

**“Communication interventions and their role in malaria prevention  
and prevalence: a case study of Kaole”**

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**A report submitted to the University of Zambia in Partial fulfilment of the  
Requirements of the Degree of Master of Communication for  
Development (MCD)**

**The University of Zambia**

**2013**

I, **Terence Soka Nyirongo** declare that this dissertation:

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## APPROVAL

This dissertation of õ õ õ õ õ õ õ .. (Name) is approved as fulfilling the partial requirements for the award of the degree of Master of Communication for Development by the University of Zambia.

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## **DEDICATION**

To my mother Reverend Jane Moyo Nyirongo

## **Abstract**

In 2007, 4.3 million cases of malaria (confirmed and unconfirmed) were reported by the Ministry of Health countrywide with 6,149 deaths. The annual malaria incidence was estimated at 358 cases per 1,000 population in 2007, a drop from 412 cases per 1,000 population in 2006, (Zambia Health Demographic survey 2010). The toll on the country's resources that the disease continues to have has led to a drain on both human resource as well as health resources. Malaria has therefore been recognised as a major cause of poverty and poverty exacerbates the malaria situation (UNICEF, 2000:1). The recognition that the fight to reduce on such statistics also falls on the communities affected has resulted in communication campaigns and interventions seeking to educate the masses on prevention measures. This report is an attempt to investigating the role that communication campaigns and interventions play in malaria prevention and prevalence.

Malaria prevention efforts have so far been based on the provision of malaria prevention medication and educating the people on how to use prevention implements such as mosquito nets as well as what they should do for effective treatment. However, trends have shown that even where such implements and communication campaigns have been disbursed, malaria incidence has not reduced to levels envisioned by country and international projection such as the Millennium Development Goals (MDGs).

The study sought to investigate the role that communication campaigns and interventions play in the malaria prevention and prevalence in Kaole Ward of Mansa. Results from the study revealed that people of the sampled Chitakwa, and Kabwasha Villages, Spark Compound, and Zambia Compound and Farm Institute are aware of the malaria prevention measures and the importance of use of prevention implements such as mosquito nets, Indoor Residual Spraying (IRS), Intermittent Preventive Treatment in pregnancy (IPTp) and environmental management but do not use them as required. The study revealed a high discrepancy between mosquito net ownership and usage as well as consistency in usage calling into attention the need to change people's behaviour. It also revealed gaps in information which has also contributed to misconceptions and perpetuation of locally held myths and beliefs while positive indicators were seen in treatment seeking behaviour and Ante natal attendance facilitating the receiving of Intermittent Preventive Treatment in pregnancy (IPTp). It

was revealed that while awareness levels were high, they did not correspond to changes in behaviour which could be interpreted into adoption and adherence to the messages in the communication campaigns. This was achieved using a triangulated research design approach utilising research instruments on both qualitative and quantitative methods from a randomly sampled 151 households in Kaole Ward of Mansa.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

ACT	Artemisinin-based Combination Therapy
ZDHS	Zambia Demographic Health Survey
IRS	Indoor Residual Spraying
ITNs	Insecticide Treated Nets
IEC	Information Education and Communication
IPTp	Intermittent Preventive Treatment in pregnancy
IPT	Intermittent Preventive Treatment
DDT	Dichlorodiphenyltrichloroethane
NMCC	National Malaria Control Centre
NMCP	National Malaria Control Programmes
WHO	World Health Organisation
RDT	Rapid Diagnostic Test
KAPs	Knowledge Attitudes and Practices
CSOs	Civil Society Organisations
CSO	Central Statistical Office
ZMIS	Zambia Malaria Indicator Survey
MIS	Malaria Indicator Survey
LUFAID	Luapula Families in Distress

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Overview

This report is a study of the role that communication interventions and campaigns play on malaria prevalence and prevention. It investigates the current knowledge and understanding that people have on issues pertaining to malaria and where they get their information from. The study also investigates the communication channels used in the dissemination of malaria information and which channels are best suited for anti-malaria communication. The study further shows how information disseminated on malaria influences people's perceptions and views on its permeation, prevention and how best such information can be conveyed to the masses for efficacious translation of campaign messages into practice. The study was carried out in Mansa district in Luapula province under the Ministry of Health (MOH), Mansa District Health Offices (DHO) with collaboration with the United States Agency for International Development (USAID) through their Communication Support for Health project (CSH) and Luapula Families in Distress (LUF AID).

#### 1.2 Background

Communication is vital for the success of any human endeavour. As such, there has been mounting stress on the importance of including communication strategies and campaigns in the fight against many diseases. The Ministry of Health through campaigns such as the Stop Malaria Campaign launched in September 2012 has for this reason stressed Behaviour Change Communication (BCC) as a pedestal for communication design and implementation. The behavioural change communication campaigns encompass topical malaria prevention methods such as Indoor Residual Spaying (IRS), Insecticide Treated Mosquito Nets (ITN) use, Intermittent Preventative Treatment in Pregnancy (IPTp), and environmental management. The main concern for BCC in malaria communication has centred on prevention methods, diagnosis, treatment, screen and treat, and surveillance.

### **1.2.1 Overview of communication and broadcasting in Zambia**

Zambia's broadcasting history has its foundation in the colonial era. According to Hamasaka (2008: 35), the development of the broadcast media was directly linked to the objectives of the British Empire of using the media as a tool for communicating and controlling the governed in their protectorates. The British colonial government in 1941 launched the first radio broadcasting in Lusaka broadcasting in four languages, namely Bemba, Nyanja, Lozi and Tonga. It was set up to not only serve Northern Rhodesia (Zambia) but also Southern Rhodesia (Zimbabwe) and Nyasaland (Malawi). These countries later formed the Federation of Rhodesia and Nyasaland between 1953 and 1963, (Kasoma 2001, 4).

After independence in 1964, the new African government took over direct control of what was at that time called the Northern Rhodesia Broadcasting Services (NRBS) and it was now known as Zambia Broadcasting Corporation (ZBC). ZBC, which was later changed to Zambia Broadcasting Services (ZBS), operated both radio and television under the socialist notion of promoting what were to become a single-party and its government, Hamasaka (2008: 35).

The station was however required to commercialise in 1985 and so it became Zambia National Broadcasting Corporation (ZNBC). In this post-independence period, total subjugation of the country's media was the norm for the government which used the media as tools for propagating the philosophy of humanism, and for government propaganda, (Kasoma 1997).

The introduction of multiparty democracy and the liberalisation of the economy in the early 1990s ushered in a relatively more open communication and information platform where more players in the media and information sector were introduced. This also translated into incorporation of the country into the global world as information was readily available for transmission and reception. Liberalisation and opening up of the market to international corporations also fostered the introduction and permeation of relatively cheap information technology devices such as computers into the country. The combined utilisation of the communication channels as well as information

technology devices including newsprint, TV, radio to mention just a few, has facilitated the dissemination of anti-malaria communication to the masses.

### **1.2.2 Malaria**

Malaria is an acute febrile illness with incubation period of 7 days or longer. It is a disease caused by a parasite that lives part of its life in human being and part in mosquitoes. It is mostly a tropical disease because mosquitoes that transmit the disease thrive in tropic climate. The most severe form is caused by the parasite *Plasmodium falciparum*, in which variable clinical features include fever, chills, headache, muscular aching and weakness, vomiting, cough, diarrhoea and abdominal pain; other symptoms related to organ failure may supervene, such as: acute renal failure, generalised convulsions, circulatory collapse, followed by coma and death, (World Health Organisation). Repeated malaria infections, caring for a sick relative and malaria-related anaemia mean a loss of workdays and manpower. In its mild form, malaria can be incubated in a human being for a long time. In such situations, the infected person does not show the typical symptoms outlined above, instead, the carrier is often weak and tired much of the time and therefore unable to work to their full potential. Lowered productivity, in turn, results in reduced income or fewer crops for consumption or sale. Thus, potential earnings and household food security are reduced due to frequent illness and malaria deaths.

### **Overview of the History of Malaria**

The discovery of malaria can be traced from ancient Rome which as in other temperate climates, lurked in marshes and swamps. People blamed the unhealthiness in these areas on rot and decay that wafted out on the foul air. Hence, the name is derived from the Italian, *malaria*, or bad air. In 1880, the French scientist Alphonse Laveran discovered the real cause of malaria, the single-celled *Plasmodium* parasite. Almost 20 years later, scientists working in India and Italy discovered that *Anopheles* mosquitoes are responsible for transmitting malaria, (NIAID, 2007).

The discovery that malaria was transmitted by mosquitoes unleashed a flurry of ambitious public health measures designed to stamp out malaria. These

measures were targeted at both the larval stages and adult stages of the insect. In some areas, such as the southern United States, draining swamps and changing the way land was used was somewhat successful in eliminating mosquitoes.

The pace of the battle accelerated rapidly when the insecticide Dichlorodiphenyltrichloroethane (DDT) and the drug Chloroquine were introduced during World War II. DDT was remarkably effective and could be sprayed on the walls of houses where adult *Anopheles* mosquitoes rested after feeding.

More than 100 different species of *Plasmodium* exist. They produce malaria in many types of animals and birds, as well as in humans. Four species of *Plasmodium* commonly infect humans. Each one has a distinctive appearance under the microscope, and each one produces a somewhat different pattern of symptoms. Two or more species can live in the same area and infect a single person at the same time, *ibid.*

### **1.2.3 Malaria spread**

Malaria can be both an acute and a chronic disease, and it is caused by intracellular protozoa of the genus *Plasmodium* that are transmitted by the bite of female *Anopheles* mosquitoes. *Anopheles gambiae* is the most important vector in Africa and is among the most efficient for transmission of the disease, Heggenhougen et al (2003). Natural transmission is dependent on a complex interaction between host, vector, parasite, and environment. The anopheline mosquito vector is infected via blood from an infected host (human); the parasite then matures to the sporozoite stage in the vector, and invades its salivary glands. The mosquito infects other people by injecting sporozoites in the saliva while feeding on their blood (Nevill, 1990). Many biological and environmental factors shape the character of malaria in a given location. Nearly all the people who live in endemic areas are exposed to infection repeatedly. Those who survive malaria in childhood gradually build up some immunity. However they may carry the infection, serving as reservoirs for transmission by mosquitoes without developing severe disease. In other areas, where the infection rate is low, people do not develop immunity

because they rarely are exposed to the disease. This makes them more susceptible to the ravages of an epidemic, (NIAID, 2007). An epidemic can occur when certain conditions come together to create conditions conducive for the breeding and transmission of the parasite from an infected person to another.

#### **1.2.4 Effects of Climate**

Climate affects both parasites and mosquitoes. Mosquitoes cannot survive in low humidity. Rainfall expands breeding grounds, and in many tropical areas, malaria cases increase during the rainy season. Mosquitoes must live long enough for the parasite to complete its development within them. Therefore, environmental factors that affect mosquito survival can influence malaria incidence.

Plasmodium parasites are affected by temperature, their development slows as the temperature drops. Plasmodium vivax stops developing altogether when the temperature falls below 60 degrees Fahrenheit or 15 degrees Celsius. Plasmodium falciparum stops at somewhat higher temperatures. This effect explains why parasites can be found in temperate areas, (WHO).

#### **1.2.5 Effects of human interventions**

Certain human activities have inadvertently worsened the spread of malaria. City conditions, for example, can create new places for mosquito larvae to develop. Agricultural practices also can affect mosquito breeding areas. Although the draining and drying of swamps gets rid of larval breeding sites, water-filled irrigation ditches may give mosquitoes another area to breed. Other breeding sites include rock and gravel quarry sites where ditches are left to fill with water during rainy season and are usually not drained in countries where resources are scarce. A good example of such places in Mansa is Farm Institute where fish farming was previously practiced but the remaining fish ponds have not been drained or covered over. The result is an increase in mosquitoes in the area surrounding the ponds.

High mosquito populations in Zambia are also found in areas near to sewerage and water treatment plants. In addition, because farmers use the same

pesticides on their crops as those used against malaria vector mosquitoes, the problem of insecticide-resistant mosquitoes is growing. Modern transportation also contributes to the spread of the disease, moving travellers and occasionally mosquitoes between malaria-endemic and non-endemic regions.

### 1.3 Overview of the worldwide malaria situation

An estimated 3.3 billion people were at risk of malaria in 2010. Of this total, 2.1 billion were at low risk while the remaining 1.2 billion remain at high risk. Of the 1.2 billion people at high risk, 47% are in the African region while 37% are in the Asian region. Approximately 81%, or 174 million (1136239 million) cases, were in the African Region, with the South-East Asian Region accounting for another 13%. The World Health Organisation estimates that 655 000 (537 000 ó 907 000) malaria deaths in 2010, of which 91% (596 000, range 468 000 ó 837 000) were in the African Region. Approximately 86% of malaria deaths globally were of children under 5 years of age, (WHO, 2011).

### 1.4 Overview of Malaria in Zambia

Malaria is endemic in Zambia with seasonal and geographical variations. In 2007, 4.3 million cases of malaria (confirmed and unconfirmed) were reported by the Ministry of Health countrywide with 6,149 deaths. The annual malaria incidence was estimated at 358 cases per 1,000 population in 2007, a drop from 412 cases per 1,000 population in 2006, (Zambia Health Demographic survey 2010).

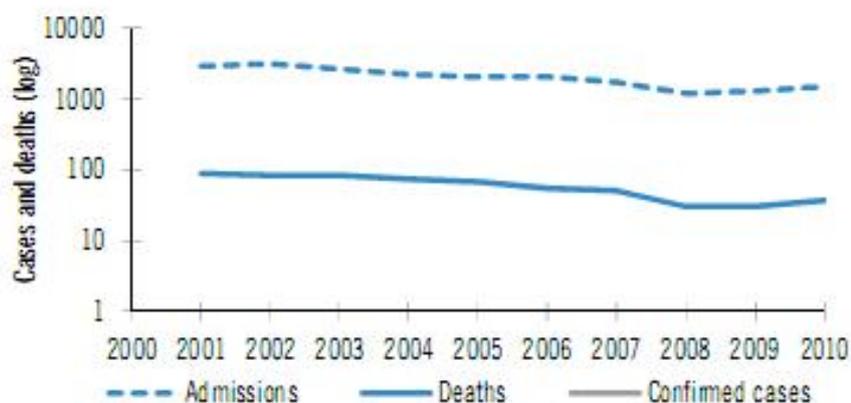


Figure 1.1 Admissions and deaths per 100,000: source, World Malaria Report 2011

However, these figures are not accurate representation of what is on the ground as some people do not report malaria incidence. Northern and Eastern provinces had the highest annual incidence of malaria, while the disease was lowest in Lusaka province. Malaria accounts for up to 40 percent of all infant mortality and 20 percent of all maternal mortality in Zambia. Malaria poses a severe social and economic burden on communities living in endemic areas.

Distribution of confirmed malaria cases in Zambia covers the whole country. WHO estimates that in 2010, IRS was sufficient to protect 25%–65% of the population at risk; ITN/LLINs delivered were sufficient to protect greater than 50% of the population at risk, (WHO 2011).

Like most African countries, there are a number of major constraints to the provision of effective malaria prevention and control activities in Zambia. Young (2000) identifies the following for Luapula province:

1. Growing levels of drug resistance;
2. Drug shortages;
3. High costs of ITNs and insecticide;
4. Inadequate accessibility to services in many rural areas;
5. Inadequate human resource coverage in the health sector;
6. Lack of appropriate supplies for effective Information Education and Communication (IEC) and behaviour change;
7. Inadequate laboratory diagnostic capabilities

A lot of factors exist that further complicate the malaria situation i.e. the spread, treatment and control of malaria in Zambia. Among these factors include availability of information to the communities on how to prevent and what to do in case they suspect malaria, their socioeconomic status, distance from health centres, and availability of free or affordable insecticide treated mosquitoes and treatment chemicals and the availability of indoor residual spraying. People's behaviour has also been recognised as an important and far

reaching factor in malaria prevention and treatment. The way people view the problem of malaria in their day to day lives and what they are willing to actively do to regarding the disease impact the fight against malaria and to a great extent transfers responsibility of action to not only the government and its supporting partners but to the people as well.

### **1.5 Malaria in Luapula province**

With a total population of about a million (958,976) people (CSO 2010), Luapula province continues to have high malaria incidences, (ZDHS 2010). Luapula province has an estimated parasite prevalence among children under the age of 5 years of about 50% and more. This makes the province the highest parasite prevalence rate among under 5 year old children in the country seconded by Northern Province with about 26.3%, (Zambia Malaria Indicator Survey 2010). The high prevalence rate among children is despite the reported 67.5% rate of households possessing at least 1 mosquito net and their houses having been sprayed and 60.9% owning ITNs and their houses having been sprayed, (Zambia Malaria Indicator Survey 2011).

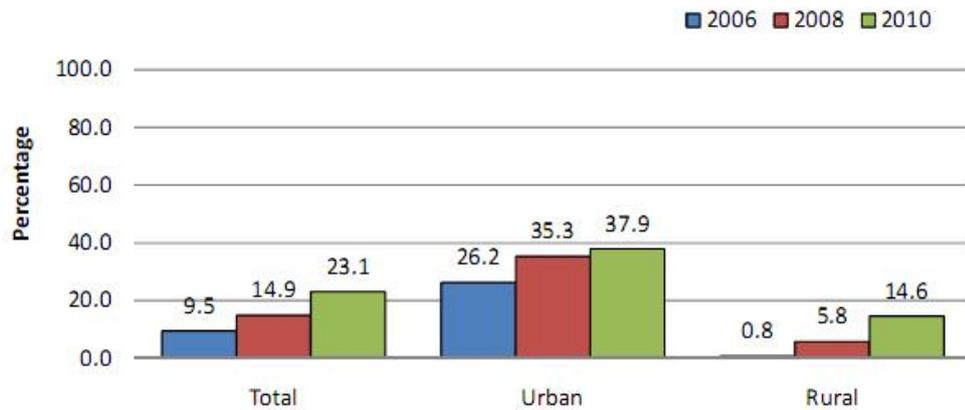
### **1.6 Prevention and Control**

Preventing malaria infections can be archived at transmission phase in the malaria cycle. Interruption of the malaria cycle therefore entails the elimination of mosquitoes or the reduction of mosquito vector significantly enough as to reduce incidence to almost zero. Otherwise prevention can only be archived by barrier methods i.e. ensuring that there is little or no contact between mosquitoes and human beings.

#### ***Indoor Residual Spraying***

The quest to control malaria has mainly been through killing the mosquitoes that spread malaria. As earlier mentioned, the discovery of DDT gave a lot of hope for the success of this venture. This hope was lost as mosquitoes started to develop a high resistance to DDT as well as administered drugs such as Chloroquine and Quinine.

Statistical data in Zambia shows that IRS is still quite low especially in rural areas.



*Figure 1.2 households reported sprayed within last 12 months 2006-2010. Source MIS 2010*

2010 was the highest recorded IRS spray with 37.9% in urban areas and 14.6% in rural areas compared with 35.3% urban and 5.8% rural in 2008.

The principle of indoor residual spraying (IRS) is based on mosquito behaviour. Scientists observed that, after biting, the female anopheles mosquito needs to rest and it tends to rest on a wall for a few hours to digest the blood. By applying a limited amount of insecticide to walls and ceilings, the mosquito will absorb the chemical once it lands on the wall and die within a day thereby preventing it from spreading malaria. IRS chemicals remain active on the walls for at least 4 to 9 months.

Indoor residual spraying (IRS) is the dominant method of vector control in the European Region (8 of 9 endemic countries), with the greatest number of houses sprayed in Azerbaijan, Tajikistan and Turkey. It is used in fewer countries in the African (16 of 45) and South-East Asia regions (6 of 10) and in the Americas (12 of 22), and least in the Western Pacific Region (2 of 10). Indoor residual spraying has been a major anti malaria campaign strategy in Zambia, (WHO world malaria report 2008).

### **Environmental management**

Another way of reducing mosquito vector has been by denying them their breeding grounds, namely stagnant waters. This method has advocated the

draining of swamps and stagnant water pools. It is estimated that Zambia has 2.5million human homes while mosquito ÷homesø or breeding areas probably exceed 2 billion in the rainy season as even small amounts of water can become an attractive place for the female malaria mosquito to lay eggs, (National Malaria Communication Strategy, 2011). Environmental management is important for malaria prevention and control because the mosquitoes that spread malaria breed in stagnant water. Therefore, if the environment is ÷managedø appropriately i.e. filling standing water pools, clearing drainage ditches, removing piles of rubbish, introducing fish in ponds and stagnant water pools where appropriate so that he fish eat mosquito larvae, and putting chemicals in the water to kill mosquito larvae (larviciding).

### Insecticide Treated Nets (ITNs)

Apart from preventing breeding through larvae maturation killing the mosquitoes, another strategy to preventing malaria has been by preventing mosquito bites. This has been done by keeping mosquitoes away from human contact by barrier methods employing household window nets as well as mosquito nets. However, a barrier is only able to keep mosquitoes away without killing them hence the need to treat the nets in pyrethroid insecticides which kill mosquitoes after settling on the nets to rest.

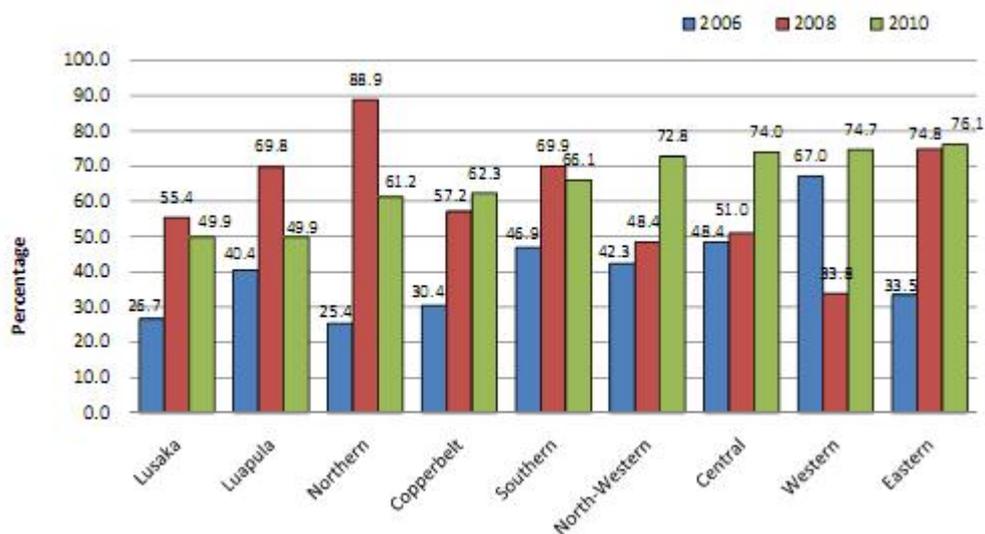


Figure 1.3 Ownership of ITN by province: source MIS 2010

Ownership of ITNs had decreased from 69.8% in 2008 to 49.9% in 2010 in Luapula Province. It is significantly lower than all the other provinces except Lusaka which it is at par with.

### **1.6.1 Elimination**

The WHO Global Malaria Programme aims not only to reduce the burden of malaria in endemic areas, but also to limit the geographical extent of malaria in the world. To achieve the second of these aims requires local elimination ó the complete interruption of mosquito-borne malaria transmission in a defined geographical area. WHO has identified four programmatic phases on the way to achieving and maintaining elimination: control, pre-elimination, elimination, and the prevention of reintroduction. Countries make the transition from control to the pre-elimination phase when less than 5% of all suspected malaria cases have a laboratory confirmation of malaria. The elimination phase begins when there is less than 1 malaria case per 1000 people at risk per year. Elimination has been achieved when the õprevention of reintroductionö, without local transmission by mosquitoes, has been successful for three or more consecutive years. While the sequence of events leading to elimination is logically clear, there is no evidence yet to show that malaria elimination can be achieved and maintained in areas that currently have high transmission. There were 8 countries in the pre-elimination stage of malaria control in 2011 and 9 countries are implementing elimination programmes nationwide (8 having entered the elimination phase in 2008). A further 8 countries (Bahamas, Egypt, Georgia, Iraq, Jamaica, Oman, Russian Federation, and Syrian Arab Republic) have interrupted transmission and are in the prevention of reintroduction phase. Armenia was certified as free of malaria by the WHO Director-General in 2011, (WHO 2011). However, WHO admits that the total elimination of malaria without a vaccine is currently not possible especially for countries with high transmission rates such as tropical Africa.

### **1.6.2 Vaccine**

Research into the malaria vaccine has been on-going since the 1960s. Research studies conducted in the 1960s and 1970s showed that experimental

vaccination of people with attenuated malaria parasites can effectively immunise them against getting another malaria infection. Current methods to develop vaccines based on weakened or killed malaria parasites are technically difficult and do not readily lend themselves to being produced commercially. Therefore, much of the research on vaccines has focused on identifying specific components or antigens of the malaria parasite that can stimulate protective immunity. However, recent media reports have announced a new vaccine called PfSPZ developed by an American biotech company Sanaria currently under trial which contains weakened forms of the live parasite *Plasmodium falciparum*. Preliminary trials of the vaccine showed that among 40 healthy volunteers, those who received the higher doses of the vaccine showed more antibodies against the malaria parasite's proteins than those getting lower doses. When the immunised participants were tested with exposure to *P. falciparum*, none of the six who received six doses of the vaccine developed malaria while five of the six who were not vaccinated became infected, Alexandra Sifferlin ([www.healthland.time.com/2013/08/09/malaria-vaccine-shows-strongest-protection-yet-against-parasite/](http://www.healthland.time.com/2013/08/09/malaria-vaccine-shows-strongest-protection-yet-against-parasite/))

### **1.6.3 Challenges in the fight against malaria**

The quest to eliminate malaria is hampered by the very nature of transmission of the disease and can only be accomplished by eliminating the mosquito. However, the fact that mosquitoes have and continue to develop resistance to most insecticides has greatly reduced the chances of successfully eradicating them. At the parasite level, the malaria parasite has also developed resistance to most drugs also hampering the successful elimination of the disease.

One problem that encourages resistance according to WHO (World Malaria report 2011) are the current methods of malaria control which are highly dependent on a single class of insecticides, the pyrethroid, which is the only insecticide class used for ITNs and accounts for approximately 77% of IRS in terms of spray area covered. The widespread use of a single class of insecticide increases the risk that mosquitoes will develop resistance to it. This

risk is of particular concern in Africa south of the Sahara, where insecticidal vector control is being deployed with unprecedented levels of coverage. Resistance to pyrethroid has been reported in 27 countries in Africa south of the Sahara; the point at which this reduces the effectiveness of vector control is still uncertain, and may depend on the locally identified resistance mechanism.

Other challenges especially in developing countries include access to diagnosis and treatment which can be carried out promptly and effectively. A solution to this has been the development and introduction of Rapid Diagnosis and Test kits (RDTs) which enable quick and relatively cheap diagnosis of malaria where there is unavailability of microscopy for parasitological confirmation. However, even RDTs require trained personnel who are only available at health centres.

One of the biggest challenges that have only recently become to be recognised has been the adoption of information and communication messages by the people regarding malaria prevention and treatment seeking behaviour. With this recognition has come promotion of IECs and communication campaigns that ultimately seek to bring about behaviour change in the target audience.

#### **1.6.4 Communication for behaviour change and Malaria prevalence**

There has been recent realisation that the fight against malaria cannot be won without concerted effort from the people whom the scourge afflicts. With this realisation has come communication and sensitisation campaigns aimed at changing behaviour as well as to fill in gaps in knowledge attitudes and practices (KAPs) essential in understanding the disease.

Behaviours are not easy to change, especially when the programme often works through intermediaries such as government health workers, who then work with village volunteers (malaria agents and Community Health Workers, (CHWs), who then try to change household behaviours. If behavioural changes are therefore modest, then the impact that the programme is striving for will likely be that much more difficult to attain. Given the pivotal role that behavioural change plays in this programme, there needs to be a commitment

to monitoring changes in knowledge, attitude and practice (KAP) very intensively and the programme should work very hard to coordinate and improve IEC strategies, to maximise the programme results, Heggenhougen et al (2003).

Communication has further been enhanced by the proliferation of relatively affordable communication devices such as radios, TVs, cellular phones and in some places the internet which greatly aid in the dissemination of information about Malaria.

### **1.7 Statement of the problem**

The malaria problem continues to affect Zambia at many levels of the society. Repeated malaria infections and anaemia among children have a negative impact on schooling resulting from attention deficits and absenteeism. As a result, children may have a difficult time passing their exams or moving to another grade, which may lead to them dropping out of school altogether.

Other effects to the country include high expenditure on treatment by the government and loss of man hours due to time taken off from productive activities.

The study investigated the communication interventions and campaigns to try and understand why malaria prevalence has remained high despite millions of dollars being pumped in various anti malaria campaigns. The study was therefore meant to understand the malaria problem and whether or not people understand information disseminated to them on malaria and if they do, understand why malaria levels still remain high. The study focused on communication campaigns in the Mansa in Luapula Province of Zambia.

The research is aimed at establishing hypothesis on the relationship between malaria prevention communication and prevalence of malaria. The study will do this by examining the malaria prevention and mitigation communication in Mansa and showing how exposure to such information impacts on people's attitudes, knowledge and practices with regard to malaria prevention and treatment. The study seeks to show the importance of properly designed and transmitted information in fighting malaria. This will be done by examining

existing communication on malaria prevention and treatment and how widely understood this communication has been. Furthermore, the study will evaluate the change in practices that may or may not have arisen from such communication.

The research will evaluate whether or not the communication campaigns are having any significant impact on the fight against malaria.

## **1.8 Purpose of the Study**

The study is aimed at providing information and understanding on how anti malaria campaigns and information influence malaria prevention and prevalence. This is done by finding out if people understand the communication currently disseminated to them, if they do not understand ó finding out why they do not understand and if they do understand, finding out why malaria levels continue to be high.

### **1.8.1 General objective**

To investigate the role that communication strategies and health campaigns used by the Government and Civil Society Organisations (CSOs) play in malaria prevention and prevalence in Mansa.

### **1.8.2 Specific objectives**

- To investigate the permeation and prevalence of communication & information on malaria.
- To investigate the sources of information and communication about malaria available to people in Mansa
- To investigate which communication channels are used in malaria health communication.
- To determine the availability of information on malaria in general, and information on Malaria prevention mitigation and treatment specifically.
- To determine the various types of messages employed in malaria health campaigns and their impact.

- To determine the people's attitude towards malaria
- To find out how widely understood malaria communication disseminated through malaria campaigns is among the general populace

## **1.9 Rationale**

The study is important because it will be the first of its kind in Luapula Province, Mansa in particular. No such study has yet been undertaken in this province.

The significance/importance of this study stems from the recognised importance of communication in any venture involving human society. The importance of aptly and adequately communicating information on environmental management to control mosquito breeding, use of mosquito nets, the importance of using insecticide treated mosquito nets (ITNs), Indoor residual spraying, what to do when they suspect malaria and other malaria related communication cannot be over emphasised. The study therefore investigates the knowledge attitudes and practices (KAPs) of the people in the malaria catchment area.

Furthermore, the growing realisation that modelling communication campaigns and strategies on centralised and one-way communication paradigms that relegate the recipients of information to the background has not aided in the development of a participatory forum between the initiators of the communication and the recipient. This has called for a more participatory communication process where feedback from the intended audience/recipients is not only encouraged but also seen as essential for a campaign's success. The importance of this kind of campaign design is that it is a more participatory and people oriented campaign design tailored to particular communities where unique problems particular only to certain communities can be addressed in the communication.

The study provides all stakeholders in the fight against malaria with knowledge and information on the people's practices, knowledge and attitude towards malaria and towards the communication campaigns. It also facilitates a better understanding of the communities' needs in order to better fight

against malaria. The findings of this study will help in policy formulation with regard to malaria communication intervention as well as give a picture of malaria prevalence in Mansa. The study will try to determine how communication campaigns in such areas can be shifted from a diffusionist perspective where the recipients of such communication are seen only as targets for adoption of innovations rather than part of that information formulation.

## **CHAPTER TWO**

### **2.0 Literature Review**

#### **2.1 Overview**

Literature seems to suggest that malaria incidences have continued to drop in Zambia. In Zambia, recent statistics report that malaria mortality rates have dropped from previous levels of over 412 incidences per 1000 population in 2006, 359 in 2007 to 252 in 2008, Malaria Performance Review (2011). This shows that significant and durable progress in battling a major public health problem is being made. However, the high negative social and economic impact the disease continues to have on the Zambian society has warranted the need for research in light of very little research having been conducted on roles of communication in fighting the disease. The chapter reviews existing literature and research on malaria and its impact on society.

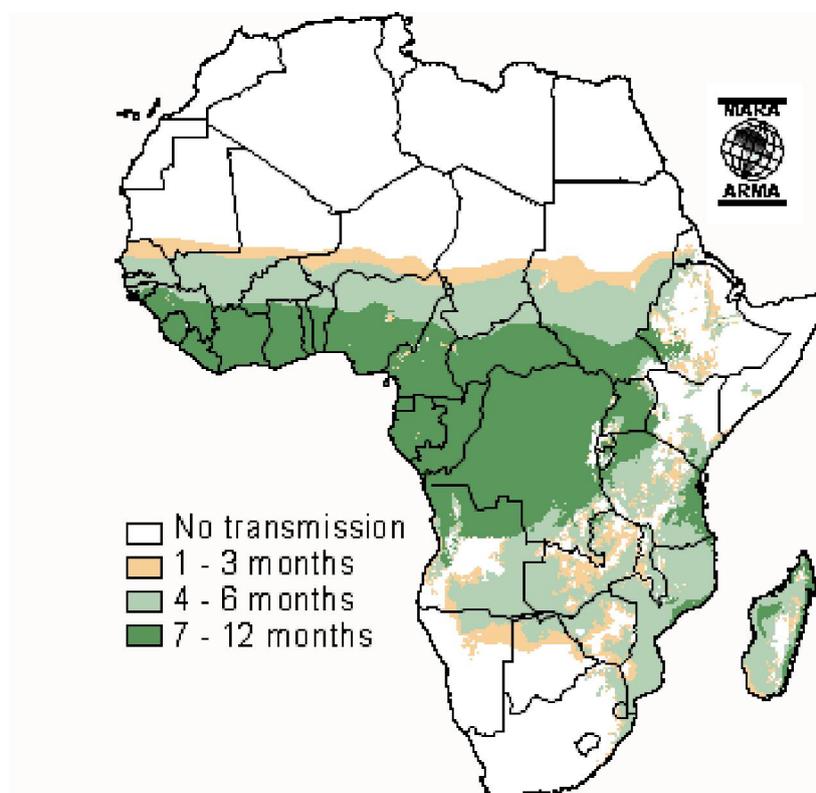
#### **2.2 Malaria**

An estimated 3 billion people, almost half the world's population, live in areas where malaria transmission occurs. Malaria is endemic in 107 countries and territories in tropical and subtropical regions, with Africa South of the Saharan hardest hit. Between 350 million and 500 million cases of clinical malaria occur each year, leading to an estimated 1 million deaths. Over 80 per cent of these deaths— or around 800,000 a year— occur among African children under age five, Malaria and Children (2007, p.5).

Malaria is endemic to the poorest countries in the world, causing 400 to 900 million clinical cases and up to 2.7 million deaths each year (Breman, 2001). More than 90% of malaria deaths occur in Sub-Saharan Africa, resulting in an estimated 3,000 deaths each day. Almost all the deaths are among children younger than 5. Other high-risk groups include women during pregnancy, non-immune travellers, refugees and other displaced persons, and people of all ages living in areas of unstable malaria transmission, (WHO & UNICEF, 2003).

Whilst evidence of a decline is strong, some caution should be used in interpreting its exact extent however, as many reports are based on health attendance data which have a number of obvious and less obvious flaws, including that there are changes in patterns of referral over time, that many cases do not reach formal healthcare, and that as diagnosis has improved so the number of non-malaria cases attributed to malaria has declined. Nevertheless recent reports do provide solid evidence that, where effective anti-vector methods are combined with Artemisinin-based antimalarials in countries that are developing economically, significant reductions in malaria can be achieved in previously high-burden African countries.

In contrast, limited data from Central Africa shows little change in the malaria burden in Brazzaville-Congo and the Democratic Republic of Congo (DRC). In central and western parts of Africa South of the Sahara, where the greatest burden of disease falls, there is no evidence of any decline in malaria cases, although this is largely due to the absence of any evidence, rather than good evidence that a decline (or increase) has not occurred Guerra et al. (2010).



*Figure 1. Map of endemic and epidemic prone areas of P. falciparum in Africa. Source: Elden et al (2010).*

### **2.2.1 Seasonal malaria incidences in Zambia and its implications**

The epidemiology of malaria in Zambia is the result of two major forces: the geographic, climatic, and social features of the country that establish factors conducive or restrictive to malaria in Zambia, and the introduction and scaling up of malaria control interventions across the country, which alter transmission and the consequent infection, morbidity, and mortality rates associated with malaria. The main malaria vectors in Zambia are the *Anopheles gambiae* and *Anopheles funestus* complexes, Malaria performance review (MPR) (2010).

Zambia is a land-locked country in Southern Africa with three distinct seasons: a hot, dry season from late August to October; a warm, rainy season from approximately November to April; and a cool, dry season stretching from May to early August. In the cool season temperatures can be as low as 10 degrees Celsius with both the lack of rain and the cool temperatures hindering mosquito reproduction; as such, reported cases of malaria are the lowest during the third quarter of the year. Traditionally malaria transmission is highest in the first and fourth quarters, peaking in March towards the end of the warm, rainy season. This according to MPR (2010) is due to vector densities which are highest during the warm rainy season.

The swampy Luapula Province in Zambia's North remains the regions hotspot, though malaria is traditionally endemic throughout the country. The swampy nature of Luapula Province offers a breeding refuge, such as swamps, lakes and river areas and hence maintains high proportion of vectors even during the dry season, MPR (2010). Because of the seasonality of peak in the malaria incidence due to weather conditions, some scientists postulate a possibility of utilising the low incident seasons to eliminate the parasite reservoir in people who are carriers and not showing symptoms of malaria.

Stresman et al. for example, observes that in areas where *Plasmodium falciparum* is holoendemic, over half the population may carry the parasite and

show no obvious clinical symptoms. The presence of asymptomatic malaria can also be seen to a lesser extent under unstable transmission conditions. Unstable malaria is typically the result of seasonal influences. There is a period when mosquito populations are at a minimum and asymptomatic infections likely become refuge for the parasite population and the source of new infections when mosquito populations expand. Among the asymptomatic cases are gametocyte carriers. Asymptomatic infections can be associated with high levels of gametocytes and likely serve as an important parasite reservoir. If asymptomatic individuals can be identified and treated effectively with gametocytocidal drugs at a time when mosquito activities are minimal, it may be possible to reduce and eventually eliminate the parasite reservoir.

In areas with seasonal transmission, pockets of asymptomatic infections persist through the dry season and perpetuate disease transmission into the next season. If a household has a member with malaria, it is more likely that there will be other infected persons clustered in that same unit. Drawing on field experience and evidence from Zambia, Stresman et al. formed basis for a hypothesis that in an area where malaria control is implemented, symptomatic cases of malaria that appear during the low transmission season do not occur in isolation but represent a group of people sustaining asymptomatic infections.

### **2.3 Immunity and other biological factors**

An individual's immune status plays a major role in the response to infection. Immunity to clinical malaria (i.e. malaria exhibiting symptoms) is acquired and maintained when exposure is frequent and maintained. In areas of high stable transmission, mortality is greatest amongst infants and children who have little or no acquired protective immunity. This is one reason why in Africa South of the Sahara, more than 80% of the estimated malarial deaths currently occur in children under five years of age, Crawley et al (2010). This provides a need for concerted effort in providing under 5 children with adequate protection through ensuring domicile spraying and use of Long Lasting Mosquito Nets (LLINs).

In areas with low or unstable transmission, all age groups are at risk. Immunity is not complete, however; non-pregnant adults resident in high-transmission settings have an increased rate of malaria (evidenced by a high prevalence of asymptomatic parasite rates in surveys) although they do not generally get severe disease. In high transmission areas, non-pregnant adults rarely experience severe clinical attacks of malaria although they may continue to get infected. This difference between immunity to disease and immunity to infection has policy implications. In high-transmission settings many, and often the majority, of transmission of malaria are from adults who are infected but have no evidence of infection as they are themselves asymptomatic.

In these settings targeting only those with symptoms will reduce morbidity and mortality from disease, but will have a more limited impact on transmission if used in isolation from other control measures. In areas where immunity is limited or absent virtually all patients with malaria will have symptoms and treatment of these subjects may have a significant impact on the overall level of transmission.

## **2.4 Factors that affect malaria propagation**

### **2.4.1 Civil unrest and conflict**

Mosquito vector breeding requires certain environmental conditions which coupled with human social systems may increase malaria transmission exponentially. Conflict affected areas and fragile states for example have according to Meek et al (1998), 13 times higher a mortality rate due to malaria than areas of the similar geographical and sociological conditions. This, Meek attributes to factors such as breakdown of health services (e.g. diagnosis and treatment) and of malaria control programmes such as IRS. Movement of non-immune people from areas of low risk to areas of high risk as well as weakened nutritional states ubiquitous in war and conflict also add to high malaria mortality rates. Even in areas where malaria was supposedly eliminated, war has led to the resurgence of malaria as evidenced in Afghanistan, Elden et al (2010).

## 2.4.2 The environment and malaria

Mosquito vectors solely depend on environmental factors for breeding purposes. Understanding environmental conditions including temperature, humidity and the availability of water pools which act as breeding grounds and how they exacerbate mosquito vector is therefore very important in understanding mosquito characteristics and may form a basis for malaria control and elimination. Climate and environmental conditions greatly affect the transmission and incidence of malaria, by influencing primarily the abundance and survival of vectors and parasites, and also exposure of humans and other hosts.

The most important environmental factors for malaria transmission have to do with conditions for *Anopheles* mosquito breeding and survival i.e. water in which they can breed, and minimum temperatures and humidity to allow them to survive long enough for the vector stage of the parasite's life cycle to be completed ó usually about ten days. These factors are influenced by climate, as well as by topography and soil conditions, drainage, vegetation cover, land use and water ó all of which vary greatly depending on local conditions. As such, changes in climate and land use such as water management, agriculture, urbanisation, and deforestation can lead to significant increases or decreases in malaria transmission, depending on local contexts, Reiter P. (2001).

Malaria control strategies therefore need to consider how changing environmental conditions, some of which may be linked to development initiatives and may increase or decrease malaria transmission. Opportunities exist for integrating environmental management interventions into vector control strategies in order to reduce malaria risk. This section examines how changes in climate, water and sanitation, agricultural practices, urbanisation and deforestation affect malaria, Elden et al (2010).

With regard to the study area, breeding sites are widely available due to the Mansa River which is near most of the sampled areas as well as the fish ponds existing in Farm institute which are less than a kilometre in radius to the surrounding residences such as Senama and Zambia compound. The

environmental conditions of the area are therefore most suited for mosquito breeding.

### **2.4.3 Water management and sanitation**

Poorly maintained water supply, sanitation and drainage systems contribute to the transmission of malaria by providing potential breeding areas for mosquitoes. The relative impact of this depends on the local mosquito vectors, but some impact is found in almost all countries, and in countries in Asia in particular changes to water management can have a substantial impact on malaria transmission. Even in Africa, where important vectors are broadly less selective with regard to breeding sites, this can play a role in both urban and rural settings. For instance the drain network can be an important larval habitat: one study in Dar-es-Salaam showed that more than 33% of all anopheline-positive habitats were drains. In Lusaka, (in areas such as Garden compound) communities living near water treatment plants usually report high mosquito populations. This, coupled with vector populations could explain why the fight against malaria still remains a challenge.

### **2.4.4 Agriculture practices**

Agricultural practices and associated land use changes (e.g. drainage, irrigation) can significantly increase or decrease malaria risk. Some practices, such as drainage and management of vegetation of marsh area, have historically been successful methods to decrease malaria by creating less favourable conditions for mosquitoes to breed. Conversely, agriculture practices that are important for food security ó such as irrigation for rice or other crops, the creation of small dams, and fish ponds ó create standing bodies of water potentially leading to an increase in the number of mosquitoes, and increases in human exposure. Whether or not this translates to an increase in disease burden, however, depends on local contexts and vectors. Furthermore, intensification of agriculture often leads to increases in pesticide use which may contribute to resistance of mosquitoes to insecticide control measures, Yadouleton et al. (2009).

Gardens near households, a practice that has been discouraged due to likelihood of providing breeding grounds for mosquitoes are an example of agriculture practices that impact on malaria prevention. Shifts from rain fed to irrigated agriculture have also changed the timing of malaria from a few months a year during the rainy season to being constant all year round, with implications for intervention strategies.

## **2.5 Socioeconomic status and malaria prevalence**

In the global development community, concerns that public health interventions may not be reaching the poor and marginalised have led investigators to examine the differences in the burden of disease, and the coverage and impact of public health interventions among persons with differing wealth status.

Barat et al espouses that results of early studies have begun to demonstrate striking disparities in the utilisation of public health services by the poorest, when compared to less poor populations. Although these services are often intended to reach the poor, very poor persons are least likely to receive the benefits of those services. Demographic and Health Survey analysis shows that the wealthiest 20% of the population of 44 developing countries were from 1.25 to more than 2.5 times more likely than the poorest 20% to receive key public health services, including treatment for diarrhoea, childhood immunisation, and antenatal care, Barat et al. (2003). Similar disparities have been found in studies examining access to and use of treatment. Schellenberg and colleagues identified that children less than five years were twice as likely to receive appropriate treatment for fever if their family were in the least poor quintile than in the poorest quintile (60% vs. 31%, p 0.0001), (2003).

At a household and community level there are strong links between incidence and outcomes of malaria and socioeconomic status but there has also been debate about the extent and direction of causation and its magnitude. Gallup and Sachs argue that there is a correlation between malaria and poverty but that malaria produces poverty more than the other way round. Less controversy surrounds treatment seeking behaviour and access to healthcare

and services by different wealth groups. Evidence shows poor people benefit less from most malaria control interventions than higher income groups. High costs of malaria treatment may lead to delays in treatment seeking behaviour.

Filmer (2002) found the poorest groups in a society did not seek care as much as the non-poor, and did so at lower level public facilities. The burden of malaria is greatest among poor people, imposing significant direct and indirect costs on individuals and households and pushing households into a vicious circle of disease and poverty. Vulnerable households with little coping and adaptive capacities are particularly affected by malaria. Households can be forced to sell their food crops in order to cover the cost of treatment, depleting household resources and leading to increased food shortages, debts, and poverty for the poorest households. The costs of malaria are highly regressive, with the poorer households spending a significantly higher proportion of their income on the treatment of malaria than their least poor counterparts. Wealthier households are better able to cope, and spend more on malaria prevention. Poor people are also less likely to seek prompt effective treatment when they fall sick. The direct and indirect costs associated with malaria represent a substantial burden on poorer households. They highlighted, however, that this relationship could be spurious and noted the problems with data and its interpretation.

### **2.5.1 Malaria and poverty**

Malaria is frequently referred to as a disease of the poor or a disease of poverty. Even a cursory examination of the global distribution of malaria is sufficient to accept this claim on a macro scale, given the concentration of malaria in the world's poorest continents and countries. However, on a more micro scale the evidence is less consistent and more difficult to collect, analyse and understand. Malaria is also said to cause poverty and prevent or reduce people's ability to escape poverty; however the evidence about the relationship between poverty and malaria incidence, and the causal pathways between the two, is scant. Moreover, the evidence which does exist is often contradictory and inconsistent or of poor quality, making it difficult to develop effective policies on the basis of sound evidence, Worralla et al. (2002).

Poverty is mostly associated with a lack of resources, a definition that remains the most widespread. The definition affirms that people are poor relative to others because they do not have the means to develop themselves or to sustain their development over time because they do not have recourse to significant, sufficient, resources. The means are normally identified in economic or material terms, for example in terms of a person who lives on less than an average amount per year, in terms of a person's access to health resources, communication resources, physical resources, educational resources and so on, Pradip (2002).

More often than not poverty is exhibited through lack of proper and adequate nutrition which leads to malnutrition. There is a clear association between malnutrition and malaria mortality. For example, it was estimated in one study that 57% of malaria deaths among children under five are associated with under nutrition. Since poverty is a risk factor for both malnutrition and malaria ascribing causality is, however, not easy without intervention trials as confounding makes observational studies difficult to interpret. Poor, rural communities tend to suffer the effects of malaria more than urban communities because of greater numbers of infective mosquitoes, poor access to health care, inadequate knowledge of how to avoid malaria and its risks, and limited funds for prevention measures such as insecticide-treated nets, (UNICEF).

It is well established that under nutrition affects the immune system and increases the incidence, duration and severity of many infectious diseases. The evidence of which nutritional factors have most impact on malaria severity is still patchy. There is, however, now reasonable evidence for a link between some aspects of both acute and chronic malnutrition and severe malaria. Under nutrition prolongs the severity of malaria episodes and increases the chance of death. Children who have severe chronic under nutrition are twice as likely to die of malaria as children of normal height. Children who are acutely undernourished (of which there are 55 million worldwide) are two to three times more likely to die of malaria, Elden et al (2010).

As a lack of access to proper and correct information on malaria prevention and treatment, Pradip posits that there needs to be an accent on communication projects that are at the centre of community development and that address the critical issues facing the community in all its complexity and variety. Such projects are by their very nature grounded in a clear understanding of the political fallout of involvement in actions that are clearly pro-poor and pro-justice, (2002).

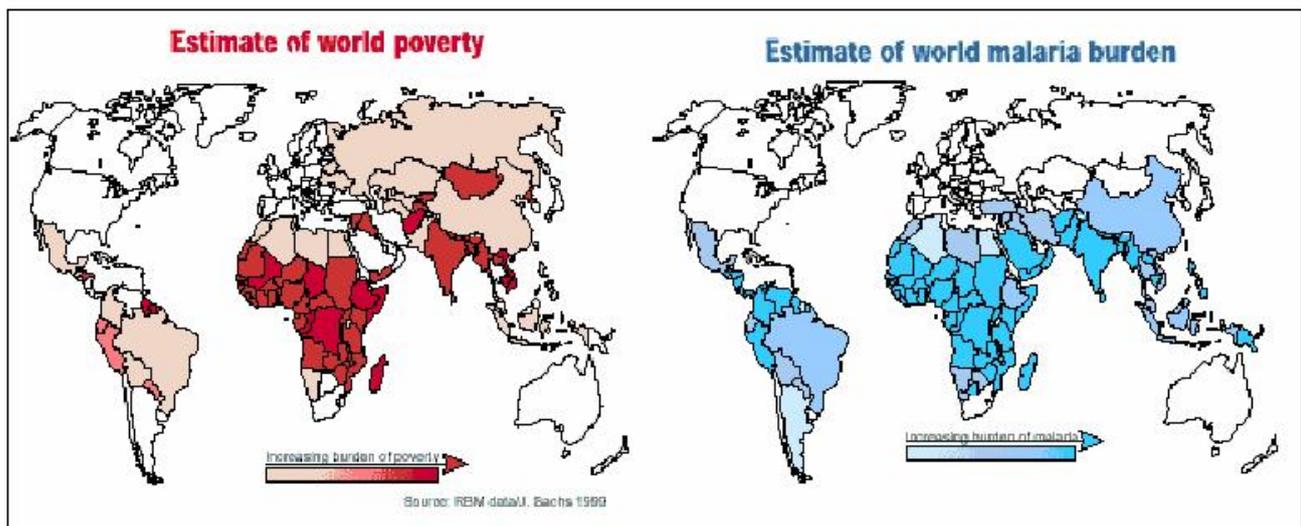


figure 2. Map showing the world's poorest areas and areas with high malaria burden. Source Malaria: Elden et al. (2010)

Perhaps a crucial consideration on were poverty trumps malaria prevention strategies is exemplified by people's practices induced by the need to eat at the expense of exposure to mosquitoes that transmit malaria. As a means of environmental control in malaria prevention, people are advised not to have gardens and fields of maize near their domiciles as pools of water in such fields harbour mosquitoes. However, this prevention strategy is rarely heeded as gardens and maize fields (and the food they bring) are considered more important than the possible threat of malaria.

### 2.5.2 Burden on economic activities

Chima et al. (2003) recognises that measuring the economic burden of malaria carries a number of methodological challenges. These include: defining a suitable measure of the health burden that takes into account febrile illness

episodes and other consequences such as anaemia and severe illness; the generally poor data available on earnings and days lost from illness and the ways in which firms and households cope with illness; and the general difficulty of capturing the opportunity cost of anticipatory or risk mitigation strategies.

Malaria is as much a social problem as it is a developmental problem. According to the United Nations Children's Fund (UNICEF), "Malaria's cost to human and social well-being is enormous. It is a major cause of poverty and poverty exacerbates the malaria situation" (UNICEF, 2000). So too is the economic loss, which in Africa alone is estimated at more than \$2 billion annually (WHO, 2000). However, the African Leaders Malaria Alliance estimates that in Africa, as much as 40% of healthcare spending in endemic countries goes on malaria, costing the continent around \$12 billion a year, ([www.alma2015.org/](http://www.alma2015.org/)). According to the Roll Back Malaria Programme (RBM, 2002), "It has slowed economic growth in African countries by 1.3% per year, the compounded effects of which are a gross domestic product level now up to 32% lower than it would have been had malaria been eradicated from Africa in 1960."

The macroeconomic impact of the disease is thought to be significant. Malaria's impact on premature mortality, the direct and indirect costs of illness, fertility rates, population growth, migration patterns, technology adoption, savings and investment, and worker productivity all impede economic development. Malaria reduces foreign direct investment, tourism, and trade, and the transmission of ideas, techniques and the development of transportation systems (Gallup and Sachs (2000)). In a survey of 8,000 business leaders conducted in over 100 countries, over a fifth of all business leaders reported that malaria affects their business with 10% reporting serious impacts. In Africa South of the Sahara, 72% of respondent firms reported deleterious effects, with 39% reporting serious impacts through absenteeism, lower productivity, increased costs, education and skills, cognitive abilities, poor skill matching, increased labour turnover, and hiring and training costs, (ibid).

The mechanisms through which malaria is linked to poverty include the effects of lost time, either through illness or caring for sick family members. In rural areas, the rainy season is often a time of intense agricultural activity when poor families earn most of their annual income. A bout of non-fatal malaria will typically last for ten to fourteen days including four to six days of total incapacitation with the remainder characterised by headaches, fatigue and nausea. The extent to which this lost labour time reduces output depends on whether it coincides with harvest time in agricultural areas, and whether other family members can compensate.

### **2.5.3 Burden on health systems**

The costs of malaria in terms of strains on health systems are substantial. The African Leaders Malaria Alliance estimates that in Africa, as much as 40% of healthcare spending in endemic countries goes on malaria, costing the continent around \$12 billion a year. In endemic countries, as many as three out of ten hospital beds are occupied by patients with the disease. However, there is limited information on the burden malaria places on the health system, especially with regard to human resources and finance. As study by Muula et al. (2007) in Malawi found, treating 65% to 85% of cases would result in using 8.9% to 12.2% of the national health budget or 22.2% to 33.2% of the national drug budget. Furthermore, having 65% to 85% of cases treated at a health facility would consume 55.5% to 61.1% of full-time equivalents of all the clinicians registered in the country. Malaria exacts a heavy toll on the health system in Malawi. In this situation, the national recommendation of self-medication with the first-line drug for uncomplicated malaria is justified as there are not enough clinicians to provide clinical care for all cases.

### **High risk populations**

#### **2.6 Pregnant women, under 5 years old children**

Malaria in pregnancy is dangerous for the mother and the unborn child in multiple ways. There is clear evidence that the effect of infection on the mother varies depending on the level of exposure to, and therefore immunity to malaria infection that the mother has acquired prior to pregnancy, although

the basis for this is not completely understood. Acquired ant malarial immunity depends on the intensity of malaria transmission, the number of previous pregnancies and the presence of other conditions such as HIV infection which may further impair the efficacy of immune responses during pregnancy, Elden et al. (2010).

During pregnancy, malaria has a telling effect on the health of new-born children, for example, malaria is the leading cause of anaemia and low birth weight babies, and such babies are 2 to 4 times more likely to experience failure at school. Malaria affects cognitive development and learning abilities, and poses a risk factor for neurosensory and behavioural development of children, Sachs and Malaney (2002).

Women in high-transmission areas who were semi-immune to malaria prior to pregnancy become vulnerable, especially to malarial anaemia, when pregnant, and this is often missed because they do not present with typical symptoms. This is most marked in early pregnancies and, in the absence of HIV, malarial anaemia in pregnancy becomes less likely as the number of pregnancies increases. Women in the second and third trimester of pregnancy are more likely to develop severe malaria than other adults, and in low transmission settings, this is often complicated by pulmonary oedema and hypoglycaemia, (ibid).

Maternal mortality from malaria is higher than in non-pregnant adults whatever stage of pre-existing immunity. Foetal death and premature labour are common. During the latter stages of pregnancy, malaria infection, in combination with maternal anaemia, can impair foetal weight gain and contribute to intrauterine growth retardation or prematurity and thus result in low birth weight. This has been demonstrated most convincingly by trials of malaria prevention strategies in which both drugs and bed nets were shown to reduce these adverse outcomes, this, according to Crawley et al., has been done through administering intermittent preventive treatment for pregnant women which is a safe and effective way to protect both mother and child from the risks of malaria. Nearly every high-burden sub-Saharan African

country has adopted the treatment as part of its national malaria control strategy, (2010).

<b>Adverse health events</b>	<b>% of total</b>			
<b>Maternal anaemia</b>	2615			
<b>Low birth weight</b>	8614			
<b>Preterm</b>	8636			
<b>Intrauterine growth retardation</b>	13670			
<b>Infant death</b>	368			

*Table 1. Malaria's contribution to anaemia, low birth weight and infant death. Source Malaria: Elden et al. (2010).*

As earlier mentioned immunity to clinical malaria (i.e. malaria exhibiting symptoms) is acquired and maintained when exposure is frequent and maintained. Because babies have not yet acquired this immunity, even the least number of parasite-carrying mosquito bites may result in infection. This is further confounded by geographical positions such as tropical regions with high vectors and ergo high stable transmission, a combination of which results in Africa South of the Sahara having more than 80% of the estimated malarial deaths currently occurring in children under five years of age, Crawley et al. (2010).

Malaria also contributes to child malnutrition, an underlying cause in more than half of deaths among children under age five globally. Although the

precise causal links are unclear, nutritional status is affected by vomiting and appetite suppression during bouts of malaria and by malaria-related anaemia, Bates et al. (2004).

### **2.6.1 Chronically ill people**

As immunity is a major factor in every human's ability to fight off infection, the malaria problem provides a challenge for the chronically ill. Confounded by lack of adequate medical facilities, as is the case in most developing countries, chronic illness such as sickle cell anaemia, diabetes and other illnesses pose a specific challenge in the fight against malaria. This is because chronic illness in most cases lowers the ability of an individual's immune system. The possible result is that every wave of malaria may result in symptomatic clinical malaria.

### **2.7 ITNs/LLIN & IRS**

As a barrier method against mosquito bites, ITNs/LLINs are cardinal in fight against malaria. Due to their relatively short life span and retreatment requirements, Insecticides Treated Mosquito Nets (ITNs) are slowly being phased out with the introduction of Long Lasting Insecticide treated Nets LLINs.

ITNs, and the newer version LLINs, are the most prominent malaria preventive measure for large-scale deployment in endemic areas; the evidence for their efficacy is strong. A systematic review of 22 randomised controlled trials concluded that the use of ITNs reduced under-five mortality in malaria-endemic areas in Africa South of the Sahara by about a fifth and halved clinical episodes of uncomplicated malaria in areas of stable malaria transmission in Africa, Lengeler (2004).

However, if infection is to be prevented, efforts should be made to make mosquito nets available to every sleeping area of every household. Though the purpose of the nets may seem apparent, it is important that the people be imparted with proper and correct knowledge on the usage of these nets and hence or at the same time dispels the many misconceptions associated with

mosquito nets. Appropriate knowledge and attitudes towards ITNs will eventually lead to correct practices and use of the mosquito nets.

### **2.7.1 Indoor residual spraying**

IRS refers to the application of long-acting insecticide formulations on the walls and roofs of all houses and domestic animal shelters in a given area. IRS shortens the life of female vector mosquitoes that land and rest on treated surfaces, and some insecticides also repel mosquitoes reducing the numbers that enter buildings. It is this last which is generally the most important for malaria transmission, WHO (2006). There is clear evidence that IRS can reduce malaria incidence and improve health outcomes where mosquitoes bite and rest indoors (and insecticide resistance is not a problem). IRS made a major contribution to malaria elimination from the United States, the former Soviet Union, several counties in Asia and the Caribbean and European countries, as well as reducing malaria burden in Asia and Latin America, (ibid).

### **2.7.2 Vector resistance to insecticides**

One of the key ways to reduce the burden of malaria is to control the *Anopheles* mosquito vectors. Insecticide resistance to all the existing classes of widely used insecticides already exists (particularly in Africa) and is likely to spread as control efforts scale up, Elden et al. (2010).

Prior to the implementation of IRS in the 2003/04 rainy season, susceptibility tests were conducted in Chipata, Chongwe, Mansa, Kabwe, Ndola, Lusaka, Mwinilunga, and Livingstone. From that data using WHO test kits, the results showed 100% susceptibility of *Anopheles gambiae* and *Anopheles funestus* to pyrethroids and dichlorodiphenyltrichloroethane (DDT). Between 2009 and 2010, studies from three districts (Ndola, Solwezi and Chililabombwe) showed more than 90% DDT resistance, and up to 60% recorded for Deltamethrin, Permethrin, and Lambda-cyhalothrin, MPR (2010).

Four classes of mosquito insecticides are currently recommended for use in adult mosquito control (adulticides) for malaria. These are organochlorines,

carbamates, organophosphates, and pyrethroids. These four classes of insecticide cover only two target sites, hence target site resistance, if at operational levels can compromise the effectiveness of two complete classes of insecticide. Common chemical backbones running through insecticide classes can also produce broad spectrum cross resistance from metabolic resistance mechanisms. Target site and metabolic resistance to all of these classes has been documented amongst *Anopheles* species. Resistance to one pyrethroid compound often means that there is resistance across the whole pyrethroid class. In some species of *A. gambiae*, managing resistance is extremely problematic as resistance has been documented across all four classes of adulticides, Ranson et al. (2009).

### **2.7.3 Myths and misconceptions associated with malaria & its prevention tools**

Studies on knowledge, attitudes and practices (KAP) in Luapula province find that, although malaria is widely recognised, there remain many misconceptions about the disease. Few families, particularly those in rural areas, take any appropriate preventative measures against the disease, Young (2000). Where preventive tools such as mosquito nets are available, several misconceptions hinder the use or consistent use of mosquito nets. Among these misconceptions are the fear that people suffocate when sleeping under a mosquito net. The feeling of claustrophobia, it is said comes from the confining nature of the nets and the limited porous nature with which the nets are associated. Other misconceptions are that the chemicals on the nets have the capacity to render one impotent and are thought to bring bad dreams. These misconceptions and many more others influence attitudes and directly affect practices. That such views are still held by members of the general populace is an indication that communication has yet to impart the knowledge essential for understanding of the proper use of mosquito nets.

Superstitions and lack of understanding of where malaria comes from continue to be sources of misconceptions and myths about malaria. As Heggenhougen et al. (2003) elaborates, "It should be noted that individuals may hold several aetiological explanations for the occurrence of any one disease. Thus, for example, if two people are sitting on the front porch in the evening and both

are bitten by mosquitoes but only one comes down with malaria, the person with malaria may be quite aware of how she got the disease but may be more concerned about why she got malaria and her friend, who was also bitten, did not. Biologically, thoughts might focus on nutritional status, degree of immunity, and other such factors as being relevant, but thoughts about the "why me?" question are often more likely to concern witchcraft or personal factors, such as having committed a sin or transgressed a social taboo or some other offence for which malaria is then seen as a form of punishment

#### **2.7.4 Diagnosis in Zambia**

Effective diagnosis of malaria cases remains a challenge in most Zambian provinces with only 12.5% (217) of 1,730 health facilities in Zambia having diagnostic capability. This situation is compounded by human resource shortage and trained microscope operators.

The diagnosis of malaria depends on proving that a child or adult with fever or other symptoms of malaria carries malaria parasites. The WHO has recently moved over to advocating a proven (parasitological) diagnosis in all cases of suspected malaria prior to the administration of antimalarial treatment. This approach is backed by strong evidence that diagnosing people with malaria purely on the basis of symptoms is ineffective since it both misses cases of true malaria and wrongly identifies people who have fevers due to other causes.

The previous situation caused the number of malaria cases that are reported in Health Management Information Systems (HMIS) to be biased by several factors. Ashraf notes that the first issue is inconsistencies in diagnostic practices over time. The HMIS is supposed to report all outpatient and inpatient visits, broken down by diagnosis. The problem is that the way in which malaria is diagnosed has changed over the period we examine. Because of both lack of diagnostic technology and differential treatment guidelines, a majority of fevers in Zambia were traditionally classified (and treated) as malaria, a practice that inflated the malaria reports dramatically. To avoid erroneous reporting and treatment of malaria, recent anti-malaria initiative

have included the massive deployment of rapid diagnostic tests (RDTs) to health centres, in order to economise on malaria treatment and properly treat non-malaria fevers. The deployment of RDTs would have led to a reduction in diagnosed cases of malaria even if there was no true change in disease prevalence, as well as an increased diagnosis of other conditions, such as respiratory tract infections. Since the method of diagnosis is not tracked in the original HMIS, quantifying the magnitude of this 'diagnostic effect' is not straightforward, Ashraf (2010).

## **2.8 Information Education Communication and Malaria Control**

According to Gramiccia, there are four main reasons for the failure of health education in malaria control. The first reason is the type of populations that suffer from endemic malaria in poor countries or in depressed areas with low educational standard and poor housing, hygiene and general environmental conditions. Accessibility to these populations is often difficult, and the medical facilities available to them are, to say the least, scarce... A second reason is that malaria is part of a socioeconomic depression complex from which people have difficulty singling out malaria for particular concern...The people cannot understand why malaria should be selected for elimination rather than poverty, hunger, or other diseases or conditions... The multiplicity of afflictions from which the people suffer takes away a good part of the motivation they might have for self-help in controlling malaria... A third difficulty is the nature of the disease itself, specifically the complexity of its epidemiology ...The fourth reason for failure of health education in malaria control is the methods currently employed. Generally speaking, they have not been well adapted to local situations, (1981:386-387).

'We have seen from evaluations of some of the existing malaria control programmes that effective Information Education Communication (IEC) is an integral component and should be intensified in the initial stages of a scale-up of RBM activities. There does appear to be a relative lack of materials however for malaria IEC and this needs to be addressed. At the present time, many health workers are passing on out dated messages and there is often lack of consistency in the messages that are passed on, leading to confusion at the

community level,ö (Young, 2000). Young further acknowledges that malaria communication is most likely going to permeate urban centres like Lusaka through mass media than rural areas where constraints such as ownership of radio sets, Television sets and illiteracy hinder the reception and understanding of such messages.

In addition to bridging the gap in IECø, there is need to analyse and change communication perspectives from earlier diffusion models. Early models in the 50s and 60s saw the communication process simply as a message going from a sender to a receiver (that is, Laswellø classic S-M-R model). The emphasis was mainly sender- receiver and media-centric. Since the 70s, however, communication has become more receiver- and message-centric, Servaes and Malikhao (2007). They go on to argue that the emphasis now is more on the process of communication (that is, the exchange of meaning) and on the significance of this process (that is, the social relationships created by communication and the social institutions and context which result from such relationships).

### **2.8.1 Appropriateness of Malaria prevention communication campaigns and the influence of culture**

The failure of previous initiatives can frequently be blamed on the lack of adequate consideration given to the social and behavioural aspects of malaria control, which, as now understood, must be taken into account and incorporated into any programme. There has been little written about social factors in the modern resurgence of malaria. This is because the focus of public health and malariology in particular, has been narrowly fixed on the parasite and the mosquito vector. The bigger picture has been neglected ó namely that increased rates of malaria morbidity, although directly influenced by changes in the parasite and vector, are more directly caused by human behaviours. Those behaviours are both related to individual culturally coded patterns and larger-scale sociological phenomena including the political-economic level, Brown (1997).

The vertically organised anti-malaria programmes that were launched before the 1990s could be conducted largely without reference to the behaviour and the belief systems of the affected populations. Indoor residual insecticides, the hallmark of the eradication era, were applied uniformly across entire continents disregarding cultural and social variances. Although residents frequently denied the government spray teams entry to their homes and removed the insecticidal sprays from treated walls, their active participation was largely irrelevant to the intervention, Heggenhougen et al. (2003, p. 9).

Resident cooperation is even more crucial when environmental management or housing improvement becomes the intervention modality. This implies a more people oriented communication campaign that encompasses people's perceptions and culture. These practical reasons should redirect communication interventions for a solid understanding of the behavioural and social factors that influence malaria risk and that may inhibit or facilitate particular intervention modalities.

In infectious disease research and control programs, collaboration between the biomedical and social sciences has occurred partly because of the failure of biological and environmental measures to control disease. The control measures now promoted to reduce malaria infection depend on an understanding of the roles of individuals and communities in the transmission, diagnosis, treatment and prevention of disease. Social science research can identify factors that influence health-seeking behaviour and treatment and describe local knowledge of disease and its prevention. This description is critical for health education, the delivery of health services, and the sustainability of intervention programs both for the community based and primary health care programs and for vertical control programs. For malaria control, it includes an understanding of indigenous medical beliefs relating to malaria and the terms used to describe clinical disease, recognition and treatment of symptoms, and use made of traditional and biomedical health services, Varkevisser et al. (1991, p.7).

### **2.8.2 Malaria and HIV & AIDS**

Contemporary models of immunity to malaria in the 1980s led to an expectation by many that HIV infection would have a substantial impact on the incidence of malaria. When early evidence suggested that, in areas of intense transmission of both diseases this did not happen, many leading authorities moved to stating there was little or no impact of HIV on malaria. More recent evidence has led to this being challenged and there is now a reasonable consensus that HIV has a significant impact on malaria incidence and severity. Modelling the impact of HIV on the incidence of malaria across Africa South of the Sahara by the WHO led to the conclusion that HIV is likely to have the greatest impact on malaria incidence (>50% increase in incidence) in regions of very high HIV burden, even where they are not high transmission settings, especially Botswana, Namibia, South Africa, Swaziland and Zimbabwe, Elden et al. (2010).

This model concluded that in these areas the incidence of clinical malaria was increased by up to 28% and deaths, as a consequence of malaria, increased by up to 114%. The model also concluded that for any given HIV prevalence, malaria incidence attributable to HIV would be higher in areas with unstable or low malaria transmission rates. Furthermore, there is increasing evidence that malaria during pregnancy increases the chance of Mother to Child (MTC) transmission of HIV. As articulated by Semrau et al. (2006), Placental malaria causes a low grade inflammatory response in the placenta and there are theoretical reasons for thinking that this might lead to increased MTC transmission of HIV peri-partum, but this has not yet been confirmed epidemiologically. Co-infection with malaria causes a transient but substantial increase in HIV viral load lasting for several months after malaria treatment is successfully concluded. Malaria infections lead to significant increases in HIV viral loads in blood and breast milk; the theoretical reasons this might lead to increased MTC transmission of HIV are obvious, but again the link has not been proven to be causal to date.

The high and pandemic HIV and AIDS levels in Africa in general and Africa South of the Sahara in particular have further exacerbated the Malaria

problem. In Zambia, where HIV and AIDS prevalence is as high as 18% in women and 13% in men, Mandy Dube and Nkenda Sachingongu, (2008, p.16), Malaria cases have also risen. This is because HIV and AIDS patients are vulnerable to opportunistic diseases and infections malaria being one of the most prevalent. High mosquito vectors and lack of environmental control to rid leaving areas of mosquito breeding grounds has resulted in more bites and transmission of the malaria parasite to HIV and AIDS patients resulting in more hospital and clinic admissions and death.

Furthermore, according to MacLachlan & Namangale, (1997), Malaria and HIV and AIDS have a hierarchical relationship in terms of problem importance as perceived by the people. MacLachlan & Namangale contend that the perceived hierarchy of specific health problems also determines behaviours, as reported in a study among university students in Malawi, which found that the perceived seriousness of and thus the attention given to malaria was minimised in the face of having to deal with people with AIDS.

#### **2.8.4 Behaviour Change communication and Malaria Control**

Heggenhougen et al. (2003), recognise that although people's behaviour may increase malaria risk, to change such behaviour is not easy. Indeed, there are many reasons why particular behaviours exist and they often are tied to considerable benefits in areas quite distinct from health. MacCormack has written that "the principal reason [for why people do not accept new kinds of health behaviour] is that the behaviour being advocated is inconvenient, produces unwanted side-effects, or does not give visible results" (MacCormack, 1984:86). Thus, it is not usually the case that "these people don't know any better," but rather that their native logic and rationality make sense within the realities and limitations of their local circumstances.

Human behaviour, much of which is influenced by social, cultural, economic, and political factors is clearly related to health, including the risk for infectious diseases like malaria. Whether it is intentional or not, human behaviour affects health-promoting and disease-preventing activities, in some

instances increasing risk and in others reducing it, as observed by Inhorn & Brown, "...human groups have often unwittingly facilitated the spread of infectious diseases through culturally coded patterns of behaviour or through changes in the crucial relationship among infectious disease agents, their human and animal hosts, and the environments in which the host-agent interaction takes place" (Inhorn & Brown, 1990:89-90).

Barat et al. expounds that beyond the costs of commodities and medications, the reasons why the people, especially the poor have more negative health outcomes and less often utilise prevention and treatment are likely complex. Cultural, behavioural, and educational factors that lead to delayed treatment seeking may play important roles, but have yet to be examined by appropriate qualitative research. Lower levels of education may, for instance be useful predictors of the type and timeliness of care-seeking behaviour. Elucidation of these factors could lead to intervention points to lower barriers to effective use of prevention and treatment services.

The social science literature on malaria shows quite powerfully that socio cultural, political, and economic circumstance not only influence behaviour, but are themselves key factors in determining both immediate and more fundamental risk factors. Targeting change in behaviour of the people will therefore entail addressing the socio cultural, political and economic circumstances. For effective interventions to take place it is not only important to know how people behave, but also the various reasons for this behaviour, Heggenhougen et al (2003, p. 147).

Knowledge and the means to transfer it, i.e. communication has predominantly been the province of the rich and elite. In international power relations, developed countries are seen to have information and knowledge about not only themselves but also developing countries. Knowledge and information transfer has therefore been from the developed countries to the developing countries analogous to the modernisation paradigm. The knowledge/information gap that exists between the developed and developing world leads to the developed world acquiring what Sujatha Sosale terms as the parent mentality. This parent mentality, otherwise also related to the panoptic

view according to Sujatha Sosale causes leaders and members of the development machinery to envisage themselves as experts in their power conferring roles. In this family analogy, the parents are naturalised into positions of power and exert authority over the children, (developing countries). The parents possess the privilege of inspecting and examining various dimensions of the communications in developing regions, for development and development policy purposes.

In the same vein, the communication paradigm inherited by most developing countries has been modelled on the parent-child mentality. In the localised context, the parent is the government and other authority conferring organs while the children are the citizens or general populace. The parent-child mentality and the power relations inherent in it means that participation in power conferring communication, i.e. participatory communication was not a priority. For example, malaria campaigns in the past have had a more practical hands on approach modelled on hierarchical top-down design and implementation of the various interventions and campaigns. In this model, the affected people are recipients of deliberate actions based on government policy on how to eradicate diseases. The role of the people was therefore at best described as passive, while government and programme initiators were seen as the only active agents in the programme implementation. With little to no active participation of the affected people in such programmes, fighting diseases has been the task of the initiator i.e. government.

However, with changing communication strategies has emerged the importance of participation. It is through this growing realisation of the futility of a vertical top-down approach to fighting malaria, which saw people in the endemic regions as merely recipients of the malaria interventions and not active participants in the fight itself. The Ministry of Health through the NMCC has come up with a National Malaria Communication Strategy which acts as a framework for designing communication messages for dissemination to the community. Among the prime focuses of this communication framework is Behaviour Change Communication. According to the Malaria Report for 2011, advocacy and communication has created demand for

malaria control interventions and utilisation of services although advocacy and communication activities for behaviour change have not been able to reach all populations in need. The emphasis of full coverage interventions and the need to extend effective communication to all sectors of society has increased.

Given the pivotal role that behavioural change plays in this programme, there needs to be a commitment to monitoring changes in knowledge, attitude and practice (KAP) very intensively and the programme should work very hard to coordinate and improve IEC strategies, to maximize the programme results, Young (2000, p.12).

### **2.8.5 Development communication and malaria**

Colin Fraser and Sonia Restrepo - Estrada (1998) sum it all up: the successes and failures of most development projects are often determined by two crucial factors, i.e. communication and people's involvement.

Servaes (2002) identifies two perspectives of how communication can be viewed. A first perspective could be of communication as a process, often seen in metaphor as the fabric of society. It is not confined to the media or to messages, but to their interaction in a network of social relationships. By extension, the reception, evaluation, and use of media messages, from whatever source, are as important as their means of production and transmission.

A second perspective is of communications media as a mixed system of mass communication and interpersonal channels, with mutual impact and reinforcement. In other words, the mass media should not be seen in isolation from other conduits.

Communication has been a key element in the West's project of developing the Third World. In the one-and-a-half decades after Lerner's influential 1958 study of communication and development in the Middle East, communication researchers assumed that the introduction of media and certain types of educational, political, and economic information into a social system could

transform individuals and societies from traditional to modern, Servaes (2002).

As many believe, better access to information, education, and knowledge would be the best stimulant for development. As such, access to communication tools and participation therein provides the basis of participation and self-governance. The role that communication and tools of communication such as TVs and radio play in development have been used to determine not only the permeation of developmental information but also development itself. For example, in determining whether Information and Communication Networks (ICNs) have an impact on reducing malaria deaths, a study was carried out using telephone density and TV density as two major ICNs. The cross country analysis showed that the ICN density as measured by the telephones and TV sets per 1,000 people had a significant correlation with reduced probability of malaria deaths. Telephones, an inter-personal means of communication, connects individuals to a bigger social network and facilitates rapid diagnosis and treatment, whereas TV, a mass media communication means, can provide disease awareness among the population, encourage people to adopt healthy behaviour and communicate risk mitigation measures.

In preventing malaria, ICN may not have a direct impact similar to malaria drugs but it can certainly increase the effectiveness of the intervention strategies and resources indirectly. ICN can speed up the delivery of services and provide access to crucial health information. Access to information and knowledge allows the community members to participate in opportunities and activities related to their own development, Mozumder and Marathe, (2007).

According to Everett Rogers the role of communication in the diffusionist perspective was (1) to transfer technological innovations from development agencies to their clients, and (2) to create an appetite for change through raising a 'climate for modernisation' among the members of the public, Rogers, (1986:49).

Having created this appetite for change, the communication media are, in the context of development, generally used to support development initiatives by

the dissemination of messages that encourage the public to support development-oriented projects. Although development strategies in developing countries diverge widely, the usual pattern for broadcasting and the press has been predominantly the same i.e. informing the population about projects, illustrating the advantages of these projects, and recommending that they be supported, Servaes (2002).

## **2.9 Government policy on malaria**

The beginning of the current anti-malaria initiative was a result of a confluence of factors both in Zambia and elsewhere in the world. In particular, the development of new technologies and a new alignment of priorities within the development community led to a desire to undertake a demonstration case showing the possibility of rapidly scaled up malaria control. Resources would be concentrated on a single country with the goal of producing a tangible success, which would then serve as a model for neighbouring countries. Zambia was chosen as the test case because it was perceived as having the institutional capacity and political will to successfully undertake such a program and also because its climate made it all the more likely that success could be accomplished, Ashraf et al. (2010). The above points out that the current resurgence of malaria initiatives are at the most exogenous, drawn up primarily by international organisations as a test case for all malaria endemic regions of the world.

Though exogenous, the Government of the Republic of Zambia has identified the eradication of malaria and other major diseases as a priority to attain the Millennium Development Goals targets for reducing maternal and child mortality rates in Zambia. Malaria poses a multifaceted problem to Zambia, (Zambia Health Demographic Survey 2010). The Zambian government has adopted the Roll Back Malaria campaign which is an international initiative of the United Nations. The overarching goal of RBM was to achieve a 50% reduction in malaria related mortality and morbidity by the year 2010.

Initiatives such as the Malaria Operation Plan supported by the United States government through the Presidential Malaria Initiative (PMI) have been

commission by the Zambian government to effect prevention of malaria through distribution of Insecticide Treated Mosquito Nets (ITNs), Indoor Residual Spraying (IRS), Intermittent preventive treatment in pregnancy (IPTp), diagnosis and pharmaceutical management and treatment, Health systems strengthening and integration and monitoring and evaluation, Presidential Malaria Initiative (2011).

Malaria in Zambia in addition to the direct health impact that it has, there is also a severe social and economic burden on communities and the country as a whole, but especially on the poorest usually in rural areas, and those vulnerable individuals and households who are also trying to cope with the HIV and AIDS pandemic. Thus malaria control is addressed, not as a separate, vertical, disease-specific intervention but as part of a health systems strengthening effort to provide holistic services in all facets of care, and as part of a larger community-development effort, (National Malaria Control Centre).

## CHAPTER THREE

### 3.0 CONCEPTUAL AND THEORETICAL FRAMEWORK

#### 3.1 Introduction

This chapter defines, conceptualises and contextualises the elements of this research. It also presents theoretical approaches within social sciences and communication, which are relevant to this study and were applied as the theoretical framework.

#### 3.2 Conceptual and Operational Definitions

The major concepts to be used in this study are Communication, Development, Modernisation, Communication for Development, Participatory Communication, Development Support Communication, and Behaviour Change Communication.

#### 3.3 Communication

Communication is a process in which participants create and share information with one another in order to reach a mutual understanding. This implies that communication is a process of convergence (or divergence) as two or more individuals exchange information in order to move toward each other (or apart) in the meanings that they give to certain events, Rogers (2011).

Communication can be defined as the sending and receiving of ideas from sender to receiver. Communication comes from the Latin word *communicare*, which means 'to make common' or 'to share.' In this study, communication is defined as 'the process of using messages to generate meaning' (Nelson et al, (2011)). Communication is considered a process because it is an activity, an exchange, or a set of behaviours—not an unchanging product, (ibid).

Nelson et al lists the components of communication as People, the Message, the Channel and Feedback where the People are involved in the human communication process in two roles - as both the sources and the receivers of messages, - the message is the verbal and nonverbal form of the idea, thought, or feeling that one person (the source) wishes to communicate to another

person or group of people (the receivers), -the channel is the means by which a message moves from the source to the receiver of the message and Feedback is the receiver's verbal and nonverbal response to the source's message. The process of communication can also be seen as a process of encoding and decoding ideas. Encoding is defined as the process of translating an idea or a thought into a code. Decoding is the process of assigning meaning to that idea or thought. Understanding the meaning of another person's message does not occur unless the two communicators can elicit common meanings for words, phrases, and nonverbal codes, Nelson et al, (2011).

Though the perspective on communication has changed from models in the 50's and 60's relying on the Lasswell Sender- Message- Receiver (S-M-R) model, with emphasis on the sender and media, communication has become more receiver and message óentric. The emphasis now is more on the process of communication (that is, the exchange of meaning) and on the significance of this process (that is, the social relationships created by communication and the social institutions and context which result from such relationships), Servaes and Malikhao (2002).

With this shift in focus, one is no longer attempting to create a need for the information disseminated, but rather disseminating information for which there is a need. The emphasis is on information exchange rather than on the persuasion in the diffusion model.

The ðoligarchicø view of communication implied that freedom of information was a one-way right from a higher to a lower level, from the Centre to the Periphery, from an institution to an individual, from a communication-rich nation to a communication-poor one, and so on. Today, the interactive nature of communication is increasingly recognized. It is seen as fundamentally two-way rather than one-way, interactive and participatory rather than linear (ibid).

### **3.4 Development**

Different schools of thought have defined development differently. Theories have in the past arisen which try to explain what development is and how undeveloped and/or under developed countries can achieve development.

Theories such as the Modernisation and then Dependency theories all sought to guide the so called 3<sup>rd</sup> world countries into a better developed era of economic and social prosperity. However, With the exception of the four newly industrialized countries, namely Taiwan, Singapore, South Korea and Hong Kong, development has not come for almost all underdeveloped countries, 40 years in the belief of development and 200 years since the emergence of the capitalist nations such as the United States of America, France, Germany and other European countries. Development remains elusive for many developing countries despite various interventions by both the international community and the developing countries themselves. The failure by developing countries to achieve this development despite decades of a variety of development efforts has led to the questioning and re-evaluation of the policies and methods previously used in the effort.

Despite the various theories under which the development paradigm is considered, Todaro, (1981, p.51), defines development as a multidimensional process involving the re-organisation and re-orientation of entire social systems, this in addition to improvements in income and output. Todaro (1981, p.302) further defines development as "the process of improving the quality of all human lives"

These are,

- (1) Raising the people's living levels i.e. their incomes and consumption levels of food, medical services, education etc., through relevant economic growth processes.
- (2) Creating conditions conducive to the growth of people's self-esteem through the establishment of social, political and economic systems and institutions which promote human dignity and respect.
- (3) Increasing people's freedom to choose by enlarging the range of their choice variables ó example, increasing varieties of consumer goods and services.

However, for a better understanding of development, it is important to look at the various theories that undeveloped countries have had to adopt in the quest to attain development. These theories include the modernisation theory, the dependency theory and another development.

### **3.4.1 Modernisation**

According to Dyll (2004, p.30), the theory of Modernisation has its roots post World War II after the implementation of the Marshall Plan under the presidency of Harry Truman of the United States of America. The Marshall Plan was essentially meant to help Europe recover from the devastation that the continent had suffered in the World Wars one and two. Although the objectives of this plan included humanitarian assistance and aid in resisting communism, the attention of the United Nations (UN) and its multilateral agencies, notably the World Bank and its most influential member, the United States, was directed toward "rebuilding European markets for US goods". Having achieved success in Europe, Truman proposed a Four Point Programme whose main focus was the development of the Third World. Truman noted that "their economic world [was] primitive and stagnant. He noted that the poverty in the Third World was a threat both to the Third World and to the prosperous areas of the world. He saw that for the first time in history humanity possessed the knowledge and skill to relieve the suffering of the people in the Third World.

This relief was to be given via a programme of modernisation and capital investment in much the same way as it had happened in Europe. In the 1960s the notion of development paid more attention to technology, especially in agricultural production and techniques, and industrial machinery. Thus, development was equated with industrialisation. To be a modern society, the attitudes of traditional societies: 'backward' people - their traditionalism, bad taste, superstition, fatalism etc. were obstacles,

Proponents of the modernisation theory such as W. Rostow articulated that for a country to develop, it needs to pass through certain stages of development, from traditional society to a modern society. Todaro (1981, p.216), lists these

stages as Traditional society, preconditions for take-off, take off, drive to maturity and a high mass-consumption society.

During this period when modernisation was seen as the way to develop, the emphasis was on economic development linked to the building of infrastructure and adoption of new technology by subject countries. It was believed that development could only be achieved through technological and capital transfer from the developed countries to the non-developed countries. This one direction flow of innovations and ideas from the West was as a result of a proven American policy in fiscal, technological and innovation transfer to Europe after the World War One, Mowlana (1995, p.35).

According to Clara Bensen (2010), when properly examined, it becomes apparent that the general definition of international development is synonymous with the Western capitalistic model, namely, that the only means by which an impoverished nation can develop is through the mechanisms of wage labour, industrialisation, production, consumption, and commodification. Servaes (1995, p.41) also contends that Modernisation is just another name for Westernisation. This theory's emphasis on technological, innovation, and financial transfer meant that people were conditioned to think that with the machinery and money that came with modernisation, development would also result. However, the very fact that technologically behind communities were not consulted and involved through this top down approach to development, the people had little sense of ownership for the various developmental projects that came with this assistance.

Evidence of modernisation can be observed on the ground in local level projects that aim to persuade people to adopt technologies. At the national level policies of governments and aid organisations, which practice this top-down approach, for example the World Bank and the International Monetary Fund (IMF). James Ferguson (1999) explains that for the Copperbelt province of Zambia, copper spearheaded the transition to modernity. Urbanisation in this province was mainly because of the mining industry. In reviewing the fate of the Modernisation theory in Zambia, Ferguson revises its theoretical

underpinnings. These turn out to have been a simple adaptation of the modernisation theory with its teleological arrangements of stages, in which life on the Copperbelt was to be seen as in transition from the primitive to the Western. Several features marked this transition of which three were particularly crucial. These were: the degree of permanence of urban residence, shift from matrilineal to nuclear family, and the emulation and adoption of Western styles of food, dressing, drinks, music, recreation etc.

### **3.4.2 Dependency theory**

Servaes (2002, p.107) traces the emergence of the Dependence Theory to the convergence of two intellectual traditions namely the Structuralist and the extensive Latin American debates on development that later resulted in the formation of the Economic Commission for Latin American (ECLA). Servaes identifies Paul Baran as the first person to articulate the thesis that development and underdevelopment are interrelated processes, that is, they are two sides of the same coin. In Baran's view, continued imperialist dependence after the end of the colonial period is ensured first by the reproduction of socioeconomic structures at the periphery in accordance with the interests of the centre powers. This, he says is the cause of the chronic backwardness of the underdeveloped countries, since the main interests of the western monopoly capitalism was to prevent, or, if that was impossible, to slow down and control the economic development of underdeveloped countries.

The original version of dependency and underdevelopment theory was outlined by Paul Baran and Andre Gunder Frank. They argue that the prevailing conditions in developing Third World nations are not a stage in the evolution towards development, but rather a result of international structures imposed from the West. The capitalist countries, or centre, had become developed by exploiting their colonies, or the periphery, for centuries, Servaes (2002, p.108).

The dependency/disassociation paradigm grew from within developing countries themselves in the 1970s as a reaction to the modernisation paradigm. Although it embodies much of modernisation's critique this paradigm still

considered economic development to be one of its most necessary tenets. From the 1960s to the early 1980s the new states in Africa and Asia and the success in socialist and popular movements in Cuba, China, Chile and other countries provided the goals for political, economic and cultural self-determination within the international community of nations. These new nations shared the ideas of being independent of the superpowers and moved to form the Non-Aligned Nations that defined development as a political struggle for economic self-reliance (Servaes (1995).

Here, the developed countries are seen as dependent on the resource rich underdeveloped or developing countries for raw materials that feed their industries. Consequently the developing countries are seen as dependent on incentives such as aid, technology transfer in form of machinery, farming inputs and other things which they cannot manufacture on their own. Exchange of such commodities can also be thought of as through international trade, however, this trade is so imbalanced that the trade itself reproduces the disparities between the centre and the periphery. The economic world system as well as trade relations are seen as fixed to favour the centre and impoverish the periphery. Dependency Theory proponents saw communication technology as a tool in building self-reliance against dependencies on the First World and the role of communication was to cultivate and advance national pride, and in integrating traditional and modern systems, (Rogers, 1976, as cited by Berger, 2005).

### **3.4.3 Another development/ other development**

Modernisation and Dependency theories were premised on rigid capital, innovation and technological transfer from the developed countries to the developing countries and the world economic forces that hinged upon the exploitation of developing countries by the developed countries as sources of raw materials, respectively. These states of affairs, especially the Dependence situation, it is argued perpetuated a system of impoverishing the developing countries or periphery and enriching the developed countries or centre. However, the paradigm of Another Development views this centre-periphery system as now endogenous in developing countries. This is because of the

ever widening gap between the rich and the poor in these countries. Rather than at a world system level, the centre-periphery is now seen between people in these developing countries. The gap in access to monetary, material, health and other resources between the rich and the poor in most developing countries continues to widen with the poor getting poorer while the rich are getting richer. Zambia for instance according to McCulloch et al (2000, p.1), is a very unequal society. The Gini coefficient of Zambia in 1996 was 0.52, a high value by international standards. This reflected a society in which the top 10 per cent of the population received over half of the per capita income, whilst the bottom 10 per cent received 0.5 per cent.

Another Development or Other Development is the brain child of the Dag Hammarskjöld Foundation, an organisation founded in honour of the late Secretary General of the United Nations Dag Hammarskjöld. The organisation was founded to find alternative development methods. The Dag Hammarskjöld Foundation identified the cardinal fact that there is no universal path to development and that development must be conceived as an integral, multidimensional, and dialectic process which can differ from one society to another. The identification that development differs from one society to another was an important step stone and is the foundation on which a development that encompasses culture is based. If development can differ from society to society, then such development would hinge on cultural and social uniqueness of particular communities. This means the holistic view of developmental methods as able to fit any culture and people was dispelled. Cultures are different and may require different approaches to achieve similar goals in comparison to another culture. This is the basis of an indigenous development as only the natives would extensively know their culture.

In other words, this means that development efforts must originate from the people in the developing countries and must be spread widely across communities encompassing the various needs that need to be met in order for such communities to sustain themselves materially, in health matters, education, infrastructure, on political issues, and other aspects of human life.

Another Development is defined by the Dag Hammarskjöld Foundation as people-centred, geared to the satisfaction of basic human needs for all – both material and, in its broadest sense, political; it is self-reliant, endogenous, ecologically sound and based on democratic, political, social and economic transformations which alone will make possible the attainment of the other goals. Another development also encompasses the search for societies overcoming discrimination of any kind – be they social, sexual, ethnic or economic. It is a participatory and pluralistic process, Mae Sod (2003, p.4).

The Dag Hammarskjöld Foundation established three foundations for another development, these are;

(1) Another Development is geared to the satisfaction of needs, beginning with the eradication of poverty.

(2) Another development is endogenous and self-reliant; and

(3) Another development is in harmony with the environment.

Another development applies to all levels of all societies, not just the poor of the non-aligned world Servaes (2002, p.111).

The attainment of the above developmental goals is somewhat synonymous with the attainment of Maslow's Hierarchy of Needs which encompasses the fulfilment of physical or physiological needs, security and safety needs, love and socialisation or social acceptance, esteem or ego and self-actualisation.

The first aspect of the above signifies that human basic needs such as shelter, food, water, sleep, sex and so on should be met as these arise from a man's instinct to stay alive. These sustainably met, communities and individuals can then look at other facets of their lives to improve.

The second aspect of self-reliance is met when people have high esteem for themselves through participation and involvement in decision making processes in their communities. This entails that the people's voices are heard both individually and as a community. The feeling of self-worth that result

from being socially recognised as having a voice and impact to influence or affect change empower, creating an attitude of self-reliance.

The third aspect implies notions of sustainable development which is defined as 'a normative concept that embodies standards of judgment and behaviour to be respected as the human community seeks to satisfy its needs of survival and well-being', Reed (2002, p.33). Community development is one of the components of sustainable development as it focuses on empowering communities to manage their own environment, using appropriate technology and meeting people's basic needs in a way that does not degrade ecological systems. Instead of the top-down approach usually employed where economic development is the primary aim, community development advocates community participation and equity paying particular attention to those vulnerable in society. Reed explains that the social dimension of sustainable development is built on the premise that equity and an understanding of the human community's interdependence are basic requirements of an acceptable quality of life, which he sees as the ultimate aim of development. For development to be sustainable, wealth, resources, and opportunity must be shared in such a manner that all citizens have access to minimum standards of security, human rights, and social benefits, such as food, health, education, shelter, and opportunities for self-development, (ibid).

### **3.5 Communication for development**

All those involved in the analysis and application of communication for development - or what can broadly be termed 'development communication' - would probably agree that in essence development communication is the sharing of knowledge aimed at reaching a consensus for action that takes into account the interests, needs and capacities of all concerned. It is thus a social process. Communication media are important tools in achieving this process but their use is not an aim in itself - interpersonal communication too must play a fundamental role, Servaes and Malikhao (2002).

### **3.6 Development support communication**

The practice of Development Support Communication, DSC, is a multi-sectoral process of information sharing about development agendas and planned actions. It links planners, beneficiaries and implementers of development action, including the donor community. It obligates planners and implementers to provide clear, explicit and intelligible data and information about their goals and roles in development, and explicitly provides opportunities for beneficiaries to participate in shaping development outcomes. It ensures that the donor community is kept constantly aware of the achievements and constraints of development efforts in the field.

Development Support Communication makes use of all available structures and means of information sharing. Therefore it is not limited to mass media alone. It also uses both formal group and non-formal channels of communication, such as women's and youth associations, as well as places where people gather.... markets, churches, festivals, and meetings. But its contribution is in using these in a systemic, continuous, co-ordinated and planned manner, to perform linkage and enabling functions. It requires analysis of the communication environment, of the available and needed communication competencies and resources (hardware, software, financial and human), and clearly indicates expected results from specific resource inputs, so as to maintain accountability.

In short, DSC is a legitimate function of development planning and implementation. DSC therefore needs to be examined as a valuable technology for using the social communication process to foster and strengthen sustainable development at local and national levels. It should be taken more seriously in programs of social change, and should be reflected explicitly in development policy and strategy. One way of doing so is through the enunciation of a national information and communication policy, which can be explicitly integrated into national development thinking and practice, <http://www.fao.org/docrep/005/y4338e/y4338e07.htm>

### **3.7 Participatory communication**

Participatory communication aims to 'empower' individuals and communities to take control of their lives. Information flows both ways between sender and receiver. Local beneficiaries are involved in designing the message and share in the responsibility of being the sender. Low cost technologies such as low-power VHF FM radio, camcorders, desk-top publishing and the Internet all open up opportunities for people to be in charge of their own communication. In the participatory model, communication is a process, not a series of products.

### **3.8 Behaviour Change Communication (BCC)**

Behaviour Change Communication shifts the emphasis from making people aware to bringing about new attitudes and practices. BCC tries to understand people's situations and influences, develops messages that respond to these concerns and uses communication processes and media to persuade people to increase their knowledge and change risky behaviour (UNICEF, 1999).

## **3.9 THEORETICAL FRAMEWORK**

### **3.9.1 Expectancy theory**

Vroom's expectancy theory, published in 1964, suggests that people are not necessarily motivated by internal needs, but more by the expectation that certain actions will achieve an outcome seen by them as desirable. He argues that people perform well when they can see a connection between effort, performance and reward.

### **3.9.2 Information Motivation Behavioural Skills Model**

This model states that in order to adopt prevention behaviour, people must have information that will translate easily into action, motivation to act, and skills to perform the behaviour. The study will use this model to try and analyse that availability of information on malaria prevention to the target

community and how this information translates to action, motivation to act and skill to perform the behaviour.

### **3.9.3 Health Belief Model**

The Health Belief Model (HBM) is based on the premise that one's personal thoughts and feelings control one's actions. It proposes that health behaviour is therefore determined by internal cues (perceptions or beliefs), or external cues (e.g. reactions of friends, mass media campaigns, etc.) that trigger the need to act. It specifically hypothesises that individual behaviour is determined by several internal factors:

- a) Belief about one's chances or risk of getting an illness or being directly affected by a particular problem or illness (perceived susceptibility)
- b) Belief or one's opinions about the seriousness of a given problem or illness (perceived severity)
- c) Belief about the efficacy of an action to reduce risk or severity (perceived benefits) compared to one's opinion about the tangible or psychological risks or costs for proposed action (perceived barriers).

This model further explains that before deciding to act, individuals consider whether or not the benefits (positive aspects) outweigh the barriers (negative aspects) of a particular behaviour.

### **3.9.4 Social Cognitive Theory**

The SCT defines human behaviour as a triadic, dynamic, and reciprocal interaction of personal factors, behaviour, and the environment (Bandura, 1977a; 1986; 1989). According to this theory, an individual's behaviour is uniquely determined by each of these three factors. While the SCT upholds the behaviourist notion that response consequences mediate behaviour, it contends that behaviour is largely regulated antecedent through cognitive processes. Therefore, response consequences of behaviour are used to form expectations of behavioural outcomes. It is the ability to form these expectations that give humans the capability to predict the outcomes of their behaviour, *before* the

behaviour is performed. In addition, the SCT posits that most behaviour is learned vicariously.

The SCT's strong emphasis on one's cognitions suggests that the mind is an active force that constructs one's reality, selectively encodes information, performs behaviour on the basis of values and expectations, and imposes structure on its own actions (Jones, 1989). Through feedback and reciprocity, a person's own reality is formed by the interaction of the environment and one's cognitions. In addition, cognitions change over time as a function of maturation and experience (i.e. attention span, memory, ability to form symbols, reasoning skills). It is through an understanding of the processes involved in one's construction of reality that enables human behaviour to be understood, predicted, and changed

The SCT explains behaviour in terms of a triadic, dynamic and reciprocal interaction of the environment, personal factors, and behaviour. However, this reciprocal interaction does not imply that all sources of influence are of equal strength. The SCT recognises that some sources of influence are stronger than others and that they do not all occur simultaneously. In fact, the interaction between the three factors will differ based on the individual, the particular behaviour being examined, and the specific situation in which the behaviour occurs (Bandura, 1989). Thus, this model of causation as proposed by the SCT is extremely complex.

The person-behaviour interaction involves the bi-directional influences of one's thoughts, emotions, and biological properties and one's actions (Bandura, 1977a; 1986; 1989). For example, a person's expectations, beliefs, self-perceptions, goals, and intentions give shape and direction to behaviour. However, the behaviour that is carried out will then affect one's thoughts and emotions. The SCT also accounts for biological personal factors, such as sex, ethnicity, temperament, and genetic predisposition and the influences they have on behaviour.

A bi-directional interaction also occurs between the environment and personal characteristics (Bandura, 1977a; 1986; 1989). In this process, human

expectations, beliefs, and cognitive competencies are developed and modified by social influences and physical structures within the environment. These social influences can convey information and activate emotional reactions through such factors as modelling, instruction, and social persuasion (Bandura, 1986). In addition, humans evoke different reactions from their social environment as a result of their physical characteristics, such as age, size, race, sex, physical attractiveness.

The final interaction occurs between behaviour and the environment. Bandura contends that people are both products and producers of their environment (Bandura, 1977a; 1986; 1989). A person's behaviour will determine the aspects of their environment to which they are exposed, and behaviour is, in turn, modified by that environment. A person's behaviour can affect the way in which they experience the environment through selective attention. Based on learned human preferences and competencies, humans select whom they interact with and the activities they participate in from a vast range of possibilities. Human behaviour also influences their environment, such as when an aggressive person creates a hostile environment. Thus, behaviour determines which of the many potential environmental influences come into play and what forms they will take. In turn, the environment partly determines which forms of one's behaviour are developed and activated (Bandura, 1989).

### **3.9.5 Protection Motivation Theory**

Protection Motivation Theory describes adaptive and maladaptive coping with a health threat as a result of two appraisal processes. A process of threat appraisal and a process of coping appraisal, in which the behavioural options to diminish the threat, are evaluated (Boer, Seydel, 1996). The appraisal of the health threat and the appraisal of the coping responses result in the intention to perform adaptive responses (protection motivation) or may lead to maladaptive responses. Maladaptive responses are those that place an individual at health risk. They include behaviours that lead to negative consequences (e.g. smoking) and the absence of behaviours, which eventually may lead to negative consequences (e.g. not participating in breast cancer screening and thus missing the opportunity of early detection of a tumour).

The Protection Motivation Theory proposes that the intention to protect oneself depends upon four factors:

- 1) The perceived *severity* of a threatened event (e.g., a heart attack)
- 2) The perceived probability of the occurrence, or *vulnerability* (in this example, the perceived vulnerability of the individual to a heart attack)
- 3) The efficacy of the recommended preventive behaviour (the perceived *response efficacy*)
- 4) The perceived *self-efficacy* (i.e., the level of confidence in one's ability to undertake the recommended preventive behaviour).

Protection motivation is the result of the threat appraisal and the coping appraisal. Threat appraisal is the estimation of the chance of contracting a disease (vulnerability) and estimates of the seriousness of a disease (severity). Coping appraisal consists of response efficacy and self-efficacy. Response efficacy is the individual's expectancy that carrying out recommendations can remove the threat. Self-efficacy is the belief in one's ability to execute the recommend courses of action successfully. Protection motivation is a mediating variable whose function is to arouse, sustain and direct protective health behaviour (Boer, Seydel, 1996).

It will use the protection motivation theory to analyse what influence fear has influencing behaviour change in people.

### **3.9.6 Two Step Flow**

The two step flow theory tries to explain the dynamics of the media-audience relationship. developed by Paul Lazarsfeld, Bernard Berelson, and Hazel Gaudet in 1948, after publishing *The People's Choice*, this study suggested that communication from the mass media first reaches "opinion leaders" who filter the information they gather to their associates, with whom they are influential. Previous theories assumed that media directly reached the target of the information. Lazarsfeld *et al* suggested that ideas often flow from radio and print to the opinion leaders and from them to the less active sections of the

population. People tend to be much more affected in their decision making process by face to face encounters with influential peers than by the mass media.

The study will use the two step flow to analyse the impact that opinion leaders have on health information. The study will do this by trying to identify the opinion leaders in the community under study and through interviews find out from community members what information pertaining to malaria prevention those opinion leaders have imparted on them.

### **3.9.7 Knowledge gap theory**

The knowledge gap hypothesis explains that knowledge, like other forms of wealth, is often differentially distributed throughout a social system. Specifically, the hypothesis predicts that as the infusion of mass media information into a social system increases, higher socioeconomic status segments tend to acquire this information faster than lower socioeconomic-status population segments so that the gap in knowledge between the two tends to increase rather than decrease. The study will use this theory to explain, if any, the discrepancy in knowhow about malaria intervention, prevention and treatment between different segments of society with regard to their economic status as well as social status. The theory will help explain why seemingly educated and well to do people know more about malaria than the poor and uneducated.

### **3.9.7 Diffusion theory**

Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas. Diffusion is a kind of social change defined as the process by which alterations occurs in the structure and function of a social system. When new ideas are invented, diffused, and adopted or rejected, leading to certain consequences, social change occurs. Diffusion is therefore comprised of the innovation, the communication channels, time and a social system, Rogers (2011).

Diffusion relies on several social factors for the adoption of an innovation. Opinion leaders and change agents influence adoptions of innovations in a social system. This is because opinion leaders are often in a uniquely influential positions in their system's communication structure, they are at the centre of interpersonal communication networks. Opinion leadership according to Rogers is the degree to which an individual is able to influence other individuals' attitudes or overt behaviour informally in a desired way with relative frequency.

A change agent is an individual who influences clients' innovation-decisions in a direction deemed desirable by a change agency, (ibid).

Diffusion can also be defined as a process by which a new practice or behaviour gets communicated through certain channels over time among individuals and groups (Rogers, 1995). In theory, there are six types of groups. *Innovators* act on information they get through the media and peers outside their community. *Early adopters* act if convinced by the media and innovators that the new practice works. *Early* and *late majority adopters* rely heavily on information from their peers. Mass media and traditional media are also important in modelling new behaviour to this group. *Late acceptors* and *resistors* require extensive peer group education (Rogers, 1995 and UNICEF, 1999).

These groups move through different stages of change as people decide on a new behaviour or practice. Although there are several versions of these stages, the principle remains the same. People do not suddenly begin to do something they have never done before. They learn, weigh the benefits and see if anyone else is doing it. They acquire the skills needed for the new behaviour, apply it to their own lives and evaluate whether it is worthwhile continuing. They may reject the behaviour, or encourage others to follow their lead.

A basic notion of diffusion is that a new idea is adopted slowly during the early stages, builds steam and then flattens out again. When plotted over time, the rate of adoption is typically S-shaped as early adopters tell others about their experience and encourage them to take up the new practice. A critical

mass builds and then levels off as fewer individuals or groups remain to adopt the behaviour (Backer *et al*, 1998). At each stage, experience shows that people need different kinds of information, emotional support and skills.

The diffusion theory explains how information and innovations move in a society and between societies. The theory will help explain how new ideas are transmitted from one person to another and what affects this transfer of ideas. The theory will also help in analysing the current communications, the channels they use and the audience or target audience of this information.

### **3.9.8 Social learning theory**

Social learning theory proposes that two key factors influence behaviour. A person must believe the benefits outweigh the costs. More importantly, the person must have a sense of personal agency, or self-efficacy (Bandura 1995). A person with a developed sense of self-efficacy holds strong convictions that he or she has the skill and abilities to act consistently to protect his or her health, despite various obstacles.

Self-efficacy builds when people set goals, monitor their behaviour and enlist incentives and social support. Bandura's research shows that if people are not convinced of their personal efficacy, they rapidly abandon the skills they have been taught when they fail to get quick results.

Another central concept is that individuals can acquire cognitive skills and new patterns of behaviour vicariously by observing others. Bandura emphasises the power of mass media, particularly television, in creating a 'symbolic environment' in which new ideas and social practices are rapidly diffused within and between societies.

## CHAPTER FOUR

### 4.0 METHODOLOGY

#### 4.1 Introduction

This chapter gives an outline of the methods that were used to conduct this research. It gives information about the techniques that were employed in selecting and determining the sample, collecting the data and coding it, and in analysing the data. The chapter begins by briefly describing the methods used and it then gives information about the sampling techniques, the sample and the analysis methods used. The chapter also discusses the limitations of the study, as well as the ethical considerations and reliability of the findings.

#### 4.2 Research Design

The method of triangulation was used in this study. Triangulation involves the use of different research methodologies in a study aimed at addressing a problem. Wimmer and Dominick (2000: 49) define it within the context of mass media research as "the use of both qualitative and quantitative methods to fully understand the nature of a research problem." This is because of the realisation by researchers that both quantitative and qualitative methods of research are vital in addressing a research problem or in trying to understand any observable fact.

As Dunn (1979) puts it, infectious disease epidemiology can no longer depend on or explain away complex social factors that influence illness behaviour by relying only on quantitative data analysis. Ethno medical data obtained by using both quantitative and qualitative methods will enable the capturing of the whole picture.

Triangulation is not only done to validate findings but to further researcher's comprehension of phenomenon. In this view, triangulation can cut across the qualitative-quantitative divide. It is necessary in ensuring that the research is both interdisciplinary and holistic.

This method was also used to help prevail over what could have been possible causes for weakness and bias in the study. The topic being researched is too

wide to restrict to one method of enquiry, hence this way, irregularities were easily observed and checked.

For this study, the qualitative and quantitative methods were used. A breakdown of the actual methods is as follows:

- i. Qualitative: In-depth Interviews, Observation, Focus Group Discussions (FGDs)
- ii. Quantitative: Structured Questionnaires

The above mentioned methods were applied in order to adequately cater for the questions raised in the study.

### **4.3 Location of the Study**

The study took place in Mansa district of Luapula province of Zambia. The study was conducted under Ministry of Health, Mansa District Health Offices and its supporting partners especially Luapula Families in Distress (LUFAID) with support from the United States Agency for International Development (USAID) through its Communication Support for Health programme (CSH). The study incorporated information from clinics and health centres throughout Mansa district as well as data collected through structured questionnaires from 151 households in Senama township, Chitapwa village, Kabwasha village, Mansa Spark Batteries settlement compound, Zambia Compound and Farm Institute settlement and 244 questionnaires administered in Senama township in a malaria baseline study conducted with LUFAID. With the exception of Senama township and parts of Zambia compound and Farm Institute, the other townships and settlements sampled were middle to high income brackets characterised by planned burnt brick/cement brick structures with iron/asbestos roofing, electricity and piped water. Senama Township itself, which had the highest number of respondents, is a high density settlement comprising of mostly lower bracket income groups with homesteads sparsely connected to electricity and piped water. It is comprised predominantly of mud brick round huts with thatched roofs. Demographic, political and statistical demarcations place the sampled areas in Kaole ward of Bahati Constituency.

The total population of this area according to Central Statistics Offices was 8,183 with 1747 households, Population and housing census (2010).

#### **4.4 Research Questions**

Based on the aim and the specific objectives of the study, the following were the questions that the research methodology sought to answer.

1. Who is most affected by malaria in Mansa?
2. How extensive is the malaria problem in Mansa?
3. What is being done about the malaria problem in Mansa?
4. What have communication campaigns/interventions imparted on Mansa residents about malaria?
5. What factors influence understanding of malaria messages by the general populace in Mansa?
6. What are the Knowledge, Attitudes and Practices by the people in relation to malaria?
7. How are communication on malaria prevention and mitigation perceived to impact on malaria prevalence?
8. How readily accessible are communication on Malaria to the people in Mansa?
9. How permeable has the communication been?
10. How understandable is this communication?
11. How participatory are the approaches to message design?
12. What communication channels are used in the dissemination of this information?
13. How appropriate are these channels to the intended recipients?

14. How is malaria prevalence with reference to communication related to education and socioeconomic status?
15. Does the communication have any impact on behaviour change?

## **4.5 Sampling**

### **4.5.1 Population**

The study drew upon a variegated population comprising semi-rural respondents considered to be in the lower socioeconomic group with thatched hut structures, no running water etc. as well as areas considered to be for the middle socioeconomic group. Respondents in the study were predominantly heads of households with only a few being dependent adults above 18 years of age drawing on a total population of 3,533 persons above the age of 18, Population and housing census (2010). Personnel from clinics and health centres including Community Health Workers (CHWs) were also sampled in the study through interviews and discussions.

### **4.5.2 Sample Size**

Two separate surveys were used in this study comprising 151 households and 244 respondents respectively. A survey of 244 respondents was conducted with LUF AID as a baseline study on malaria in pregnant women and under 5 years old children in Mansa district, Kaole ward. Therefore, a total of 394 households were sampled in this study.

## **4.6 Methods of Data Collection**

### **4.6.1 Sampling Methodology**

#### **a. Quantitative Survey**

Simple random sampling method was used to select Kaole ward from the 16 total numbers of wards in Mansa district. Systematic sampling was then used to select respondent's households for the questionnaire administration. Systematic random sampling involved deciding the size of the sample (151) and then dividing it into the population of households in Kaole ward to

calculate the proportion of the population of households required. As such, a 151 sample was required from a total population of 1747 households in Kaole ward.

$1747/151 = 11.66$  rounded off to 12.

Therefore an interval of 12 houses was observed in the sampling procedure i.e. every 12<sup>th</sup> house was selected as target for the questionnaire administration beginning with a house randomly selected using random number tables.

#### **b. Qualitative Survey**

Qualitative methods were also used to obtain information not quantifiable in statistical analysis. As such, opinions and views of various persons deemed essential to the study were taken into consideration through in-depth interviews, non-structured interviews, focus group discussions, observations and others. Qualitative methods were used with respect to the fact that quantitative methods alone do not give a complete picture of the situation and hence requires qualitative data to further fill in the gaps and/or add on to the qualitative findings.

#### **4.6.2 In-depth Interviews**

In-depth interviews were used to gather information from the identified experts as part of the qualitative survey of the study. These were valuable in getting an insight into some of the factors that may be behind the malaria communication problems as well as procedures in the dissemination of malaria information.

Structured Interviews: Based on the criteria of Expert sampling, the following institutions or individuals were sampled for the Structured Interviews:

- Mansa District Health Office Community Health Workers based at 6 different health centres that are responsible at community level for implementing health education programmes, overseeing/distributing health implements such as mosquito nets and training among others

IRS spray agents were among the sampled population to whom structured interviews were administered.

- The Ministry of Health, Mansa District Health Office, Malaria Focal Point Person, responsible at the district level for formulating and implementing all malaria strategies and programmes in Mansa district.
- The Ministry of Health, Mansa District Health Office, Health Promotion Officer, responsible at the district level for coming up with strategic communication messages on various community health concerns including malaria.
- The Director, Luapula Families in Distress, responsible for overseeing the on-the-ground dissemination and implementation of various communication strategies and programmes in the communities and expert in logistics concerning behaviour change communication campaigns in Luapula province.
- The Programmes Director, Luapula Families in Distress, expert in behaviour change communication campaigns formulation and implementation responsible for on-the-ground implementation of communication campaign programmes in Mansa.
- Behaviour Change Communication Officer, Luapula Families in Distress, responsible for door to door dissemination and analysis of campaign outcomes.
- Chief Statistician, Central Statistics Office, Mansa district office, responsible for overall demographic and statistical analysis in Mansa district. Expert in layout of the districts ward boundaries and populations therein.

#### **4.6.3 Observation**

The study also relied on field observation conducted on communications campaigns. The observations method were employed by the researcher to learn people's reactions about malaria communication, health institutions responsible for helping when they are sick and the disease itself. Observations

gave a valuable insight on people's perceptions of communication materials, the channels used, preferred channels of communication, institutions and organisations involved in malaria as well as the people's comprehension of the information obtained from communication campaigns and interventions. Observations also helped in getting a feel of the people's day to day lifestyles and from these their behaviour. Misconceptions and myths about malaria, strategies of fighting it, and perceptions of its severity in communities sampled were also possible through direct observations of the people. Observations also gave insight in the workings of the studied organisations responsible for malaria communication and educational campaigns, their operations and interdependency or lack thereof.

#### **4.6.4 Policy review**

Policies on Malaria were also reviewed including district level intervention programmes as prescribed by the national policies.

#### **4.6.5 Non-Structured Interviews**

These were used to gather information from various concerned parties involved on the implementation aspect of malaria control programmes as well as health personnel at various health facilities at district level. Non-structured interviews were especially helpful in getting an understanding of the magnitude of the malaria problem as seen by health personnel in the district.

#### **4.6.6 Focus group discussions**

Focused group discussions were conducted with Environmental Health Technicians at the district level who are responsible for among other things the day to day teaching of community members on various preventative measures with regard to malaria and the training of IRS personnel responsible for the door to door spraying. Focus group discussions were also carried out with the newly trained Community Malaria Agents to find out among other things the perceptions that they have on the tasks they were trained for as well as to ascertain their knowledge base as well as Community Health Workers deemed as pivotal to health interventions in communities.

#### **4.6.7 Informal interviews**

Interviews were conducted with men and women involved in the spraying of households in the Indoor Residual Spraying programmes, this was to find out the extent to which they perform their duties as well as the challenges that they face in their work, comprehension of their training for the programme etc. Interviews were also conducted with members of the community especially in communities where communication campaigns were carried out. These interviews provided a valuable opportunity to find out message permeability, acceptability and peoples comprehension of the communication. Misconceptions about malaria were also better understood through one-on-one interviews and group discussions with the community members.

#### **4.6.8 Analysis of Data**

##### **4.6.8.1 Quantitative Survey**

After data collection, the research instruments were coded by the researcher with coding sheets to begin the analysis process. Quantitative data was entered into The Statistical Package for Social Sciences (SPSS) for analysis. This was used in order to help find the various frequencies, relationships and correlations in the research.

##### **4.6.8.2 Qualitative Survey**

In-depth interviews were analysed in a thematic approach (theme by theme) going by the research questions and relevant relationships that were made in the light of the research topic.

#### **4.7 Limitations**

The study was met by some challenges in many aspects especially data collection. Firstly, very little research on this subject has been done in Zambia making literature and comparison of findings very difficult. It was anticipated that the results of similar studies would be used to compare and contrast with the findings. However, since very little or almost no documented research was available, the researcher had to rely on external studies done by other researchers that often did not capture the *Zambian* situation.

Secondly, due to the expensive nature of the study, funds were a challenge for the researcher due in part to the location of study and the distances covered during the study as well as other transport and logistical challenges.

Thirdly, information was hard to obtain from some organisations pivotal in malaria interventions in Mansa especially Malaria Consortium which was not helpful to the researcher as well as other organisations as the researcher found out. Due to the lack of information sharing among organisations, the researcher found it difficult to consolidate all the information on the subject matter thereby finding difficulty in getting a united/single picture of the situation on malaria as compiled by the various organisations.

#### **4.8 Ethical Considerations and Reliability**

Knowing fully the significance and enormity of ethics in this study, the researcher obtained ethical clearance from the University of Zambia Ethics Committee in accordance with the Ministry of Health requirements before authorising public research involving human subjects. The study used ethical principles of research that include: (a) obtaining informed consent from potential research participants; (b) protecting the anonymity and confidentiality of the participants; (c) observing beneficence and non-maleficence; and (d) being truthful to the participants. Participants were fully apprised of their right to refuse/terminate participation in the study and what the data collected was going to be used for. All participants gave full consent and care was taken to ensure that only persons of 18 years and above were sampled and participated.

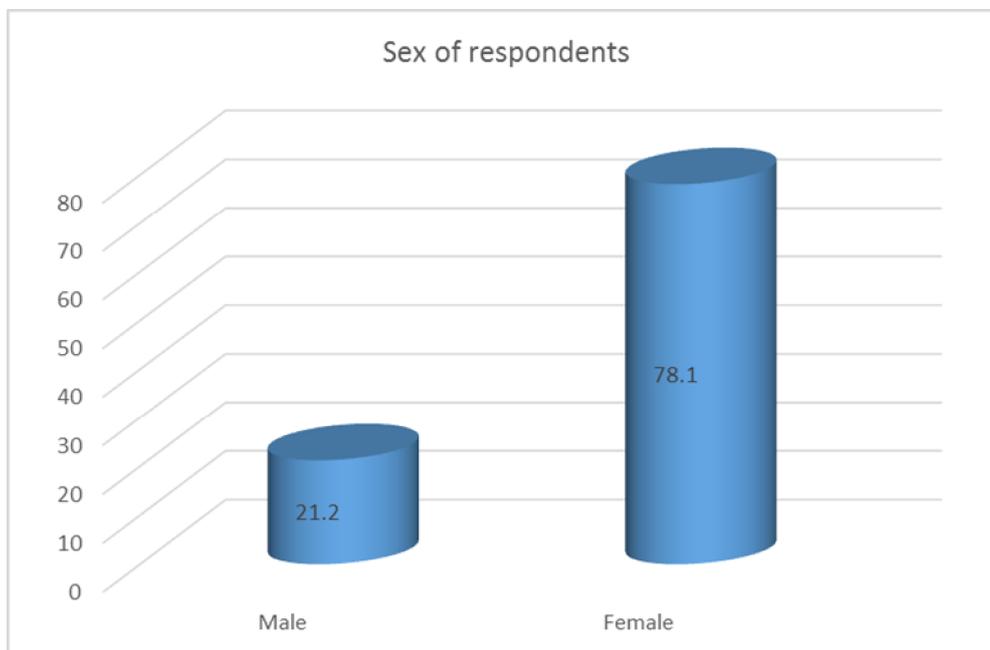
## CHAPTER FIVE

### 5.0 Presentations of findings

#### 5.1 Attributes of respondents

##### 5.1.1 Distribution of respondents by sex

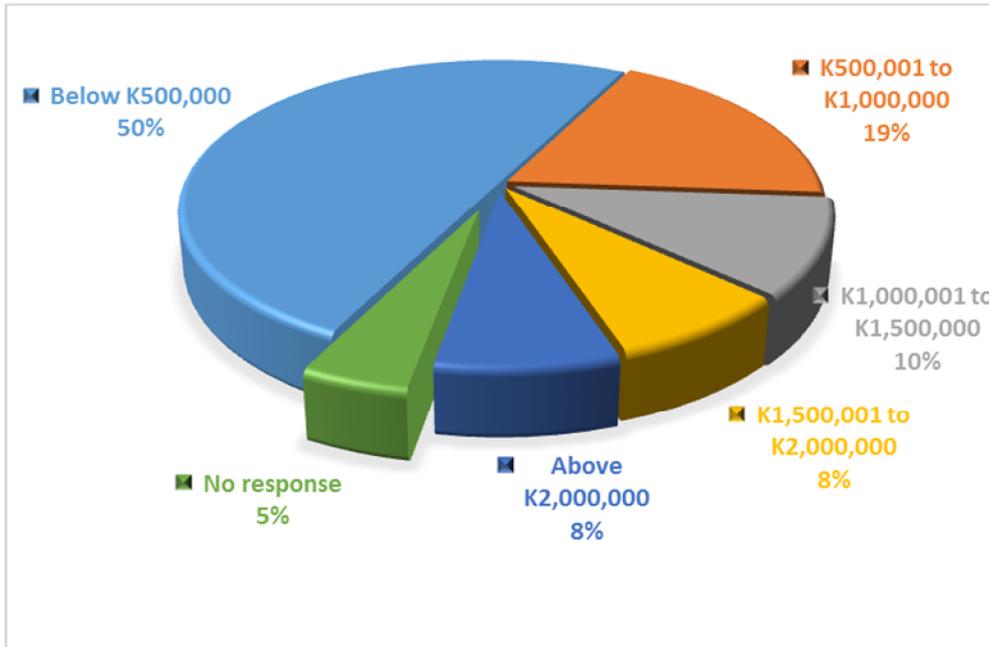
Of the 151 respondents in the initial study, 78% of the respondents were female while 21% were found to be male. It was discovered during the survey that it was likely to find a female at home than it was to find a male. This information is given in *figure 5.1*



*Figure 5.1 Distribution of respondents by sex*

##### 5.1.2 Distribution of respondents by income

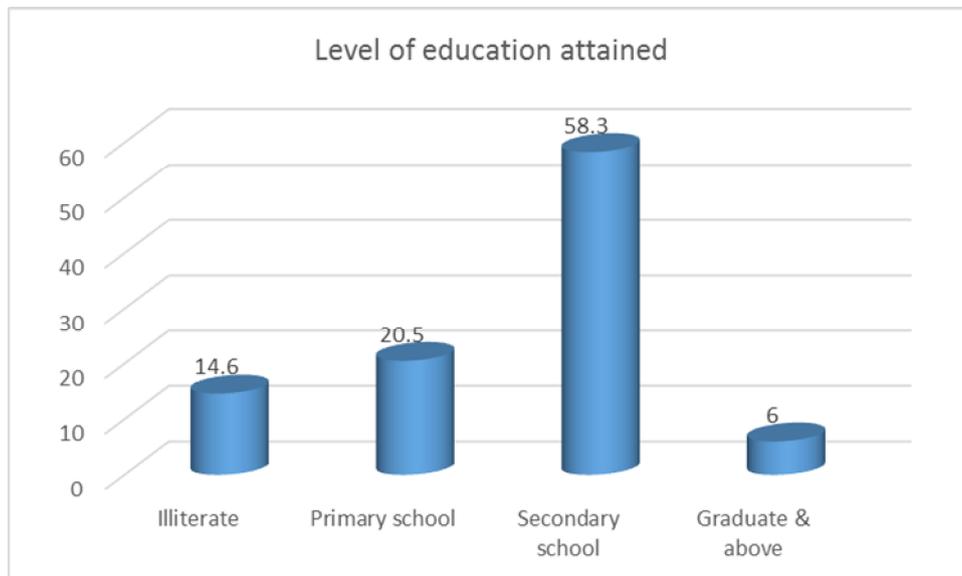
Socioeconomic characteristics of the respondents revealed that 50% of the respondents earned below K 500,000 (KR 500) equivalent to below \$95 per month, *figure 5.2*. The majority of the respondents were not in formal employment most relying on subsistence farming for their livelihood. 19% of the respondents earned between K 500,001 and K 1,000,000, 10% of the respondents earned between K 1,000,001 & K 1, 500,000, 8% earned between K 1,500,001 & K 2,000,000 and 8% earned above K 2,000,000.



*Figure 5.2. Respondent's distribution by Monthly income*

### 5.1.3 Formal education

The study showed that 88 respondents (58.3%) had attained secondary school education 14.6% had never been to school, 20.5% had reached up to primary school and only 6% had attained graduate level education, figure 5.3



*Figure 5.3. Respondent's distribution by level of education attained*

### 5.1.4 Number of people per household

The study sampled 151 households comprising an estimated 812 people with an average of 7 people per household. Of these people 285 slept under mosquito nets while 257 did not. The population the households comprise represents 9.9% of the total population of Kaole ward while the households sampled represents 8.6% of the total household count using the population and housing census of 2010.

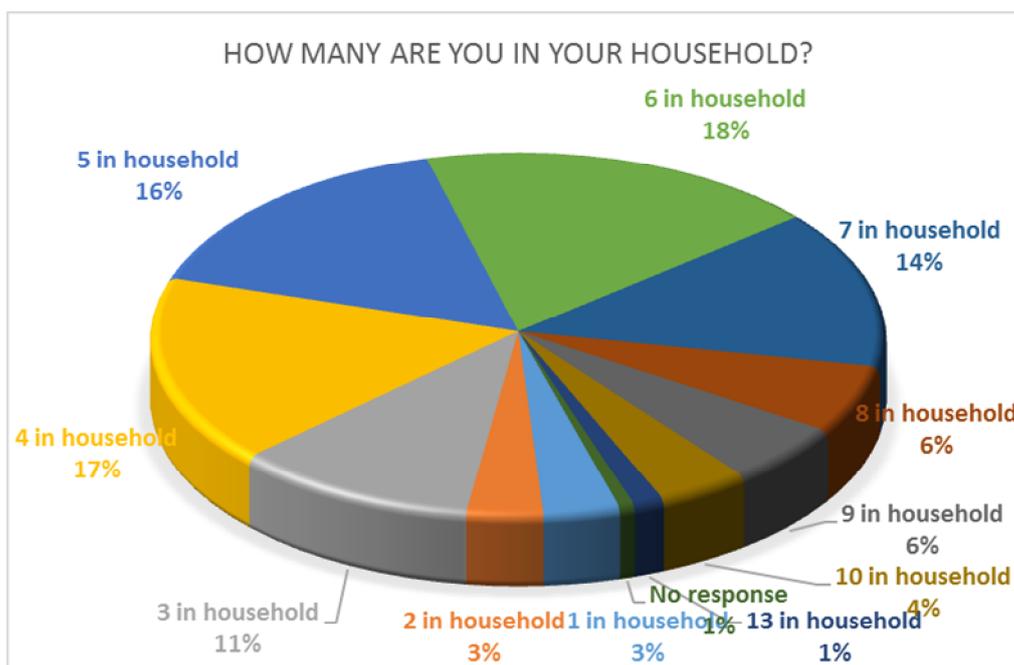
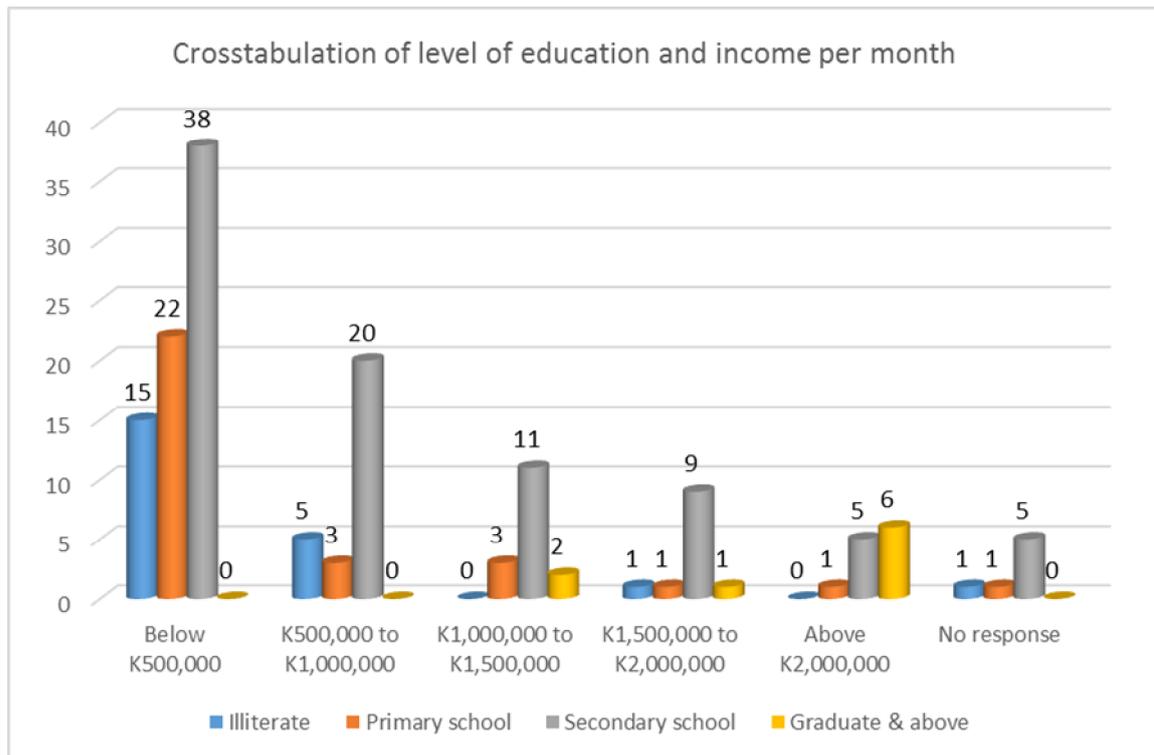


Figure 5.4. Respondent's distribution by number of people in a household

### 5.1.5 Level of education vs. income per month

A cross tabulation of levels of education and income per month showed that education to an extent, plays a role in the income earned as most illiterate and primary school respondents fail in the category which earned below K500, 000 per month while the majority of those earning in the category above K2, 000,000 were mostly those who attained secondary school and graduate and above education.

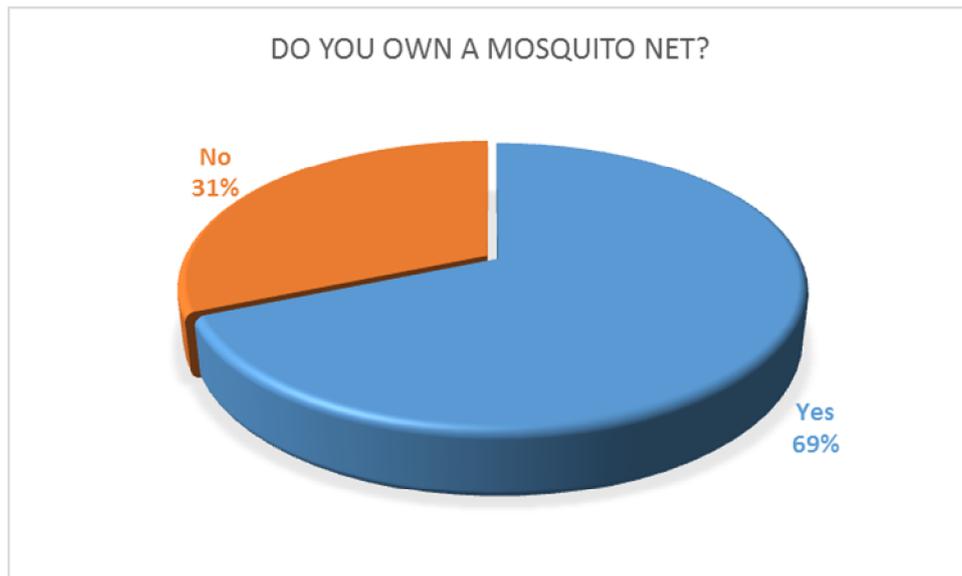


*Figure 5.5. Cross tabulation of income and level of education*

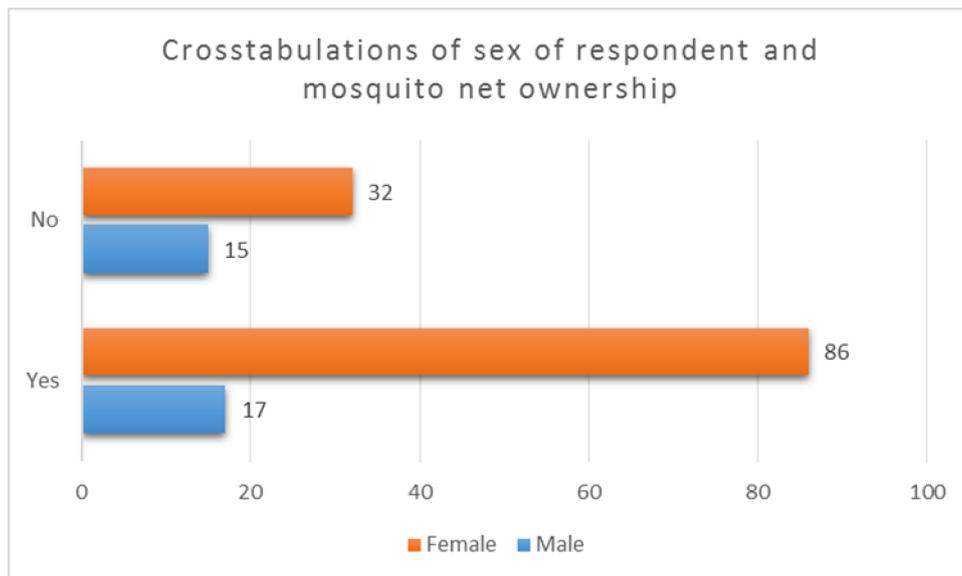
## 5.2 Mosquito net ownership

Mosquito net ownership is fairly high with 69% of the respondents indicating to having owned mosquito nets, *figure 5.6*. The fairly high number of respondents could be attributed to the relatively recent mosquito net distribution programmes undertaken by the Ministry of Health and its partners. Most mosquito nets were not bought by the respondents but given free of charge.

Observations by the researcher found that if anything, there was an abundance of mosquito nets in the area leading to misuse associated with undervaluing a product that has no monetary cost to the owner/beneficiary of the mosquito net distribution programme. Nets were seen strewn on premises being used for various things among others as barriers on gardens.



*Figure 5.6. Percentage of respondents who owned or did not own mosquito nets*



*Figure 5.7. Distribution by mosquito net ownership and sex of respondent*

### 5.2.1 Relative age of mosquito nets

The study showed that 77% of the mosquito nets respondents indicated to have owned were less than a year old with only 14% being more than a year old. 7% of the respondents did not respond to the question, figure 5.7. The fairly new mosquito nets were because of the general mosquito net distribution programmes of 2011, (National Malaria Control Centre Mass Distribution Data collection register Mansa District level 2011) and the mosquito net distribution programme targeting only pregnant women and under 5 years old children which is still undergoing.

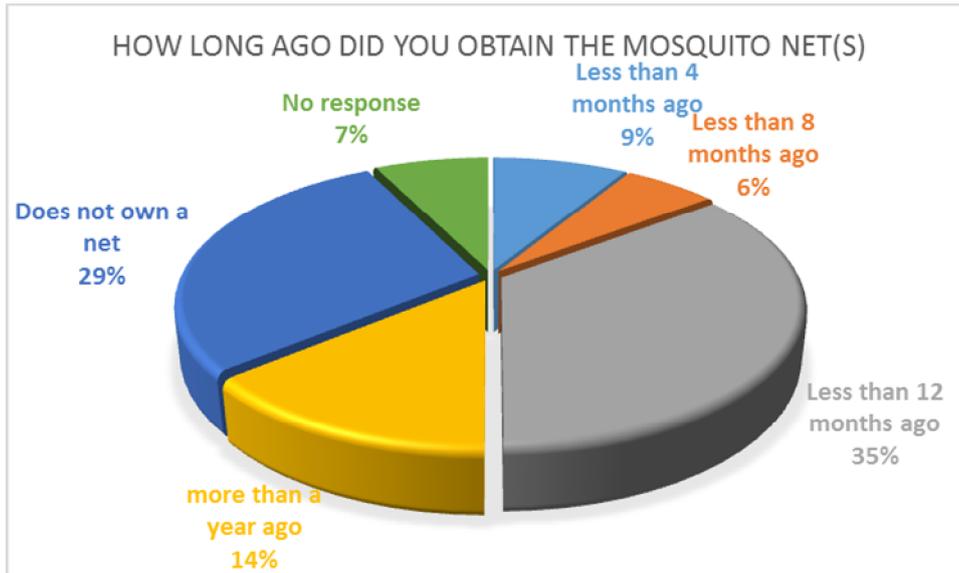


Figure 5.8. Percentage of respondents by age of mosquito net they owned

### 5.2.2 Mosquito net usage

Trends in mosquito net ownership versus usage of mosquito nets show a rather low usage to ownership ratio. The study showed that of the 69% who indicated that they owned a mosquito net only 36% reported to sleep under a mosquito net. 33% of the respondents reported not to sleep under a mosquito net even though they owned mosquito nets while 31% reported that they do not own mosquito nets hence did not sleep under a mosquito net, (figure 5.9).

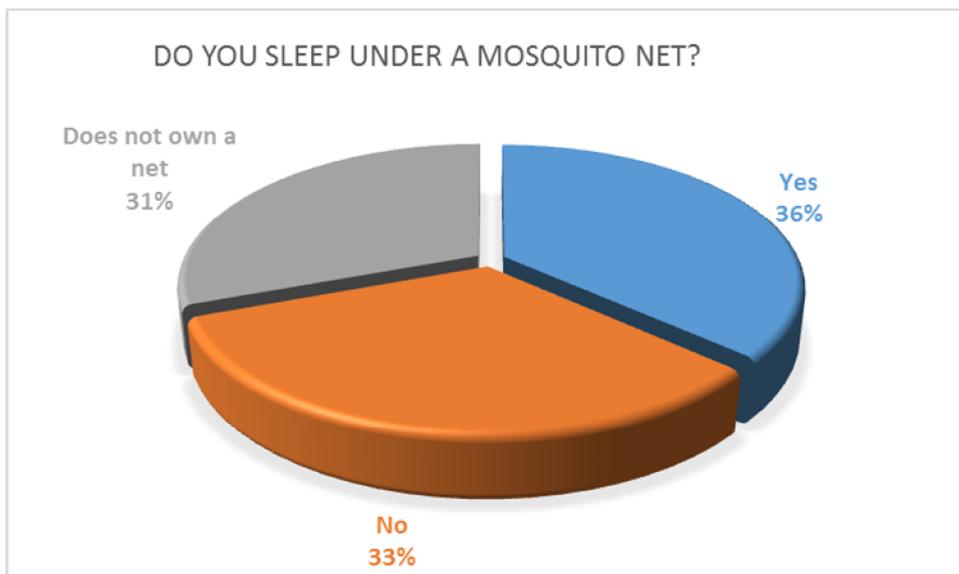


Figure 5.9. Percentage of respondents by mosquito net usage

### 5.2.3 Mosquito net ownership and income earned

The study also showed that ownership of mosquito nets was slightly dependent on income earned. The study showed that of the lowest income group of those earning below K500, 000, 36% did not own mosquito nets while those earning between K500, 000 to K1, 000, 000, 35% did not own mosquito net. The groups earning between K1, 000, 001 to K1, 500, 000 and K1, 500, 001 to K2, 000, 000 had 18.7% and 20% respectively not owning mosquito nets. The income group earning above K2, 000, 001 had 20% not owning mosquito nets, (figure 5.10).

The fairly high mosquito net ownership in the low income groups is due in part to the freely distributed mosquito nets numbering over 215396 insecticide treated nets by August 2011. The District conducted massive ITN distribution with support from World Vision, NMCC, USAID, UKAID and the Ministry of Health.

Local partners who helped as MATF members included Anglican Diocese HBC for storage of ITNs, Luapula Foundation for storage of ITNs, Mansa General Hospital for storage of ITNs, radio Yangeni for information dissemination and ZNS for transportation of ITNs to Health Centres, ITN distribution report (2011).

The district received a total of 215396 ITNs for the distribution to health centres and subsequently to beneficiaries following the submitted information relating to sleeping spaces.

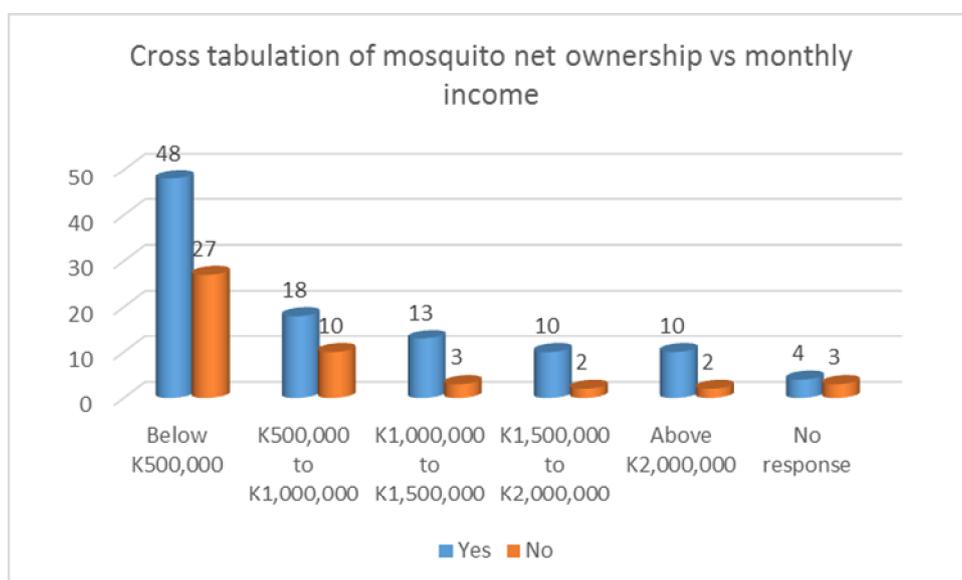


Figure 5.10. Cross tabulation of mosquito net ownership and income earned (percent)

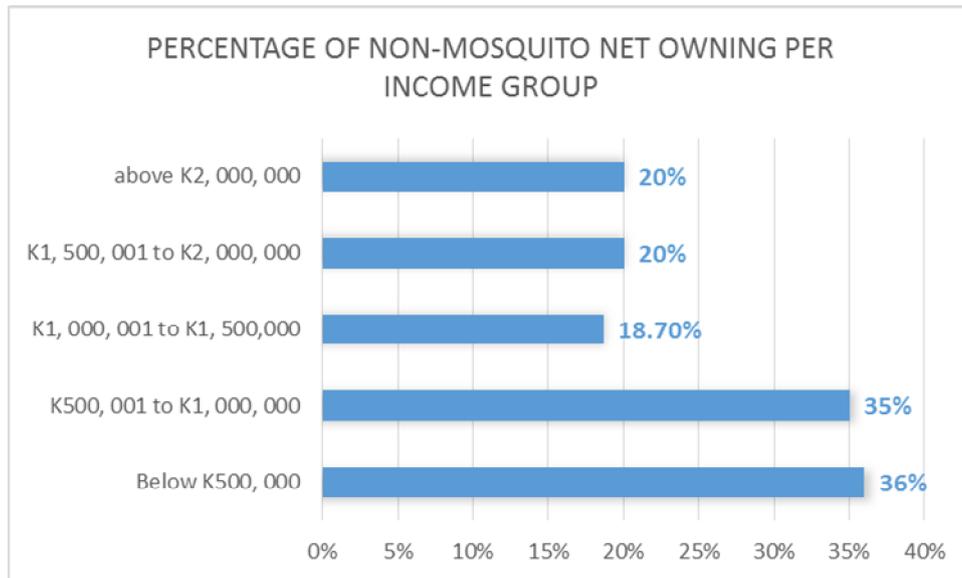


Figure 5.11. Percentage of non-mosquito net owning per income group

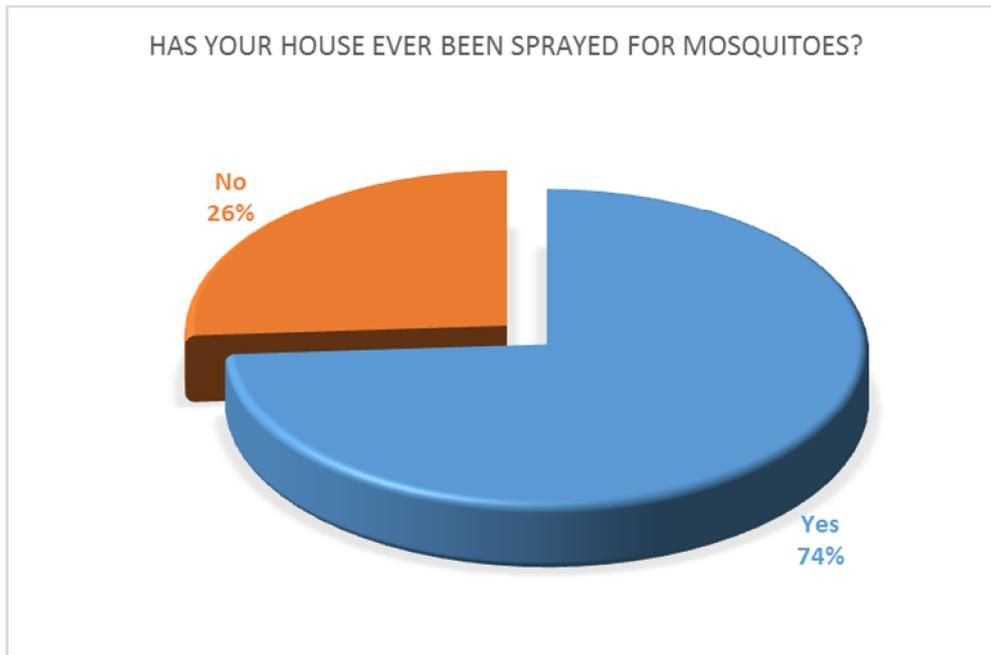
### 5.3 Indoor Residual spraying

Indoor Residual Spraying remains the most effective preventive method in malaria management due to its efficacy in killing mosquitoes hence denying them the opportunity to spread malaria. However, due to inconsistencies and inability to properly communicate and convince the populace of the importance of Indoor Residual Spraying and dispelling myths surrounding the chemicals used when spraying, some respondents reported their houses not to have ever been sprayed (26%) principally because they did not let the spray agents in, table 5.1 and figure 5.12. However, a relatively high number of the respondents (74 %) reported that their homes have been sprayed in the last 12 months.

#### Has your house ever been sprayed for mosquitoes?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	111	73.5	74.0	74.0
	No	39	25.8	26.0	100.0
	Total	150	99.3	100.0	
Missing	System	1	.7		
Total		151	100.0		

*Table 5.1. Distribution by number of household sprayed*



*Figure 5.12. Distribution by number of households sprayed*

On interview, the majority of the respondents who reported that their households were not sprayed said that this was so because they did not admit the spray agents. Others claimed that no spray agents visited their homes. Those who refused to admit the spray agents cited reasons that included myths such as that the chemicals used in spraying contributed to impotence and barrenness while a majority of the respondents interviewed on IRS claimed that it was an inconvenience and most of the time did not work at keeping mosquitoes away. This they claimed was because the spray agents over-diluted the chemicals used rendering their potency low.

Discussions with groups of women in Chitakwa and Kabwasha village revealed that most of the women claimed that they and members of their family developed subsequent skin irritations that lasted days after their houses were sprayed, while women in Spark and Minister's compound also complained about white stains that remained on their walls as a result of the spray residual. A good number of the respondents interviewed, in this case mostly women in the latter locations said they proceeded to wash the stains off the walls after the spray agents left. Most claimed ignorance on the effects of washing the stains off the walls after their homes had been sprayed.

### 5.3.1 Information given before and after spraying

With still a chance of myths and misconceptions surrounding IRS it is important that spray agents explain what it is that the chemicals they are spraying do and do not do and how the household owners should treat the chemicals for efficacious results. It is therefore important that explanations be given before and after spraying. Before and after explanation enables repetition which in turn aids understanding and recollection of information imparted.

The study showed that 90 (59.6%) respondents indicated that the spray agents did explain to them issues pertaining to the spraying of their households before they sprayed and 33 (21.8%) respondents were explained to after spraying of their households. No explanation was rendered to 25 (16.5%) respondents before their houses were sprayed while 82 (54.3%) respondents after their houses were sprayed. 35 (26%) household were not sprayed.

**Was anything explained to you? Before spraying \* was anything explained to you? After spraying? Cross tabulation**

		Was anything explained to you? After spraying?			Total
		Yes	No	Not sprayed	
Was anything explained to you? Before spraying	Yes	29	61	0	90
	No	4	21	0	25
	Not sprayed	0	0	35	35
Total		33	82	35	150

*Table 5.2. Explanations before and after IRS*

## 5.4 Malaria incidence and knowledge of what to do

### 5.4.1 Incidence

Malaria incidence in the past 1 year was high with 142 respondents indicating that they or members of their household had had malaria one time or another in the respective month building to one year. This represents 94.3% of the respondents surveyed in this study. The months of September to October (a month before administering the questionnaires) seems to have been the highest peak of illnesses with 72 respondents (47.7%) indicating that they or members

of their household had had malaria during that period, table 5.3 and figure 5.12.

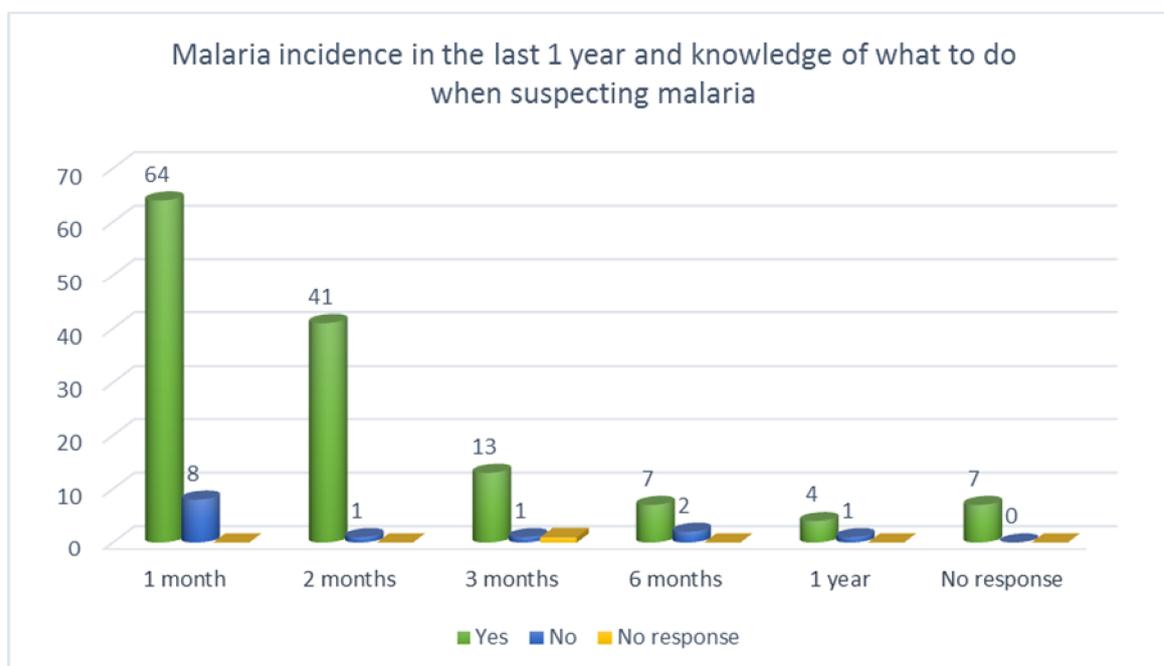
**Has anyone in your family had malaria in the last \* do you know what to do: when you suspect malaria? Cross tabulation**

		Do you know what to do: when you suspect malaria?			Total
		Yes	No	No response	Yes
Has anyone in your family had malaria in the last	1 month	64	8	0	72
	2 months	41	1	0	42
	3 months	13	1	1	15
	6 months	7	2	0	9
	1 year	4	1	0	5
	No response	7	0	0	7
Total		136	13	1	150

*Table 5.3 Malaria incidence and what to do when suspecting the disease*

#### 5.4.2 Knowledge of what to do

The majority of the population sampled 136 (90%) expressed understanding of what to do when they suspect that they or members of their families may have malaria.

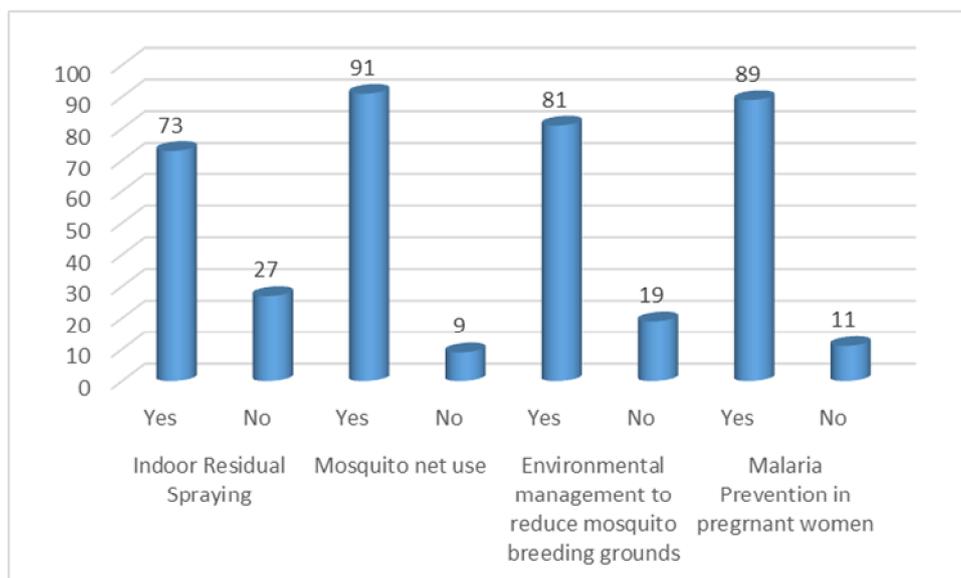


*Figure 5.13 Cross tabulations of malaria incidence in the last 1 year and knowledge of what to do when suspecting malaria*

## 5.5 Information on IRS, Mosquito nets, environmental management and prevention in pregnant women

The general reception of information on the importance of malaria prevention and mitigation measures was fairly high in communication on Indoor residual spraying, Mosquito net use, environmental management to reduce mosquito breeding grounds and malaria prevention in pregnant women. This could be attributed the indicated dominant source of information on malaria prevention i.e. health centres (table 5.9) where information given is usually explained in vernacular.

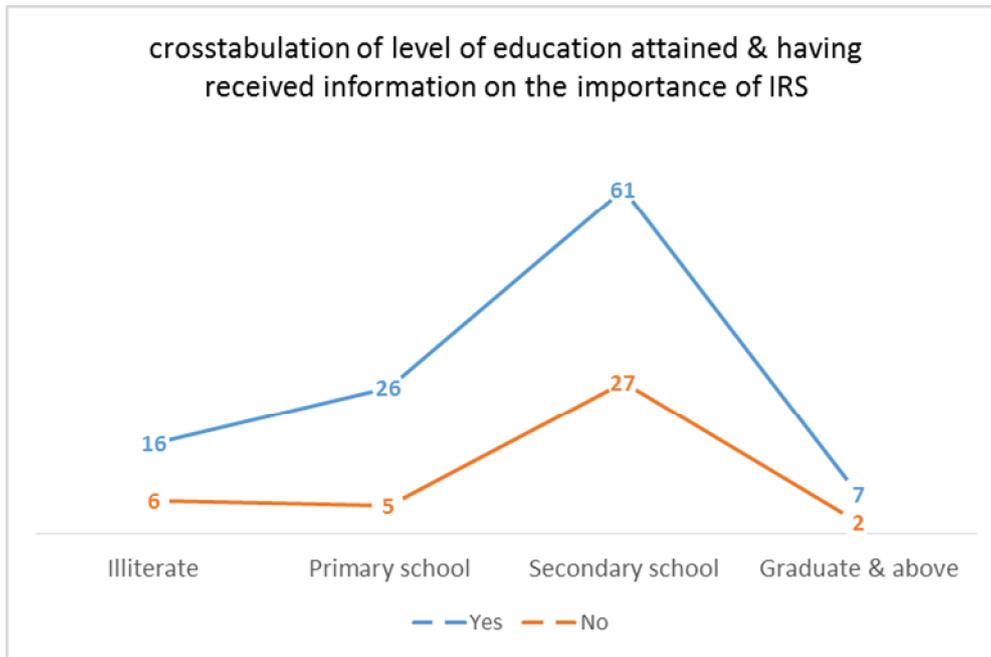
The study showed that 73% of the respondents had received information on the importance of IRS while 27% did not. 91% reported to have received information on the importance of mosquito net use and 81% and 89% on environmental management to reduce mosquito breeding grounds and malaria prevention in pregnant women respectively.



*Figure 5.14 Percentage of respondents who received information and were aware on the importance of IRS, Mosquito Net use, environmental management to reduce mosquito breeding grounds and malaria prevention in pregnant women.*

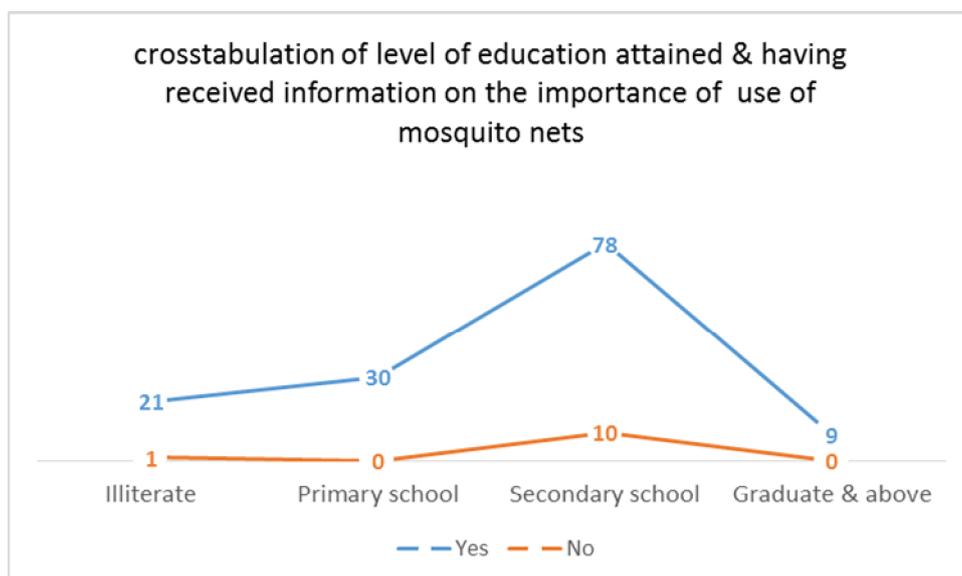
A cross tabulation of education level attained and the above 4 variables revealed that illiterate respondents and those who had attained primary education only were as likely to have received information on the importance of IRS, mosquito nets, environmental management to reduce on mosquito

breeding grounds, and malaria prevention methods in pregnant women, as respondents with a secondary education and higher, figures 5.15.



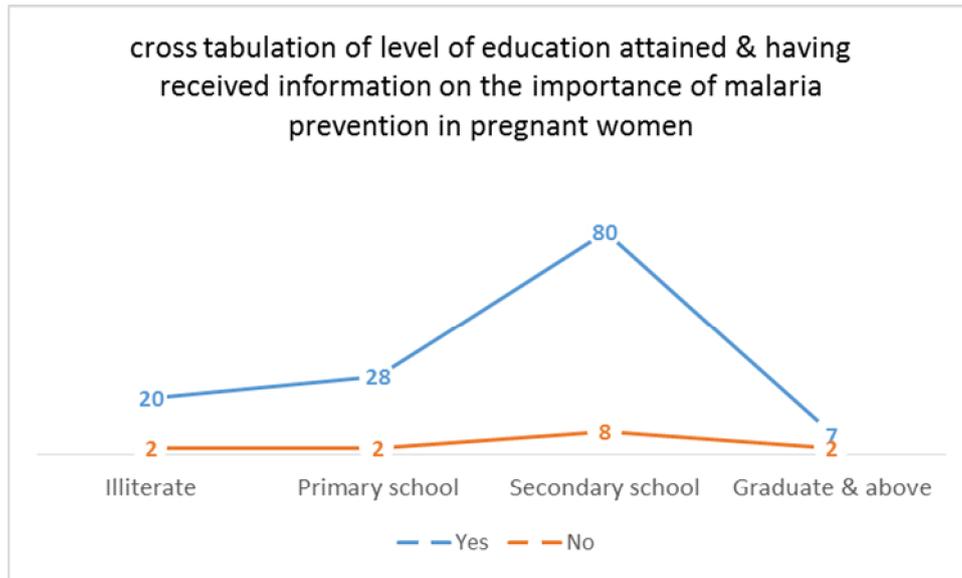
**Figure 5.15. Frequency count of education level and reception of information on importance of IRS**

73% of the illiterate respondents, 84% who attained primary school education, 69% who had attained secondary school education, and 78% of those who had attained graduate level education and above reported to have received information on the importance of IRS with 27% , 16%, 31% and 22% respectively saying that they did not receive the information.



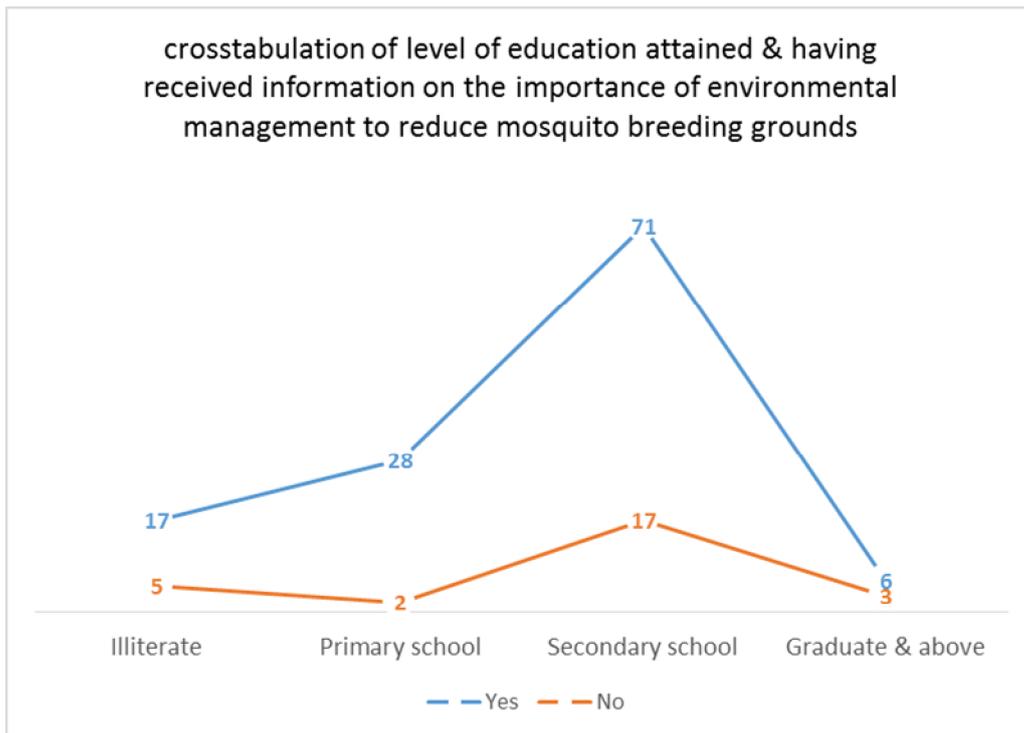
**Figure 5.16. Frequency count of education level and reception of information on importance of use of mosquito nets**

95% of the illiterate respondents, 100% who attained primary school education, 88.6% who had attained secondary school education, and 100% of those who had attained graduate level education and above reported to have received information on the importance of the use of mosquito nets.



**Figure 5.17. Frequency count of education level and reception of information on importance of malaria prevention in pregnant women**

90.1% of the illiterate respondents, 90.3% who attained primary school education, 90.1% who had attained secondary school education, and 78% of those who had attained graduate level education and above reported to have received information on the importance of malaria prevention in pregnant women.



*Figure 5.18. Frequency count of education level and reception of information on importance of environmental management to reduce mosquito breeding grounds*

77.3% of the illiterate respondents, 90.3% who attained primary school education, 80.7% who had attained secondary school education, and 67% of those who had attained graduate level education and above reported to have received information on the importance environmental management to reduce mosquito breeding grounds.

## 5.6 Knowledge attitudes and practices in malaria

### 5.6.1 Knowledge of malaria

#### 5.6.1.1 Attitudes to the severity of malaria

The survey showed that 81% of the respondents considered malaria to be a serious and deadly disease while 13% considered it to be an ordinary disease with 5% of the respondents having no ideas of about the severity of the disease.

Peoplesø attitude towards the severity of the disease was reflected by consequent actions after suspecting that they or members of their family may

have malaria. 95% of the respondents reported to going to a health centre immediately on suspecting that they or members of their family may have malaria. Only 2% of the respondents reported to have waited till it passes.

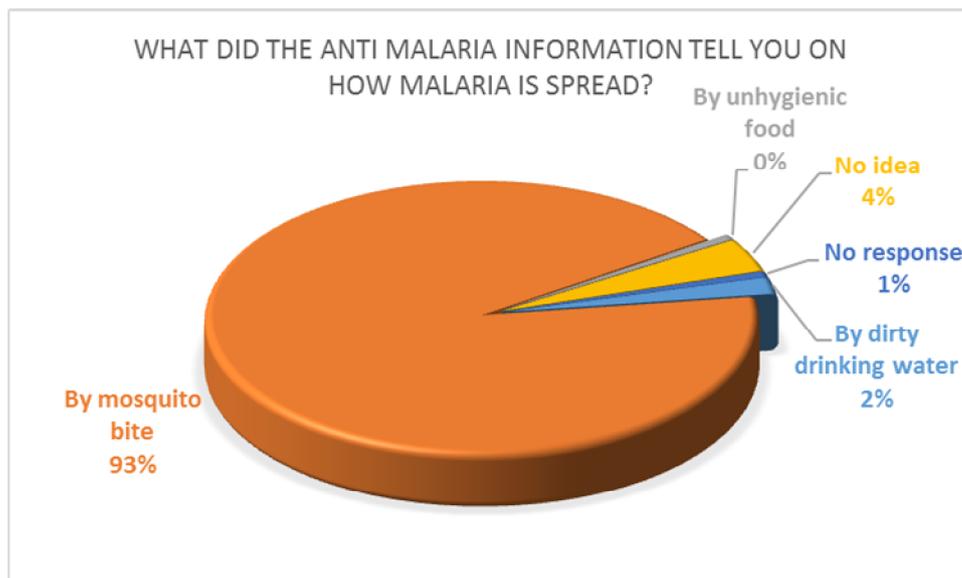
**What did the anti-malaria information tell you about the severity of malaria?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	An ordinary disease	20	13.2	13.3	13.3
	A deadly disease	122	80.8	81.3	94.7
	No Idea	8	5.3	5.3	100.0
	Total	150	99.3	100.0	
Missing	System	1	.7		
Total		151	100.0		

*Table 5.3 severity of malaria*

**5.6.1.2 Knowledge of how malaria is spread**

Awareness of what causes malaria in the population sampled was high with 92% attributing the disease to mosquito bites while only 4% reporting to have no idea as to what causes malaria. However, other beliefs exist as to other sources of malaria such as by drinking dirty contaminated water (2%) and eating unhygienic food (1%), figure 5.17.



*Figure 5.19. How malaria is spread*

### 5.6.2 Knowledge on Transmission of malaria

While knowledge of what causes or transmits malaria is fairly high (92%), there seems to be a gap in knowledge about the mechanism of malaria transmission. 58% of the respondents did not understand that malaria is transmissible from one infected person to another despite most of the people interviewed having the notion that when one member of the family is sick with malaria chances are that another member will also get sick. Figure 5.18. Only 42% of the sampled population understood that mosquitoes can transmit the malaria parasite from one sick person to another and took precautions.

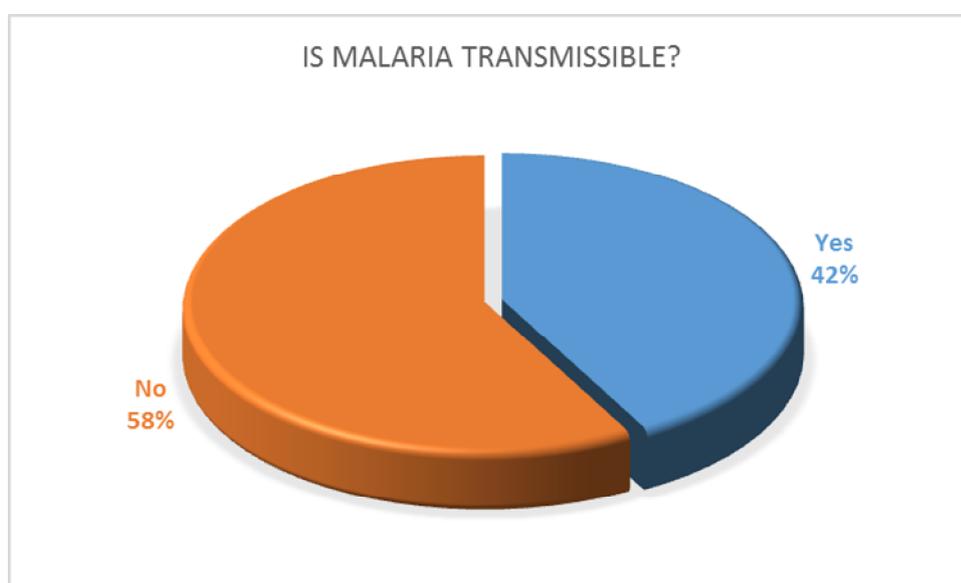


Figure 5.20 knowledge of transmission of malaria

### 5.6.3 Knowledge of mosquito breeding grounds

The majority of respondents (80.5%) indicated that mosquitoes breed in dirty stagnant water as opposed to 4.7% who indicated that they breed in clear stagnant water. While the later may be correct, it was nonetheless encouraging to not that there was understanding that breeding had to take place where water was, and there was distinction between õstagnantö and õrunningö water, tables 5.4 and 5.5. However, it was also noted that most of the respondents who indicated that mosquitoes breed in vegetation and garbage/trash thought so literally. Most did not understand that water logs within the garbage and vegetative matter created troughs big enough for breeding to take place. The

general perception was that water bodies had to be significantly large for mosquitoes to be able to breed there.

**Where do mosquitoes breed in? (d) Standing dirty water;**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	120	79.5	80.5	80.5
	No	21	13.9	14.1	94.6
	Don't know	8	5.3	5.4	100.0
	Total	149	98.7	100.0	
Missing	System	2	1.3		
Total		151	100.0		

*Table 5.4*

**Where do mosquitoes breed in? (c) Standing clear water;**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	4.6	4.7	4.7
	No	134	88.7	89.9	94.6
	Don't know	8	5.3	5.4	100.0
	Total	149	98.7	100.0	
Missing	System	2	1.3		
Total		151	100.0		

*Table 5.5*

Vegetation and garbage/trash were also cited by 37.6% and 30.2% of the respondents respectively as mosquito breeding grounds tables 5.6 and 5.7 respectively.

**Where do mosquitoes breed in? (f) Plants/vegetation;**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	56	37.1	37.6	37.6
	No	85	56.3	57.0	94.6
	Don't know	8	5.3	5.4	100.0
	Total	149	98.7	100.0	
Missing	System	2	1.3		
Total		151	100.0		

*Table 5.6*

**Where do mosquitoes breed in? (b) Garbage/Trash**

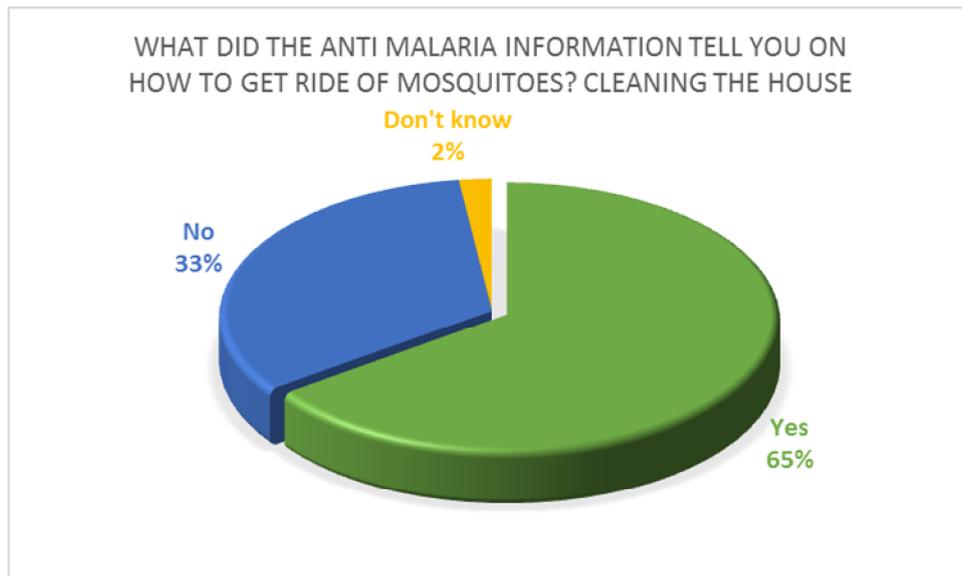
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	45	29.8	30.2	30.2
	No	96	63.6	64.4	94.6
	Don't know	8	5.3	5.4	100.0
	Total	149	98.7	100.0	
Missing	System	2	1.3		
Total		151	100.0		

**Table 5.7**

### **5.7 Misconceptions and alternative beliefs on malaria**

Interviews and discussions with respondents revealed that among the commonly held belief of another source of malaria was being soaked by the rains. These beliefs have a potential to spread if not countered by correct information mostly because they were attributed to word of mouth communication handed down and or from person to person after erroneous interpretation of individual experiences where one may already have been serving as a malaria reservoir, then got drenched by the rains, then manifested symptoms of malaria due to the lowered immunity occasioned by the drenching.

Another highly held misconception on malaria concerned hygiene. 65% of the respondents believed that cleaning the house prevented mosquitoes, **figure 5.19**. This misconception could primarily be attributed to coterminous communication campaigns carried out by health promotion agencies. For example, review of health promotion campaigns revealed that most communications campaigns either overlapped or were carried out simultaneously. Malaria prevention communication campaign carried out or overlapping with cholera prevention communication campaigns elicited such misconceptions.



*Figure 5.21*

### **5.8 Responsive action on suspecting malaria**

The study showed that most of the respondents considered malaria to be a deadly disease which required prompt action. 95% of the respondents revealed that they go/take their members of the family to a health facility when they suspect that they or any member of their family may have malaria, (figure 5.20). This is a significant percentage especially that the majority of the respondents not only preferred health centres for information about malaria but also that most of the respondents cited health centres as able to explain information on the same. However 2% of the respondents indicated that they wait till the sickness passes and another 1% go to a traditional healer while 2% did not respond to the question.

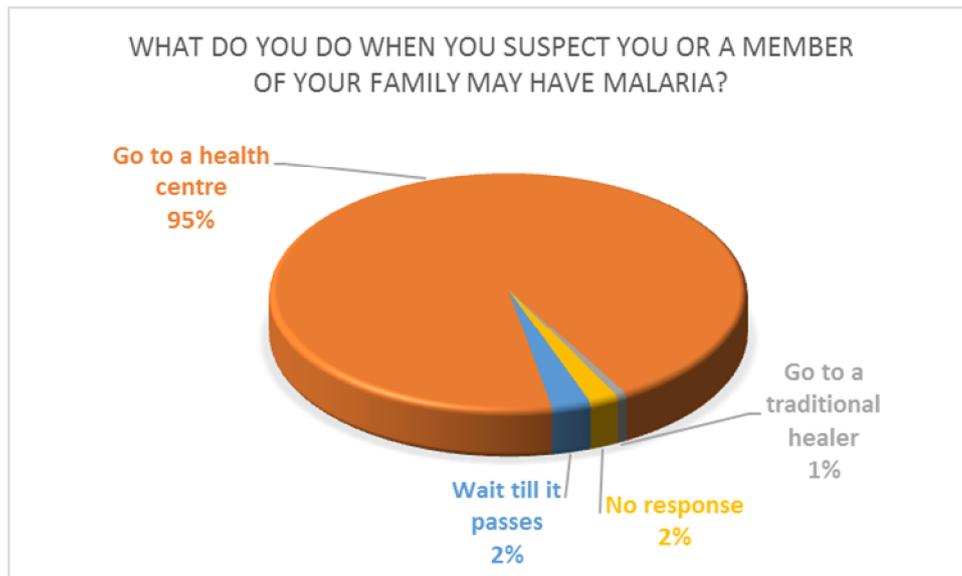


Figure 5.22

In another survey, 95% of the respondents also reported to go/taking members of their family to a health centre upon suspecting malaria. Only 3% of the respondents reported to be in the habit of going to buy malaria medication on their own and self-medicating, while 1% reporting to going to a health centre and self-medicating, **figure 5.22**.

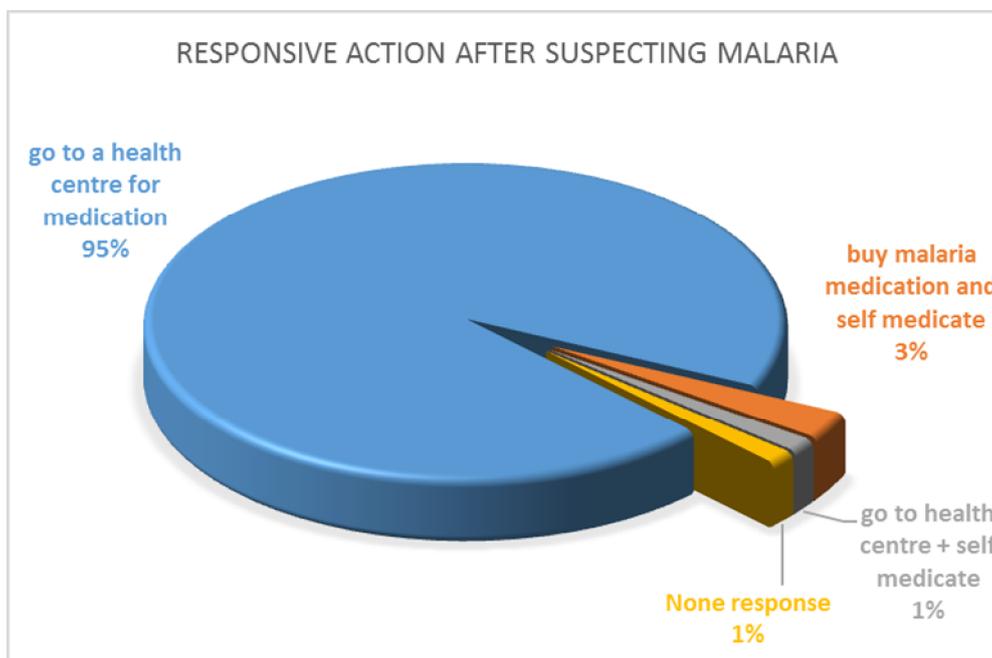


Figure 5.23 source LUFAID malaria baseline survey

## 5.9 Mosquito net ownership per sleeping area

Despite a relatively high number of households owning mosquito nets, the study revealed that discrepancies existed between the number of mosquito nets

owned by a household and the number of sleeping areas in that household. This discrepancy means some sleeping areas do not have mosquito nets. Table # show such discrepancies with a total of 49 sleeping areas out of a total of 510 sleeping areas not owning any mosquito nets at all. The table shows that a total of 4 respondents reported to have 1 sleeping area 2 of which had no mosquito nets at all while the other two had only 1 mosquito net each.

27 respondents reported to have 2 sleeping areas each in their homes with 10 of these respondents having no mosquito nets at all, 6 having 1 mosquito net for the 2 sleeping areas and 11 having the adequate 2 mosquito nets for 2 sleeping areas. 56 respondents reported to have 3 sleeping areas each in their homes with 16 of these areas having no mosquito nets at all, 7 having only 1 mosquito net for the 3 sleeping areas, 10 having 2 mosquito nets for their 3 sleeping areas and 22 having the adequate 3 mosquito nets for the 3 sleeping areas in their households etc., table 5.8.

Interviews with respondents and community members revealed that in a situation where a home did not have adequate mosquito nets, the available mosquito nets were utilised by the parents leaving the children unprotected.

**How many sleeping areas have mosquito nets? \* How many sleeping areas do you have in your home? Cross tabulation**

	Number of sleeping areas in a home?							Total
	1	2	3	4	5	6	7	
Number of 0 mosquito nets per household	2	10	16	15	3	3	0	49
1	2	6	7	2	0	1	1	19
2	0	11	10	3	0	1	0	25
3	0	0	22	10	5	1	0	38
4	0	0	1	11	2	0	0	14
5	0	0	0	0	1	1	2	4
6	0	0	0	0	0	1	0	1
Total	4	27	56	41	11	8	3	150

*Table 5.8 sleeping areas in a home and the mosquito nets available per sleeping area*

### 5.10 Consistency of mosquito net use in adults and under 5 children

Consistency of use of mosquito nets stood at 63% for respondents reporting to sleep under a mosquito net every night while 26% of the respondents only slept under mosquito nets sometimes. 7% reported to have mosquito nets but chose not to sleep under them for one reason or another while 4% did not respond. Consistency in mosquito net use was higher in adults than in children under 5 years of age with 41.4% being supervised to consistently sleep under a mosquito net every night. The number of children under 5 years who did not sleep under mosquito nets at all was significantly high with 33.6% of the respondents reporting the same for their children. 15.2% of the children were reported to only sleep under mosquito nets sometimes, LUFAID malaria baseline survey (2012).

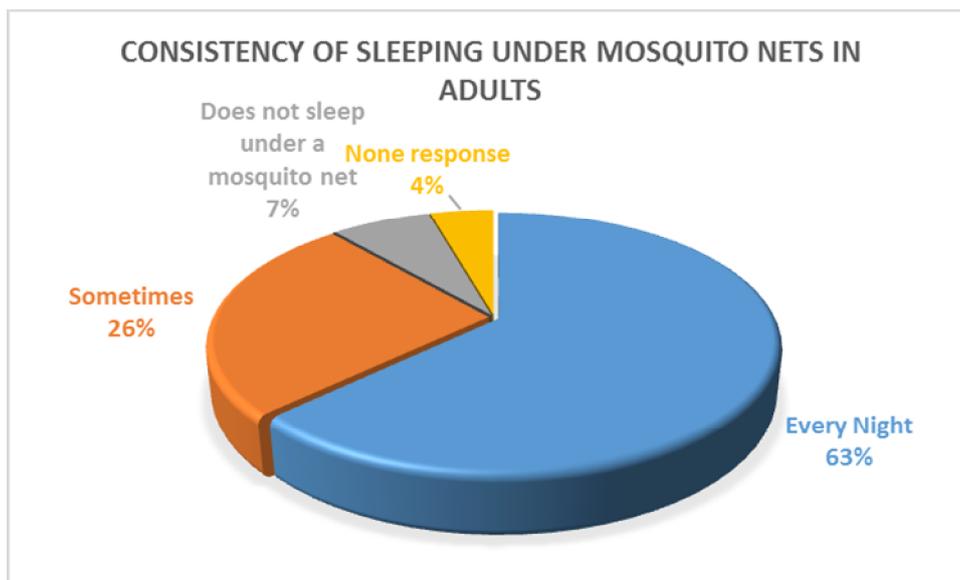
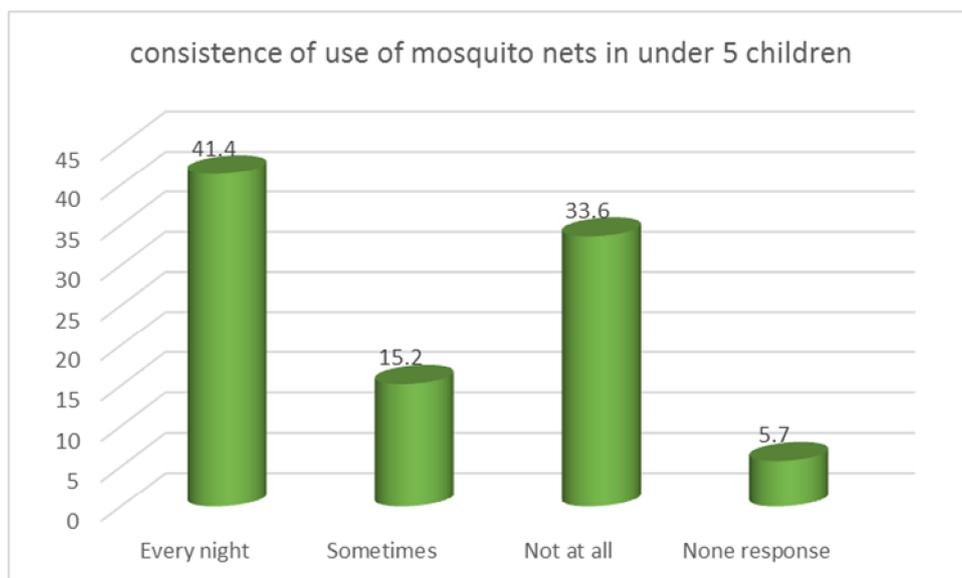


Figure 5.24. Source Lufaid malaria baseline survey



*Figure 5.25*

### 5.11 Sources of information on malaria prevention

The study showed that the health centre is the highest cited source of information about malaria and how to prevent it with 126 (84%) respondents getting their information from there. The trend is only seconded by radio which was cited by 97 respondents as being the source of malaria information. A cross tabulation of these two sources of information showed that 88 respondents got there information on malaria prevention from both these sources, **table 5.9**

**Where did you hear about how to prevent malaria? (a) Health centre; \* Where did you hear about how to prevent malaria? (c) Radio; Cross tabulation**

		Where did you hear about how to prevent malaria? (c) Radio;		Total
		Yes	No	Yes
Where did you hear about how to prevent malaria? (a) Health centre;	Yes	88	38	126
	No	9	14	23
Total		97	52	149

*Table 5.9*

Newspapers have been the least utilised in malaria communication with only 7 respondents having gotten malaria communication from them. 60 respondents claimed to have gotten malaria communication from television with only 6 respondents having gotten the information from both Newspapers and television, **table 5.10**.

**Where did you hear about how to prevent malaria? (d) TV; \* Where did you hear about how to prevent malaria? (b) Newspaper; Cross tabulation**

	Where did you hear about how to prevent malaria? (b) Newspaper;		Total
	Yes	No	Yes
Where did you hear about how to prevent malaria? (d) TV; Yes	6	54	60
No	1	88	89
Total	7	142	149

Table 5.10

Malaria communication through word of mouth by relative and friends were also among the least used communication channels. The study showed that only 4% of the respondents heard of malaria prevention methods from relatives or friends.

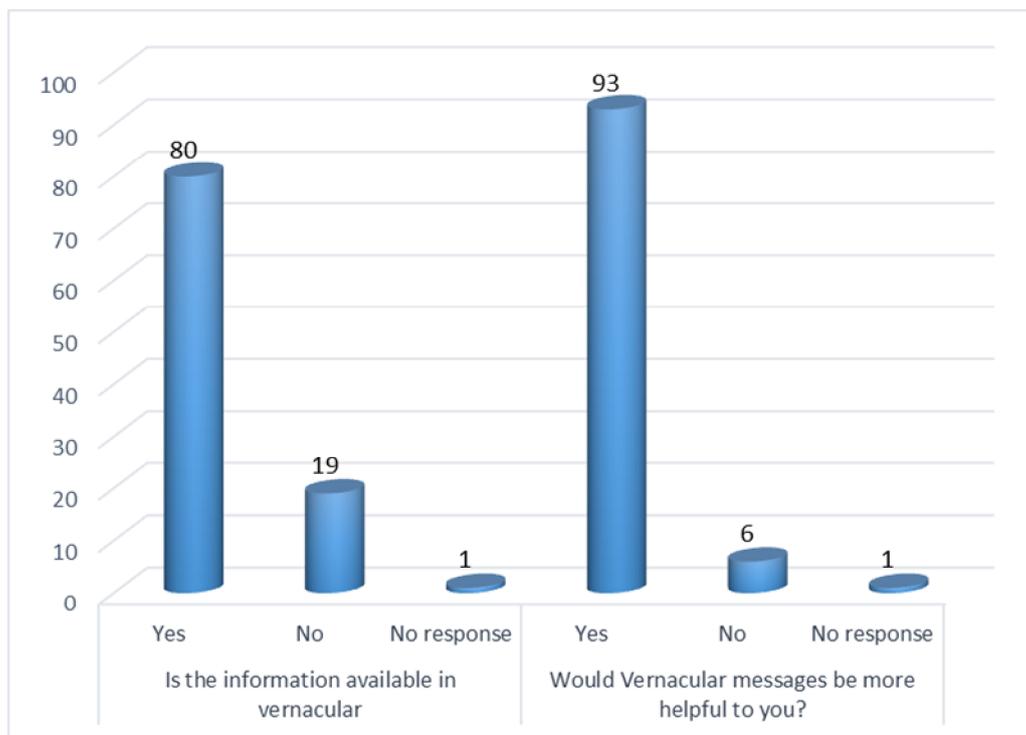
**Where did you hear about how to prevent malaria? (e) Relatives or friends;**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	4.0	4.0	4.0
	No	143	94.7	96.0	100.0
	Total	149	98.7	100.0	
Missing	System	2	1.3		
Total		151	100.0		

**Table 5.11**

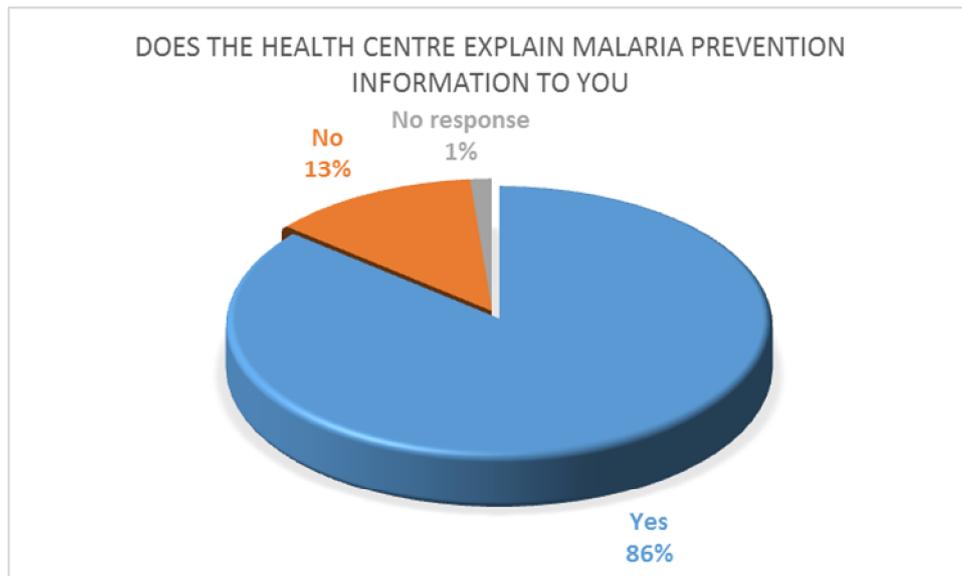
### 5.12 Availability of anti-malaria information in vernacular

Formal education and the ability to read and understand the English language are very important where communication is only available in English. The study showed that 80% of the respondents had seen and read malaria communication in the vernacular language Bemba. It further showed that 93% of the respondents thought messages in the vernacular language were more helpful in understanding issues about malaria and how to prevent and treat it.



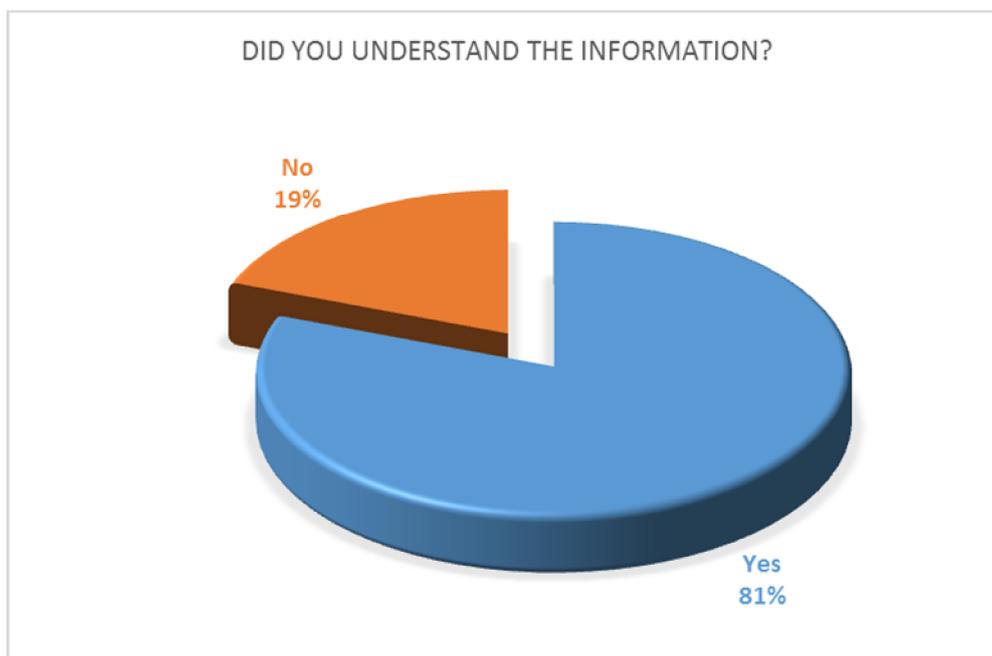
*Chart 5.26. Percentages availability of anti-malaria information in vernacular*

As previously seen, the health centres are the highest (in terms of percentage) sources of information on malaria and its prevention methods. 86% of the respondents said the health centre they went to explained malaria prevention information to them. 13% of the respondents indicated that the health centre they went to did not explain malaria prevention information to them.



*Figure 5.27*

81% of the respondents indicated that they had understood the information about malaria as received from the different communication channels. 19% of them indicated that they had not understood the information.



*Figure 5.28*

From a cross tabulation of education levels and how the respondents classify their knowledge of malaria and its prevention methods, the study showed that although respondents who had reached secondary school predominated in categories of very good knowledge of malaria prevention methods (60%), good knowledge of malaria prevention methods (52%), prevention methods communication seem to have transcended formal education barriers with even

the illiterate category having fairly good representation in the very good and good categories.

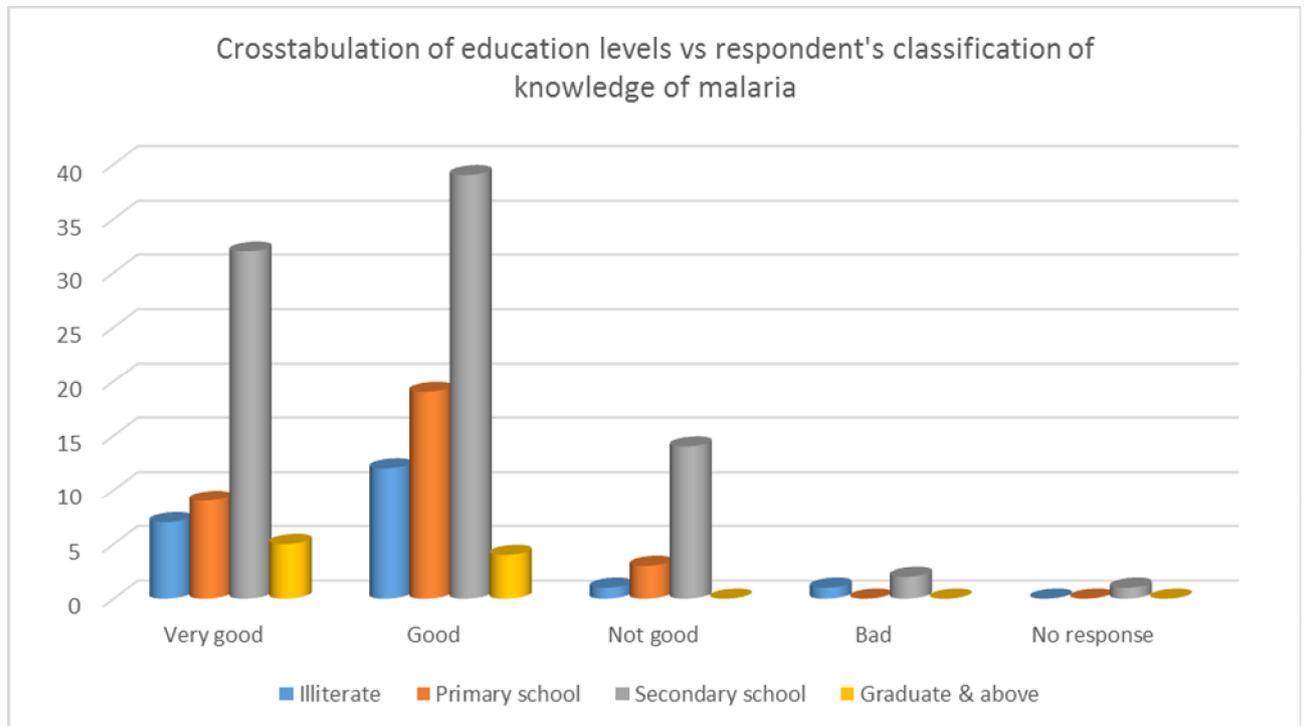
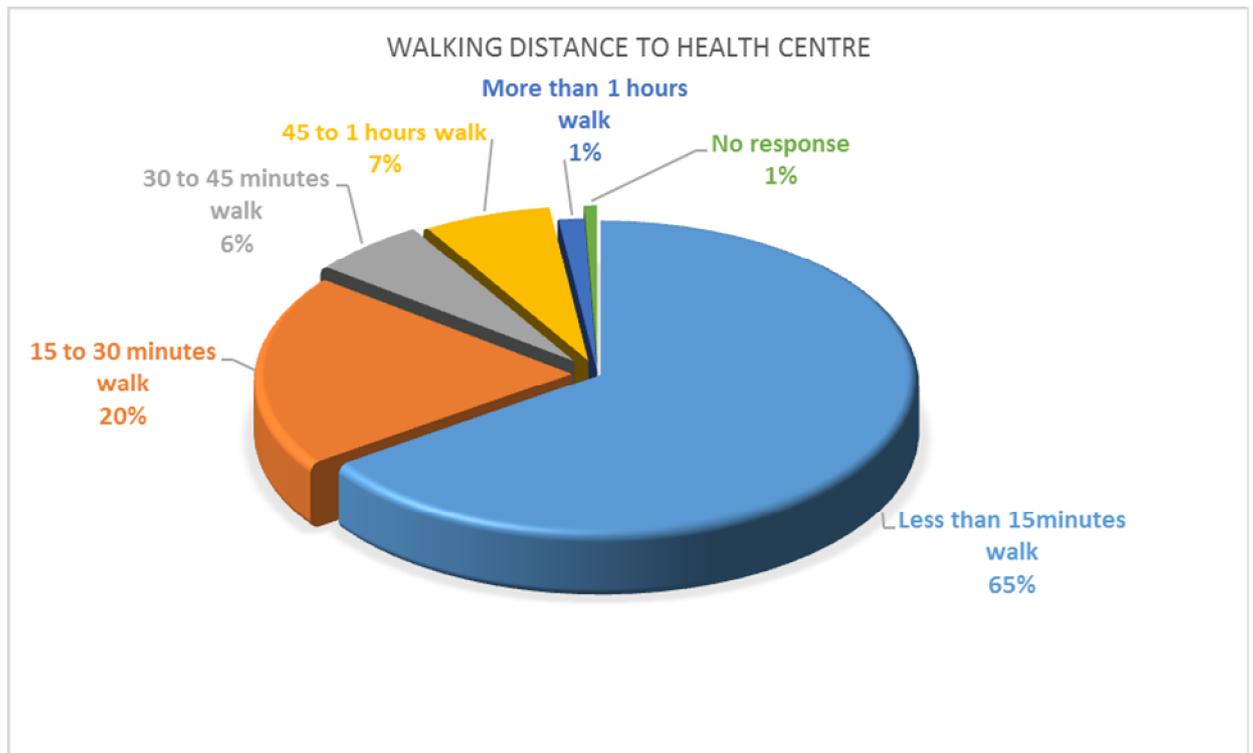


Figure 5.29

### 5.13 Access to health facilities

Distance to health facilities for the respondents is a major factor in response to malaria or its symptoms as this basically defines access to health facilities. However, because of how the Mansa town was planned 3 major health facilities are available to them. These include Senama clinic, Central clinic and Mansa general hospital. Other health facilities exist such as the Red Cross clinic. 65% of the respondents reported that they have to walk for less than 15 minutes to the nearest health facility from their residence, while 20% reported to walk for 15 to 30 minutes to the nearest health facility from their residence. The relatively short distances for most of the sampled populace to health facilities could be a factor to the relatively high response to why people report they go to a health facility upon suspecting malaria.



*Figure 5.30*

#### **5.14 Communication channel associated most with malaria communication**

Respondents were asked to state which communication channel they associated most with malaria communication. This was to enable the researcher to get an idea of the communication channel most used in malaria communication. 76.5% of the respondents cited radio as the channel the associate most with malaria communication. This was followed by the respective health centres which accounted for 71.8%. TV followed with 45.3% while Posters and fliers, Newspapers, and relative and friends accounted for 8.7%, 3.4%, and 0.7% respectively, figure 5.29.

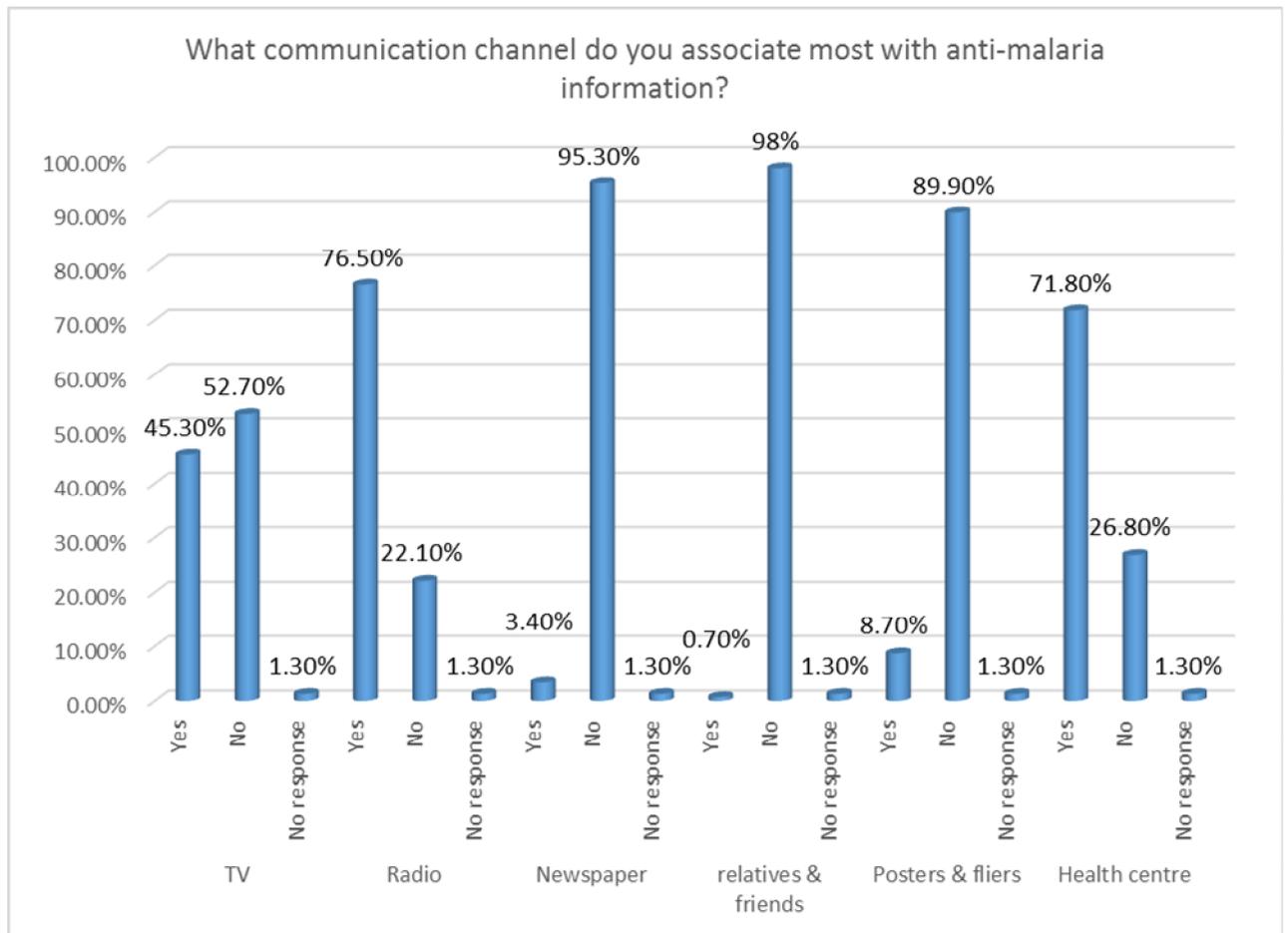


Figure 5.31

### 5.15 Communication channel preferred for Malaria communication

The study revealed that the health centre is the most preferred mode of communication for the sampled communities. 73% of the respondents reported that they would prefer receiving malaria information from Health centres. Radio was the second most preferred communication channel with 70% of the respondents preferring it to other communication channels. TV received 51% preference while Posters and fliers got 19% citation. Newspapers were among the least preferred communication choice with 8% while relatives and friends received the least preference with only 2%. Preference of the health centre could stem from convenience. It is convenient for the people to get health information when they are at a health centre as well as the explanations rendered by health personnel because health centres are seen as custodians of matters pertaining to health.

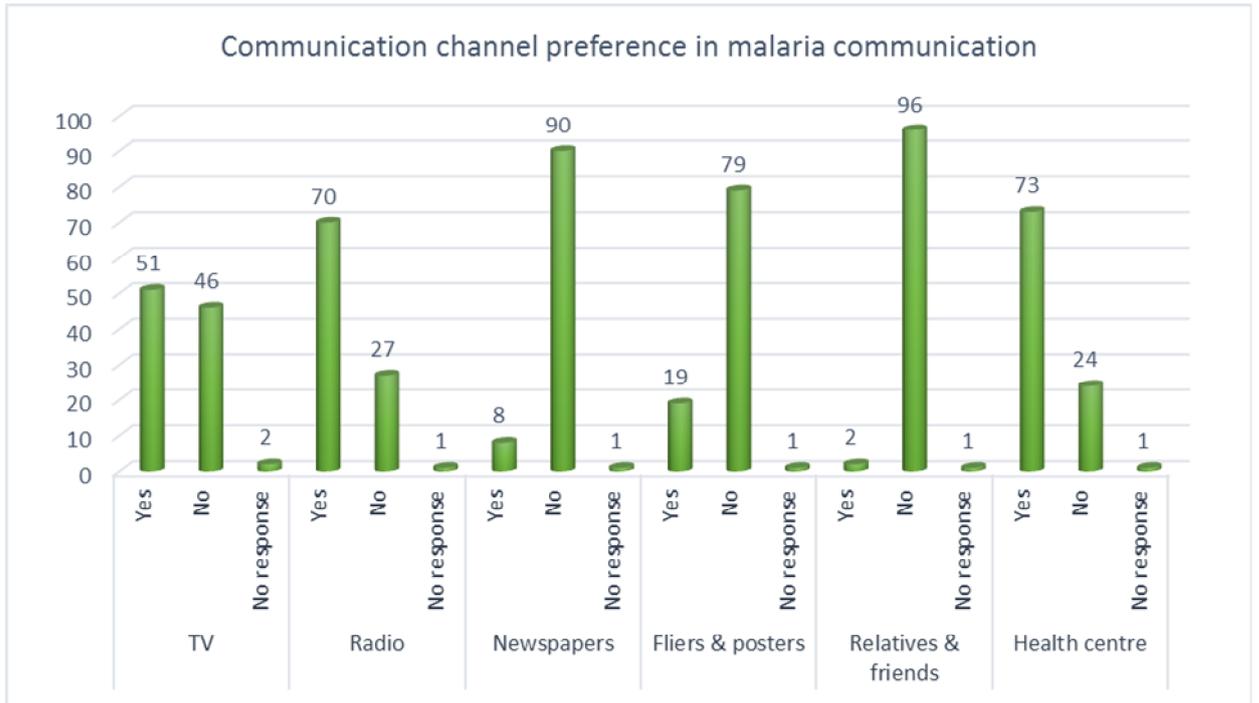


Figure 5.32. Percentages of respondents with the communication channel they preferred in malaria communication

### 5.16 Respondent's view on adequacy of anti-malaria information

The study showed that 21% of the respondents thought there is not enough information on how to fight malaria while 79% thought there was adequate information on the subject with radio, TV and the health centres being the most preferred sources of the information.

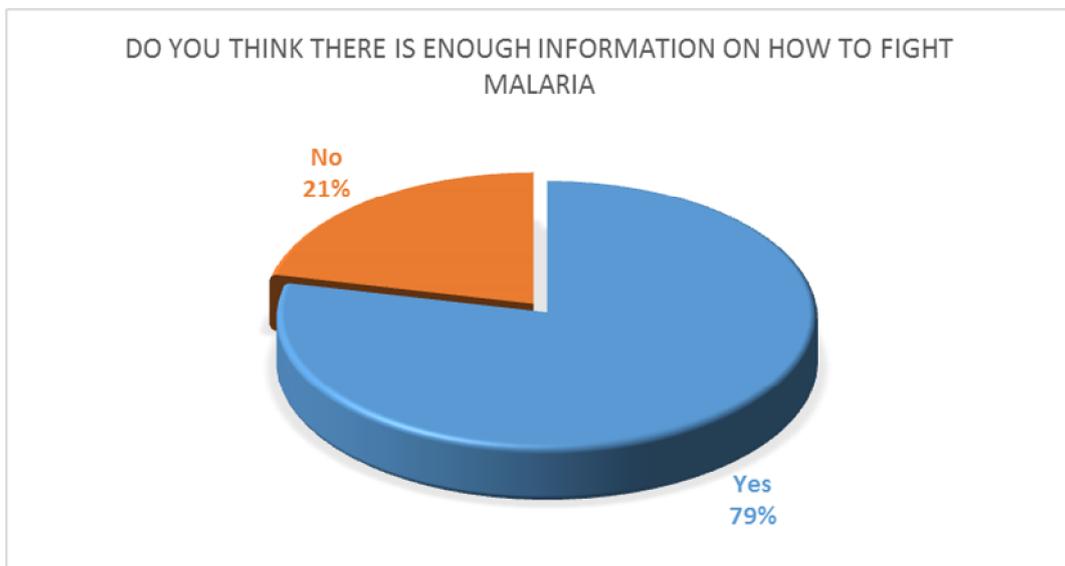


Figure 5.33

### 5.17 Perception of vulnerability

It was discovered that the majority of the respondents rightly perceived children to be more at risk of getting malaria with 68% indicating to the effect. However, it was also discovered that only 7% thought pregnant women were also in the high risk group. 17% thought that both pregnant women and children under 5 years old were at high risk. The low association of pregnant women being at high risk of getting malaria could be attributed to little to non-existent understanding of the implications that pregnancy has on the immune system and the consequences that malaria may have on the pregnancy and foetus were the mother infected. Consequently, this is an alarming statistic as this would imply fewer adherences to malaria prevention and treatment measures by pregnant women.

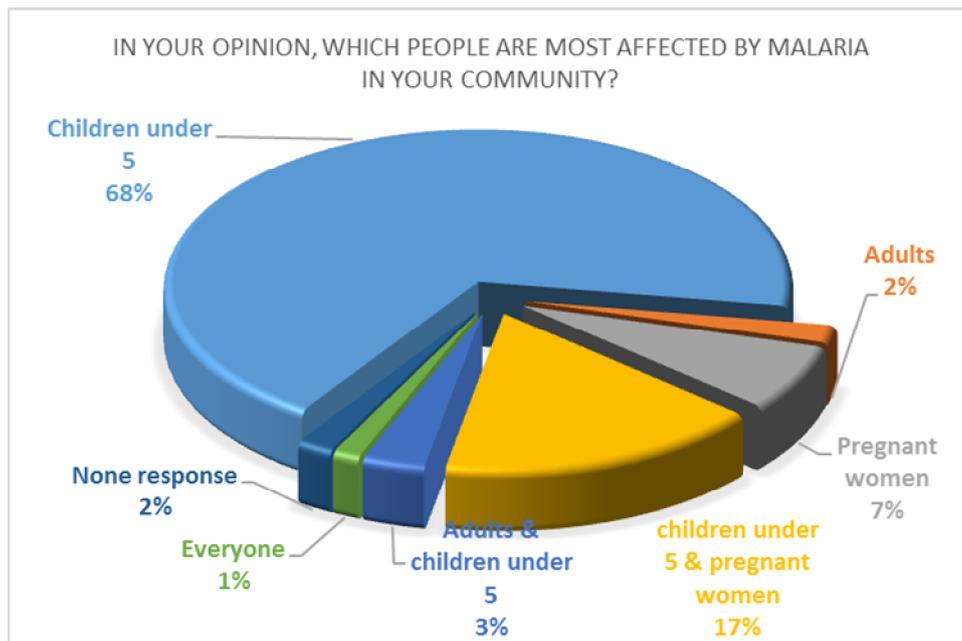


Figure 5.34. Respondent's perception of who is most vulnerable to malaria

## CHAPTER SIX

### 6.0 DISCUSSION OF FINDINGS

#### 6.1 Introduction

This chapter discusses the findings of the study as presented in Chapter 5. The discussion has been given with the research objectives and questions as the basis and also relates the findings with what has been documented in the given Literature Review and the Theoretical Framework.

#### 6.2 Discussion

Based on the findings, it is clear that malaria remains a problem with a high incidence rate. The study showed a high response rate of 142 (94.3%) respondents out of 151 claiming that they or a member of their family had had malaria in the past 1 year. This statistic is despite the various efforts by The Ministry of Health and its National Malaria Control Centre under the ministry's Health Promotion Unit and its supporting partners.

Malaria has in the past few years received attention as an unrecognised killer pegged as the number one killer disease in Africa. Though it is older and has had grander effects on especially populations in the tropics than the highly publicised HIV and AIDS, malaria has not received the danger status that it should. With this attention has come international aid to help combat the disease.

Reasons to the high incidence rate may be many but may include:

#### 6.3 Population and environmental conditions of the sampled communities

The findings confirmed that though there are efforts to fight the disease, malaria continues to be a burden and problem for the people of Kaole ward. This is because the malaria vector continues to thrive in the environmental conditions and nature of human settlements characterised by dense populations in areas such as Chitakwa and Kabwasha village. As much as it is appreciated that little to nothing can be done about the weather conditions that encourage mosquito breeding, environmental management and human

settlement planning can be manipulated to counter mosquito contact with the people. For instance, the nature and close proximity of the housing units in part of the sampled communities i.e. Chitakwa village and Kabweshwa village could lead to easier transmission of the parasite from one person to another. This is because the mud brick and thatched roof huts that the majority of the sampled communities live in are highly porous with uncovered holes that are meant to facilitate ventilation. These holes remain uncovered during the night for most of the year due to the warm to hot weather conditions experienced in the area. The holes provide entry ways for mosquitoes from hut to hut. Coupled with the apparent low awareness of how malaria is transmitted (*Figure 5.18 knowledge of transmission of malaria*), population density and the nature of the housing units, malaria transmission may be encouraged from a sick person to another. This is because an infected person can act as a carrier of the malaria parasite while not exhibiting symptoms.

As regards to the other residences where the study took place such as Spark Compound and Farm Institute, though their housing structures are fairly-modern to modern, their proximity to water bodies ensure a continued exposure to mosquitoes. Farm Institute for instance has fish ponds previously made for fish farming but currently only serve as breeding grounds for mosquitoes. These ponds, without fish which feed on the mosquito larvae continue to be a health hazard to the surrounding community.

### **Subcontracting health promotions agencies**

As earlier mentioned, staffing at provincial and district health offices in the health promotion department is very low. As such, very few personnel is available in the design and implementation of health promotion messages. Government through the Ministry of Health and its supporting partners therefore usually subcontract other organisations to run campaigns on their behalf. As practical as this may be, better scrutiny is needed for subcontracted organisations ensuring adherence to deliverables and goals at the implementations stage and proper evaluation of their interventions. This is because subcontracting organisations rarely own the projects they are subcontracted for hence may doctor data to suit contracting agency needs.

The motivating factor for these organisations is most often the monetary gain and not the provision of the service for which they are subcontracted.

### **Campaign design**

Most campaigns reviewed showed a design approach that did not encompass the community's input in problems and solutions identification. Apart from that, the campaigns mostly aimed at information dissemination rather than education. However, it was the researcher's view that especially in low-education populations, it is not enough to merely impart information without ensuring understanding of the same information.

### **Communication channels**

The findings have shown that communication efforts have facilitated awareness about the various aspects of the disease. The retinue of communication efforts have included the imparting of information on such aspects as what the cause of malaria is, how to protect oneself and what to do when one suspects they or a member of their family may have malaria including symptoms to look out for.

The communication channels used in most of the observed and reviewed campaign included Radio, TV, Posters and wall paintings, fliers, drama shows and health centres. It was noteworthy that Newspapers, and fliers and posters were among the least preferred channel of communication while Health Centres, Radio and TV were the most preferred channel of communication. It was interesting to note that while posters and wall paintings of malaria messages are many in Mansa town and in strategic locations such as wall fences of schools, clinics and hospital as well as at wall fences at some government institutions, very few people associated them to malaria communication. It is almost as if they are not noticed with only 7% associating them to malaria communication.

Radio, being the preferred mode of communication for most rural communities has not received its fair share as a communication channel for malaria communication in Mansa even though the association is high with 76%. This could be attributed to the fact that only 1 radio station was well

established during the study but since then another local radio station has been set up. Radio Yangeni, a Roman Catholic Church ran station was the only local station that disseminated malaria prevention information in vernacular as well as English. Supplementary but not local radio stations included Radio 4 and Radio 2, both National Broadcasting Corporation stations transmitting alternatively from Lusaka and the Copperbelt.

However, Radio Yangeni is not a community run radio station where community members are involved in making programming and thereby facilitating community involvement and discussion on such matters as the community may wish. This rather limits the channel as discussion with community members can only take place through phone-in programmes or panellist invited to discuss topics of the stations choice.

TV received 45% association to malaria communication. Apart from satellite TV, the only TV signal Mansa receives is that of national broadcaster ZNBC.

Health centres provide a more solid face-to-face information channel as interaction is on a personal basis. The high regard that medical practitioners are held accords them a special advantage in instructing people on disease prevention measures and repercussion on not heeding their instruction. Visual aids where available can also help in explaining issues associated with mosquitoes and malaria in general. The popularity of health centres as information sources can therefore be appreciated with 71% association to malaria communication.

#### **6.4 Poverty and malaria**

Poverty is one of the key determinants of health. According to Heggenhougen et al (2003), poverty is both a cause and a consequence of ill health. Ill health can lead to poverty by interfering with the individual's capacity to produce while at the same time requiring the family's few remaining resources to pay for treatment. The poor are less likely to have access to health services or to have savings to get them through the periods when they are sick and unable to work.

According to the United Nations International Children's Emergency Fund (UNICEF), malaria is a major cause of poverty and poverty exacerbates the malaria situation (UNICEF, 2000:1). The study showed a variegated socio-economic status of the sampled populations with a predominant low income to poor group of 50% earning below K500, 000 (Kr 500) equivalent to below \$94 per month. The second lowest income group were those earning between K500, 001 to K1, 000,000 per month (Kr 501 to K1, 000) equivalents to between \$94 and \$188 per month. The low income of most of the respondents indicates a high susceptibility to poverty. With low income come economic burdens such as failure to provide for one's family. In most homes this would mean concentrating on spending on the little food that could be gotten, this is hardly managed in families averaging 7 per household (figure 5.4 *Respondent's distribution by number of people in a household*) while expenditure on health is neglected. Furthermore, a meagre income entails poor nutrition to malnutrition. A malnourished person is more likely to have a poor immune system hence is highly susceptible to disease.

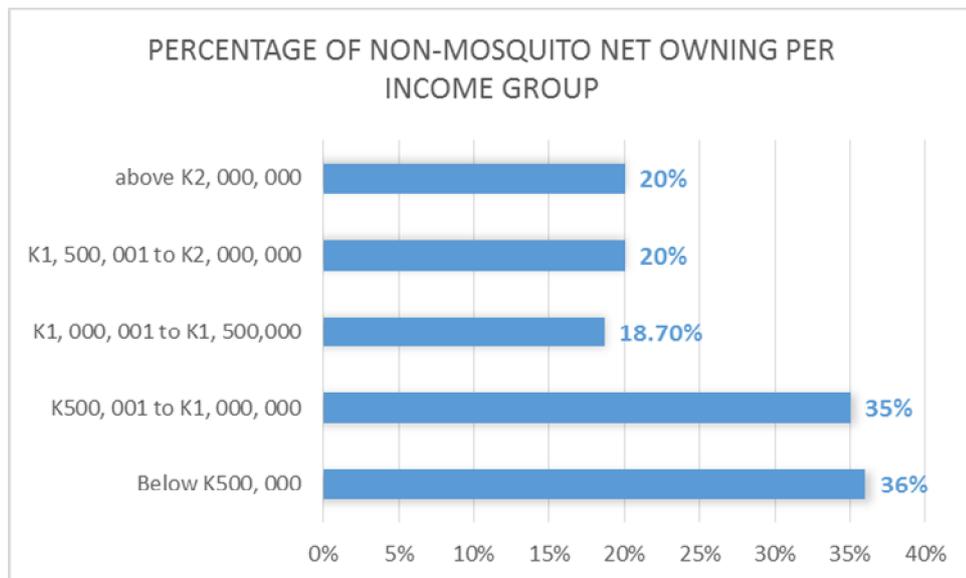
Malaria therefore becomes part of a socioeconomic depression complex from which people have difficulty singling it out for particular concern. Even where it is a particular burden, faced with other immediate problems such as hunger, the people cannot understand why malaria should be selected for elimination rather than poverty, hunger, or other diseases or conditions. The result is at best passive interest in prevention measures which in turn may interpret into lack of behaviour change that should start with awareness.

#### **6.4.1 Mosquito net ownership vs. poverty**

At present, the primary recourse in preventing malaria, at least until a suitable vaccine is found, is to break the chain of transmission between mosquito vector and human host. Since the ground breaking research of Bradley and Greenwood in The Gambia (Bradley et al, 1986), which showed a significant inverse correlation between mosquito net usage and mortality, much hope has been pinned on the use of mosquito nets in malaria control. As earlier mentioned, mosquito nets offer a barrier between mosquitoes and the human

being thereby presenting the last defence against mosquito bites. The availability of mosquito nets is therefore crucial in the fight against malaria.

The study showed a relatively high mosquito net ownership statistic with 69% of the sampled population claiming to own mosquito nets (**figure 5.6**). The study further showed that low income groups had less number of mosquito nets by percentage when compared to high income groups. The study showed that 36% of the low income group of those earning below K500, 000 did not own mosquito nets. This is compared to 35% in the income range K500, 001 to K1, 000, 000, 18.7% in the income range K1, 000, 001 to K1, 500, 000 and 20% in the last two income ranges K1, 500, 001 to K2, 000, 000 and above K2, 000, 000.



*Figure 5.11 Percentage of non-mosquito net owning per income group*

With reference to the income earned per month and the retail price of mosquito nets (usually above K45,000 constituting about 9% of the total income of those earning K500, 000), it is safe to conclude that most families would not afford buying mosquito nets especially that most households have more than 2 sleeping areas. Therefore for households which may not have received free mosquito nets buying one may not be a priority. Government and cooperating partners free mosquito net distribution programmes have therefore benefited a lot of the people who would otherwise not be able to

afford. These free mosquito net distribution programmes explain the relatively high mosquito net ownership among the lowest income group.

## **6.5 Mosquito net usage**

Though mosquito net ownership was 69%, mosquito net usage was almost half with only 36% of the respondents using the mosquito nets they owned. 33% did not sleep under their mosquito nets though they owned them. 31% of the respondents did not own mosquito nets at all corresponding to about 46 households from the total 151 sampled households, (*Figure 5.6. Percentage of respondents who owned or did not own mosquito nets*). The above statistics basically means that 64% of the respondents did not own and or use mosquito nets corresponding to about 96 household. This is a low usage statistic.

Interviews pointed out that the primary reason for mosquito net usage in this study was avoidance of the nuisance of mosquito bites during periods of high mosquito density, and not necessarily to prevention of malaria. Here again we see that the respondents did not attach too much risk in getting malaria by being bitten by the mosquito. This is despite a relatively high number of respondents being aware that mosquito bite may cause malaria (*figure 5.19 how malaria is spread*).

Reasons for not using mosquito nets included complaints of claustrophobia, breathing difficulties, and itchiness brought about by the chemical treatment of the mosquito nets. Most of the respondents complained that it became too hot sleeping under a mosquito net as ventilation was limited especially in the hot humid season when mosquitoes thrive.

The low usage statistic could among other reasons explain the high incidence rate of 94% in the past year leading to the study, (*Figure 5.13 Cross tabulations of malaria incidence in the last I year and knowledge of what to do when suspecting malaria*).

Using Vroom's Expectancy theory, it could be that the people do not see the connection between effort, performance and reward. The efforts of procuring a mosquito net, having the house sprayed (with all the inconveniences involved)

do not justify the perceived low chance of getting malaria when most of them get bitten but do not get sick. The issue could be that while the people believe that malaria results from mosquito bites, they are confused as to why most of the times they get bit they do not get malaria. This again is because of lack of information and understanding about mosquitoes that transmit malaria and those that do not and the times that malaria vector mosquitoes bite. For instance interviews showed that there was very little awareness of types of mosquitoes that transmit malaria and the likely times that they bite. General understanding was that all mosquitoes transmit malaria.

### **6.5.1 Misuse of mosquito nets**

Although trends in mosquito net ownership may be fairly high, it was discovered that a myriad alternative uses for the product had been devised by the local populace. Alternative uses included using the nets for fishing, as material for personal garments, and as covering for a variety of structures such as gardens to keep out small animals such as chickens and covering for such structures as outside ablution blocks. This trend was rampant especially in the village setting of Chitakwa village.



*Picture showing mosquito nets used as barriers for vegetable gardens in Chitakwa village*

## **6.6 Mosquito nets per sleeping area**

The study showed that there is a high discrepancy between the number of mosquito nets owned per household and the number of sleeping areas, (table 5.8, *sleeping areas in a household and the number of mosquito nets available per sleeping area*). The study revealed that only 47 households had the adequate number of mosquito nets corresponding to the number of sleeping areas in the households respectively. This corresponds to 31% of the total households sampled. Essentially this means only 3 in every 10 households had the adequate number of mosquito nets to sleeping area.

Furthermore, discussions with the Community Malaria Agents (CMAs) from 20 different communities in Mansa district revealed low knowledge of prioritising mosquito nets in a household where there are shortages in relation to sleeping areas. It was discovered that parents usually utilised the net leaving the children unprotected though vulnerability showed that most people considered children under 5 years old to be the most vulnerable, (figure 5.31, *respondent's perception of who is most vulnerable to malaria*). Here again is another area where information is needed to explain vulnerability in children under 5 years old and pregnant women.

## **6.7 Education literacy and awareness of malaria**

The benefits of literacy are proven to improve people's livelihood in various ways. For instance, there is ample evidence supporting the direct relationship between basic education and positive health indicators, manageable families, higher agricultural productivity, higher family income, and other social and economic indicators (UNESCO 2007, P.18). The study showed a fairly high education/literacy levels with over 84% of the respondents having reached at least Primary level education. The high literacy levels could explain the also relatively high statistic of people who were aware of what causes malaria and prevention measures associated with the disease and what to do when they suspect that they or members of their family may have malaria (90%), (figure 5.3, *Respondent's distribution by level of education attained*).

### **6.7.1 Awareness about IRS, mosquito net use, environmental management and IPTp**

The study showed a high awareness of IRS, Mosquito net use, Environmental management and Intermittent Preventive Treatment in pregnancy across all educational backgrounds, (*figures 5.12, 5.13, 5.14, 5.15, and 5.16*). The high awareness was especially through the health centre as the source of information with 73% of the respondents having gotten their information on malaria from there. Awareness of importance of IRS stood at 73% while mosquito net use stood at 91%, environmental management at 81% and malaria prevention in pregnant women through IPTp at 89%.

The distance that most of the respondents had to walk to the health facilities was relatively short making the health facilities accessible. Also the health facilities are a constant physical place where information could be obtained at any time during working hours and on demand while the other channels are not.

#### **Spray agents shortcomings**

It was discovered that while spray agents are equipped with basic instructions of what information to impart on the households while undertaking IRS programmes, they are not adequately informed hence the information they impart is somewhat lacking. For instance, it was found out that only 59.6% of the respondents had been explained to on how the insecticides work and what to expect upon spraying while 21.8% were explained to after spraying. Information such as the need to leave the chemicals on the walls even though they may be aesthetically displeasing is not imparted on the populace leading to their washing of the walls immediately after spraying. The low percentage (21.8%) of households at which spray agents explained what to do after the spraying indicated that re-emphasising and repetition of messages did not take place. Messages are therefore not inculcated in the recipient's minds.

Aside those who understood that mosquitoes have developed resistance to insecticides, spray agents were the most cited reason for reduced efficacy of the insecticides with most of the people suspecting them of diluting the

chemicals too much so as to render their potency low. The remaining chemicals, it was said, were sold to farmers for use on their fields.

## **6.8 IRS resistance and perceptions**

The study showed a 74% positive response for household which had been sprayed for mosquitoes in the last 12 months through the IRS programme. Though fairly high, the remaining 26% households which had not been sprayed pose a threat to the sprayed houses because they may harbour mosquitoes. However, due in part to the recent media announcements by the National Malaria Control Centre on the efficacy of the spray chemicals used in IRS due to vector resistance and the already existing scepticism that the people interviewed had on IRS; it is expected that spray agents and IRS programmes will have more resistance from the people. Furthermore IRS programmes are carried out once a year before the onset of the rainy season leaving the rest of the year prone to malaria vector.

### **Considerations in future IRS programmes**

Among cardinal areas of concern for future IRS programmes are issues dealing with dispelling of myths surrounding the chemicals used and increasing people's confidence in the efficacy of the chemicals. Because spray agents are the final implementers of the IRS programmes, their training and education should get centre stage if wrong perceptions are to be dispelled. Myths and issues of chickens dying after eating cockroaches that have died from the insecticides should not arise if spray agents properly inform the people on how the insecticides work. Effects on human beings that are 'normal' should be explained so that the people know what to expect after spraying. For instance, itching is expected when the chemicals come into contact with the skin. Issues of touching and or cleaning the walls should be explained with particular emphasis on explaining the 'residual' nature of the chemicals. As an added advantage, communication efforts should also play up the insecticidal role that the chemicals play in relation to other insects in the house such as cockroaches, bedbugs and others. This, in some cases may persuade people to let in spray agents.

## **6.9 Knowledge on malaria**

The task of communication campaigns has been to impart information while knowledge about malaria remains elusive. As Jan Servaes and Malikhao put it, communication is a two way process, and true knowledge is more than information. Knowledge is the meaning that people make of information. And, for societies the world over making sense of information depends on their ability to discuss and debate it. For social change to occur there must be opportunities for dialogue. Only when information helps people communicate, participate and allows them to make informed choices does that information become knowledge.

The study showed that though awareness was high, knowledge about mosquito biting times, treatment and care of mosquito nets, how much water is sufficient to constitute mosquito breeding grounds etc. does not exist in most of the population. This knowledge needs to be imparted on the community as this will help them make more informed and correct decisions. Interviews revealed that there is little understanding of important information such as the above that could aid in behavioural change.

### **Mosquito biting times and malaria vector**

It was discovered that the majority of the respondents believed mosquitoes bite at night with 137 of the respondents indicating thus. However, as Harrison puts it, while night biting is very common among malaria vectors, especially *Anopheles*, it is not universal (Harrison, 1978). It is important, therefore, to know the specifics of local variation in mosquito species and their peak biting hours when designing an insecticide-impregnated mosquito net intervention.

The study revealed that mosquito biting times and susceptibility to malaria are a source of a lot of confusion and sometimes leads to misconceptions. Discussions revealed problems in understanding why most people did not get malaria despite being bitten in the late evenings. Without understanding that there are different species of mosquitoes and that only the anopheles is a malaria vector, most people questioned the use of mosquito nets when retiring for the night. This is because for them, it does not make sense why it is

required to sleep under a mosquito net to avoid bites why they are bitten in the late evenings but rarely get malaria. Low mosquito net usage statistics of 36% could be attributed to such misconceptions or lack of comprehensive understanding of the malaria transmission dynamics.

### **Mosquito net care**

As evidenced in Ghana, Agyepong and Manderson (1999) found that knowledge and practice do not necessarily have a linear relationship. In their study, the researchers learned that knowledge of an association between mosquitoes and malaria was not related to literacy or formal education, and did not predict mosquito net usage. This is apparently the case in Mansa as well where high awareness of benefits of using mosquito net does not correlate with usage.

Discussions with 3 groups of women in Kabwasha village and Farm Institute also revealed that there is not adequate information on the care of Long Lasting Insecticide treated Nets (LLINs). As these nets are already treated and may not need retreating for as long as 3-5 years, potency of the chemicals on the nets should be cardinal in educating the people about how to care for them. The study revealed that almost all the women talked to expressed ignorance on the adverse effects of washing LLINs with detergent pastes though a few of them knew that LLINs are supposed to be dried in the shade. Communication campaigns rarely if at all educate the people that detergent pastes have a chemical action and therefore chemically alter or remove the insecticides, which are themselves chemicals on the nets.

On education, Gramiccia (1981) identified four reasons as to why malaria control programmes at the community level have failed in many countries, these are: 1) health education will have little chance of success with an audience that has low education, poor housing, lacks physical and social resources, and is apathetic; 2) population groups have accepted malaria as part of their lives and would rather have attention focused on the causes of their poverty and poor living conditions; 3) people have difficulty in understanding the complexities of malaria aetiology and epidemiology; and 4) existing

control methods have often been formulated without sufficient knowledge of the target population and the situations in which they live.

However, we are warned that while health education is important and should certainly be a main activity of the anti-malaria initiative, especially if it uses language, images, and metaphors that are "experience near," that is, make sense relative to the everyday experiences of the target population, imparting knowledge is not enough. Even with "correct" knowledge, people may not necessarily act in a way that to public health professionals seems in their own best self-interest. We must be aware that our view may be too focused and too limited, and that a number of other factors influence behaviour, Heggenhougen et al.

#### **6.10 Interpersonal communication and social change**

Because understanding and making sense of information depends on people's ability to discuss and debate issues, then it is safe to say that the population sampled may not have understood though they may have been made aware. This is because though awareness is high, very little interpersonal communication goes on. The study showed that relatives and friends were among the least counted associated source of information on malaria as well as among the least preferred source of information on malaria with only 0.7% and 2% of the respondents associating the mode of communication to malaria communication and preferring the mode of communication for malaria communication respectively, (figures 5.29 and 5.30).

Observations revealed that such low statistics in interpersonal communication about malaria and subsequent discussions that may issue from such communication are impeded primarily by the lack of forums and community groups at which such discussions could take place (unlike at clinics and health centres where they are more or less discuss issues). This could be attributed to the design of the communication campaigns that aim to make people aware through telling them what to do (talking down to them) thereby not soliciting for their input. As earlier mentioned, ownership and personal participation in such campaigns by the communities is therefore none existent. The study

showed that relatives and friends were among the lowest source of information on malaria with less than 5% of the respondents indicating it as a source of information, (table 5.10). This could suggest low to none existence of discussions among people in the communities.

### **6.11 Issues in the communication campaigns**

The communication campaigns as reviewed and observed by the researcher had some issues that may need to be worked on. Firstly, it was observed that although communication guidelines and strategy manuals were all encompassing regarding the information on prevention measures including using the barrier methods such as mosquito nets and the disruption of the mosquito life cycle through larviciding and environmental management, the actual communications disseminated to the communities was not all encompassing. For example and most noted was the omission of environmental management practices in malaria prevention. This spells a discrepancy between what has been set to be the most effective and informative information to be disseminated and what actually obtains on the ground. This could be attributed to the limited staffing at district level involved in management and implementation of communication messages. This is because of lack of time, capacity and resources for the design and implementation of communication programs due to low prioritisation

Secondly and in addition to the lack of staffing at provincial and district health offices, it was observed that there was lack of co-ordination between the various agencies and organisation involved in education and dissemination of malaria information to the communities. On a strategic level this presents various problems such as repetition of efforts, and the problem of various organisations targeting the same communities while neglecting others. Because of the nature of the disease, malaria requires a multidimensional approach, as such, concerted effort is required in tackling for instance the perceptions and myths that as associated with the disease an approach very different to for instance the dissemination of mosquito nets or IRS. However,

because of lack of co-ordination between the organisations involved, efforts may be concentrated only on dissemination of mosquito nets by all the organisation while other aspects are ignored. It is therefore only when all the organisations interact and co-ordinate will they know where which organisation is working and what it has done and not done.

Thirdly, and perhaps a consequence of the above, it was observed that some myths/misunderstandings about malaria emanated from cross linking of information by the recipients on two or more communication campaigns being carried out conterminously. For example, issues of hygiene and keeping the house clean have somehow been adopted to have malaria connotations by most of the interviewed women.

Spray agents are also a convenient avenue for information dissemination as they are supposed to be knowledgeable about malaria.

#### **6.12 Community participation and involvement in the fight against malaria**

Malaria communication campaigns and interventions observed and reviewed revealed that the communities in which malaria prevention programmes were implemented were mostly passive in terms of participation. This could be primarily attributed to the campaign and interventions designs which in most cases had little to no community involvement at the design level thereby excluding them in inputting their views on how the projects could best serve their community. It is disheartening to note that though most current communication intervention programme design models emphasis community participation and research on the local population before interventions can be carried out, such has rarely been the case in most campaigns. As Interventions and campaigns are thus mostly carried out blind off the existing local conditions and worse more with no community input.

It was observed that what passes for community participation was the spectatorship which community members are offered when edutainment campaigns and education meeting are organised in their communities which require their attendance as well as inclusion of a selected (and recycled) few Community Health Workers from their communities. According to Sharma

and Mehrotra (1986), for successful malaria control, whether today or tomorrow, people's participation is absolutely essential, and in the future, much will depend on the 'community-will'. As Bermejo and Bekui (1993) observe, all too often, the people in the community are not involved in the decision-making process. Yet community members not only can contribute to vector control and broad epidemiological surveillance for keeping local malaria incidence under control, but they are essential for the success of such work.

The World Health Organisation draws a distinction between participation and involvement by the community. Participation may be a simple passive response, while involvement is when people take an active part in decisions as well as activities. Communities cannot therefore be silent participants in programmes that have been determined elsewhere. Bermejo and Bekui (1993) define community participation as 'a process whereby specific groups living in a defined geographical area and interacting with each other actively identify their needs and make decisions to meet them'.

From the above definition, participation entails interaction among community members which leads to identification of their needs and making of decision to meet those needs. For this interaction to happen, forums of discussion and dialogue need to be put in place which would also constitute interpersonal communication about issues of malaria. However statistical findings in the study showed personal interaction and communication as the least mode of communication associated or preferred in malaria communication with less than 1% of the respondents associating it to malaria communication (figure 5.29)

### **Information flow**

The study suggests that intermediaries between the media and the community who may act as catalysts for diffusion of information and ideas are virtually none existent in the communities sampled. Information is therefore seen to flow directly from the media and health centre to the people with little to no informed others or opinion leaders aiding the acceptability and or

understanding. The study showed that less than 1% of the people sampled associated malaria communication with friends and relatives. Discussion and interviews also showed that there is little to no discussion about malaria at community or family levels due to lack of organisations at which such issues can be discussed.

Future communication campaigns and interventions should therefore tap into the reservoir of already existing organisation such as churches that elicit large gatherings and encourage them to discuss community issues such as malaria and its prevention modalities.

### **6.13 Perceived vulnerability**

It was interesting to note that children under 5 years old were perceived to be the most vulnerable group subject to malaria infection with 68% of the respondents indicating so. Pregnant women and under 5 children in the same category had 17% perceived vulnerability. However, interviews showed that behaviour does not reflect perceived vulnerability statistics as priority in mosquito net usage in households with inadequate mosquito nets is given to the parents leaving the children unprotected.

### **6.14 Perceived severity of malaria**

Perception of illness, knowledge and understanding of illness are socially and culturally constructed, as are actions taken with regard to treatment, Tanner and Vlassoff (1998). The study shows evidence that communication campaigns about malaria have made people aware of how dangerous the disease is and how to prevent it. However, it also shows a high laxness among the population when it comes to bed net usage despite their knowledge that it is one of the most effective barrier against mosquito bites.

As Tanner and Vlassoff put it, people's perceptions and actions that may or may not follow depend on social and culture constructions, another way of saying that they are diverse. These discrepancies point to how the people really perceive malaria's severity. Hence though they may say that they think malaria is a deadly disease, their perception of the severity of the disease does not match with the prevention measures they are willing to take i.e. use a mosquito net every night. Reason could range from acceptance of the disease

as part of their lives or perceiving the chances of getting ill as slim. Furthermore, the availability of malaria medication further lessens the perceived severity as most know that medication is available.

Another reason for the supposed high laxness with regard to actions aimed at preventing malaria could stem from population groups having accepted malaria as part of their lives and would rather have attention focused on the causes of their poverty and poor living conditions which are more pertinent.

#### **6.14.1 Perceived probability of occurrence**

The perceived probability of occurrence is another factor that influences people's actions on malaria prevention measures. As mentioned above, confusion exists among the populace on why they should sleep under a mosquito net to avoid mosquito bites while they are bitten countless times in the early to late evenings. The knowledge that they rarely get sick from the latter bites reduces their perception of probability of occurrence. Furthermore, in endemic populations such as Mansa where immunity against the illness can safely be assumed to be high, most people may not often totally succumb to the illness but rather act as carriers most of the time feeling fatigued and feverish but not getting bedridden. On the other hand and due in part to the high incidence rate of malaria, most people have come to see the disease as part of their lives.

#### **6.14.2 Perceived efficacy of recommended preventive behaviour**

Another factor that may influence behaviour and how people receive malaria prevention communication is the perceived efficacy of the recommended preventive behaviour i.e. does the said prevention measures really work in preventing the illness? This particularly applies to the IRS programmes. Interviews carried out in the study showed that the growing lack of confidence in the IRS dissuades a lot of people from admitting spray agents because they think IRS is no longer efficacious due to the publicised mosquito resistance to the insecticide used. Coupled with other myths and negative connotations about IRS, a lot needs to be done in educating and raising people's confidence in IRS. Short of introducing and socially marketing and highly publicising a

new insecticide that is highly efficacious, IRS programmes will be more difficult to implement especially to the people who are informed on the resistance that the mosquitoes have on the current insecticides.

### **6.15 Treatment seeking behaviour**

While there seemed laxness in mosquito net usage (figure 5.9) and scepticism on IRS (figure 5.12) despite high awareness on both, it was nonetheless encouraging that people saw the effects that non treatment of malaria could result in. The study showed a positive attitude towards seeking treatment from a health centre with 95% (figure 5.12) of the respondents indicating that they go to a health centre upon suspecting to have malaria. The study also showed that only 3% resorted to buying malaria medication on their own and self-medicating, although this could largely be attributed to lack of financial resources to purchase Coatem which is significantly more expensive than its predecessors such as Chloroquine and Fansidar. That fewer people are self-medicating is a good development for both health facility statistical and treatment purposes because health facilities could get a better more accurate picture of the malaria incidences as well as diagnosis.

### **6.16 Malaria and gender**

Vlassoff and Manderson emphasise that by incorporating gender in the anthropological study of infectious disease, "the social analysis goes beyond the description of biological or sex differences and affords a more holistic understanding of the determinants and consequences of health and illness" (Vlassoff and Manderson, 1998).

It is interesting but rather not surprising to note that 78.1% of the respondents in the study were female and only 21.2% were male (figure 5.1. *distribution of respondents by sex*). Observations showed that even though females were more likely to be found at home while males would more or less be attending to income earning activities and or other activities as dictated by local perception of their gender roles, it was also observed that women mostly bore the blunt of taking care of the sick and trips to the health facilities when

required. Indeed observations at health facilities showed a predominant female. This makes the women more pivotal and important in the fight against malaria. This is because women and children are at greatest risk from malaria in both high and low endemic areas for both biological and social reasons. Pregnant women are most at risk in areas of high and continuous transmission such as Mansa, particularly during their first pregnancy, and also under conditions of unstable malaria, which do not permit acquired immunity development. The role and contributions of women as household guardians, community members, income earners, and primary educators can therefore not be overlooked in planning and community-based services.

Heggenhougen et al, (2003) observes that although both males and females in areas of endemic tropical diseases suffer from discrimination due to class inequality, poverty and deprivation, women are particularly disadvantaged and marginalised due to structural factors within society. In other words, the risk, prevention and treatment associated with malaria are significantly distinct for men and women. Inclusion of gender provides a social context in which to discern how individual behaviour, cultural traditions, and social norms manifest differentially in men and women and how these manifestations of gender influence the transmission of malaria.

## CHAPTER SEVEN

### 7.0 Conclusions and Recommendations

#### 7.1 Introduction

This chapter presents the conclusion and recommendations emanating from the study. It gives a conclusion to the study as dictated by the data collected and findings made in the study. The chapter then gives a brief discussion on some areas that may call for further research in the light of the topic and it finally gives recommendations to relevant institutions and organisations.

#### 7.2 Conclusion

In conclusion information about malaria has permeated most of the communities in Kaole Ward of Mansa. The study has shown high awareness statistics of malaria, what transmits it, how to prevent it and what to do when they suspect and/or get malaria. Although people are aware of the malaria problem and its consequence, lack of understanding which leads to behaviour change has made them generally passive about adhering to prevention measures as handed down to them through communication campaigns. Also there are still information gaps on many issues relating to transmission, mosquito net care, types of mosquito nets and retreatment, mosquito breeding sites, mosquito types, biting times and many more.

There still remains a considerable gap between õcorrect scientific knowledgeö and the accepted practices and beliefs about malaria held by disparate groups of people. It is also essential to note that sociocultural, political, and economic circumstances which should be investigated and incorporated in the design of communication campaigns and interventions are rarely taken into account by the communicators and health promoters. It is rarely appreciated that sociocultural, political and economic circumstances not only influence behaviour, but are themselves key factor in determining both immediate and more fundamental risk factors. This neglect means problem identification and possible solutions are all externally determined. There however is still little

appreciation that for effective intervention to take place it is not only important to know how people behave, but also the various reasons for their behaviour. Not all behaviours are the result of consciously made reasoned action ó there are norms, circumstantial factors, and influences of important others that often drive what people do. Understanding of the real-life situations in which such behaviour exists may aid in coming up with appropriate interventions that are based on reasons for such behaviour.

The study also showed that the problem has not been the quantity of information but rather the quality of the information and the lack of support structures at community level that would aid in ensuring discussion and understanding of prevention measures. It was observed that communication campaigns and intervention have mostly been designed to raise awareness of the issues and lack behavioural change strategies rendering recipients as passive spectators in the determination of their problems and solutions. While there has been realisation that people's involvement is required in successful implementation of campaigns and programmes, the realisation has for the most part remained on paper. In essence the communication programmes are still modelled on the hierarchical top-down approaches based on the Sender-Message-Receiver model.

Albeit participation in design and implementation of programmes be they communication campaigns by the locals, is virtually none existent. Campaigns, even where communication strategies such as drama are utilised are mostly externally designed often excluding the locals in the creation and development of the ideas leading to the campaign. There is therefore lack of ownership of the projects and programmes by the locals. And as much as it might be known that the problem is malaria, most campaigns do not appreciate the social and behavioural aspects of the communities they work in.

The study has therefore found that gaps in information and knowledge as well as none-community inclusive communication design to be the major problem behind lack of behaviour change in target audiences of malaria intervention and communication campaigns. This lack of behaviour change, it has been

concluded, is the major hindrance to lowering malaria incidence and mortality rates. The other major contributing factor was poverty.

The study has also concluded that a shift in communication channels is needed with particular emphasis on word of mouth communication at local level utilising Ante Natal Clinic gatherings as well as other social and religious gatherings such as churches to complement other efforts. It has also concluded that particular emphasis should be put on educating women as they are the most affected by the disease.

### **7.3 Further research**

The findings in this study show that there are gaps in knowledge regarding malaria communication especially in people's understanding of how the disease is transmitted. Further research should therefore strive to not only educate the masses on prevention measures but also to find out pertinent issues regarding such issues as information and communication flows with regard to gender, poverty and what other factors may hinder behaviour change. Furthermore, more information is needed to understand how to impart seemingly complex information such as types of mosquitoes, their breeding habits, meanings and significance of terms such as 'residual' in 'indoor residual spraying' and other information to the communities so that they understand as most communication campaigns previously embarked on purposefully left out explaining such issues due to their perceived complexity.

### **7.4 Recommendations**

- The ministry of health should partner at the community level with already existing organisations such as churches in health education. Health educators could be invited at regular intervals to give talks on health issues pertinent to the particular communities such as malaria.
- Information sharing among organisations involved in the malaria prevention effort needs to be improved with the district and provincial health office being at the centre of the information sharing. This will inevitably ensure proper record keeping and statistical accuracy of the malaria situation in the province.

Furthermore issues of repeating efforts such as mosquito net distribution in the same localities will also be avoided as proper records will be kept on which areas have received which intervention and which has not.

- It is also recommended that central computerised information storage archives be set up where proper records can be kept and referred to when the need arises. This is in view of observations made on scanty and at times incomplete records and archival data on malaria and other diseases. Measurements of success or failure in interventions and subsequent progress on the fight against many diseases can easily be measured and remedial action effected to correct the situation only if proper and accurate statistical data is kept.
- It was discovered that at district level, more staff is needed specifically in malaria related positions. While Community Health Workers and Environmental Health Technicians supplement efforts as directed by the district and provincial health office, their number in relation to the communities they cover is not nearly adequate. This compounded with logistical and implementation problems that they constantly work with significantly reduces the effects of the health promotion and educational information they impart. The study recommends not only the increase in staffing but also in staff support services and logistics such as transportation, adequate supply of health implements and training in communication strategies that incorporate health education and behaviour change strategies.
- More emphasis should be given to developing behavioural change communication (BCC) strategies as part of every communication intervention. Questions should be asked as to what follows after people are made aware but still do not change their behaviour. Primary emphasis should be put on understanding why people's behaviour does not change and what motivates their current behaviour. Community participation and involvement are therefore recommended to ensure that communities are part of the communication and intervention programmes at every level.
- Communication programmes need to be tailored to specific communities basing the information on community generated problems and solutions. A broad spectrum panacea for all malaria endemic areas may not work as people in different areas have different problems, concerns and belief systems that

dictate behaviour. Research is therefore recommended before carrying out interventions in communities. Thus, studies aimed at uncovering local attitudes toward mosquito net usage as well as other means used to prevent mosquito bites are critical for they reveal a multiplicity of local variations and point to the need for behavioural and anthropological approaches in the design and implementation of malaria control programmes.

- Government and health promotion organisations should put particular attention to educating the women on malaria prevention issues because they are most affected by malaria and much more likely to impart knowledge on their children/ fellow women than men are. Many programmes that are conceptually sound fail to be effective because the microclimate that influences decision-making is not considered at the programme-planning and operational stages. There is need to comprehend how diseases are engendered in a culture or social setting so that sustainable prevention and control programmes can be supported.
- There is need for government establishing, and where already established, further strengthening of the health centres' health promotion and education wings outside and within the boundaries of the health centres especially utilising ANC visits. As recognised in the study, women and children are the most vulnerable populations with regards to malaria infections. Utilizing ANC visits for dissemination of malaria information principally to women is a good strategy as most women trust and respect the health professionals. Furthermore, observed ANC meetings greatly resembled discussion groups with some latitude for contribution and question asking by the attendees. Information gotten from such visits by women could be passed on to their children, inculcating a general behaviour change from one generation to another.
- On gender relations, research institutions and organisations involved in statistical data collection need to disaggregate data and analysis of complex questions regarding women's health and in particular the gendered patterns of risk, prevention and treatment of malaria using relevant measures. Future research is needed to determine how women's status and social disadvantage influence malaria risk and inadequate use of health services in order to ensure

equitable as well as more effective delivery of services and to break the vicious cycle of disadvantage.

- Continuation of free LLINs distribution by the government and its supporting partners is highly recommended principally because most middle to low income groups as used in this study may not be able to afford commercially sold mosquito nets. Where possible, government should consider subsidising the unit price of mosquito nets so as to make them more affordable for the majority of the people in places where free distribution is not available.

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