, the prevalence is as low as 5% of all cases in Ghana (DHS, 2017).

According to Fenny et al., (2014) often, malaria diagnosis is based on symptoms without carrying out an RDT or microscopy for malaria parasites which is not so reliable since many other diseases like bacterial or viral do present the same way like malaria. This is still the approach of managing malaria-related symptoms in many other endemic areas where they don't have diagnostic laboratories. In Ghana, hospitals and private clinics are the facilities where malaria using microscopy is diagnosed. Whereas in peripheral health facilities Rapid Diagnostic Test (RDT) is used to diagnose malaria (Osei-kwakye et al., 2013). Based on the protocol for malaria management for Ghana, lower level facilities such as CHPS compound, are recommended to use RDT to diagnose malaria at the community level. However, they are sometimes challenged with an inadequate supply of the test kits and end up treating symptomatically (Fenny et al., 2014).

According to 2014 guidelines for management of malaria in Ghana, there are four levels of health facilities at which malaria can be diagnosed and treated: community level (households, licensed chemical sellers, community-based agents, and volunteers); Primary health care level (CHPS compounds, health centres, private clinics and pharmacies); Secondary level (district hospitals) and Tertiary level (regional and teaching hospitals). (Ghana Malaria Operational Plan FY, 2015).
The recommended first-line treatment of malaria in Ghana is Artemisinin-based combination therapy (ACT) of uncomplicated malaria in Ghana. According to the malaria indicator survey 2016, fifty-nine (59%) of children below the age of 5 years received an ACT due to fever, where a combination of artemether-lumefantrine is used by 37% as compared to 22% of the artesunate-amodiaquine. About 31% used an immunotherapy with sulphadoxine-pyrimethamine (fansidar) and 8% used quinine tablets as compared to 1% who used injections which are being discouraged especially intramuscularly due to increased injection abscess.

The average cost of treating each case of malaria as it was found out in the northern part of Ghana was US$6.39 to 15.79 which is equivalent to 28.755 to 71.055 Ghana cedis, this has consequences on the health-seeking behaviours of individuals since the demand to health care services tend to be high and make some people seek for care from non-formal sources of care like herbalists among others (Asante et al., 2003). However, the national health insurance scheme has improved access to primary basic health care services in Ghana which is becoming mandatory to almost all districts since there are no direct costs incurred in the treatment of conditions such as malaria. This has greatly had an impact on health care seeking behaviours of individuals and those who have the valid health insurance card tend to seek for care from formal health providers as compared to those who do not have (NHIS Act, 2003).

A study was conducted in the Kassena-Nankana districts, Ghana to determine the effect of a national health insurance scheme on the cost of treating malaria in the households.

It was revealed that, the average direct medical cost of treating each malaria case as GH¢3.2 which is equivalent to (US$2.1) and those who had valid NHIS (national health insurance
services) paid less amount of money (GH¢2.6 equivalent to US$1.7) as compared to those without the national health insurance (GH¢3.2/US$2.1) (Oduro, 2014).

The overall average cost including direct and indirect costs incurred by households for each case malaria treated was GH¢20.9 (US$13.9). Those who were insured (76%) among those who were admitted were more compared to those who were not insured (24%), the average amount households spent on the insured was less (GH¢4/US$2.7) than their uninsured counterparts (GH¢6.4/US$4.3). This study revealed no statistical difference between those who had health insurance and those who did not have as far as health seeking behaviours are concerned and the costs incurred during the treatment of malaria in the northern part of Ghana. However, this does not undermine the impact of health insurance on improving health-seeking behaviours of individuals by reducing the costs incurred on treatment of malaria (Oduro, 2014).

About 12 species of herbal medicines containing underground and aerial ingredients have been recommended by Ghana Food and Drugs Authority to be used in the treatment of malaria with a wide range of commercial availability with strict regulations like any other known formal drugs on the market for treatment of malaria (Komlaga et al., 2015). In a study that was carried out in rural Ghana by Asante et al., (2010), it revealed fever as a symptom of malaria that is highly known by a number of people in rural communities.

However, the WHO recommended first-line treatment for malaria as Artemisinin Combination Therapy (ACT) specifically the Artesunate- Amodiaquin therapy (AS-AQ) many people were not aware of its use and its side-effects. This calls for an appropriate intervention through increasing community awareness for all individuals in a community (Fenny, Asante, Enemark, & Hansen, 2015).
According to Ghana malaria Indicator,(2016), when one experiences fever usually seeks for care or treatment from the private health sector (51%), public health sector (48%), and 2% from other sources. However, this report is more on children and data about adults regarding malaria is inadequate and 30% of these children who experience fever always take a finger prick for RDT and 59% use antimalarial drugs as ACTs (DHS, 2017).

Rapid diagnostic test impact on the antimalarial prescription as compared to microscopy testing was examined in West Africa where four clinics in west district of southern Ghana were randomized with one clinic performing microscopy before treatment and the remaining three clinics treat malaria clinically. The study revealed that there is no much more impact on the behaviours of those health workers who prescribing antimalarial in settings where microscopy already exists as compared to those who relied on RDT before treatment which led to a reduction in over-prescription of antimalarial (Ansah et al., 2010).

In a study that was carried out among United States university staff and students who visited Ghana in the year 2002 where they investigated a report of a group of malaria patients. About 56% of the students completed prescribed medication to manage malaria symptoms. It also revealed (80%) of the students experienced symptoms related to malaria. Surprisingly 20% of the cases turned out to have a negative microscopy for malaria implying that they had a wrong diagnosis. This can lead to drug resistance and unnecessary use of antimalarial (Causer et al., 2004).

Regarding knowledge on malaria in Ghana,84% of the women in their reproductive age as reported in the Malaria Indicator Survey (2016), knew mosquito bites as the cause of
malaria, 77% knew that use of mosquito bed net can prevent malaria and only 55% could tell that fever is a symptom of malaria.

2.7 Conclusion of literature review

The literature review describes; sources of health care, sources of health information, factors, and personal characteristics affecting health seeking for malaria treatment behaviours of International students. However, age, knowledge on malaria, perceived susceptibility to malaria and a perceived barrier to seeking treatment are vital factors in influencing health-seeking behaviour for malaria treatment. There is a need to focus on targeted interventions, promote awareness and prevention, and address misconceptions. In Ghana, a lot of data on the health-seeking behavior exist. However, among International students data appears to be inadequate. The aim of this study is to bridge this gap in knowledge by reporting the health-seeking behaviour among International students at the University of Ghana Legon.
CHAPTER THREE
METHODODOLOGY

3.0 Introduction

This chapter covers the methods used including study design, study area, study population, sampling procedures, data collection tools, data collection, data analysis, ethical considerations, exclusion, inclusion criteria, dissemination of study findings and study limitations.

3.1 Study design

A descriptive quantitative cross-sectional study was carried out to assess health-seeking behaviours for malaria treatment among International students in the University of Ghana. This design is advantageous because it allows the researcher to collect firsthand information from the respondents for addressing the stated specific objectives and at the end of it, data can be quantified for easy reporting of the health-seeking behaviours for malaria treatment.

3.2 Study location

The University of Ghana is one of the Public Universities in Ghana which has been in existence for 69 years located about 13 km northeast of Accra central, the capital city of Ghana along Dodowa road and extends up to the Commonwealth Hall on Legon hill. It offers a number of academic programs at different levels such as sub-degree certificates, diplomas, bachelors, masters and doctoral to which it admits students from Ghana and other different International countries irrespective of their social, cultural, ethnic backgrounds, sex and age.
The campus has Halls of Residence, Departments, lecture theatres and laboratories. Midway, an open space – the University Square – with an attractive pool is overlooked by the Balme Library (named after David Mowbray Balme, the first Principal of the University College). Across from the University Square are sports fields, a Central Cafeteria and halls of residence. Behind Commonwealth Hall is an open-air theatre with a Grecian style auditorium built into the slope of Legon Hill.

On the summit of Legon Hill is the convocation group of buildings which houses the University's administration offices, the Great Hall and a Tower donated by the Government of Ghana in 1959 to commemorate Ghana's Independence. On the southern side of the campus are residential accommodation for staff, the University Basic Schools, the Noguchi Memorial Institute for Medical Research, School of Public Health, the Sports Stadium, supermarket and student hostels; while on the Northern side are more teaching departments, lecture theatres and laboratories. Across the Accra-Dodowa road from the Main, University Gate is a Police Station, a University Hospital and housing for Junior Staff of the University.

The university has four main colleges which include Health Sciences, Humanities, Basic and Applied sciences, education, it also has 19 schools which are distributed in the mentioned colleges and 7 institutes and 10 centres. 109 departments across different schools. According to the basic statistic as at July 2016, the current population of students is 39,249 and the International students are about 840 (UG, 2016).

The University students have access to the University Hospital that has been in existence since October 1959. It consists of an Out-patient Department, an Operating Theatre, an X-
Ray Department, a Laboratory and a Ward section, a Pediatric Ward, an Emergency Unit and a Dental Clinic. The Hospital offers medical attention to all members of the University community such as students, staff and the dependents of staff, and members of the public.

All new students to the University are given a thorough medical examination at the beginning of their first year. This is also done by members of staff on their first appointment. Students requiring medical treatment are seen daily at the Students' Clinic located within the Central Cafeteria Building and the University has a counselling centre which offers services to the entire community of the University of Ghana (UG, 2015). The University of Ghana is surrounded by a number of private pharmacies, drug shops, churches and private clinics which offer health services to the University students if they cannot have access to the University hospital.

International students have a special office known as international programs office which is locted on campus opposite the school of law. This has a full administration headed by the Dean and a team of staffs who ensure hospitality and well-being of all international students at the University of Ghana. All students do register with this office and assist in the orientation of students about the operations of the university including regular meetings with the concerned staffs and students. They also assist in the processing of Visa for students so that they have a better and safe stay in Ghana.

There are special hostels that have been put in place to accommodate specifically international students with a full administration headed by senior tutors. These hostels include International Students Hostel (ISH 1 and 2). It is also supported by Jubilee hostel. However, some students who are from Ghana are also given opportunity to reside in these
hostels to ensure that international students get to interact with the locals of the country (Ghana). Some international students are free to occupy other hostels on campus and off campus.

Map of the study area.

Figure 2: Map of Ghana showing greater Accra and University of Ghana. Adopted from (Mahammah, 2009).
3.3 Study population

This was male and female International or foreign students coming from other countries other than Ghana, undertaking various courses in different schools at the University of Ghana Accra both regular and visiting students. The University receives students from a number of countries such as Nigeria, Uganda, Kenya, Rwanda, Burundi, Cameroon, USA, Togo, China, and Japan, Canada, Sierra Leone, Tanzania, DRC, Ireland, Turkey, Germany among others. The International students are about 840 (2.14%) of the total number of the University students’ population as at July 2016 as per the University website and the total population was 39,249 students (UG, 2016). All International students are registered by the International Program Office (IPO) located in the University campus Legon with its full administration structure headed by the Dean. The University of Ghana is home to over a thousand International students and scholars coming from over 60 countries across the world. Every academic year the international programs office orients new international students on various issues including the various places for treatment for various illnesses while at the University of Ghana (UG, 2016).

3.4 Variables

3.4.1 Independent variables

The following are the independent variables that were likely to determine the health-seeking behaviour for malaria treatment among International students in the University of Ghana. Personal characteristics such as age, sex, residence status, country of origin, faculty of the student, health insurance, level of knowledge about transmission of malaria, breeding sites, symptoms, prevention interventions. Sources of information about malaria treatment such as friends, health facility, media, school.
Sources and actions taken to seek for health care like a hospital (clinic), pharmacies (drug shops), and any other form of care like herbs, prayers. Factors like accessibility, affordability, time taken to receive services, availability of health services.

3.4.2 Dependent variable

Health seeking behaviour for malaria treatment was the dependent variable and it is the actions or inactions taken to address malaria-related symptoms and where they seek for health care whether used a health facility (hospital or clinic) or did not use a health facility but used other sources.

Table 1a) :Study variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Operational Definition</th>
<th>Type of variable</th>
<th>Scale of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health seeking behaviours</td>
<td>Actions taken by international students when they experience signs and symptoms for malaria (either use health facility like hospital /clinic or non-health facility such as pharmacies, drug shop, prayers)</td>
<td>Dependent</td>
<td>(Nominal)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-NO</td>
</tr>
<tr>
<td>Personal characteristics</td>
<td>These are some of the demographic characteristics of international students such as age, sex, residence status, country of origin, faculty of the student, health insurance</td>
<td>Independent</td>
<td>Age -years (continuous)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sex – male /female (Nominal)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Residence: on-campus or off campus (nominal)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Country – African or non-African (Nominal)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Health insurance YES/ NO (Nominal)</td>
</tr>
<tr>
<td>Knowledge about malaria</td>
<td>These are facts that are known by the international students especially on transmission, breeding sites, signs and symptoms as well as preventive measures</td>
<td>Independent</td>
<td>YES</td>
</tr>
<tr>
<td>Source of information about malaria</td>
<td>This is where the international students acquired information related to malaria e.g school</td>
<td>Independent</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Nominal)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NO</td>
</tr>
</tbody>
</table>
Factors associated with health seeking behaviours for malaria treatment. These included factors that do influence health seeking behaviours for malaria treatment such as affordability, accessibility, availability, cost on transport

<table>
<thead>
<tr>
<th>Independent (Nominal)</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affordability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost on transport</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.5 Sample size

The population of International students as at July 2016 was 840 students constituting (2.14%) of the total population of 39,249 students at the University of Ghana (UG, 2016). Considering the largeness of the University student population size, a sample was drawn that enabled the study to reach an adequate number of International students and help draw a relevant conclusion. In determining the sample size, a 95% confidence interval and a 5% margin of error were applied. Based on the proportion of the population of 2.14%, this gave a small sample size of only 32 students. Therefore since the prevalence of health-seeking behaviours for malaria treatment was unknown, an assumption of 50% was used and the calculation of the sample size according to Leslie Kish's, (1979) formula was employed to come up with the sample size (Alexander, 2001).

A total of 384 International students was obtained. Where \(d\) is margin of error (5%), \(p\) = prevalence presumed (50%) \(q = (1-p)\), \(n\) is sample size, \(z\) is the confidence level of 95% taken as 1.96.

\[
n = \frac{z^2 \cdot pq}{d^2} = 1.96 \times 0.5 \times 0.5 / 0.05 \times 0.05 = 384 \text{ International students}
\]

**Finite population correction** formula to get the appropriate and manageable sample size of 264 International students was applied since the population is less than 1000 students.
(T.P.S, 2016). Where \( n \) is the sample size required, \( n_0 \) is the sample size obtained above as 384, \( N \) is the total population of 840 International students at the University of Ghana as at July 2016.

\[
n_0 = \frac{n_0}{1+(n_0-1)/N} = \frac{384}{1+ (384-1)/840} = 264 \text{ International students.}
\]

The non-response rate of 10% was included to be able to recruit 27 extra participants leading to a total of 291 respondents.

3.6 Sampling procedures

A systematic sampling method was employed to select the study participant where a register from the International Program Office was used to aid in the sampling as the sampling frame which had a list of all registered International students. Every 3\textsuperscript{rd} participant was taken from the register, this was obtained after dividing the total population of 840 International students by the sample size of 264 students. Their address or contact and other necessary particulars were captured and then the questionnaire was delivered to that particular respondent by the researcher to be completed. The starting number of the respondent was decided upon by use of a table of random numbers where the researcher closed his eyes and pointed onto the table of random numbers. The number in the table based on the first three digits was available from 1-840 then that number was the starting point to select the participants. The first number selected was 2181, so the next respondent was 221, the procedure went on by taking every third person. Every third person was selected for a total of 291 with a 10% non-response rate was obtained. Once the selected participant was not found or not willing to take part in the study, the researcher moved on to select the next third person on the list until the required sample size was obtained.
3.7 Inclusion criteria

All students who are foreign or International coming from other countries other than Ghana irrespective of their course of study or program, year of study, sex, age were included in the study. All students had an equal chance of being selected to participate in the study since a systematic sampling method was used. All participants must have experienced symptoms suggesting malaria while at the University of Ghana such as fever, headache, joint pains, general body weakness, and loss of appetite, body pains and others.

3.8 Exclusion criteria

The study did not include all students who are Ghanaians since it is focusing on those who are coming from other countries other than Ghana. It is also excluded students who completed their courses and graduated. It also excluded those who are intending to enroll for any program at the University of Ghana but they have not been successfully admitted to any course in the University of Ghana. The study did not include staff members who are also internationally working at the University of Ghana. Students who had never experienced signs and symptoms of malaria during their stay at the university were also excluded much as they were International students.

3.9 Data collection tool

A self-administered questionnaire was designed with a total of 28 items based on the study-specific objectives including 6 items for socio-demographic characteristics (age, sex, marital status, program, level of education currently undertaken at the university), 8 items regarding personal student's characteristics (country of origin, faculty at the university, residential status, sponsorship, health insurance, name of insurance company, expiry date of health insurance), knowledge about malaria with 5 items (transmission, breeding sites,
signs and symptoms, preventive measures and sources of information and sources of health care which is having four main items assessing the health seeking behaviours and the factors associated with health seeking behaviours using 5 items regarding health-seeking behaviours and the cost for malaria treatment as well as cost on transport among International students. The questionnaire was written in English since it is the official language that all students use at the University of Ghana. It had an introductory statement (participant's information sheet) and a section for the consent form where students appended their signatures as an indicator that they accepted to take part in the study. It also had a debrief statement to remind the respondent about the purpose of the study and how confidential their information given was treated and thanked them for their participation.

The dependent variable as health seeking behavior based on the source of health care was categorized into two; first line and second line of action when students experienced symptoms related to malaria. It was further categorized into health facility (hospitals or clinics) and non-health facility (pharmacies, drug shops, herbalists or churches among others).

3.10 Pretesting of the study tool

The designed questionnaire was administered to ten International students who were currently undertaking various courses at the University of Ghana with an aim of fine-tuning the questionnaire. This was to ensure validity and reliability before it was delivered to the respondents for completion or filling and any mistake or invalid question identified. The researcher made the necessary adjustments to the study tool by deleting some items that affected the validity and reliability or replaced with other relevant questions.
3.11 Data collection

3.11.1 Data collection procedure

Data were collected by use of self-administered questionnaire and students filled the questionnaires which were returned to the researcher by the respondent. Data were gathered by the researcher with the help of two research assistants, screened and edited for completeness. The researcher with research assistants went to the hostels at the University of Ghana with printed questionnaires and he delivered the questionnaire to the already selected students. After the students completed the questionnaires, they were collected from them, checked for completeness there and then before leaving the respondent. The respondent was requested and guided and any uncompleted part the respondent was guided and requested to complete it. Students who were non-residents were traced from their individual faculties where the researcher together with research assistants went to those different faculties looking for the participants. Through the heads of departments, the researcher was directed to the class representatives who assisted in the identification of the participants in that particular department. The data collection was carried out after ethical approval and when all students were back from their holiday break in April 2018 and it took about six weeks to complete the data collection exercise.

3.11.2 Data quality control

Supervision of the completed pretested questionnaires was well maintained by the researcher for an aspect of data quality control. Any issues that proped up during the day were discussed by the research team at the end of every day of data collection, to ensure that the whole research tool is completed well.
The researcher was always available to clarify any unclear issues that might come up during the field work and he had to visit the research assistant to supervise the data collection process and checked all previously completed questionnaires for consistency and completeness. The two research assistants were employed to collect the data so as to be able to meet the targeted sample size. The researcher explained to them what was expected, to ensure that they collect correct data and they were also checked and compared to each other to see whether they were collecting the right information. This was one way of ensuring the validity of the questionnaire.

3.12 Data management and analysis

The completed questionnaires were coded and entered it into SPSS version 20.0 for data analysis. It was also used to highlight the significant association between personal, factors and health-seeking behaviours for malaria treatment. Univariate analysis was used to describe the distribution of each of the variables. Bivariate analysis was used to investigate the strength of the association between the outcome variable (use of health facility or non-health facility) and associated factors as well as other independent variables. Data were presented using frequency tables and cross-tabulations. Important summary statistics were obtained and associations were examined using the chi-square test and binary logistic regression. Binary logistic regression was used to investigate the strength of the relationship between health seeking behavior and the independent variables. A significance level of 5% taking the \( P<0.05 \) (95%) confidence interval was used to determine the significance of associations being examined. Hosmer and Lemeshow test of goodness of fit was applied to check whether the data fits the model taking the significance to be \( P>0.05 \) at step three using FORWARD LR method.
Whereas the ENTER method was used to see those variables that were not added to the model since they had less effect on the data. Health seeking behaviour for malaria treatment as the dependent variable was categorized into the use of health facility and non-health facility as a source of healthcare. Where health facility is if the respondent sought care from hospital or clinic and non-health facility referred to those who sought care from the pharmacy or drug shop or any other source of care such as herbalists, churches or consulting friends.

3.13 Ethical considerations.

**Ethical approval:** After completion of the research proposal development, an ethical approval and clearance were sought from Ghana Health Service Ethical Review Committee for the study to be implemented. Ethical clearance was offered by Ghana Health Service Ethics Review Committee **ID NO: GHSERC023/12/17.** The ethical approval letter for the project was obtained and addressed to the Dean of International Program Office, the University of Ghana Legon with an introductory letter from the head of the Department of Social and Behavioral Sciences at the School of Public Health, who authorized the researcher to carry out the study among International students. The Senior Hall Tutors for Jubilee/ISH hall of residence and other halls were informed through writing by the academic registrar of the IPO about the data collection exercise who also granted permission to carry out the exercise.

**Consent:** A participant written informed consent was sought from study participants and it was evidenced by the respondents appending signature onto the consent form so as to take part in the study after giving them adequate information about the study through information participation sheet.
Confidentiality: Anonymity and confidentiality were taken care of and any potential personal identifier like email address, name, student's identification number were replaced by a unique identifier or labelling after getting the already filled and returned questionnaire was kept under lock and key for safe custody and the questionnaires will be destroyed after two years.

Privacy: Voluntary participation was exercised, held interviews in conducive locations without interruptions, withdrawal at any time in interviews and if any interruptions occurred during the course of the interview the researcher was apologised to for the interruption

Potential risks and benefits: A study was health promotional and beneficial to the entire population, however no direct benefit to the participant, no direct payment in form of money for the participation. However, participants were compensated with pens and small notebooks during the interviews.

Environmental ethics: Reduction in use of papers, recycling was used for any used papers, electronic data was mainly used.

3.14 Dissemination of study findings.

The results will be presented to Department of Social and Behavioral Sciences, International Program Office authorities, study participant (students) and written report and recommendations presented to the relevant stakeholders and to the scientific community through publications upon successful approval through VIVAs voice (defence) and examiners.
3.15 Study limitations

The study was limited to only international students at the University of Ghana. Therefore we do admit that if the study was conducted even among Ghanaian students it would have given a more comprehensive picture of the health-seeking behaviours for malaria treatment. Therefore findings may not be generalized to the entire population of the University of Ghana.
CHAPTER FOUR

RESULTS

4.0 Introduction

A descriptive cross-sectional study was carried out to assess health-seeking behaviours for malaria treatment among International students at the University of Ghana. The study explored the socio-demographic or personal characteristics, knowledge, sources of information about malaria, actions taken to seek for health care by International students for malaria treatment and factors affecting health-seeking behaviours for malaria treatment.

4.1 Socio-demographic characteristics of respondents

The socio-demographic characteristics of 264 International students such as age in years, sex, religion, marital status and level of education are shown in Table 4.1. The average age of International student was 25.2 years with the majority of the respondents, (58.7%) were between the age group of 18-25 years and only 4.9% were aged 34 years and above. For their sex, males constituted slightly a higher percentage (51.1%) compared to females. Regarding their religion, 77.3% were Christians, 17.1% were Muslims, (5.7%) were Traditionalists and Atheists. Concerning their marital status, the majority of the International students, 78.8% were single, 20.5% married and only 0.8% of the respondents had divorced.

About their level of education, the majority (66.7%) of the respondents were undergraduates, 33.3% were graduate students (Masters and PhD). Most, 41.3% of the respondents were in the third and fourth year of their program, meaning level "300 and 400". Whereas (31.8%) of the respondents were at level "600" which is at Masters Level of their study programs.
Table 4.1: Socio-demographic characteristics of International students

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>(N=264)</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td></td>
<td>155</td>
<td>58.7</td>
</tr>
<tr>
<td>26-33</td>
<td></td>
<td>96</td>
<td>36.4</td>
</tr>
<tr>
<td>34-41</td>
<td></td>
<td>13</td>
<td>4.9</td>
</tr>
<tr>
<td>Sex of students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>135</td>
<td>51.1</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>129</td>
<td>48.9</td>
</tr>
<tr>
<td>Religion of students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christians</td>
<td></td>
<td>204</td>
<td>77.3</td>
</tr>
<tr>
<td>Muslims</td>
<td></td>
<td>45</td>
<td>17.1</td>
</tr>
<tr>
<td>Traditionalists</td>
<td></td>
<td>5</td>
<td>1.9</td>
</tr>
<tr>
<td>Atheists</td>
<td></td>
<td>10</td>
<td>3.8</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td></td>
<td>208</td>
<td>78.8</td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td>54</td>
<td>20.5</td>
</tr>
<tr>
<td>Divorced</td>
<td></td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Level of study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td></td>
<td>176</td>
<td>66.7</td>
</tr>
<tr>
<td>Masters</td>
<td></td>
<td>80</td>
<td>30.3</td>
</tr>
<tr>
<td>PhD</td>
<td></td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Level of study currently</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 &amp; 200</td>
<td></td>
<td>63</td>
<td>23.9</td>
</tr>
<tr>
<td>300 &amp; 400</td>
<td></td>
<td>109</td>
<td>41.3</td>
</tr>
<tr>
<td>500 &amp; 600</td>
<td></td>
<td>84</td>
<td>31.8</td>
</tr>
<tr>
<td>700</td>
<td></td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>264</td>
<td>100</td>
</tr>
</tbody>
</table>


4.2: Personal students’ characteristics

Table 4.2. shows personal student’s characteristics of the respondents. Most, (39%) of the International students were from the faculty of basic and applied sciences whereas (29.6%) of the respondents were from the college of humanities.
The rationale for combining some years for the level of study was that some were having less than five respondents that could have an effect on the analysis and they were making the table to be abnormally long extending to the second page.

Regarding the residential status, the majority (87.1%) were residing in the university campus while others preferred to have a non-residential status (12.9%). For the country of residence, three quarters (72%) of the respondents were from the African continent. About the sponsorship status, 63.3% of the respondents were supported by their families and 24.6% are sponsored by International donor organizations or Government.

For health insurance, 54.2% of the respondents had health insurance from different companies dominated by Premier Health Insurance Company (82.9%) of those with health insurance. And 50.3% of those who have health insurance, the date of expiry was 2019 when most of them are expected to graduate from their programs. Regarding the last time they had experienced malaria-related symptoms, 54.3% was within the last 2-12 months and 25.4% was within the last one month prior to the time of this study.
Table 4.2: Personal student’s characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>(N=264)</th>
<th>Frequency(n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>College/Faculty</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic &amp; applied sciences</td>
<td>104</td>
<td></td>
<td>39</td>
</tr>
<tr>
<td>Education</td>
<td>21</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>61</td>
<td></td>
<td>23.1</td>
</tr>
<tr>
<td>Humanities</td>
<td>78</td>
<td></td>
<td>29.6</td>
</tr>
<tr>
<td><strong>Residential status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident(on campus)</td>
<td>230</td>
<td></td>
<td>87.1</td>
</tr>
<tr>
<td>Non-resident(off campus)</td>
<td>34</td>
<td></td>
<td>12.9</td>
</tr>
<tr>
<td><strong>Continent of origin</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African</td>
<td>190</td>
<td></td>
<td>72</td>
</tr>
<tr>
<td>Non –African</td>
<td>74</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td><strong>Sponsorship status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self –sponsored</td>
<td>32</td>
<td></td>
<td>12.1</td>
</tr>
<tr>
<td>Supported by family</td>
<td>167</td>
<td></td>
<td>63.3</td>
</tr>
<tr>
<td>International Donor Organization./Government</td>
<td>65</td>
<td></td>
<td>24.6</td>
</tr>
<tr>
<td><strong>Health insurance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>143</td>
<td></td>
<td>54.2</td>
</tr>
<tr>
<td>No</td>
<td>121</td>
<td></td>
<td>45.8</td>
</tr>
<tr>
<td><strong>Year of expiry for health insurance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>51</td>
<td></td>
<td>19.3</td>
</tr>
<tr>
<td>2019</td>
<td>72</td>
<td></td>
<td>27.3</td>
</tr>
<tr>
<td>2020 and above</td>
<td>20</td>
<td></td>
<td>7.6</td>
</tr>
<tr>
<td>Did not have health insurance</td>
<td>121</td>
<td></td>
<td>45.8</td>
</tr>
<tr>
<td><strong>Last time of experiencing symptoms related to malaria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With the last one month</td>
<td>67</td>
<td></td>
<td>25.4</td>
</tr>
<tr>
<td>Within the last 2-12months</td>
<td>141</td>
<td></td>
<td>53.4</td>
</tr>
<tr>
<td>More than 12months ago</td>
<td>58</td>
<td></td>
<td>21.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>264</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

4.3: Knowledge about malaria among International students.

International students were also assessed for their level of knowledge about malaria where a total of 15 items were used with a maximum score of 1 (one) and a minimum of 0 (zero) point for each item based on the scale of measurement of knowledge of any concept (Ashur, 1977). A score of less than 40% of the correct answers implies a low level of knowledge, greater or equal to 40% but less than 59% is taken as an average score, 60 to 80% is high, 80% and above is taken as the very high level of knowledge.

Results from (Table 4.3), show a high level of knowledge (mean score for correct alternative = 97.7%) for malaria transmission, it also shows average level of knowledge (mean score for correct alternative = 56.3%) about the breeding sites of mosquitoes. Regarding symptoms of malaria, it revealed a high level of knowledge (mean score for correct alternative = 69.5%). Concerning the preventive measures, the study revealed the very high level of knowledge (mean score for correct alternative = 81.6%).

Basing on the scale of measurement according to Ashur, (1977). The overall mean score of the level of knowledge about malaria was 76.3% equivalent to 11.5 out of the maximum score of 15. This implies that International students had a high level of knowledge about malaria transmission, breeding sites, symptoms and prevention of malaria since it lies between (60-80%) score for Ashur criteria of measuring the level of knowledge.
## Table 4.3: Knowledge on malaria by International students

<table>
<thead>
<tr>
<th>Knowledge-about-malaria</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N= 264)</td>
<td></td>
</tr>
<tr>
<td>a) Transmission of malaria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bites from Infected female Anopheles mosquito</td>
<td>263</td>
<td>99.6</td>
</tr>
<tr>
<td>Not Eating contaminated food and drinking</td>
<td>261</td>
<td>98.9</td>
</tr>
<tr>
<td>Not by Cold weather</td>
<td>250</td>
<td>94.7</td>
</tr>
<tr>
<td><strong>Mean score</strong></td>
<td></td>
<td><strong>97.7</strong></td>
</tr>
<tr>
<td>b) Breeding sites for mosquitoes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standing water both indoor or outdoor</td>
<td>261</td>
<td>98.9</td>
</tr>
<tr>
<td>Bird baths</td>
<td>95</td>
<td>36</td>
</tr>
<tr>
<td>Eaves and drains</td>
<td>90</td>
<td>34.1</td>
</tr>
<tr>
<td><strong>Mean score</strong></td>
<td></td>
<td><strong>56.3</strong></td>
</tr>
<tr>
<td>c) Signs and symptoms of malaria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td>259</td>
<td>98.1</td>
</tr>
<tr>
<td>A headache 230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint pains</td>
<td>216</td>
<td>81.8</td>
</tr>
<tr>
<td>Others (Diarrhea, vomiting etc.)</td>
<td>29</td>
<td>11</td>
</tr>
<tr>
<td><strong>Mean score</strong></td>
<td></td>
<td><strong>69.5</strong></td>
</tr>
<tr>
<td>d) Preventive measures for malaria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleeping under ITNS</td>
<td>254</td>
<td>96.2</td>
</tr>
<tr>
<td>Eliminating breeding sites</td>
<td>229</td>
<td>86.7</td>
</tr>
<tr>
<td>DDT spraying</td>
<td>185</td>
<td>70.1</td>
</tr>
<tr>
<td>Closing windows early</td>
<td>192</td>
<td>72.7</td>
</tr>
<tr>
<td>Personal protection with prophylaxis or repellants</td>
<td>217</td>
<td>82.2</td>
</tr>
<tr>
<td><strong>Mean score</strong></td>
<td></td>
<td><strong>81.6</strong></td>
</tr>
</tbody>
</table>

**Overall mean score for knowledge**  201.4  76.3

**Total Score**  11.4/15

**Source: Field Survey, (2018)**
4.3 Sources of information about malaria among International students

Results in Table 4.4, show the distribution of various sources of information by International students about malaria such as transmission, breeding sites, signs and symptoms, prevention and treatment. The majority, (79.6%) of the respondents acquired information regarding malaria from school (University), 61.4 % from media and 58.3% acquired information about malaria from the health facility (hospital or clinic).

Table 4.4: Sources of information about malaria

<table>
<thead>
<tr>
<th>Source of information about malaria</th>
<th>Frequency*</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media</td>
<td>162</td>
<td>61.4</td>
</tr>
<tr>
<td>Health facility (Hospital or clinic)</td>
<td>154</td>
<td>58.3</td>
</tr>
<tr>
<td>Friends</td>
<td>104</td>
<td>39.4</td>
</tr>
<tr>
<td>School (University)</td>
<td>210</td>
<td>79.6</td>
</tr>
</tbody>
</table>


4.4 Health seeking behaviours for malaria treatment

Regarding health-seeking behaviours, Table 4.5, shows the first line of actions taken to manage malaria-related symptoms by sex and continent of residence. Regarding the first line of action, most (35.2%) of the respondents used antimalarial drugs as their first line of action when they experienced symptoms related to malaria. More males (39.3%) out of the total males seem to use this first line of action as compared to females.
Respondents from African countries (23.1%) out of 264, used antimalarial drugs as their first line of action as compared to those from Non-African countries to manage malaria-related symptoms.

However, it is revealed that 42.1% of those from non-African countries use antimalarial only from the pharmacy as their first line action as compared to 32.4% of those from African countries.

With regard to the second line of action, the majority (57.6%) of the respondents went to health facility such as hospital and clinic for further treatment of malaria-related symptoms as compared to (38.3%) who sought health care from the pharmacies.

There is a slight difference in the percentage of males (20%) who sought care from health facilities (hospitals and clinic) as compared to 15.2% of females. More respondents, (71.1%) out of 76 from Non-African countries utilize health facility as the second line of action against (52.1%) out of 188 from African countries.

Table 4.6 shows, results from a Pearson's Chi-Square of independence which revealed an association between personal students characteristics and health-seeking behaviours for malaria treatment. There was no significant association between sex and health-seeking behaviours for malaria treatment. $X^2(1, N = 264) = 0.101, P= 0.751$. There is no difference between males and females who sought care from a health facility (hospital or clinic) as compared to those who sought care from other sources such as pharmacies or drug shops.

It also revealed a significant association between having Health Insurance and health-seeking behaviours for malaria treatment of international students, $X^2(1, N = 264) = 5.837,$
Students with health insurance were more likely to use a health facility when they feel signs and symptoms of malaria as compared to those without health insurance through it demonstrated a small effect.

There was also a significant association between the continent of residence (Africa and non-African) and health-seeking behaviours for malaria treatment of international students, $X^2(1, N = 264) = 7.936$, $p<0.05$, $\Phi=0.2$. International Students from non-African countries were more likely to go a health facility (hospital or clinic) when they feel signs and symptoms of malaria as compared to those from African countries through this came out to be a small to moderate effect.

There was no significant association between the residential status of international students and health-seeking behaviours, $X^2(1, N = 264) = 0.046$, $P=0.83$, $\Phi=0.01$. There was no difference between those who used the health facility and those who did not use the health facility (Table 4.6).

Regarding examination for signs (63.6%) were examined for signs of malaria when they sought for care from various sources where (56.1%) was in the health facility (hospital or clinic), (6.1%) from pharmacies or drug shops and only (1.5%) who sought care from other sources like prayers, herbalists, consulting friends were examined for signs of malaria-like fever and this was done through temperature taking axillary (Table 4.7).

For blood examination, (62.5%) were examined for malaria parasites by obtaining blood from them and this was done through RDT (Rapid Diagnostic Test) or Microscopy of blood slides. Regarding sources where these RDTs were carried out, (54.9 %) of these were done in a health facility (hospital or clinic) and only (6.1%) from pharmacies and (1.5%) from
other sources of healthcare such as consulting friends or self-blood examination using RDT (Table 4.7)

### Table 4. 5: Actions taken to seek for health care by sex and their continent of residence

<table>
<thead>
<tr>
<th>Action</th>
<th>Sex</th>
<th>(N=264)</th>
<th>Continent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
<td>N(%)</td>
</tr>
<tr>
<td><strong>The first line of action</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antimalarial only from a pharmacy</td>
<td>53(20)</td>
<td>40(15.2)</td>
<td>93(35.2)</td>
</tr>
<tr>
<td>Antimalarial + painkillers pharmacy</td>
<td>38(14.4)</td>
<td>33(12.5)</td>
<td>71(26.9)</td>
</tr>
<tr>
<td>Painkillers only from a pharmacy</td>
<td>25(9.5)</td>
<td>39(14.8)</td>
<td>64(24.2)</td>
</tr>
<tr>
<td>Went to a health facility (hospital/clinic)</td>
<td>7(2.7)</td>
<td>3(1.1)</td>
<td>10(3.8)</td>
</tr>
<tr>
<td>Herbs/prayers/warm bath</td>
<td>12(4.5)</td>
<td>14(5.3)</td>
<td>26(9.8)</td>
</tr>
<tr>
<td><strong>The second line of action</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health facility (hospital/clinic)</td>
<td>79(29.9)</td>
<td>73(27.7)</td>
<td>152(57.6)</td>
</tr>
<tr>
<td><strong>Non-health facility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pharmacy (drug shop)</td>
<td>53(20.1)</td>
<td>48(18.2)</td>
<td>101(38.3)</td>
</tr>
<tr>
<td>- Herbs/prayers/warm bath</td>
<td>3(0.1)</td>
<td>8(3.0)</td>
<td>11(4.2)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>135(50.1)</td>
<td>129(48.9)</td>
<td>264(100)</td>
</tr>
</tbody>
</table>

**NOTE:** n (%) = n is frequency, % is a percentage which was calculated from the total sample size of N=264. The total column and rows are the same for continent and gender.
Table 4.6: Personal student's characteristics and health-seeking behaviours.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Health seeking behaviours</th>
<th>df(chi-square)</th>
<th>P value</th>
<th>Phi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-health facility</td>
<td>Health facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>56</td>
<td>79</td>
<td>1(0.101)</td>
<td>0.751</td>
</tr>
<tr>
<td>Female</td>
<td>56</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>51</td>
<td>92</td>
<td>1(5.837)</td>
<td>0.016</td>
</tr>
<tr>
<td>NO</td>
<td>61</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continent of residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>90</td>
<td>98</td>
<td>1(7.936)</td>
<td>0.05</td>
</tr>
<tr>
<td>Non-Africa</td>
<td>22</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-resident (off campus)</td>
<td>15</td>
<td>19</td>
<td>1(0.046)</td>
<td>0.83</td>
</tr>
<tr>
<td>Resident (on campus)</td>
<td>97</td>
<td>133</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td>152</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4. 7: Examination during the time of seeking for care

<table>
<thead>
<tr>
<th>Examinations were done</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>For signs of malaria (taking temperature)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>168</td>
<td>63.6</td>
</tr>
<tr>
<td>No</td>
<td>96</td>
<td>36.4</td>
</tr>
<tr>
<td>Did RDT /Microscopy for malaria parasites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>165</td>
<td>62.5</td>
</tr>
<tr>
<td>No</td>
<td>99</td>
<td>37.5</td>
</tr>
<tr>
<td>Total</td>
<td>264</td>
<td>100</td>
</tr>
</tbody>
</table>


4.5 Factors associated with health-seeking behaviour for malaria treatment

Results in Table 4.8, show factors associated with health-seeking behaviours based on the second line of action categorized into Health facility (hospital or clinic) and Non-Health facility pharmacy or drug shops, herbalists, friends and prayers as sources of care. These factors were accessibility in terms of time taken to reach the source of health care, waiting time as time spent to receive health care services, affordability of malaria treatment and transport, having health insurance cover and availability of services needed such as drugs.

For accessibility of services, (54.2%) of the respondents had more access (less than 30 minutes) to health facilities (clinic and hospitals) and 45.8% had easy access to other sources like pharmacy or drug shops. Regarding waiting time to receive health care
services, the majority (62.4%) of the respondents who went to a health facility (hospital or clinic) to seek for health care spent more time (≥30 minutes) at the facility as compared to those who sought care from pharmacies and drug shops among other remedies.

Regarding affordability of health services, the majority (87.8%) of the respondents could afford treatment since there is free medication at the university hospital where many students did not pay for the service. However, more than a half (59.3%) of the respondents had to pay a fee of 8 or more Ghana Cedis for their transport to get to and from the health facility since they tend to use special hire transport which charge according to distance and time it took to reach the facility or any destination. About health insurance, majority (64.3%) of the respondents had health insurance which enabled them to have access to health facility and 35.7% of those who sought for health care from pharmacies or drug shops or prayers or herbs had health insurance since some could use their insurance to get treatment from a few pharmacies which provide health care using health insurance. Regarding the availability of health services, the majority (56.4%) of the respondents reported having found the services needed in the health facilities such as drugs, health workers, and test kits for malaria.

Table 4.8, indicates results from a Pearson's chi-square test of independence between factors affecting health-seeking behaviours for malaria treatment. It revealed a significant association between accessibility of health care services and health-seeking behaviours for malaria treatment of International students, $X^2(1, N = 264) = 7.624, P< 0.05, \phi=0.2$. Students whose distance was less than 30 minutes to reach health facility were more likely to use a health facility when they experience signs and symptoms of malaria as compared to when distance takes more than 30 minutes to reach the facility.
It also revealed a significant association between waiting time to receive health care services and health-seeking behaviours for malaria treatment of International students, $X^2(1, N = 264) = 25.514, P< 0.05, \text{Phi}=0.3$. Students whose waiting time was more than or equal to 30 minutes to receive services were less likely to use a health facility when they experienced symptoms related to malaria as compared to those who went to the spent less than 30 minutes to receive the required services from non-health facilities. The more the waiting time the more the individual is less likely to utilize such services. It also revealed a significant association between the cost of treatment and health-seeking behaviours for malaria treatment of International students, $X^2(1, N = 264) = 97.160, P< 0.05, \text{Phi}=0.7$. Students who were to pay less than 15 Ghana Cedis for treatment or free health services were more likely to use a health facility when they experience signs and symptom of malaria as compared to when they were to pay more than 15 Ghana Cedis for the services. There was no significant association between the availability of healthcare services, transport costs and health-seeking behaviours for malaria treatment of International students $[X^2(1, N = 264)= 2.688, P= 0.102., \ X^2(1, N = 264) = 0.439, P=0.507]$ respectively.

Table 4.9 shows, why they did not go to the health facility. Most, (50%) of the 156 gave a reason of long waiting time taken to receive services from the health facility (hospitals and clinics) as the hindrance. Concerning the reasons why respondents prefer using a pharmacy for health care, most (46.5%) of 101 respondents mentioned short waiting time to receive services from the pharmacy and drug shops as a motivating factor why they prefer them as compared to the health facility.
Table 4. 8: Factors affecting health-seeking behaviours for malaria treatment by sources of care

<table>
<thead>
<tr>
<th>Factors</th>
<th>Health seeking behaviours</th>
<th>(N=264)</th>
<th>(df)Chi2</th>
<th>P value</th>
<th>Phi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non facility n(%)=112(42.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Accessibility of services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More accessible (&lt;30minutes)</td>
<td>104(45.8)</td>
<td>123(54.2)</td>
<td>1</td>
<td>7.624</td>
<td>0.006*</td>
</tr>
<tr>
<td>Less accessible (&gt;=30minutes)</td>
<td>8(21.6)</td>
<td>29(78.4)</td>
<td></td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Perceived Waiting time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short (&lt;30minutes)</td>
<td>23(82.1)</td>
<td>4(17.9)</td>
<td>1</td>
<td>25.514</td>
<td>0.001***</td>
</tr>
<tr>
<td>Long (&gt;=30minutes)</td>
<td>89(37.6)</td>
<td>148(62.4)</td>
<td></td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Perceived Affordability of services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Cost on treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More affordable (&lt;15 GHC)</td>
<td>16(12.2)</td>
<td>115(87.8)</td>
<td>1</td>
<td>97.160</td>
<td>0.001*</td>
</tr>
<tr>
<td>Less affordable (&gt;=15GHC)</td>
<td>37(27.8)</td>
<td>96(72.2)</td>
<td></td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>b) Cost of transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More affordable (&lt;8GHC)</td>
<td>51(44.7)</td>
<td>63(55.3)</td>
<td>1</td>
<td>0.439</td>
<td>0.507*</td>
</tr>
<tr>
<td>Less affordable (&gt;=8GHC)</td>
<td>61(40.7)</td>
<td>89(59.3)</td>
<td></td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>c) Health Insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>51(35.7)</td>
<td>92(64.3)</td>
<td>1</td>
<td>5.837</td>
<td>0.016*</td>
</tr>
<tr>
<td>No</td>
<td>61(50.4)</td>
<td>60(49.6)</td>
<td></td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Perceived Availability of services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>109(43.6)</td>
<td>141(56.4)</td>
<td>1</td>
<td>2.688</td>
<td>0.102***</td>
</tr>
<tr>
<td>No</td>
<td>3(26.3)</td>
<td>11(73.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey, (2018), Note: Percentages are calculated based on the row total,* significant at level 0.05 at 95% CI, **from Fisher’s exact test since some cells are having frequencies less than 5.
### Table 4.9: Reasons for preference of the source of care.

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reasons for preferring pharmacy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less waiting time at the pharmacy</td>
<td>47</td>
<td>46.5</td>
</tr>
<tr>
<td>Easily accessible</td>
<td>17</td>
<td>16.8</td>
</tr>
<tr>
<td>Health workers are friendly with satisfactory services</td>
<td>8</td>
<td>7.9</td>
</tr>
<tr>
<td>Drugs/services are always available</td>
<td>10</td>
<td>9.9</td>
</tr>
<tr>
<td>Services are affordable</td>
<td>12</td>
<td>11.9</td>
</tr>
<tr>
<td>No risk of getting infections from other patients</td>
<td>7</td>
<td>6.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>101</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td><strong>Reasons for not going to the hospital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessibility Hospital is far and not easily accessible</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Efficacy (Unfriendly health workers)</td>
<td>13</td>
<td>8.3</td>
</tr>
<tr>
<td>Perceived long waiting time for services</td>
<td>78</td>
<td>50</td>
</tr>
<tr>
<td>Affordability (I could not afford to pay for services and transport)</td>
<td>27</td>
<td>17.3</td>
</tr>
<tr>
<td>Availability (Drugs are not always available)</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td><strong>Others reasons:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Was simple malaria.</td>
<td>16</td>
<td>10.3</td>
</tr>
<tr>
<td>-Respondents were Health worker themselves</td>
<td>9</td>
<td>5.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>156</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factors</th>
<th>B</th>
<th>Sig.</th>
<th>Exp(B)/OR</th>
<th>95% C.I for EXP(B)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Continent (country of residence)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non–Africa</td>
<td>0.155</td>
<td>0.771</td>
<td>1.168</td>
<td>0.41</td>
<td>3.332</td>
<td></td>
</tr>
<tr>
<td><strong>Health insurance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>-0.07</td>
<td>0.871</td>
<td>0.933</td>
<td>0.403</td>
<td>2.158</td>
<td></td>
</tr>
<tr>
<td><strong>Accessibility of services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More accessible (&lt;30 min)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less accessible (&gt;30 min)</td>
<td>1.482</td>
<td><strong>0.008</strong>*</td>
<td>4.4</td>
<td>1.474</td>
<td>13.128</td>
<td></td>
</tr>
<tr>
<td><strong>Waiting time</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short (&lt;30 min)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longer (&gt;=30 min)</td>
<td>1.713</td>
<td><strong>0.029</strong>*</td>
<td>5.547</td>
<td>1.191</td>
<td>25.83</td>
<td></td>
</tr>
<tr>
<td><strong>Availability of services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0.333</td>
<td>0.473</td>
<td>1.395</td>
<td>0.562</td>
<td>3.463</td>
<td></td>
</tr>
<tr>
<td><strong>Transport costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More affordable (&lt;8GHC)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less affordable (&gt;=8GHC)</td>
<td>-0.077</td>
<td>0.838</td>
<td>0.926</td>
<td>0.443</td>
<td>1.935</td>
<td></td>
</tr>
<tr>
<td><strong>Treatment costs</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More affordable (&lt;15GHC)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less affordable (&gt;=15GHC)</td>
<td>-3.164</td>
<td><strong>0.001</strong>*</td>
<td>0.042</td>
<td>0.019</td>
<td>0.095</td>
<td></td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td><strong>-22.405</strong></td>
<td><strong>0.998</strong>*</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Field Survey, (2018), Note: DF= 1, the first level is the reference group, Hosmer and Lemeshow test of goodness of fit for checking whether the data fits the model was significant at step 3 with $X^2=0.876$, df (3) p.value=0.831: * Significant at 5% level, Pseudo $R^2=0.517$, log likelihood =231.755, EXP (B) - Exponential of the beta coefficient (constant) equivalent to odds ratio, at step 1 of the model using ENTER method
Table 4.11: A binary logistic regression of factors affecting health-seeking behaviours for malaria treatment

<table>
<thead>
<tr>
<th>Factors</th>
<th>Beta coefficient</th>
<th>d.f</th>
<th>Sig.</th>
<th>Exp (B)/OR</th>
<th>95% C.I. for EXP(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.17</td>
<td>1</td>
<td>0.811</td>
<td>1.185</td>
<td></td>
</tr>
<tr>
<td><strong>Accessibility of health services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More accessible (&lt;30 minutes)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less accessible (&gt;=30 minutes)</td>
<td>1.857</td>
<td>1</td>
<td>0.001*</td>
<td>6.405</td>
<td>2.361</td>
</tr>
<tr>
<td><strong>Waiting time to receive health services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A short time (&lt;30 minutes)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longer time (&gt;= 30 minutes)</td>
<td>1.728</td>
<td>1</td>
<td>0.012*</td>
<td>5.627</td>
<td>1.473</td>
</tr>
<tr>
<td><strong>Cost of treatment for malaria</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More affordable (&lt;15GHC)</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less affordable (&gt;=15 GHC)</td>
<td>-2.978</td>
<td>1</td>
<td>0.001*</td>
<td>0.051</td>
<td>0.026</td>
</tr>
</tbody>
</table>

Source: Field Survey, (2018). This method helped in dropping those factors which were not strongly associated with the data at entering method as shown in table 4.9 and finally added these three factors to the model at step 3 of the model using FORWARD: LR

Tables 4.10 and 4.11 indicate, results from a binary logistic regression conducted to establish the association of factors affecting health-seeking behaviours for malaria treatment of International students. The first level for each factor was treated as a reference group as indicated with an exponential for beta coefficient (OR) of 1(one). Findings in Table 4.10 show, all factors that were significantly associated with health-seeking behaviours for malaria treatment with the chi-square test, the beta coefficients of the
accessibility of health services and waiting time to receive the health services were significant with appropriate signs. Cost of treatment was significant but with a negative sign. This implies that waiting time to receive health care services and the accessibility of health care services for malaria treatment had stronger associations with respondents' health-seeking behaviours for malaria treatment.

Adjusting for factors such as continent (country) of residence, health insurance, availability of services, and cost of transport. Therefore, there was a significant association between waiting time and health-seeking behaviours for malaria treatment. This is because waiting time to receive health care for malaria treatment increases the probability of health-seeking behaviour for malaria treatment by 1.728 units. This is equivalent to odds of 5.6 times of not seeking health care from a health facility when the time is taken to receive services is more than or equal to 30 minutes as compared to when it is less than 30 minutes to receive services from the facility (Exp (B)/OR= 5.627; 95% CI, 1.473 -21.495), P<0.05.

Another significant association was between the accessibility of health services for malaria treatment and health-seeking behaviours. Respondents who had more access to services within less than 30 minutes were 1.857 times, equivalent to odds of 6.4 times more likely to use a health facility than those who had less access to the health services ( EXP(B)/OR= 6.405; 95% CI 2.361- 17.397), P<0.05. This could be due to the presence of University clinic and University Hospital Legon near the university and numerous private clinics and majority of the students being residents at university which makes it easy for them to access these services. The beta coefficient for the cost of treatment for malaria treatment was significant with a negative sign showing an inverse association between the cost of treatment and health-seeking behaviours for malaria treatment. The odds of having
affordable services at the facility reduces the chances of not seeking for care by 97.4% as compared to when services are not affordable (EXP (B)/OR= 0.026; 95% CI 0.026-0.101), P<0.05. This implies that the cost of treatment for malaria was affordable to most of them. This is due to the fact that they sought health care from University Hospital Legon and University clinic where services are free to all students at the University of Ghana. They did not pay a fee to be treated for malaria. Therefore the findings revealed the strongest association to be between waiting time to receive health services and accessibility of health services and health-seeking behaviour for malaria treatment among international students at the University of Ghana.
CHAPTER FIVE

5.0 DISCUSSIONS

5.1 Introduction

This descriptive cross-sectional was a self-administered questionnaire-based study carried out at the University of Ghana on health-seeking behaviours for malaria treatment. A total of 264 International students were interviewed on issues such as personal characteristics, knowledge about malaria, sources of information about malaria, sources and actions are taken to seek for health care to manage malaria-related symptoms and factors affecting health-seeking behaviours for malaria treatment.

Most of the respondents (39.4%) were from the faculty of Basic and Applied Sciences with the least (8%) of the respondents from the faculty of Education. Regarding residential status, the majority of the respondents are residents (87.1%) against those who are residing off campus (12.9%). In respect to sponsorship status, the majority (63.3%) of the respondents were supported by their families and only 24.6% were sponsored by the International Donor Organizations or Government from their home countries.

5.2 Respondents’ knowledge about malaria.

International students at the University of Ghana were assessed for their knowledge on malaria regarding the transmission, breeding sites for mosquitoes, symptoms of malaria and preventive measures about malaria. The level of knowledge about malaria among International students was high. It was rated at 76.3% as high score since it is within the range of 60-80% score according to criteria for measuring knowledge (Ashur, 1977). This was measured by the use of 15 items pertaining to malaria transmission, breeding sites for the mosquitoes, symptoms and preventive measures of malaria.
The score from the four main subscales was 11.4 out of 15. This scale of measurement has been used to measure knowledge of malaria prevention among mothers in Ogun State Nigeria (Yewande, 2017). However in this study, the score was rated average (56.5%) for the breeding sites since only 36% and 34.1% of the respondents knew that bird baths, eaves and drains as breeding sites for mosquitoes respectively. Though, 98.9% of the respondents knew the commonest breeding site as stagnant water indoor and outdoor as long as it is not cleared or protected well. A few, (5.3%) knew that malaria can be transmitted by cold weather and only 1.1% knew eating or to drink contaminated foods as a way of malaria transmission. These findings are also consistent with those in a study carried out in Bangladesh about knowledge on malaria transmission and treatment, where they found out that respondents knew the causes as mosquito bite and fever as a common symptom of malaria (Ahmed et al., 2009).

Other symptoms of malaria that were highlighted by only 11% of the respondents at the University of Ghana and these were vomiting, diarrhoea, general body weakness, loss of appetite and fever, joint pains and headache. However, it is important to note that these symptoms are not only limited to malaria they could be due to other infections other than malaria. These findings are consistent with those according to Yewande, (2017) in Ogun state Nigeria about malaria while exploring knowledge, attitudes and practices of mothers taking care of children below the age of five years.

Once an individual has adequate or satisfactory knowledge about certain conditions the way the disease is acquired, presented, prevented and treated he or she is likely to do self-medication without consulting the professionals.
This is consistent with findings from the study carried out among pharmacy students from various universities such as the University of Sargodha, GC University of Faisalabad, and the University of Lahore), where knowledge about self–medication with dietary was rated as satisfactory (Arshad et al., 2017).

Furthermore, these findings are consistent with those that were obtained from a study in the Dangme-East district of the Greater Accra Region, Ghana, between 2007 and 2008. Where trained school teachers designed participatory health education activities and led school children to the dissemination of messages related to malaria to their communities. A number of misconception on the causes of malaria was corrected after the intervention and treating mosquito ben nets improved from 21.5% to 50% as a result of health education on malaria control and prevention which improves their knowledge therefore since these children acted as a media to promote health among their communities then these at the higher level of education once are given information regarding malaria they are more likely to ensure proper dissemination and application of the learnt facts into practice (Ayi et al., 2010).

5.3 Respondents’ Sources of information about malaria

The leading source of information on malaria with (79.6%) of the respondents was from school (University) from various departments or colleges, (61.4 %) from media in form of internet, newspapers, televisions, and radios among others. Whereas (58.3%) acquired information from the hospitals or clinics where they sought care from Health workers and posters or IEC materials that are placed over the walls of the hospitals.
Findings from this study are consistent with those revealed among University students in Australia, where 73% got health-related information from health workers. Whereas 41% of the students getting information from media through the use of the internet. In the same study, 60% utilized friends and family members as a source of health information (Kim et al., 2010). As it was revealed by Kim et al., (2010), 28% of the university students in Australia among those who used internet as a source of health, delayed to seek for medical attention since most of the information uploaded on the internet tend to be misleading in most cases which paused a need to assess this source of health information. This requires evidence-based health communication to students so that they are careful while using media to seek information regarding their health status.

Media as a source of information from this study was found to be (61.4%) and health facilities or health professionals (58.3%). This is quite different from findings in a study carried out in Pakistan among pharmacy students on the dietary medication with the main source of information related to health was media (21%) followed by pharmacists (20%) this implies that utilize media to access health information than the pharmacy students at the university in Pakistan (Arshad et al., 2017). However, this is consistent with findings that were depicted by Ghana malaria indicator survey where media in terms of radios, televisions among others were identified as common ways of disseminating information regarding antimalarial drugs in form of ACTs (DHS, 2017).
5.4 Respondents’ Health Seeking Behaviours for malaria treatment.

This was approached in terms of actions taken as the first line of action and second line of action for dealing with malaria-related symptoms. Treatment of malaria is one of the key components for the intervention of controlling malaria as per malaria control program. This reduces the burden of this parasitic disease that claims many lives (WHO, 2015). This was in form of first line action and many go-aheads to seek care in form of the second line of action. This is to ensure that they get well and be free from symptoms related to malaria and be able to continue with their studies.

This is in line with Metta (2016), who defined health-seeking behaviours as any action that is taken by individuals who seem to feel un-well which can be of any kind as long as it makes the individual recover from the symptoms related to malaria. The study revealed that the first line of action that most of the International students (35.2%) took up as soon as they experienced symptoms related to malaria was taking antimalarial drugs only as self-medication. This has been observed more among males with (57%) for males as compared to (43%) for female international students through the difference is marginal. These findings are consistent with those in a study carried out among University students in South Western Nigeria concerning the prevalence of self-medication, where (46.3%) of them used antimalarial drugs to treat themselves upon experiencing symptoms related to malaria (Osemene & Lamikanra, 2012).
Furthermore, the results of this study are in agreement with those among university students in Nigeria where 66% utilized a number of drugs including antimalarial to manage malaria-related symptoms (State & Adeyemo, 2014). These findings do agree with those by Katrina, (2014) in Eastern Uganda on treatment seeking behaviours of caretakers of patients with suspected malaria, which revealed that as high as 76% of individuals believe that malaria-related symptoms such as fever can be handled at home. Then afterwards seek for medical attention and (41%) sought for care from nearby pharmacies to manage malaria-related symptoms. More than a half, (65.6%) of International students in this study and coming from African countries were also observed during this study to use only antimalarial drugs for self-medication as their first line of action whenever they experienced symptoms related to malaria. This study among international students at the University of Ghana, further revealed that (24.2%) used painkillers only to handle malaria-related symptoms as the first line of action. This is in agreement with Metta (2016), whose study on health-seeking behaviour among adults in South Eastern Tanzania, revealed that many of them first tried painkillers to handle malaria-related symptoms before they go to seek for health care from a health facility.

These painkillers especially paracetamol are misused so much by a number of people even when one has symptoms due to exhaustion that can be relieved through simple actions without the use of drugs such as bathing, drinking water and taking a rest. This abuse does not also exclude antimalarial drugs which are abused in thinking that all symptoms such as fever, headache or joint pain that are due to only malaria. This can lead to drug resistance especially when a drug is taken without any detected parasite in the body (Causer et al., 2004).
This concept of drug resistance is supported by the study on assessment of conveyed malaria chemoprophylactic failure among travellers in a US University Exchange Program. This resistance against antimalarial drugs is further supported by Parsel et al., (2017), where they studied malaria over-diagnosis in Cameroon looking at the diagnostic accuracy of Fluorescence and Staining Technologies for examination of blood samples for malaria parasites through the use of microscopy. Once the diagnosis is wrongly made then it leads to wrong treatment.

Use of pharmacy or drug shops as the first source of action was 62.1% among the respondents in this study and it was more among males (55.5%) as compared to females (44.5%), comparing their country of residence among those who use pharmacy as a source of care was more among those from African countries (73.8) as compared to those from non-African countries (26.2%). These findings are consistent with those of Ghana malaria indicator survey (2016), a number of sources of health care were identified and these included government hospital (24.8%), pharmacy (14.5%) with traditional healers (0.3%). However, these were from children who had a fever and their caretakers had to take them to various sources of care so as they get treated of the malaria-related symptoms.

In respect to the second line of action, majority (57.6%) of the respondents went to health facility such as hospital and clinic for further treatment of malaria-related symptoms as compared to (38.3%) who sought health care from the pharmacies and only a few as 4.1% who utilized non-medical means such as herbs, prayers and consulting friends.
These findings differ from Afolabi et al, (2013) in Nigeria, who revealed that only 24.7% of university students sought for health care from the health facility and that students prefer self-medication by purchasing drugs from pharmacies as compared to a health facility. The improved use of health facility by international students at the University of Ghana as revealed in this study could be due to the easy accessibility of health facilities like Legon hospital and university clinic. These health facilities are within the university and the majority of the students being residents which make it easy for them to visit a health facility when they experience malaria-related symptoms. These findings still showed a marked improvement in the use of health facility (57.6%) in the management of malaria-related symptoms as compared to (12%) of students in Nigeria who sought for health care from a formal health facility (State & Adeyemo, 2014).

This study among international students at the University of Ghana revealed a slight difference in the proportions of males (52%) who sought care from health facilities (hospitals and clinic) as compared to (48%) of females. This seems to support the fact that more males have more access and control over resources which affects their health-seeking behaviours. However, the difference was not so big since almost both have equal access to health facility irrespective of their gender because the services are free at the university facility and also insurance coverage to most of the students. This is in line with Mahamah, (2009) who noted that 60% of the students at the University of Ghana who sought health care from a health facility were males as compared to females.
More respondents from Non-African countries (42.1%) utilized health facility as the second line of action against (20.5%) from African countries. This could be due to the fact that more Non-Africans have health insurance coverage and they are not sure of the health system of the African continent and their only option is to consult hospitals and clinics for any malaria-related symptoms. Use of pharmacy or drug shop in this study as a second line source of care was 38.3%, slightly more used by females (47.5%) as compared to males (42.5%), comparing their country of residence pharmacy is more among Africans (79.2%) as compared to those from non-Africans (20.8%) of all those who sought for care from the pharmacy as a second line source of care.

The other actions that were taken by International students were prayers, herbs, warm bath and consulting friends to address malaria-related symptoms and 9.8% were for those who used it as the first line and 4.2% were used as the second line of action. This implies that most of them did not have a severe form of malaria or the symptoms were due to other causes like fatigue among others. These findings are consistent with those of a study carried out in Bangladesh on self-medication while comparing medical and pharmacy students where they revealed that 65.2% of medical students and 60% of the pharmacy students purchased drugs from pharmacies and some other students used herbs among other remedies to manage their illnesses (Alam et al, 2015).

5.5 Factors associated with health-seeking behaviour for malaria treatment

This study explored factors associated with health-seeking behaviours for malaria treatment among 264 international students at the University of Ghana. The country of origin of the respondents was grouped into two major groups as continents (African and non-African), the majority (72%) were from African countries and only 28% of the
respondents were from the non-African countries. The study participants were selected at random from 34 countries with 17 from Africa (Cameroon, Togo, Mali, Rwanda, Uganda, Nigeria, Zambia, Tanzania, DRC, Kenya, Sierra Leone, Ivory Coast, Malawi, South Sudan, Benin, Burkina Faso and Zimbabwe). Non–Africa were also 17 (Canada, Czech-Republic, USA, Italy, Japan, Colombia, Australia, Germany, Denmark, Lebanon, Brazil, China, Mexico, Cuba, France, Ireland and England). Most of the respondents (22.4%) were from Nigeria since it is known to be one of the highly populated countries and near Ghana the study area and a known malaria-endemic country.

More than half of the International students, (54.2%) had Health Insurance coverage as compared to (45.8%) who did not have health insurance. This is because some students who are sponsored by International donor organizations offer Health Insurance to the students during the study period. And once it is over it also expires that's why most of them were expiring in 2019 when the majority are expected to complete their programs. Health insurance is a contributing factor to health-seeking behaviours since individuals don't pay cash in kind during the time of seeking care, they are likely to use a health facility for treatment unlike those without health insurance who resort to pharmacies where services are presumed to be cheaper.

However this seems to be in disagreement with a study on perverse ‘net’ effect as influenced by Health insurance and ex-ante moral hazard in Ghana, where they revealed that having national insurance demonstrated an inverse association with the use of mosquito net for prevention of malaria (Yilma, Van Kempen, & De Hoop, 2012)
The impact of health insurance on the health-seeking behavior is further supported by the study carried out in Ghana by Oduro, (2014) to establish whether health insurance reduces the household cost of treating malaria in the Kassena-Nankana districts. It was found out that, for those who had health insurance their cost was reduced as compared to those who did not have health insurance. However, just like this study among International students where health insurance had a significant association with the health-seeking behaviours upon bivariate analysis using the chi-square test of independence. The binary logistic regression could not add the factor since it had a small to medium effect as compared to other factors such as accessibility and wait time

Regarding the accessibility of health services in this study, a large number of the International students (46.6%) had easy access to health facilities and this led to high numbers of students seeking care from hospitals or clinic. This is due to the presence of a university clinic and University Hospital Legon which is within easy reach to almost all students at the university where they reach within 30 minutes. It revealed that the likelihood of using a health facility due to easy access was 6.4 times higher than when the distance is more than 30 minutes away from their halls of residence.

These findings are in agreement with those of Chinweuba et al., (2017) who revealed that access to a health facility was a contributing factor that affected health-seeking behaviours for malaria prophylaxis and treatment among pregnant university students residing in hostels of South Eastern Nigeria. These findings among international students are also consistent with results according to Mahamah, (2009) where it was revealed that 50% of the students who got sick while at the University of Ghana and sought for care from health facility, gave reason; and one of them was accessibility of the health facility (Legon
hospital and university clinic). Findings in this study regarding accessibility of health services are also consistent with those in a study carried out in rural Ethiopia on treatment-seeking behaviours for febrile illnesses where 18% did not go to health facility for treatment due to long distances away from their homes of residence to reach health facility (Deressa, 2007). Therefore comparing the results of this study, these are in an urbanized area where access to a health facility is good within easy reach as compared to those who were in rural Ethiopia who have poor access to health facilities.

Regarding waiting time, this study revealed that the odds of short waiting time taken to receive services is 5.6 times increased among those who use the health facility as compared to those who don't use a health facility to manage malaria-related symptoms. These findings are in agreement with a study carried out on self-medications in the University of Lubumbashi –DRC that some of the factors that influenced practice of self-medication through purchasing drugs from pharmacies was having simple symptoms easy to manage, preference, saving time and money to receive health care (Chiribagula et al., 2015).

Findings in this study regarding waiting time are also consistent with those in a study carried out in rural Ethiopia on treatment seeking behaviours for febrile illnesses where inadequate time due to excessive workload was identified to contribute to 3.5% of the reasons as to why they did not want to seek care from health facilities (Deressa, 2007). These are also consistent with findings about waiting time has been pointed out in Laos (Southeast Asia) as one of the factors that discourage individuals (female sex workers) from seeking services from health facilities and sometimes it is coupled with failure to see a health care provider or even fail to get the medication (Phrasisombath et al., 2012).
The cost of treatment for malaria-related symptoms revealed an inverse association with health-seeking behaviour for malaria treatment. This was as a result of free medical services where more of the International students do not pay for medical services at the university clinic and Legon hospital. Partly others do have health insurance as revealed in this study which enables them to afford health care.

This is in line with A. Morris et al (2015) who revealed that once the prices of ACTs are subsidized there will be increased utilization of such services since they are affordable by almost everybody. This was related to a 24% point increase in the portion of suspected malaria patients buying ACTs to relieve the malaria-related symptoms from pharmacies than going to a health facility. The findings from this study differ so much from the factors as reported by (Metta, 2016) in Tanzania from the study concerning health-seeking behaviour for malaria diagnosis and treatment such as poor patient to health care provider relationship, inaccessibility of medicine and the costs associated with accessing treatments from the health facilities.

This is also consistent with a study conducted by Oduro, (2014), in Ghana Kassena-Nankana districts about the effect of health insurance on the treatment of malaria where they were asked about the direct and indirect costs incurred. Since those who were insured paid less as compared to those who were not insured, from this study at the University of Ghana, the number of students who had health insurance were almost equal to those who did not have based on study sample and it was found out that there was a marginal statistical significance of association between the use of health facility and non-health facility with an effect size of (0.149).
The findings on the cost in this study are also consistent with those in a study according to Asante et al., (2003), where they revealed the average cost of treating a case of malaria in the northern part of Ghana was US$6.39 to 15.79 which is equivalent to 28.755 to 71.055 Ghana cedis, this has consequences on the health-seeking behaviours of individuals since the demand to health care services tend to be high and make some people seek for care from non-formal sources of care like herbalists among others. However, the health insurance and free medical services at the University of Ghana make it easier for the students to access health services.

Factors such as availability of services, cost of transport, the attitude of health workers are key factors known to affect health-seeking behaviours for malaria treatment. To the contrary during this study they did not reveal a significant association with health-seeking behaviours among international students at the University of Ghana. This could be due to the presence of health facilities within the university, private facilities around the university, where students have to pay a little fee to reach the facility and acquire services needed to deal with malaria-related symptoms for free or pay a little amount of money. This is also supported by the provision of services by CHPS initiative as revealed by Ghana Malaria Operational Plan FY, (2015), that has tremendously improved malaria treatment in rural and urban communities in Ghana since people are no longer moving longer distances of about 8 kilometres access services. The issue of attitudes of health workers affecting health seeking behaviours is also in line with Afolabi et al.,(2013), which revealed that one of the perceived barriers hindering students at the university in Nigeria from seeking care from hospitals among other factors.
The findings of availability of health care services are also in agreement with Mills et al. (2012), where they revealed that it is one the key factors influencing health seeking behaviours. The more the services for treatment of malaria are available the more the individuals are likely to use them.

The cost of transport is in agreement with Metta, (2016), in the study carried out in Pakistan where he found out that the cost incurred on treatment has an effect on health seeking behaviours. Those who put in more transport were less likely to seek care from health facilities hence resorting to self-medication by purchasing drugs from drug shops or pharmacies.
CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study revealed accessibility and waiting time for the health care services as the main factors associated with health-seeking behaviours for malaria-related symptoms among international students at the University of Ghana. Antimalarial drugs for self-medication as a first-line form of action to address the malaria-related symptoms was also revealed. This could be due to the nearby pharmacies and drug shops within easy reach and short waiting time students take to receive treatment. The second line of action was the use of a health facility (hospital or clinic) for further management. This could be due to the failure of responding to antimalarial drugs since not all symptoms such as fever, joint pains or a headache are restricted to only malaria. It could be bacterial or viral infections that require further investigations from a health facility. School (University) was the main source of health information related to malaria transmission, breeding sites, signs and symptoms, preventive measures.

In conclusion, International students from Non-African countries at the University of Ghana sought health care for malaria-related symptoms more from the Health Facility (Hospital or clinics) as their second line of action. Whereas, those from African countries sought care more from pharmacies or drug shops as their second line of action. Students who had health insurance sought healthcare for malaria-related symptoms from health facilities as compared to those who did not have health insurance.
6.2 Recommendations

To the Researchers: There is a need to extend this study to entire university students at the University of Ghana or other universities in Ghana to explore their health-seeking behaviours for malaria treatment. There is a need to carry out a study about the feasibility of using RDT in pharmacies and drug shops so as to improve on malaria treatment.

To the University International Programs Office and faculties or schools
During orientation of students, IPO (International Programs Office) and various schools should continue to sensitize students about the health system for Ghana and that of the University of Ghana and encourage them to seek for care from health facilities before taking antimalarial drugs when they experience malaria-related symptoms.

To the University Students: Students should always first seek care from a health facility for malaria diagnosis before taking antimalarial drugs since not all fevers or joint pains or a headache are due to only malaria.

To the Health service providers: Pharmacies should follow the Ministry of Health guidelines for Ghana to dispense drugs to those with a prescription from a recognized health facility, or they should first take detailed history and examination of the patient before dispensing antimalarial drugs to those without prescription. Extension of time for receiving health care by students from the University clinic so that students can be able to access the health facility after lectures. Ministry of Health for Ghana should continue with the supportive supervision of pharmacies, to ensure that drugs are issued out as per the stated guidelines in various protocols for treatment of malaria in Ghana.
REFERENCES


APPENDIX 1: PARTICIPANT INFORMATION SHEET

Introduction

Good morning or Afternoon. Thank you for allowing me to speak to you. My name is Lwenge Mathias, a graduate student of University of Ghana School of Public Health, Faculty of Health Sciences. I am requesting you to participate in this study that is establishing the Health seeking behaviours for malaria treatment: A case study for International students in the University of Ghana Legon. You will be asked some questions concerning you. The information given will help the University to design appropriate interventions that will reduce the risks of malaria infections among International students.

Procedures for the study: This questionnaire will take about 10 minutes. No names will be required for the purposes of the study; however, I will use a code for the Questionnaires.

Benefits: There are no immediate and direct benefits to you as a person that will accrue from your participation in the study. However, the information you give will help the health team to have a focused intervention that will reduce the risky behaviours for malaria in order to reduce the malaria burden among International students.

Confidentiality: Any information given will remain confidential and will be used for the purpose of this study only. The answers will be treated in confidence and the findings of the study will be generalized and not attributed to a single individual. Codes will be used instead of names to enhance confidentiality of the information provided.

Voluntary consent: You are free to choose whether to take part in this study or not, and you are free to withdraw at any time at your own discretion. Feel free to ask any questions before or after the interview.

Potential risks- There are no potential risks in the study. If you have any questions please contact me as the principal investigator (Lwenge Mathias) on Tel number +233-262946444, +256782450525, email mathiaslwenge@gmail.com Or please contact my supervisor Dr. Phyllis Dako-Gyeke at email address of gyekenay@yahoo.com phone +233(0)20797037.

Or GHS-ERC Administrator Ms Hannah Frimpong at email address hanna.frimpong@ghsmail.org Tel. No. +233(0)243235225 or 0507041223, or office No. +233302681109
APPENDIX 2: VOLUNTARY PARTICIPATION FORM (CONSENT FORM)

I have read the consent form and have understood what has been explained of what will be required of me if I decide to participate in the study. *Entitled - Health seeking behaviours for malaria treatment: A case study of International students at the University of Ghana Legon.*

I hereby agree to take part in this study.

........................................... ...........................................

Signature of the Respondent  Date
APPENDIX 3: RESEARCH QUESTIONNAIRE

Health Seeking Behaviours for Malaria Treatment: A case study of International Students in the University of Ghana Legon.

Section

1 A: Introduction and informed consent

Good morning or afternoon Miss or Mr.

My name is Mathias Lwenge an International student at the school of Public Health University of Ghana pursuing a Masters of Applied Health Social Sciences. I would like to gather good information from different International students including you, about your health seeking behaviours for malaria treatment; source of health care, factors and sources of information about malaria treatment.

It is important that you give true responses so that a good idea of where you go for health care and how much you pay so as to come up with better recommendations to improve on your well-being. Everything you say will be kept confidential except those who will analyze the data who will not even know that you are the one who said.

Please tick in the box for the appropriate alternative or fill in where need arises

B: SOCIO- DEMOGRAPHIC CHARACTERISTICS

In this section, we would like you to give us some information regarding your personal characteristics and you are required to fill in the provided spaces or tick in box against the option that is appropriate about your characteristics for each question from B1-B11.
B1: Age of respondent ................... Years

B2: Sex of respondent  □ Male  □ Female

B3: What is your religion? □ Christian  □ Muslim  □ Traditional  □ others specify……

B4: Marital status □ Single  □ Married  □ divorced  □ Widowed  □ Separated

B5 {a}: Level of study:  □ Undergraduate  □ Masters  □ PhD

B5 {b} for undergraduate only: Which level are you on now?

□ 100  □ 200  □ 300  □ 400  □ 500  □ 600  □ 700

Personal students’ characteristics

B6: Faculty or college

□ Health Sciences  □ Humanities  □ Basic and Applied sciences  □ Education

B7: Residence:

□ Nonresident (Off- campus) □ Resident (On- campus) □ others specify

B8: Hall of residence (for residents only)

□ Legon  □ Akuafuo □ Commonwealth □ Volta □ Mensah Sarbah

□ Elizabeth Frances Sey □ Hilla Limann □ Alexander Adum

Kwapong
Jubilee Hall and International Students Hostel

☐ Valco Hostel.

☐ Others specify…………………….

B 8: Please write your Country of residence …………………………………………

B9: Sponsorship status:

☐ Self- sponsored   ☐ Supported by your family    ☐ Government sponsored

☐ International Donor Organization    ☐ others specify …………..

B10 {a}: Do you have Health Insurance?    ☐ Yes    ☐ No

B11 {b} If YES what is the name of your insurance company?

B11 {c} When will that insurance expire? (Month) ……. Year of expiry).

C: KNOWLEDGE ABOUT MALARIA

In this section we need to assess your knowledge about malaria and you are required to tick in a box besides the alternative answer(s) in that you may tick more than one answer and where you feel like you want to write any other thing please write it under others specify.

C1: What transmits malaria?

☐ Infected Female Anopheles Mosquito bite    ☐ Eating contaminated food and drinking

☐ Cold wet weather    ☐ others specify………

C2: What breeding sites for the vector that transmits malaria do you know?

☐ Standing water both indoor and outdoor  ☐ Bird Baths  ☐ Eaves and Drains
C3: What are the Signs and symptoms of malaria?

☐ Fever  ☐ Headache  ☐ Joint pain  ☐ others specify

C4: What are the Preventive measures for malaria?

☐ Sleeping under ITNs (insecticide treated nets.)  ☐ Eliminating breeding sites

☐ DDT spraying  ☐ Closing windows and doors early.

☐ Personal protection with prophylaxis or mosquito repellants  ☐ others specify…….

C5: What was the source of your information on malaria?

☐ Media  ☐ Hospital  ☐ Friends  ☐ School  ☐ Others specify……….

D: HEALTH SEEKING BEHAVIOURS FOR MALARIA TREATMENT.

In this section we would like to ask you questions regarding your health seeking behaviours and where you go to seek for care when you feel that you have signs and symptoms suggesting malaria

D1: When was the last time that you got symptoms like fever, joint pain, headache or any other symptom suggesting malaria?

☐ Within one last month  ☐ Last 2-12 months  ☐ more than 12months ago
D2: The last time you got signs and symptoms suggesting malaria what actions did you take first?

☐ Took antimalarial only from pharmacy

☐ Took antimalarial and painkillers from pharmacy

☐ Took painkillers only from pharmacy

☐ Went to hospital or clinic

☐ Others specify ……………..

D3: Where did you seek for further care?

☐ Hospital  ☐ Pharmacy  ☐ Herbalist  ☐ Friends  ☐ Others

specify…………..

D4: When you last went to seek care from pharmacy or hospital or any other place for malaria treatment did they take you through the following?  YES  NO

Examined for signs of malaria (temperature taken)  ☐  ☐

Checked blood for malaria (RDT or Microscopy)  ☐  ☐
SECTION E: FACTORS ASSOCIATED WITH HEALTH SEEKING BEHAVIOURS FOR MALARIA RELATED SYMPTOMS.

In this section, we would like you to give your reasons for using those sources to seek for care to manage malaria related symptoms. Some concepts used in this section such as; Accessibility means how easy to get to that facility in terms of time e.g. less than 30 minutes as easily accessible and if 30 minutes or more is less accessible. Affordability means your ability to pay for services like if the fee is more affordable or less affordable such as transport or treatment. Availability means whether the services needed were readily found when you went to facility. Efficacy is how you found the services whether to be effective in treating of malaria symptoms including the attitude of healthcare providers, and Time is how long it took you to receive the care you sought for from that source that source you chose.

E1. How long did it take you to reach the facility where you got care for malaria treatment?

☐ Less than 30 minutes ☐ 30 and more minutes

E2: How long did it take you to receive services the last time you went to seek for care?

☐ Less than 30 minutes ☐ 30 and more minutes
E3: Please how much money did you pay for the following the last time you sought for malaria treatment from the above mentioned source of care? Please write the figure below:

I) Treatment ............. GHC  
ii) Transport ............ GHC (to and from)

E4: If did not seek care from hospital, which reasons might have hindered you? (For those who did not go to hospital only)

☐ Affordability (I could not afford to pay for services and transport)

☐ Availability (Drugs are not always available)

☐ Accessibility Hospital is far and not easily accessible

☐ Long waiting time to receive services

☐ Efficacy (Unfriendly health workers)

☐ Others specify..................

E5: If you went to Pharmacy or drug shop or any other source other than health facility which reasons motivated you to seek care from such sources of care.

☐ Services are affordable  ☐ Easily accessible  ☐ Drugs/services are always available

☐ Health workers are friendly with satisfactory services.

☐ Less waiting time spent to receive the services  ☐ Others specify ..............

THANKS FOR YOUR PARTICIPATION
APPENDIX 4: DEBRIEF

Thank you for taking part in this study. The study has now ended. Your participation is very much appreciated. We would like to take some time to provide you with a few more details concerning the study.

Aim of the study: The questionnaire was created by Lwenge Mathias a student at the School of Public Health at the University of Ghana as part of the SOBS 680 dissertation. The questionnaire was designed to capture information about Health Seeking Behaviours for Malaria Treatment among International students at the University of Ghana Legon campus. Please note that your responses will be used to write a report about the above mentioned subject so as to complete his dissertation to fulfil one of the requirements for the award of a masters in applied health social science of University of Ghana.

Contact Information: If you have any queries or questions concerning this study, please contact the supervisor Dr. Phyllis Dako Gyeke, using the contact details below: Phone – 020 7970370, E-mail: gyekenay@yahoo.com

GHS-ERC Administrator Ms. Hannah Frimpong at Email address hanna.frimpong@ghsmail.org  Tel. No. +233(0)243235225 or 0507041223, or office No. +233302681109.

Anonymity and Confidentiality: We would like to remind you that your information will be anonymised and will remain completely confidential. It will be stored on an encrypted, password-protected computer and will only be used as part of a dissertation

Thank you again for your time.