MALARIA:
LAY PEOPLE'S LIVED EXPERIENCE IN RIGOMA DIVISION, NYAMIRA DISTRICT, KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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This thesis has been submitted for Examination with my approval as a university supervisor.

Dr. Isaac Keango Nyamongo.......................Date....21.01.2004....

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DEDICATION

To my beloved late sister Bonareri

My grandma Baba Mosaisi

And my loving mother Tabitha

I can do all things through Christ who strengthenth me.

Philippians.4: 13.

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ABBREVIATIONS

AIDS	- Acquired Immunodeficiency Syndrome
AFRO	- WHO African Regional Office
AMREF	- African Medical Research Foundation
CQ	- Chloroquine
DC	- District Commissioner
DMO	- District Medical Officer
EM	- Explanatory Model
FGD	- Focus Group Discussion
GDP	- Gross Domestic Product
IAS	- Institute of African Studies
ITNs	- Insecticide Treated Nets
KEMRI	- Kenya Medical Research Institute
MCU	- Malaria Control Unit
MOH	- Ministry of Health
NGO	- Non- Governmental Organisation
NMCP	- National Malaria Control Program
NMS	- National Malaria Strategy
O.T.C	- Over- The- Counter drugs
PHC	- Primary Health Care
RBM	- Roll Back Malaria
SDA	- Seventh Day Adventist
SP	- Sulfadoxine or sulfalene/Pyrimethamine
SSA	- Sub-Saharan Africa
UNICEF	- United Nations Children Fund
WHO	-World Health Organisation
UNDP	- United Nations Development Programme

ABSTRACT

This study was designed to investigate lay people's malaria lived experiences in Rigoma division. Nyamira district. Rigoma is situated in a malaria epidemic-prone region in the southwestern highlands of Kenya. It is inhabited by the agricultural Gusii community. The objectives of the study are: (I) to describe the factors that determine the health seeking behaviour of malaria patients. (ii) to investigate the lay peoples perceptions on malaria signs and symptoms. (iii) to establish the health care options available to malaria patients. and (iv) the patient's response time in seeking health care.

Fieldwork was carried out during the months of January to March 2001. Data was mainly collected through case histories from 55 purposively selected respondents. The selected respondents must have suffered a bout of malaria within the last three weeks prior to the study. Additional data was obtained through direct observation and four Focus Group Discussions (FGDs) from the four locations in the division. This yielded qualitative and quantitative data. Qualitative data were thematically analysed. while quantitative data were summarised into frequencies and percentages. Further systematic data was collected (22 respondents) using free listing method and analysed using ANTHROPAC. Results are interpreted using Explanatory Models. Explanatory models were considered suitable for this study. as they are concerned with people's lived experiences with illness.

The study results reveal that various factors influenced lay people's health seeking behaviour. Cost of treatment. distance from health facility. disease severity. patient's social networks and service delivery emerged as the common factors that influenced patients' health care choices. It is also clear from the 55 case histories that

the respondents are fairly knowledgeable on malaria aetiology, its signs and symptoms and treatment. However this level of understanding did not seem to translate into proper control and preventive measures, as there existed some knowledge gaps. For instance about 26 % of the respondents reported multiple causality for malaria, while the 12 respondents who provided health care to children in the study sample, found it difficult to diagnose malaria in children. This has greatly affected the lay people's coping strategies against malaria infection. The study further reveals that there are several treatment options available for malaria patients in the area. The options available to the people include: self-medication, local private and public health facilities. Indeed 87.3 % of the respondents began treatment at home and reported using formal health facilities as subsequent options. Generally, most respondents (81.8 %) took 1-3 days to seek medical care upon realisation that they had malaria. Specifically, 43.6 % took one day, 21.8 % took two days and 16.4 % took three days. Only 18.2 % took over three days.

To help bridge the existing knowledge gaps about malaria aetiology and its control and prevention measures, it is recommended that a public health education program be initiated in the area. There is also a need for the health authorities to establish a monitoring and surveillance system, which will provide for proper forecasting of malaria epidemics in the area. Thus helping to mobilize resources for effective management of the epidemics. This will greatly help to check the high transmission rates associated with malaria epidemics. The scientific testing of the efficacy levels of the reported traditional remedies and the promotion of bed net use in the area are also recommended to be given due attention.

CHAPTER ONE
PROBLEM STATEMENT

1.0   INTRODUCTION

This section covers the background information, the problem statement, study objectives and the justification of the study. The study is designed to investigate malaria through the eyes of the lay people rather than the biomedical approach. In other words the research protocol takes a symptom-based rather than illness-based approach. This approach is important because recent community-based ethnomedical studies to describe local classifications of malaria have established that local populations frequently associate malaria and fever with mosquitoes. Hence revealing that the biomedical concepts about malaria have not been adopted universally, and other ideas of disease causation coexist in nearly every culture where local taxonomies have been studied (Baume et al. 2000).

Indeed the various ethnographic studies around the world show that local populations may use the term (malaria) to cover a wide range of illnesses than clinical malaria (thereby calling something malaria when it is not), or they may interpret some signs of malaria, especially convulsions, as something else (thereby not calling something malaria when it is). Therefore by talking about a symptom (especially fever), it is more likely both the researcher and the respondents are talking about the same thing- malaria infection. However fever can also be the result of other diseases. Although I use the term malaria, from the lay people's point of view, febrile illness may be a more appropriate term since they cannot conclusively determine malaria. But the term "malaria" is widely used by lay people to refer to febrile illness. In this thesis I use malaria and febrile illness interchangeably.

1.1 BACKGROUND INFORMATION

As we begin the 21st century Malaria remains a major public health problem especially in Africa where 90 % of the global incidence occurs. It causes 300-500 million episodes of acute illness globally, affecting up to one in ten of the world's population each year. Indeed the disease is a major cause of poverty and inequality in the world affecting primarily the poor; it exacerbates inequalities in health and impedes development. It costs African countries >1 % of the GDP and it constraints global private investment. Malaria accounts for 9 % of the disease burden to African people and is responsible for 1 in 4 of deaths below the age of five years. Therefore, the persistence of malaria posses a threat to global health in a changing world (of environmental changes, population movement, civil unrest, biological changes in parasite and the mosquito vector) (WHO 1998).

Despite major successes in controlling malaria in the 1950s and 1960s, recent years have seen resurgence due to a combination of factors. These factors include a growing resistance to current anti-malarial drugs in many areas, including multi-drug resistance, increasing insecticide resistance (Bruce-Chwatt, 1985, Knell, 1991), environmental changes and human migration (Lindblade et al., 1999). The situation is further compounded by political instability and wars, a reduced commitment to control programmes in some regions have also had the serious consequences of exposing populations with decreased immunity to malaria (Davies, 2000).

Over the past few years there has been growing momentum to address the problem of malaria from local, national and international levels. A strong and growing commitment in support of action against malaria, both in affected countries and the donor community is underway (The African Initiative on Malaria, the G8 summit 1998). Both the research community (Multilateral Initiative on Malaria) and the private sector have been mobilized and are showing interest (Medicines for Malaria

Venture). Recognising the wide spread political desire that had been building since the Amsterdam Summit of 1992, when the Global Malaria Strategy was adopted, Dr Gro Harlem Brundtland, Director-General World Health Organisation declared upon taking office in July 1998 that there should be a deeper commitment to win the fight against malaria.

For this task to bear fruits it is going to require not only the commitment of the health sector, but also other government sectors, the private sector, Non-governmental organisations, and affected communities themselves. Greater financial resources and higher visibility for malaria campaigns would be necessary. It was thus through the offices of WHO, four UN- system agencies (UNDP, UNICEF, WHO and the World Bank) Roll Back Malaria initiative was launched on 30th October 1998, to help control the disease (WHO, 1998).

The key elements of Roll Back Malaria include:

(i) Early detection of malaria by families and communities;

(ii) Rapid treatment by making drugs accessible and close to parents and care takers, referral and use of effective anti- malarial drugs;

(iii) Multiple prevention ITNS; environmental, biological and/or chemical methods; pregnant women taking anti – malarial medication;

(iv) Well co-ordinated action where efforts contribute to sustainable and effective health care systems, take accounts of local situation, public and private care givers work together, and many organisation join in the a synchronized efforts to fight malaria;

(v) Dynamic global movement through partner/s at global, regional and country levels as groups active at the community level working together (as a movement) for improved health and reduced malaria;

(vi)   Focused research to effective and efficiently use existing malaria control measures, develop new products, and new, ecologically safe insecticides.

The target of this new initiative is to reduce malaria deaths by a half over the next ten years. In Africa, Roll back malaria gained political commitment at the African Heads of state meeting in Abuja, Nigeria, in April 2000. The international community too has committed 41 billion per year to the initiative. It should however, be noted that despite this encouraging international anti-malaria initiatives, the war against malaria still remains far from won, has intervention programs have hitherto remained disjointed and uncoordinated in approach. Thus there is need by all the stakeholders to seize this opportunity to design sustainable intervention programs.

1.2   STATEMENT OF THE PROBLEM

Malaria is one of the world's most dreaded parasitic disease, and the common cause of morbidity and mortality to human beings especially to young children. Although several intervention programmes have been put in place to control the disease, it still remains a threat to public health. In Kenya malaria is a priority disease accounting for 30 % of outpatient attendance nationally. It kills daily over 70 children under 5 years old every day, and as negative effects on other sectors of the national economy has well (Oyediran and Achola, 1999).

In Rigoma division (study area), malaria is a major health problem. In fact the ministry of health in Kenya has been classified, Nyamira district, as one of the 14 districts worst hit by malaria epidemics (Republic of Kenya 2001). The area usually experiences malaria outbreaks during the rainy months, when ecological conditions provide ideal conditions for mosquito breeding. The local population has low immunity to the fatal consequences of infection. This is due to their lack of exposure

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to the plasmodium parasite. Thus making both children and adults at significant risk of severe morbidity and mortality. This has exerted pressure on the few available health facilities.

The study was therefore designed to investigate how the lay people in Rigoma division, Nyamira district experience malaria. The study results will help reveal their malaria knowledge and coping strategies. This will help in designing any future intervention program in the area. Indeed malaria is the leading cause of morbidity in Nyamira District as it accounts for over 40 % of out patient cases in the district's health facilities (Republic of Kenya, Nyamira 1997 – 2000).

Therefore, the primary problem of this study was to find out how lay people experience malaria in Rigoma division, Nyamira district.

Specifically the study was guided by the following questions.

1. What factors determine health-seeking behaviour among malaria patients in Rigoma Division?

2. What are the local people's perceptions on malaria signs and symptoms?

3. What are the health care options available to malaria patients?

4. What is the response time in seeking treatment for malaria?

1.3   STUDY OBJECTIVES

1.3.1   General objective

The main objective in this study is to examine the lay people's lived experiences with malaria among the Gusii in rural Kenya.

1.3.2   Specific Objective

The immediate objectives of the study are:

1. To describe factors which determine health-seeking behaviour of malaria patients.

2. To establish the lay people's perceptions of malaria signs and symptoms.

3. To establish the health care options available to malaria patients

4. To establish the response time in seeking health care.

1.4   RATIONALE FOR THE STUDY

I advance three reasons to support this study; first, the study was motivated by the fact that Highland malaria is a fairy recent phenomenon in Kenya (Some, 1994). Given the high level of vulnerability among affected populations and the surprise nature of the outbreaks, which usually find the health care system unprepared, knowledge about the lay people's lived experience is important. These knowledge on the community's treatment seeking behaviour, lay perceptions on malaria signs and symptoms and time response to health care, will help to enhance early case detection and improve home management thus averting loss of human life by initiating appropriate and prompt intervention program. This study therefore attempted to generate data that could be used to influence malaria control among lay people in rural epidemic settings in Kenya and Nyamira in particular.

Secondly, this study links to the main component of current malaria control strategies: to reduce malaria related mortality and severe morbidity by enhancing early diagnosis and prompt treatment at peripheral health services such as village health posts and dispensaries (WHO 1993). This is however promoted mainly by sensitising the population with regard to the available service offer and by providing classical biomedical descriptions of symptoms and signs of malaria. This strategy,

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while positive in its recognition of the importance of community-based approaches to disease control, has been less successful in terms of implementation and sustainability (Tanner and Vlassoff 1998). This situation has been blamed on inadequate consideration of social and cultural context of infection and disease. For instance recent studies by social scientists (Agyepong 1992., Munguti 1998., Nyamongo 1998) have reported the existence of ethinomedical perceptions different from those of allopathy. This has important implications for malaria control, has earlier measures have been less effective (Agyepong 1992). Hence, the need to incorporate these ethnomedical perceptions of the lay people into the biomedical domain so as design sustainable intervention programmes for malaria control. This study therefore will provide data in the social and cultural context of malaria control in Rigoma using lay people lived experiences.

Finally, the study too, underlines the crucial role of Anthropology in the improvement of health care delivery in various communities or cultural entities. It underscores the fact that any sustainable health care system must incorporate the medical knowledge of the people it serves. This includes their disease classification, medical beliefs and Medicare practices. Indeed an understanding of cultural factors can contribute greatly to enhance medical therapeutic as well as health disease preventive and promotive activities. Those in the biomedical domain may not easily gather this vital information as to using an anthropological approach. The study therefore, would provide a useful reference for future research aimed at designing appropriate intervention program in the study area and Nyamira district in general.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.0   LITERATURE REVIEW

2.1   INTRODUCTION

This section covers the Literature review, theoretical framework, assumptions
and the definition of key terms. Although much of the literature in this study is drawn
from recent ethinomedical studies, an attempt was also made to review the biomedical
information on malaria. Data results emerging from these studies indicate that there
are local variations in human behaviour, social organisations and culture, which
influence disease incidence and subsequent health seeking behaviour. Therefore
malaria is both a social, economical and political problem as it is a medical one.

This view tends to contradict the early approaches in malaria control. These
approaches were largely based on the biomedical paradigm and usually premised
there understanding on disease aetiology on the germ theory. The theory is premised
in the strong belief that germs are the sole agents of disease causation. So, all control
measures in that regard should be geared towards the elimination of the illness-
causing germ. However the new body of ethnomedical studies has shown that malaria
control programmes based on biomedical orientation alone have been less successful.
Thus calling for an all-inclusive affront against one of the world's most dreaded
parasitic disease - malaria.

2.1.1   NATURE OF DISEASE

Malaria is by far the world's most important parasitic disease. In many
developing countries, and in Africa especially, malaria exacts an enormous toll in

lives, in medical costs and in days of lost labour. The disease is transmitted by the female anopheles mosquito, which acquires the malaria parasite by sucking blood from an infected person passing it later on by the same route to a healthy person. When an infected mosquito bites a healthy person it takes a bout 12-28 days before the on set of the malaria fever depending on the specie of the parasite.

The severity of the disease depends largely on the immunological status of the person who is infected. Partial immunity develops over time, through repeated infection. Indeed without recurrent infection, immunity is relatively short-lived. Therefore the pattern of exposure to malarial infection, the degree of treatment and compliance with any anti-malarial drug regimen, local patterns of drug resistance, an individual age and make-up all tend to influence the severity of the disease (Mwenesi 1995:10)

Of the more than 200 species of the Plasmodium that have been identified, only four recognized species of plasmodium protozoa, have been shown to infect humans, these are – *P. falcipurum, P. ovale, P. vivax, P. malarie.* (Bruce-Chwatt 1985). However *P. falcipurum* is the most lethal, because parasites clot together in the body capillaries and in this way block oxygen and blood supply to vital body organs. It is the most common of malaria infection in Kenya (Republic of Kenya 1992). However it should be noted that malaria is a curable disease if promptly and adequately treated.

The diagnosis of malaria includes: clinical diagnosis, where presenting patient symptoms suggest malaria; therapeutic diagnosis, where presenting patient's complaints respond to malaria treatment and laboratory diagnosis, where malaria parasites are seen in the blood stain after tests have been done. The laboratory

diagnosis is the surest way of diagnosis but it's not practical in highly malarious areas because of lack of health facilities (Butegwa, 1987).

Malaria presents clinically, by the presence of all or combination of some of the following symptoms: chills, severe headache, fever, general body weakness, painful joints, excessive sweating, vomiting, nausea, dizziness, convulsion (in severe cases) and anorexia. If the parasites continue to multiple, unabated they destroy many red blood cells leading to malaria related anaemia. However a more serious form of falciparum malaria – cerebral malaria may present additional neurological symptoms (Esamai et al., 1999). The clinical course of malaria infection may be presented as uncomplicated or severe malaria. Uncomplicated malaria presents parasite counts less than 5 % and in severe malaria, a patient presents with malaria that is either prostrated, unconscious or has respiratory distress (MOH, 1998).

2.1.2   MALARIA EPIDEMIOLOGY AND ENDEMICITY

Various epidemiological classification systems have been used to describe malaria, none of which fully captures the epidemiological spectrum of the disease displayed in Sub Saharan Africa. A simple but useful dichotomous system is taken between stable (endemic) and unstable (epidemic) Malaria (Goodman 2000:2). Indeed, recent literature (Goodman 2000, MOH 1998, Gilles 1993) classifies malaria into two broad groups -stable and unstable malaria. The differences in the features of these types produce different pictures of the disease as it affects the community as a whole. In stable malaria the amount of transmission is high without any marked fluctuation over the years, although seasonal fluctuation may exist. In unstable malaria the amount of transmission fluctuation varies from year to year.

Malaria Endemicity refers to the amount or severity of malaria in an area or community. It may be presented in various degrees and the following classification of

it, is commonly used. (1) Hypoendemicity, denotes the areas where there is little transmission and the effect of malaria unimportant (2) Mesoendemicity is found typically among small rural communities in subtropical zone with varying intensity which varies depending on local circumstances (3) Hyperendemicity is found in areas with intense but seasonal pattern, where the immunity of the population is insufficient to prevent the effect of malaria on all age groups (4) Holoendemicity denotes a perennial transmission of high degree resulting in a considerable degree of immune response in all age groups, particularly in adults (Gilles, 1993:131).

In Kenya, the transmission and spread of malaria is broadly categorized into four geographical areas: (1) Stable malaria areas in high endemic (measured by the degree of transmission) areas like in the Coast, Nyanza and western province. (2) unstable malaria areas with seasonal transmission and low endemicity. (3) Epidemic areas which referred to highland areas which border endemic zones. Since 1988 there has been a series of highland epidemics after three decades of quiescence. These areas are usually agricultural zones with high population densities. Such as Uasin Gishu, Nandi, Kericho and Gusii highlands. (4) Malaria free zones which generally include all the land that lies altitudes about 1600 meters like Nairobi, Mt Kenya and their surrounding areas (Republic of Kenya 1993). The distribution of malaria in Kenya is shown Figure 1.
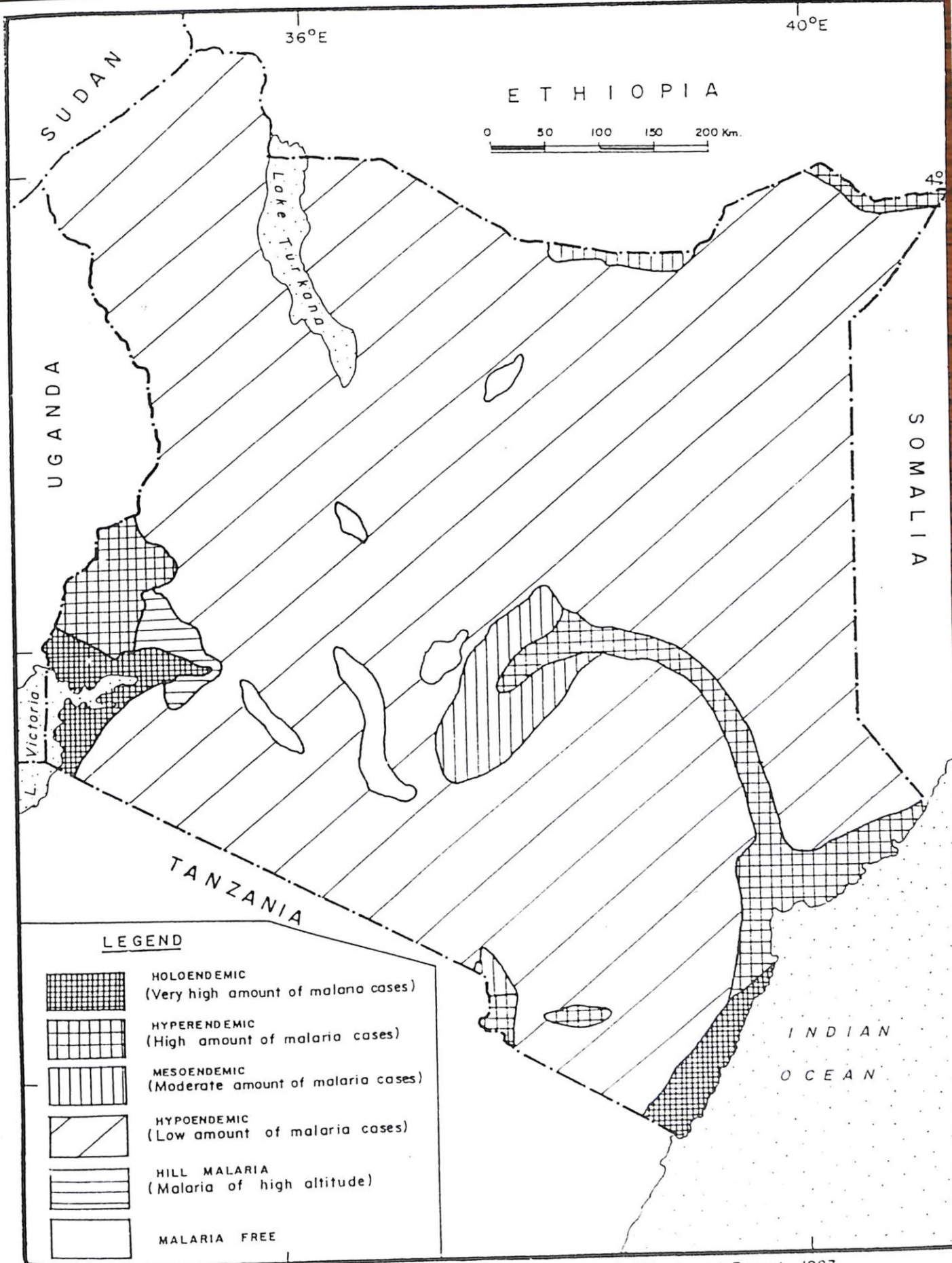
FIGURE 1. KENYA: ENDEMICITY OF MALARIA. Source DVBD Annual Report, 1983

2.1.3   EFFECTS OF MALARIA

Generally, literature on the effects of malaria suggests that little/or no attempts have been made to estimate the overall public expenditure on malaria prevention and treatment. However the number of patients seeking care for suspected malaria and data on unit costs of treatment suggest that the total costs is likely to be substantial. Mwenesi (1995) for instance observed that although virtually no reliable statistics exist on malaria morbidity and mortality in Africa, extrapolations from epidemiological studies showed that the disease is probably responsible for at least 500,000 to 1.2 million deaths annually mainly among children below the age of five years.

Some (1994) studying the effects of epidemic malaria in Uasin Gishu District in Kenya, found out that Hospital mortality per month increased by 8.6 times, during the epidemic (1994). While morbidity went up by 3.7 times, and of the 103 deaths attributed to malaria, 64 (62.2 %) occurred in hospitals and 39 (37.9 %) at home. Most of the home deaths (93.3 %) occurred in areas that border the malaria endemic Lake Victoria Basin. The rate of pupil absenteeism ranged from 17.6 % to 54.4 % in primary schools. Brooker et al. (2000) too, studying the current situation of malaria among school age children in Kenya estimated that between 0.7 and 5.3 million clinical attacks by malaria occur in stable areas, and between 0.8 and 1.2 million in unstable areas among school children in Kenya. The drug and diagnostic consumable cost to implement preventive or curative services for primary and secondary children were found to be expensive. The study noted that while these data suggest a relative low risk of clinical attack, such attacks might still have an impact on school attendance and educational outcomes. Cases of malaria infection were observed to account for a significant 13 - 15 % of school days per year.

Indeed Masala et al. (1999) noted that malaria mostly affects rural communities. In rural areas, the rain season is often a time of intense agricultural activity, when poor families earn most of their annual income. Malaria can thus make these families even poorer.

2.1.4   ECONOMIC IMPACT OF MALARIA

The economic cost of malaria is a challenge to quantify as infections may be asymptomatic in partially immune persons, may manifest in acute catastrophic cerebral illness and death or permanent neurologic sequelae, or may appear ingradations between these clinical extremes. Indeed many febrile illness in endemic areas mimic malaria, and confirmatory parasitologic diagnosis is not often available, reliable, or prompt, particularly in rural zones. Parasitemic patients can have other illness, complicating matters even more.

The estimated costs of malaria, in terms of strains on the health systems and economic activity loss are enormous. In affected countries as many as 3 in 10 hospital beds are occupied by malaria patients. In Africa, where malaria reaches a peak at harvest time and hits young adults especially hard, a single bout of the disease costs an estimated equivalent of 10 working days (WHO 1998). The direct and indirect costs of malaria in sub-Saharan Africa exceed $2 billion, according to 1997 estimates.

Around 20 % to 40 % of out patient visits in Sub-Saharan Africa (SSA) are for 'fever' and suspected malaria among inpatients ranges from between 0.5 % to 50 % of admissions. An outpatient visit costs in the region of $ 0.96 in Malawi; inpatient treatment for severe malaria costs $35 per admission in a typical Kenya district hospital and absorbed 9 % of hospital inpatient recurrent costs (Goodman et al. 2000).

According to Kenyan Government Malaria Control Strategy (2001- 2002), an estimated 170 million working days are lost each year as a result of malaria infection. The economy in general and the health sector in particular are heavily burdened by the cost of drugs and treatment. Malaria accounts for more than 8 million out patient treatment at government health facilities each year. Hundreds of thousands more sufferers do not reach the formal health sector. The country therefore looses about US$ 129 million every year due to lost working days because of malaria. This is surely a great burden for a developing country whose economy relies primarily on agricultural production.

In addition to these direct costs, malaria also has an economic impact through its effect and on physical work capacity and direct productivity: land use, and children school attendance, school performance and cognitive development. However studies on these issues have been fraught with methodological difficulties. There has been general failure to take into account several important factors, including the specific nature of malaria disease burden, the particular characteristics of the local economy, the coping strategies of households and the effect of malaria on the production possibilities and incentives of households (Goodman et al. 2000).

As far as affected communities are concerned more than any other disease malaria hits the poor. Malaria endemic countries are some of the world's poorest. Costs to countries include costs for control and lost workdays- estimated to be 1- 5 % of Gross Domestic Product (GDP) in Africa. For the individual, costs include the price of treatment and prevention, and lost income (Masala et al. 1999). The aforesaid economic estimates are however, imprecise, misleading, and low because of inadequate diagnosis and incomplete reporting (Breman 2001). Gallup and Sachs (2001) show that where malaria has been eliminated economic growth has increased

substantially over the following five years, compared to growth in neighbouring countries. Countries with intensive malaria lagged in growth by 1.3 per cent per person per year compared to neighbouring countries; a ten percent decrease in malaria incidence was associated with a 0.3 percent increase in economic growth. It is incontestable therefore that the control of malaria in Africa and elsewhere will increase economic induces and encourage international investment and foreign trade.

2.1.5 PREVENTION AND CONTROL

Ever since the discovery by Laveran in the 1889 that the parasite was the root cause of malaria and the subsequent demonstration by Ross in 1897 that the mosquito was the biological vector responsible for transmitting the disease, malaria has been the subject of much research and control efforts. (WHO., 1992).

In the review of the prevention and control of malaria, Onori et al., (1993), observed that most of the measures employed by individuals and for a larger scale control of the disease can be divided according to the classification proposed by Russell (1952).

1. Measures designed to prevent mosquitoes from feeding on man.
2. Measures designed to prevent or reduce the breeding of mosquitoes by eliminating the collections of water or altering the environment.
3. Measures designed to destroy the larvae of the mosquitoes
4. Measures designed to destroy adult mosquitoes
5. Measure designed to eliminate the malaria parasite in the human host.

However, recent literature on malaria prevention and control measures indicates three broad categories of malaria prevention measures. First, those that aim at the prevention of the contact of man with the mosquito vector (bed nets, mosquito repellents, screening e.t.c). Secondly, those aimed at the reduction of vector population in its larval or adult form (proper drainage systems, use of insecticide and other chemical sprays). Thirdly, the involvement of chemotherapeutic measures to

eliminate malaria parasites in the human host (use of anti-malarial drugs) and immunization (skill at the experimental stage) (WHO 1993).

Scientific studies done in non-western societies indicate that in controlling malaria lay people in malaria prone areas do not rely on the use of conventional and modern methods of control (Nyamwaya 1992, Mulemi 1998). These studies revealed that in an effort to control malaria, lay people used traditional methods like the burning of local plants and substances that produce scents capable to repel mosquitoes away, alongside modern devices like bed nets, insecticides and mosquito coils. Indeed, the use of scientific methods of malaria control in non-western societies has been noted to be low (Nyamwaya 1987). The studies therefore suggested that this situation may be a product of socio-cultural variables and situations, which directly influence people's health and illness behaviour for the disease.

In planning malaria control interventions therefore, one must not be bound by any standardised methodology but adopt flexible approaches which must take as priority local conditions and circumstances. In particular an effort must be made to look for the indigenous preventive resources for incorporation in the overall prevention strategy in that community, if the intervention has to be sustainable. It should be noted that the use of indigenous preventive resources alongside the conventional scientific resources, has hitherto received minimal/no attention by most malaria prevention initiatives. The fact that these initiatives have not been successful in prevention and control of malaria makes it prudent to tap this potential (traditional resources).

2.1.6 FOLK PERCEPTION AND KNOWLEDGE OF MALARIA

Given that much of the research carried out on malaria, has hitherto been biased towards the biomedical paradigm on the etiology of the disease and that there is evidence to suggest that the scientific perspective alone has been inadequate in man's quest to control and prevent malaria (Nyamwaya 1992, Agyepong 1992, Nyamongo 1998, Khayundi 2000). Progressive attempts by social scientists have been made to study the extent to which social, political and economic factors influence the cause and nature of the disease. This new approach is in total contrast with the biomedical paradigm- whose orientation revolves around the germ theory and remains the basis of disease etiology in western societies. This theory was based on the fact that germs are the sole agents of disease causation.

According to Khayundi (2000:34)

This theory has been the basis for drug formulation for use against each specific disease-causing germ. The trust in chemotherapy is therefore, seen by the biomedical profession as the panacea for all diseases, thereby, relegating any other factors that may be integral to disease causation and healing.

The argument advanced here is that the over-reliance of the western formulated biomedicine has not and will not be adequate enough in dealing with all human ailments. The only sustainable health system therefore to deal with health problems such as malaria, should as a priority embrace both the biomedical and the affected community's indigenous medical knowledge and health care system. This is especially important, given the fact that western scientific medicine provides only a small proportion of health care in most countries of the world (Helman 1994). Therefore there is need to bring on board the examination of other factors like cultural beliefs, social and economical status of communities visa vice there relationship to human health problems. In other words the fight against malaria must be broad based and not confined to only the biomedical approach.

This is indeed what Foster and Anderson (1978) have proposed as alternative way of classifying lay etiologies, especially in non-western societies. They differentiate between personalistic and naturalistic systems. In the former illness is due to the purposeful active intervention of an agent, such as supernatural being (a god, a ghost, ancestral spirits, capricious spirits) or human beings (witch or sorcerer). One could also include in modern notions of "germs" in this category especially those causing "fevers". In naturalistic systems, illness is explained in impersonal, systematic terms, it can be due to natural forces or to conditions such as cold, wind or damp, or to rise equilibrium within the individual or in his own social environment (Helman, 1994).

Young (1976) has too classified belief systems about ill health as either externalizing or internalizing. Externalizing belief systems concentrates mainly on the etiology of the illness, which is believed to arise outside the sick person's body, especially in their social world. Thus in trying to identifying a cause for the individuals illness, they examine closely the circumstances and social events of his life before he/she fell ill such as tracing the cause of an illness from a grudge between two people, then to feelings of resentment, then to some pathogenic act (such as witch craft and sorcerer) which then led to the illness itself. So many of the lay models of illness etiology from different parts of the world, can be described as 'externalizing' types of explanation. The internalizing belief system emphasizes on what occurs inside the individuals body and this is the perspective scientific medical model (Helman, 1994)

It is with this realization that a number of scientific studies have been carried out on how lay people diagnose and classify malaria but the results are not necessary an equivalent of what is known to biomedical practitioners. In a study of a rural

community in Ghana (Agyepong. 1992) reported that the Adangbe recognized a complex symptom known as *Asra* to correspond closely to the clinical definition of malaria. *Asra* was characterized by headache. arise in body temperature. chills, bitterness of the mouth. yellow eyes, deeply colored urine, loss of appetite, bodily aches and pains, weakness and easy fatigability vomiting, favor of the palms and sores, and cold sores around the mouth.

In another study among the Gusii of the South western Kenya, (Nyamongo, 1998) reported the following symptoms: feeling cold (usually accompanied by fever), vomiting yellowish–green liquid (*esosera*) joints aching, feeling tired and weakness (usually accompanied by dizziness); headache. stomachache (*amatema*), lack of appetite unusual heart beat and drooping eyes. For children 5 years may include dullness, crying a lot and intermittent spasms during sleep.

The study by Karanja et al., (1999) study in Kisumu district among the Luo of Nyanza noted that a local terminology for general malaise. (*midhusi*), and the conventional term "malaria" were used interchangeably. And although there appeared to be a local understanding that mosquitoes cause malaria. other factors were also given as responsible for malaria such as cold and wet conditions (*Ngich mar piny*). However common symptoms of malaria were well recognized among a large proportion of the respondents. But in Kilifi district, Kenya, although there is no specific vernacular word for malaria, the term *homa* is synonymous with fever and is the nearest term to the syndrome of uncomplicated malaria among this rural population (Snow et al., 1992).

A study in Marigat division of Baringo district by Munguti (1998) reflected that the Iichamus community believed malaria to have multiple causes. These include: *nkonjongo'ne* (mosquito), *kule nairewa* (fresh milk) and *nkare tarumo* (dirty water).

Here too many of the symptoms mentioned by the respondents seemed to neglect correct clinical symptoms of malaria.

From the foregoing popular medical theories and practice by the lay people don't always correspond with those of biomedical domain. Indeed some communities have a single terminology corresponding with malaria, as the case among the Adangbe of rural Ghana (Agyepong, 1992). While other communities like the Abagusii of Kenya, use more than one illness term interchangeably (Nyamongo, 1998). Local populations frequently associate malaria and fever with mosquitoes.

That most lay people don't ascribe the to "germ theory" on malaria causation is an established fact and continues to dog any malaria control intervention programs. Therefore malaria control programs must incorporate these ethinomedical perceptions, if they have to be sustainable.

2.1.7 HEALTH SEEKING BEHAVIOR

According to Brearley et al. (1978) health like love is an elusive concept, several definitions exist, but non is entirely satisfactory, and it is curiously difficult, for professionals and lay men a like, to answer the seemingly simple question " what is health? ". However the World Health Organization (WHO) definition of health since its time of inception in 1946 has despite criticisms retained wide appeal. It defines health as " a state of complete physical, mental and social well being and not merely the absence of disease and infirmity". Indeed this definition views health more broadly as something more than the absence of disease and reinforces the relationship of physical health to mental and social well-being.

It should be noted however, that in spite of these apparent problems of defining health, most people are able to say whether they are health or not. Indeed in

every society, most people are able to tell whether they are health or not, as every society has accepted standards of what they perceive as 'normal' health and fitness. Usually ill health is regarded as a deviation from these standards. Lay definitions of normal health, then are made in social contexts and are governed by the broad cultural norms of a particular society. Nyamwaya (1992) noted that people's response to disease is governed by their predominant concepts of health and illness. In Africa, such concepts are largely indigenous, and usually specific to each cultural group.

When a health individual therefore falls sick, the most likely reaction is to try and revert to the normal health state. This process (however simple as it sounds) is normally very complex that leads to the patient making various health-seeking decisions, which sees them through a number of treatment patterns.

Mbeja (1997:16-17) commenting on the complexity of these patterns observed that:

> From the time an individual realizes something is wrong to the time he/she decides to make an initial collective measure varies from an individual to individual. It is based on one's usual "baseline" state of well-being; the perceived seriousness of that symptom, and the extent to which the discomfort disrupts what he/she wants to do. Most important is the prevailing culture. Indeed, societal values and beliefs, which are the principal guidelines to people's culture, play an important role in influencing the cause of action taken by individuals during sickness.

However the process of treatment seeking is sequential according to Ryan (1998), involving several stages: the occurrence of a symptom, the detection of that symptom, the definition of the symptom as a medical problem, the decision to seek care, actually seeking care, and being advised to get/or seeking follow up care. Despite this sequential process, the search for appropriate therapy for malaria seems not to follow a definite pattern as lay people go through different treatment transitions (Nyamongo 2002). In most cases Lay people utilize one or more of the available health care options. Typically, most study findings have revealed several health care

alternatives for malaria patients but not all are utilized (Nyamongo 1998, Snow et al. 1992, Ongore and Nyabola, 1996). The treatment options include, home remedy through self-medication with pharmaceuticals bought over-the -counter on the open market, traditional herbal therapies and therapies offered by health centers or hospitals or patient may opt to seek for any therapeutic intervention. The utilization of a particular treatment alternative for malaria is determined by several factors, which influence the health-seeking behavior of malaria patients.

The literature on the determinants of health seeking behaviors is quite extensive. McCombie (1996) in his review of recent research on treatment seeking for malaria cited; access to services, disease severity, attitude towards providers and beliefs about the disease as the most important determinants of health care seeking among malaria patients. Nyamongo (1998), has summarized them as: (1) illness characteristics and its perceived seriousness (2) lay people's knowledge and categorization of the illness (3) expenses that are likely to be incurred for each treatment choice (4) distance from health care facility (5) social networks of the patient and the care taker and (6) Religion.

2.2.0 THEORETICAL FRAMEWORK

2.2.1 EXPLANATORY MODEL

This study was based on the explanatory models. Simply stated explanatory models (EMs) are the notions about an episode of sickness and its treatment that are employed by those engaged in the clinical process. Both the patients and practitioners hold explanatory models and they offer explanations of sickness and treatment to guide choices among available therapies and therapists and to cast personal and social meaning or the experience of sickness. In particular, they provide explanations for the

five aspects of illness (1) the etiology or cause of the disease (2) the timing and onset of symptoms (3) the pathophysiological process involved (4) history and severity of illness (5) and the appropriate treatment of the condition (Helman 1994).

According to Kleinnman 1993 (the proponent of EMS), lay EMS tends to be idiosyncratic and changeable and heavily influenced by both physical and cultural factors. They are partly conscious, and partly outside of awareness and are characterized by ' vagueness', multiplicity of meanings, frequent changes and lack of sharp boundaries between ideas and experience. He contrasts this with physician's EMS, which is also marshalled to deal with a particular illness episode but is mostly based on 'single causal trains of scientific logic'. Explanatory models are therefore used by individuals to explain, organize and manage particular episodes of impaired well-being. In which case consultations with a doctor are actually transactions between lay and medical EMS of a particular illness.

Explanatory models therefore, can only be fully understood by examining the specific context in which they are employed, since this usually has a major influence upon them. The context of an EM may include the social and economic organization and the dominant ideology (religion), of the society in which that individual got ill and in which they consulted a doctor (Helman 1994). Thus EMs is a powerful tool for placing experience within specific context. In this regard EMs construct different clinical realities, for the same illness episode. Differences in clinical realities may in turn lead to poor medical care due to lack of proper communication between those involved in the clinical process.

For instance, though the EMs of biomedicine may structure a view of clinical reality in which the sickness is located within the body of the sick person, and the doctor views medical care as treatment of the diseased organ. Those of the popular

culture may locate the problem in the family and may label the entire family as sick. The target of treatment, then, will be seen as involving considerably more than the patient's body. The doctor will be viewed as only one, and perhaps not most important agent of treatment (Kleinman 1993). Therefore, lay peoples EMs normally seeks treatment interventions and evaluations of therapeutic outcome that most of times are not the same as those of biomedicine. These require more than biomedical concept for their explanation and application

2.2.2 RELEVANCE OF THE MODEL

Normally explanatory models are marshaled in response to a particular illness episode and they focus on how particular illness is patterned, interpreted and treated by an individual or group of persons. It also illuminates how problems in clinical communication quite often present conflict in the way clinical those involved in the health care process conceive reality. This is the central focus of my study. The model enabled me to explain and discuss people's malaria experiences within the Gusii cultural system.

2.3.0 ASSUMPTIONS

In pursuance of the research objectives the following assumptions were investigated:

1. That lay people's perception and knowledge of malaria determines their health seeking behaviors.
2. That Gusii people belief that malaria has multiple causes.
3. That malaria is commonly associated with fever in the community.
4. There is a tendency to utilize home-based medical resources in the management of malaria related illness in the community.

2.3.1 DEFINITION OF KEY TERMS

Epidemic-   A sharp rise of the incidence of malaria among a
                             Population in which the disease was unknown or an
                             increase in the disease beyond that normally expected.

Febrile –   An increase in temperature compared with the normal.

Health -   The World Health Organization (WHO) defines health as
                             a state of complete physical, mental and social well-being
                             and not merely the absence of disease or infirmity.

Health care-   This term was generally used for any practice related to
                             the restoration of health or prevention of ill health.

Health care providers-   Refers to the medically trained persons who, either at a
                             health institutional settings or in private practice,
                             participate in the provision of health care and health
                             information to the community members. This includes
                             nurses, doctors and the paramedical personnel working in
                             the existing formal health units.

Health seeking behavior- Deliberate move to restore health during and after an
                             illness episode. It includes home treatment behavior as
                             well as consultations with any health providers, whether
                             traditional or modern.

Lay people-   Non- health professionals involved in the management of
                             their own health problems or of the health problems of
                             people they know (acting as care givers to their children).

Perception –   People's beliefs, knowledge and attitudes regarding
                             particular phenomena. In this study it refers to
                             respondents' views and understanding about malaria.

CHAPTER THREE
SITE SELECTION AND METHODOLOGY

3.0   INTRODUCTION

This study covers the description of the study site, its location and population. It also includes Data collection and analysis methods. The problems encountered during the course of study are also included.

3.1.0   SITE LOCATION

This study was carried out in Rigoma division in Nyamira district of South Western Kenya (Figure 2.). The division is one of the five administrative divisions that constitute Nyamira district (Figure 3.).

Nyamira district is one of the twelve districts that make up Nyanza Province. The district is divided into (5) administrative divisions, twenty-two (22) locations and seventy-one (71) Sub-location (Figure 3). The Abagusii, a Bantu-speaking group in Western Kenya, occupy the district. It shares boundaries with Rachuonyo district to the North, Trans-Mara district to the South, Kericho district to the East, and Bomet district to the South East. The district lies between latitudes 0^030" and 0^045" south and longitudes 34^045" and 35^000"East.

The area covered by the district is approximately 896.5 square kilometers, shared among five divisions namely: Nyamira, Ekerenyo, Borabu, Manga and Rigoma (Table 1). Rigoma division, which is the area of this study, is 141 square kilometers with a population density 680 per Kilometre Square. It is divided into 4 locations (Gesima, Kitutu East, Mochenwa and Biticha). This is further sub-divided into 12 sub-locations. It is here that the study respondents were selected.

3.1.1 TOPOGRAPHY

Several ridges and hills dissect Nyamira district. Kiabonyoru hills, Manga Escarpment and Nyamabisimbi hill are the most prominent features. The two topographical zones found in the district lie between 1500m and 1800m above sea level, covering the northern part, and areas lying above 1800m altitudes comprise the southern part of Nyamira and Ekerenyo divisions. The hill terrain of the district leads to soil erosion and makes construction and maintenance of road network costly.

The drainage pattern in the district is such that the rivers and the streams drain into Lake Victoria. The major permanent rivers are Gucha and Sondu. Usually, several streams emerging from the many water points in the area join these rivers. There are also several depressions in the district, the Sironga valley being a notable example.

3.1.2 CLIMATE

The district has a climate of a highland equatorial type, which enables the district to receive high and reliable rainfall that is well distributed throughout the year. The district has two rain seasons of which the long rain season occurs between March and June while short rain season is from October to December. The highest amount of rain is received during the month of April, while the least is received in the months of January and August. In general the district receives an average annual rainfall of 2100mm.

The district generally experiences monthly temperatures between 24.7^0C and 27.1^0C and minimum mean monthly temperatures of between 9.9^0C to 11.9^0C. Hence, the temperature variations in the District are not extreme. These climatic and

ecological conditions greatly favor the survival of mosquitoes especially during the rain seasons, periods normally marked with malaria epidemics.
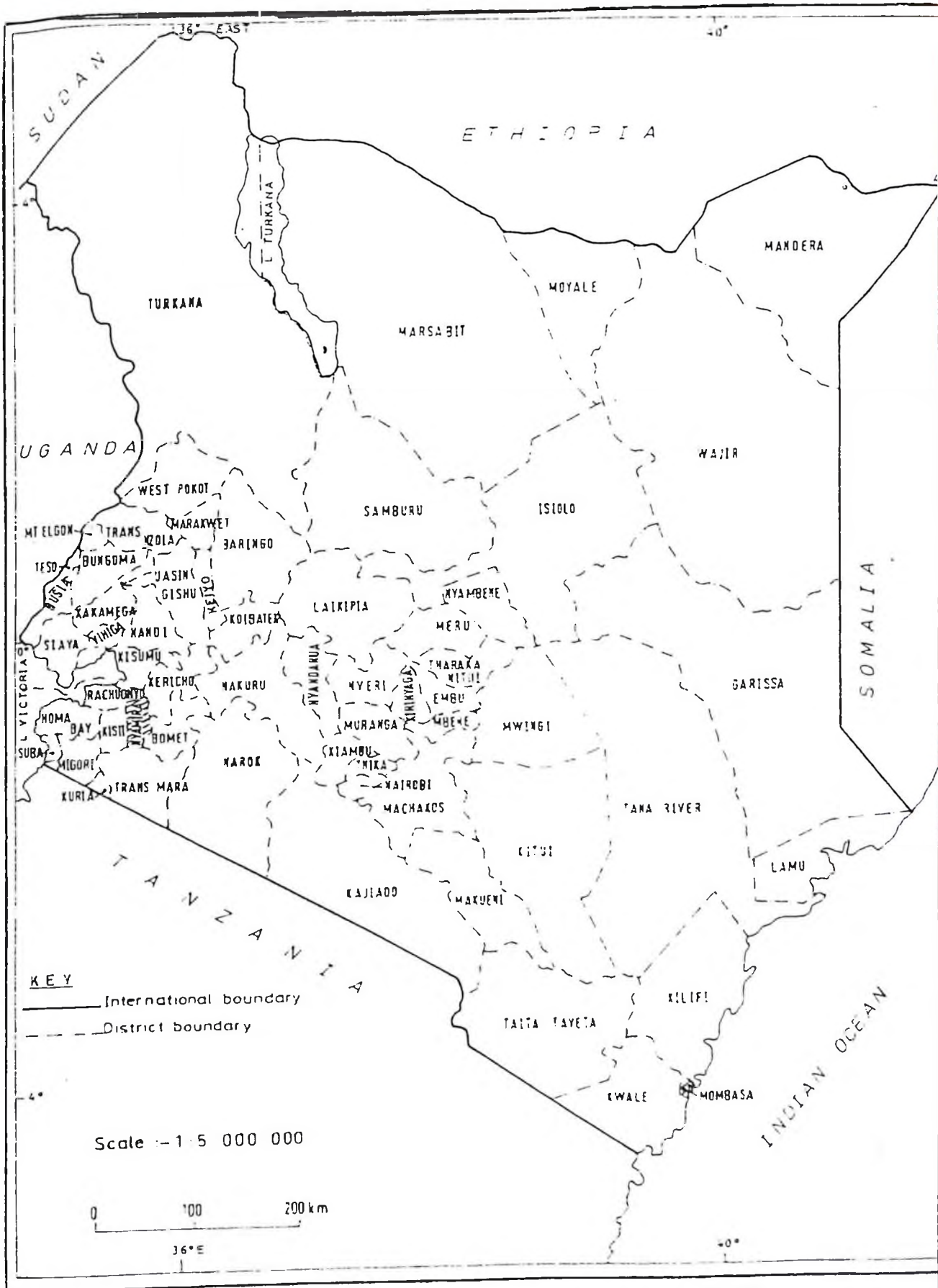
FIGURE 2. KENYA: LOCATION OF NYAMIRA DISTRICT.
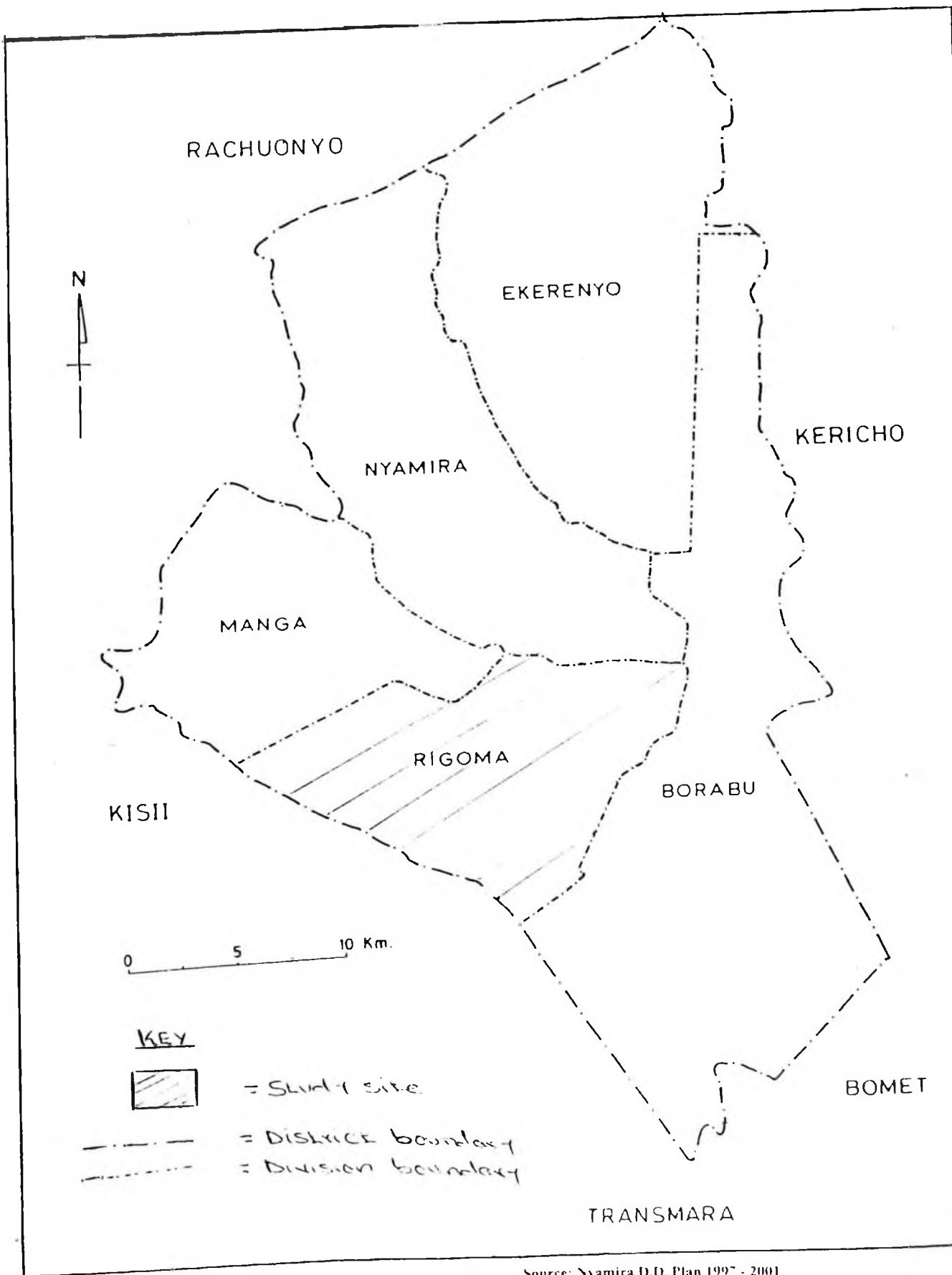
Source: Nyamira D.D. Plan 1997 - 2001

FIGURE 3. NYAMIRA DISTRICT ADMINISTRATIVE BOUNDARIES

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3.1.3 POPULATION SIZE AND COMPOSITION

According to the 1999 population census results, 498,102 people (239,861 male and 258,251 women) inhabit the district. This people constituted 99,701 households. The district covers 896.4 square kilometers of surface area with an average population density of 556 people per a kilometre square (Table1). The main inhabitants of the division are members of the Gusii ethnic group – a Bantu-speaking people (Levine and Levine 1966). These people are mainly small-scale farmers. They cultivate tea, some coffee, bananas, beans as well as subsistent food crops. They sell their farm produce at the local market to raise money for other activities including paying for health services (Nyamongo 2001).

Table1: The Population and Area of Nyamira district per division.

Division	Area Sq.kms	Population	Density
Borabu	247.4	58,079	235
Ekerenyo	216.1	133,967	620
Nyamira	180.1	133,920	744
Rigoma	141.3	96,140	680
Manga	111.5	75,996	682
Total	896.4	498,102	556

Source:1999 Population Census (Republic of Kenya 2001)

3.1.4 LAND USE AND SOILS

The soil types found in Nyamira district are categorized as friable clay, sandy loam and rich clay loam. These soils support the cultivation of both cash and food crops. The common food crops are beans, maize, finger millet and bananas; while cash crops are tea, coffee and pyrethrum.

The agricultural produce is meant for both household consumption and commercial purposes, since a majority are small-scale farmers. Normally the farm produce is sold at the local markets to raise money for other activities, like school fees and health services among others. Although the people here keep cattle, sheep, goats, poultry, rabbits and beehives, livestock production has however dwindled over the years. This is due to high population pressure, inadequate extension services and high cost of veterinary services.

3.1.5 INFRASTRUCTURAL DEVELOPMENT

The district has only 30 kilometers of bitumen roads, 396 kilometers under gravel and 280 kilometers earth roads. Though, the road network is well spread in the district, Its maintenance is poor. Thus creating a major problem with regard to accessibility of major market centres, where all health facilities are located particularly during the rain season.

And whenever there is an epidemic most victims find it practically impossible to get to a health facility in time, hence increasing the chances of death. Indeed from the study, I gathered that the roads are such bad that most matatus had long stopped plying some routes hence the use of wheelbarrows to ferry the sick to the nearest health facilities, especially during malaria outbreaks. This obviously impacts negatively in the management and combating any malaria epidemic in the area.

The supply of electricity in the district is in adequate. There is no single line of electric power in the whole of Rigoma division. This has led to poor drug storage by local health facilities and is the main reason responsible for limited laboratory services by health facilities in the area. This situation is compounded by the fact that the area has no clean piped and safe water in the area. Generally the infrastuctural

development in the division is poor. Social institutions such as schools and health facilities are ill equipped and unevenly distributed.

3.1.6 HEALTH FACILITIES

There is one hospital in the district – Nyamira District Hospital, Twenty Health Centers, two nursing homes and twenty-three dispensaries. The government maintains about 52 % of the health facilities. NGOs 28 % while private facilities is account for 20 %. Many health facilities in the district are congested and require immediate rehabilitation, staffing and equipping. For example in 1996, there were 4 doctors in the district serving an estimated population 571,000 people. This gives a doctor/population ratio of 1:142,000, implying that the available doctors are inadequate to meet the current demand. The situation has worsened over time with the increase of population (Nyamira District Development Plan 1997-2001).

Rigoma division, has five Health Centers namely: Keroka, Esani, Mochenwa, Magombo and Riakworo) and three dispensaries (Gesima, Gekano and Rigoma) (Figure 4.). These are in addition to a number of private clinics, which according to the area residents are mostly visible during the malaria epidemic period and are usually inactive soon after. These facilities are however unevenly spread and inaccessible to most residents due to poor road network in the division especially during the rain season - the season, which usually coincided with the epidemics. This forces some malaria patients to travel well over 4 kms to reach the nearest health facility. Sometimes due to limited resources and the poor road network, most malaria patients trek for these long distances to seek health care.

3.1.7 DISEASE INCIDENCE

Although actual statistics on disease incidence in Rigoma division are not currently available, malaria is apparently a major health problem in the area. This is demonstrated by district statistics on disease incidence. According to the Nyamira district Development plan 1997-2001. Malaria is a serious health problem that affects the population in the district. Malaria infection accounts for over 40 % of out patient cases in health facilities in the district. The study results too, established that virtually every family in the division is affected during malaria epidemic periods. This disease incidence adversely affected the productivity of Rigoma division labour force and the district in particular and hence the overall earning. This is especially the case, as malaria epidemics, usually are experienced in the district during the rainy months. This period conceits with the planting and weeding season in the area.

3.2 POPULATION UNIVERSE

A universe according to Simion, 1985:110 is the collection of things or people from whom you want to say that your sample was taken. In this study therefore, the population universe will be the entire population of Rigoma division in Nyamira district. According to the provisional results of the 1999 Population Census, the division has 97,000 persons (45,297 male and 50,842 females) who constituted 19,179 households. The division has a population density of 680 people per a kilo metre (Table 1). It is from this population that the study derived its unity of analysis.
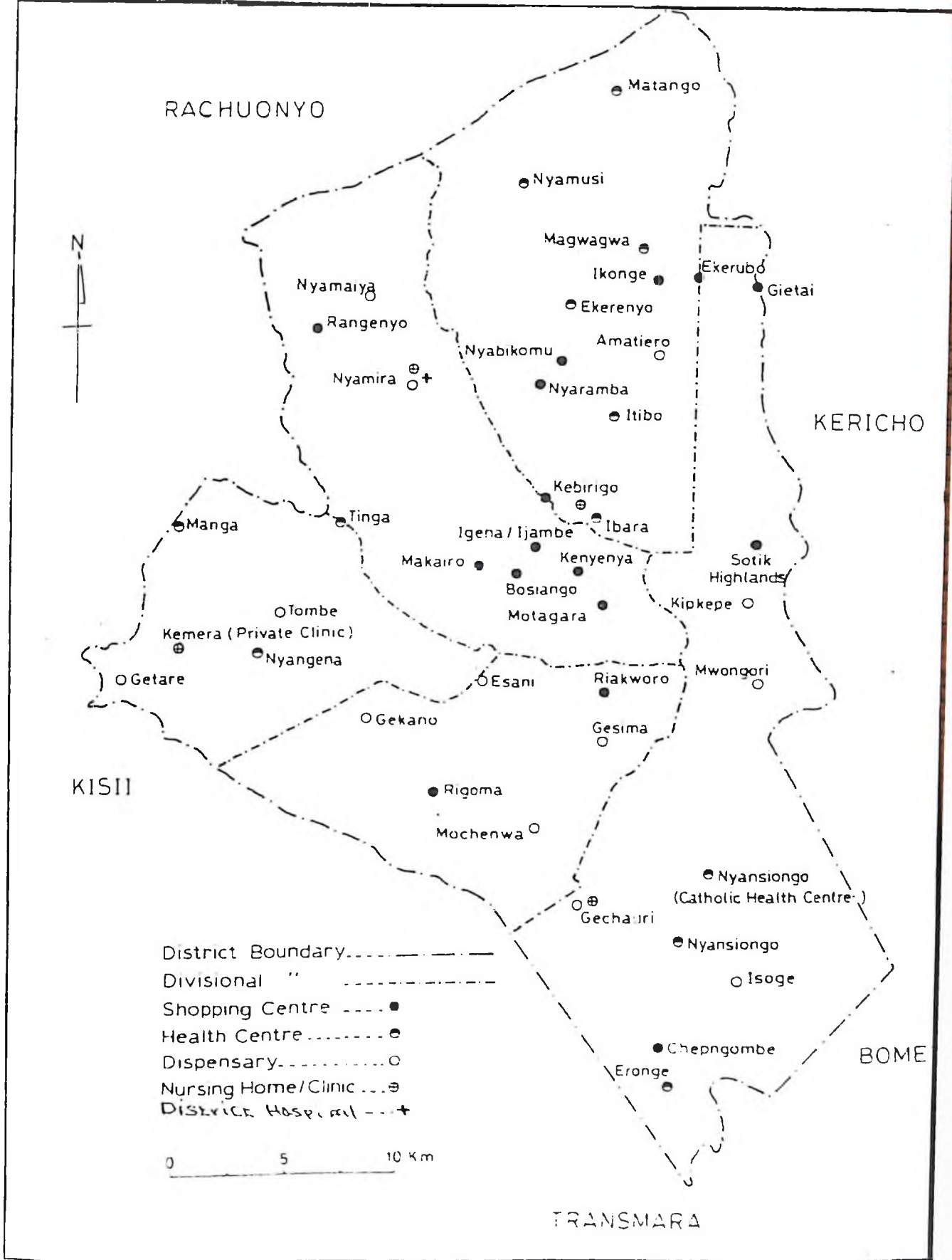
FIGURE 4. NYAMIRA DISTRICT HEALTH FACILITIES

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3.2.1 STUDY POPULATION

The study population comprises the adult male and female aged between 19-60 years and residing in Rigoma division. Specific focus was placed, however, on those who had experienced an episode of febrile illness, three weeks prior to the study. The choice of this category of people was anchored on the assumption that owing to their recent experience with malaria, they were better placed to offer most reliable, adequate and valid information on various malaria- related issues sought in the study. This was necessary because the study needed to capture respondents as close to the malaria episode as possible. This information was derived through step by step accounts of the lay peoples lived experiences with febrile illness.

3.2.2 SAMPLING PROCEDURE

The main sample in the study comprised of 55 respondents, selected purposively from all the four locations that constitute Rigoma division. According to Bernard (1995) purposive sampling is applicable where "You decide the purpose you want an informant (or community) to serve and you go out to find one". Usually when using this sampling method there is no overall sampling design that tells you how many of each type of informant you need to study. You learn in the field has you go along, to select the units of analysis that will provide the information given.

A study like this, which aims to collect ethnographic accounts of lay peoples experience with malaria, requires substantial time and financial commitment. This constrains obviously limit the sample size. In addition data to complement Case histories was collected through focus group discussions. One FGD was held in each location constituting of both men and women. A total of four FGDs were conducted and the information given recorded. The inclusion of respondents from all the four

locations therefore, was done mainly due to the reason that since the study covered the entire division, its various sub- units deserved representation in the sample.

3.2.3 ENTRY INTO THE STUDY AREA.

This study was carried out during the months of January and March 2001. During and after the out of season rains which pounded the country in January and February, That led to new malaria outbreaks in at least six districts in the country. These districts are Isiolo, Embu, Transmara, Gucha, Kisii and Nyamira. Indeed Nyamira district is one of the southern Nyanza districts, which have been identified by Kenya's Ministry of health as epicentres of malaria outbreaks in the county. (Daily Nation 2nd March 2001)

I began the study by first paying a visit to both the District Commissioner (DC) and the District Medical Officer's (DMO) offices as stipulated in the license issued by the Ministry of Education to facilitate my entry into the field. Here I got the opportunity to introduce myself to the two most important figures in the district as regards to the health matters of the area residents. Having briefed them on the objectives and the purpose of my study and exchanged views on malaria situation in the area they assured me every assistance, I would need for successful completion of the study. But the most important was informing the residents of the study area about my study through the provincial administration.

Although I was born in Nyamira district, I must say that hitherto I had little familiarity with the division. So with the assistance of one local assistant chief, I was able to identify my research assistant. The hired research assistant was a local Adult Education Tutor, who had vast knowledge of the division due to his involvement in local development issues and a number of previous research programmes in the area. I

briefed him on the objectives and purpose of the study and later trained him on how to conduct research interviews. I emphasized the importance of being honest, punctual, accurate and of good conduct throughout the study period. Later we translated the interview guide and questions into the local language – Ekegusii. Then I selected the four Sub-locations (Biticha, Gachuba, Gesima and Mochenwa) to visit and drew our working schedule. Thereafter I contacted the local sub-chiefs readily informed their people through barazas. This approach proved useful especially when I organized Focus Group Discussions in the selected four sub-locations in the division.

However, given that the primary source of information for this study was based on case histories, I made every effort to move deeper into the villages to find informants, some of whom might have not heard about the study. I used two methods to get to my respondents (1) Once I interviewed one respondent he/she directed us to the next person who had recently suffered from malaria, and (2) through the people i encountered in the village. One thing I noted is that malaria is such a dreaded health problem in the study area, that once one is affected, most community members got to know especially immediate family members or the nearest neighbours. This made it easier for us to identify our respondents. In one, village (Esani village which bordered R. Gucha), I was overwhelmed by the number of malaria cases reported. This village, it later emerged in the study to have been the worst hit by the malaria epidemic at the time.

3.3   METHODS OF DATA COLLECTION

Data collected was primarily based on case histories obtained from people who have experienced malaria, directly as patients or from caregivers where children have had malaria. After I had interviewed all the cases, I again visited them later for a

social demographic inquiry so as to measure some of the data given against certain socio- demographic variables (Appendix III). Additional data was also collected through Focus Group Discussions (FGDs).

3.3.1 CASE HISTORIES

This study was designed to get in-depth accounts of lay people's lived experiences with malaria. Case histories were most suitable in obtaining these individualized accounts on their recent lived experiences with malaria episode. In total fifty-five informants were interviewed (53.2 per cent female and 46.8 per cent male). The age range was between 19- 60 years who were interviewed in the local language - Ekegusii. Time constraints and a realization that no new information was emerging from interviewing more cases prompted my decision to have 55 Case histories for this study. The interview followed a prepared interview guide (Appendix I) and lasted for about one hour .The data sought, focused on getting specific information about symptom recognition and interpretation, illness perceptions and knowledge, health care seeking behavior and disease treatment. This was derived through detailed description of the step-by-step actions taken by every informant.

My research assistant did the interview, while I did note taking and probing whenever necessary to get clarity or a deeper understanding on the information given. The information was recorded in a near-verbatim form. The verbatim data was thematically recorded to indicate information on topics such as lay peoples' knowledge on malaria causation, health care options, health seeking behavior, prevention and control measures and time taken to seek treatment. The case histories thus yielded both (1) qualitative data which captured rich descriptions of lay peoples'

malaria lived experiences and (2) quantitative data comprising of a small set of standard variables from the narratives.

3.3.2   FOCUS GROUP DISCUSSION (FGD)

In order to get data that can be generalized to the whole study area, Case histories were supplemented by the use of FGDs.

FGDs allowed respondents to discuss their malaria lived experiences among themselves under the general supervision of the researcher. The groups consisted 9 - 12 persons. The interview followed a prepared Interview guide (Appendix II) on pre-set themes, and each interview session lasted one to one and half hours. Focus group discussions were particularly useful in cross-checking different perceptions and treatment seeking behaviour by each respondent. One group discussion in each of the four selected locations was held constituting both men and women. The composition of both sexes in one FGD was made possible by the fact that the respondents came from one ethnic and socio-economic background. The researcher took as detailed and extensive notes as possible. Data was collected on lay people's recognition and interpretation of febrile illness and health seeking behaviour.

3.3.3   DIRECT OBSERVATION

Direct observation consists of systemically observing a phenomenon, event, process or physical objects in their natural setting. It essentially involves looking around and taking notes about what has been observed. Respondents' non-verbal behaviour such as actual practices in prevention and treatment of malaria infection were observed and recorded in form of field notes. Observations were also used to

confirm the validity of some of the responses given by the respondents to questions in the interview schedule.

This method is usually combined with other data collection methods as in the case of the study; data was also collected through case histories and focus group discussions. Indeed in my repeated field visits in the division, I was able to give a specialised observation on the physical infrastructure, ecological conditions, cropping patterns, housing and drainage in the area. This was done with a view to establish their influence on the state of malaria menace in the division.

3.3.4 FREE LISTING

Free listing is a simple but powerful technique of gathering information especially within a cultural domain. Usually in free listing, the researcher tell informants: "Please list all the X you know about", or ask them "what kinds of X are there?" (Bernard 1995). The study free list was based on two questions (Appendix IV), where twenty-one respondents were asked to list the most common diseases in the community and secondly, tell all the malaria symptoms they knew. The answers were recorded in the order given by each respondent. The assumption being that the nearer to the beginning of a list that answer occurs, the more salient (important) it is for that particular informant and that more salient answer occurs more frequently. The data collected was analysed through a computer package ANTHROPAC- that gave the order and frequency of recall.

3.4 UNITY OF ANALYSIS

Decisions about sample size and sample strategies depend on prior decisions about the appropriate unit of analysis to the study. Since the unit of analysis is the

primary focus of data collection. This study sought information from lay men and women who had had an experience with malaria episode three weeks prior to the study. Individual case narratives therefore, formed the basic unit of analysis in this study.

3.5   ETHICAL ISSUES

This study was guided by the code of ethics in conducting anthropological research. The respondents were first, informed on the research goals and objectives, methods and sponsorship. The researcher sought consent from respondents and assured them that the information they gave will be treated with confidentiality and that the final report shall not have any identifying information.

3.6   METHODS OF DATA ANALYSIS

The study was principally qualitative in nature, although key standard information and demographic variables were quantified. The quantitative data were summarised into frequencies, percentage and other measures of central tendency. Further data from twenty- one respondents was tabulated and analysed using Free listing method – through a statistical package for anthropological research (ANTHROPAC). The purpose of quantifying key variables was to facilitate analysis of pertinent patterns on lay peoples malaria lived experiences. The patterns provided were then used to explain and more fully analylize qualitative information. Data from case histories (which was the primary source of information) was coded thematically to facilitate analysis. The themes were then organized into main area (analytical categories), which were used to discuss the results.

3.7   PROBLEMS AND CHALLENGES ENCOUNTERED IN THE STUDY

Generally, the research was successfully completed, however the researcher did faced a few problems and challenges, which in various ways affected the study. First, to penetrate some areas in this rural division was a bit difficult since the area has poor road network which made the process of reaching out respondents tiresome and quite taxing, especially for those who were located in villages far away from the base of operation- Gesima (Figure 4). Indeed the situation is such bad that even when there are no rains, it was still not easy to get vehicles plying most of the routes. This forced the researcher to even abandon using a bicycle and instead trekked several kilometers on foot. This undoubtedly slowed down the researcher's efficiency in data collection.

Second, the research period coincided with the busy planting and weeding season in the study area. Given that the community members are predominantly subsistence farmers, most respondents were in most cases busy either planting or weeding during the study. This in most cases forced the researcher to reschedule some appointments with respondents so as to suit the respondents desired time. For instance, it was planned initially that all the interview sessions begin in the morning hours, but they were moved to start any time from afternoon. Even with this change, some respondents still pushed the meeting date forward citing heavy workload in their farms. This drastically cut the number of respondents interviewed each day as earlier anticipated, the situation was compounded further by the hot scorching sun experienced in the study area in the month of march as we came to the end of the study.

Thirdly, one of the greatest obstacles to this study was funding. Attempts to source funds before the study commenced were fruitless. This inevitably caused the

researcher to compromise a number of earlier considered factors, which undoubtedly affected the outcome of the study. For example, I had proposed 60 Case Histories to be interviewed in this study. It was too, designed that eight focus group discussions (two in each of the four locations in the division). Too, ten health care practitioners who the study proposed to interview were also never interviewed on the lay peoples' health response to febrile illness. It should be noted that, despite of the researcher's earlier preparation for all these activities inadequate or lack of funds made it a bit difficult to actualize their implementation.

Fourthly, despite the good reception we were accorded from our respondents, thanks to the combined efforts from the provincial administration and the research assistant who was conversant with the local people as he had been involved in the two previous population census exercises. We did encounter people with a negative attitude towards research work in the area. Indeed I found myself unable to explain, for example, why some people elsewhere in the district got bed nets for free, while they have not been given the same, despite a promise from the provincial administration. Other respondents did not hide their intention to be interviewed after being given drugs for their various ailments. Although I could not all ay all the fears raised by respondents, I nevertheless managed to convince them that the data they will allow us to collect from them was for academic purposes and will too help to redress some of the issues they were raising.

Finally, it is also important to note here that during my third week into the study, I also fell prey to the very disease that I went to investigate. First, it started as mild headache one morning, and I promptly took painkillers (Panadol tablets) and continued with my study schedule that day. But that evening I experienced fever that was accompanied with a feeling of coldness. Having suspected malaria, I took the

clinically recommended three-fansidar tablet dose for malaria, which I had included in my First Aid kit. Given that the following day was a Saturday (weekend), I had to rest for two days till Monday. This unfortunate incident however later proved to be a blessing in disguise as it gave me a clear insight on some of experiences that malaria patients undergo in Rigoma. For instance, I realized that of the three health care facilities from my area of stay (Gesima), none offered laboratory services and that the nearest and only government dispensary (Gesima) never lendered medical services during the weekends. Obviously this has important implications on the control and management of malaria in the area. This not withstanding, I did my level best under the circumstances to bring the study to any amicable completion.

CHAPTER FOUR
RESEARCH FINDINGS

4.1 INTRODUCTION

This chapter presents socio-demographic characteristics of the respondents and their knowledge and perceptions about malaria. The primary concern is to provide insights of the lay people interviewed and to show how they perceive malaria. The socio-demographic characteristics include the age, gender and marital status, family size, religious affiliation, level of education, occupation and land size and housing. The views and understanding of the respondents with regard to causality, transmission, prevention, treatment, incidence, and health care options have been used to reveal the folk knowledge and perception of malaria.

4.2.1 AGE, GENDER AND MARITAL STATUS

A total of 55 respondents (54.5% female and 45.5 male) aged between 19- 60 years were interviewed. This included 12 respondents (8 men and 4 women) who were health care givers to twelve children (5 boys and 7 girls). Additionally data were collected from 47 respondents (53.2% female and 46.8% male) from the four focus group discussions. A majority of the respondents were aged between the 19-27 years (38.2 %). They were followed with those who had 28-36 years (34.5 %), 37-46 years (14.5 %), 46-54 years (7.2 %) and those between 54- 60 years constituted only 5.5 % (Figure 5). The marital status of the respondents indicated that 85.5 per cent were married while 14.5 per cent were single. Most of the respondents were aged between 19- 36 years (72.7 %) with only 5.5 % of the respondents aged between 55-60 years.

FIGURE 5. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS
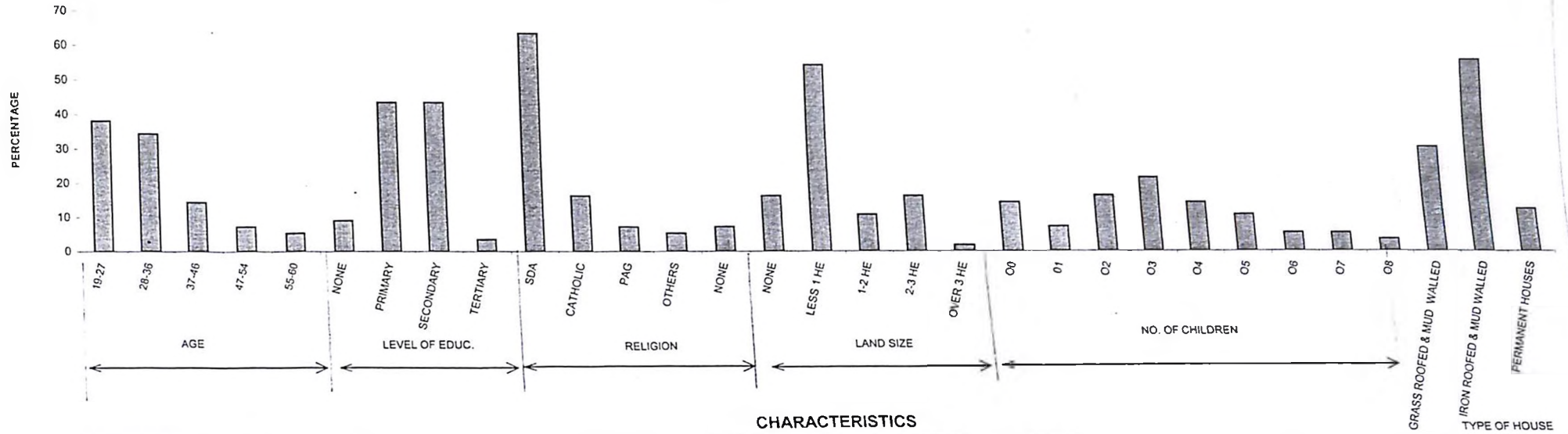
4.2.2 FAMILY SIZE

For the purpose of this study family size was defined as the number of children in the respondents family, who share at least one parent (father or mother). Relatives who stayed with the respondents though regarded as bona fide members of the family were not included in this study. A majority of the respondents (21.8 %) had three children. 14.6 % had four children, and 10.9 % had six children (Figure 5). The highest number of children (8) accounted for 3.6 %. The study findings suggested that those respondents with highest number of children had no or below primary of education. Those who had no children (14.5 %) were all single.

4.2.3 RELIGIOUS AFFILIATION

Majority of the respondents were Christians (92.7 %) but with a strong inclination towards the protestant churches, leaving only 7.3 % who didn't identify themselves with any religious group. This latter group included mainly men, who indicated that they usually stayed at home, when the rest of their family members went to church. None of the case history respondents reported belonging to traditional religion. The study showed that 76.2 % of the respondents were affiliated to the Protestant churches including Seventh Day Adventist (63.6 %), Pentecostal Assembles of God (7.3 %) while 5.4 % was shared between two others (Power of Jesus around the World and Free Pentecostal church), 16.4 % were Catholic (Figure 5).

Religious groups play a role in health care delivery in this area. For example, a number of health facilities were operated by religious organizations such as the Catholic Church (Gekano Mission Health Centre), S.D.A church (Riakworo Health Centre) and Liberty church (Geta Private Clinic). The church also offers good

opportunity on malaria prevention and control, as a possible vehicle for disseminating public health messages. This shows that the church would be an important stakeholder in the fight against malaria infections especially as a sponsor of health care facilities. Hence complimenting the government's efforts in health care delivery.

4.2.4   LEVEL OF EDUCATION

More than ninety per cent of the respondents interviewed had at least primary school level of education. They include 43.6 % who had primary education, 43.6 % secondary education, 3.6 % tertiary education and 9.2 % had no formal education (Figure 5). The small number 3.6 % of the respondents, who had tertiary education was attributed to the fact that a majority of those who had attained the same level were in towns either formally employed or looking for employment. From Figure 5 it is clear that most respondents are literate in Rigoma division. These existing levels of literacy presents good opportunities for public health education in the area which if well utilized can help to bridge the existing knowledge gaps especially on malaria prevention and control.

4.2.5   HOUSING AND OTHER ECOLOGICAL FACTORS

Data on housing and ecological factors was collected through direct observation and extensive notes were kept regarding the type of houses, there condition and general environment. Typically, most (except for those who had permanent houses) homesteads had at least three houses- Parents living house *"enyomba enene"*, kitchen *"echikoni"* (sometimes housing adult girls in this case circumcised and who can not according to custom share a house with their parents) and boys house *"esaiga"* for

circumcised boys. This is the traditional housing arrangement. The data showed three broad categories of houses occupied by the respondents in Rigoma.

The three types of houses are; grass roofed and mud walled houses (31 %), iron roofed and mud walled houses (56.4 %), and permanent houses (12.7 %). All the permanent houses had iron roofs and stone walls (Figure 5). The permanent houses were owned/rented by individual respondents or their parents. From Figure 5 a majority of the respondents lived in semi-permanent houses (87.4 %), most having eaves (a gap between the wall and the roof). The eaves are meant for ventilation. This well-intentioned practice of constructing houses with eaves, however provided space for free entry of mosquitoes into the houses.

The type of houses owned by the respondents also indicated the socio-economic status of the individual. For example those who lived in permanent houses and had their parent(s) or themselves employed in the formal sector in addition to being farmers were considered well to do. Those who lived in grass roofed and mud walled houses considered themselves as poor and reported to be unable in meeting their medical expenses among other family needs.

Over eighty per cent (81.8 %) of these houses were situated in environments that were conducive to presence of mosquitoes. For example cattle bomas (zooprophaxis) with/and tall grass, maize plantation and vegetable growing around the houses visited. Interestingly when asked on the preventive measures they have put in place for malaria prevention most of them (58.2 %) either reported having a clean compound or clearing bushy places around the compound. Indeed other houses had windows that would allow free passage of mosquitoes into the houses.

Despite the fact that a hilly terrain dissects Rigoma division, there is also low lying land, which is usually prone to flooding and collecting of water marshes

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especially during the heavy rains. This land locally referred as *"Ekerubo"* is located a long river Gucha and its many feeder streams that pass through the area. The flooding and the collected waters are normally breeding grounds for mosquitoes. This part of land is also known locally to have suitable soils for brick making. Normally after mining this soils and are exhausted, the brick makers leave behind empty depressions, which become reservoirs of stagnant waters. Hence making rich breeding grounds for mosquitoes.

4.2.6 OCCUPATION AND LAND SIZE

The study revealed that a majority (96.4 %) were subsistence farmers, whose main source of livelihood depended on farm produce. They cultivated tea, bananas, and some pyrethrum as well as subsistence food crops with maize, wimbi and beans being the commonest. Only 3.6 % of the respondents reported doing petty trade for their upkeep. These two women respondents had each rented a house in the local market center (Gesima). Indeed the study established that most respondents (56.4 %) too were engaged in other income generating activities like brick-making, petty trade and lumbering. However they considered this as part-time jobs and insisted that farming is their main source of livelihood. Given that farming was the main source of income to most respondents, the study sought to know their land sizes. The data revealed that over half of the respondents (54.5 %) owned less than an hectare of land, 16.4 % had no land, and only 1.8 % had over three hectares (Figure 5). Those who had no land included one son of a single mother and eight others who were unmarried. These according to the community only had users right to their parents and grandparent's land

4.3.0. FOLK KNOWLEDGE OF MALARIA

4.3.1. HEALTH PROBLEMS AS PERCEIVED BY LAY PEOPLE IN RIGOMA DIVISION.

Perceived prevalence in this study refers to the number of cases of disease, or infection existing in a population at a given time. The study reveals that malaria is the single most health problem in the area. This was clearly demonstrated when twenty-one participants were asked to provide a free- list of illness that they considered to be most common in the area. The responses showed that malaria was to be the commonest disease in the area as all the twenty- one respondents (100 %) mentioned it. It was followed by common cold (90 %), AIDS (86 %), typhoid (81 %) and intestinal worms (52 %) both being the top five common diseases in the study area (Table 2).

Salience is defined in this study as the most important or noticeable disease or sign/symptom. The salience scores in this study showed the importance attached to the diseases listed by the respondents. So, malaria with a salience score of (0.960) - the highest in order of rank is the most common health problem in the area. This was followed by common cold (0.522), AIDS (0.472), typhoid (0.318) in that order (Table 2). It should be noted however that, despite asthma, epilepsy, toothache, cancer, and chest pains having the same percentage scores, they had different salience scores save for asthma and chest pain. This reflects the different levels of importance held by the respondents to each 'disease'.

The listing of some common malaria symptoms like backache, headache, fever, stomachache, and chest pains by lay people as diseases (though with low salience scores Table 2), may present problems on proper disease diagnosis. For

instance the respondents may resort to treating malaria signs like fever and headache rather than the diseases itself. This will obviously prolong the health-seeking period, thus complicating the treatment process.

Table 2: Most important health problems in Rigoma division.

Disease	Frequency	%	Salience
Malaria	21	100	0.960
Common cold	19	90	0.522
AIDS	18	86	0.472
Typhoid	17	81	0.318
Intestinal worms	11	52	0.187
Gonorrhea	10	48	0.194
Diabetes	8	38	0.081
Pneumonia	8	38	0.178
Tetanus	7	33	0.083
Diarrhoea	7	33	0.216
TB	5	24	0.106
Backache	5	24	0.086
Skin diseases	5	24	0.111
Syphilis	4	19	0.048
Headache	3	14	0.071
Stomachache	3	14	0.070
Swollen limbs	3	14	0.033
Fever	2	10	0.064
Meningitis	2	10	0.029
Amoeba	2	10	0.036
Measles	2	10	0.050
Eye problems	2	10	0.024
Asthma	1	5	0.041
Epilepsy	1	5	0.000
Toothache	1	5	0.019
Cancer	1	5	0.022
Chest pains	1	5	0.000

The prevalence of malaria in the area was further tested, when case history respondents were asked to tell the number of family members who had contracted malaria in the recent past. The results indicated that 96.4 % reported all members in their households as having been infected in the recent past. Only 3.6 % reported two to three members to have been affected at one time or another. These data results

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imply that in Rigoma division malaria affects virtually every household. To explain the vulnerability of every resident in the study to malaria infection, one middle-aged woman at Biticha FGDs, had this to say:

Q. How many members of your family have suffered from malaria in recent past?
A. It has affected everybody in my family- I mean my children and my husband. Highland malaria spares nobody here my son (researcher). It is not like the malaria that used to attack people here (Rigoma) in the past. This one comes like plague (omosando). (Interjected by a male respondent)....it is so persistent and takes along time to heal completely.

Such statements were common both from the case narratives and FGDs in the study, thus clearly pointing out the fact that malaria is the common cause of mortality and morbidity in the division. Some of the common comments made to support this view were: "malaria is the worst disease here", "malaria is responsible for the increasing poverty in the community, "large proportion of family resources are spent in malaria treatment" and "malaria has killed more people in the community that any other disease" among others.

4.3.2 LAY PEOPLES RECOGNITION OF MALARIA SIGNS AND SYMPTOMS

To treat an illness in a timely manner, the patient or caregiver must recognize when s/he becomes ill. Knowledge on malaria symptoms was tested when again the twenty-one respondents were asked to give a free- list of all the malaria signs they knew. The respondents recognized twenty- three symptoms and signs. Fever and feeling cold were the most commonly (both by 86 % of the informants) mentioned symptoms others includes headache (73 %), weak joints (68 %), loss of appetite (64 %) among others (Table 3).

Table 3: Malaria signs and symptoms as reported by lay people in Rigoma division.

Symptoms	Frequency	%	Salience
Feeling cold	19	86	0.642
Fever	19	86	0.496
Headache	16	73	0.538
Weak joints	15	68	0.406
Loss of appetite	14	64	0.205
Vomiting	13	59	0.226
Stomachache	11	50	0.251
General body weakness	10	45	0.265
Diarrhea	8	36	0.090
Sweating	6	27	0.074
Dizziness	5	23	0.101
Vomiting yellowish fluid	5	23	0.071
Loss of vision	4	18	0.086
Coughing	3	14	0.024
Body aches	3	14	0.033
Itching	2	9	0.029
Pneumonia	2	9	0.006
Wanting bitter foods	2	9	0.023
Aching joints	1	5	0.045
Taking water now and then	1	5	0.021
Restlessness	1	5	0.015
Loss of memory	1	5	0.015
Nausea	1	5	0.008

The salience scores of each of the symptoms however indicated that feeling cold had the highest score (0.642), headache, fever and weak joints followed it respectively (Figure 6). This means that despite both fever and feeling cold scoring the same percentage, the respondents attached more importance to feeling cold than all the other signs and symptoms.

The study showed lay people in Rigoma division had away of differentiating certain closely related symptoms, which would easily be interpreted as the same thing by formal health providers. For example lay people in Rigoma distinguished, weak joints (okorosa chinengo) from aching joints (chinengo chikogwatia); general body weakness (omomere okorosa) from body aches (omomere okogwatia); vomiting (okoroka) from Vomiting yellowish fluid (okoroka esosera). This classification is

important especially for local health care providers to know so as to understand and enable them know lay peoples expression of malaria symptoms. This will inevitably improve the doctor to patient communication hence enhancing the treatment process.

The twelve health care givers reported children specific signs usually with or without the one mentioned in Table 3. These includes; crying too much, pneumonia, coughing, and body rashes from the high fever and the child stops breast-feeding. The caregivers further reported finding difficult in proper identification of childhood febrile illness. Fever for instance, the most commonly mentioned of all malaria signs was also reported to be manifest in children with common cold. This made the diagnosis of childhood febrile illness a bit difficult for most lay people. This obviously affects early detection of malaria infection among children and therefore hampers proper management childhood malaria.

FIGURE 6. MALARIA SIGNS AND SYMPTOMS
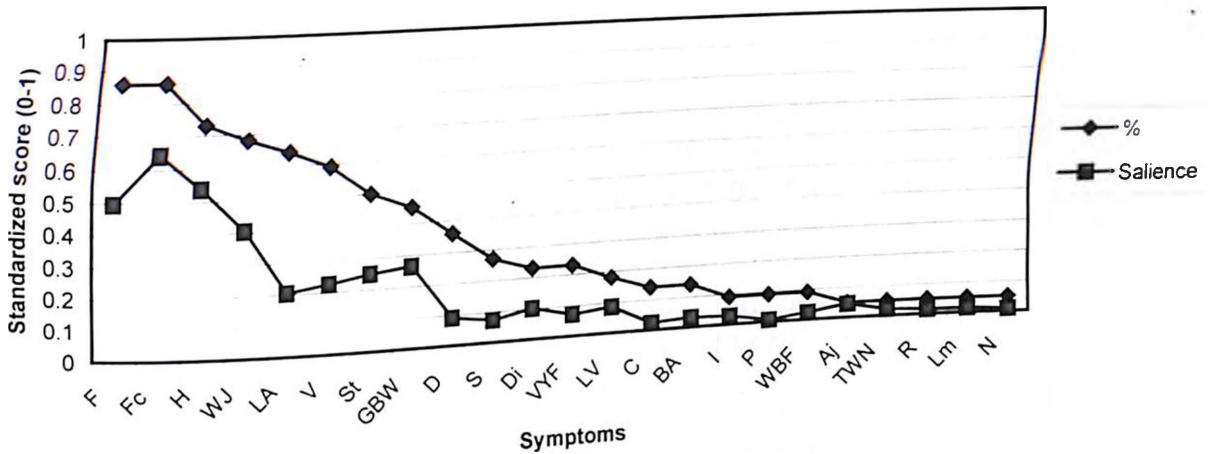
Key:

F	-Fever	LV	-Loss of vision
Fc	-Feeling cold	C	-Coughing
H	-Headache	BA	-Body aches
WJ	- Weak joints	I	-Itching
LA	- Loss of appetite	P	-Pneumonia
V	-Vomiting	WBF	-Wanting bitter food
St	-Stomachache	AJ	-Aching joints
GBW	-General body weakness	TWN	-Taking water now and then
D	-Diarrhoea	R	-Restlessness
S	-Sweating	LM	-Loss of memory
Di	-Dizziness	N	-Nausea
VYF	-Vomiting yellow fluid		

The Standardized score was derived by converting the percentage marks in Fig. 5 into a 0 – 1 scale. This was necessary so as to make the comparison between the two variables (percentage and salience scores) possible. The percentage scores were divided by hundred so as to be in the same scale as salience scores.

One sign, which was identified as being a sure way of recognizing that a certain attack of fever is associated with malaria, is the vomiting of yellowish-green substance locally known as "*esosera*" (23 %). Vomiting of any kind (with or without the yellowish-greenish fluid) is believed to have a healing effect. A majority (59 %) of the informants were of the view that those who suffered from malaria infection, when given proper medication and do vomit, took a shorter time to heal.

For example a thirty-four years old standard four graduate woman blamed her long period in recovering from malaria on her in ability to vomit. She lamented thus:

> I took the right medication – I first bought the recommended fansidar dose for malaria from a local duka (shop) and after seeing no 'change' (recovery), I went to Mochenwa health centre and received treatment from "daktari" (clinicians). But the fever alternating with feeling cold and stomach disorders persisted for about two weeks. Had I vomited, I know, I would have recovered much earlier. This is because the vomit will pass a way the malaria in the body and help hasten the recovery process. But unfortunately I am among the unlucky malaria victims- I mean I rarely vomit.

The lay people also reported two types of malaria in the area namely: "brain malaria"(cerebral malaria) referred locally as *"malaria yo obongo"* and "normal malaria", (not so severe malaria) locally referred *"malaria ya kawaida."* Brain malaria" was reported to be the worst type of malaria, though not very common in the area. Some of the signs reported are: the victim turns violent and gets very strong, makes unintelligible sound, convulsion and can even go into a coma. The respondents reported that "brain malaria" can only be treated in a formal health facility (because they have trained personnel) and this done soon after recognition of the above signs. This type of malaria they believed was the most lethal and therefore deserved prompt and expert attention. Not so severe malaria was the most common and was identified by the lay people as a major health concern in the study area (Table 2).

4.3.3. LAY PERCEPTIONS ABOUT MALARIA CAUSATION

In this study lay peoples' knowledge on malaria causation was measured in terms of one's conception of the cause of disease. Those who subscribed to scientific explanations were considered knowledgeable while those who subscribed to other forms of explanations were considered less knowledgeable. Therefore, When the lay people in the study were asked on their knowledge of malaria causality or/and

transmission. all respondents (100 %) associated malaria with mosquitoes. However despite their apparent agreement with the biomedical paradigm - that mosquitoes are the sole agents of malaria causation, other respondents felt that malaria has other causes. They listed cold weather (23.6 %), pollen grains (18.2 %), eating sugary foods (7.3 %), bad smell from decaying matter (3.6 %), unboiled water (7.3) and dirtiness 1.8 %) as some of the other causes.

To explain these belief in multiple causality, one of the respondents a thirty-one years old man, had the following:

A. Malaria is caused in most cases caused by mosquitoes. However, this may not be the only reason has it can also be caused by cold weather conditions and bad smell from decaying matter as result of heavy rains.

Q. (probe) Can you explain how cold weather and bad smell from decaying matter cause malaria?

A. Normally after heavy rains lots of things (plants and small animals) die and begin to decompose and hence produce bad smell. The smell coupled with cold weather conditions makes a person to contract malaria.

While the study found a relationship between cold weather, and that of bad smell from decaying matter with the presence of mosquitoes, the other reported causes have clearly a spurious relationship with malaria causation. This belief in multi causality for malaria is indeed a great challenge to any malaria control and prevention intervention programme that may be initiated in the area.

4.3.4. PERCEIVED MALARIA TRANSMISSION PERIOD

Regarding lay people's perceptions of malaria transmission, the results reveal that 90.9 % of the respondents regarded the period between April to August has the high malaria transmission period. However, 40 % of these respondents while acknowledging this period as the worst as regards to their health status further indicated that it is actually the months of July and August that the malaria scourge reaches its peak. 7.1 % mentioned any period after the heavy rains and only one

informant only reported that it occurred seasonally without preferring to state the period (Table 4).

Table 4: Lay people's perceived malaria peak period in Rigoma.

Peak period for malaria	N= 55	%
April – July	28	50.9
July – August	22	40
After heavy rains	4	7.3
Seasonal	1	1.8
Total	55	100

Two reasons were given to explain why there were increased cases of malaria outbreaks during this period. The are; (1) heavy rains- all respondents attributed this phenomenon to the long rains season experienced in the area at this time. This they argued presented optimal conditions for mosquito breeding. They supported their view by saying that during this period they had increased numbers of mosquitoes. To support this view, common comments like " at this time mosquitoes are like bees" and "the mosquitoes fight us at night during this time (May-July)" were made. (2) Others (18.2 %) in addition to the heavy rains felt that the pollen grains from maturing maize plants also played a role in malaria transmission during this period. However the association between pollen grains and increased malaria transmission however, lacked credible explanation from the respondents.

Malaria infections in the area during this period (especially the month of July) was aptly captured by a forty years old man, who said thus:

July is the worst month in the year. It is the period we experience the climax of malaria epidemic, which normally starts in April. This is the time one can see wheelbarrows ferrying malaria patients to local health posts. Virtually everybody is infected from the disease during this period. For example during the 1998 El Nino phenomenon- everybody "tested"(contracted) malaria. Indeed it is said here (Rigoma) that if one finishes the month of July a live, chances are that s/he will live to see the New Year.

These comments were shared by a majority of the respondents from both the FGDs and case narratives, which did demonstrated the grave malaria situation at this time of the year.

The study further showed that close to a half (47.3 %) felt that the peak period might be changing to January to February. These respondents however, attributed this to unprecedented increase of malaria cases in the division at that time. But when asked to tell any possible reason behind the occurrence, they reported the out of season heavy rains that pounded the area during the months of December 2000 to January, 2001.

4.3.5. MALARIA CONTROL AND PREVENTION

A majority (87.3 %) of the respondents believed that malaria is preventable. 12.7 % of the respondents were not keen on malaria prevention, despite the fact that they too believe that malaria is preventable. This behaviour was attributed to the respondent's previous failed attempts to compact malaria, leading to their disillusionment on the capacity of prevention measures. Those who believed that malaria is preventable cited a number of prevention measures, which they reckoned could help curb malaria menace. Such as the use of mosquito nets, clean compound and insecticide spraying.

The respondents who believed that malaria is unprevetable seemed to have been disillusioned by the capacity of some prevention measures to effectively control malaria infections. However, they did indicate having attempted to control malaria at one time or another.

Their state of desperation is clearly demonstrated by forty-five year old man at Mochenwa FGDs:

> Prevention and control of malaria in this area has defeated us. How can you prevent malaria with all the mosquitoes during the rain season? .....We have tried every method from mosquito coils, cleaning compound, spraying with Doom (insecticide)...But the mosquitoes are simply many. Personally, I bought a mosquito net as a last resort. However this mosquitoes have become 'clever' they bite you even when you are sited in the house... to prevent malaria here with all the mosquitoes is a dream... may be the government should look for immunization drug, like the case of recent polio immunization campaign in the area.

Generally all respondents listed at least four malaria prevention methods that they had used before the study. The responses were grouped into three broad groups. First were the ecological approaches that are aimed at controlling the population of mosquitoes. This includes: clearing bushes/ clean compound (58.2%); proper disposal of waste containers (30.9 %); proper water drainage (29.1 %); planting maize a way from compound (1.8 %); closing doors early before dark (1.8 %); and pouring oil on stagnant water (1.8 %).

Secondly, those preventive measures aimed at repelling mosquitoes so as to protect human population from biting their skin. The listed measures are: burning dry pyrethrum flowers (50.9 %); Mosquito coils (49.9 %); spraying with insecticide like "doom"; burning dry cow dung (10.9 %); Mosquito nets (9.1 %); Vaseline Mosquito repellents (3.6 %); and White nylon bedcover (1.8 %). The study revealed that the use of ecological approaches and repellants was common. This can be attributed to the fact that most of these methods were relatively cheap to these largely small-scale farmers.

Thirdly, those methods used to deal with parasite and treat resultant infection (Chemoprophylaxis), though not widely used in the study area. For instance only

5.4 % of the case history respondents reported use of over-the-counter drugs as a means of preventing malaria. This included known anti-malarial drugs like fansidar and metakelfine along with commercial pain killers (i.e panadol). The limited use of medicine for malaria prevention was attributed to the fact that respondents believed that its use is limited to a response to perceived biocultural symptoms of a disease.

Data from fifty-five respondents showed that 76.4 % of the respondents thought that the most effective method of malaria prevention was the use of mosquito nets. However, only 9.1 % of the respondents reported using one and the few who had were usually parents or elders. The lay people attributed the non- use of the mosquito nets to there high cost, unavailability in the area and sometimes by sheer negligence. But much of the blame was heaped at the government's several failed promises to provide the local residents with free bednets. This poses a major challenge to the fight against malaria in the area, as the study showed that virtually everybody including the most vulnerable members (children) do not have protection mosquito bites.

The study further showed remarkable use of locally available resources in the prevention of malaria in Rigoma division. For example burning dry pyrethrum flowers (50.9 %), burning dry cow dung (10.9 %) among others to scare away the mosquitoes. Another innovative preventive measure though applied by one respondent but which got my attention is the use of a white nylon as a bed cover at night. The respondent explained that at night the nylon becomes cold and when a mosquito sits on it, it feels cold and quickly flies away hence reducing the chances of being bitten. To prove his point, the respondent showed us the nylon bed sheet on his bed. The use of indigenous knowledge and innovation such as this in the control and prevention of malaria menace in Rigoma division should be strengthened and

encouraged. This is because the preventive measures are cheaply available and more so acceptable to the local residents.

4.3.6 TREATMENT OPTIONS AND THERE UTILIZATION

In Rigoma malaria patients have a number of sources of treatment. They include; self-medication. the government system of health services, and private health services (individual/s or church sponsored). These rural based government health facilities i.e health centres and dispensaries, were designed to be sources of initial care for local health problems as well as of follow up care for the same problems. A government referral hospital (Nyamira District Hospital) is located approximately 30 kms away from Rigoma division (Figure 4). However the respondents reported that most of the available health facilities are poorly equipped to cope with the large numbers of patients during malaria epidemic periods.

The study showed that 87.3 % of the 55 case histories attempted some form of self-treatment as their first response to febrile illness. 79.2 % of whom used over-the counter (OTC) drugs. The drugs were in most cases bought from local shops or from chemists, which, are located in nearby towns. Only 20.8 % of those respondents reported using both traditional malaria medicines and OTC drugs in self - treatment. Either the patient or caregiver (in case of children) usually did self -medication at home. The treatment included both the traditional and biomedical remedies. Some of the commonly used home remedies are; (1) Pain killers such as panadol, hedex, aspirin, piriton and other OTC drugs like tumbocid, septrin e.t.c. and (2) known anti-malarial drugs the commonest being SP drugs such as fansidar, metakelfine and malara tab.

Further, the findings showed that all the participants recognized the failure of CQ drugs as first-line malaria medication and have swifted to the recommended SP drugs for malaria management. Indeed, fansidar the most widely used SP drug in the area was reported by 41.1 % of the informants to be showing signs of either becoming less effective or the malaria parasites growing resistance. Some of the common sentiments that pointed to this fact are: " fansidar will soon go the chloroquine way (ban from shops)", "fansidar doesn't work as before" and " the three tablet (fansidar) dosage for malaria is no longer working". This reported failure/or decline in the efficacy of the Fansidar as a first–line anti-malaria drug is a matter of further scientific research and a challenge to the health authorities to discourage monotherapy (over-reliance on one drug in disease treatment).

Despite the fact that most respondents sought self-treatment as first response to malaria infection, the study findings showed, that they at the same time had trust in the formal health system for effective treatment of malaria. In fact typically most informants do something at home as an initial response, but it appears that generally such treatment does not replace the decision to go to a health post for " expert treatment". The view that self-medication is not enough for effective treatment of malaria was vividly captured at Esani focus group discussion. In the discussion all the respondents supported the view that in the area, self-medication was done as a form of "first Aid" while a waiting proper treatment at a formal health facility. This was clearly brought out by one forty years old man, who first reported resorting to self-medication before seeking other alternates. This respondent had this to say:

Q. You mean that even if you buy anti-malarial drugs, like the fansidar that you said you bought and took, you can't get well?
A. No. What I am saying is that buying drugs be it anti-malarial drugs is not enough. Real malaria treatment must be done in hospital "nyagitari". This is where we have trained personnel to treat malaria. Self-treatment is merely meant to be "first

Aid".(support from a female informant) You must treat the fever and headache so as to be able to reach hospital.

Q. What do you mean by "First Aid"?

A. (Another woman answered) The drugs we buy from the shops and chemist help us to cool down malaria signs like fever and headaches. This enables one to monitor the progress of the disease. This is especially important when you have no money for proper treatment in hospital. It gives you an opportunity to look for the money.

The study noted that there is a decline in the use of traditional medicine in the lay people's treatment of malaria. They reported that traditional medicines are ineffective in treatment of malaria infection. Indeed, only 18.2 % of the study respondents reported using herbs. This action was however reported to be a kind of " First aid" that they resorted to while awaiting proper treatment in formal health facilities. They attributed their little/no use of traditional remedies to there reduce capacity to treat highland malaria that is common in the area. Reckoning that to a certain extend, traditional herbs do heal malaria, depending but this depended on what they termed as "compatibility with the victim's blood" *(okoigwana na amanyinga)*. However given that they were not sure of the possible effect of traditional remedies, they preferred going to formal health facilities.

The commonly used traditional remedies were derived from locally known malaria treating plants. The herbal plants reported in the area include: *Omwarubaine (Neem tree, Azadirachta Indica)* whose leaves (and/or bark) are boiled and the juice extracts are drunk; *Omotagara (Solanecio mannii)* whose leaves are boiled and the juice drunk to stop vomiting; *Omonyasese (Clerodendrum myricoide)* whose leaves (and/or roots) are boiled and the juice extracts drunk; *and omokera ogesimba (Justicia betonica)* whose leaves are also boiled and the juice thereof drunk.

The respondents resort to self- medication as a first response to malaria infection was attributed to three factors namely: (1) cost, buying OTC drugs is thought by lay people as not only convenient but less costly than most formal medications, (2) the

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lay people felt that it served as "first aid" for treating people with febrile illnesses to help "cool" the fever *(riberera)* before seeking formal health care and (3) the fact that it was not possible to get treatment in government dispensaries and health centres during weekends. The health facilities were relatively cheap in malaria treatment, when compared to private health facilities.

To test the utilization of the local formal health facilities respondents were asked to tell where they went for treatment whenever they suffered from febrile illness. These formal health facilities included health care providers and institutions based on scientific medicine. In this study they refer to dispensaries and health centres, which were either sponsored by the government or church organizations and private clinics (owned by individual physicians). The responses given were varied. The results indicated that 41.8 % went to dispensaries, 36.4 % to health centres and 21.8 % to private clinics (Table 5).

Table 5: Respondents first choice of health facility.

Treatment options	N=55	%
Dispensary	23	41.8
Private Clinic	12	21.8
Health center	20	36.4
Total	55	100

Generally the reported first choice health care facilities were noted to be located near the respondents' homesteads. This underscores the crucial role that can be played by the local health posts in malaria treatment and therefore central in any intervention malaria programme in the area.

The study findings suggested that private health care providers offered tremendous support during epidemic outbreaks. However most (54.4 %) respondents regretted that rarely do all the cases referred there heal completely. When probed as

to why it is the case, the respondents seemed to be doubtful as to whether they are given proper dosage, expressing suspicion that the health care providers are more likely to cash on the patients desperation during the epidemic. Their fears seemed to be premised on the fact that most of these private clinics are usually visible during malaria epidemic periods and sometimes stop operations till another outbreak.

It was also revealed that most respondents sought multiple treatment of malaria for a single episode of malaria to heal fully. For instance only 12.7 % reported having recovered after using one healthcare option, 43.6 % mentioned two healthcare options, 34.5 % indicate using three healthcare options while 9.1 % mentioned four healthcare options. Several reasons can be attributed to this phenomenon. They include use of presumptive treatment by most healthcare providers in the area, which at times may lead to improper diagnosis of malaria and suspected inadequate anti-malarial dosage by some healthcare providers and use of wrong drugs during self-medication by respondents.

4.3.7 TREATMENT TIME SEEKING

A range of responses were given, when the case history respondents were asked to tell the time they took to seek treatment upon their detection of what they perceived as malaria. The responses were categorized as follows: those who took 1 day (43.6 %), 2 days (21.8 %), 3 days (16.4 %), and those who took over 3 days (18.2 %). (Table 6).

Table 6: Time taken by respondents before seeking health care.

Treatment time seeking	N= 55	%
1 day	24	43.6
2 days	12	21.8
3 days	9	16.4
Over 3 days	8	18.2
Total	55	100

Usually children were taken to formal health facilities by their caregivers within 24 hours upon recognition of childhood febrile illness. This was because children were reported to be vulnerable to malaria and therefore needed immediate medical attention. Those respondents who had no prior experience (12.7 %) with malaria and therefore were not sure with its signs also sought treatment in a day's time.

The respondents who took two days and over before seeking health care gave various reasons for doing so. First, they wanted to establish whether a certain case of fever attack was actually malaria or not. Secondly, some lacked money to seek immediate medical attention. Thirdly, the closure of most government health facilities (that are considered less costly) during weekends forces most of them to wait till the weekend is over. Finally, the other respondents ignored the sighs hoping that they will get well. However the study noted that despite this apparent delay in response time most of the respondents still knew the importance of quick treatment of malaria infection. Indeed some took painkillers and to a lesser extent traditional herbs as "First Aid" while a waiting appropriate treatment.

4.3.8 DETERMINANTS OF HEALTH SEEKING BEHAVIOR

In this study several factors emerged that were found to be responsible for the lay people's health seeking behavior. Top among them is the cost of treatment. For

instance a majority (58.2 %) of our respondents preferred government owned dispensaries and health centres to other health care options because they were reported to be cheaper in treating malaria. The cost sharing policy by the government seemed to be popular and cheaper in treating a single episode of malaria by most of our informants. Indeed cost of treating malaria was singled out as the main reason why 87.3% of the informants first sought self-medication. For example one middle age explained in detail on how money affected his choice of health care option. He said thus:

Normally I go to Gesima dispensary whenever I suffer from febrile illness. This is because they treat malaria and other diseases a lot cheaper than the other health care providers in the area. For example I pay Kshs 20 for registration and Kshs 20 every injection thereafter. In total I can pay around Kshs 150.While other health care providers like local clinics can charge a minimum of kshs 500.Worse still the pay is increased during the epidemics.

Distance from health facilities also was mentioned as a contributory factor in determining the type of health care option the lay people sought. The study established that respondents who were very close (less than 1/2 kms) to health facilities were either found to go straight to that facility without self-medication or preferred it as the first choice formal healthcare provider. Given that health facilities in Rigoma division are unevenly distributed, most respondents are forced to walk or are ferried using wheelbarrows for long distances to seek health care in these facilities. Indeed those respondents who were situated over four kilometres took more than one day before seeking health care and when they finally did they first sought self-medication from nearby shops. They only went to formal health care facilities when the condition got worse. The delay was meant to check the progress of the disease. The effects of distant on lay people treatment choices, was clearly described by those respondents (18.2 %) who were located over four kilometres away from the nearest health post. Some of the common statements said were "it takes me one and

half hours to walk on foot to hospital, so I stopped going back for follow up treatment", and "I buy anti-malarial drugs because the hospital is far".

Disease severity also played a significant role in determining the treatment-seeking behavior of lay people. The study results indicated that when a malaria episode is deemed severe by the lay people, the patient is taken straight to a formal health facility within 24-hours. This was especially the case when the person was believed to suffer from cerebral malaria, which the lay people identified as the worst form of malaria. This if not treated promptly and properly they observed would lead to death or one become mad. Not so severe malaria (malaria ya kawaida) was either treated at home using OTC drugs or in local formal health care facilities.

Another important factor in determining the kind of health care to be sought is that of the patient's social networks. Social networks refer here to any form of relationship or alliances that develop out of social interests and which can be used to assist malaria patients. In this study most respondents reported full involvement of other family members in the disease healing process. In most cases the immediate family members right from the nuclear to extended family members were informed of the sickness.

The idea behind informing many people revolved around the formation of a wide support mechanism what Helman (1994) termed as "therapeutic networks", in case the disease becomes more severe. These people will then be available to give emotional and material support during the healing process. The patient's immediate circle of friends and relatives also did help in making a decision on the kind of health provider to consult especially where the victim is suffering from a severe case of febrile illness.

4.3.9 EFFECTS OF MALARIA

Varied responses were reported when the respondents were asked to tell the effects of malaria in the study area. The responses showed that 90.9 % mentioned disruption of farm work, 76.4 % depletion of family budget, 60 % traumatizes the family " brings fear", 18.2 % mentioned both school absenteeism and death (especially children) and 3.6 % reported miscarriage.

The effects of malaria in the area were vividly brought out by the following common comments made during the FGDs and even with case history respondents. For example, " malaria is the main source of poverty in the area", " When malaria strikes here, it means many days without going to the shamba", and " malaria brings fear and uncertainty in the family"*(malaria igoekoreta obwoba mono ase omochie).*

From the said comments and stated effects the study confirmed that malaria is indeed a dreaded disease among community members. Throughout the study it became clear that many residents were more worried about malaria than any other disease affecting the local residents.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter provides a brief discussion of the research findings presented in Chapter Four. The implications of these findings on the lay peoples lived experiences with febrile illness are discussed. Conclusions drawn from the study and recommendations made.

5.1 SUMMARY

This study analyses lay people's lived experiences with febrile illness in Rigoma division, Nyamira district. The study findings suggested that malaria is a serious health problem in Rigoma division as the place normally experiences periods of malaria epidemics. Data results indicated that all respondents mentioned malaria as one of the most common diseases in the area, with a majority of them ranking it at the top of their health concerns. The importance of malaria was further strengthened by the fact that malaria was reported to have virtually affected every household. Indeed over ninety five per cent (96.4 %) of the respondents reported that at various times, malaria had infected all members of their families. This is a clear demonstration that malaria is a real health issue in Rigoma division.

The period between April to July was reported by a majority of the respondents as the months with increased incidences of malaria in the area. They specifically mentioned the month of July as marking the climax of malaria epidemics. However malaria transmission in the area display a distinct seasonality in the prevalence and severity of the disease. Most cases of febrile illness, the respondents generally agreed,

occurred during and just following the rainy season, which provide optimal conditions for mosquito breeding. This is the period the local residents normally braced themselves for malaria epidemics.

The study revealed that all the respondents (lay people) in the community were in agreement with the biomedical paradigm of the " germ theory"- on disease causation. Indeed all the respondents believed that malaria was caused and transmitted by the mosquito carrying "germs" (ebiini) through biting the human skin. Thus the mosquito acts as a transmission agent. However despite this high level of agreement with the biomedicine, some respondents further felt that the mosquito vector is not the only cause for malaria and as such suggested other causes. The other causes they cited include: cold weather, eating sugary foods, pollen grains from maturing maize, bad smell from decaying materials, unboiled water and general dirtiness. The believe in multiple causality has been reported in other studies carried elsewhere in Africa (Agyepong 1992, Munguti 1996, Khayundi 2000). This multiple malaria causality mentality by the lay people will no doubt impact negatively in any malaria prevention strategy in Rigoma division. So, there is need to curb this trend by initiating anti-malarial campaigns in the study area to help bridge the existing knowledge gaps. Already indications from the study suggest that hitherto, no serious health education has been carried in the area.

Lay people in Rigoma distinguished between two types of febrile illness, namely: Cerebral malaria termed locally as " brain malaria" (*malaria yo obongo*) and Uncomplicated malaria termed locally " normal malaria" (*malaria ya kawaida*). Data results revealed that while cerebral malaria was rare in the area. The respondents however, labelled it as the worst form of malaria. They reported that if not quickly and adequately treated, a patient a suffering from cerebral malaria may turn mad or

even die. So, once this kind of condition was recognised in a patient s/he is immediately taken to a formal health facility especially in hospital for "expert" treatment. Its symptoms include the victim turning violent and very strong, making unintelligible noise, convulsion and unconsciousness or even going into a coma. Uncomplicated malaria was identified by the lay people as the most common and which the respondents were referring to in the study. Community- based ethnomedical research to describe local classifications of febrile illness has been undertaken in a number of sites in Africa (Agyepony 1992, Karanja et al. 1999, Munguti 1998). These studies have established that local populations frequently associate malaria and fever with mosquitoes. However biomedical concepts are yet to adopted universally, and other ideas of disease classification coexist in nearly every culture where local illness taxonomies have been studied.

A majority of the respondents in the study were able to recognise that an episode of fever is actually a case of malaria. They listed a number of symptoms that in most cases conformed to the biomedical classification of malaria symptoms. Some of the symptoms they reported to be associated with malaria included: high fever, feeling cold, aching joints, vomiting with or no yellowish- greenish fluid 'esosera", diarrhoea, loss of appetite, a need to eat bitter foods, profuse sweating, convulsion, restlessness, stomach disorder among others (Table 3). A person suspected to be suffering from malaria, when some or a combination of the above symptoms, were detected by either the victim or caregiver.

The study further revealed that the lay people in Rigoma division also did recognise children specific symptoms. Indeed there was noticeable influence of age on sympatomatology among children, when compared with the adults. They cited the following as some of the children specific malaria symptoms: crying too much,

pneumonia, the child stops breast-feeding, coughing and restlessness. Despite this distinction, the caregivers indicated that they had difficulties in diagnosing childhood febrile illness as some of the mentioned signs may not necessarily lead to malaria. For example a child suffering from common cold may also experience fever. These underlines the crucial role of laboratory services so has to enhance early malaria diagnosis and therefore prompt treatment. The ability by the lay people to remarkably recognize internal physiological changes associated with febrile illness was also revealed in a study by Jackson (1995) among Liberians. Indeed this is a major challenge to all those involved in health care delivery to malaria patients. That it is about time they take on board lay people's perceptions on malaria sighs and symptoms, as they have showed that they have medically predictive powers and can greatly improve the doctor patient communication hence proper diagnosis of disease.

The study results showed that a majority of the respondents believed that the onset of fever alternating with a feeling of coldness gave strong indications that the person will suffer from malaria infection. They believed that the vomiting of yellowish-greenish fluid *(esosera)*, was the surest symptom to tell that one is suffering from malaria. Besides they believed that vomiting especially yellowish- greenish fluid, was actually welcome and desirable to the patient as it had a healing effect. The respondents reckoned that most malaria victims who vomited took a shorter time to recover compared to those who don't vomit. This they believed was made possible, through "the passing out of malaria from the body"- contained in yellowish- greenish fluid. These study findings corroborate with another study about the Gusii of Suneka, Kisii district, which show the same believe on the healing effects of vomiting by malaria patients (Nyamongo 1998). This believe by the lay people in the area poses a

challenge to the health authorities to carry out scientific studies on the composition of the yellowish-fluid so as to give an empirical direction on the matter.

There are minimum efforts towards the prevention and control of malaria in the study area. The prevailing opinion throughout the study was that there is little that can be done by the local residents themselves to prevent malaria. This is irrespective of the fact that a majority of the respondents had a clear knowledge on the malaria prevention measures. The respondents attributed this behaviour to the unpredictable and periodic nature of malaria epidemic in the area, ignorance amongst some lay people and a tendency by the lay people to put little emphasis on matters related to their health. This notwithstanding, most respondents were well aware of the preventive measures of malaria and reported having at one time or another used some preventive measures.

The study showed a significant utilization of various indigenous preventive measures to keep away mosquitoes from the people. The methods included burning of dry pyrethrum flowers and dry cow dung- that produced scents repelling the mosquitoes. These methods were widely used by respondents. These results are similar to those by Mulemi (1998) in Siaya district, Kenya, where respondents used herbal repellents, smoke and burning of cow dung to repel mosquitoes. The use of traditional preventive measures by lay people should therefore, be encouraged so as to strengthen the local capacities (as they are both cheap and accessible to the largely poor rural folks) of communities in their efforts to control malaria infections. The measures will help to complement or act as alternatives to conventional preventive measures.

Bed net use as a preventive measure, in Rigoma division was dismal. The study results showed that over seventy per cent (76.4 %) of the respondents knew that

mosquito bednets offer the only viable solution to the malaria menace in the area, but only 9.1 % had at least one in their homes. The study results further indicated that even those few who had bednets, only one or two people (usually parents) have priority access to the bednets. The respondents cited the high cost of the bednets, unavailability in the local markets and ignorance among lay people as the main reasons responsible for their non-use of mosquito bednet in the study area. This findings tally with those reported by Egwang et al. (2000) in Apac district, Uganda which showed a low bednet use (<12 %), here the use of bednets was related to status and not as a measure of protection against malaria. The low bednet use by lay people in these communities poses a major challenge to malaria control in the area and need to be addressed through public health education and motivation to use bed nets. Since, researchers have long established that the use of bed nets (especially insecticide-treated nets) can reduce malaria mortality by 25 % and malaria related admissions by up to 50 % (Nordberg 1999).

Some respondents also reported disillusionment in the utilisation of certain scientific malaria prevention measures. This anti- malaria behaviour has led the respondents to stop using them in fighting the malaria menace in the area. For example a majority of the respondents (65.5 %) reported to have stopped burning mosquito coils to repel mosquitoes in their houses. Because they urged, the smoke emitted thereof usually lead to common cold. Other respondents indicated having long stopped using mosquito repellents (such as Vaseline) because it was alleged to be associated to devil worship. We even had respondents who felt that the bed net use cannot guarantee maximum protection as the mosquitoes can bite a person when sited in the house or in any other place at night. This anti-malaria behaviour obviously poses great challenge to any malaria prevention intervention program in the area.

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According to Nyamwaya (1987) the behaviour can be attributed to lack of proper knowledge about the measures, difficulties by the lay people in perceiving the efficacy of the measures and the impracticability of some of the measures by the lay people and not that they lack understanding of prevention.

Few respondents reported the use of anti- malarial drugs as a preventive measure. This was attributed to the fact that most lay people in the area believed that drugs were only meant for treatment of sickness not the other way round, anti- malarial drugs were therefore not an exception. This was also the case with the use of traditional herbs for malaria treatment. Those respondents who reported using traditional herbs only did so as part of self- treatment not malaria prevention.

The lay people in the study area have a number of treatment options to choose from whenever they are attacked by malaria. These are: self- medication, public health care facilities (dispensaries, health centres and Nyamira district hospital), private health facilities (individual/s or church sponsored health facilities). However a number of factors determine (as discussed elsewhere here) the use or non-use of each of the available treatment options. The study noted that Rigoma division, has poorly equipped and unevenly distributed formal health care facilities.

Data results suggested that a majority of the respondents (87.3 %) sought self-medication as the first response to an episode of perceived malaria. This was usually done at home and included both traditional (though to a less extend) and biomedical remedies. Most of them bought drugs from local shops and chemists. The initial treatment of malaria at home and without consulting trained professional has been established in a number of studies (Snow et al. 1992, McCombie 1996, Miguel et al. 1998). These findings underlines the vitality of making anti-malarial drugs available to patients, this is especially important in a rural division like Rigoma where health

care sources are not only inadequate but also having insufficient drugs for the many patients common with malaria epidemics.

Three reasons were mentioned to explain why most respondents in Rigoma, first sought self-medication for malaria. This included first and foremost the fact that self-medication is relatively cheaper compared to other treatment options and therefore bearable to most of the poor small subsistence farmers in the area. Secondly, the respondents urged that self-medication acted as a kind of "fist aid" to help "cool down" the malaria symptoms especially fever before seeking health care from formal healthcare providers. This was particularly the case if one suffered from malaria attack during the weekend, when most government owned health facilities offered little or no services to the public. Thirdly, it provided an opportunity for the lay people to monitor the progress of the disease so as to ascertain whether it is malaria or not. This was especially the case with those respondents who had no clear knowledge of malaria symptoms.

However self-medication had its own shortcomings. For instance most respondents resorted to cheap over-the-counter pills, some of them, which are not anti-malarial drugs for example painkillers like panadol, aspirin, hedex e.t.c. Thus the respondents end up treating symptoms such as headache and fever instead of malaria infection. This obviously will have negative effects in the treatment and management of malaria, as the respondents may treat symptoms rather than the disease itself. It was also largely responsible for prolonged health time seeking period. This usually resulted to a case of uncomplicated malaria becoming more severe making the eventual treatment process difficult. There is also the prospect that some respondents bought insufficient drugs for malaria treatment. This can be seen in the light of the many respondents who sought alternative healthcare providers despite having started

with self-medication. The study concurs with Foster (1995), observation that most episodes of malaria are treated outside the formal health system. The increased resort to self-medication by lay people underscores the importance of improving self-medication practices of the populations, as it constitutes an important resource for malaria treatment.

Few respondents (18.2 %) reported the use of herbs for self-medication reckoning that traditional medicine is no longer effective in the treatment of Highland malaria, which is common in the area. This was corroborated by the fact that no respondent reported visiting a herbalist for malaria treatments. The lay people who reported using herbs extracted from indigenous malaria medicinal plants were however found not to be sure of the dosage of the herbs traditionally known for the treatment of malaria. The herbs involved, the use of there leaves, barks and roots which are boiled and the solution taken orally. Most respondents however observed that their inability to tell proper dosage had led many to leave using them. Indeed it appears from the study, that lay people from Rigoma division have shifted from the use of traditional resources to scientific resources for malaria treatment. While it is true that malaria can be effectively be treated by existing anti-malaria drugs, there susceptibility to grow resistant to malaria parasite, thus making local resources all the more Important alternative or complementary to these drugs.

Most of the health facilities in Rigoma division lacked adequate drugs and infrastructure development to deal with malaria out breaks or malaria epidemics common in the area. For example most respondents who visited government owned health facilities lamented frequent lack of drugs. This usually force the 'doctors' (clinicians) to only prescribe anti-malarial drugs and then send the victims away to buy them from chemists or local shops. The study noted that this lead to prolonged

use of anti-malarial drugs by both the health personnel and the respondents. this included the administration of ineffective doses and over reliance on one anti-malarial (SP-Fansidar) drug by respondents. For instance, the study established that most lay people tend to treat symptoms- fever, shivering, headache, vomiting and diarrhoea in the early stages. It is only when the symptoms become severe that malaria is suspected and appropriate medication sought. The effects of which a majority of the cases of self-medication actually end up seeking alternative health care providers.

But according to Mwabu 1986 patients tendency to consult different providers in a given illness episode might be explained by one or more of the following (a) patients are generally unable to tell with certainty the provider who will provider who will cure their illness and thus, they search among health care providers for treatment that will cure them, (b) successful treatment of some illness require more than one provider and, (c) patients belief that in order to get cured they must be treated by more than one provider.

The study findings suggested that a majority of the respondents knew that chroloquine drugs are no longer effective in the treatment of malaria. The have therefore resorted to the two drug combination therapy known as sulphadoxine-pyrimethamine (SP), whose common brand names (depending on the manufacturer) are Fansidar, metakelfine, Orador and Falcidin. However fansidar is the most commonly used SP drug in the area but was reported to have shown signs of being less effective. This was compared to the time it was recommended by the Health ministry as one of the first-line malaria treatment drugs (MOH 1998). Indications that fansidar is showing signs of drug resistance were apparent as 41.1 % of the case history respondents reported to have not recovered after taking the three tablets dosage, than was the case before. This has raised doubts among most respondents

about the efficacy of the drug. This is a clear indication that the malaria parasite may be beginning to show signs of growing resistant to fansidar. Indeed recent studies by AMREF and other Kenyan government health agencies indicate growing resistance levels to SP drugs (Daily Nation, 15th November, 2001).

Most lay people in Rigoma division believed that the effectiveness of any anti-malarial medicine (biomedical or traditional) dependent largely on its "compatibility with the victims blood" (amanyinga gakoigwana na amariogo). They urged for example that different people respond differently to malaria medication- that some malaria patients can be treated by fansidar, others with metakelfine, while other can only be effectively healed by use of quinine injections. They further urged that those malaria patients whose blood can't "accept" most anti- malarial drugs, are usually the ones who take a long time to heal and after undergoing a number of treatment options. The lay people also believe that malaria medications cannot heal a patient who continues to work (farm work) while taking the medications. This believes of Rigoma residents need to be studied further and an attempt be made to explain them empirically, so that they will find expression in the biomedical treatment of malaria in the area.

Private clinics were reported to play crucial role in health care provision in the division. However the fact that most of them were reported to be visible mostly during the epidemic period should be a cause of concern and suspicion to health authorities. The study findings revealed that not all patients who sought malaria treatment in private clinics got healed. Thus bringing to question the competence of their staff and the appropriateness of the dosages give for malaria treatment. The government therefore, should apart from issuing licenses to this clinics, carry out routine inspection of this facilities so as to ensure proper health care delivery.

Responses from the lay people on the time they took to seek health care for malaria were varied. In total four categories emerged, those who took; one day, two days, three days, and those who took over three days. Those who acted within 24 hours included three groups of malaria patients (1) Children- whom caregivers reported difficulties in identifying febrile illness, (2) those people who had no previous experience of malaria and therefore sought quick expert assistance from formal health care providers, and (3) cerebral *"malaria yo obongo"* malaria patients.

While those who took two days and over attributed their behaviour as necessitated by; (1) a need to establish fully whether a case of fever attack is actually malaria. (2) Lack of money for immediate treatment. (3) Closure of most government health facilities over the weekends, which were reported to be cheaper. (4) Others simply ignored the sighs hoping that they will recover. Although waiting for a time has been reported as an important Phase of health seeking, whereby patients buy time to access and conclusively decide what afflicts them, this does not however seem to be the case in Rigoma. Mwenesi (1993), too found out that mothers in the Kenyan coast wait for a period of three days before taking action. Despite this marked differences in the time taken by lay people to seek treatment for malaria, it must be noted that lay people in Rigoma took a suspected case of malaria seriously. Indeed throughout the study indications were that even before seeking 'appropriate' medication for malaria, most respondents were already involved in self-treatment (which they never considered as proper treatment). The lay people's little regard in self-medication poses a major challenge to health authorities, since it is likely to lead to either the wrong use of anti-malaria medicine, under dosage or patient compliance in the use of anti-malarial drugs.

The study established that a number of factors determined the health seeking behaviour of lay patients and caregivers in Rigoma division. First, the cost of malaria treatment has pushed a majority of the respondents to go to government owned dispensaries and health centres compared to the other health care providers because of there relatively low cost. So, the cost of malaria treatment was crucial in deciding the type of healthcare provider to seek for healthcare. For example most respondents reported to by pass nearby private clinics, to go to a dispensary located 3-4 kilometres a way. They only returned to the private clinic in case they see no signs of recovery or when the disease becomes more severe

The distance of the health facility from the patient also played a significant role in the decision of the lay people to select a health provider. The study findings revealed that that those respondents located near to a health facility were most likely to go straight to the facility when he/she suffers from a bout of malaria even without seeking self-medication than are those who live further a way. This study finding is similar with that of a study by Baume et al. (2000) in Zambia. In the study 79 % of children living within 1 hour travelling time were taken for treatment at the health centre, compared with 58 % of children who resided more than an hour from health centre. The fact that distance influence greatly people's choices on where to seek health care, underpin the need to have rural health care posts within reach to a majority of the rural population. For this reason there is need to have mobile clinics if only during the epidemic periods so as to promptly and conveniently deal with the increased cases of malaria infection.

The severity of an episode of malaria was also important in determining the type of health provider to be sought. For example when an episode of malaria was perceived to be severe by the lay people then the patients was most likely to go or be

taken to a formal health facility within 24 hours. This was particularly the case when the victim had cerebral malaria- the worst reported form of malaria in the area. This patient was usually taken to private health facility or church sponsored health facilities because of their quick and proper service delivery. But when an episode of malaria is perceived not to be so severe, usually the lay people started with self-treatment before moving to other locally accessible health care options.

The social networks of the patient or health care giver came in handy in deciding the type of health care provider. Most respondents reported full involvement of other family members in the disease healing process. In most cases the immediate family members, right from the nuclear family to the extended family members and even neighbours got involved making various decisions on the treatment of the disease and this depended also on the condition of the patient. In this study sickness of any kind in the community is as personal as it is a community concern. It was established that the informing of a large number of people served as a social support strategy. For instance should the disease become more severe, more people will be available to give the much-needed emotional and material support. At the family level the study results indicated that most mothers acted as health care givers to children and even their husbands, while men were mostly responsible in giving the money for medication. Njagi (2000) studying malaria among pregnant women in Tharaka Nithi district, Kenya also notes the importance of social networks during malaria treatment process. The study observed that Tharaka women consulted and sought help from people close to them as a strategy of managing malaria.

Service delivery by each individual health care provider was given due consideration before a patient or caregiver made a choice on where to seek treatment. Gilson et al. (1994) notes, that satisfaction is an important element of the quality of

health care, often determining the patient's willingness to comply with treatment and influences the effectiveness of care. Although, the study findings suggested that most lay people in Rigoma division visited local government owned health facilities because of their relative low cost in malaria treatment, indeed others sought treatment elsewhere (private clinics and church sponsored health facilities). This behaviour was attributed to the perceived better service delivery by these healthcare providers. The reasons cited for the preference of church sponsored health facilities and private clinics are; they are not congested, there staff are understanding and give necessary attention to a patient and most of them offer laboratory services therefore make the diagnosis of malaria and other ailments much easier. The church owned facilities were trusted by the lay people for giving proper malaria dosage and were sensitive to the plight of patients especially their financial situations.

The study findings revealed that the respondent's religious affiliations never affected their choice of health care providers for malaria treatment. Although Nyamongo (1998) study on the health seeking behaviour among the Gusii in Kisii district suggested that Seventh Day Adventist followers travelled along distance, often by passing local government and private hospitals, to visit Kendu Mission Hospital (sponsored by the SDA church) for medical care, malaria patients in Rigoma division never discriminated in terms of religion on their malaria health care choices. Throughout the study the respondents were unanimous that malaria was deadly if it is not treated in time and its consequences are far more important that their religious inclinations. This is an encouraging trend as it will ensure speed health seeking by patients and therefore fast recovery.

Malaria has virtually affected the livelihoods of every resident in Rigoma. During malaria epidemics the lay people reported that one is either affected or infected by

malaria .The mentioned effects include: disruption of farm work as the epidemics normally conceit with planting or/and harvesting periods, depletion of family budgets due to high medical costs, school absenteeism as children are infected or come home to help in domestic chores in case one of the parents is sick, death, miscarriage and the fear and psychological trauma wrought to the family. In fact malaria is no longer viewed only as a health problem in Rigoma, but a major contributor to poverty in the area.

5.2   CONCLUSION

Lay people's lived experience with malaria in epidemic malaria areas was the main theme of this study. The study set to investigate lay people's response to what they perceive as malaria. To establish these, their knowledge on disease causality, prevention, health seeking, perceived health options available for them, effects and determinants of health seeking were sought.

The fact that the ethnomedical perceptions of lay people in Rigoma division, largely tallies with those of biomedicine, underscores the importance of incorporating this perceptions in the diagnosis and treatment process of malaria. This is especially important in rural areas like Rigoma division, where we have inadequate health facilities and poor infrastructural development that makes health care delivery a real nightmare. For example most cases of malaria treatment in Rigoma division is done through presumptive treatment, as most health facilities don't offer laboratory services. Hence a need to incorporate these local malaria ethnomedical perceptions by lay people in Rigoma division, for easier diagnosis and treatment of malaria in the area.

The use of local resources in the control and prevention of malaria is noted in this study. This use of traditional remedies and coping strategies by the respondents

should be encouraged and strengthened if the fight to combat malaria is to be won in the study area. Since, most of these measures are not only cheap but also conveniently available and acceptable to the local residents. For instance in Rigoma division most lay people use smoke from cow dung and dry pyrethrum flowers to repel mosquitoes, this is in total contrast to their reported low use of bednets and general disillusionment with morden measures like mosquito coils and body oil repellents. The existence of these traditional resources in Rigoma provides an opportunity the indigenous resources that can be enlisted in the fight against malaria.

Most respondents treat malaria at home as the first resort. This cases of self-medication, usually involve buying commercial anti-pyretics and anti-malarial drugs from local shopkeepers and chemist. There are others too who resort to traditional remedies. However self-medication is viewed by most respondents as a form of 'first aid" awaiting proper treatment in formal health facilities, thus prone to underdosing by lay people. This trend should be checked, while at the same time strengthening the capacity of the lay people to deal with malaria at home. To achieve this, as a first step local shopkeepers and drug vendors should be trained on the appropriate medication of malaria. Also attempts should be made to establish the efficacy levels of the local medicinal plants for malaria treatment, with a view to making them acceptable. These measures will go along way to improve home case management of malaria.

The reported reduced efficacy/therapeutic failure of Fansidar (SP), which is the widely used anti-malaria drug in the study, indicates a possibility of growing levels of drug resistance. This obviously portends great challenge to the government policy on first line treatment drugs. This policy shifted in 1998, from the use of chroloquine to sulfadoxine- pyrimethemine drugs. However it appears from recent studies in the country that SP drugs have also began to be resistant to malaria parasite. This study

finding in Rigoma provides a basis for scientific research on the resistance levels for Fansidar and other SP drugs to justify there continued use in the area.

Private health care providers were an important source of malaria treatment in Rigoma division. Indeed lay people reported seeking health care initial and follow up care from health care providers other than those owned by the government. These findings clearly indicate the need for the government to substantially increase the coverage of health services in the study area by integrating private providers in its health system. A combined effort between the government and private health sectors will be especially useful in dealing with the large numbers of malaria patients during epidemic periods- thus helping to reduce the morbidity and mortality of the infection.

In conclusion the study recognised malaria as the most important health concern in the area. Despite recognising malaria as an important health concern, there is evidence to suggest existing gaps in the knowledge of the disease aetiology and its treatment by most lay people. The study also established that malaria epidemic in the area is influenced by multiple factors. This includes cultural, socio-economical as well as environmental factors.

5.3   Recommendations.

In view of the study findings and conclusions the following recommendations are made;

i. Although the study results showed that most respondents in the study are fairly knowledgeable about malaria, gaps in knowledge about the disease still exist. This was especially explicit on the lay peoples knowledge on malaria causation, control and prevention measures, health care seeking and the treatment of malaria infection. Equally, the little concern attached by the respondents on

matters related to their health impacts negatively on the effective management of the malaria infections in the area. To bridge these key deficiencies therefore. it is recommended that a vibrant health education (especially on malaria scourge) should be mounted in the study area with the involvement of all stakeholders. Such, campaign should as much as possible involve the local people with particular regard to their indigenous medical systems. while at the same time disseminating scientific facts about malaria. The local community members should be involved as they are the direct beneficiaries of such an initiative. This too will ensure that the initiative is sustainable. as the members will easily identify with it. The stakeholders should also include local churches. the community leaders and opinion shapers. Non Governmental organisations. the government.

ii. Given the nature of the malaria epidemics in the study area. it is recommended that health authorities put up a surveillance and monitoring mechanism in place. The surveillance system once in place. should help public- health staff to detect outbreaks early, to respond to them rapidly and identify malaria trends in the study area. Thus enhancing a quick and prompt response towards the consequences of malaria outbreak by reducing the morbidity and mortality rates. For instance effects of recent malaria outbreak in the area (between January to February, 2001) should have been minimal had there been such a mechanism in place. The study findings indicated that most people were caught unawares because this was not in line with the usual trend as malaria epidemics outbreaks usually occur between the months of April and July in the study area. Hence an urgent need for routine surveillance of vectors and epidemic forecasting in the area.

iii. Although there were few respondents who sought traditional medicine in the treatment of malaria, the study still recommends that scientific studies should be carried out, aimed at detailed identification, documentation and testing of indigenous therapeutic resources currently being used in the malaria control and treatment in the area. This is necessary because of two reasons. First, it will lead to some of the traditional resources with malaria medicinal ingredients being used to compliment the biomedical resources for the treatment of malaria infections. This measure will help to make the treatment of malaria less costly and therefore accessible to most people. Secondly, the scientific testing of the efficacy levels of the traditional medicines is necessary to confirm whether they can be used for the treatment of malaria or not. It will also help prove scientifically that these medicines do not have harmful pharmacological effects on the users.

iv. The fact that recent research findings from various sites in the world, have showed that insecticide treated nets can reduce mortality by 25 % and malaria-related hospital admissions by up to 50 %, calls for there (ITNs) increased appreciation and use by the lay people. Therefore the study recommends that the same be made available and affordable to the poor rural communities and to the people in Rigoma division. At the moment the situation on the ground is a discouraging one, not only as we have few people with bednets but also most people cannot access them in the local markets. The issue of cost too, must be addressed if this goal has to be attained, as most of the people in the area are poor small-scale farmer. The recent Kenya government's decision to Zero- rate taxes (2001 budget) on imported bednets is a positive step and should be encouraged. Has this is in line with the recently launched National Malaria

Control Strategy objective of providing Insecticide- treated nets to people in malaria prone areas.

The medically predictive powers of perceived malaria signs and symptoms by the lay people in the study area, is challenge to health care provider concern with treating malaria patients in the area should pay particular attention to their complaints of malaria induced symptoms. This is especially so given the fact that the respondents demonstrated a remarkable agreement with biomedicine in perceived febrile illness. Therefore of diagnostic value and the study recommend that it should be included (data) in theoretical models and statistical analysis by the disciplines concern with the study of malaria in the area. The information too, will help to promote effective communication between local health care providers and their patients.

vi. This study reveals perceived reduction in the efficacy of SP drugs. specifically fansidar. The study recommends therefore, that scientific studies be carried out to establish the resistance levels for common SP drugs (malaria first line drugs) used in the area, so as to justify there continued use. This should be in accordance to the WHO guidelines on drugs that recommend that once the resistant levels reach the 25 % mark of drug's action level, that drug should be moved out of the market as a first line drug.

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APPENDIX I

INTERVIEW GUIDE: ETHNOGRAPHIC INTERVIEW

INFORMANT NO: _____

INTERVIEWER: _____DATE:_____

TIME STARTED: _____END: _____

NAME OF THE RESPONDENT: _____

MARITAL STATUS: _____ SEX: _____

LOCATION: _____ S. LOCATION: _____

EDUCATION: _____

NO. OF CHILDREN: _____

INTRODUCTION

Thank you very much for agreeing to participate in this study. The purpose of this interview is to enable me to learn more about your experience with Malaria. The findings of the research may be used by the government or any other interested parties in setting up programmes to fight malaria in the area. I will highly appreciate your honest response. Thank you.

QUESTIONS

1. Tell me all about malaria: causes, recognition, experience and consequences.

2. The treatment options of malaria:(Probe) self-treatment, visiting a dispensary, hospital and traditional healers (and others).

3. Health seeking behaviour: (Probe) illness characteristic and it is perceived seriousness, cost, distance from health facility, religion, social network of the patient, economic, believes about

4. Malaria prevention in and control (probe) use of mosquito repellent, mosquito coils, burning pyrethrum, clearing bushes, mosquito bed nets (ask for more)

5. Tell me what you did in the last malaria episode? The time you took before seeking treatment (reasons, the first step you took and subsequent ones.

6. How did you treat malaria in the last episode? (Probe) knowledge of the correct treatment, the effectiveness of the treatment sought, use of the multiple health providers (reasons) and drug resistance.

7. The period when malaria is most prevalence (Months). Why do you think it is prevalent at this time? (Probe) it is interference with farming and other activities and any loses caused by malaria not discussed

APPENDIX II
INTERVIEW GUIDE: FOR FGDs

FGD GROUP NO: _____   DATE: _____

INTERVIEWER: _____   END: _____

TIME STARTED: _____

NAME OF THE RESPONDENT: _____

MARITAL STATUS: _____   SEX: _____

LOCATION: _____   S. LOCATION: _____

EDUCATION: _____

NO. OF CHILDREN: _____

INTRODUCTION

Thank you very much for agreeing to participate in this study. The purpose of this interview is to enable me to learn more about your experience with Malaria. I will highly appreciate your honest response. Thank you.

QUESTIONS

1. Tell me all about malaria: causes, recognition, experience and effect.

2. How did you treat malaria? (Ask questions on) self treatment, visiting a dispensary, hospital, traditional healer (probe for more)

3. Health seeking behaviour (ask questions on (illness characteristics and it is perceived seriousness, cost, distance from health facility, religion, social net work of the patients, believes about malaria (probe for more).

4. Malaria prevention and control: (probe) use of mosquito repellents, bed net mosquito coil, burning of pyrethrum clearing of the bushes (ask for community initiatives).

5. Ask questions on the community's management of malaria in the past. As the trend changed? If so, why?

6. Tell me what you did in the last malaria episode? The steps and times you used in seeking treatment?

7. Do people in this community treat malaria at home? If Yes/No explain.

APPENDIX III

QUESTIONNAIRE: BACKGROUND SURVEY

INFORMANT NO: _____

INTERVIEWER: _____ DATE: _____

TIME STARTED: _____ END: _____

NAME OF THE RESPONDENT: _____

LOCATION: _____ S. LOCATION: _____

INTRODUCTION

Thanks you very much for agreeing to participate in this study again. The purpose of this interview is to enable me learn more about you. I will highly appreciate your honest answer. Thanks you.

SOCIAL

1. Are you married? (Probe) If so, what is the family size and residence? Who is the family head?

2. What is your level of education?

3. What is your religion?

4. Please tell me your occupation?

ECONOMIC

5. What is your source of income?

6. What is your farm size? Who provides your farm labour?

7. Which crops to you plant? (List both the cash crops and food crops)

8. When is your planting and harvesting season?

DEMOGRAPHIC

9. Please can you tell me the most common disease in this area?

10. Has malaria affected any member of your family? If so, who? When is malaria prevalent?

11. Where do you go for treatment in case of any sickness?

12. How did you treat malaria in the past? Has the trend changed? If so, why

APPENDIX IV

FREELISTING

INTRODUCTION

Thank you very much for agreeing to participate in this study. The purpose of this interview is to enable me to learn more about the health situation in your community. I will highly appreciate your honest response. Thank you.

QUESTIONS

1. Please, tell me all the common diseases that affect you here in Rigoma division.

2. Please, tell me all the sigh and symptoms of malaria that you know.