ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COMMUNITY'S PERCEPTIONS OF MALARIA AND THE UNDERLYING INTERVENTIONS FOR ITS MANAGEMENT AND CONTROL IN JIMMA TOWN, OROMIYA NATIONAL REGIONAL STATE

AMEYU GODESSO

JULY, 2008

COMMUNITY'S PERCEPTIONS OF MALARIA AND THE UNDERLYING INTERVENTIONS FOR ITS MANAGEMENT AND CONTROL IN JIMMA TOWN, OROMIYA NATIONAL REGIONAL STATE

By: AMEYU GODESSO

A thesis submitted to the School of Graduate Studies of Addis Ababa University in partial fulfillment of the requirements for the Degree of Master of Arts in Sociology

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COMMUNITY'S PERCEPTIONS OF MALARIA AND THE UNDERLYING INTERVENTIONS FOR ITS MANAGEMENT AND CONTROL IN JIMMA TOWN, OROMIYA NATIONAL REGIONAL STATE

By

Ameyu Godesso

Approved by the Examining Board

_____	_____
Chairman, Department Graduate committee	Signature
_____	_____
Advisor	Signature
_____	_____
External Examiner	Signature
_____	_____
Internal Examiner	Signature

Acknowledgements

Very special thanks goes to my advisor Dr. Woldeab Teshome (Director of the Institute of Regional and Local Development Studies) for his support, fruitful discussions and constructive criticisms, without whom the successful accomplishment of the thesis would not have been possible. My most sincere thanks are also expressed to all members of the community of Jimma Town, its local leaders and all informants who collaborated in this study. Last but not least, the graduate program of Addis Ababa University is duly acknowledged for its financial assistance to carry out the research.

Table of Contents

Contents **Page**

List of Tables

Tables **Page**

List of Figures

Figures **page**

Acronyms

AAAS- American Association for the Advancement of Science

AIDS-Acquired Immune Deficiency Syndrome

CDDS-Community Drug Distributors

CHWs-Community Health Workers

CSA-Central Statistical Authority

DALYs-Disability Adjusted Life Years

DDT- Dichloro-Diphenyl-Trichloroethane

FGDs-Focus Group Discussion

GDP-Gross Domestic Product

HBM-Health Belief Model

HIV-Human Immune Virus

HMM-Home Management of Malaria

HSDP- Health Systems Development Project

IRS-Indoor Residual Spraying

ITNs- Insecticide Treated Nets

MES-Malaria Eradication Services

MOH-Ministry of Health

NOCMVD-National Organization for Malaria and Other Vectorborne Diseases

PHC-Primary Health Care

RBM-Roll Back Malaria

RDTs- Rapid Diagnostic Tests

UNDP-United Nations Development Programme

UNICEF-United Nations Children's Fund

VCNs-Volunteer Collaborator Networks

WHO- World Health Organization

Abstract

Malaria is one of the leading causes of morbidity and mortality in Oromiya National Regional state. Its management and control depends on many factors, some of which have not been studied at the level of urban community. The objective of this study is to identify what households in Jimma Town community perceive to be the cause and symptoms of malaria and their treatment and control perceptions for malaria. A cross-sectional study design was utilized employing both quantitative and qualitative data collection methods. A simple random cluster sampling procedure was used to select the ganda, after which the sample households were proportionally allocated to each ganda. Finally, interviews were conducted with 422 heads or representative of households. The study was conducted between March and April 2008. The study findings indicate that the community has multiple aetiologies for malaria. Of the 422 heads of households interviewed, 374 (88.6 percent) indicated mosquito as the cause of the disease. Other aetiological beliefs included: 269(70.4 percent) exposure to unhygienic conditions and 129(30.4 percent) cold weather as causes of malaria. And only about 3.8 percent indicated witchcraft. Many of the respondents (91.5 percent) could identify malaria by several correct symptoms. In the treatment of malaria, various health resources such as public health facilities, over-the counter medications, private clinics and herbal medicines are used. For first choice of care, many households used private health facilities. However, for poor households the other forms of treatment especially Jimma malaria control center and Jimma University Hospital seem to have been preferred. A recent strategy of malaria treatment, Home Management of Malaria, has lacked community support for its full implementation. For most 330(88 percent) of households the use of insecticide treated bed net was mentioned as the most widely practiced preventive method for malaria. Among these only 71.1 percent the households own the net currently. Weak intersectoral linkage, poverty, population movement and poor environmental management appear to be factors worsening malaria management and control in the Town. Thus, understanding community perceptions of aetiology, symptom identification and treatment and control of malaria is an important step towards the control of the disease.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Malaria is an acute or chronic infection, of red blood cells caused by protozoa parasites of the genus Plasmodium: P.Vivax, P.malariae, P. falciparum and P.ovale. Each year, the world experiences 300-500 million cases of malaria. Approximately, 90 % of those cases occur in Sub-Saharan Africa, where over one million children under the age of five die of malaria annually. The malaria burden faced by African countries continues to be a challenge for national governments. Increasing resistance to drugs and pesticides, the lack of capacity to implement programs effectively and low public education about malaria is only a few of the many complications that African governments must address to effectively combat malaria (Melanie et al ,2004).

The costs of malaria are also enormous when measured in economic terms. Countries with a high number of cases of malaria are among the very poorest in the world, and typically have very low rates of economic growth; many have experienced declines in living standards in the past thirty years (reviewed in Korte et al, 2004).

In response to this pressing social problem, in April 2000, the African heads of state committed their governments that by the year 2005, 60% of malaria episodes are appropriately treated within 24 hours of onset of symptom. A strong healthcare delivery system would ideally provide early reliable diagnosis and appropriate prompt effective treatment. However, in most malaria-endemic countries access to curative and diagnostic services is limited (WHO, 2004).

Malaria is also a major public health problem in Ethiopia. Of the four species, *P.falciparum* and *P.vivax* are the two dominant parasites species with relative frequency of 60% and 40% respectively in Ethiopia (MOH, 2004). According to MOH (2004), the magnitude of the problem in 2002/03 has even worsened and the disease has causes of morbidity and mortality accounting for 15.5% out patient consultation, 20.4% admissions and 27.0% in patient deaths. Similarly, in 2004/05 it has been reported as the first cause

of morbidity and mortality accounting for 16.6 % outpatient consultations, 15.0% admissions and 29.0% deaths with minimal change numerically.

In line with the HSDP and the global initiative to Roll Back Malaria (RBM), the Federal Ministry of Health developed a five-year national strategic plan for the prevention and control of malaria for the period 2001 – 2005. The objective was to achieve a 25% reduction in the burden of malaria by the end of 2005 by ensuring at least 60% coverage in the major malaria intervention that includes access to effective treatment, suitable vector control and detection and containment of malaria epidemics with in two-weeks from onset (MOH, 2006).

Malaria has been a major cause of both morbidity and mortality in Oromiya Regional State, and primarily occurs in epidemic forms from the months of September to December, peaking in October and November (Wakgari et al, 2004). The burden of the disease has been increasing and is now at an intolerable stage. In spite of its importance, however, assessment of the real magnitude and burden of the disease has been difficult (Wakgari et al, 2003).

Keizer et al (2004) confirmed that Ethiopia and other countries in Sub Saharan Africa are characterized by rapid urban population increase particularly in areas where the highest rates of Plasmodium falciparum are common. And Ethiopia towns are also characterized by poor housing, lack of proper sanitation, poor drainage of surface water, weak health services and wide spread economic disparity, wchich independently or together facilitate urban malaria transmission. However malaria research in Ethiopia has been underemphasized.

Cognizant to this fact, therefore, this study attempted to reveal the problem of malaria menace and its management and control in urban areas with particular reference to Jimma Town, Oromiya Regional state. The paper also discusses how malaria arises from and its management and control depends on a complex interaction of social-cultural, economic, ecological and political factors of the community under study.

1.2 Statement of the Problem

Malaria remains a major health problem of our time. Malaria plagues human society and impacts obnoxious and immeasurable burden on human population. It displays full explosive power of vector – born infections, erupting suddenness and intensity that can overwhelm vulnerable communities (Kiszewski and Tekelehaimanot, 2004).

It is, thus, health problem that attracted concerted efforts over the years. It is quite unfortunate that despite the efforts in technological advance in research, diagnosis, prevention and treatment, malaria is still one of the world's most serious health problems (Carrasquilla, 2001). Simply put, advances in biomedicine and technology were not translating into results at the individual, community, and health system levels. The importance of social, cultural, and economic factors of the community in malaria control for successful treatment and health promotional interventions have been emphasized and illustrated frequently (Tanner et al, 1998).

Successful malaria control efforts also need to acknowledge and address the country specific social, economic, and political circumstance as they are expressed in local communities (Mandreson, 1998). In his rapid ethnographic study of malaria in young children in Zeway, (Woldeab, 1996) also recommended that since families' decisions about where to seek care are made within this community context, focusing on a small number of communities allows the investigation to look at how factors interact to affect health-seeking practices of families within communities, and provides more opportunities for the investigator to observe behavior and understand local conditions

Clearly, social science inputs and understanding a community's beliefs and behavior are critical to the success and sustainability of malaria management and control. Regrettably, although social science input is necessary for almost all interventions for malaria management and control, the numbers of researchers working in this area are dismal in most of the key disciplines. There must be clear insights into how populations define, perceive, prevent, and respond to malaria. Cockerham (2007) concurred with idea

arguing that individuals and societies tend to respond to health in a manner consistent with their culture, norms, and values.

But again, the study of malaria in Ethiopia has been under the domain of medical sciences. And considerable progress has not been made in understanding how human behavior and social organization, economic context, environmental conditions and health and political systems affect responses to malaria at national, community, household, and individual levels. Since many years ago, in Ethiopia, much effort has done and is being carried out by the medical researchers with partial emphasis on the social aspects of diseases and prevention (Kloos and Zein, 1993).

Malaria can longer also be considered as just a rural issue in Africa in general and Ethiopia in particular. Researchers from Tanzania go on to say that thinking behind malaria research and control strategies stems largely from experience gained in rural areas and needs to be adapted to the urban environment. Rapid urbanization brings about major changes in ecology, social structure and disease patterns in sub-Saharan Africa. It is estimated that 300 million people currently live in urban areas in Africa and two-thirds of them are at risk of malaria. There is a lack of understanding of the complex interactions between human social structure, the environment and malaria infections (Wang et al, 2006)

Studies too conducted in Ethiopia have apparently seemed to conclude that malaria is the major problem of rural communities. For instance, a study by Awash (1967) asserts that the rural areas in Ethiopia are acquiescent for mosquitoes breeding and malaria treatment has faced for long various challenges. Furthermore all aspects of social and economic life of the malarial community, low earning capacity and low labor are also other challenges for treatment the disease. But, this study also attempts to portray and warrant malaria as the major public health problem in urban areas too.

Having the above arguments in mind, this study attempted to assess community's perceptions about causes and transmission of malaria, patterns of treatment seeking-

behavior and its implication for management in Jimma Town.. Specifically, the study was conducted to answer the following questions:

1) How the community recognizes the cause, symptoms and transmission of malaria?
2) What factors determine the heath care seeking behavior and practices of the community?
3) What are the urban factors worsening the problem of malaria menace in Jimma city?
4) Are the prevention and control programs of malaria satisfying the felt needs of the community in malaria management?

1.3 Objective of the Study

The study was conducted to satisfy the following objectives.

1.3.*1 General Objective*

The overall objective of the study research is to assess community's perceptions of malaria and its management in Jimma Town.

1.3.2 Specific Objectives

The specific objectives of the proposed study are;

- To determine the extent to which different households perceive malaria as a problem, their knowledge of its cause and symptoms, their recognition of complications.
- To assess households treatment-seeking behavior when malaria and its complications are suspected.
- To explain the social, cultural, political and economic factors influencing treatment seeking in urban areas.
- To assess the view that the communities have held towards public health versus private health care system in their contributions to management of malaria.

1.4 Research Methodology

1.4.1 The Area and Population

The study was carried out between March and April 2008 in three *ganda*[1] in Jimma Town, Oromiya National Regional State. The Town is situated in Jimma Zone335 kilometers away from Addis Ababa. According to the data collected by Jimma Town Health Bureau, the Town had a total population 162,300 by the year 2007.

According to the administrative structure of the region, this urban center is divided into three Olanaa (higher) and 13 gandas. As information obtained form the Jimma Town malaria prevention and control office, the ten adjacent ganda are highly malarious. The study was specifically conducted among three randomly selected ganda. According to data complied by Jimma Town health bureau, malaria is one the leading top ten diseases claming human death and contributing to large hospital admission. The Town has one referral hospital, one health center, there government clinics, five private drug venders, and three health posts under functional.

1.4.2 Study Design

The study was designed as a community based cross-sectional household survey. Both quantitative and qualitative study methods were employed to gather the relevant and pertinent information with regard to malaria management and control. The cross - sectional survey was devised for the quantitative study.

1.4.3 Data Collection Methods

Both qualitative and quantitative data collection methods were employed to provide a broad understanding of factors and the context influencing community definition and management malaria. The strengths of quantitative methods are that they produce factual, reliable outcome data that are usually generalizable to some larger population. The strengths of qualitative methods are that they generate rich, detailed, valid process data

[1] The smallest administrative unity in Oromiya National Regional state

that usually leaves the study participants' perspectives intact. The combination of qualitative and quantitative data collection methods is viewed as complementary, assuming that weaknesses in either would be compensated by the other. Thus, the data collection methods used for this study are;

1.4.3.1 Survey Questionnaires

The quantitative tools used are a micro-census of the study population and 422 heads of the household or their representatives were interviewed with closed and open-ended structured questionnaires**.**

1.4.3.2 Focus Group Discussions

Here, a total of six focus group discussions were conducted with one female caregivers group and one male group per the three study ganda. Each group will have 8- 12 participants.

1.4.3.3 In- depths Interviews

For the purpose of getting detailed information a total of nine in- depths interview were conducted with, one opinion/community leaders and a community health worker per the three ganda, a public health provider, a heath manager and a private drug vender.

1.4.4 Research Instrument

In order to attain the intended objectives of the study, it is useful to gather relevant and reliable data using appropriate techniques. For this research, structured questionnaire was prepared to collect information through a house-to-house survey. And unstructured interview guide questionnaire was employed for both focus group discussion and in-depth interview methods.

1.4.5 Sample Size Determination and Sampling Procedure

1. 4.5.1 Sample Size

The study basically involved both communities and health care providers. At the community level the study unit was the head of the household or their representative. In this cross sectional survey study, a sample size of 450 was planned to be included. Of course, there is little previous research on malaria prevalence in Ethiopia up on which one can estimate sample size. Therefore, the sample size was determined based up on the following assumptions and formula.

1. Concerns related to cost are also considered in determining the sample size.
2. In the absence of accurate previous prevalence data on the population under study, calculation was made assuming 50 % of the households to have at least one perceived malaria patient over the past one year.
3. At 95 % confidence interval is assumed
4. A margin of error of 0.5 is assumed

Using these assumptions and the following formula, a sample size of 422 is calculated.

Formula $$n = \frac{(Z\alpha/2)2\ p(1-P)}{d2}$$

$$= \frac{(1.96)2\ X0.5\ (1-0.5)}{(.05)\ 2}$$

$$= 384$$

Z= the confidence limits of the survey result which is 1.96

P= is an estimate of the proportion of households at least one of whose member has had malaria incidence (50 %)

n= the total sample size.

d = the margin of sampling error tolerated (0.05)

For non – response, 10 % (38) of the sample size is added .In sum there will be a total sample size of 422.

1.4.5.2 Sampling Procedure

As per information obtained from the Jimma Town malaria prevention and control office, of the total 13 gandas (the lowest administrative unity in Oromiya region) of the Town 10 adjacent ganda are highly malarious. Taking the gandas as a sampling unit clusters; one from each district was randomly selected for the survey respondents. The sample households were allocated to each ganda in proportion to its total households. The sampled gandas were *Ginjoo Guduruu*, *Bachoo Booree* and *Bossa Kittoo* consisting total households of 1,272, 2,570 and 3,603 respectively. The data collectors were made to visit every 17 households until 72, 146, and 204 households were selected from the respective ganda.

Government, private, community health workers serving the respective communities were purposefully included in the assessment. Additionally, opinion or community leaders who have better know-how about the culture of the community were included in they study. Focus group discussants comprised persons who have already participated in the survey and were screened with the consent of community health workers in their respective ganda.

1.4.6 Sources of Data

In order to generate relevant data for this study both primary and secondary data were employed. While secondary data were complied from sources such as books, journals and articles, primary data were gathered from the subject of the study.

1.4.7 Data Analysis

Once the data have been collected, they were entered and processed using SPSS PC + version 11.0 statistical software package for analysis. Frequency, proportions and means were used for the descriptive analysis of data. Qualitative data was transcribed and analyzed after data collection along the sample survey. Verbatim transcriptions in Afan

Oromo was made for all tape recorded FGDS and in-depth interviews, and finally used for analysis and comparison for quantitative data. Some quotes from the qualitative data that best explain the context of malaria in the community was identified, translated into the nearest English version and presented in parallel with the quantitative data to give more insights into the perceptions and practices of the community.

1.5 Scope and Limitation of the Study

This study is purposefully delimited to the community in the Town. It did not consider observable activities carried out at health care settings like physicians –patient interactions. This is due to the belief that these issues demand a separate examination and careful data collection methods namely participant observation. The study is also not without limitations. Some constraints such as time and lack of sufficient fund hindered the need to include a large sample size that could nearly represent the total population of the Town.

1.6 Significance of the Study

As revealed in the introductory part of this study, this research has attempted to uncover the problem of malaria and assess its management options form social sciences inputs at community level. Hence, the results of this study would be used as base line information for researches that have envisioned compressively understanding the problem of malaria and thereby designing holistic interventions approach. It will also attempt to warrant policy makers to give more attention to urban malaria, as uncontrolled urban population growth calls for upscaled and adapted strategies.

1.7 Ethical Consideration

After the Graduate Committee of the Department of Sociology and Social Anthropology at Addis Ababa University approved the study topic, the researcher has taken letter of clearance to be submitted to the concerned officials. Before commencement of the actual data collection, written permission was obtained from the Jimma Town Health Bureau. After explaining the importance of the study, verbal consent was obtained from each individual participant.

1.8 Operational Definition

Community refers to a group of people living in a particular area and therefore having shared values and cultural patterns, and social problems**.**

Malaria Management refers to the whole process of recognition of the causes, symptoms and transmission of malaria and seeking health care for its treatment.

Malaria Control is a process that requires eradicating the carrier mosquito or reducing man-vector contact so as to cut in the life –cycle of the parasite.

1.9 Organization of the Study

This thesis was organized in to five main chapters. The first chapter consists of the introduction, statement of the problem, objective of the study, research methodology, scope and limitation of the study, siginifcance of the study and ethical considerations. The second chapters dealt with review of related literature. The third chapter is the analysis and presentation of the result and the fourth is the discussion of the results along with some empirically data ever generated by different researchers on the area. Finally the last chapter presents the conclusion and recommendations.

CHAPTER TWO: REVIEW OF THE LITERATURE

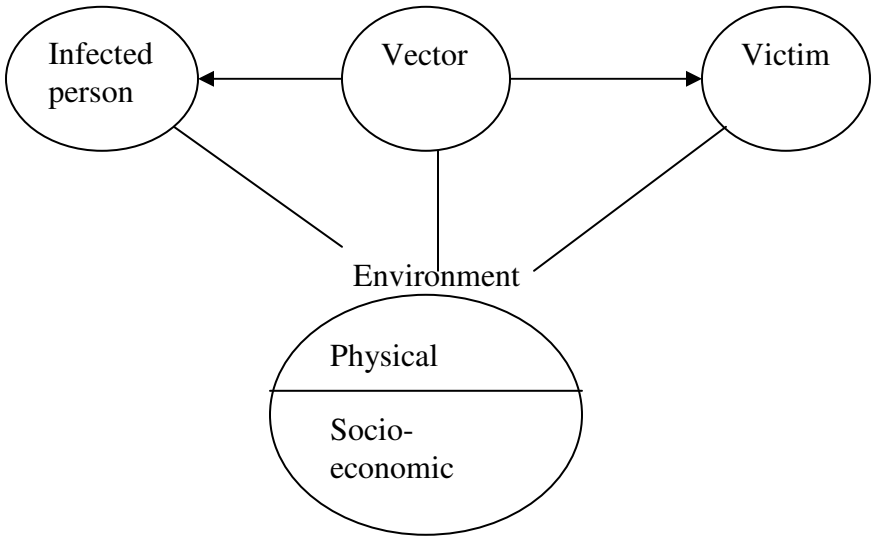
2.1 Background to Malaria

Malaria is as old as mankind. It is unique among disease because its roots lie so deep within human communities. When human being had toiled up the perilous paths of

evolution and emerged on earth as such, mosquitoes were already on hand to sting them (Williams, 1969).

The discovery of a parasite as the cause of malaria was isolated by the Frenchman, Laveran in the years 1878-1880. His work revealed the fallacy of the long belief that misasmas, foul air rising from wet, marshy ground caused malaria (hence in 18th century, people in Italy associated malaria with "bad air" (mal'aria) from which the name has been derived. The main credit for malarial research goes to Ronald Ross, who discovered the transmission of malaria by Anopheline mosquitoes in 1897. Ross found out that malarial parasites grow as cysts on the stomach walls of Anopheline mosquitoes which had previously fed on a malaria patient. Later in 1898 Grassi and his colleagues working in Italy demonstrated human malaria transmission through bite of mosquitoes (Prothero, 1965).

Figure 2.1: A diagram that shows the forces of malaria transmission



Source: Prothero, R.M (1985) adopted from L.J.Bruce-hwatt.

Thus, the forces of transmission of malarial infection believed to require the interaction of four epidemiological factors; the human host; the malarial parasite; the anopheles vector; and the physical, biological and socioeconomic environment (Strickland, 1992).

Malaria is caused by the presence in the red blood cells, of a unicellular protozoon belonging in the genus of plasmodium. There are four main species of human malaria parasites: Plasmodium *falciparum*, Plasmodium *vivax,* Plasmodium *malariae*, and Plasmodium *ovale.*Of these four species, Plasmodium *falciparum* causes severest type of malaria .Some of the chief symptoms of malaria include: fever ,cold shivering rigor, burning dry skin and drending sweat that lowers the temperature ,common headache, vomiting ,poor appetite, thirst and high fever(Jamison et al,1993; reviewed in Tababer,2006).

According to the report complied by the AAAS (1991), the earliest scientific records on malaria in Ethiopia come from Italian investigators like Lega, Raffeaele, and Canales in 1937 and Corradett in 1938 and 1939.

2.2 The Burden of Malaria

Malaria has probably accounted for more deaths and has influenced the course of history more than any other disease. The number of malaria deaths in the world has been estimated at 1.1-1.3 million in World Health Reports 1999-2004. Based on reported malaria data and estimations of populations at risk and incidence rates, it is estimated that the malaria incidence in 2004 was between 350 - 500 million cases. Malaria is considered to be endemic in 107 countries and territories (WHO, 2005).

And about 90 % of the world's malaria deaths are estimated to occur in tropical Africa south of the Sahara, where the majority of infections are caused by the most dangerous species, Plasmodium falciparum, which is predominantly transmitted by vectors that are highly efficient, widespread and difficult to control. It is generally agreed that malaria causes around 20% of all deaths in children under in Africa and that it is now the most important cause of death in this group. In malaria endemic countries in Africa, 25-40% of all outpatient visits and 20-50% of hospital admissions are for malaria (WHO and UNICEF, 2003).

While malaria today is associated with tropical countries, it is only within the last fifty years that malaria has been driven out of the temperate and developed countries of the North (Tren and Bate, 2001). Thus, the disease remains one of the major tropical health challenges in the world today. Williams (1969) so asserts that in the tropical world, where the damp heat itself lies like a great weight on land, malaria – nature's model of the torture rack-more than any other diseases has made life, liberty, and the pursuit of happiness a weary, wearing business.

Most of the people at risk of malaria in Africa live in areas where transmission is relatively intense and continuous to do so. Only, a smaller proportion of people in Africa live in areas of seasonal and less predictable transmission due to lower temperatures or rainfall in highland or desert fringe areas (WHO, 2004a). In some areas, development projects, war and civil disturbances have all increased the malaria burden. All of these countries have had their health services and malaria control activities disrupted in the last decade (WHO, 2004a).

Besides its death toll, malaria is both a cause of poverty and a result of poverty. It has had a disastrous effect on economic development throughout the world and continues to do so in some of the world's poorest developing countries (Tren and Bate, 2001). The burden of malaria is causing many countries in Africa to sink further into poverty. It has been estimated that it causes a reduction of 1.3% in the annual per capita economic growth rate of malaria endemic countries and the long-term impact of this is a reduction of the GNP by more than a half. The economic effects of malaria are especially noticeable in rural areas, when there are greatest needs for agricultural work. Interms of both direct and indirect costs of healthcare can be a substantial burden to poor households, which may spend up to 34% of their total income on health care (WHO and UNICEF, 2003).

The interaction between HIV and malaria in adults is also now well documented as the serious health burden. In areas of stable malaria transmission, infection and fever rates among HIV infected adults increase. In areas of unstable malaria transmission, HIV co-infection is associated with severe forms of malaria and death. Certain anti-malarial therapies also appear less effective among HIV-infected adults. Pregnant women are especially vulnerable to HIV and malaria co-infection, suffering more episodes of malaria and adverse birth outcomes. Furthermore, acute malaria episodes result in elevated HIV

viral loads. This relationship is of particular concern in sub-Saharan Africa where both diseases show a significant degree of geographical overlap (WHO, 2004).

Malaria is also a major problem in peri-urban areas of most African cities, where, very often, the climate and the environment allows vector densities associated with intense transmission. In inner-city areas of larger urban agglomerations, anopheline-breeding sites may be unevenly distributed, so that some urban populations are rarely exposed and therefore develop less immunity (WHO, 2005).

Considering different plausible scenarios, researchers estimate an annual incidence of 24.8–103.2 million cases of clinical malaria attacks among urban dwellers in Africa. These figures translate to 6–28% of the estimated global annual disease incidence (Keizer et al, 2004).

Like other developing countries, the burden of malaria is so immense in Ethiopia. Falciparum (P.f) and P.vivax (P.v) are the most dominant malaria parasites in Ethiopia. They are prevalent in all malarious areas in the country and their relative composition generally is 60% and 40% of the malaria cases respectively (MHO, 2006).

In a population of approximately 67 million, 68 % of Ethiopians is at risk of contracting malaria (MOH, 2006). About 40 % of the population lives in epidemic areas, while another 24 % resides in endemic areas (WHO/RBM, 2004). The average number of malaria cases is estimated to be 4 to 5 million; however, in years when severe epidemics occur, malaria prevalence can reach 10 million. Malaria accounts for 13 to 26 % of all inpatient admissions, and accounts for 13 to 35 % of mortality in health facilities (MOH, 2001). It has also been documented in the nationwide child survival study that malaria affected school attendance by 20 % and contributes to 47 % of the child death in Ethiopia (MOH, 2006).

Malaria is also a significant impediment to social and economic development in Ethiopia. It impedes flow of trade, foreign investment and commerce. In endemic areas, malaria

strikes during planting and harvesting seasons, cutting down productive capacity at a time when there is the greatest need for agricultural work. The disease is also associated with loss of earnings, low school attendance, and high treatment cost. Overall, Malaria in Ethiopia is estimated to account for 30% of the DALYs (MOH, 2006).

Health facilities are also overwhelmed with patients and a lot of resources are required to deal with the emergency situation. The overall burden of malaria showed significant increases (21-23 increase on average as compared to the 2001 level) over the period of the last five years. The highest burden of malaria (30-34 % increase) was observed in 2003 and 2004. The high case fatality rates were particularly observed during the 2003 epidemics, particularly in the Oromiya, Amhara, Tigray, and SNNP regions (MOH, 2006).

The progressive increase in the annual trend of malaria is also related to the widespread decline in the efficacy of the anti-malarial drugs and the low coverage of preventive interventions such as IRS and ITNs that reaches only 20% of the population at risk (Negash et al, 2005, cited in MOH, 2006).

2.3 Perceptions about Disease Causation and its Transmission

People in different societies hold a variety of beliefs about the causes of illness and its transmission that vary according to cultural factors, and hence have a direct consequence for both preventive and treatment seeking behavior. In their topic of Lay etiology of disease (Janes et al, 1986) made apparent that belief systems of a culture influence what is the causative agent cited for the illness and how should it be treated? Treatment in

keeping with these basic beliefs is directed at specific "culture –bound" agents and can be understood only in light of the accepted etiology. And so, to gain general insights into the cause of ill-health in general and malaria in particular, it is vital to review the various explanations or theories of illness causation.

2.3.1 Theories of Illness Causation

In most traditional societies, before new medical profession started to claim the monopoly of health care, health care responsibilities in most societies are placed up on the patient's family or his kin. Usually when an individual fall sick, the family members get together and embark on the search for causes for such sickness and its eventual treatment. And the culture of each community has specific beliefs about disease causation, and the family's role in the diagnosis process is to identify the kind of etiological pattern the symptoms appear to follow. Therefore, making enquiry in to the explanations of illness causation is a trademark for understanding the beliefs behind cause of malaria apprehended by a community.

Various studies, thus, have addressed the subject of disease causation or disease etiology especially in non-western societies. At this juncture, two fundamentally and widely studied theories of illness causation in medical sociology and medical anthropology are briefly underscored. These are the pesonalisitic theories of illness causation and the naturalistic theories of illness causation.

According to Foster's (1976) personalistic etiologies, diseases are believed to be caused by an active, purposeful, intervention of an agent who may be human(a witch or sorcerer), non human(a ghost, an ancestor, an evil sprit etc) or supernatural forces such as deity or other powerful being(Helman ,1990).

Foster second classification comprise naturalistic etiologies .In this category, diseases are believed to be caused by natural forces or conditions such as cold, heat, winds, dampness and ,above all by upset in the balance of the basic body elements(Foster,1976 and

Helman,1990).This classification parallels Clements(1973) category of diseases believed to be caused by what he termed external material agent .Both Clements and Foster concur in this classification which petty much resembles the western germ theory of diseases causation (Vallis et al, 1985).

Similarly, Murdock (1980) explains that personalistic explanations of illness attribute health problem to the willful acts of external beings. The causal agents in this sort cut across the natural and supernatural world. On the other hand, the naturalistic explanations of illness attribute health problem to non supernatural agents and understood as the bodily response presumed natural factors under abnormal conditions.

As reviewed in Tababer (2006), Young (1970) has asserted that Ethiopians attribute causes of health problem to either personalistic or natural agents and treatment is therefore, believed to be the reflections of these cause. This implies that people's understanding and interpretations pertaining to bodily functions, health and illness are shaped by the existing culture of the localities and shows certain differences cross culturally (Citied in Tebaber, 2006).

2.3.2 Perceptions about Causes and Transmission of Malaria

Understanding community's perceptions of malaria, its cause and transmission, and the factors which influence these perceptions, must be a central part in escalating a successful intervention for malaria treatment and control.

Examples of "misconception" about causes of malaria are reported in research from all over the globe. In Tanzania and Ghana it has been reported that malaria is considered a result of excessive heat or overwork. Specifically, in Ghana malaria is caused by excessive contact with external heat which upset the blood equilibrium (Agyepong, 1992).

Similarly, elsewhere in the Guatemala malaria is thought to be derived from exposure to cold or wet conditions; weakness or poor general health; problems related to hygiene; poor eating habits or eating too much the wrong foods (Ruebush, et al, 1992).In another study of fake malaria and hidden parasites the ambiguity of malaria in Lipangalala of Tanzania ,the local knowledge about the causes of malaria mainly referred to drinking water or wading through dirty water or being exposed to intensive sun(Muela et al ,1998). These explanations directly fed in to the naturalistic explanation of illness causation.

Links between malaria and supernatural forces are common in most societies .In Gambia and in Kenya, malaria especially in children, is often perceived as a result of the child being possessed by an evil sprits or devil (Mwenesi, Harrpam, and Snow, 1995).The connection between evil sprits (majini) and malaria was also investigated during study conducted with women in rural Lungwena of Malawi (Kulmala, 2005). These explanations directly fed in to the domain of the naturalistic theories of illness causations.

In one study in rural Ethiopia Wakgari et al (2008) state that the causes of malaria could be sleeping with a person who has the disease through breathing, by drinking dirty water, or by being exposed to the cold or the bad smells of swampy areas. Some participants in the study also mentioned ‘mosquito bite’ as the cause. Some participants had other answers such as ‘drinking contaminated water’, ‘hunger’ or ‘exposure to cold’. Skipping meals or working when hungry was another perceived cause that could lead to malaria.

2.4 Treatment Seeking Behavior and its Explanatory Models

Treatment seeking behaviors of people may depend on the perceived causes of illness. As to Helman people seek for medical help depends on the etiology of the conditions whether it is believed to originate in the individual, or in the natural or supernatural worlds (Helman, 1990). Similarly, severity of the illness, access to and cost of treatment options and characteristics of health care providers (both modern and traditional healers)

influences treatment-seeking behavior. In view of that, attempts will be made to underline the common treatment modalities and the respective treatment seeking behavior under the following sections.

2.4.1 Treatment Modalities of Illness

Accredited to the diverse causality of illness, people in any society use a single or a multiple options of illness treatment. Just as etiologies differ drastically between cultures, so too do the treatment chosen to free the affected individual from illness. As of Janes et al (1986), the attitudinal system of the endemic population determines to whom the patient will go for treatment, the type of treatment accepted, preventive measures followed, and the success of intervention on the part of extra community medical systems. Kleinman (1980) stressed that most decisions about health care and treatments occur in what he called the popular sector – as differentiated from the 'folk' and the professional sectors.

Numerous studies have documented the importance of home treatments. Ryan (1995) found that in a Kom village of Cameroon, 83% of the illnesses were treated at home, with 22.5% of the 454 illness episodes seeking treatment outside the home. Kroeger (1983) reported that 80% of illnesses are managed within the household, further pointing to the importance of looking at the home as a major player in the management of health problems. Despite self -care is central to the available alternatives, it has received relatively little attention in illness behavior research to date. In deed, studies carried out in North America and Great Britain indicates that roughly 70 to 90 % of all illness episodes are never seen by a physician (Vallis et al, 1985).

According to Helman (1990) even in large and more complex societies, therapeutic options are likely to be available for a person provided that individual can afford for them. Therefore, in modern societies whether western or non- western people are more likely to exhibit medical pluralism. On the other hand when people perceive themselves

as ill, they may do nothing or a great of them may try to treat the illness by themselves (self-care) more often than formal help seeking (Vallis et al, 1985).

In general multiple treatments are common both in the concurrent use of different types as well as in the sequential use of various sources of treatment in all societies. And as to McCombie (1996), treatment modalities can be generally separated in to three different categories: home or self-treatment, including both herbal/ traditional treatment and antibiotic use; traditional techniques; and the official sector such as hospitals, clinics, dispensaries, private practitioners and village health workers.

Treatment seeking for malaria also involves all the activities or modalities engaged in by people to avert or treat the occurrences of malaria. Perceptions about the cause and appropriate methods to be used can play a large role in the type of treatment chosen. Thus different etiological explanations for malaria can lead to different treatment methods. Cost, convenience and the attitude of health staff are also obvious reasons.

Where for example, malaria is thought to be of supernatural origin, treatment is usually within the domain of traditional medicine. On the other hand, those illnesses thought to be due to natural causes can be cared for through more modern methods and treatment therapies. The two are often combined, sometimes simultaneously, especially in Africa (Igun, 1987). Moreover many cultures do not have an illness concept or general category that corresponds to the biomedical term malaria .In light of many difficulties in diagnosing of malaria case, it s important to study the local categories and illness that correspond to malaria, since the concept of what is and what is not malaria can affect treatment seeking behavior (McCombie, 1996).

Severity of illness may be related to the hierarchy of resort in seeking treatment for malaria, with the use of multiple treatment as one treatment fails and the illness worsens, people may take resource in other drastic or costly means to alleviate it (WHO, 2003). When people employ a hierarchy of resort in seeking treatment for malaria, home treatment usually serve as the first line of defense. The importance of home treatment

with a particular emphasis on malaria has been shown in a variety of studies (Foster, 1995). In developing countries, constrained access to health care facilities reinforces the need to focus on local solutions in the management of illnesses. Particularly in the field of malaria, interventions have been designed to improve access to drugs and treatment compliance. The author goes on to say that self-treatment in Africa is the rule rather than the exception (Foster, 1995).

Cost and convenience are also obvious reasons for seeking traditional treatment method and healers in developing countries where the majority of the people are poor. Siva (1991) argues that the use of herbal remedies in the treatment of malaria is widespread in Africa, since they are often inexpensive alternatives to western antibiotics. Traditional healers may be consulted for other reasons beyond cost. In study of the use of traditional healers in the malaria volunteer programme in Thailand, villages preferred traditional healers because villages felt more comfortable having their finger prinked with them and they felt that they were more able to complain about their symptoms and receive a sympathetic response (Okanurak, Sornmani and Chitprarop, 1992).

Absolutely, concern over cost of treatment seems to be a primary reason for the search of other treatment modalities than modern health care. This does mean that people never visit modern health care or receive better treatment from all modern health care settings. Studies conducted thus far confirmed that people usually prefer private clinic to public health centers. The possible barriers to use public health centers include long waiting time, common at rural health facilities, as well as shortage of medicines and doubt about the effectiveness of the treatment (WHO, 2003, Wakgari et al, 2003).

The attitude of the heath staff may be yet another reason for avoiding official health facilities for malaria treatment. When staff are brusque or condescending (due to ethical perceived class differences or other reasons), patients may not be comfortable asking questions to clarify dosage schedules or they may feel belittled .In deed, the quality of interaction between staff and patient is often neglected in studies of health clinic attendance, even though this may be an important deterrent to facility use (Foster, 1995).

Similar to the African countries, home remedies, and indigenous medicine by local healer and modern medicine typifies treatment strategies in Ethiopia. In Ethiopia especially in rural areas, it is common to seek treatment from home before any other action for health problem including malaria incidence (Mirgissa, 1993). Despite this fact, home treatment is the most overlooked subjects of study in Ethiopia. Thus, the diagnosis and treatment of malaria at public health facilities was the primary focus in Ethiopia until the early1990s (Wakgari et al, 2008).

Treatment seeking of malaria in Ethiopia is determined by several factors. In study of malaria related seeking behavior in Ethiopia, researchers found that, access, quality of care and perceived serious of illness are the main factors that influence treatment –seeking behaviors (Wakgari et al, 2008). Health staff may not carry out proper roles and have no keen interest to help the patient, where some of the health agents were founds to be selling anti –malaria drugs illegally (Yeneneh et al, 1993).

2.4.2 Health Seeking Behavior Models

It should be clear that noteworthy to identifying the health –related seeking characteristics of a person or community is the understanding of psychological, social and cultural correlates of individual's social settings as well as the determinants at risk for example ,public health officials (Janes et al ,1986).Allegedly, health seeking behavior models from social psychology, medical sociology and medical anthropology allow for considerable extension of the determinant factors for behavior of knowledge ,attitude and practice studies.

In public health, probably the most utilized models from social psychology is the Health Belief Model (HBM).The Heath Care Utilization or Socio-behavioral Model by Anderson, and the Decision Making Model are the most known from Medical Sociology and Medical Anthropology respectively. As the Social Psychologist argued that health beliefs shape the terms of rational decision –making, sociologists and anthropologists

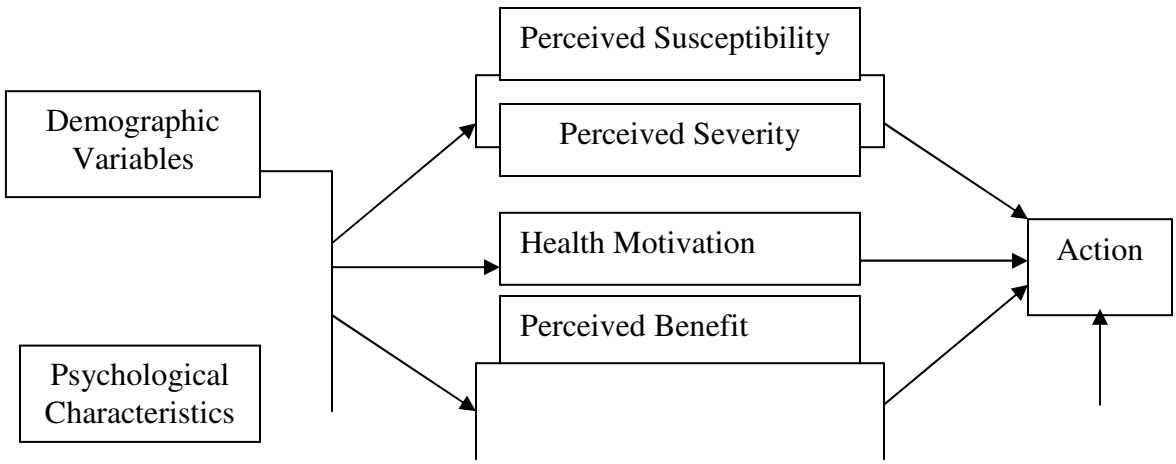
argue that a society's local, culturally –grounded illness theories shape its members' illness behavior and the choices they made among traditional therapies, folk healers and biomedical practitioners (Vallis et al, 1985).

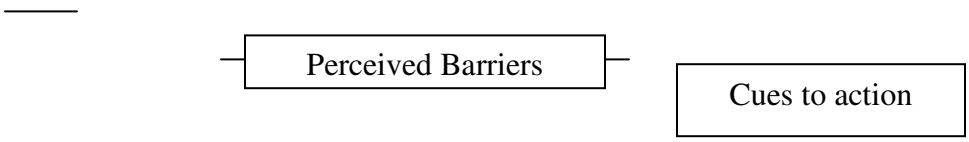
Another recent development related to health seeking behavior model in sociology is a theory of health lifestyles (Cockerham, 2007). All of these models contain pertinent variables, which are considered to be relevant for explaining health seeking behavior. But, neither of theses models is congruent, nor independently makes full account about health care seeking behavior. The researcher, therefore, adopt relevant variables in the models to the peculiarities of this study with the aim to increase the repertoire of possible key concepts.

2.4.2.1 The Health Belief Model (HBM)

According to Cockerham (2007), one of the most prominent socio-psychological approach premeditated to account for the ways healthy people seek to avoid illness, is the health belief model of Irwin Rosenstook (1966) and his colleagues M.Becker (1974).The model hypothesized that the perceived susceptibility to a disease and the perceived severity of the disease, combined with perceived benefits of preventive actions minus perceived barriers to taking those actions ,explained the likelihood of an individual taking preventive health measures, complying with the prescribed regimes ,or utilizing services (Vallis et al, 1985).

Figure 2.2: The Health Belief Model





Source: The Health Belief Model, Sheeran and Abraham, 1995.

According to Sheeran and Abraham (1995), the action in the HBM is guided by:

1) Beliefs about the impact of illness and its consequence s which depends on the perceived susceptibility of a certain illness or perceived severity if illness and its consequence.
2) Health motivation or readiness to be concerned about health matters.
3) Beliefs about consequence of health practices and about the possibilities and the efforts to put them in to practices.
4) Cues to action, which includes internal and external factors, which influence action. For instance the intensity of illness symptoms, mass media campaign, and advice from relevant other (family, friends and health staff).
5) Beliefs and health motivation are conditioned by socio-demographic variable (class, age, religion, gender, etc) and the psychological characteristics of a person.

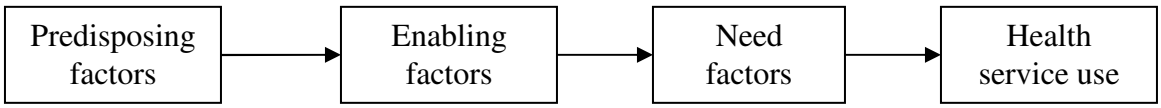
Critiques argue that the HBM could partial account health seeking behavior of people. The reason is that, the model has demonstrated considerable utility in the study of health behaviour.The individual subjective assessment of the health situation becomes the critical variable in the utilization of health services explain (Cockerham,2007).And in the health belief model research ,the analysis of cultural beliefs is made doubly subservient ,relativized to the privileged perspectives of current medical knowledge and placed in the service of a utilitarian theory of illness behavior(Vallis et al,1985).

Researchers also argued that the health belief model could not be entirely adapted to malaria control research. Studies by Mwenesi (1993), for example, found out that in endemic areas malaria was considered a severe disease (adapted), or that mosquito –nets were not felt effective against malaria because mosquitoes bite day and night, are other examples which show the implications of perceived threat of health behavior. Prothero (1965) has also claimed that people in Africa and elsewhere who are subjected to malaria at high levels of endemicity learn, so to speak, to live with the disease. And mosquito may be regarded as a curse, not because they are vectors of malaria but because of their unpleasant biting habits.

2.3.2.2 Health Care Utilization or Socio-Behavioral Model: The Sociological debate

The health care utilization model (Anderson and Newman, 1973) groups in a logical sequences three clusters or categories of factors (predisposing, enabling and need factors), which influences health behavior. The model was specifically developed to investigate the use of biomedical health services. An adoption of the model has been also proposed for studying health seeking behavior for malaria (Rauyajin, 1991).

Figure 2.3: Rauyajin (1991) Health Care Unitization Model



Examples of the factors organized in the categories of the health care utilization model (Weller et al, 1997) are;

- Predisposing factors: age, gender, religion, global health assessment, prior experience with illness, formal education attitude towards health services, and knowledge about the illness.
- Enabling factors: availability of services, financial resources to purchase services, health insurance, and social network supports.

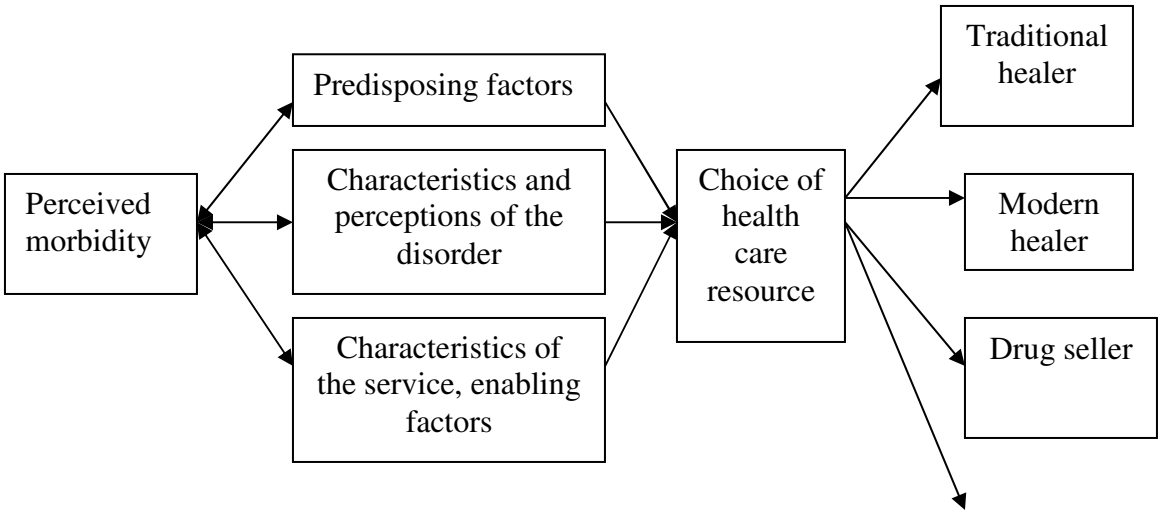
- Need factors: perceptions of severity, total number of sick days for a reported illness, total number of days in bed, days missed from work of school, help form outside for caring etc.
- Treatment actions: home remedies (herbal), pharmacy, counter drugs from shops, injections, traditional healers, private medical facilities, public health services etc.

This model has made an attempt to include both material and structural factors, which are barely taken in to account in the health belief model. However, the health care utilization model center specifically on treatment selections. The model nearly neglect the structure of health care system and its link to a country's social and political macro system by paying attention to only the predisposing and enabling factors.

To address these neglected but chief factors, Kroeger (1983) has made an extension and elaboration on Anderson's model and proposed the socio-behavioral model. Later version by Kroeger (1983), in addition to predisposing and enabling factors, includes health services system factors. This is a valuable extension as he puts emphasis on the link of health seeking behavior with a macro-political and economic context. This model has also shortcomings as it omits need factors which are central for understanding health – seeking behavior (Weller et al, 1997).

Figure 2.4: Kroeger's Model, 1983.

Self – treatment or no treatment



According to Kroeger (1983) model, interrelated explanatory variables ,all of which are affected by perceived morbidity, first an individual's traits or predisposing factors; age, sex, marital status in households, ethnic group, degree of cultural adaptation, formal education, occupation, asset and social network interactions; second ,characteristics of the disorder and their perceptions as chronic or acute, sever or trivial, causal model, expected benefits or treatment (treatment traditional versus modern) and third ,the characteristics of services health services system factors and enabling factors, accessibility, attitude towards traditional and modern healers, acceptability, quality, communication and costs. Thus, the interactions of these factors guide the selection of health care resources.

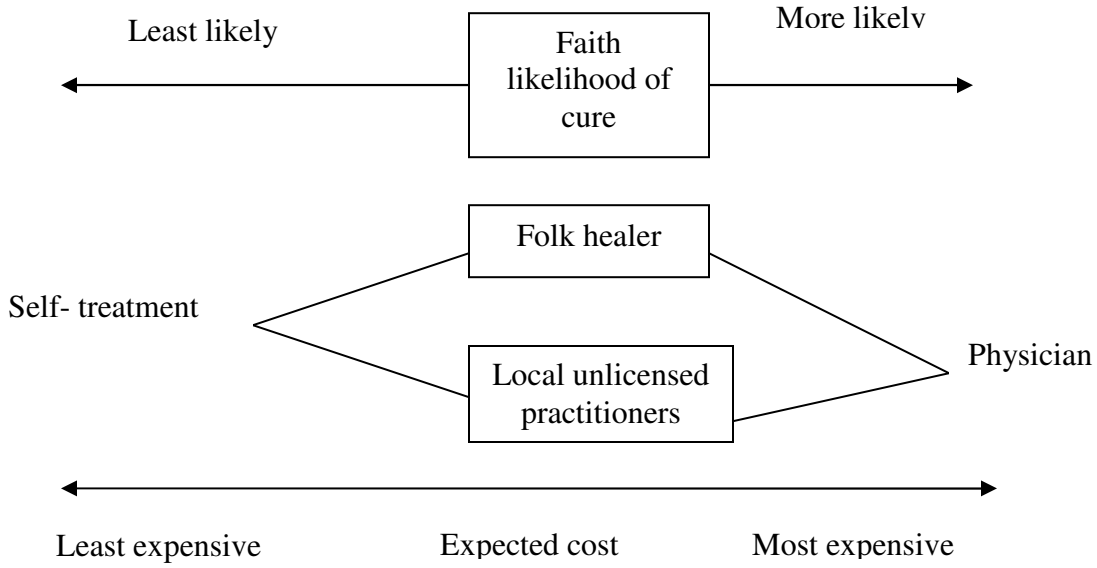
The advantageous of socio-behavioral model is the variety of the factors which are organized in categories, making interventions on therapeutic action (or lack of actions) feasible. They permit the establishment of correlations with good predictability, but not specification of how and why the different factors affect therapeutic selection (Weller et al, 1997).

2.4.2.3 The Decision -Making Models of Treatment Choice: An Anthropological debate

Anthropologists have used a number of different methodological and theoretical approaches to study how the decision to seek help is made and how treatment choices are made from the available alternatives. Generally, two paradigms have emerged in anthropological literature. First, they have an interest in the strategies of resort among the variety of popular, folk and professional therapies available in most societies using the various forms of decision analysis (Vallis et al, 1985).

The second position, grounded in the political economy theories ,criticizes the decision modeling theories ,arguing that characteristics of the objective social order ,not the subjective factor play the decisive role in determining care seeking patterns ,and that the voluntarism assumed by such decision theories is more characteristics of our tacit social constructs than of the actual conditions of most persons seeking health care(Ibid , 1985).

Figure 2.5: Model of Treatment Choice: Adopted from Vallis, T.M. and McHugh, S. (Eds.)
1985).



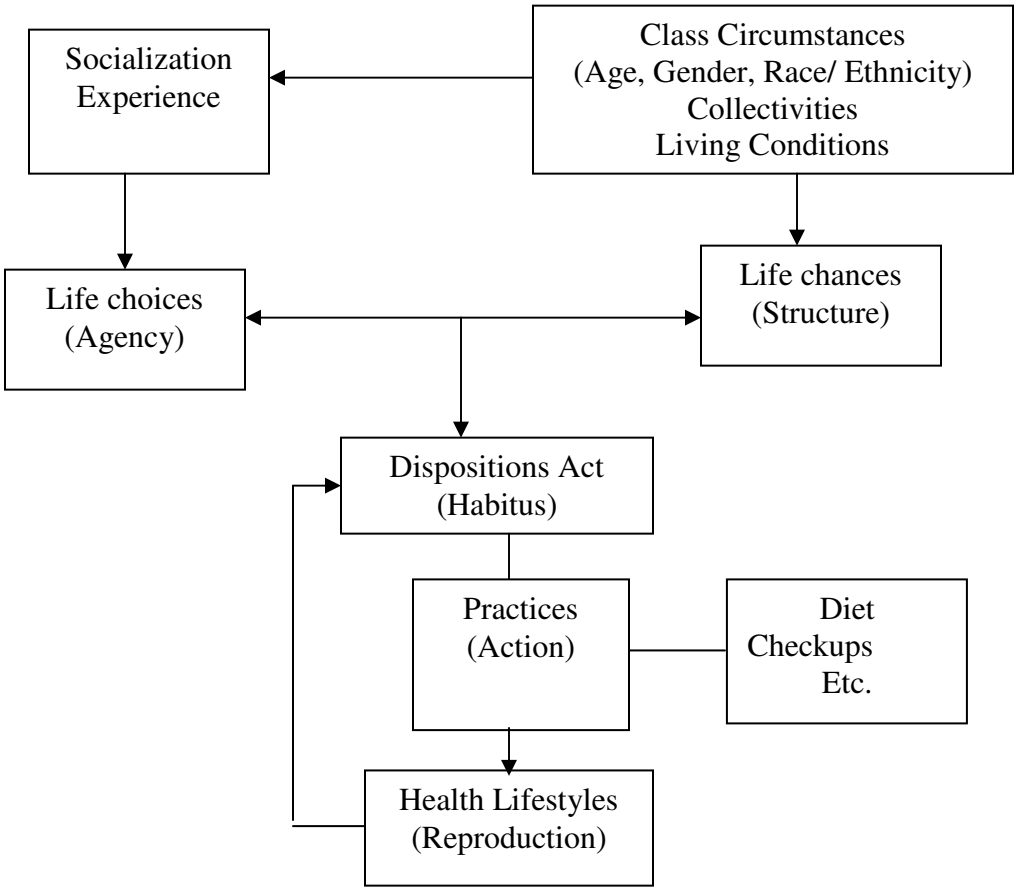
In scheming the above model the editors of the book argued that four criteria were consistently cited as important consideration in the choice of treatment : the gravity or the

seriousness of the illness; the knowledge and experiences posed concerning the given type of illness and its appropriate remedy; the faith or confidence one has in the effectiveness of the folk treatment remedies as opposed to western medical treatment in treating a particular illness ;and the expense associated with some alternatives and available resource to meet them(Vallis et al,1985).

2.4.3 A Theory of Health Lifestyles

One of the recent instigation in medical sociology to explain health behavior is the theory of health lifestyles. The theory is grounded on the belief that it is not in fact an individual behavior but life conditions that determine the health situations of a person. Here under with, find a detailed diagram of health lifestyles developed by Cockerham (2007).

Figure 2.6: A theory of Health Lifestyles, adopted form William C.Cockerman (2007)



In essence, the theory has made an attempt to link the health belief model to the health care utilization model. It depicts that the interaction between the life choice of an agent (a person) and his /her life chance in the social structure mutually determine and are the foundation for maintaining healthy lifestyles. One of the major criticism of theories of health lifestyle is that it dwells on what is being carried out at home more than on how situations out side the home affects the health lifestyle of a family or individuals.

Overall, the theory of health lifestyles explain that the social structure (socio-cultural and economic context) in which an individual live determines his/her life choices. Consequently, life choices compounded by social structure reinforces the person to make an action to carry out activities that would bring about healthy lifestyle.

2.4 Malaria Control Policies and Strategies: General Overview

From the time that the relationship between parasite –vector-hosts was understood it was possible to begin devising ways of dealing with malaria, either by attacking the parasite in man or by killing the mosquito vector. Thus, many effective drugs have been discovered, both to cure those who are suffering from malaria and to give protection and to prevent it being contracted (Prothero, 1965).In general the war against malaria parasites started when man developed the immune response and certain innate genetic mechanisms (Kilama, 1994).

The world health organization has also adopted the concept of malaria eradication prior to 1970, which was based on indoor residual spraying. Meanwhile the theory and practice of malaria eradication were found to be the most complex and challenging task. Initial successes in the eradication efforts in Southern Europe, in India, and other endemic areas that used indoor spraying of DDT resulted in near elimination. However, massive use of there pesticides with insufficient attention to agricultural consequences and economic development efforts has now resulted in major increase in insecticide resistance in Anopheles mosquitoes (Collins and Paskewitz, 1995).

During the 1970s, however, following the failure of eradication efforts in many areas, the shift was made from eradication to control. WHO adopted a revised strategy based on a realistic assessment of an individual region. The two main strategies attempted by WHO involved first, a strengthening of basic primary health services to ensure adequate diagnosis, access to care, and treatment for individuals, while providing protective measures to the community by promoting insecticide treated bed nets and environmental anti-vector measures that would change the epidemiologic equilibrium of malarial transmission. However, continued widespread misuse of and belief in the efficacy of chloroquine as the preventive and treatment drug of choice despite documented high levels of chloroquine resistance have also hampered malaria control (Van Geldermalsen, 1999).

Thus, successes in malaria control over the past have been few but significant and marked improvements have been registered. Because of these ineffective efforts and the seriousness of the problem, WHO, UNICEF, UNDP and the World Bank have recently joined forces in world wide malaria efforts of Roll Back Malaria (RBM) with crucial control policy and strategies with he aim of reducing mortality by 50 % by the year 2010(World Bank, 2001). In order to realize this goal malaria control policy today is designed centering on strategies of disease management and prevention through the use of anti malaria drugs and vector control.

2.5.1 Disease Management

Early diagnosis and prompt treatment are the basic elements of malaria control. Early and effective treatment of malaria disease will shorten its duration and prevent the development of complications and the great majority of deaths from malaria.

In the treatment policy for malaria it is the responsibility of national health programmes to develop a treatment policy for malaria which should ideally be part of the national malaria control policy, covering prevention as well as case management (WHO, 1994).

It is recognized that antimalarial treatment policies will vary between countries depending on the epidemiology of the disease, transmission, patterns of drug resistance and political and economic contexts. Such decisions depend on whether countries are able to implement different drug policies for different regions and whether the health system can deliver the required drug successfully to end-users. As the available drugs become more expensive or less safe, dual policies for vulnerable and less vulnerable groups may need to be considered (WHO, 2003a).

By and large, the most recently used diagnosis of malaria is clinical diagnosis and Rapid diagnostic Tests (RDTs). The diagnosis of malaria must precede treatment with antimalarial drugs and is made first on a clinical suspicion of the disease based on fever and other signs and symptoms. A confirmatory diagnosis requires evidence of the presence of parasites.

Determination of a patient's clinical history and symptoms is an acceptable basis for the management of malaria disease. However, it is not possible to apply any one set of clinical criteria to the diagnosis of all types of malaria in all patient populations. Clinical diagnosis offers the advantages of ease, speed and low cost. In areas where malaria is endemic, it usually results in all patients with fever and no other apparent causes of malaria being treated for malaria. This approach can identify most patients that really need malaria treatment but is also likely to misclassify many who are not (WHO, 2005).

The second diagnosis, RDTs may be an alternative to light microscopy in situations where normal laboratory services are non-existent or overworked. RDTs are immuno-chromatographic tests that detect parasite specific antigens in a finger-prick blood sample. Some tests detect only one species (Plasmodium falciparum), others detect one or more of the other three species of human malaria parasites (P.vivax, P. malariae and P.ovale) (Ibid, 2005).

A review of the current evidence on the use RDTs by WHO informal consultations identified that these tests have many potential advantages such as: producing rapid

results. This is useful in clinical care as well as rapid epidemiological assessments; needing a lower level of training/skilled personnel; requiring lower capital costs than light microscopy (but they can be more costly when case numbers are high (WHO, 2000c).

Certain disadvantages were also identified such as: where prevalence (and host immunity) is high, RDT test results may erroneously suggest a positive diagnosis in patients with parasitaemia incidental to another illness (WHO, 2000c). RDTs detect antigens and not parasites: results may therefore reflect recent and not current parasitaemia. However, antigen detection may be a better indication of parasite load than light microscopy (WHO, 2005).

Home-based treatment of malaria is extremely common in all malaria endemic countries. In Africa, more than 70% of malaria episodes in rural areas and more than 40% in urban areas are self-treated with drugs bought from local private drug sellers. Help from the public health services is only sought if the home based treatment is ineffective. The main reasons are inaccessibility of the health services and limited time, transport or funds to visit them (WHO, 2003a).

2.5.2 Prevention

The role of chemoprophylaxis in malaria control has been considerably reduced in the last two decades. The implementation of this policy was limited by a number of factors, including: spread of chloroquine resistance. Chloroquine, the cheapest and most widely available antimalarial drug, has lost its clinical effectiveness in most parts of Africa (WHO, 2003). Poor compliance with a weekly regimen throughout pregnancy and childhood, adverse drug effects; the contraindication of alternative drugs during different stages of pregnancy and childhood and cost are also other challenges (WHO, 1994).

Vector control remains the most generally effective measures to prevent malaria transmission, and as such it is one of the four basic technical elements of the Global

Malaria Control Strategy. The control options against the adult mosquito are: Indoor residual spraying (IRS) with insecticides; use of personal protection measures or Insecticide-treated material such as mosquito nets (ITNs); larviciding(including use of biocides),environmental management ,including source(breeding site) reduction and Ultra-low volume space spraying(which has limited application)(WHO,1995).

2.6 Ethiopia Malaria Control Policy and Strategies

Malaria control activity in Ethiopia was first launched as pilot projects in the 1950's and then launched into a national eradication campaign in the 60's. In early 1970's, the Malaria Eradication Service was re-organized into a control program. Following this, in 1976 the vertical organization known as the National Organization for the Control of Malaria and Other Vectorborne Diseases (NOCMVD) evolved from the Malaria Eradication Service (MES). Until 1993, this organization had been operating with one central office, 17 regional or zonal offices, consisting of 70 sector offices and more than 1,400 malaria detection and treatment posts (MOH, 2006).

Since June 1993, under the general policy of decentralization and democratization of the administration based on the federal system of administration in the country, malaria control became an integral part of the basic health service and the responsibility of managing malaria prevention and control activities has been vested to Regional Health Bureaus (Ibid, 2006).

Although the effectiveness and the components of the strategy vary with the global efforts, Ethiopia government has adopted malaria control policy and strategies to a certain amount. Disease management and prevention are the pivotal components.

2.6.1 Diseases management

Early diagnosis and effective treatment for disease management remains the most important intervention in terms of its contribution in preventing mortality and reduction

of the incidence of severe illness. Based on evidence collected in 2003, Ethiopia introduced the use of Artemisinin based combination therapy as first line treatment for falciparum malaria in July 2004 and full implementation was started in early 2005. Currently, implementation of the new policy is at health facility level and has reached a nationwide coverage (MHO, 2006).

Malaria diagnosis in health facilities is largely based on clinical diagnosis. Microscopic diagnostic facilities are available only at public health centers and hospitals and in higher private sector health facilities. The laboratory based service is estimated to be accessible to about 30% of the total fever episodes. The introduction of Rapid diagnostic tests (RDTs) in 2005 as the major strategies in home management of malaria is expected to have offered opportunity to expand diagnosis services at peripheral levels (MOH, 2004). The major challenge in the provision of early diagnosis and treatment services remains to be the low access to basic health service and utilization. The high cost of anti-malarial drugs and diagnostic facilities in an environment of a developing economy is also expected to pose a serious threat (MOH, 2006).

2.6.2 Prevention

The two most important vector control activities implemented in the country include In-door Residual Spraying (IRS) and Insecticide Treated Nest (ITNs). IRS is the only and major intervention applied to pre-empt and control malaria epidemics in malaria epidemic prone areas. Insecticide Treated Nets (ITNs) are targeted for area with longer period of transmission, which in Ethiopia, is for a period of three months and above. Other vector control measures such as environmental modification for mosquito breeding source reduction and larviciding are also widely used. The role of these methods in light of the water conservation schemes in the country and the expansion of irrigated agriculture need to be well tailored (MOH, 2006).

Health education also found to be the effective strategies for malaria control. Although no recent surveys have been done on malaria knowledge, attitude and practice (KAP),

previous studies conducted in 2002 indicated that the level of community awareness on malaria illness, its treatment, prevention and control is generally higher in areas where malaria is more common than in areas where transmission is generally low. During the 2001 – 2005 periods, various health education materials have been prepared and distributed by regions. These include health education messaging through radio, TV broadcast and printed materials. More than 118, 000 posters, 90,000 leaflets have been distributed and around 100 radio sessions and 90 TV spots were aired (MOH, 2002).

2.7 Community Participation in Malaria Control

Discussions thus far have tinted how socio-cultural, economic, and political and ecological aspects of health and illness of the community in malaria –endemic areas are important factors in malaria control and management activities. Local socio-cultural, economic, and political and ecological variability and understanding of disease and preventive practices mean that one particular intervention can not be applied to all areas. Accordingly, the choice of control methods appropriate for a specific community requires an understanding of the role the community as a whole plays in malaria management programs. Use of community-based programmes for malaria control is a common approach in many endemic countries, which started some years after the Alma Ata Declaration on Primary Health Care (PHC) in 1978.

For malaria control ,whether today or tomorrow ,people's participation is absolutely ,and in the future ,much will depend on the 'community will' (Sharma and Mahrotra,1986). Mouchet(1982) reviewed in Kibe (2006),wrote that the community can no longer remain a spectator ,but must either be actively involved with vector control or make a financial contribution to control. The use of local community potential was paramount to sustainable vector control and that effective malaria control is depends up on local governments, health institutions and the community's understanding of the need and rational for malaria control (Agyepong, 1992).

With modifications tailored to meet the objectives of a malaria control program and the local epidemiologic setting, the Volunteer Collaborator Networks (VCNs) of Latin America are one of the oldest and most successful examples of community participation in malaria control can serve as an excellent model for community participation in malaria case detection and treatment in other regions of the world (Ruebush et al, 1992).

A study by Okanurak et al (1992) is the most extreme approach of a "malaria worker network" with regard to closeness to the community. Their approach included the training of "malaria workers" – or mother co-ordinators, as they call them – nearly down to the household level, where each mother co-ordinator, provided with antimalarial drugs, was responsible for about 20 households. Besides that malaria workers were necessarily female, one of the interesting aspects of this approach was the combination of bringing education of mothers and antimalarial drugs to the household.

The importance of community participation has also been acknowledged by one study in Oromiya. Thus, a study by Wakgari et al (2005) asserts that when malaria epidemic covered wide geographical areas and caused high morbidity and mortality within a short period of time, mobilizing of the necessary human and material resources, particularly the community itself is extremely important in the control of malaria epidemics.

2.8 Conceptual Framework for the Study

In the foregoing sections of this chapter, an endeavor has been made to review relevant literature that would enable the researcher espouse applicable variables and concepts to construct conceptual framework for the study. In order to systematically understand about how the framework is constructed it is, therefore, essential to foretaste some of the models and theories that have been discussed in the proceeding sections of this chapter. Furthermore, reading the various sections under the review literature would enable the reader to scrutinize some of the concepts in the framework. This helps as a lens, through which the reader could gain a general insight into the scope of the study. The conceptual

framework for the study, as illustrated in figure 2.7, is structured along four principal dimensions, answering the questions:

- What is the option of malaria management and control activities?
- Who are or/and should be the actors in the field?
- How the four analytical dimensions namely, economic context, political context, socio-cultural of the community and environmental context of the Town affect malaria management and control?

2.8.1 Options for Management and Control of Malaria

The first options for of malaria management are early diagnosis and treatment. Home management is based on Rapid Diagnostic Tests or other traditional methods. Clinical management is based on microscopic laboratory diagnosis. Besides these conventional modern options, households also may seek treatment from other alternatives. Prevention by using antimalarial drugs and vector control is the second option in malaria control activities.

2.8.2 Actors and Partners.

A wide range of individuals, groups and organizations should be concerned with malaria management and control as service users, service providers, and intermediaries. The household should recognize malaria as health problem and seek early and prompt treatment from health care settings. The community should not only act as service users but also as service providers in malaria management and control. The community, for instance, should form a community based organizations to involve in environmental management and in supporting the health care providers in malaria management particularly by appointing the community health workers and community drug distributors. Both public health care and private health care providers should also play the crucial role in the management and control of malaria. Other organization like NGOs should take part in assisting the public health sector with necessary supplies and

sensitizing the community for jointed efforts with other sectors. Theses organizations as intermediaries should create linkage between community, government and private sector. The public health mangers with the help of local leaders should organize, direct, plan and supervise the activities of the other actors and partners involved in malaria management and control.

2.8.3 Context

The effectiveness and sustainability of malaria management and control systems depend upon their adaptation to the prevailing context of the community in which they operate. The most important aspects in this respect are outlined below at the political, socio-cultural, and economic and environment at all levels.

Political Context

Malaria management and control is influenced in numerous ways by the political context. The existing relationship between local and central governments (the effective degree of decentralization), the form and extent of community participation in the public processes of health policy making and NGOs all affect the character of malaria management and control. More important in the role of the government is the need to revitalize the role of public health care and private health care providers in health sectors.

Socio-Cultural Context

The functioning of malaria management and control systems is influenced by the extent to which the community recognizes malaria as menace, beliefs about its cause, its transmission and handling patterns associated to symptoms and underlying health care seeking behaviors of the city's urban population. These factors are, themselves, conditioned by the people's social and cultural context. Effective malaria management and control also depend up on the social network of the community. The need to improve

behavior patterns and attitudes regarding malaria management and control must be based on sound understanding of these social and cultural characteristics.

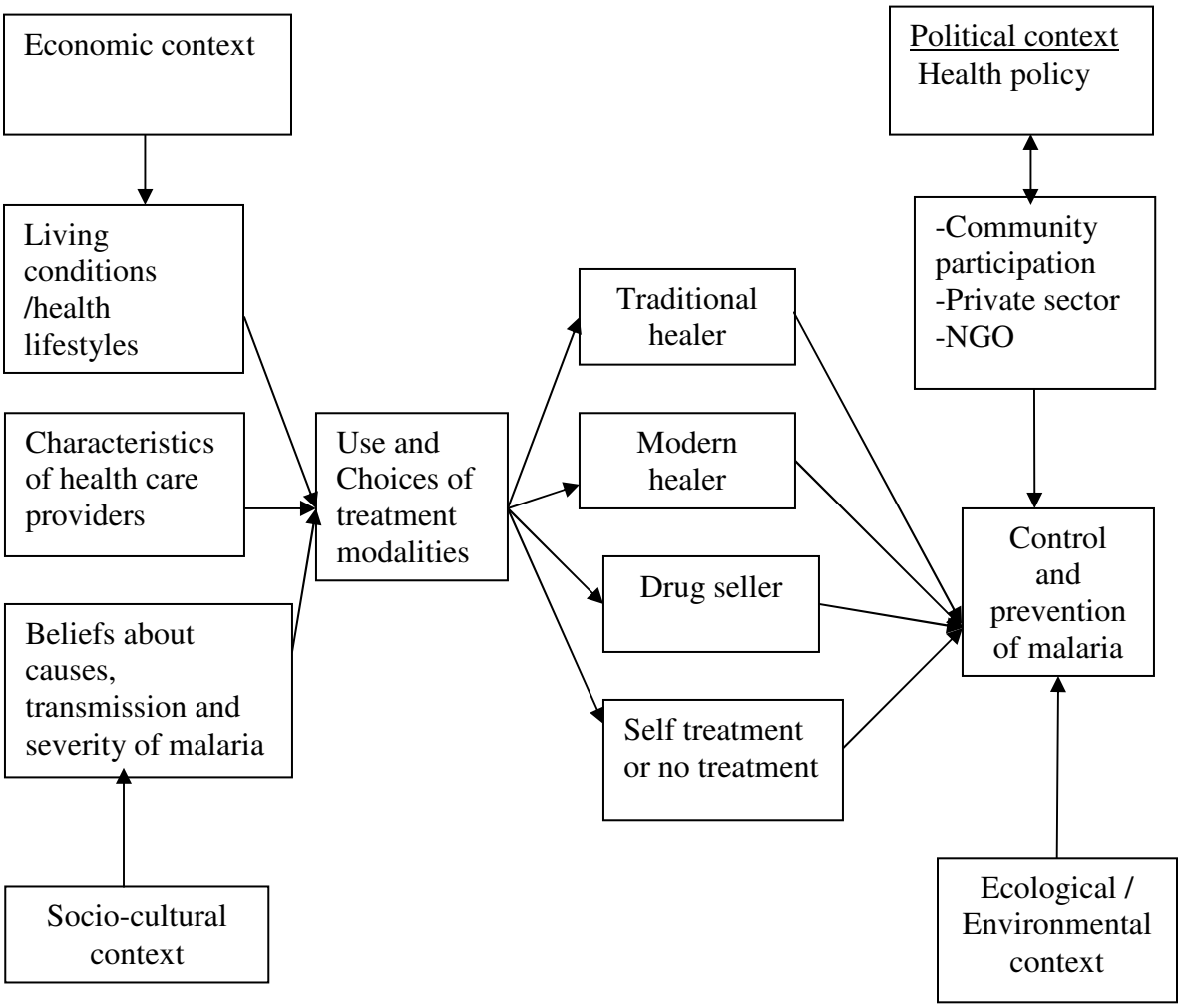
Economic Context

The character of malaria management and control tasks and the technical and organizational nature of appropriate solutions depend a great deal on the economic context of the country and/or city in question and, in fact, on the economic situation in the particular area of a community. The level of economic development is an important determinant of the health personnel and medical equipments supplied in health facility to tackle the problem of malaria. At the same time, the effective demand for malaria management and control services, the willingness and ability to pay for a particular level of service, is also influenced by the economic context of a particular community. In general the living conditions of the household determine the health lifestyles of the household or community at large.

Environmental/ Ecological Context

Lopsided interaction of man with physical environment has adversely affected its nature and made conducive habitat for the rejuvenation of the vector of malaria. Firstly, at the level of the built environment, the size and structure of a settlement has an important influence on the character of potential breeding sites for malaria. Spontaneous settlement with poor drainage system can be one possible factor which complicates the management and control of malaria. In short, the way community modifies and alters the environment should be taken in to account in the effort to malaria management and control.

Figure 2.7: Conceptual Framework for the study



Conscientious to this conceptual framework and the research's objective, the study will attempt to study about community's perceptions of malaria and the underlying intervention for its management and control in Jimma Town, Oromiya National Regional state. A critical analysis was made on how the attitudes of health care providers affect the treatment choices and practice of the community. Moreover, the level of community participation in the control and prevention of malaria as ratified in the health policy was being assessed.

CHAPTER THREE: RESULTS

This chapter is concerned with the analysis and interpretation of primary data**.** A total of 422 face-to -face interviews were conducted with survey respondents at their households. The sample was allocated to each ganda *(the* smallest administrative unit in Oromiya*)* in proportion to its households. Moreover, a total of six focus group discussions and a total of nine in-depth interviews were conducted. The analysis dealt with pieces of information about the respondents' perceptions of malaria, their knowledge about the causes, transmission and symptoms of malaria. It also dealt with community perceptions about treatment of malaria and their treatment seeking behavior. Finally, an attempt was made to understand the community's knowledge and practice of malaria prevention and control.

3.1 Background Characteristics of the Respondents

In a total of 422 households visited, all the intended respondents were available. Hence, in the study the response rate was found to be 100 percent. A summary of the socio-demographic background characteristics of the respondents is presented in Table 3. 1. The study consisted 35.8 percent males and 64.2 percent females of the total study subjects. The ages of the subjects range from 15 to 100 years with the mean of 35.2 years (not shown). About 32.9 percent of the respondents are the head of the household and 40.0 percent are their spouses and the rest are their parents and child. The Oromo, 42.9 percent constituted the dominant ethnic group in Jimma Town followed by Amhara, 18.2 percent; Kaffa, 7.6 percent; Dawaro, 6.9 percent; Gurage and Tigre each comprises of 4.5 percent, with the rest 15.4 percent comprising Gumuz, Kambata, Seltie, Yem and Wolayita.

Most of the respondents are Orthodox Christians 55.3 percent, followed by Muslim 29.1 percent, Protestant Christians 14.5 percent, Catholic 0.7 percent and indigenous religion one 0.5 percent. Among the study subjects, 58.3 percent were married, 24.2 percent single, 11.8 percent widowed/er and 5.7 divorced or separated.

Table 3. 1: Socio-demographic characteristics of the respondents.

Characteristics	Male	Female	Total
Age in years			
15-40	101(66.88)	198(73.06)	299(70.8)
41-64	41(27.15)	58(21.40)	99(23.5)
>65	9(5.96)	15(5.53)	24(5.7)
Relationship to the head			

Self	79(52.32)	60(22.14)	139(32.9)
Spouse	30(19.86)	139(51.29)	169(40.0)
Parent	7(4.65)	7(2.58)	14(3.3)
Child	33(21.85)	62(22.88)	95(22.5)
Other	2(1.32)	3(1.10)	5(1.2)
Ethnicity			
Oromo	61(40.39)	120(44.28)	181(42.9)
Amhara	29(19.20)	48(17.71)	77(18.2)
Kaffa	15(9.93)	17(6.27)	32(7.6)
Dawaro	13(8.60)	16(5.90)	29(6.9)
Gurage	6(3.97)	13(4.79)	19(4.5)
Tigre	7(4.63)	12(4.43)	19(4.5)
Other	20(13.24)	45(16.60)	65(15.4)
Religion			
Muslim	38(25.16)	85(31.36)	123(29.1)
Orthodox Christian	89(58.94)	144(53.13)	233(55.2)
Protestant Christian	23(15.23)	38(14.02)	61(14.5)
Catholic	0(0)	3(1.10)	3 (.7)
Indigenous	1(.66)	1(.36)	2 (.5)
Marital status			
Married	104(68.87)	142(52.39)	246(58.3)
Never married	40(26.49)	62(22.87)	102(24.2)
Widowed/er	4(2.64)	46(16.97)	50(11.8)
Divorced or separated	3(1.98)	21(7.75)	24(5.7)
Educational status			
No formal education	16(10.59)	67(24.72)	83(19.7)
Adult education	2(1.32)	15(5.53)	17(4.0)
Primary education	58(38.41)	95(35.05)	153(36.2)
Secondary education	49(32.45)	74(27.30)	123(29.1)
Post secondary education	26(17.21)	20(7.38)	46(10.9)
Occupation			
Private business	35(23.17)	39(14.39)	74(17.5)
Government employee	55(36.42)	36(13.28)	91(21.6)
Unemployed	31(20.52)	64((23.61)	95(22.5)
Housewife	0(0)	86(31.73)	86(20.4)
Daily laborer	26(17.21)	33(12.17)	59(13.9)
Other	7(4.63)	10(3.69)	17(4.0)
Total	151	271	422(100)

Source: Filed survey, 2008

Concerning educational status, 19.7 percent had no formal education, 4.0 percent attended adult education 36.2 percent primary and junior level and the remaining 40.0 percent high school and above. With regard to occupation, 17.5 percent of the respondents run private businesses, 21.6 percent are government employee, 22.5 percent

unemployed, 20.4 percent housewife, 13.9 percent daily laborers and 4.0 percent students.

Besides the socio-demographic characteristics, a certain level of consideration has been made on the socio-economic conditions of the households. The study showed that the average monthly income for 50.9 percent of households was less that 500 birr, for 16.6 percent 501-to1000 birr and 10.4 percent greater than 1001 birr. The rest survey respondents did not show willingness to mention their household monthly income

Table 3.2: Socio-economic characteristics of the respondents

Variables			**Frequency(%)**
Household size (#of member in the household			
1-5	-	-	257(60.9)
6-10	-	-	160(37.9)
11-15+	-	-	5(1.2)
Household monthly income (Cash only in Birr)			
Low income (<500)	-	-	215(50.9).
Middle (501-1000)	-	-	70(16.6)
High (>1001)	-	-	44(10.4)
Not stated	-	-	93(22.0)
Type of house	-	-	
Mud plastered	-	-	330(78.2)
Stone house	-	-	43(10.2)
Break house	-	-	49(11.6)
Household source mass media items ownership	*		
Radio	-	-	341(80.8)
Television	-	-	219(51.9)

Source: Filed survey, 2008

*****Percentage exceeds 100 because of multiple responses.

Regarding household size, there are on average five members per family, with minimum of one and a maximum of 15 per household. The surface walls of houses were made of wood and mud plastered 78.2 percent, stone and cements 10.2 percent and breaks and

cement 11.6 percent. Among the households, 80.8 percent and 51.9 percent owned radio and television respectively.

3.2 General Perceptions and Recognition of Malaria

General awareness about malaria was high among the households in Jimma Town. It was recognized as a widespread and serious disease. This study indicated 99 percent level of awareness. It was also reported as the top diseases threatening the health and socio-economic well being of the community, though the perceived effects differed with different respondents. The term malaria is commonly used as *busaa* among the study community. Moreover, it was used as a synonym for hot body or body pains.

Almost all women and men involved in focus group discussions felt malaria as a common and everyday illness that means a high health burden to the community. Similarly, information obtained from in-depth interviews supported the views apprehended by focus group discussants. The perception was that nearly everyone in the community has already experienced malaria episodes.

Paradoxically, evidences from the survey show that only 109(25.8 percent) households had had at least a person having experienced malaria during the last six months of this study (Figure 3.1). The low malaria cases might be attributed to the unusual malaria transmission patterns due to the absence of heavy and long rainfall from June to August.

The reader should be informed at this juncture that the community's perceptions about malaria are often explained based on its causes, symptoms and ways of its transmission. Thus, it may overlap with some of the topics which will be treated in detail in the following sections. Here, the explanations are merely about general perceptions and recognition of malaria.

In the focus group discussion, women in *Ginjoo Guduruu* understood malaria as a diseases caused by *Bimbii (*Mosquito) reproduced and lived in garbage and swampy

areas. When a *Bimbii* bites people, it transmits the disease. Discussion with male participants also epitomized the knowledge base of women with regard to malaria.

In another discussion held with female caregivers at *Bachoo Booree,* malaria has been defined as a non- curable but preventable disease often accompanied by fever, common cold and sour food taste. Men at the quarter have certainly perceived malaria from biomedical point of view compared to these women. A man from the group has further stated:

> *Bachoo Booree* community knows malaria very well. Evermore, we have been living with the disease. No part of our community has been free from malaria Therefore; malaria by the community has been clearly defined as a disease transmitted by mosquito bite.

A discussion conducted at *Boosaa Kittoo* with women and men categories, described malaria based on its signs and symptoms. Thus, malaria was associated to mosquito *(Bimbii), which* bites and transmits a virus to human body and then causes fever, headache, vomiting and hot body. These groups also avowed that living near swampy (wet) areas and unhygienic environments exposes people to malaria. Not everyone in men category, however, believed that all mosquitoes cause malaria. Thus, a man at Bossa Kittoo goes on to say that:

> The big and black mosquito, which appears during the daytime, does not transmit malaria; it is the smaller mosquito appearing during nighttime that causes malaria.

3.2.1 Perceptions about Cause and Transmission of Malaria

Perceptions about the causes of illness are determinants of treatment seeking decisions. Given the diversities existing in various communities, one has to admit that putting all beliefs about disease causation into two categories as seen in the review of literature is an overgeneralization. Primarily, findings from this study tend to attribute the cause of malaria to multiple factors. As depicted in Table 3. 3, about 88.6 percent of the study subjects indicated mosquito bite as causes of malaria, while other respondents indicated

exposure to unhygienic conditions and cold weather as causes of malaria. And only about 3.8 percent indicated witchcraft as the cause of malaria.

Regarding malaria transmission, 61.8 percent of the study subjects believed that malaria could be transmitted from person to person. However, 32.7 percent of the study subjects perceived that malaria could not be transmitted from person to person, and the rest 5.5 percent of them do not know weather malaria is transmitted from person to person (Table 3.3)**.**

When asked about how someone is infected with malaria, 88.8 percent mentioned the bite of infective mosquitoes (Table 3. 3). Nearly 9 percent of the respondents related it to a close contact with a patient having malaria, while 8.7 percent of them associated it with unhygienic living conditions. These included drinking unsafe water, eating contaminated food and exposure to a bad stink.

Table 3.3: Knowledge about causes and transmission of malaria (n=422)

Variables	Frequency	Percent
Causes of malaria		
Mosquito bite	374	88.6
Unhygienic conditions	269	63.7
Cold weather	129	30.6
Witchcraft	16	3.8
Other causes	16	3.8
Malaria is transmitted		
Yes	261	61.8
No	138	32.7
Do not know	23	5.5
Modes of transmission		
Bite of infective mosquitoes	375	88.8
Close contact with malaria patient	35	8.3
Unsafe drinking water	25	5.9
Bad stink	5	1.2
Eating contaminated food	7	1.6
Don't know	5	1.2

Source: Filed survey, 2008

Percents totally exceed 100 percent because of multiple responses.

The data were further analyzed to assess the relations between some socio –demographic variables mainly religion and educational background of the respondents and their knowledge about causes of malaria. Table 3.4 shows that there were no statistically significant differences between religious affiliations with regard to knowledge about causes of malaria.

Table 3. 4: Relationships of respondents' religious affiliation and knowledge about causes of malaria.

Causes of malaria		Religious Affiliation			Total	Chi-square
		Moslem	Orthodox	Others		
Mosquito bite	No	113	202	59	374	P=0.34
	%	30.2%	54.0%	15.8%	100.0%	
Unhygienic conditions	No	86	166	45	297	P=0.88
	%	29.0%	55.9%	15.2%	100.0%	
Cold weather	No	38	71	20	129	P=0.99
	%	29.5%	55.0%	15.5%	100.0%	
Witchcraft[2]	No	4	9	3	16	
	%	25.0%	56.3%	18.8%	100.0%	

Source: Filed survey, 2008

As shown in Table 3.5,with regard to the association between educational background of the respondents and their perceptions about the causes of malaria, there was a statistically significant difference between illiterate, primary and secondary and above groups in specifying mosquito as possible cause of malaria (P<0.05). However, no statistically significant difference was observed between educational groups and their knowledge of other causes of malaria excluding mosquito bite.

Table 3.5: Relationships of respondents' educational status and knowledge about causes of malaria.

Causes of malaria		Educational status			Total	Chi-square
		Illiterate	Primary	Secondary and above		
Mosquito bite	No	85	130	159	374	P<0.05
	%	22.7%	34.8%	42.5%	100.0%	

[2] The P-value is not stated for the reason that a chi-square test is invalid.

Unhygienic conditions	No	68	114	115	297	P=0.37
	%	22.9%	38.4%	38.7%	100.0%	
Cold weather	No	28	54	47	129	P=0.28
	%	21.7%	41.9%	36.4%	100.0%	
Witchcraft	No	6	5	5	16	P=0.41
	%	37.5%	31.3%	31.3%	100.0%	

Source: Filed survey, 2008

A study conducted in all gandas in Jimma Town found that causation and transmission of malaria were distinguished. Not everyone agreed that mosquitoes cause malaria. Questions asked by participants in the focus group discussions included:

> If *busaa* [malaria] is due to mosquitoes, why is it that it is more common in the dry season when there are few or no mosquitoes? Why is it that some people do not get it even when they are bitten*?* (Mother, Bachoo Booree).

There were participants in this study who then attributed the cause of malaria to factors unrelated to vector-human transmission patterns. They blamed instead the drinking of contaminated water, breathing bad air, staying near somebody with malaria, witchcraft, evil spirits, eating sweet fruits as factors causing malaria. Those women tend to believe that *gagabsaa (cerebral* convulsions), which are a common manifestation of severe malaria in children, were attributed to purposeful intervention either by human beings, in this case sorcerers and witches, or by supernatural beings, passion fruits and staying in cold weather. Cerebral convulsions are linked to what Foster and Anderson call a *personalistic aetiology* belief system (Foster and Anderson, 1978).

A man from the same *ganda* has further explained about the etiologies of malaria as:

> Based on my experience there are two convincing beliefs behind the cause of malaria. First, when a person feels hot body in humid whether, cold whether was believed to cause malaria. Second, when a person feels hot body in sunny daytime and nighttime it is expected that mosquito causes malaria. (FGD –Bachoo Booree).

Economic considerations were also cited as intermediary factors of causes of malaria. All participants involved in the FGDs and in-depth interviews in one way or another acclaimed poverty as causes of malaria. A participant in FGD said '*Poor deity will increase the susceptibility of person to malaria especially children'*. (Mother,, Bossa Kittoo)

By and large, the community's model of causes and transmission of malaria mainly consists of elements derived from the biomedical model; all the two are not entirely congruent.

3.2.3 Perceptions about Symptoms of Malaria

As with other illnesses, a significant percentage of malaria-like illness is first recognized and defined at home. Consequently, respondents were asked about the signs that a person with malaria presents. Knowledge about signs and symptoms of malaria was relatively high with most respondents indicating awareness of key symptoms including raise in temperature/hot body 91.5 percent, followed by other symptoms like headache 85.5 percent, shivering 77.9 percent, loss of appetite 73.7 percent, vomiting 73.2 percent cough 13.0 percent, yellowish urine 33.9 percent and restlessness 13.9 percent (Table 3. 6).

While hot body is mandatory symptoms, which is literally means high fever, almost all participants in the FGDs and in-depth interviews mentioned loss of appetite, headache, lack of sleep and frequent nightmare, frequent thirst, vomiting, feeling too cold and refusal of (stopping) breast feeding in this case for child. Generally, there was substantial agreement on the main symptoms associated with malaria.

From the emic perspective, the community defines a person with signs of malaria by using the logical explanation as '*I believe that a person has malaria when he /she requests too much water to drink. Even babies who are immature to put their idea into speech attempt to*

approach any container holding liquid things. Therefore, urging for water frequently meant that the person has definitely contracted malaria.' (Opinion leader).

Table 3.6: Knowledge about common symptoms of malaria (n=422).

Variables	Frequency	Percent
Fever/hot body	386	91.5
Shivering	329	77.9
Weakness	279	66.1
Joint pain	248	58.8
Headache	361	85.5
Appetite loss	311	73.7
Vomiting	309	73.2
Cough	55	13.0
Yellowish urine	143	33.9
Restlessness	59	14.0

Source: Filed survey, 2008

Total percentage exceeds100 because of multiple responses.

While general knowledge of malaria symptoms is relatively high, this research indicates that symptoms of the severe malaria are not well known among the community. On purpose, this study has also made an attempt to clarify the types of symptoms designate severe malaria. Hence, 52.1 percent of the respondents indicated comma as symptom of severe malaria followed by high fever, convulsion and persistent vomiting. A private clinic owner elaborated this idea as:

> The difference between mild and severe malaria is that severe malaria goes to the head, develops into high body temperature which spreads to the whole body. Then the person becomes lethargic, too weak to stand up and fails to make commands/requests. Then, fails to eat and drink.

Taken as whole malaria is recognized as a distinct disease, and knowledge of symptoms and transmission through mosquito bites is high among the households of Jimma Town. In few cases, malaria was simply recognized as a distinct disease, without understanding its etiologies and transmission.

3.2.4 Sources of Information about Malaria

Information about malaria entails the whole process geared towards behavioral change

communication. This communication is made in the attempt to sensitize households to better understand malaria as a problem and thereby endorsing its treatment modalities and prevention methods to control the problem.

While community's sources of information about malaria were varied, radio was indicated to be the main source of malaria information for 80.8 percent of respondents (Table 3.2). Health providers, relatives, drug dealers and health posters followed it. The study also indicated insistent marketing on television as possible sources of information. Newspapers were a source of information for mainly educated households. Information about traditional herbal treatments for malaria was mainly obtained from the older relatives, friends, and herbalists in the Town.

Similarly, observations from discussions held with mothers, fathers, opinion leaders and health service providers go well together with the survey results. Hence, mass media, health center, hospital, health workers and social networks were found to be the most important sources of information about malaria.

Although the community currently uses these sources, they are not satisfied with some media of communication like radio and television. Viewed from them, both of these sources conveyed information over wider audiences, however, they often hamper participation. In the qualitative research across all participants the feeling was that the source of information about malaria should be closer to the community. These feelings were at most authenticated in FGDs in Bachoo Booree where a mother stated:

> We know that radio and television always transmit information concerning malaria. However, no body gives attention to them. We the community need to ask questions and then get immediate solutions. Nevertheless, radio and television do not let us participate and express our opinion. Hence we are more eager to receive information from sources located closer to the community.

The in-depth interviews also pointed out the preferences of community health workers to convey information about malaria. For them, face to face communication by these workers could inculcate unforgotten recall in the mind of the community. A public health provider at *Kittoo Boosaa* argued that:

The community health workers are armed with the basic cultural elements such as language, norms, values, which are the tools for effective communication.

These observations demonstrate that the radio, health providers and relatives were communication opportunities that can easily be used to reach the target audience. Nonetheless, the most suggested source of communication was community health workers.

3.3 Treatment and Health-seeking Behavior of Malaria

Accurate knowledge of etiology and transmission of malaria is not often related to getting appropriate treatment. Hence, there must be a need to assess what proportions of presumed malaria cases receive some type of treatment. This section, therefore, attempted to indicate the proportion of malaria cases that get appropriate treatment from the various health sectors. In view of that, a detail investigation has been made to gain general insight into respondents' knowledge about malaria treatment and their health seeking behavior for malaria.

3.3.1 General Knowledge about Malaria Treatment

General knowledge about malaria treatment is a prerequisite to treatment seeking practices. To this effect, respondents were asked the question "Is malaria a treatable disease?" Accordingly 80.6 percent replied 'yes', while 17.0 percent and 2.4 percent said 'no 'and 'do no t know', respectively. Study subjects were further asked about the best drug to cure a person with malaria. The great majority, 75.6 percent of them mentioned quinine, followed by injection 46.9 percent and chloroquine 44.9 percent as the major treatment modalities. A relatively few respondent 16.9 percent and 5.1 percent replied herbal medicine and religious healing (such as holly water and witchcraft) respectively. And only about 2.2 percent study subjects were not sure about the name of the best treatment drug (see Table 3.7).

Table 3. 7: Respondents' knowledge about malaria treatment and belief about the best treatment modality to cure a person with malaria.

Variables	Frequency	Percent
Malaria is treatable(n=422)		
Yes	340	80.6
NO	72	17.0
Do not know	10	2.4

Best modalities/drugs(n=350)		
Quinine	264	75.6
Injection	162	46.9
Chloroquine	157	44.9
Herbal medicine	59	16.9
Religious healing such as holly water and witchcraft.	18	5.1
Not sure	8	2.2

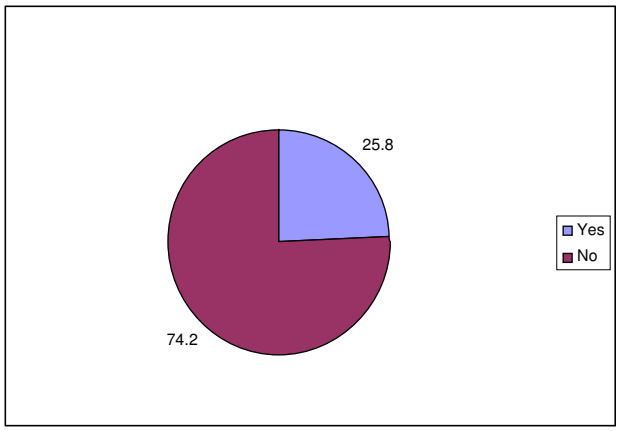
Source: Filed survey, 2008
Total percentage exceeds100 because of multiple responses.

Overall, quinine still plays an important part in the treatment of malaria and in many households is the drug of choice for complicated and severe malaria. This study suggested that the majority of the people recognize the value of modern drugs in the treatment of malaria or perceive the value of antimalarials in promoting health even when the drugs are not associated with malaria.

3.3.2 Treatment- seeking Patterns and Behavior

As noted in review part, individuals often use a combination of self-treatment, traditional medicine and one or more health care providers (McCombie, 1996). For the purpose of clarity, therefore, treatment- seeking patterns have been divided in to three: Traditional healers and medicines, official health sector (both public and private) and self-treatment. The analysis of treatment seeking patters and behavior was limited to households with reported malaria cases during the past six months from the time of interview. The study found that among the 422 visited households, 25.8 percent households had at least a person with malaria within the specified time recall (see Figure 3.1).

Figure 3.1. Households in which at least a person was caught with malaria during the past six months (n=422).



Source: Filed survey, 2008

3.3.3 Use and Knowledge of Treatment Modalities at Home

Malaria treatment was often reported to be a combination of both traditional and modern methods. Treatment takes the form of self-medication at home with anti-malarial, herbal medicine and other modalities. When many people employ a hierarchy of resort in seeking treatment for malaria, home treatment usually serves as the first line of defense.

In the home management, various treatment modalities could be used after the household has recognized a certain illness as malaria. To this effect, respondents were first asked about the duration they waited to start treatment after the onset of malaria. The survey findings indicated that about 26.6 percent of the household started home treatment of malaria cases within 24 hours, 21.2 percent after one day and two days each, and 15.5 percent for each of after three days and until the illness get worse (see Table 3.8).

Table 3.8: Time to start treatment after the onset of malaria symptoms.

Start time	Frequency	Percent
Within 24 hours	29	26.6
After one day	23	21.2
After two days	23	21.2
After three days	17	15.5
Until the illness get worse	17	15.5
Total	109	100.0

Source: Filed survey, 2008

Secondly, respondents were also asked about the drugs they have ever used for malaria treatment at home level. As shown in Table 3. 9, the study indicated that, chloroquine; quinine and paracetamol were the most commonly used drugs to avert malaria illness. Among the respondents, 26.6 percent and 20.6 percent of them reported home prepared herbal medicine and bathing with cold water as treatment modalities ever used at home respectively.

A more elaborated and extensive results of drug use at home were available from the qualitative data. Thus, the most commonly used and unanimously reported modalities in the first line of treatment for a person with malaria were giving paracetamol and malaria tablets bought from pharmacy. Bathing with cold water and sponging the forehead of the person with wet cloth are also conducted to lower the patient's body temperature, *dhaqna gubaa*.

Home prepared herbal medicine such as Abaasuda (*Nigella Sativum*),Ancabbii(*Ocimum sp*) onion and Ebichaa *(Vernonia amygadalian)* were also used by some households to forestall malaria illness.A Participant in FGD at Bachoo Booree emphasized the use of Ebichaa as the best drug for malaria adding ways of its preparation:

> We do various treatments for members in my household presenting signs of malaria at home. We usually use *Ebichaa*.The leaf of *ebichaa* is collected, dried, pulverized and its juice is dropped on the tongue of the child. Meanwhile, the child gets ride off hot body, which is the main sign of malaria.

There was a tendency to use other traditional medicines by the community to treat malaria at home. An opinion leader at *Ginjoo Guduruu* stated that some families provided traditional medicine like garlic for various diseases including malaria suspecting that these diseases might be caused by 'evil sprits.

Table 3.9. Households' treatment modalities ever used at home (n=109).

Home treatment modality	Frequency	Percent
Chloroquine tablet	47	43.1

Paracetamol tablet	60	55.0
Chloroquine syrup	37	33.9
Paracetamol syrup	31	28.4
Home prepared herbal medication	29	26.6
Bathing with cold water	22	20.6
Nothing	20	18.5
Other	4	3.7

Source: Filed survey, 2008

Total percentage exceeds100 because of multiple responses.

A high preference for home treatment of malaria often results in inadequate treatment and /or the use of drugs left over from previous treatment episodes. Some consumers were taking drugs for periods considerably shorter than specified treatment periods- some as short as one day. Therefore, mere knowledge of ant-malarial drug is not a guarantee by itself unless prescriptions are internalized and put in to practice correctly by caregivers and the patients.

Table 3.10. Respondents' knowledge about drug usage per day (n=109).

Variables	Frequency	Percent
Frequency of drug given per day		
Once a day	37	33.9
Twice a day	43	39.4
Three times a day	29	26.6
Number of days		
One day	3	2.7
Two days	14	12.8
Three days	55	50.5
Until the person get well	18	16.5
Other	19	17.5

Source: Filed survey, 2008

For most case in the first line of malaria treatment, anti malaria drugs is given twice a day for three consecutive days. Having this idea in mind, the respondents were asked about how many times drug was given per day and for how many days in the first line of malaria treatment. As indicated in Table 3.10, 33.9 percent the respondents believed that

a drug is given once a day, 39.4 percent twice a day and the rest 26.6 percent three times a day.

When asked about for how many times drugs are given, wide range answers were replied. As indicated in Table 3.10, almost half of (50.5 percent) of the respondents reported for three days, 12.8.3 percent for two days, 16.5 percent until the person get well and 2.7 percent for a day. The rest 17.5 percent has not mentioned the exact days. This finding has shown that some consumers were taking drugs for periods considerably shorter than specified treatment periods- some as short as one day.

Reasons given by consumers for such drug use include: feeling recovered, failure to improve in expected time, feeling worse, forgetfulness, unpleasant side effects (especially vomiting and itching for chloroquine), multiple prescriptions and ,therefore, difficulties in remembering instructions, unclear instructions from drug providers, sharing of drugs at home, and sometimes lack of money to purchase all the prescribed drugs.

There is a need for detailed studies of drug use and dosage patterns, with information on the specific drugs used, considering resistance patterns in a particular area. Under dosing and over dosing are common, and the clinical and epidemiological impact of this behavior pattern needs to be studied.

Sources of drugs for home management of malaria were found to be another concern for this study. The study revealed that in households whose members have had malaria illness, the majority 81(74.3 percent) of them bought antimalarial drugs form private pharmacy and 34(31.2 percent) from private clinic. Only 21(19.3 percent) of the respondents mentioned public health centers as sources of drugs. About five respondents also indicated traditional healers as sources of drugs.

Most households who have visited the private sector would likely expend high price to purchase drugs. Thus, the question of ‘do the households have the capacity to afford the cost of the drug?’ was posed to the respondents. Accordingly, of 109 respondents, who reported one malaria cases in their family, 64(58.7 percent) replied ‘yes’ and the rest 45(41.3 percent) ‘No’.

Various strategies were employed as copying mechanisms for those households who have no capacity to afford the cost of antimalarial drugs. Seeking financial assistance from relatives, lending money with or with out interest, selling assets, lobbying community leaders to get certificate which entitles the right to free treatment were the cited mechanism to mention a few.

3.3.4 Malaria Treatment Outside Home

As a corollary to recognition and definition of malaria at the household level, treatment of malaria, in both mild and severe forms, first commences at home. And, for the most part, continues outside of the formal health-care sector. A large proportion of malaria cases are treated outside of the official health care system (Foster, 1995). This meant that households resort to second and third treatment choices, usually located out side home, when the first actions seems to have failed, usually after a period of waiting to observe whether they respond to self treatment.

Given that, from the households in which at least a person has had experienced malaria illness, almost all 85.3 percent sought health care outside home. Of which, 43.1 percent sought treatment outside home after two days or more days, 30.1 percent after a day. And only 26.8 percent sought within 24 hours. However, it is known widely acknowledged that access to appropriate and effective treatment for malaria should be provided within 24 hours of onset of symptoms (WHO, 2003; MOH, 2004). The main reasons cited for delay (one or more days) were wait and see until the person get well, 69.1 percent; financial problem, 41.1 percent; mild illness, 33.8 percent and no health facility open, 11.7 percent(Table 3.11).

Why do families seek treatment outside home? Households resort to second and third treatment choices, usually located out side home, when the first actions seems to have failed, usually after a period of waiting to observe whether they respond to self treatment. Perceived severity of symptoms was one the key factors for 91.4 percent of the respondents to seek malaria treatment out side home (Table 3. 11). These findings also concur with Ryan's (1995:222) observation that "the longer an illness lasts, the more likely people are to go outside the compound for treatment.

Other households sought treatment outside home for convenience. Low cost incurred at modern health care particularly for those families receiving service free of charge at public health care was another reason. In addition to consideration of the most appropriate treatment methods, there are various other ways by which the households make decisions to seek care outside home for malaria illness. Social network has also played a role. Indeed, 30.1 percent of the study subjects confirmed that decisions where to seek care outside home is influenced by lay references. These findings concur with Igun's (1987) works that in Africa malaria diagnosis and selection of treatment sources may be affected by a network of neighbors and friends who constitute a Treatment Management Group.

Table 3.11: Treatment seeking outside home after onset of malaria illness, and reasons for delay to seek prompt treatment.

Variables	Frequency	Percent
Seek outside home*		
Yes	93	85.3
No	16	14.7
Reasons outside home (n=93).		
Seriousness of illness	85	91.4
Effectiveness of treatment	37	39.8
Low cost incurred	30	32.3
Recommended by others.	28	30.1
Time interval (n=93)		
Within 24 hours	25	26.8
After a day	28	30.1
After two days	24	25.8
After three days	9	9.7
> 4 days	7	7.6
Reason for delay (> 24 hrs, n=68)		
Wait and see the illness	47	69.1
Financial problem	28	41.1
Mild illness	23	33.8
No health facility open	8	11.7

Source: Filed survey, 2008

*Except for the first variable, total percentage exceeds 100 because of multiple responses.

Where to seek treatment outside home is also influenced by a variety of factors. Key factors include beliefs about cause of illness, access to health care, costs of care and attitudes towards health care providers. Socio-cultural factors governing interpersonal relations also influenced the treatment-seeking process.

Most of families 57.0 percent sought treatment outside home form private clinic. About 36.6 percent and 33.3 percent initially visited hospital and malaria control center respectively, and most of them occasionally transited to private health sectors for convenient treatment. Only 4.3 percent of the respondents were from households who visited indigenous healers for malaria treatment. It appeared that traditional healers were rarely consulted regarding the treatment of malaria, although people sometimes use home herbal remedies to reduce fever. In many cases, traditional healers do not claim to cure malaria, and in others people have already knew how to treat malaria modern medicines. Hence, treatment of malaria with modern antimalarial drugs from health care providers was highly preferred to home treatment or indigenous remedies.

The widely used source of modern health care for the majority of the respondents was private clinic. It was also found to be the last line of treatment in hierarchy of resort including for those who initially visited the public health sector. Better and prompt treatment was the major reason to visit private clinic for 60.2 percent of the respondents. But, about 41.1 percent of the respondents reported that their families visited public health settings because of the low cost incurred there. As indicated by 40.9 percent of the respondents, families also sought treatment from the nearest health sector whether it is private or public.

There were also evidences, which suggested that health care seeking preference outside home depends on caregivers' background. A participant in in-depth interview explained this as:

> Health care preferences of caregivers for a person presenting malaria can be seen from two angles. Those who are literate seek for health care at modern health care settings. On the other hand, those who are illiterate seek for traditional healers. And people preference is determined by their belief about the causes of malaria.

Households also made transitions from one type of health sector to another. Why did they make these transitions? There are again a number of reasons why households move from one type of health care to another. Poor families usually start with a cost saving strategy opting usually for the government clinic or hospital if drugs are available there free of charge. Although, the cost of taking a patient to private clinic is high, they reported getting better sooner due to the better treatment provided by the facilities. This was reflected in statement made by the focus group discussant.

> Private clinic provide better treatment, so patients may continue to visit. But it is different in government dispensaries. We all have information that a lot of drugs are sent to hospital and government clinics, but those drugs find their way into shops where they are sold.

This study, thus, depicted that except for the compliant for high prices, community visited private sector more often than that of the public sector.

> Though we know that the payment at private sectors is high, we prefer to visit private clinic for malaria diagnosis. They treat and respect you very well. We also prefer to buy drugs from private pharmacy though it is expensive. We could find the drug any time and any kind with appropriate prescription. *(*Mother).

Another woman reported her grievances at Jimma Hospital saying:

> In hospital we face a numbers of difficulties. When we take a person who is seriously affected with malaria, we are ordered to go through such bureaucratic line; like card stacking, waiting in a long queue etc. Sometimes it takes eight hours to consult a doctor. When about 30 persons are seeking for help from a doctor, I believe that at most three patients could get treatment per day. This is why we are forced to visit a private clinic though we know that we are unable to afford the payment.

Mothers from *Bachoo Booree* also disclosed sufficient reasons why parents switch from the government health care system to the private clinic. Especially, in hospital patients were not treated quickly, were not given convenient time for appointment. Moreover, health workers in hospital did not allow caregivers' involvement in the diagnosis of malaria. General, this study suggested that the sick role dimension is one of the neglected issues by public health workers.

It has not been uncommon in Jimma University hospital to see patients to wait a long queue for medication. Particularly, doctors were blamed for lacking strong commitment and complete dedication for discharging the duties entrusted to them. The mothers even came to the conclusion that "doctors are hardhearted persons'.

Lack of confidence on practitioners' skill of diagnosis and drug prescription was appeared to be another reason to keep away from hospital. A woman who took her child to Jimma University Hospital narrated her experiences as follows.

> Once upon a time a doctor in the hospital investigated that my child was suffering from common cold and prescribed drug for the illness. When my child could not recover form the illness, I took him to a private clinic. The doctor in private clinic told me that the child has contracted malaria. He was given a drug and then he revived.

Generally, the study showed that part of the reason why mothers are reluctant to visit public health care facilities is related to the attitudes of health care workers whom they meet at the facilities. The report from observation of FGDS was that mothers are chastised for losing clinic cards, and are made to keep for long periods waiting on queues for medical attention. This made them lose faith in the services provided at the health centers, leading to their reluctance to attend at all. The study also found out that these mothers sometimes waited for as long as 6 days from the onset of fever to join normal public health center or hospital and get treatment for malaria.

The community health worker at *Bachoo Booree* also agreed with the mother's opinion. He then argues "The *community and I myself personally prefer private or death of members of our family at home rather than going to public hospital because they hardly serve properly and the professionals have not any sympathy for the patient*"

The men category *Bachoo Booree* on the other hand precluded public hospital as the most used sources of care for malaria treatment. Although the people know that the hospital offers poor services, poverty has forced them to visit this institution to get treatment at lower cost. Supposedly, one of the discussants said,

> Most of our people are poor. As a result, we have limited opportunity to visit private clinic though we all know that better and prompt treatment is there. Therefore, we 'choose' to seek health care for person a presenting with malaria symptoms at hospital for the sake of getting the services free off charge or with low cost.

Unlike the two previously studied quarters, discussion with men and women at *Bossa Kittoo* showed that most households visited the public health center for malaria treatment. The reasons cited were distance and cost. The Jimma Town health center, where malaria

control center was located, is closer to *Bossa Kittoo* than the other study cites. It was also relatively better equipped and well staffed than other health centers in the Town. This place is also in short of private clinic and far a way from Jimma University Hospital. Hence, these opportunities made possible for these residents to seek consult from the health center. People also sought treatment for malaria at Jimma Town malaria control center as the services were provided with nominal fee.

But, this discussion also revealed that all households did not usually get health care for malaria at Jimma Town health center. Long waiting time, overcrowding and the quota allocated for a day service (only 40 cases per day) made them visit private clinics to get prompt treatment.

An in-depth interview held with a team leader at the center has confirmed this fact. The observation from the leader was that the health center is not only a destination for community from the Town but also for people who come from the adjacent rural villages. This has increased the number of patients at the health center. Consequently, competition over the limited existing material and human resources has increased. In such cases there is possibility for some families to transit to private clinic to get immediate treatment.

In sum the many reasons indicated for widespread use of private sector for malaria medication revolve around inadequacies of public health-care facilities and delivery of services, including accessibility of the health-care facilities, waiting time, lack of drugs and social distance of health workers from caregivers or patients. Nevertheless, people do seek care from formal facilities (public and private) and informal sources, such as traditional healers, the choice being dependent on various factors, including cost, distance and socioeconomic status. It is important to note that these sources of drugs that are not part of formal health-care services are not seen as alternatives, but as first tiers of care.

3.3.5 Community Perceptions and Practices of Home Management Malaria (HMM)

It is the inability of the public health services to deliver timely and effective treatment for all at risk of malaria that has resulted in the need for the home management of malaria. Although patterns of health-care seeking behavior in Africa have been shown to be related to cultural beliefs and the perceived causes of the illness, the choice of treatment is greatly influenced by the access that individuals have to health care (McCombie, 1996). The determinants of treatment –seeking behavior also include the cost of care, care providers' attitude, and time spent at the facilities, the overall availability of the services and medicine, and distance to be traveled to health care. The home management of malaria enables timely access to treatment and will therefore need to address all these issues.

Augmented to this opportunity and in response to the Pretoria statement of call for research studies on HMM, the Health Education and Behavioral Sciences Department of Jimma University has adopted the program and put into implementation since 2005.The project was designed in such a way that Rapid Diagnostic Tests (RDTs) is carried out by trained community health workers (CHWs) at household level. And accessibility of pre-packed drugs for malaria is possible through community drug distributors (CDDs).

With this intension the study has inclined to assess about: households' knowledge about HMM, their willingness to accept CHWs and CDDs involvements in the provision of RDT and distribution of pre-paced drug respectively. This research is at the forefront in elucidating not only the best delivery mechanisms for these interventions but also in revealing social, cultural, and contextual factors that must be overcome for effective delivery and uptake of these strategies.

Of the study subjects, 105(24.9%) respondents were acquainted with Rapid Diagnostic Tests that involved a finger prick and its results would be available within 20 minutes. The respondents also reported that this kind of treatment was implemented mainly for under five children who have malaria. And they have had the experience that the project was planned to be run by CHWs.

In view of that, it is vital to know the agreement of the community that the RDT is provide by CHWs. Thus, from those who have had knowledge of the project, the great majority 89(84.8%) favored and the rest 16(15.2%) were against the involvement of CHWs in RDTs. When question was posed for those who have shown disagreement with CHWs, possible reasons were cited. Arguably, the respondents have the fear that if a finger prick is conducted by non-professionals, it would expose people to the transmission of certain disease mainly HIV/ADIS. On average, the respondents preferred physicians to community health workers to conduct finger prick for malaria diagnosis.

The focus group discussion held with mothers in *Ginjoo Guduruu* community revealed the fact that health workers acclaimed great priority to conduct RDTs for malaria management. Those mothers proved that compared to 'outsiders' (doctors), community health workers are closer to the community, and know the felt need of the community. They were believed to be essential to diagnose a person who presents malaria during the nighttime or when public health care settings are closed. However, a woman from the group expressed her fear and recommended accredited physicians in malaria management arguing that;

> To best of my knowledge malaria diagnosis involves finger prick. This demands great care because transmittable diseases like HIV/ADIS can contract to the patient if the needles are not treated carefully. Hence, I prefer a doctor.

Women from *Bachoo Booree* also shared a similar opinion with that of women form *Ginjoo Guduruu*. They all did not show keen interest that RDTs would be given by community health workers.

After a persuasive argument was made one of the participants, all of the women discussants blamed the involvement of CHHs in malaria management. Her argument was that;

> I do not believe that the CHWs were able to diagnose and treat malaria within short-term training. Malaria diagnosis is difficult even for health workers who were trained for many years. There were cases in which doctors could make inappropriate diagnosis and report that person with perceived malaria signs as having no malaria. But when we went to private clinics, it was found to be malaria.

As part of this project, pre-packed drug (coartem) has recently been introduced to the community. The drug was supposed to be distributed at the community level by Community Drug Distributors. To this effect, the study intended to answer whether or not households have knowledge of the coartem; agree that the drug will be distributed by CDDs and whether or not they were able to afford the cost of the drug. Moreover, respondents' perceptions of the efficiency of the drug were assessed.

In the 422 households surveyed, only 59(14%) have discovered the introduction of coartem in the community. Most of them have got the information from malaria control center and community health workers. Neighbors, friends and private clinics were also mentioned as sources of information. With regard to usage of the drug for treatment, about 68.7 percent of the respondents were among the households who have ever received the pre-packed drug to avert malaria episodes.

Is coartem, in fact distributed by CDDs or private pharmacy? For the majority of the respondents, undeniably it was more by the later. The study showed that 75 percent the households bought the drug from private pharmacy and only 45 percent from malaria control center. Apparently, this situation contravenes the principle of HMM –better treatment at community level with reasonable cost.

Similarly, information collected from FGDs and in-depth interviews pondered that the pre-packed drug intended to be distributed by CDDs has not yet been put in to practice. Rather, the community has purchased it from the private drug vendor. In few cases, the poor families have received the drug from malaria control center if letter of entitlement to service of free off charge is written from the community leaders.

The critical question to be raised would be how this intervention can be sustainable. Who should be the actors and what contextual factors should be examined? In order to answer these questions intensive discussions were conducted with participants in FGDs, opinion leaders, and with both public and private health care providers.

Concerning the channel of (actors in) distribution of the pre-packed drug, two major counter arguments were replicated in the focus group discussions. Accessibility and appropriate prescription of the drug were reference points for the arguments. Shops, CDDs and Kebele officials were mentioned as optimal channel of distribution with the belief that the drug is readily accessible. A woman from *Ginjoo Guduruu* further substantiated this idea;

> The drug should be seen as an ordinary commodity like salt and kept at any shop. We do not have the fate to determine when a person is caught with malaria. As we all know public office is kept open eight hours per day. However, we can get the services at a shop for a minimum of 15 hrs per day.

The participants in all FGDs have not acknowledged the community health workers' involvement in the distribution of the pre-packed drugs. They have not got confidence on the CDDs skills in appropriately prescribing the drugs. Hence, trained pharmacists were widely accepted and acknowledged by the participants to dispense and prescribe drugs.

The opinion leaders also contemplated the views apprehended by the FGDS with regard to the channel for the distribution of pre-packed drugs. The basic argument was if CDDs do not correctly explain how to use drugs, if the drug distributors themselves are misinformed, if the medicine is bought at shop where incorrect information is given, the potential for misuse is high. Hence, for the complete treatment the best solution would be receiving drugs from more trained health service providers.

On the other hand, interview with a private drug seller showed that the community did not positively perceive private sectors involvement in the distribution of Coartem. Price and distance was the main reasons for these negative perceptions. When the drug seller was asked a bout how the pre-packed should be distributed at the community level, he suggested:

> It is good and decisive question. I prefer if community drug distributors with close supervision of community leaders to distribute the drug. In addition, the drug should be kept at health post located at community level.

The price for pre-packed drugs was found to be one of the most disturbing issues for the full implementation of HMM. The unit price to purchase a dose of drug was reported as 25 birr which lead participants in FGDs and in-depth interviews to complain about the price. Many participants suggested that the appropriate amount for one-dose treatment for a sick person would range between five to ten birr. A man at *Bachoo Booree* explained:

> Only one out of ten families in our community can afford the current price of the drug. To my understanding the great majority would be able to pay 5 to 10 birr. Logically, to visit public heath care every body expends at least 5 birr for transportation. We also pay 2 birr to stack registration and admission card, excluding the cost of treatment and drug. If, therefore, the drug is given at the community level with appropriate price people would prefer this opportunity.

Sustainability of Home Management of Malaria

Participants in the FGDs and in-depth interviews were less optimistic about the sustainability of HMM. There are numerous challenges in this area. Satisfactory and optimal ways of engaging communities, community health workers and distributing pre-packaged drugs have yet to be identified. Examples of issues include volunteerism and incentives for community health workers, logistical processes to ensure the timeouts delivery of drugs from central locations, handling of the drugs at the community cadre level, and supervision from the formal health-care sector.

The team leader at Jimma Town Health Center has strongly insisted that unless incentives are given to the newly 120 trained community health workers, HMM would phase out. One of the main limitations is the amount of wage allocated for CHWs, which is 50 birr per month.

The community health workers have also mentioned several important points which hinder their motivation in practicing HMM. There were two important limitations unanimously raised by the CHWs. One limiting factor commonly cited was CHWs members' personal financial situation. It was reported that in the absence of a sustainable income generating projects, management activities was not possible without salary

increment. However, keen they were to assist the community; the existing wage (50 birr per month) precludes their full involvement.

A second limiting factor was lack of support from the community. CHW reported: "*we lack community support because we are seen as being fully employed by the government. This is a drawback to our activities*".

3.3.6 Costs of Malaria Treatment

So far it has been implicated that cost was one of the main reasons for the delay in seeking malaria treatment outside home. The study indicated that a nominal fee has been charged for all malaria treatment services at Jimma Town. Although small, this fee was perceived as a significant barrier to malaria treatment service use by most poor households. The average cost of treating one malaria episode was 7.35 birr and 32.25 birr in public health care and private clinic respectively excluding transport cost.

This above figure does not include the newly introduced drug, coartem, which incurred on average 25 birr per person goes to 100 birr for some households. Respondents also commented the reasonable cost for coartem to be on average 12.75 birr.

Results from FGDs and in-depth interviews conducted with health services providers and opinion leaders showed dissatisfaction with the price of the drug. They all recommended that the cost should be adjusted to the level that most sections of the community can afford it, which was not more than 10.00 birr in all cases. An opinion leader said:

> Money is our problem. Resource constraints that place the purchase of drugs for treatment in competition with buying basics for family survival become all the more acute and stressful for family. Thus the cost for malaria treatment should be made lower or given free off charge by the government.

The community health workers and opinion leaders recommended that the government has to device a mechanism to distribute all drugs, especially Coartem with the lowest possible price in order to safe the life of people. A public health provider at Bachoo Booree has shown his dissatisfaction with the price of the drug suggesting that:

> In our situation in a single household there are on average more than five members per family. So if three of them become sick imagine how much money is expected from this family. It is more than 75 birr only for the drug for single malaria episode. Definitely the poor cannot afford this price.

3.3.7 Perceived Efficiency of Antimalarial Drugs

Evaluating the efficiency of antimalarial drugs at the community level is a rudimentary measurement. Since there are other various intervening variables, such as storage, dosage and frequency of drug intake, which hinder the efficiency of these drugs.

Inefficiency of antimalarial drugs was perceived as the main challenge to malaria management for the communities of Jimma Town. This concern has become questioning for most of the FGDs and in-depth participants. A team leader at Jimma Town malaria control also reported that;

> Let alone the pervious drug, such as quinine and sulfadoxine pyrimethamine, the current drug, coartem is becoming inefficient. There were reports from the community that the drug has lost power to treat malaria. There were cases in which patients encounter another malaria episode, within two weeks of the pervious illness.

The following quotation taken from a father at *Bossa Kittoo* also illustrated the fear of efficiency of anti malarial drugs in malaria treatment:

> We have been using antimalarial drugs from Jimma Town Malaria Control Center. In earlier years those drugs could cure malaria. Nowadays, we also buy the drugs from private clinic when we do not find from the center. I do not know, but the drugs could not cure the illness.

The study indicated that malaria was previously recognized as a disease cured by drugs like fansidar, quinine and chloroquine. Today, the perception is that malaria attacks people even in the presence of these drugs. The inefficiency of the newly introduced drug, coartem for malaria treatment was becoming another challenge for households and health care providers in malaria management.

3.3.8 Challenges of Malaria Management

Challenges for malaria management could be many folds. However, this study enshrined into the difficulties that both health service takers and health service providers face in managing malaria.

Lack of knowledge about the recognition of symptoms of malaria by the caretakers has lead to delay in its management. Besides, economic situation of the caretakers held them

from buying drugs that could be used for home treatment of malaria. Poverty has at most challenged households to seek immediate treatment outside home for a person presenting signs of malaria.

Difficulties in management of malaria were also explained form the political context. Lack of intersectoral cooperation among various agents, individuals and organizations were implicated as factors. Interviews with the team leader at Jimma Town Malaria Control Center argued that management of malaria has been considered as the sole responsibility of the health center.

The team leader has gone on to say that the Jimma Town Malaria Control Center has been giving service not only for residents in the Town but also for those who are coming from the adjacent rural villages. However, the expectation was that the services given would be only for the Town's residents. This means that the health center is serving unexpected number of patients with limited health workers and drugs.

All the adjacent villages were expected to get services from the health center run by the Jimma Zone Health Bureau. Nevertheless, most of them regularly visited the health center run by the Jimma Town health bureau, a situation that often leads to missutilization of resources. Given this reality, the observation was that the Jimma Health Bureau has not shown keen interest to support the health center of the Town even when malaria outbreak reached its peak.

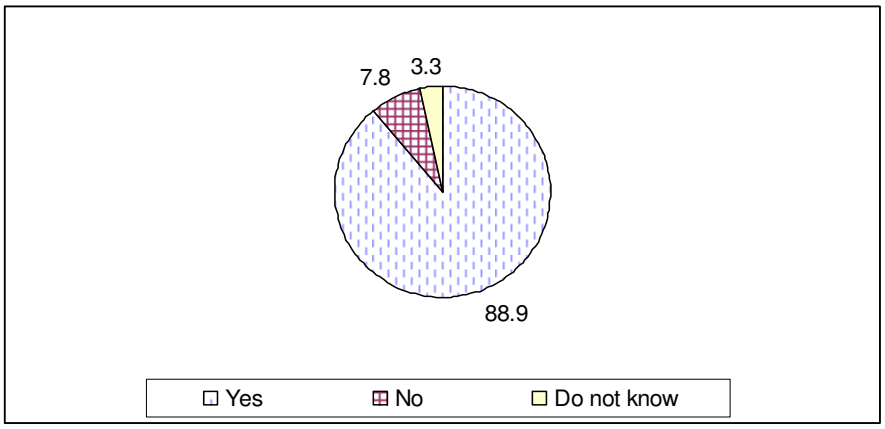
In order to address these challenges, the study subjects suggested a number of solutions for malaria management initiatives. In survey 239(56.6 percent) of the respondents recommended close health post/hospital, 210(49.6 percent) better treatment at government clinic and 168(39.8 percent) recruitment of more staff at health settings for the improvement of malaria management. Better training for drug vendor, health education for the general population, provision of cheaper drugs and treatment were the other options forwarded for effective treatment of malaria.

3.4 Perceptions and Practices of Malaria Prevention and Control

Malaria prevention and control has been an integral element in the fight against the disease and its adverse effects. Apart from treatment, attempts to prevent and control malaria have usually followed two approaches: eradicating the carrier mosquito or reducing man-vector contact so as to cut in the life-cycle of the parasite.

With this belief, the study subjects were asked the perceptions they held about malaria prevention. The survey respondents had several opinions about ways to prevent malaria. As depicted in Figure 3.2, about 88.9 percent of them believed that malaria could be prevented, while 7.8 percent held the belief that it could not be prevented .Not significant, 3.3 percent of the respondents were even not sure if malaria could be prevented or not.

Figure 3.2: Perceptions about the preventability of malaria (n=422)



Source: Field survey, 2008.

In fact, malaria prevention entails the use of drugs (prophylaxis) and other transmission prevention tools, such as insecticide-treated nets (ITNs) and indoor-residual sprays (IRS) amongst others. Accordingly, from which who believed that malaria is preventable, 92.0 percent reported eliminating breeding site, 88.0 percent mentioned using mosquito net, and 54.9 percent indicated residual indoor house spraying (DDT) as preventive methods. There were also few respondents who mentioned good nutrition, taking drugs and herbs as remedies to prevent malaria (see Table 3.12).

Table 3.12: Perceptions about preventive method of malaria. (n=375).

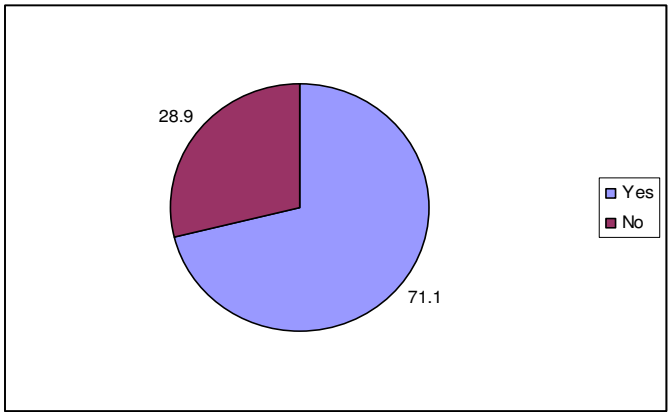
Preventive method	Frequency	Percent
Using mosquito nets	330	88
Clean environment	345	92
Use of indoor spraying (DDT)	206	54.9
Good nutrition	156	41.6
Avoid to much sun	78	20.8
Take herbs	71	18.9
Take drug	71	18.9
Rest enough	51	13.6
Other control method	12	3.2

Source: Filed survey, 2008.
Total percentage exceeds100 because of multiple responses.

3.4.1. Insecticide Treated Bed Net Ownership and Use

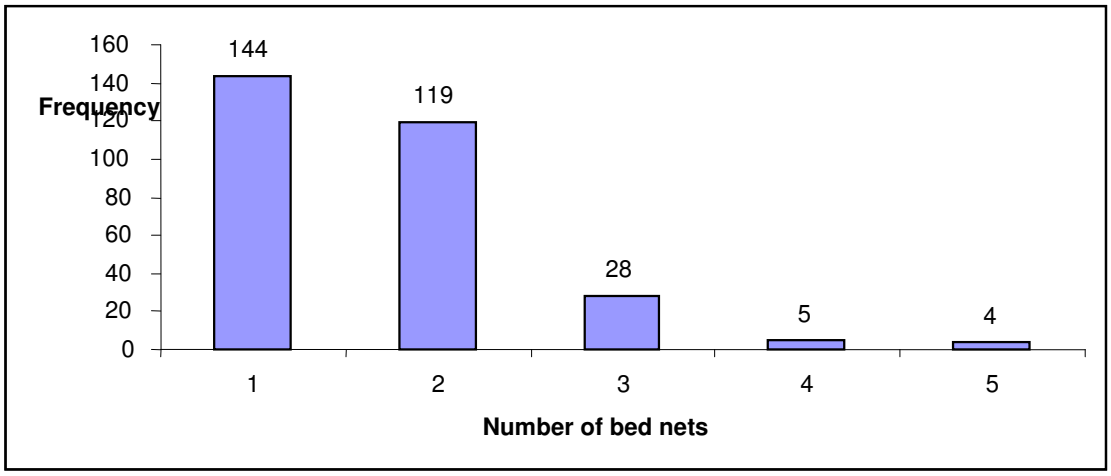
The foregoing section indicates that the most preferred method, next to environmental management of vector control is the use of mosquito nets. Therefore, attempts have been made to uncover the ownerships and use of insecticide treated bed nets. The survey shows that 71.1 percent of the households reported owning a mosquito net (Figure 3.3), and more than half of these 52.0 percent owned more than one mosquito net.

Figure 3. 3. Households bed net ownership (n=422).



Source: Filed survey, 2008.
As noted in Figure 3.4, form the total 300 households who owned bednet, 48 percent owned only one net,36.6 percent two bed nets ,9.3 percent there nets and the remaining 1.3 percent and 1.6 percent owned four and five beds nets respectively.

Figure 3.4: Number of Bed net per Household (n=300).



Source: Field survey, 2008.

Knowledge about the Use and Treatment of Bed Net

Bed net ownership is a nominal step to malaria vector control unless it is correctly used. As shown in Table 3.13,from the 300 households who owned the bed net, half of them 48.6 percent applied the insecticide every 6 to 12 months, 33.4 percent every one year and above and 13.0 percent in every month. Washing of nets emerged as a problem in a number of studies. Like wise, 15 respondents came from households who washed the bed net with water.

Figure 3.13: Time for retreatment of mosquito nets.

Time for retreatment	Frequency	Percent
Every 6 to12 months	146	51.2
Every above one year	100	35.1
Every month	39	13.7
Washing	15	5.0

Source: Field survey, 2008.

Most importantly, lack of knowledge for treating and retreating nets is a problematic behavior for some households. Retreatment remains another big challenge, even under the best of circumstances. Wide-scale production and availability of nets treated with

long-lasting insecticides should help this situation. However, communication (with regard to health education about how to re-treat mosquito nets) has to continue for all the normal nets that will still be on the ground.

Reasons and Attitude for Non-use and Non-ownership of Mosquito nets

In the study of bed net use, the major reason for not using nets was cost for 65.6 percent respondents among the 122 households who have not owned it (Table 3.14). The respondents confirmed that there were cases in which families spent 50 birr to buy a net. According to their view, all households could have owned bed net if the unit price was on average 11 birr. Other cited reasons included the following: 18.9 percent reported the unavailability of nets in the community; 14.8 percent lack of information about outlets selling nets. Moreover 22.1 percent attributed to differential distribution of the nets and others to difficulty in hanging the net due to little space in the house and poor sleeping conditions and positions.

About 13.1 percent of the households were not using the bed net due to lack of confidence on the net. Negative perceptions about nets such as: mosquitoes still can bite through the net, dislike for the net among some household members, some households are resistant to malaria or not bothered by mosquitoes, sleeping under net is uncomfortable and causes heat while sleeping, sleeping under the net can cause suffocation to people.

One can easily understand that bed net usage is associated with households' lifestyle, which can be again analyzed from the socio-economic dimension of the community. The study seemed to avail the explanation that income by large and poor housing conditions to some extent curtailed bed net usage. Undoubtedly, poor households are less likely to have bed net or any net. The disparity goes with a probability of higher burden of malaria in poorer households, who live in houses and areas that typically allow more exposure to mosquitoes, and who are less able to afford treatment once the infections has occurred.

Table 3.14. Reasons for non-use and non-ownership of mosquito nets (n=122)

Variables	Frequency	Percent
High cost	80	65.6
Lack of confidence on bed net	16	13.1
Lack of awareness	18	14.8
Not available	23	18.9
Not fairly distributed	27	22.1
Other reasons	5	5.0

Source: Filed survey, 2008
Total percentage exceeds100 because of multiple responses.

3.5 Practice and Challenges to Indoor Residual Spraying

In door residual spraying (ISP) has played as key strategies for reducing the mosquito vector. At household level spraying roach killer has been used to kill the vector mosquito. However, the discussion with health workers confirmed that indoor residual spraying at community level in Jimma Town was rarely practiced since 2006. Indoor residual spraying by health workers is often conduced when malaria become epidemic.

The challenges to IRS as reported by the team leader at Jimma Malaria Control Center were found to be shortage of chemicals, lack of community cooperation and meager incentives for health workers. During spraying, the rich households have no willingness to admit the health workers to their home. They refuse them with the simple reason that preparation of the house for spraying leads to disarrangement of house furniture. Since, these houses become a reservoir for some mosquitoes, the complete eradication of the vector by DDT would be impossible.

Unsatisfactory incentives provided for health workers who are involved in spraying of DDT are other challenges for IRS. The team leader has reported that 10 birr was allocated for a person per day. The experiences were that this incentive demotivated the workers to carry out spraying effectively. Being discontented with the incentive, the health workers also inclined to bargain with some individuals to sale the chemicals at low price.

3.6 Factors Worsening Malaria Menace in Jimma Town

Developing countries lag behind other developed countries in eradicating or at least controlling malaria. There are factors, which are interwoven and impeded the capacity of countries in the former categories to alleviate malaria menace. Added to this, there are also man made and natural factors, which aggravate the persistence of the problem. The study area could not escape out of this reality. Poverty, population migration and environmental depletion mainly due to human action were cited as factors worsening malaria in Jimma Town.

Survey results from household survey confirmed that lack of proper environmental sanitation was found to be one of the factors worsening malaria as reported by 401(95.0%) of the respondents. Development projects (such as expansion of housing universities and pond) and poverty were also reported as factors aggravating malaria menace in Jimma Town by 293(64.3%) and 207 (49.1%) respondents respectively. A significant number of the respondents cited population movement, as another factor frustrating the control of malaria.

Poverty

Abject urban poverty has multidimensional effects on households. It affects every aspects of their lifestyle of the people including health lifestyles. In the study context poverty exposes the households to malaria problem. It could also disguise the recognition of malaria as a disease and postpone its early treatment.

A man form Bachoo Booree came to support this idea arguing that:

> Most parents knowingly report malaria as common cold when a person presents sing of hot body. The earlier a disease is recognized as malaria the more pressure from family members to consult prompt treatment outside home. Hence, the more money incurred. Parents have willingness to report hot body as sings of malaria only when the illness is getting worse. In sum, if we do not have any pocket money, we prefer to cite common cold to malaria. (Father, FGD)

Not being poor presupposes a health lifestyle. That is the capacity to afford preventive methods and treatment modalities. Those who are poor are less likely to commensurate both preventive and curative health services. Poverty has thus complicated the treatment behavior of most households. In all focus discussion and in-depth interviews conducted, financial constraints became the major bottlenecks for treatment or early treatment. Lack of income impeded the caregivers' ability to buy drug at home for self-medication. Especially within poor households, the anticipated high cost of treatment was often perceived as the cause for treatment delays as well as the type of treatment sought outside home.

Poverty has also incapacitated the ability of families to purchase preventive methods of malaria. The capacity to buy bed net and chemicals for spray really depends.

Population Movement

Human population movements have also played a significant role in malaria transmission. Why, how and where people move can have a profound effect on the distribution of malaria; moreover population movement can hinder antimalaria intervention (Prothero, 1965).

Information gained from both FGDs and in-depth interviews showed that Jimma Town is a transitory Town for daily passengers. The passengers were mainly from SNNP and Gambella regions and Illuababor Zone of Oromiya. Most of these passengers come from areas where malaria is hyperepedemic.

The threat of such population movement causes profound anxiety for malaria management. Interview with the team leader of Jimma Malaria Control Center supported the above opinion. He emphasized how population movement has complicated the prevalence of malaria and its control. A team leader has further gone on to explain:

> You should know that in this Town there are transitory passengers. They come from malaria epidemic areas like Bonga,Tepi and Gambella. This means that there is more probability for the Town residents to experience passengers who might have been infected with mosquito bite. In such situation, the control of malaria becomes backbreaking activities.

Focus group discussants and opinion leaders also voiced the concern that uncontrolled in-movement of population to Jimma Town for permanent residences was likely to be unfaithful for malaria management. Such concern reflected not only for the potential increase in competition over limited public health service use, but also for the circumstances of population growth pressure. The study subjects revealed that uncontrolled urban population growth leads to the emergence of physically deteriorated areas in the Town.

Physically substandard areas in the Town would have resulted in the situation conducive for potential breeding sites for mosquito. Most of the areas, which are recurrently affected by malaria, are basically located at the most neglected part of the Town.

Here, residential areas are situated at nearby the disposal site or marshy land. An opinion leader took a strong position:

> There has been a paramount in-movement to the degree that it is beyond the carrying capacity of our city. There is frequent movement from SNNP to the Town. This situation has increased competition over social services, mainly health service for malaria. Moreover in-movement of population has negatively affected the environment. An increase in population number, for instance, is often accompanied by unemployment and environmental modification (increase in garbage). To my limited knowledge, these situations indirectly precipitated the persistence of malaria.

Environmental Mismanagement

Potential mosquito breeding sites, comprising small, temporary, freshwater pools (man-made or natural) that are exposed to sunlight, abound in Jimma Town quarters in which malaria is endemic. More breeding sites are created by human manipulation of the environment, mostly for necessary endeavors such as housing, expansion of university, building dams for fishing, etc. Other factors that have a direct impact on breeding sites

include house structure and rubbish disposal. Of these, intervention from communities could work at the level of improving house structures to decrease the number of mosquitoes entering rubbish disposal. Overall, the absence of integrated waste management system has partially contributed to the persistence of malaria menace in Jimma Town.

The situation of malaria in Jimma Town particularly in *Ginjoo Guduruu* has been aggravated by lack of sanitation. At the center of this quarter, there is a marshy land used as waste disposal site by Jimma University. Compounded with these man made interventions, the marshy land is accounted for being the potential mosquito breeding site. Participants in FGDs and in-depth interviews blamed the Jimma University waste management system. They all come to the conclusion that the University is becoming a problem creator rather than solving the problem of the community.

Second, *Bachoo Booree* is located near by a small dam, *Booyyee* which even has worsened the magnitude of malaria infections. As per information from FGDS and in-depth interviews, malaria problem has tremendously been aggravating after the dam was constructed. There are also small streams to which all wastes from the Town have been drained. These places claimed to be the potential areas for increasing breeding sites for mosquitoes.

To address malaria problem, integrated vector control on a large scale, through environmental management is required. It has been noted that residual indoor spraying seems to be less acceptable to householders than other interventions. Thus, the cooperation of the householders, various organizations, and community at large is necessary for the success of environmental management. There is no body of social science literature on integrated vector control through environmental management; this could be a good area for research.

3.7 The Role of Community in Malaria Control and Prevention

The active involvement of the community in planning and implementing all malaria control activities would be very decisive. This process demands complete dedication of and genuine cooperation among, public and private health workers, associations, community-based organizations, opinion and religious leaders, NGOs, CHWs, CDDs and the leadership of elected community leader.

Results for the survey part pointed the level of community participation in areas of: involvement in environmental management about 90.6 percent of the respondents, percent selecting CHWs and CDDs and supporting their activities (66.4 percent) and percent sensitizing fund raising initiatives (38.4 percent).

The results from the focus group meetings indicated that the intended malaria control activities carried out by community groups included the treating of water bodies with used engine oil, the removal of stagnant water and the organization of community clean up days as environmental management.

Environmental management accredited vital importance for sustainable malaria control. The study made certain that environmental management for vector control is the most cost-effective methods. It was also recognized the least in negatively affecting the natural environment compared to other methods like spraying DDT.

The observation from FGDs and in-depth interviews foretasted that the community has participated in selecting community health workers. Currently there were more than 120 CHHs in the Town, who were trained and assigned to the community level by the project running HMM. Those health workers have got the support of the community to some extent. Viewed from the participants, the community has come to the understanding of assisting these workers in the whole process of malaria management.

Fund raising activities to undertake social marketing was one of the key areas that the community has identified as an element for enhancing community participation. Fund raising activities were found to be important for purchasing bed net for those who were unable to buy or might not have sufficient bed nets. The fund raised could be used as an initiative to convince the rich persons, private sectors and government involvement in malaria control. A man took strong position with in suggesting that:

> Next to environmental management for malaria control, using bed net is found to be effective method. Given that, most households in the Town do not have bed net at all or do not have sufficient nets, in my belief, the best strategy to ownership of bed net is to pool our resources together. And trying to involve rich men in our Town so that they can provide us with the net in collaboration with government is another strategy. If we continuously contribute whatever money we have, I hope all families will gradually get bed net (Father, *Bachoo Booree*).

CHAPTER FOUR: DISCUSSION

The evidence that has been examined in this study, which might have validity for other areas, suggest that understanding community perceptions about malaria and the underlying intervention for its management has a policy implication for mounting successful malaria prevention and control initiatives.

The need to improve behavior patterns and attitudes regarding malaria management and control must be based on sound understanding of the socio-cultural characteristics of a certain community. Of course, in the study community, the socio-cultural context has not

had significant impact on their knowledge to recognize malaria as health problem, their perceptions about its cause and symptoms. The findings of this study indicated that general awareness about malaria was high among Jimma Town communities. It was considered as the major health problem in the community. These findings do not concur with Prothero's (1965) observation that people in Africa and elsewhere who are subjected to malaria at high levels of endemicity learn, to speak and live with the disease.

Jimma Town community has significantly perceived mosquito vector as the causes of malaria. This result disagree with Prothero's (1965) claim that in most African countries ,mosquito may be regarded as a curse, not because they are vectors of malaria but because of their unpleasant biting habits. Of the 422 visited households, about 88.6 percent of the study subjects associated malaria to mosquito bite. This figure is more significant than malaria study conducted in rural Ethiopia by Wakgari et al (2008) in which 63.4 percent of respondents mentioned mosquito bite as a cause of malaria.

Households in Jimma Town have relatively high knowledge of reporting mosquito as causes of malaria compared to other African courtiers. For example, review of malaria studies in Uganda by Batega (2004) reported that the study by (Okello, 2001) indicates that 77.6 percent of the respondents knew that mosquitoes cause malaria. A study done in Kampala by Makanga (1997) shows that 84 percent of the respondents interviewed knew that mosquitoes transmitted malaria.

Examples of misconception about causes of malaria are reported in research from all over the globe. Similarly, this study showed that some community members still have misconceptions about causes of malaria. These are the major socio-cultural setbacks in malaria treatment and control. All these add up to the discrepancies in health seeking behavior and may cause delay in seeking appropriate treatment. Results from the survey findings showed that 70.4 percent and 30.6 percent of respondents associated malaria to exposure to unhygienic conditions and cold weather respectively. This was not found to be surprising since other studies by (Agyepong, 1992; Kulmala, 2005; Muela, et al, 1998; Ruebush et al, 1992, Wakgari et al, 2008), have consistently reported that there were misconceptions about the causes of the malaria in most communities.

Only about 3.8 percent associated the causes of malaria to witchcraft. The qualitative data also reflected the belief that witchcraft causes malaria though not consistently agreed among most focus group discussants across the whole FGDs in Jimma Town. Links between malaria and supernatural forces are also common in most societies. For instance, in Gambia and Kenya, malaria especially in children, is often perceived as a result of the child being possessed by an evil sprits or devil (Mwenesi, Harrpam, and Snow, 1995). The connection between evil sprits (majini) and malaria was also investigated during the study conducted with women in rural Lungwena of Malawi (Kulmala, 2005).

The above explanations about causes of malaria fit into the naturalistic theories of illness causation and pesonalisitic theories of illness causation (Foster, 1976; Helman, 1990; Murdock, 1980; Vallis et al, 1985). However one could not absolutely conclude that treatment patterns always followed beliefs about causes of diseases.

Despite the fact that some of respondents have still misconceptions about the causes of malaria; most households are at most inclined to seek treatment from modern health care system. Hence, the findings of this study do not correspond Young's (1970) assertion that Ethiopians attribute causes of health problem to either personalistic or natural agents and treatment is therefore, believed to be the reflections of these causes.

Respondents' perceptions with regard to the transmission of malaria appear to be satisfactory. The great majority, 61.8 percent of the study subjects believed that malaria could be transmitted from person to person. About 32.7 percent of the study subjects perceived that malaria could not be transmitted, and 5.5 percent of them do not know weather malaria is transmitted from person to person. This figure is surprising when it become lower than similar reports of malaria studies in rural Ethiopia (Wakgari et al, 2008).

Many of this study's findings are consistent with those found out by other researchers who have considered hot body or fever as the major symptom of malaria. Rise in

temperature/hot body was indicated as the typical symptoms of malaria by 91.5 percent of the respondents, followed by other symptoms like headache, vomiting, shivering and restlessness. In Batega (2004) review of malaria studies in Uganda, it was assumed that the households had good knowledge of the symptoms of malaria if they mentioned at least fever plus headache or other pain, but poor knowledge if they mentioned fever plus general weaknesses or dizziness. The present study seemed to conclude that the survey respondents in Jimma Town had good knowledge of the symptoms of malaria compared to studies in Uganda.

Knowledge of the respondents about whether or not malaria is a treatable disease was significant among Jimma Town community. The results of this study have shown that about 80.6 percent survey respondents replied 'yes '. However, this appeared discouraging compared to the rural malaria study by Wakgari et al (2008) in which about 88.1 percent respondents replied 'yes' for the similar question.

Like most countries, home treatment of malaria, come first in the hierarchy of resort and mostly used in Jimma Town. The importance of home treatment with a particular emphasis on malaria has been shown in a variety of studies (Foster, 1995; McCombie, 1996; Mirgissa, 1996; Vallis et al, 1985; Wakgari et al, 2008; Weller et al, 1997). However, the implementation of HMM which was designed to substitute home treatment of malaria is a problematic issue. Due to socio- cultural factors, people have shown reluctance to accept CDDs and CHWs involvement in the program as the had become acquainted with well trained health workers in malaria diagnosis for its treatment,

The use of modern antimalarials drugs over the traditional remedies was very high in this study in home treatment of malaria. The great majority 75.6 percent, mentioned quinine followed by other modern medicines as the major treatment modalities. Only few of the respondents (16.9 percent) reported herbal medicine, religious healing (5.1 percent) and only about 1.9 percent of the study subjects were not sure about the name of the best treatment drug. The results of this study opposed Igun's (1987) claim that especially in

Africa, many culture do not have an illness concept or general category that corresponds to the biomedical term malaria to seek modern treatment modalities.

The study found out that, out of the 109 households in which at least a person has experienced malaria episode, about 85 percent sought for help outside home. Startlingly, this result is a turnaround of Ryan's (1995) finding that stated in a Kom village of Cameroon, where 83 percent of the illnesses were treated at home, with 22.5 percent of the illness episodes seeking treatment outside the home. The same was true for Weller et al (1997) who have shown that only 10 percent of the population in Guatemala involved seeing a physician or a nurse. Foster (1995) has gone also to the generalization that self-treatment in Africa is the rule rather than the exception. For him, constrained access to health care facilities reinforces the need to focus on local solutions. Despite this fact there was an observation that the Jimma Town community has mostly inclined towards seeking malaria treatment outside home.

The rationale for consulting health care providers outside home for malaria treatment was mainly associated to the severity of the disease. In Jimma Town, perceived severity of symptoms was one of the key factors for 91.4 percent of the respondents to seek malaria treatment outside home. These findings correspond with WHO (2003) reports that argues when malaria illness worsens, people may take resource and seek treatment outside home in other drastic or costly means to alleviate it (see also Ryan, 1995).

These findings seemed to support the Health Belief Model (Cockerham, 2007; Vallis et al, 1985), which explains that the perceived severity of illness is the predisposing factor for seeking health care. It also takes into account the health care utilization model or Anderson Model (1973) of the need factors and Kroeger Model (1983) of perceived morbidity.

Delay in seeking appropriate treatment appears to be one of the problematic issues. The findings show that although poverty and its related consequences are recognized barriers for timely appropriate treatment, they are not the only barriers .Furthermore, the impact

of cultural factors on timely and appropriate health seeking cannot be solely a result of ignorance. There are conditions in which households wait and see a person caught with malaria then take to health care when the illness become serious.

In explaining why people made a choice between different alternatives in seeking health care for malaria treatment outside home, the research found out various reasons. The economic context, accessibility, quality of care and attitudes of the health care providers were mentioned as main reasons in Jimma Town community. These reasons are at best fit into the Decision -making Models of Treatment Choice (Vallis et al, 1985). However, a full account of treatment seeking behavior according to this study is given by Kroeger's (1983) the sociological debate of socio-behavioral model.

Most households in Jimma Town as reported by 57.0 percent of the respondents prefer private clinic to public health care for malaria treatment. Except for study the conducted in *Bossa Kittoo*, results from FGDs and in-depth interview held at *Bachoo Booree* and *Ginoo Guduruu* also confirmed similar preferences. Studies conducted thus far also confirmed that people usually prefer private clinic to public health centers (Wakgari et al, 2008; WHO, 2003; Yeneneh et al, 1993). Quality of care, effective and prompt treatment, and the attitude of the health care providers were found to be the major reasons for consulting private health sector. These findings do not agree with Helman's (1990) general conclusion that even in large and more complex societies, therapeutic options are likely to be available for a person provided that individual can afford for them. This study revealed that most families who have visited private clinic have not actually the capacity to afford the cost.

The possible reasons as reflected in this study to the non-utilization of public health sectors were long waiting time, social distance of the health workers and inappropriate diagnosis of malaria and prescription of drugs to mention a few. These findings concur with (WHO, 2003) report that the possible barriers to use public health centers include long waiting time, as well as shortage of medicines and doubt about the effectiveness of the treatment (see also Wakgari et al, 2003). On the other hand, the Jimma Town Malaria Center team leader claimed that the public health-services and drug-providers might not have adequate supplies or, for other reasons, often fails to provide appropriate treatment

The attitude of the heath staff may be yet another context for avoiding public health facilities for malaria treatment. Foster (1995) has argued when staffs are brusque or condescending (due to ethical perceived class differences or other reasons), patients may not be comfortable asking questions to clarify dosage schedules or they may feel belittled. Health staff may not carry out proper roles and have no keen interest to help the patient, where some of the health agents were founds to be selling anti –malaria drugs illegally (Yeneneh et al, 1993). Thus the study suggested that interaction between staff and patient, what Parsons termed sick role as seen in Cockerham (2007) is often neglected in studies of health clinic attendance, even though this may be an important deterrent to public facility use

The economic context that means living in abject poverty has influenced about 40 percent of the households to choose public health care though it is complained for its poor services. The observation of qualitative research in *Bossa Kittoo* also approved that Jimma malaria control center as the most used sources of malaria treatment for it was the place where nominal health care was utilized with minimum cost or free off charge.

The survey research of this study on malaria treatment-seeking behavior and practices seemed to conclude that people preferred private clinic to public health care settings. These findings tend to communicate distorted information and are simply overgeneralizations. As per information gained from the qualitative data, one could not unreservedly conclude that private health care sectors were the 'best' place for malaria treatment. The observations were that most households unwillfully visited private health care simply to save the life of the patient. The study disclosed that the high cost expended at the private health sectors has drained cash income and confronted the capacity of households with buying basics for survival.

Knowledge about the preventability of malaria is high in Jimma Town. About 88.9 percent study population believed that malaria is a preventable disease. This figure is quite larger than the findings of the study in central Ethiopia (Wakgari et al, 2008). The explanation is that households in Jimma Town have been exposed to health education for more than 20 years, starting with the extensive Community Based Education (CBE) of Jimma University. The nearby university hospital and health centers, but not appreciated by the people especially for treatment of malaria, are the main site of health promotion. It is, therefore, not surprising that the population has a good knowledge of malaria prevention.

The ecological context of the Jimma Town has been the most neglected context in malaria control activities. Spontaneous settlement with poor drainage system, rubbish disposal and untreated development projects like natural and man made ponds have necessitated the breeding of mosquitoes. Hence, the community suggested environmental management as the best method for malaria control. Participants in FGDs and in-depth interviews indicated that, it was considered as the most cost effective methods for malaria vector control than other methods. The survey results also indicated that the study population has a fair knowledge of the life cycle of malaria vectors as over 92 percent agreed that stagnant water and disposal sites could serve as breeding sites for mosquitoes.

Next to environmental management, the most recognized and practiced method for prevention of malaria was insecticide treated bed nets. The study indicated that 71.1 percent of the households reported owning a mosquito net, and more than half of these 52.0 percent owned more than one mosquito net to maintain health lifestyle.Net use is one aspect of participating in health lifestyles which don not involve contact with health care providers. This theory explains that The ITNs coverage in Jimma Town satisfied the National Strategic Plan, which targeted 60 percent of households with at least one mosquito net per households (MOH, 2001; cited in Wakgari et al, 2008).

Studies of bed net conducted so far have given much emphasis on whether a household has the net or not. Based up on these data they misleadingly rush to the generalization that there is an increase in bed net usage among the study population. The most important but disguised issue were how much mosquito net does the family has? Is the number of the bed net proportional to household size? This study found out that there were on average 1.7 bed nets per family, with a minimum of one and a maximum of 5 per household. The logical conclusion is that a household with five members on average has one mosquito bed net.

The study also found out that nearly half of the households 61.6 percent in Jimma Town have treated their bed net every 6 to 12 months. It is thus possible to infer that most of them have had good knowledge of ITNs use and application, as the report is in line with the recommendation of MOH. It stated that even if insecticide impregnated bed nets are purchased and used correctly, they must be treated every 6 to 12 months, as insecticide effectiveness wears off over time (MOH, 2004). So not only bed net itself must be emphasized in control programmes, but also the insecticide that is applied to it as well.

There were also 35.1 percent of the respondents who indicated that the ITNs were retreated every one year and above. Washing of nets emerged as problem in this study as in number of studies. Like wise, 15 of the respondents came from households who washed the bed net with water. This finding was similar to studies from Ghana that indicated mothers washed their nets when young children dirtied them with faeces and urine (WHO, 2003; WHO, 2005). This situation reflected the shortage of awareness creation on the use and re-treatment of ITNs in Jimma Town by health workers.

Cost of the bed net and the living conditions were found to be the major reasons for those who have not owned it. This means that the poor remain least likely to use preventive care. This is in line with WHO (2005) report that the major challenges to the implementation of ITNs could be addressed by the provision of an improved supply of affordable ITNs to the majority of population.

This study also found out that there were households who did not consider the relevance of bed net in preventing malaria illness as they were not sure whether mosquito bites people at day or night time. Studies by Mwenesi (1993), similarly found out that in endemic areas malaria was considered a severe disease (adapted), or that mosquito –nets were not felt effective against malaria because mosquitoes bite day and night, are other examples which show the implications of perceived threat of health behavior.

In line with reports from other parts of the world, this study indicated that community participation was recommended as the key strategy to sustainable malaria control and prevention activities (Agyepong, 1992 Ruebush et al, 1992; Wakgari et al, 2005). A study by Okanogan et al, (1992) is that the most extreme approach to malaria control is a "malaria worker network" with regard to closeness to the community.

Regardless of this recommendation, this study uncovered weakness of intersectoral linkage among different stakeholders, which reinforces community participation. The political context has not fully sensitized the collaboration between different stake holders in malaria control activities. Participants in FGD and in-depth interviews blamed the insignificant roles that Jimma Town Health Bureau has played in establishing a concerted efforts among health care providers, community leaders, NGOs, private sectors ,academicians in Jimma University and community at large in the attempt to design a holistic strategies for malaria control.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

Researches into better understanding the individual, household, community, and health provider perceptions of malaria and the underlying interventions for its management could result in more effective prevention and control activities. With this belief, this study was conducted to understand community perceptions of malaria and the underlying

intervention for its management and control in Jimma Town, Oromiya National Regional State. Based up on the findings of the research, the following conclusion could be drawn and recommendations were forwarded.

5.1 Conclusion

The research findings revealed that Jimma Town community has perceived and recognized malaria as the major health problem. It was considered not only as the plague killer of human life but also as the main restraint to economic well being of the community.

In Jimma Town community, most of the study subjects pondered mosquito bite as a possible cause of malaria and indicated that people are infected with malaria by the bite of infected mosquitoes. This awareness in the present study is much higher than the level noted in the study conducted by Wakgari et al (2008) in central Ethiopia.

Misconceptions about the causes of malaria were also still pointed out in this research. Exposure to cold weather and excessive heat, drinking bad water and eating rotten fruits were cited as the causes of malaria. To a minimum degree the study also found out the link people put between malaria and supernatural forces. These misconceptions certainly have implications for community's malaria preventive behaviors and practices. The results also showed that knowledge about the symptoms of malaria was very high. Most of the study subjects had the knowledge of at least one of the classical symptoms.

The community survey has shown that a high proportion of households in Jimma Town believe that malaria is a treatable diseases. And most of the presumed malaria cases receive some type of treatment. This study discovered that the majority of the people recognized the value of modern drugs in the treatment of malaria or perceives the value of antimalarial in promoting health care.

Although households in Jimma Town recognized the importance of modern antimalarial drugs in malaria treatment, various problems hinder the effectiveness and the use of the drugs. First, lack of proper prescription of the drugs by health care providers influences the dose of drugs to be taken, which ultimately lead to inefficacy of drugs. Second, financial constraints were the major problems that hinder their ability to purchase the prescribed drugs. Third, households have slight confidence on the efficiency of some prescribed drugs primarily coartem, which in turn compelled them to resort other drugs or use traditional medicine. Thus, there is a need for detailed studies of drug use and dosage patterns, with information on the specific drugs used, considering resistance patterns in this area.

Most of the households have sought treatment for malaria outside home from modern health care services. Perceived severity of the illness and convenience were found to be the major disposing factors to seek malaria treatment outside home. This implies that Jimma Town community has come to recognize the meaning of modern health care than the traditional one.

Clearly, the study results demonstrated households' high use of private sector for malaria treatment. In reality, it is unaffordable for the majority of the community, who live in abject urban poverty. Thus, the community has enthusiastically interested to get malaria treatment at public health care with low cost. They were, however, forced to visit the private health care providers for sufficient reasons. Clients reported that the main advantages offered by private clinics over government clinics are better geographic access, more reliable supplies of drugs and more rapid treatment and positive attitude of the private health care providers. Additionally, private clinics were perceived to provide reliable services.

On the other hand, the public service providers attributed the low utilizations of public health center to various factors. Low supply of drugs and medical equipment and the high proportions of clients over health personnel were cited. Here, further research is needed

to answer the question of what proportion of malaria cases get appropriate treatment and identify the best strategies to improve the situation.

This study has highlighted the importance of home management of malaria. The study s indicated that the households felt comfortable with less accessible health services with relatively minimum cost. However, shortcomings existed in the sustainability of the HMM as it has not accredited the fully acceptance of the community. The major limitations were: lack of confidence on the service providers' skills (CHHs and CDDs) and unanticipated cost of the pre-packed drugs. Therefore, much work remains for addressing the full implementation of home management of malaria in Jimma Town.

Within the context of malaria control, community participation was found to be an indispensable element. However, the study found out nominal community participation in areas of mobilizing resources for malaria prevention. Again lack of coordination between the community and others partners has influenced the course of malaria vector control through environmental management.

The one that has received most recent attention in relation to malaria control in Jimma Town is the use of insecticide treated bed nets for preventing mosquito bite. For most poverty stricken households, however, ITNs use was not yet practiced. The improper handling of the ITNs has remained to be the main obstacle for its effective use for the majority of the households who own it. Lack of re-treatment and washing of the ITNs were found to be the major draw backs in effective use of mosquito nets.

5.2 Recommendations

From the foregoing results and discussions, it could be understood that malaria problems have been unresolved and is expected to remain so. Therefore, the following recommendations are intended to support the effort towards improving malaria management, prevention and control activities.

1. Widespread intervention in the area of health education and promotion should be implemented in the study area so as to reduce community's misconceptions of

causes and transmissions of malaria, which would likely to hinder the need for seeking appropriate treatment modalities and prevention methods.

2. Multi-faceted efforts have to be made to establish mechanisms by which most households could receive prompt and cost effective malaria treatment services. It is only through such establishment that equitable and affordable health services can be provided to all the residents of the Town.

3. The home management of malaria which now is unquestionably applied in the Town need to consider the socio-cultural context of the community.

4. The advantage of community health workers is that they come from the social networks that they are working in; therefore, they are sensitive to the cultural sensibilities about local health situations of those whom they serve. However, efforts must be exerted so that the community health workers should be taught to recognize symptoms of severe malaria and be equipped with simple but effective biomedical remedies to get acceptance from the community.

5. The findings of this study have major implications for malaria control through the use of ITNs. However, affordability issues and lack of awareness were also identified as major barriers for the possession of nets. It then necessitates the distribution of ITNs among the community with subsidized price and extensive health education on the implementation and appropriate use of the nets.
6. Malaria treatment is not an end by itself; it always needs continuous and holistic interventions. Hence, efforts should be exerted by the Town health bureau to establish collaborative networking among the various organizations like; health care providers, community leaders, municipality, Jimma University and the community at large in the whole activities pertaining to the management, prevention and control of malaria.

7. Finally, development induced environmental modifications and changes have necessarily contributed to the emergence of physical environments conducive for mosquito breeding cites. Hence, the issue of environmental management for vectors control should be given emphasis as integral strategies of malaria control.

References

.

Agyepong, I.A. (1992). Malaria: Ethnomedical Perceptions and Practice in an Adangbe farming community and Implications for Control. *Social Science & Medicine, 35, 131- 137.*

Association for the Advancement of Science (1991). Malaria and Development in Africa, A cross sectional Approach. Washington, DC20005.

Awash Teklehimanot (1967).What is Malaria, Addis Ababa, Ethiopia.

Carrasquilla, G. (2001). An Ecosystem approach to malaria control in Urban setting.*Cad.Sude Publica,Rio de Janerio,17:171-179.*

Batega, D.W. (2004). Knowledge, Attitudes and Practices about Malaria Treatment and Prevention in Uganda: A LitreratureReview.Departement of Sociology, Makerere University.

Clements, E.F. (1973). Primitive Concepts of Disease. University of California Press Barkley— California.

Cockerham, W.C. (1995). Medical Sociology Six Edition. University of Alabama at Birmingham.

Collins, F.H, Paskewitz, S.M. (1995). Malaria: Current and Future Prospects for Control.*Annual Review of Entomology, 40:195-219.*

Foster, M.G. (1976). Disease Etiologies in Non-Western Medical System. *Amer. Anthr. 78: 773-82.*

Foster, S. (1995). Treatment of malaria outside the formal health services. *Journal of Tropical Medicine and Hygiene, 98(1), 29-34.*

Helman, C. G. (1990). Culture, Health and Illness: An Introduction for Health Professionals. Oxford: Butterworth-Heinemann Ltd.

Igun UA. (1987). Why we seek treatment here: retail pharmacy and clinical practice in Maiduguri**,** *Nigeria. Social Science & Medicine, 24, 689-695.*

Janes, C.R., Stall, R. and Gifford, S.M. (Eds.) (1986). Anthropology and Epidemiology, Interdisciplinary Approaches to the study of Health and Disease. D.Reidel Publishing Company.

Keizer J, Utzinger J, De Castro.M.C, Smith, T.A, Tanner, M. and Singer, B. H. (2004) .Urbanization in Sub-Saharan Africa and implication for Malaria Control. *American Journal of tropical medical hygiene, 71(2):118-127.*

Kibe, L.W., Mbogo, C.M., Keating, J., Molyneux, S., Githure, J.I. and Beier, J.C.(2006). Community based vector control in Malindi, Kenya.*African Health scinces, 6(4): 240-247.*

Kilama, W.L. (1994) .The War against Mosquitoes and Mosquito –borne Diseases in Tanzania .Dar Es Salaam University press.

Kiszewski, A.E. and Tekelhimanot, A. (2004). A review of Clinical and Epidemiologic burden of epidemic Malaria .*American Journal of Tropical Medicine and Hygiene, 71(2):128-135.*

Kleinman, A. (1980). Patients and Healers in the context of Culture. Berkeley: University of California Press.

Kloos.H and Zein,A. Z(1993).The Ecology of Health and Disease in Ethiopia. West views press Inc.

Korte, F and Fisher, D (2005).Malaria: Perceptions and Treatment Practices among Mothers of Children under 10 years in Rural Ghana.

Malaria and Urbanization in Sub-Saharan Africa: Retrieved from (http://creativecommons.org/ licences/by/2.0),accessed on Dec5, 2007.

Kroeger, A. (1983). Anthropological and Socio-medical health care research in developing countries. *Social Science & Medicine, 17:147-161.*

Kulmala.T and Launiala.A (2005).The importance of understanding the local context: Women's perceptions and knowledge concerning malaria in pregnancy in rural Malawi.*Acta Tropical, 98: 111-117.*

Lindsay, S.W, Egwang, T.G, Kabuye F., Mutambo T & Matwale G.K (2004). Community-based Environmental Management Program for Malaria Control in Kampala and Jinja, Uganda Final Report.

Manderson, L. (1998). Applying Medical Anthropology in control of infectious diseases. *Tropical Medicine and International Health, 3: 1020-1027.*

McCombie SC. (1996). Treatment seeking for malaria: a review of recent research. *Social Science & Medicine, 43, 933-945.*

Melanie L. Biscoe, Clifford M. Mutero, and Randall A. Kramer (2004). Current Policy and Status of DDT Use for Malaria Control in Ethiopia, Uganda, Kenya and South,Nicholas School of Environment and Earth Sciences, Duke university. Africa. Working Paper 95 International Water management Institute, South Africa.

Ministry of Health (MoH) (2004).Malaria Diagnosis and Treatment Guidelines for Social Workers in Ethiopia 2nd edition. Addis Ababa, Ethiopia.

Ministry of Health (MoH) (2006). National Five-Year Strategic Plan for Malaria Prevention and Control in Ethiopia, 2006 – 2010. Addis Ababa.

MOH (2001). Malaria and Other Vector-borne Diseases Prevention and Control Team, Diseases Prevention and Control Department. National Five Years Strategic Plan for Malaria Control in Ethiopia: 2001- 2005.

MOH (2004). Malaria diagnosis and Treatment guideline for Health workers in Ethiopia.

MOH (2002) .Ethnographic Survey on Malaria.

Mwenesi H, Harpham T, Snow, RW. (1995). Child malaria treatment practices among mothers in Kenya. *Social Science & Medicine, 40, 1271-1277.*

Mwenesi H. (1993). Mother's Definition and Treatment of Childhood Malaria on the Kenyan Coast. Dept. of Public Health and Policy, London School of Hygiene and Tropical Medicine, London. PhD Thesis.

Mwenesi, H.B. (2005). Social Science Research in Malaria Prevention, Management and Control in the last two decades: An overview. Academy for Educational Development (AED), Africa Regional Malaria Program, South Africa.

Okafor E Emekaand and Amzat,J.(2007).Problems of Malaria Menace and Behavioral Interventions for its management in Sub-Saharan Africa. *Hum.Ecol, 21(2):155-162.*

Okanurak K, Sornmani S, Chitprarop U. (1992) .The impact of folk healers on the Performance of malaria volunteers in Thailand. Social and Economic Research Progress Reports, No. 10, 1-43. Geneva, World Health Organization.

Prothero, R.M. (1965). Migrants and Malaria. University of Liverpool, Longmans, Green and CO LTD.

Rauyajin, O. (1991). Factors affecting malaria related behavior: A literature review of behavioral theories and relevant research, in Social and Economic Aspects of Malaria Control (Sornmani, S. & Fungladda, W. Eds.). Bangkok: MRC-TROPMED. Report Series No. 735.

Ruebush II, T.K. and Godoy, H.A. (1992). Community participation in malaria surveillance and treatment I. The Volunteer collaborator network of Guatemala. *American Journal of Tropical Medicine and Hygiene 46(3), 248-260.*

Ryan, G.W. (1995). Medical decision making among the Kom of Cameroon: Modeling how characteristics of illnesses, patients, caretakers, and compounds affect treatment choice in a rural community. PhD Thesis. University of Florida.

Sheeran, P. & Abraham, C. (1995). The Health Belief Model, in Predicting Health Behavior (Conner, M. & Norman, P. Eds.). Buckingham: Open University Pres.

Silva KT. (1991). Ayurveda, malaria and the indigenous herbal tradition in Sri Lanka. *Social Science & Medicine, 33, 153-160.*

Strickland GT. (1992) .Fever in the returned traveler. *Medical Clinics of North America, November, 76(6): 1375-1392.*

Tanner,M.and Vlassoff,C.(1998). Treatment-Seeking Behavior for Malaria: A typology based on endemicity and Gender.*Soc.Sci.Med.46 (4-5):523-532.*

Tebaber Chane (2006). "A Socio- Cultural study of the Causes, Transmission, Prevention, and Treatment of Malaria:"The case of Debre Elias Woreda.East

Gojjam Zone, Amahra National Regional state, MA thesis, Addis Ababa University.

Tren, R.and Bate, R. (2001). Malaria and the DDT Story. The Institute of Economic Affairs, Great Britain, Hobbs Printers.

Van Geldermalsen AA. (1999). Chloroquine sensitivity confirmed. *Central African Journal of Medicine, 45(2):49-51.*

Wakgari Deressa, Shelleme Chibsa, Dereje Olana (2003). Treatment Seeking Behavior of malaria Patients in East Shewa Zone of Oromiya,*Ethiopia.Ethiop.J. Health Dev, 17(2):9-15.*

_____(2004).The Distribution and Magnitude of Malaria in Oromia, Ethiopia. *Ethiop.J.Health Dev., 18(3):164-170.*

_____(2005).Community participation in malaria epidemic control in highland areas of southern Oromia, Ethiopia.*Ethiop.J.Health Dev, 19(1):3-10*

Wakgari Deressa,Ahmed Ali,and Damen Hailemariam(2008).Malaria –Related Health – Seeking Behavior and Challenges for Care Providers in Rural Ethiopia: Implications for Control.*J.biosoc.sci, 40(1)1-21.*

Wang, S., Lengeler, C., Mtasiwa, D., Mshana, T., Manane, L., Maro, G. and Tanner, M. (2006). Rapid Urban Malaria Appraisal (RUMA) II: Epidemiology of urban malaria in Dar es Salaam (Tanzania).

Weller, S.C., Ruebush II, T.R. & Klein, R.E. (1997). Predicting treatment-seeking behavior in Guatemala: A comparison of the Health Services research and Decision-Theoretic approaches. *Medical Anthropology Quarterly, 11(2):224-245.*

Williams ,G(1969). The Plague Killers. New York.

WHO (1994). Antimalarial drug policies: Data requirements, treatment of uncomplicated malaria and management of malaria in pregnancy. Report of an Informal Consultation, Geneva, 14-18 March 1994. WHO/MAL/94.1070.

WHO (1995). Vector Control for Malaria and other Mosquito- Bore Diseases, WHO technical repot series, Geneva.

WHO (2000a). WHO Expert Committee on Malaria, Twentieth Report. WHO Technical Report Series No. 892.

WHO (2000c). Malaria Diagnosis: New Perspectives. Report of a joint WHO/USAID informal consultation 25-27 October 1999.WHO/CDS/RBM/ 2000.1091.

WHO (2003a). Framework for developing, implementing and updating national antimalarial drug policy: A guide for country malaria control programmes. WHO Regional Office for Africa, Brazzaville. AFR/MAL/03.02.

WHO (2004). Malaria and HIV Interactions and their Implications for Public health Policy, Report of Technical Consultation. Geneva, Switzerland.

WHO (2004a). Malaria epidemics: forecasting, prevention, early detection and control - From policy to practice. Report of an informal consultation, Leysin 8-10 December 2003.WHO/HLT/MAL/2004.1098

WHO (2005). Malaria Control Today Current WHO Recommendations. Roll Back Malaria Department, Geneva Switzerland.

WHO and UNICEF (2003) .The Africa Malaria Report,WHO/CDS/MAL/2003.1093.

Woldeab Teshome (1996). The Management of Malaria in Young Children in Zeway, Southern Ethiopia A Report of a Rapid Ethnographic Study, Addis Ababa university.

World Bank. (2001). Malaria on the rise, children most vulnerable: World Bank, WHO, UNICEF, and UNDP call for much more action in the fight against malaria. News release, 2001/302/AFR.

World Health Organization (WHO) (2004).Bringing Malaria Management closer to the Home. Roll Back Malaria Department, Geneva.

World Health Organization/Roll Back Malaria (WHO/RBM). 2004. Country Profile: Ethiopia. http://mosquito.who.int/ malaria control.

Vallis ,T.M. and McHugh,S.(Eds.) (1985). Illness Behaviour.A multidicsiplinary Model.University of Toronto,Toronto,Canada.

Yeneneh H, Gyorkos TW, Joseph L, Pickering J and Tedla S. (1993). Antimalarial drug Utilization by women in Ethiopia: A knowledge-attitudes-practice study. *Bull. WHO. 71(6):763:772.*

Addis Ababa University
Department of Sociology and Social Anthropology
MA Program in Sociology

Appendix. Questionnaires for the household survey for malaria –related illness interview.

Introduction

The main objective of this study is to assess community's perceptions of malaria and the underlying intervention for its management and control in Jimma Town, Oromiya National Regional State. To this effect, your involvement in the study has of great importance to the research's output. Please feel free that, the information collected is only for academic purpose. Hence, any part of the information being secured from you will be kept confidential.

Would you allow for me to continue an interview with you Yes ⟶1 No⟶ 2

Date: _____
Name of the interviewer_____
Supervisor name _____
Serial number _____
Aanaa(higher)_____
Ganda (Kebele) _____
House number _____

Thank you for agreeing to talk to me about a health problem that affects many people in this Town. Before we continue, I would like to ask you a few questions about your background.

Socio-demographic characteristics				
Characteristics			Head of HH	interviewee
1	Age (in completed years)			
2	Gender	1. Male 2. Female		
3	Relationship to the head of household	1. Self 2. Spouse 3. Parent 4. 4. Child 5. Others. _____		
4.	Ethnic group	1. Oromo 2. Amhara 3. Tigre 4. Kaffa 5. Others. _____		
5.	Religious affiliation	1. Muslim 2. Catholic 3. Protestant		

		4. Orthodox 5. Indigenous 6. Others. _____		
6.	Educational status	1. No formal education 2. Adult education 3. Primary education 4. Secondary education 5. Post secondary education		
7.	Marital status	1. Never married 2. Married 3. Widowed/er 4. Divorced/ separated		
8.	What is your main occupation?	1. private business 2. government employee 3. unemployed 4. housewife 5. daily laborer 6. others _____		
9.	Number of people living in the household	_____		

Socio-economic conditions			
10	Household average monthly income	_____	
11	Type of house	1. Mud plastered 2. Stone walls 3. Break walls 4. Others _____	
12	How many sleeping rooms do you have?	_____	
13.	Do you have the following items?	1. Radio 2. TV 3. Others._____	
Respondents Knowledge about malaria			
14.	Are you familiar with the term 'Malaria'?	1. Yes 2. No	
15.	What causes malaria	1. Mosquito 2. Unhygienic conditions 3. Cold weather 4. witchcraft	

		5. others_____	
16	Do you think that malaria can be transmitted?	1. Yes 2. No 3. Do not know	
17.	What are the most common symptoms can a person, if it has 'Malaria'?	1. Fever/hot body 2. Shivering 3. .Weakness 4. Muscle Pain/Joint pain 5. Headache 6. Loss of appetite 7. Vomiting 8. Cough 9. Others _____	
Treatment and Health care seeking			
18	Can malaria be treated?	1. Yes 2. No → 3. Do not know	40
19	What do you belief about the best treatment modality to cure a person with malaria?	1. Chloroquine 2. Quinine 3. injection 4. herbal medicine 5. Religious healing such as holly water and witch craft. 6. Others(Specify)_____	
20	Is there any person in your household who was caught with malaria during the past six months?	1. Yes 2. No →	40
21	When you recognized a person was sick, when did you start a treatment?	1. Within in the first 24 hrs 2. After one day 3. After two day 4. After three days 5. Others(Specify)_____	
22	What was the main reason for the delay in the treatment?	1. No drugs at home 2. No money to buy drug 3. Not serious 4. No drug supplier around 5. No health facilities open 6. Usually first wait and see 7. Others(specify)	

		_____	
23.	What would be the conventional time for seeking treatment of malaria?	_____	
24.	What has been done at home when your household member had malaria?	1. Chloroquine tablet self medication 2. Paracetamol tablet self medication 3. Chloroquine syrup self medication 4. Paracetamol syrup self medication 5. Home prepared Herbal medication. 6. bathing with ordinary cold water 7. Nothing 8. Others(Specify)_____	
25	If the respondent is familiar with use of drugs, how many times was the drug given in a day?	1. Once a day 2. twice a day 3. three time a day 4. Other(specify)_____	
26	For how many days the drug was given?	1. One day 2. Tow days 3. Three days 4. Until the person gets well 5. Other(specify)_____	
27.	If the respondent is familiar with use of drugs, how much did you pay for the drugs per person?	_____	
28.	Where did you get these drugs that you gave at home?	1. Pharmacy 2. Drug store 3. Ordinary shops 4. Health facility (Public☐ Private ☐) 5. Traditional healer 6. Others(Specify) _____	
29	Do the household have the capacity to afford the cost of the drug?	1. Yes 2. No	
30	If the answer is “No “to question no 29, what was the sources of money used to pay for health service and other related costs?	1. From relatives 2. Lending money with out interest 3. Lending money with interest 4. Sold asset	

		5. getting drug free of charge 6. Others(Specify)_____	
31	Did the family seek help for malaria outside the home?	1. Yes 2. No	
32	If yes, how many days after the start of that illness episode did you go to the clinic/hospital? _____ days	1. Within in the first 24 hr 2. After one days 3. After two days 4. After three days 5. Others(Specify)_____	
33	Where did you go for help outside the home when a member of your household has malaria?	1. Health worker in the community 2. Government hospital 3. Private clinic 4. Local healers 5. Religious leaders 6. Other(specify) _____	
34	What were the main reasons to seek treatment for malaria outside the home?	1. seriousness of illness 2. low cost 3. effectiveness of treatment 4. recommended from others 5. Others(Specify)_____	
35	Which was /is the most used sources of care for person presenting with malaria symptoms?	1. Health worker in the community 2. Government hospital 3. Private clinic 4. Local healers 5. Religious leaders 6. Other(specify)	
36	Tell me why is it the most frequently used source?	1. Because of low cost 2. prompt and better treatment 3. Near by to home 4. Other(specify)_____	
37	If hospital was your most used sources which drug(s) did you get at the hospital?	1. Chloroquine tables 2. Paracetamol table 3. Chloroquine syrup 4. Paracetamol syrup 5. Vitamins 6. Others(Specify)_____	
38	Cost of treatment and medicines, “How much did you spend for the help of and medicines prescribed at hospital or clinic for malaria of a person?”	1. Government _____ 2. Private clinic_____ 3. Total _____	

39	Did the cost of treatment affect health seeking options?	1. Yes 2. No	
40	As integral aspect of home management of malaria, there is a quick diagnostic test for malaria, which involves a finger prick and can tell you in 20 minutes if a person has malaria, have you ever heard of it?	1. Yes 2. No →	44
41	Would you have agreed that the test be done by a trained community member when a person has fever?	1. Yes 2. No	
42	If yes, whom do you prefer most?	1. community health workers 2. drug distributors 3. Traditional healer 4. Shop keepers 5. Other community member (Specify)_____	
43	If no to Q NO 41, why not?	1. They are non professionals 2. Do not trust their skill 3. Fear of HIV transmission from sharp material 4. Others (Specify)_____	
44	Have you ever heard of the use of pre-packaged drugs to cure malaria	1. Yes 2. No →	51
45	If yes where did you get the information from?	1. Health institution 2. Family members 3. Mass media 4. malaria control centre 5. Neighbours 6. Others (Specify)_____	
46	Has your household member ever been treated with them?	1. Yes 2. No	
47	If yes, where did you get the pack from?	1. Pharmacy 2. malaria control centre 3. private clinic 4. public health center/hospital 5. NGO clinic 6. Others (specify)_____	
48	Would you be able to pay for the drug?	1. yes 2. no	

49	What would be the reasonable cost for the drug?	_____	
50	If no, what would be the options?	1. the drug should be given free of charge 2. the price for the drug made lower 3. Others (specify) _____	
51	Please tell me: How can a person be better treated for malaria. What would need improvement?	1. Close health posts/hospitals 2. Better streets 3. More staff at clinic/hospital 4. Better education of drug seller 5. Better education of population 6. Cheaper treatment at clinic/hospital 7. Better treatment at clinic 8. Cheaper drugs 9. Others(specify)_____	
Prevention and control			
52.	Can any thing be done so that a persons the household or in the Town will not have malaria?	1. Yes 2. No 3. Do not know	
53.	If yes "Tell me about what could be done to prevent and control Malaria"?	1.Using mosquito nets 2. Clean the environment 3. Take drugs 4. Take herbs 5.Avoid too much sun 6. Rest enough 7. Good nutrition 8. Use indoor spraying 9. Others_____	
54.	Where did you hear the above mentioned prevention strategies?	1. From community health workers 2. From health post 3. Form mass media 4. From neighbors 5. Others. Specify_____	
55	How have you perceived these sources?	1. They were not given frequently 2. they were not delivered by appropriated sources 3. they were not given at right time 4. Other (specify)_____	
56	Do you have Insecticide Treated Nets at your home?	1. Yes 2. No	
57	If yes, are you meshing the nets around the bed?	1. Yes 2. No	

58	If no, what would be the pertinent reasons of not using it?	1. high cost 2. lack of confidence on the net 3. they were not available 4. they were not fairly distributed among community at large 5. lack of awareness about its use 6. Others(Specify)_____	
59	If cost is the main reason how much money you afford to buy the net?	_____	
60	What is the time in which the bed net is retreated?	1. per month 2. once a year 3. every six months 4. other(specify)_____	
Factors worsening malaria menace in Jimma Town			
61	What would think about the potential factors which worsen malaria problem in Jimma Town?	1. poverty 2. lack of proper satiation 3. Impacts dams, construction, and irrigation. 4. Others(specify)_____	
62.	What possible solutions would you suggest to tackle the adverse effects of the above mentioned factors?	1. Poverty reduction 2. environmental management 3. construction projects with plan 4.Others(Specify)_____	
63	Role of community in control of malaria	1. involvement in environmental management 2. supporting the role of health workers 3. funds activities for program 4. Others(specify)_____	

Declaration

I, the undersigned, decrare that this thesis is my original work and has not been presented for a degree in any other university, and that all sources of material used for the thesis have been duly acknowledged.

Name Ameyu Godesso

Signature. _____

Place and date of submission AAU, June 2008

This thesis has been submitted for examination as approved by the University advisor.

Name._____

Signature_____

Date of approval _____

Thank you