

**MOTHERS' PERCEPTION AND MANAGEMENT OF MALARIA AMONG
YOUNG CHILDREN IN NYANG'OMA AREA OF BONDO DISTRICT. //**

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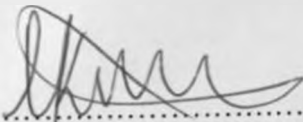
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DECLARATION

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


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DEDICATION

Dedicated to my father Justus Nyaga Mutunga and my mother Ann Karigi Nyaga for all their sacrifices and encouragement. You have taught me the value of hard and honest work. Thank you.

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LIST OF ABBREVIATIONS

CDC	Center for Disease Control
CHW	Community Health Worker
DBL	Danish Bilharziasis Laboratory
EM	Explanatory Model
FGD	Focus Group Discussion
GoK	Government of Kenya
IAS	Institute of African Studies
JKML	Jomo Kenyatta Memorial Library
KEDHAR	Kenya Danish Health Research Project
KEMRI	Kenya Medical Research Institute
MoH	Ministry of Health
NGO	Non-Governmental Organization
OTCD	Over-the-counter drugs
RoK	Republic of Kenya
RTI	Respiratory Track Infection
SP	Sulfadoxine or Sulfalene/Pyrimethamine
SPSS	Statistical Package for Social Sciences
TBA	Traditional Birth Attendant
UNICEF	United Nations Children Fund
WHO	World Health Organization

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ABSTRACT

The control of malaria remains one of the greatest public health challenges, particularly, as we are still waiting for an efficacious and applicable vaccine. Current statistics show that over one million deaths (mostly in children) occur each year with another over 200 million being exposed to infective bites. Notably, 90% of the world's malaria burden is found in sub-Saharan Africa. Over 75% of malaria mortality is experienced among children aged 0-4 years. Consequently, *Plasmodium falciparum* is one of the most significant pathogens encountered by the African child.

This study set out to investigate the perceptions of malaria among mothers of young children in Nyang'oma and how these perceptions influenced the ways in which malaria is managed by these mothers. In regard to management of malaria, the study sought to establish the treatment options employed by the mothers to cure malaria in their children.

Data collection was carried out using a combination of qualitative and quantitative techniques. Qualitative methods included Focus Group Discussions (FGDs), in-depth open-ended interviews, direct observation, narratives, key informant interviews and use of secondary data. Quantitative method involved use of a standardised survey questionnaire.

Malaria means various illnesses and diseases for the mothers in Nyang'oma. This conclusion came up as a result of respondents describing malaria in terms such as "strong malaria", "malaria of meningitis", "malaria of typhoid" and "malaria". Symptoms given for various "malarias" also differed with some agreeing with what is biomedically recognized as malaria and most being a mixture of symptoms of what is biomedically defined as malaria and other diseases. Malaria was generally said to be just "malaria" or "strong malaria". What was described as "malaria" was illness with fever and usually accompanied by headache, vomiting and loss of appetite whereas "strong malaria" had

other symptoms in addition to those of “malaria”. These symptoms include fainting and “madness”.

Agents perceived to cause malaria are varied and diverse. Causes of malaria varied from human, supernatural, to natural. A large proportion of the respondents attributed malaria to the mosquito in addition to other agents mentioned above. Causes of strong malaria were mostly associated with supernatural forces (ancestors, evil spirits - “nyawawa” and god), a worm in the head and witchcraft.

Various management strategies were employed to counter perceived malaria. These involved the use of biomedical or ethnomedical resources or a combination of both. Biomedical remedies employed involve the use of over-the-counter drugs (OTCDs), injectionists or modern health facilities. Ethnomedical resources include use of herbs, preparations, charms or magico-religious rituals.

A number of factors affect the management strategies employed to counter malaria. These factors include the cost of treatment, distance to health facilities, availability of transport means, religion, intrahousehold gender relations and perceived cause, symptoms and severity of the disease.

Following the findings, the following recommendations are made and will help in addressing various issues to improve various aspects regarding malaria. The recommendations are: the need for health education (which pays special attention to the participation of mothers of young children) on malaria touching on causes, prevention, symptoms, the adverse effects and proper treatment. There is also need for scientific studies on the herbs used for treatment and prevention of malaria so that their safety and efficacy can be established. More health facilities are needed in Nyang’oma since the two existing ones are insufficient, in addition to one of them being unaffordable for the residents of Nyang’oma.

CHAPTER ONE

BACKGROUND INFORMATION

1.0 INTRODUCTION

The control of malaria remains one of the greatest public health challenges, particularly, as we are still waiting for an efficacious and applicable vaccine (Tanner et al. 1996; Targett 1990). Moreover, some of the established tools such as the anti-malaria drugs and insecticides are showing reduced efficacy in most endemic areas owing to the development of resistance among parasites. Under stable transmission conditions common to most of sub-Saharan Africa, over 75% of malaria mortality is experienced among children aged 0-4 years (Brooker et al. 2000). Consequently, *Plasmodium falciparum* is one of the most significant pathogens encountered by the African child. Under conditions of stable transmission such as those found in Bondo District, the age-specific risk of disease and death is shifted towards pre-school children. Available evidence suggests that across a broad spectrum of stable transmission conditions malaria specific mortality is 1.22 per 1000 children aged 5-9 years per annum. The risks of mortality are 7-20 times higher among pre-school children compared to children of school age (Brooker et al. 2000). Current statistics show that over one million deaths (mostly in children) occur each year with another over 200 million being exposed to infective bites (Snow et al. 1999). The global impact of malaria is estimated at 35 million DALYs (disability adjusted life-years) (World Bank 1993, cited in Vlassof and Tanner 1997), i.e., an annual loss of 35 million future life years due to premature mortality and disability. Notably, 90% of the world's malaria burden is found in sub-Saharan Africa.

In Kenya, it is estimated that over 30% of Out Patient Department attendance is done by malaria patients. This puts a huge burden on health resources in the country. In 1999, responding to increased malaria problem in the country, the government changed its policy towards malaria. Sulfadoxine or Sulfalene/Pyrimethamine (SP) was introduced as a first line option against malaria in place of the largely ineffective chloroquine (MOH 1999).

It is estimated that over 80% of the malaria cases in endemic areas are managed at home (Breman 2001; Nyamongo 2002). In endemic areas majority of the sufferers are children, who are taken care of by their mothers. Thus, the mothers' perceptions and management of malaria at once become of interest to malaria researchers. The importance of social, cultural and economic factors in malaria control for successful treatment and health promotion interventions has been emphasized and illustrated frequently (Agyepong 1992b; Agyepong et al. 1995; Brooker et al. 2000; Gomes 1993; McCombie 1996). The key to effective malaria control and management is early detection and treatment, and an understanding of the health and help-seeking behaviour of a population in relation to the various health service options (including traditional healers, governmental and non-governmental organizations and private providers) as well as the predisposing, enabling and provider factors in any given setting (Vlassof and Tanner 1997). The importance of social, cultural and economic factors is crucial in understanding the management strategies that mothers employ to counter malaria in their young children. This is because perceptions of any illness as well as the actions taken with regard to treatment are influenced by these factors (i.e., social, cultural and economic) (Agyepong 1992b). This is why it is important to investigate the mothers' perceptions of malaria and how these perceptions influence management of malaria in Nyang'oma area, Bondo District.

1.1 STATEMENT OF THE PROBLEM

Bondo District is an area of stable malaria transmission. Malaria is a major cause of morbidity and mortality in the area. Owing to recent increases in resistance of malaria parasites and vectors to drugs and insecticides, malaria cases are on the increase in endemic areas in general and Bondo District in particular. This implies that despite the fact that malaria is both preventable and curable, its prevalence among households in general and children in particular, in Bondo District is unsubdued. Given that women and especially mothers are the central agents and key participants in health care for children in their households, their health actions are likely to have a bearing on the incidence and prevalence of malaria in their respective households. Where the actions are inappropriate,

the incidence and prevalence rates may be sustained often leading to morbidity and mortality. The reverse may be true where the actions are appropriate.

Mothers' ability to take appropriate health action relevant for the management of malaria episodes may be influenced by their perceptions of the disease. For instance, mothers who perceive malaria as less dangerous could delay in taking any action (appropriate or inappropriate) (see Molyneux 1993). Other factors that are likely to influence mothers' ability to manage a malaria episode include low literacy levels, inadequate resources and unfavourable gender relations within households among other factors. This study endeavoured to establish the reasons thereof by seeking to provide answers to the following questions:

- i) How do the mothers of young children in Nyang'oma perceive malaria?
- ii) How do the mothers' perceptions about malaria in their young children influence health-seeking behaviour for these children?
- iii) What health care options do the mothers utilise in the management of malaria among their children?

1.2 OBJECTIVES OF THE STUDY

1.2.1 Broad objective

To investigate and describe mothers' perceptions and management of malaria among young children in Nyang'oma area of Bondo District.

1.2.2 Specific Objectives

- i) To explore mothers' perceptions of malaria.
- ii) To examine how mothers' perceptions of malaria in their young children influence their health - seeking behaviour for these children.
- iii) To establish the health care options utilised by mothers of young children in the management of malaria.

1.3 JUSTIFICATION OF THE STUDY

The increasing trends in malaria prevalence in Kenya and in the Bondo District in particular, suggests the need for more research on the social and behavioural aspects of the disease control and management. This study is one of the attempts that have been made with the aim of generating data that could be used to influence malaria control strategies at household level in rural endemic settings in general and Nyang'oma Division in particular.

Recent data shows that malaria ranks first among the 10 most common diseases in Bondo District with an infection prevalence of 70 to 90% in young children (Wachira 2001), it is the leading cause of morbidity and mortality in the district. A deeper analysis of the social and behavioural aspects of the disease control and management in the district would help shed light into this phenomena, which is what this study aims at doing.

The study is one of the few attempts made so far with the aim of gaining a firm understanding of the social and behavioural components of malaria control from the mothers' point of view. Such particularistic focus on mothers' perceptions and management of malaria among their children is deemed important because of various reasons. A major reason is that women (usually mothers or grandmothers) are the informal providers of healthcare in the household and especially for the young children (Helman, 1997:65; Sivard 1985; Vlassof and Tanner 1997). It is they who are the family's first line of defence against any sickness. It is, therefore, necessary to gain a firm understanding of the mothers' perceptions and management of malaria to understand why malaria prevalence is high in Nyang'oma Division. In addition, due to this important role of health provision to the household and especially young children, women are now being increasingly recognised as important resources for community health programmes with regard to implementation of intervention programmes and especially in designing of health messages, and promoting usage of appropriate malaria control technologies (Bendler and Cantlay 1983; Ghebreyesus 1995; Targett 1990).

An analysis done by Vlassof and Tanner (1997) shows that irrespective of the malaria endemicity, women and children represent high risk groups in malaria infection and key players in malaria control. While their position as high risk population, target groups and beneficiaries of control is well recognised in some quarters, their role in malaria control activities themselves has been neglected. It follows that women must be considered not only as targets in the design of control strategies but that the social, cultural and economic factors that define the gender context in which they live must also be recognised. This study set out to fill this gap in research.

Young children aged 0-5 years are at greatest risk of malaria infection in areas of both stable and unstable transmission. They were, therefore, chosen as subject of study for this reason. In addition, they are fully under the care of their mothers who are the first people to take any action (appropriate or inappropriate) when their children are sick. The way these mothers perceive and manage malaria episodes among this group of individuals is, therefore, of ultimate importance for researchers interested in malaria cases among young children.

The data generated from this study will be of use in malaria control among households in rural endemic settings in Kenya. This is because the study aims at documenting enhancing and hindering factors of malaria control. In addition, the study will further enrich the studies already conducted in Nyang'oma area by the Institute of African Studies (IAS).

Planners, opinion leaders, and other interested parties can use the information collected by this study when it comes to drawing up health education programmes aimed at promoting the role of women as principle caretakers of the family and community. The study should also form a valuable basis and reference for similar future studies either in the same area or elsewhere where malaria is a major cause of mortality and morbidity.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This section covers the literature review, the theoretical framework and the operational definitions of terms. A review of the relevant literature will focus on: the nature of malaria, the perception and management of malaria by lay people, health care seeking behaviour for malaria, and gender variances in malaria endemicity and management.

2.1. LITERATURE REVIEW

2.1.1. The Nature of Malaria

Malaria 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 about 12-28 days before the onset of the malaria fever depending on the species of the parasite (Bruce-Chwatt 1986). Of the more than 200 species of *Plasmodium* that have been identified, only four recognized species of *Plasmodium* protozoa have been shown to infect humans. These are: *Plasmodium falciparum*, *Plasmodium ovale*, *Plasmodium vivax* and *Plasmodium malariae*. *Plasmodium falciparum* is the most fatal of malaria causing *plasmodium* and accounts for over 90% of all malaria cases all over the world (WHO 1998). It is lethal because parasites clot together in the body capillaries, and in this way, block oxygen and blood supply to vital body organs such as the brain, lungs and the kidney. The infections of this parasite often result in disastrous medical conditions such as cerebral malaria, anaemia, kidney failure, and ultimately, death (WHO 1997a).

While death results most often from cerebral dysfunction, severe shock, secondary bacterial septicaemia and hypoglycaemia may also contribute to death (Burgess 1993). Other effects of severe *falciparum* malaria include stillbirths,

miscarriages among expectant mothers, low birth weight infants (Bruce-Chwatt 1986) and serious neurological disabilities in young children.

Plasmodium vivax causes tertian malaria, which is a seldom fatal form of malaria (Harrison 1978). *Plasmodium malariae* causes quartan malaria, a form of disease that is generally mild but often extraordinarily tenacious. Apart from causing recurrent fever (typically every third day), this parasite can also cause severe renal glomerular damage in young children, resulting in massive urinary protein loss and generalized oedema (Burgess and Cowan 1993). *Plasmodium ovale* malaria parasite is similar to the *vivax* in appearance but causes a kind of malaria that has symptoms of *plasmodium malariae* but whose development is similar to the *vivax* (Dutt and Dutta 1978).

Although all the four variants of malaria are prevalent in Kenya, with the degree of endemicity varying geographically and ecologically, *falciparum* malaria is by far the most frequent and dangerous. It accounts for 80-90% of malaria cases occurring in Kenya, while tertian malaria is rare and only occasionally reported from coastal areas. *Plasmodium malariae* and *Plasmodium ovale* account for 10% and 5% malaria cases in Kenya, respectively (MOH 1998; Okeyo 1994).

There are about 2500 types of mosquitoes. Of these, 380 species are anopheline mosquitoes. Of the 380 species, only about 60 species are of importance in terms of malaria transmission (WHO 1992b). However, four species of anopheles mosquitoes are known to transmit malaria parasite and disease to man. These are *Anopheles gambiae*, *A.funestus*, *A.melas* and *A.arabiencis*. *A.gambiae* and *A.funestus* are the main transmitters of malaria in Kenya (Okeyo 1994; GOK and UNICEF 1991). Malaria parasites and disease can, however, be transmitted to man by other means apart from the natural transmission through the mosquitoes. This can occur through wounds when handling infected blood (Burne 1970), through blood transfusions (Burne 1970; Shute 1960) and mechanically through syringes or needles or from the mother to the foetus through infection of the placenta (Jenny 1996).

Naturally, the process of malaria transmission starts when a parasite-infected mosquito bites a healthy person during a blood meal (WHO 1997a). In the process of feeding the infected mosquito injects the parasites through the saliva into the blood stream that in turn carries them into the liver. In the liver, the process of parasite development and disease begins. The parasites in the liver then multiply and grow from sporozoites into merozoites, which then burst into the blood stream again. Upon re-entry into the bloodstream, they attack and penetrate the red blood cells where they multiply again progressively breaking down the affected cells, thereby causing disease (WHO 1992b).

Malaria presents normally with chills, fever, shivering, headaches, joint pains and profuse sweating. In severe instances, the patient has convulsions, which are caused by the malaria parasite blocking oxygen supply to the brain. This is the cause of cerebral malaria, which may present additional neurological symptoms (Esmail 1999). In addition to the above symptoms, the patient may vomit, feel dizzy, nauseated and suffer from anorexia. If the parasites continue unabated, they destroy many red blood cells, leading to malaria-related anaemia. However, it is worth noting that malaria is a curable disease if promptly and adequately treated (WHO 1998).

2.1.2 Perception and management of malaria by lay people

Perceptions are people's worldviews, knowledge and meanings that they attach to phenomena and the definitions they offer (Brown 1989). The perception of phenomena by a person is a sort of social judgement about that phenomenon. This conceptualisation implies that perceptions are learned and, therefore, are a product of social interaction (Hare 1996). The perceptions one has about a situation or phenomena normally guide the actions one takes regarding the situation. This, therefore, implies that the perception people have about malaria, have a direct bearing on what they do to deal with it (King 1962; Knutson 1965).

Research conducted on malaria has adopted a biomedical paradigm on the aetiology of the disease ignoring social, cultural, political and economic factors to be of

any influence on the cause and nature of the disease. In the recent past, however, challenges to the biomedical paradigm have come up (Green 1999). Sociologists, anthropologists, economists and medical geographers have insisted that for proper management of disease, it must be seen within the framework of a health care system. A health care system integrates the health-related components of society. These include patterns of belief about causes of illness, norms governing choice and evaluation of treatment, socially legitimate status, roles, power, relationships, interactions, settings and institutions (Kleinman, 1980:24). It is within the health care system that disease is managed in society.

Among many African societies, there are differences in disease aetiology. A disease such as malaria, although portraying an apparent naturalistic aetiology may sometimes assume a socio-cultural interpretation. For example, a study conducted at the Kenyan coast and another in Southern Tanzania showed that mothers regard cerebral malaria to be the result of invasion by evil spirits that enter the brain to infect the victim. They were therefore “treated effectively” according to these people by a traditional healer (Mwenesi 1992; Tanner et al. 1996). The Abagusii of Western Kenya associate cerebral malaria with social problems whereby the victim gets under stress hence suffering from mental instability and also to lack of a high fever patient to diarrhoea, thus, the fever rising to the brain through the spinal chord (Nyamongo 2000).

A comparative study of the bio-cultural perception of malaria and clinical evidence of the disease conducted among mothers and children in Liberia and revealed that there is a significant difference between the social and biomedical model of the perception of malaria (Jackson 1985). This study showed that without a cultural context, distinguishing between disease and illness is frequently problematic. Malaria illness, according to this study, referred to ethno medical perceptions of malaria. These perceptions are expressed by specific symptomatology which have both biological and socio-cultural dimensions. Malaria disease, on the other hand, referred to the parasitological confirmation of plasmodium protozoa in the red blood cells of affected individuals. It, therefore, follows that understanding of the cultural and biological

parameters of symptomatology is crucial (Jackson 1985; Khayundi 2000). Without a cultural context, distinguishing between disease and illness is frequently problematic and, therefore, effective management is impossible.

A number of studies show that African populations do not perceive malaria as a health problem because they do not think that it can lead to death. Prothero (1965) argues that malaria is generally viewed as such a common disease that people scarcely recognize it as deadly. Kloos (1995:1503) notes that “malaria, a disease associated with high mortality and morbidity, is regarded by many rural people in Third World countries as an inevitable part of their lives and less important than poverty, hunger, and lack of basic services such as roads, electricity, roads and employment.” Etkin (1991) also points out that in some hyperendemic areas in Africa, malaria is so common that people perceive it as a “norm” that does not warrant expenditure of their limited resources. Cockerham (1992) emphasizes Etkin’s point by highlighting that diseases people perceive as common are usually defined by them as routine illnesses such that they do not bother to prevent or treat them adequately. In Kisii, people do not believe that a person can die of malaria and hence transfer the blame to a human being, especially a witch (Nyamongo 2002).

Some people in endemic areas also perceive malaria as a mild or less serious disease. A study by Steketee et al. (1994) in Malawi, found that although the respondents perceived malaria as a health problem, they did not perceive it as a serious disease. As a result, they failed to take malaria as a health priority and did little to control it. Molyneux (1993) also found out that mothers in Malawi perceived malaria to be less serious if a child does not have convulsions. This is indicated by the way management is carried out. Children were taken to hospital within three hours if they had convulsions, whereas it took mothers 48 hours to take a child to hospital in case he or she did not experience convulsions.

The perceptual knowledge on the various aspects of malaria such as its causation, prevention, mode and agents of transmission, curability, treatment, symptomatology and

consequences among other aspects, act either as enhancing or hindering factors in malaria control, as noted by Agyepong (1992a), Munguti (1998), Mwenesi (1992), Nyamongo (1999, 2000, 2002), Tanner et al. (1996) and Yeneneh (1991). A study by Munguti (1998) in Marigat division of Baringo district, for instance, showed that the Ilchamus community believed malaria to have several causes such as mosquitoes, fresh milk and dirty water. For prevention, milk and water were avoided. As a result, they did very little to prevent and treat malaria infections effectively. The Abagusii recognize causes of malaria as the mosquito, sugary foods and actions of ill intentioned individuals. For treatment, sugary foods were avoided by the malaria patient and the use of emetics to expel the sugars was used (Nyamongo 2000). Other studies, for instance, by Abdullah (1984), and Lipowsky et al. (1991), indicate similar situations where people's perceptual knowledge and definition about malaria directly influence their actual behaviour in prevention and treatment of the disease.

The lay perception of disease, therefore, greatly influences the management strategies that the people take when the disease occurs. This study will, therefore, attempt to discover the mothers' perceptions of malaria, which will help understand how they (perceptions) hinder their effective control and management of the disease among their children in Nyang'oma Division of Bondo District.

2.1.3 Healthcare seeking behaviour for malaria

When confronted with illness, the sick and those responsible for their welfare have an obligation to do something positive towards finding some cure since illness, whatever its magnitude is an undesirable phenomena. Recent studies on malaria, for example, by Abdullah (1984), Munguti (1998) and Njoka (1995), however, suggest that when people are confronted with malaria attacks they do not necessarily show similar response patterns. Various factors determine health-care seeking behaviours. According to Nyamongo (1998) such factors include: Illness characteristics and perceived seriousness, lay people's knowledge and categorization of the illness, expenses that are likely to be incurred, distance from health care facility, the social network of the patient and the care-seekers, and religion.

In addition to the above factors, McCombie (1996) in her review of recent research on treatment seeking for malaria, cited access to services, diseases severity, attitude towards providers and beliefs about the diseases as the most important determinants of healthcare seeking among malaria patients.

There is need to look into not only the biomedical explanations of malaria management but also it is necessary to take into account the social, cultural and economic context of infection and disease. The importance of social, cultural and economic factors is crucial in understanding the management strategies that the mothers employ to counter the disease. This is because perceptions of illness as well as the actions taken with regard to treatment are socially constructed. This can mean that the measured risk of disease and the level and distribution of perceived concern do not directly translate into effective health seeking behaviour. This study will seek to find out the local perceptions about malaria which inhibit the disease's proper management in Nyang'oma area.

Evidence from several countries indicate that self-medication accounts for as much as half of all consumption of malaria treatment especially in rural areas. A large majority of malaria episodes in children are first treated at home using shop-bought drugs. However, the majority of such home treatments are inappropriate in terms of the drugs used, the dosages or both (Marsh et al. 1999; Mwenesi et al. 1995). Reports from various countries show that general stores or market sellers may sell as much or possibly more chloroquine than is distributed through the health services. In Pinkine, a suburb of Dakar, Senegal, private street traders account for 53% of drugs sold, in Zimbabwe private traders account for 43%, in Saradidi, Kenya, 53% of people in the area bought anti-malaria drugs from shops, and in Mara, Tanzania, 72% of the people got chloroquine from sources other than the official chemoprophylaxis programme (Targett 1990). In Gusii, Kenya more than 80% bought over the counter drugs (Nyamongo 1999). In Togo, 83% of children with fever had been treated at home with chloroquine; two-thirds of the mothers had obtained the drug from private sellers. Various reasons were given for the utilization of market sellers. Some of the reasons include lack of queues while buying the drug, convenient late hours of the shopkeepers, proximity in distance of shopkeepers,

lack of drugs in hospitals and dispensaries, advice was given by shopkeepers on dosage, and that the shopkeepers (market sellers) gave discount on bulky buying among other factors (Targett 1990).

People often have stocks of drugs in their homes. Haak (1988) found that many Brazilian homes had various drugs some of which had been prescribed by a physician and many of which were past the expiry date and had deteriorated. In Tanzania, people liked to keep a stock of antimalarials which were shared by all with fever. Among the Abagusii, incomplete doses are bought or pills are saved for later use and dosages may be divided in homes having more than one patient (Nyamongo 1999).

When a person in a family has a fever, and especially a child, a quick decision has to be made. The mother knowing only that the child has fever and that malaria is common, she has to decide on the basis of inadequate information, common sense and the local beliefs about health and decide what course of action to take. She also has to take into account the options open to her as far as distance to travel, cash required, care of others children, among other things are concerned. Not surprisingly, in many areas where malaria is endemic the mother takes the risk that the situation will resolve it self and treats the child herself or with local resources. This will probably mean self-medication with drugs already in the home or with drugs purchased locally on the market. Only when she sees that home treatment is not working will she consider taking the child for professional care. At this point, she has to organize care for other treatment and this may take a day or two, to organize a trip to the health facility. This anecdote gives an indication why self-medication is so widespread as the first line sought as health seeking behaviour for malaria among households (Targett 1990).

2.1.4. Gender variances in malaria endemicity and treatment organization.

The recent introduction of well validated guidelines for the rapid assessment of social, economic and cultural aspects of malaria (Agyepong et al. 1995) represents an important contribution in describing tools to collect information on issues relating to community based malaria control and its adaptation to distinct sociological settings. The

methods described assume, but do not clearly spell out a number of assumptions regarding gender relations in the community, such as the fact that women are the main caregivers in the family and that health information should be focused on women and mothers. An understanding of gender differences of malaria, and of gender relations within the household is key to ensuring effective malaria control both at the household and community level (Vlassoff and Tanner 1997).

There are epidemiological conditions that are particularly relevant to disease control at the community and household levels. A comprehensive epidemiological assessment of distribution of malaria in a community implies a need to look at health information system that can adequately provide health and planning needs and also include health behaviour and health management information among various members of society. While looking at malaria as a health problem, one should take into account the epidemiological perspective by calling for quantitative or semi-quantitative assessments of the prevalence and distribution of knowledge of malaria as a disease and the perception of malaria as a problem affecting individuals and communities. These need to be complemented by an understanding of the socio-cultural context, especially in relation to gender dynamics in any endemic area.

Studies have shown that in an area of low endemicity where the population has not developed some degree of immunity, the risks of infection, disease, severe disease and possible, death are directly related to exposure (Molyneux 1993). Any one exposed may develop disease. Clearly even communities of low endemicity may show a high degree of immunity with regard to the distribution of malaria morbidity and death. For instance, women and children often face a higher risk of increased morbidity and mortality because of their lack of access to effective treatment and often, lack of ready cash to purchase preventive tools such as bed nets or mosquito coils or visits to health services (Agyepong 1992a; Ettlting et al. 1989 and Vlassoff and Tanner 1997). Low social status can also amplify these heterogeneities. It follows that the major risk and burden of disease are concentrated in the poorest segments of a population, often of low social status, that has a high proportion of women and children.

The differentials in malaria risks and levels of knowledge of risks and disease burden are even more marked in areas of high endemicity, where children are those suffering most, and mothers who are caretakers, are constantly confronted with disease and death and forced to rely on whatever methods of prevention and treatment are available to them. The combination of these epidemiological, social and economic risk differentials means that children and women in areas of high malaria transmission are inevitably the most disadvantaged population sector (Vlassof and Tanner 1997). In addition, it is well documented that pregnancy affects the risk of malaria infection by altering temporarily the immune system (Rueben 1993; Menendez 1995). This calls for gender sensitive approach to prevention and control of malaria.

A gender perspective can affect malaria infection, disease and health seeking behaviour at many levels. Virtually all-key elements of the gender framework-including personal factors, social and reproductive activities, and economic considerations are relevant to malaria infection, disease and treatment. Early recognition of symptoms and signs leading to a decision to seek effective treatment is dependent on all gender variables, including the responsibility and power to make decisions, as well as access to resources. The semi-quantitative assessment of the magnitude of each key factor in relation to malaria infection and disease shows that each factor may influence the probability of an individual receiving effective treatment.

The 1993 Global Conference on Malaria laid emphasis on tailoring malaria control and management to the local situation, i.e., considering the social, ecological and political context of a given area and its overall health and development plans. In this respect, the household was identified and promoted as a promising and main target of the interventions (WHO 1993, cited in Target1995). However, attention was not focused on mothers who are the principal health providers in the household and their children who are the main sufferers of malaria. That is why I propose to look at mothers' perceptions and management of malaria among their children to fill this gap.

Recognition of malaria based on local concepts forms the framework through which people consider seeking help and care. It is at this stage that decision-making

within the household occurs, and it is here that gender relations play a crucial role. Although women are usually the centre of reference to illness within the household, their status within the household affects their autonomy and decision-making power with respect to health. Their freedom to consult health services may be curtailed by others within the household such as mothers-in-law or husbands (Mwenesi 1992) or because of cultural norms restricting their movements. Therefore, gender power relationships within the household may inhibit their ability to seek care or have the necessary access to information and resources (Vlassoff and Tanner 1997). This study will attempt to discover the gender variables which hinder their effective control and management of malaria within the household, especially among young children.

Inevitably, women, especially mothers of young children carry much of the burden of added responsibilities and consequently the impact of illness of other household members. This is because the provision of extra service during times of family emergency is part of the traditional role expectation of women. As patients, women's economic activities may place them at risk of infection. For instance, forest work such as collecting firewood may expose them to malaria vectors. However, women more often than not are at no greater risk than men within the context of their economic activities, but because much of women's work is within the household, their risk of infection and even the prevalence of infection may be underestimated. In addition, when women themselves are patients, their productive and reproductive work is unlikely to be fully replaced by other family members (Rathgeber and Vlassof 1993). This may result in their reluctance or inability to fully adopt a sick role, and thus fail to seek medical attention.

Poor segments of society which are composed mainly of women and their children find themselves with less access to health care today than ever before especially, with the introduction of cost sharing in the health sector. Longer waits at clinics have seriously eroded women's already limited time for seeking medical attention for their children and themselves. Consequently, traditional healers are more likely to be consulted for treatment because they may accept payment in kind in addition to being within the vicinity of the patient whereas the formal health facility may be miles away (Vlassof and Tanner 1997).

2.2 THEORETICAL FRAMEWORK

This study was guided by the Explanatory Model (EM). The purpose is to describe, explain and predict relationships between variables affecting mothers' perceptions and management of malaria among young children in their households.

2.2.1 The Explanatory Model (EM)

Simply stated, Explanatory Model refers to the notions about an episode of illness and treatment that is employed by all those engaged in the clinical process. This model was suggested by Kleinman as a useful way of looking at the process by which illness is patterned, interpreted and treated (Kleinman1980). EM offers explanations of sickness and treatment, and guides choices among available therapies and therapists and helps patients to cast personal and social meanings to the experience of sickness. EMs particularly provide explanations for five aspects of illness, namely the aetiology, symptoms, physiological changes, natural history and treatment of the illness. On this basis, patients choose what seems to be an appropriate source of advice and treatment for the condition Helman (1997:84).

Lay explanatory models are heavily influenced by personality and cultural factors. EMs are used by individuals to explain, organize and manage particular episodes of impaired well-being. They can only be fully understood by examining the specific context in which they are employed. Such context may include the social and economic organisation and the dominant ideology (religion) of the patient's society. For instance, assessment of how serious an illness is and how it will affect their life may depend not only on their explanation of the origin of their condition but also on other factors such as type of helper actually available, whether the patient can afford health care among other factors. The social and economic context will also influence the types of treatment that patients can afford for their illness and whether this takes place in the popular, folk or professional sectors.

The gender, age and stage of the life cycle of different individuals also greatly influence the Explanatory Models they employ.

2.2.2 Relevance of explanatory model to the study

The Explanatory Model emerges from the above description as a one large portion of a general theory of human behaviour and conduct that explains why people view illness the way they do and why they seek health care where they do. As such, this model readily suits this study because it can help explain why mothers perceive febrile illness among their children the way they do in addition to explaining why they seek health care where they do.

This model is holistic in the sense that it puts various factors that are likely to influence perception and management of disease into account. Such factors include personal, social, cultural, economic and ideological factors. This, therefore, means that EM is able to explain human behaviour in relation to perception and management of disease.

Most important about EM is that it considers culture as a major determinant of human thoughts and behaviour. Because culture is a social heritage and because it is shared by members of a community, it is logical to say that the manner in which Nyang'oma mothers perceive malaria among their children and how they organise themselves towards treatment are based on and shaped by their cultural inhibitions. The fact that people's perceptions, social constructions and patterns of response to illness are culturally constructed and exert considerable influence on disease occurrence and management are evidently clear. To the extent that the propositions of EM are true, it emerges and ably fits this study as a fruitful model that is useful and relevant in the tasks of interpreting, explaining, predicting, and analysing the perceptions and management of malaria among Nyang'oma mothers.

2.3 DEFINITION OF TERMS

Perception - The respondent's views, knowledge and understanding of malaria. Mothers' perceptions of malaria were measured by looking at their understanding of key aspects of the disease. These aspects included; its severity, curability, symptomatology,

causation, incidence, mode of transmission, preventability, and possible consequence on the victim.

Management of malaria - These are the procedures, techniques, skills, patterns and resources that the mothers use to deal with malaria-related illnesses. This was measured by inquiring about signs recognised as malaria, strategies (activities, techniques and therapeutic resources) used in treatment, activities lay social support system do, referral behaviour for uncured malaria cases and preventive actions taken following successful treatment.

Lay women - referred to any woman irrespective of education or social status who lacks a professional training in biomedicine.

Household - This term was used to denote any living unit in the study community that comprises persons who live together in the same house or compound and who in some way are related and answerable to the head of the particular living unit.

Malaria endemicity - means the degree of natural transmission of malaria within a given area. There are four areas of endemicity in malaria: holoendemic areas are those with very high annual amount of malaria transmission; mesoendemic areas are those with moderate annual amount of transmission, hypoendemic areas are those with low malaria transmission and malaria-free zones are those that no malaria transmission occurs.

Intrahousehold gender relations - refers to the various and varying types of relations between male and female members (mainly spouses) of households in the study area. This variable was used to illuminate on the gender factor on women's health seeking behaviour for management and control of malaria. It was sought by eliciting respondents' opinion on the following household issues which serve as the main variable indicators: The nature of personal relationships between spouses, decision-making processes within households especially those related to children's health care and malaria control and management, men's and women's relative access to and control over vital

resources relevant for malaria control, and the allocation and performance of health and malaria related tasks along gender lines.

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CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter covers the description of the study site, the study location and the population. The problems encountered during the course of the study are also included.

3.1 RESEARCH SITE

Bondo district, in which Nyang'oma Division falls, is found in Nyanza province. Nyang'oma Division lies in the southern most tip of the District. Bondo District is bordered by Siaya District to the North, Busia District to the West, Kisumu District to the East, Homabay, Rachuonyo and Suba Districts across the lake on the South- East and South. The District lies along the shores of Lake Victoria and covers an area of 1,069 square kilometers (ROK 2002). (See Appendix V for map of the research site).

It is important to rationalize the choice of the present site for the study. Previous population census in Kenya indicate that infant mortality levels are highest in areas towards the Lake Basin and the Indian Ocean Coast (Kibet, 1982). Mortality rates are highest in Coast and Nyanza Provinces of Kenya. In Nyanza, for instance, Siaya, Bondo, Kisumu and Rachuonyo Districts have the highest mortality levels. These high mortality levels have been attributed to a number of factors the most notable being malaria.

3.1.1 Location

Nyang'oma Division, the proposed study site is found in the southern most tip of Bondo District. Bondo District is found in Nyanza Province of Western Kenya. It is bordered by Siaya District to the North, Busia District to the West, Kisumu District to the East and Homa Bay District to the South. The District lies along the shores of Lake Victoria and covers an area of 1,069 square kilometers (Nyambedha 2000; ROK 1994).

3.1.2 Topography, climate and soils

Nyang'oma Division lies within the Lake Victoria basin. The Division has expansive plains with isolated hills such as Abiro hill, and Sirafuongo hill. The Division

experiences an equatorial climate with strong influence from local relief and Lake Victoria. The division is mostly dry due to its low altitude and closeness to the Lakeshore. The area experiences low rainfall of between 996 and 1106 per annum. The rainfall type is convectional. The soil type in Nyang'oma Division is of vertisol and verlic sub-groups of phaezons and luvisole, commonly known as black cotton soils (ROK 1994, 2002).

3.1.3 Socio-economic activities

Most people grow crops such as maize, beans, cassava and sorghum which are basically for subsistence, but which are sometimes sold to small scale businessmen and women. People engage in small-scale gold mining as well. They also fish at Wagusu beach and other nearby beaches, primarily to supplement their subsistence activities, and for commercial purposes. Other commercial activities within the study area include, trading in mining and fishing products as well as the provision of services such as *Boda Boda*, a transport service based on bicycles (Nyambedha 2000).

Livestock rearing is done. The animals commonly reared include cattle, sheep, goats and donkeys. The donkeys are used for carrying luggage and water from the lake during times of shortage, while cattle, goats and sheep are reared for milk, meat, ghee and dung for smearing the floors of houses and as manure for increasing soil fertility. The livestock is also used for paying bride-wealth. Employment activities within the study area are mostly found in neighbouring boarding schools and the local catholic mission (Nyambedha 2000).

3.1.4 Population

The majority of the inhabitants of Nyang'oma area are Luo. According to the 1999 Population and Housing Census, Bondo District in which Nyang'oma Division falls had a population of 237,780. This population is projected to rise to 248, 003 by the year 2002, and to 273,848 by 2008 assuming an intercensal growth rate of 1.79% per annum between 1989 and 1999 (ROK 2002). This could be attributed to the fact that Bondo District is close to fishing villages and is likely to attract people from other areas. The

population density of Nyang'oma Division is 186 persons per square kilometer. Nyang'oma Division has the lowest population density in the district.

3.1.5 Health

Nyang'oma Division lacks adequate water resources which in turn brings along poor health situation. The bad state of health is made worse by lack of adequate health facilities in this area. In Nyang'oma Division, there is Nyang'oma mission clinic. This clinic is not so popular with the local people due to its high charges for treatment (Nyambedha 2000). There is one government clinic at Nango but it frequently lacks drugs. There is also Bondo District Hospital which is 12kms away from Nyang'oma. This makes it inaccessible to residents of Nyang'oma because the transport network is poor. With respect to health services utilization, it is noteworthy that a significant proportion of ailments are managed at home either through the use of herbs, over-the-counter drugs (OTCDs), prayers or by traditional healers.

The poor state of health in Bondo District can be interpreted through the existing infant and early childhood mortality levels. These levels are among the highest in the country (UNICEF and Kenya 1984). Mortality rates based on returns from formal health facilities indicate that most of the health problems affecting the district are preventable since most of them are related to poor sanitation, lack of safe drinking water, and lack of awareness about good health. Major health problems are water- borne or related diseases such as malaria, schistosomiasis and diarrhoeal diseases, malnutrition, immunizable diseases, low family planning utilization and maternal health. More recently, the emergence and significance of HIV/AIDS infection has further worsened the health status (Ministry of Finance and Planning 2002).

ENTRY INTO STUDY AREA

The researcher was not familiar with the study area and the residents. Arrangements were, therefore, made by the Danish Bilharziasis Laboratory (DBL) field officer for fulfilment of the necessary protocol. The researcher and field officer travelled to the local chief's office to inform him of the objective of the intended research.

Two field assistants who had been trained on conducting research by the DBL assisted in collecting the necessary data. The field assistants translated the questionnaire, key informant interview guide, in-depth interview guide and narratives guide into dholuo. After this exercise, the researcher enlisted the assistance of the field officer in ensuring that the translations were correct.

The pre-testing of the questionnaire revealed some extreme questions to the research topics. Necessary adjustments were made to the questionnaire prior to embarking on the actual interviewing.

3.2. SAMPLE POPULATION

The study interviewed mothers of children aged five years and less. This group of individuals was chosen purposively because they are more likely to have had a chance of dealing with malaria incidences among the young children in their households. Key informants were also interviewed. They included women group leaders, Community Health Workers (CHWs), traditional healers, Traditional Birth Attendants (TBAs), drug vendors, spiritual healers and health personnel.

3.2.1 Study design

This is a descriptive study, which involved a cross-sectional survey. In-depth interviews were conducted to investigate the perceptions and management of malaria among mothers in Nyang'oma area. Both qualitative and quantitative data was collected through in-depth studies key informants, Focus Group Discussions (FGDs), in-depth open-ended interviews and structured interviews, narratives and direct observation.

3.2.2 Sample size and unit of analysis

A sample of a hundred respondents was drawn for the administration of the standard questionnaire. This sample could be reached within the allocated time and resources. Eight key informants were interviewed and ten FGDs each comprising 8-11 respondents were conducted. Five mothers were requested to narrate their experiences with malaria in their children. In addition, in-depth open-ended interviews were

conducted with twenty mothers. The unit of analysis was mothers of children below five years.

3.2.3 Sample selection

This study interviewed a sample of the population to represent the entire population using purposive sampling procedure. This entailed targeting respondents who were mothers of children of below five years. Respondents were drawn from Nyang'oma area of Nyang'oma Division. One hundred mothers of children aged five years and less were interviewed on various issues relating to perception and management of malaria in their children.

3.3 DATA COLLECTION METHODS

Data collection was carried out using a combination of qualitative and quantitative techniques. Qualitative techniques encourage participation by research subjects while quantitative methods generate data that can be quantified in analysis. Qualitative methods applied included FGDs, in-depth open-ended interviews, direct observation, narratives, key informant interviews and use of secondary data. Quantitative method involved use of a standardized survey questionnaire.

3.3.1 Focus Group Discussions (FGDs)

This was the principal method of gathering information in the community. It systematically provided answers to research questions through unstructured interviews with groups of women. A FGD facilitates the gathering of data within a short period of time and provides a great deal of community experiences and opinions than can be learned from any individual interview. Discussions mainly focused on the perceptions of malaria and management strategies the mothers employ to counter malaria in their children.

Two field assistants facilitated each focus group, one acted as a translator and the other took notes. Discussions were also tape-recorded. Ten focus groups, each with 8-11 participants stratified by age were conducted. This ensured that women of the same age-

group were in the same FGD to ensure they are free to discuss issues raised. A major disadvantage of FGD is that it primarily elicits group norms rather than individual experiences.

3.3.2 Survey techniques

A short questionnaire was used to gather basic demographic and socio-economic information. Other information that was gathered using this method was on gender issues, perceptions and management of malaria. The questionnaire was administered to the mothers who had been recruited for the survey to obtain both quantitative and qualitative data. A standardized questionnaire was administered to the respondents. It contained both open- and closed-ended questions. For open-ended questions, the respondents answered questions asked using their own words. The researcher used this where she required in-depth information on an issue. Closed-ended questions were precise, guided and with specified answers. The questionnaire was designed so as to be relevant to the research question and objectives.

3.3.3 Key informant interviews

A key informant is usually an individual who is knowledgeable in the topic of the researcher's interest. Eight key informants were identified through purposive sampling technique. They included one Community Health Worker (CHW), two women's group leaders, one health care personnel, one drug vendor, one traditional healer, one 'Roho' healer and one TBA

In-depth interviews were carried out with these key informants. These interviews took the form of lengthy informal discussions or conversations lasting between one and half to two hours on the topic of the researcher's concern. The key informants gave qualitative data to fill gaps in knowledge on issues that arose from the field. There was a question guide to facilitate the interviews. The question guide served as a reference to the researcher on the main areas to concentrate on during the discussion.

3.3.4 In-depth open-ended interviews

In-depth interviews were conducted with twenty mothers of young children (less than five years) who were purposively sampled. A standardized open-ended interview guide was used to collect the necessary qualitative data. Data collected was on mothers' perceptions of malaria in their young children and the management strategies they employ to deal with malaria when it attacks their children. Information gathered through this method also included intrahousehold gender relations in households and how it affected health seeking behaviour for their children.

The in-depth open-ended interviews were more like conversations. Such conversations presented a good opportunity for the researcher to move closer to the study population and gain an insight into their culture (Fetterman, 1990). Data gathered were always recorded in the field notebook.

3.3.5 Narratives

Mothers of young children who had had malaria were requested to recite their experiences of malaria in their children. Their narrations were tape-recorded. This method produced qualitative data on mothers' experiences of malaria in their young children.

3.3.6 Secondary data

Secondary data was obtained from census books from the (Kenya Danish Health Research) KEDAHR project. In addition, library materials such as books and journals were used to shape the study.

3.3.7 Direct observation

This data collecting technique entails the making of direct observations about the phenomena of the researcher's interest. It essentially involves looking around and taking notes about what has been observed. The respondent's non-verbal behaviour such as actual practices in prevention of malaria was observed and recorded against a prepared list. Such observations were made and recorded about the home setting such as cleanliness standards within the compound, type of houses, people who perform what

duties around the household, among others. Observations were also made in ‘clinics’ of various kinds such as at the traditional and spiritual healers’ ‘clinics’ and local drug vendors’ shops.

Table 3.1. Summary of data collection methods and respondents per method

Data Collection Method	Number
Focus Group Discussions (FGDs)	10 Groups
Survey techniques	100
Key informant interviews	8
In-depth open-ended interviews	20
Narratives	5
Direct observation	100

3.4 METHODS OF DATA ANALYSIS

Both qualitative and quantitative techniques of data analysis were used to analyse information gathered during the study. Quantitative techniques were relied on to analyse survey data from structured or closed-ended questions. Quantitative techniques included the use of descriptive statistics such as means, frequencies and percentages. Qualitative data were analysed from direct quotations, selected anecdotes and comments from informants to emphasise their actual words.

Data collected from the field were coded to make them computer readable. Each variable was assigned a unique numerical code by which it could be identified in the data file. A codebook comprising all the codes plus their explanations acted as a guide to the coders. Coded data were transferred to the appropriate computer sheets for onward entry into the computer. The data were analysed using the Statistical Package for Social Sciences (SPSS) and excel. The computer analysis broke the data into frequencies, percentages and other measures of central tendency. These statistics were used in discussing data collected in the field. Qualitative method was used in describing and discussing qualitative data. This included data obtained from the key informants, through direct field observation, in depth interviews, narratives and FGDs.

3.5 LIMITATIONS OF THE STUDY

This study's main focus on perceptions and management of malaria can be viewed as necessary due to the limited time of fieldwork. This however, left out a detailed analysis of other factors which act as determinants of the mothers' health seeking behaviour such as poverty (lack of resources), distance to health facilities, household composition, for instance, where there may be a young daughter-in-law in a hierarchical family, mother's education among other factors.

Another limitation of the study was that some young children who may have been under the care of other persons who are not their mothers, for instance orphans who are under their siblings' care or under the care of a guardian may have been left out since the study focused on mothers of young children.

During fieldwork, there were difficulties in finding a precise schedule to interview respondents some of who were not available for interviewing.

Another problem encountered was language barrier since the researcher does not speak the respondent's native language. Finally, difficulties in transportation and (travel) within the field were experienced since the road network is not well developed.

3.6 ETHICAL ISSUES

The people under study were informed on the research goals, objectives and sponsorship. Information acquired from informants was treated with confidentiality if the informants so wish. Informants were interviewed only if they are willing i.e., voluntarily.

Recommendations made and actions taken ensured that they did not harm the community's interests. These actions were respectful to the community's dignity, integrity and worth. In the course of the study, seriously sick persons who had no financial means to attend health care, were assisted financially to enable them seek care.

The findings of the study have been and will continue to be disseminated to interested parties accurately without any falsification and distortion whatsoever.

The findings of the research will be available to the libraries such as the Jomo Kenyatta Memorial Library (JKML), KEDHR offices and the Institute of African Studies (IAS) Library, for any interested parties to look at once approved by the relevant authorities.

3.7 PROBLEMS ENCOUNTERED

There were a number of logistical problems. First, communication in Nyang'oma proved difficult. Due to sparse population distribution, there were great distances separating households where respondents resided. This was aggravated by the fact that the research team used bicycle transport which proved difficult due to the rough terrain and almost inexistent footpaths through which cycling was impossible. This forced the research team to either push the bicycles or leave them behind and walk for long distances to reach to the respondents. Bicycle transport also proved difficult during the later stages of fieldwork because of the rains.

Part of the fieldwork coincided with the time when this area experiences the short rains. These rains were problematic in two ways. First, movement became difficult both when it was raining and after it had rained. Secondly, most people know that the short rains are unreliable. When the rains come, therefore, everyone rushes to their farms to plant and weed so as to maximize the use of the rains. This pattern of activities made it difficult for the research team to find respondents in the homes. To overcome this problem we changed our time of going to the field. Since we noted that mothers in Nyang'oma tended to go to the farm early in the morning and work up to around eleven o'clock then came back home to prepare lunch for household members, most of our interviews were conducted after eleven o'clock especially during the last part of the fieldwork.

Although our respondents did not harbour any mistrust or suspicion about our presence, thanks to efforts of DBL staff, the chief as well as the field assistants who came from respected families in Nyang'oma, it was evident that people had little faith in research. A number of respondents and other people we met in the study area were sceptical that research would ever improve their health let alone any aspect of their lives. They cited past researches that had been going on in the area for about five years by the KEDHAR project and yet had not seen any benefits to the community. At the same time most respondents clearly stated that they were more interested in talking to those who could offer material and financial support. Examples were cited of Rachuonyo District where researchers from Kenya Medical Research Institute (KEMRI) and Centre for Disease Control (CDC) gave drugs and bed nets to their respondents and wondered why we could not do the same. Although our respondents were sceptical about these and other issues which we could not address (e.g., building a hospital, providing bed nets, drugs, paying school fees, e.t.c.), we were able to convince them that the data we were collecting from them would be used to redress some of the issues they were raising.

The researcher is not a Luo and, therefore, is not conversant with Dholuo language. This proved an impediment. In addition it is possible that some information vital to this study may have been lost through translation. The researcher tried to tackle this problem by at first learning some basic dholuo words and expressions which enabled me to follow conversations. The field assistants proved very useful because they were thoroughly trained by DBL on how to make the translations.

Another problem that arose was that of another study that was being carried out in the area by DBL. This forced the research team to leave out many households which would have been eligible for the study. We were, therefore forced to extend our study area, which proved a problem due to the poor transport network.

Despite these challenges the research was successfully carried out. The researcher did her best under the circumstances to bring the study to an amicable completion.

3.8 DISSEMINATION OF RESULTS

The results of this study were communicated to the study community and the local authorities at the end of the study. The study findings helped shed light to the mothers of young children in Nyang'oma in regard to aspects such as early detection of malaria in their children so that they can make the proper treatment choice. Feedback of the study will also be provided to the IAS, University of Nairobi (UoN), and to the DBL once the final report is approved. The findings will also be communicated to a wider scientific audience by writing articles to be published in international journals. The study is expected to result to a Masters thesis.

CHAPTER FOUR

SOCIO-ECONOMIC CHARACTERISTICS AND PERCEPTIONS OF MALARIA

4.0 INTRODUCTION.

This chapter presents the salient demographic, socio-economic and cultural patterns that emerged after the analysis of the data. The patterns depict phenomena that may have an implication on mothers' perceptions and management of malaria and malaria-associated sicknesses in their children in Nyang'oma area. Data on perceptions of malaria is also presented. Such information was obtained through various data collection methods such as in-depth interviews, FGDs, key informant interviews, a standardized questionnaire, direct observations and narratives. The data in this chapter are analysed under subtopics namely socio-economic characteristics of respondent and perceptions about malaria.

4.1. SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

4.1.1 Age and marital status of respondents

From the survey questionnaire, twenty (20%) respondents were aged between 15-20 years, twenty-four (24%) were between 21-25 years; twenty-six (26%) were between 26-30. Eighteen (18%) respondents were aged between 30-35 years; ten (10 %) were between 36-40 years and the rest, two (2%) were aged between 41- 45 years. This shows that a majority of the respondents, seventy (70%) were aged between 15-30 years.

Figure 4.1: Distribution of respondents by age



Ninety (90%) of the respondents were married; seven (7%) were widows while only three (3%) identified themselves as single mothers. Those who identified themselves as married said that their husbands are the household heads. The widows said that their households were headed by their late husband's brother and three single mothers said that their father was the head of the household they lived in. Even in the absence of a husband, or in cases of single mothers who have never been married, a male relative of the husband is usually termed head of that particular household according to key informants.

4.1.2 Education

Data collected through survey questionnaires revealed that a majority of the respondents, ninety-six (96%), had attained some formal education. Of these, seventy-eight respondents (78%) had primary school education and eighteen respondents (18%) had attained secondary school education. Only four respondents (4%) had no formal education (Table 4.2). Of the seventy-eight who had primary education, twenty-three had KCSE certificates, forty had lower primary education and fifteen had attended upper primary but had not completed primary level education. Of the eighteen who had attained secondary education, two had completed while sixteen had not completed their secondary education.

Table 4.1: Education level attained by respondents

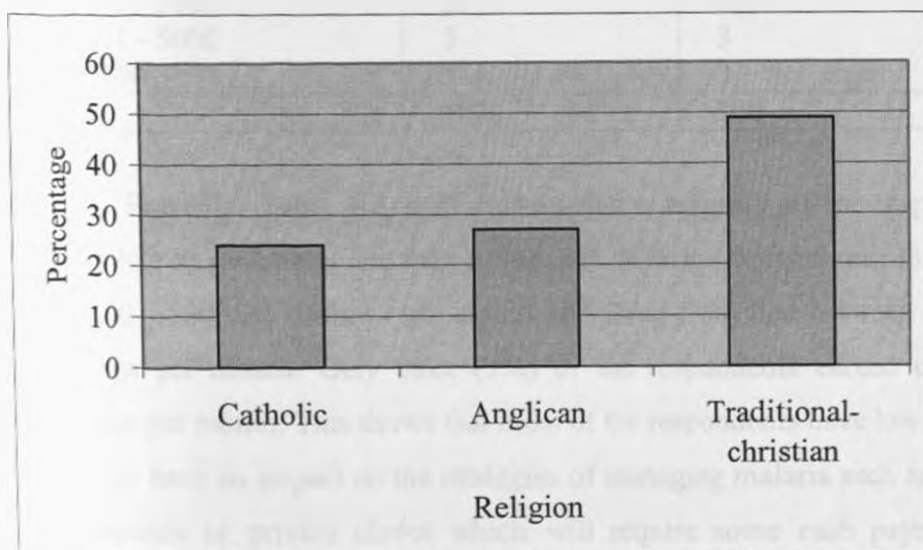
Education level	Frequency	Percentage	Cumulative percentage
Lower primary	40	40	40
Upper primary	15	15	55
Completed primary	23	23	78
Not completed secondary	16	16	94
Completed secondary	2	2	96
None	4	4	100
Total	100	100	100

1.3 Religion

Fifty-one respondents (51%) belonged to two mainstream Christian denominations, 24% Catholic and 27% Anglican. The remaining forty-nine (49%) espoused Traditional-Christian religion (Figure 4.2). The forty-nine percent who espoused Traditional-Christian religion comprise sects as follows; Roho Church 17%, New Apostolic Church 12%, Church of Saviour 8%, Nomiya Church 4%, Soul Winning Church 3%, Legio Maria 2%, Miracle Church 2% and Power Church 1%.

Religion has a big impact on health issues in Nyang'oma as response from key informants FGDs and survey questionnaire indicated. For instance, respondents belonging to three sects, namely Miracle church, Nomiya and Legio Maria church said that only prayers and God -given resources namely medicinal herbs and spiritual power could heal and, therefore, there was no need of "wasting time and resources" trying other means which in this case referred to modern drugs and hospital. Surprisingly, even the Catholic respondents had great belief in spiritual intervention to cure diseases (malaria included) and they often went for faith healing at the Nyang'oma Catholic Mission where a Catholic priest conducted a healing mass once every week. One Catholic faithful said that she must consult the priest before taking any other treatment action for herself and family members.

Figure 4.2: Religious affiliation of respondents



There were other faith healers in the area, and informal interviews with them revealed that they were consulted on numerous illnesses. One "Roho man" (a faith healer from Roho Church) informed us that in addition to praying for the sick, he encouraged them to seek help in hospital.

Further discussions on this issue revealed that eighty-seven (87%) of the respondents to the survey knew of a spiritual or traditional healer within a radius of less than three kilometers from their home. Thirteen (13%) of the respondents did not know of any such healer.

4.1.4 Occupation and income.

Responses to the survey questionnaire revealed that most of the respondents, sixty-nine (69%), were involved in some form of small scale trade in groceries, shop ware, fish and small amounts of gold in addition to subsistence farming. Twenty-eight (28%) were subsistence farmers and only three (3%) performed menial jobs for pay and did some subsistence farming. These activities the respondents engaged in most cases had low incomes, with a majority (>61%) earning less than one dollar a day.

Table 4.2: Respondents' cash incomes per month

Income (Ksh)	Frequency	Percentage (%)
< 1000	61	61
1000 - 3000	33	33
3001 - 5000	3	3
>5000	3	3
	100	100

From the Table 4.2, it is evident that a majority of the respondents, sixty-one (61%) had an income of less than a thousand shillings, thirty-three (33%) earned between 1000.00 - 3000.00 shillings per month and three (3%) had between 3001.00 - 5000.00 shillings per month. Only three (3%) of the respondents earned over five thousand shillings per month. This shows that most of the respondents have low incomes which are likely to have an impact on the strategies of managing malaria such as seeking treatment in hospitals or private clinics which will require some cash payment. Moreover, a majority of the women, sixty-eight (68%), said that all their earnings were controlled by

their husbands, thirty (30%) said they did what they wished with their money and the rest two (2%) did not have any earnings.

4.1.5 Household size and composition

A majority of the respondents to the survey questionnaire, fifty (50%), came from households with 3-5 members, thirty-eight (38%) of the respondents had households with 6-8 members, eleven (11%) had 9-11 members and one (1%) of the households had more than eleven members. The average household size in Nyang'oma has seven members.

All the respondents to the survey questionnaire came from households with a child or children aged five years and below. Thirty-nine (39%) of the households had one child below five years; forty-two (42%) of the respondents' households had two children aged five years and less; fourteen (14%) of the respondents had three children of that age, four (4%) had four children. Only one (1%) of the respondents' household had five children aged less than five years (see Table 4.3). All of these respondents indicated having dealt with malaria in their children.

Table 4.3: Household size and composition

Total No. of household members	Frequency	Percentage (%)	No. of household members under five	Frequency	Percentage (%)
3-5	50	50	One	39	39
6-8	38	38	Two	42	42
9-11	11	11	Three	14	14
12-14	1	1	Four	4	4
			Five	1	1
Total	100	100		100	100

4.1.6 Housing

Direct observation on the type of houses inhabited by the respondents showed that most of them, sixty-five (65%) were semi-permanent being built of grass - thatched roofs, mud walls and earthen floors. Houses with iron roofs, mud walls and earthen floors comprised 30% of households visited, while those built with iron roofs, cemented walls and floors accounted for (5%). A common trend, which had implications for malaria

infection, included unscreened windows and eaves. Less than half of the houses were screened against mosquitoes. For example, 57% of the houses had windows without screens while 69% had wide unscreened eaves which made easy entry for mosquitoes. This however does not mean that the rest were screened. There were instances where the houses did not have windows or eaves.

In addition, most houses (61%) were surrounded by environments that provided conducive breeding grounds for mosquitoes, namely, bushy compounds, tall grass, maize plantations, broken pots and tins within a radius of less than two meters. Surprisingly, most respondents to in-depth interviews and survey questionnaire mentioned cleanliness and tidiness of home surroundings as a way of preventing malaria.

4.2 PERCEPTION OF MALARIA.

This section will cover the perceptions on various aspects of malaria namely: causation, severity, symptomatology, curability, preventability, incidence and likely consequence on children. Information on perceptions was gathered through in-depth interviews, FGDs, narratives and a standardised questionnaire with mothers of young children. Key informants were also interviewed some of who were not mothers of young children.

4.2.1 Perceived causes of malaria

Information gathered through in-depth interviews, FGDs and the questionnaire showed that most of the respondents were aware of malaria as a disease. Seventy-five (75%) of the respondents to the survey questionnaire had experienced malaria in their young children within a period of four weeks preceding the interview. The remaining, twenty-five (25%), had dealt with malaria in their children in a period ranging between five and ten weeks prior to the interview.

The fact that a majority (75%) of the respondents to the questionnaire had dealt with malaria cases in their children within four weeks before the interview has strong implications that they gave a vivid account of their views about the illness and the

management strategies they employed to counter it. However, as shown in the Table 4.4 below, there are variations on how it is caused.

Table 4. 4: Perceived causes of malaria in children

Cause	Frequency	Percent (%)
Cold and rain	88	88
Witchcraft	80	80
Dirty food, water and clothing	80	80
Mosquito	79	79
Comes on its own	77	77
Worm in the head	70	70
“Nyawawa”	70	70
Sudden changes of weather	65	65
Crying a lot	10	10
Lack of enough food	9	9
Contact with sick child	9	9
Don't know	3	3

From Table 4.4 above, it is evident that a majority of the respondents to the questionnaire, eighty-eight (88%), perceived malaria to be brought about by cold and rain. Eighty (80%) of the respondents perceived malaria to be caused by acts of witchcraft, another 80% believed malaria is caused by dirt, either through ingestion (drinking dirty water and eating dirty) or physical contact such as wearing dirty clothing. The mosquito was thought to cause malaria by seventy-nine (79%) of the respondents to the survey while seventy-seven (77%) thought that malaria comes on its own. A worm in the head which children are born with was believed to cause malaria by seventy (70%) of the respondents and another seventy (70%) said that malaria is brought about by evil spirits (“nyawawa”) from the lake. Other things mentioned as causes of malaria include sudden change of climate/weather (65%), when a child cries a lot (9%) and getting in contact with a sick child (9%). Only three (3%) of the respondents to the survey did not know what causes malaria.

There were other agents that were believed to cause malaria in children according to some key informants, in-depth interviews, narratives and FGDs. Such agents include, fresh corn, evil spirits (“nyawawa”), breast milk of an infected

mother, feeding children with cold food, performing tedious tasks, eating food cooked with modern cooking oils, tsetse flies, "sam"(mosquito-like insect) and dust.

Information from key informants and in-depth interviews revealed that cerebral malaria was sometimes treated as a different kind of malaria from the "normal malaria". It was referred to as "strong malaria" or madness and is often associated with madness and leads to death of the victim. As will be discussed later in this and the preceding chapter, this perception about malaria has implications for malaria management.

Various agents were perceived to cause this kind of malaria in young children. One such agent is a worm in the head which children are born with. This worm causes strong malaria by disturbing the brain if it is not calmed by putting a herb ("*Feto*") in the nose of a child before he/ she is three months old. Acts of evil individuals, punishment by ancestors for breaking taboos and abrupt change of temperature are all believed to cause strong malaria. One respondent narrated how her child got strong malaria:

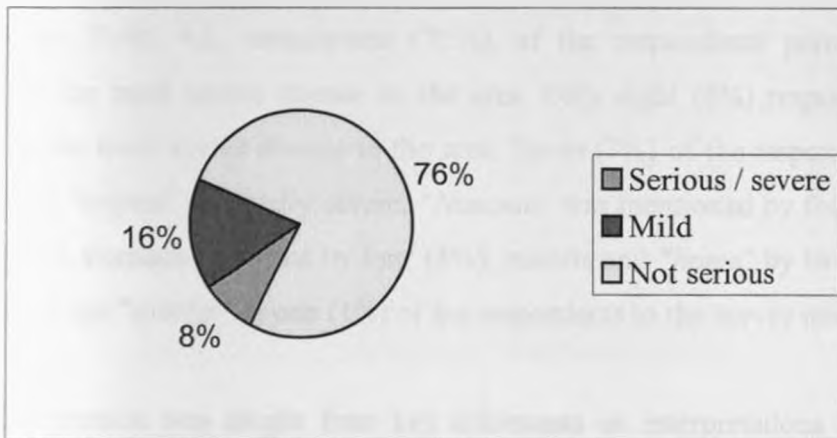
My child (boy) was very bright in school. One of the parents (a neighbour) was not happy about this and managed to lay his hands on my son's books. The next day, my child developed a severe headache, and started convulsing (fainting), at times talking to himself then backing like a dog, then he died. This man (neighbour) has killed many children through causing such malaria (Akoth, 35 Mother of two young children).

FGDs and in-depth interviews mentioned some taboos that could lead to strong malaria and these were: failure to name a child after an ancestor, talking evil of the dead and failing to adhere to the procedure that should be followed during sexual relations within a polygamous household. This procedure requires that before any activity is carried out in the farm such as land preparation, planting, weeding or harvesting, the household head should have sexual relations with his wives in the order in which they were married, i.e., first wife first followed by the second in that order to the last wife.

4.2.2 Perceived severity of malaria in relation to other diseases

For the purpose of this heading, it should be noted that the respondents were referring to what they called "normal malaria". Most of the respondents to the survey were aware of malaria as a health problem because when asked to mention the common disease that affect children, 98% of the respondents mentioned malaria as one of the diseases that affect children in Nyang'oma. Only two respondents (2%) did not mention malaria as a common ailment in the area. However, most of the respondents to the survey did not perceive it as a serious disease. For instance, when asked how they perceive malaria's severity in its initial stages, only eight (8%) of the respondents perceived it as severe, sixteen (16%) perceived it as mild and the majority 76% perceived malaria as not severe at the onset (Figure 4.3).

Figure 4.3: Perception of malaria in its initial stages



This in turn caused most mothers not to take immediate action once they suspected malaria in their children. A significant proportion of mothers (33%) indicated waiting for at least one day before taking any action (see Table 5.6).

The order in which common diseases in Nyang'oma were mentioned also gives an insight into the seriousness and importance with which malaria is taken/ranked. Only two respondents (2%) started by mentioning malaria as a common disease. The rest (98%) started by mentioning "angieu". Other diseases mentioned include "homa", "nimonia",

stomach problems, skin infections, typhoid "*hima*" and "*mbaha*". Table 4.5 shows how many respondents to the survey questionnaire perceived the diseases mentioned above as the most severe in children.

Table 4. 5: Of the diseases that affect children in Nyang'oma, which is the most severe?

Disease	Frequency	Percentage (%)
"Ang'ieu"(the small disease)/measles	71	71
Malaria	8	8
Malaria and "ang'ieu"	7	7
"Nimonia"	4	4
"Hima"	2	2
Stomach problems	4	4
Malaria and "homa"	2	2
"Homa"	1	1
"Mbaha"	1	1
Total	100	100

From Table 4.5, seventy-one (71%), of the respondents perceive "*ang'ieu*"/measles as the most severe disease in the area. Only eight (8%) respondents perceive malaria as the most severe disease in the area. Seven (7%) of the respondents perceived malaria and "*ang'ieu*" as equally severe. "*Nimonia*" was mentioned by four (4%); "*hima*" by two (2%), stomach problems by four (4%); malaria and "*homa*" by two (2%), "*homa*" by one (1%) and "*mbaha*" by one (1%) of the respondents to the survey questionnaire.

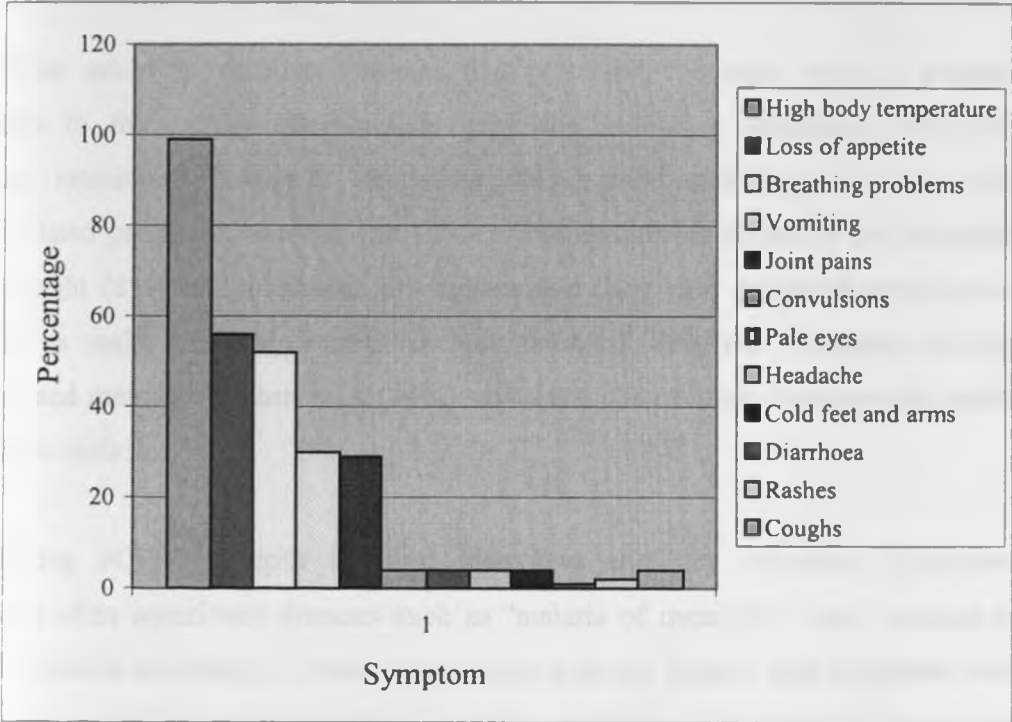
Information was sought from key informants on interpretations of some of the diseases. "*Ang'ieu*" or the "small disease" turned out to be what is biomedically referred to as measles (see section 4.2.3 for in-depth explanation of "*hima*" and "*mbaha*"). Stomach problems include diarrhoea, constipation and vomiting while "*homa*" refers to sneezing and flu. "*Nimonia*" has symptoms such as chest pains and accompanying complications such as difficulties in breathing.

4.2.3 Perceived symptoms of malaria.

Respondents to the questionnaire were asked to mention symptoms they associated with malaria. Most of the respondents, ninety-nine (99%), mentioned high body temperature (fever) as one of the symptoms they use to recognise that their children

had malaria. Only one (1%) of the respondents did not mention high body temperature/fever as a sign of malaria in her children. Other symptoms were also mentioned in addition to high body temperature. These symptoms include diarrhoea (1%), breathing problems (52%), coughing (4%), cold feet and arms, rashes (2%), loss of appetite (56%), constipation, red eyes and lips, vomiting (30%), joint pains (29%), convulsions (4%), headache (4%), cough (4%), cold feet and arms (4%), pale eyes (5%) and rashes (2%).

Figure 4.4: Perceived symptoms of malaria.



From the Figure 4.4, it is clear that a majority of the respondents termed diseases which present with fever as malaria. Other symptoms that were said to be those of malaria according to in-depth interviews include pale urine and constipation. Various diseases were said to present in the same way as malaria (Table 4.6).

Table 4.6: Diseases with similar symptoms as malaria

Disease	Frequency	Percentage %
"Nimonia"	1	1
"Ang'ieu"	44	44
Stomach problems (diarrhoea, vomiting and constipation)	1	1
"Mbaha"	1	1
"Ang'ieu", "mbaha", typhoid, cholera, "nimonia" and meningitis	8	8
Stomach problems and headache	1	1
None	44	44
Total	100	100

When asked to mention diseases that presented the same way as malaria, respondents to the survey questionnaire gave the following responses; one (1%) respondent mentioned "*nimonia*", forty-four (44%) mentioned "*angieu*", one (1%) stomach related problems, another one (1%) a combination of headache and stomach-ache and eight (8%) had a number of diseases that they said presented with similar symptoms as malaria. Such diseases include "*mbaha*", "*ang'ieu*", typhoid, cholera, "*nimonia*" and meningitis. Forty-four (44%) said there was no other disease with similar symptoms as malaria.

During FGDs, in-depth informal interviews and key informant interviews, respondents often mentioned diseases such as "malaria of meningitis" and "malaria of typhoid". Malaria according to these respondents was any disease that presented with severe symptoms often accompanied by headache and fever. Sometimes a disease was not referred to as malaria as far as the symptoms did not seem severe. "*Wich bar*", literally headache, was also referred to as malaria or the latter as "*wich bar*". According to my observations, information from in-depth interviews and focus group discussions whichever of the two that was judged more severe was then labelled malaria. This in extension implies that malaria meant different illnesses to different people.

Convulsions were not thought by most respondents during Focus Group Discussions (FGDs) and in-depth interviews to be due to malaria. This is further

reinforced by the fact that only four (4%) respondents (Figure 4.4) mentioned convulsions as a sign of malaria. Convulsions were thought by a majority of respondents to be due to meningitis, witchcraft, "*nyawawa*", or epilepsy. Meningitis was thought to develop into strong malaria as one respondent indicated during in-depth interviews;

Meningitis starts from the back of the head. It can also make you have mental disturbance and convulse (faint and cause stiffness) because the severe headache makes the brain turn. ...epilepsy has similar symptoms (Amollo, 32, Mother of young child).

Convulsions were also thought to be due to epilepsy. Epilepsy in turn is believed to run through families (inherited).

"*Mbaha*" was described as a disease, which caused a child to turn pale due to reduced blood in the body. On further inquiry from a key informant who is a medical personnel from a local health center, "*mbaha*" turned out to be cases of anaemia, which often was due to continued cases of malaria attacks which had not been well managed and also due to malnutrition. Another illness, which is common among children in Nyang'oma, is one referred to as "*hima*". It has symptoms of a hard swollen stomach. This, like "*mbaha*" is a further complication of malaria due to swollen spleen (splenomegaly) according to one key informant who is a medical personnel in the area.

4.2.4 Perceptions on prevention and curability

Perceptions about prevention and cure of malaria were sought from the respondents with the aim of finding out whether or not mothers in Nyang'oma perceived malaria as a preventable and curable disease. Ninety-three (93%) of the respondents stated that malaria is preventable while four (4%) of the respondents perceived the disease as unpreventable. Three (3%) of the respondents did not know whether malaria was preventable or not.

Respondents to the survey who perceived malaria as preventable mentioned various methods of prevention (Table 4.7). Those who perceived malaria as unpreventable said that one cannot know that one will be sick. They, therefore, said that one cannot waste time and resources controlling a disease because after all one might not

get sick. They also felt that since malaria just comes on its own, there was no way you could prevent it from coming to you.

Table 4.7: How can malaria be prevented?

Methods	Frequency	Percentage (%)
Avoiding contact with cold/keeping warm	84	84
Cleanliness (food, water, bedding and clothing)	64	64
Use of mosquito net	54	54
Burning mosquito coils	47	47
“Feto”	19	19
Immunization	18	18
Chemoprophylaxis	17	17
Destroying mosquito breeding places	17	17
Frequent use of drugs such as panadol and septrin	8	8
Don't know	7	7

When asked how malaria can be prevented, respondents to the survey questionnaire gave the following responses; by avoiding contact with cold or keeping warm (84%), observing cleanliness (64%), using mosquito nets (54%), burning mosquito coils (47%), use of “feto” (19%), immunisation (18%), chemoprophylaxis (17%), destroying mosquitoes breeding places (17%) and frequent use of septrin and panadol (8%). Seven (7%) did not know of any way of preventing malaria (Table 4.7).

In addition to responses from the survey questionnaire, information from in-depth interviews yielded additional ways malaria was perceived to be preventable. These include use of aerosol insecticide sprays; avoiding eating freshly harvested grains, use of protective charms and use of herbal medicine. Other prevention methods mentioned include burning “mieny” (*Lantana camalla*) and cow dung whose smoke produces a scent believed to repel mosquitoes.

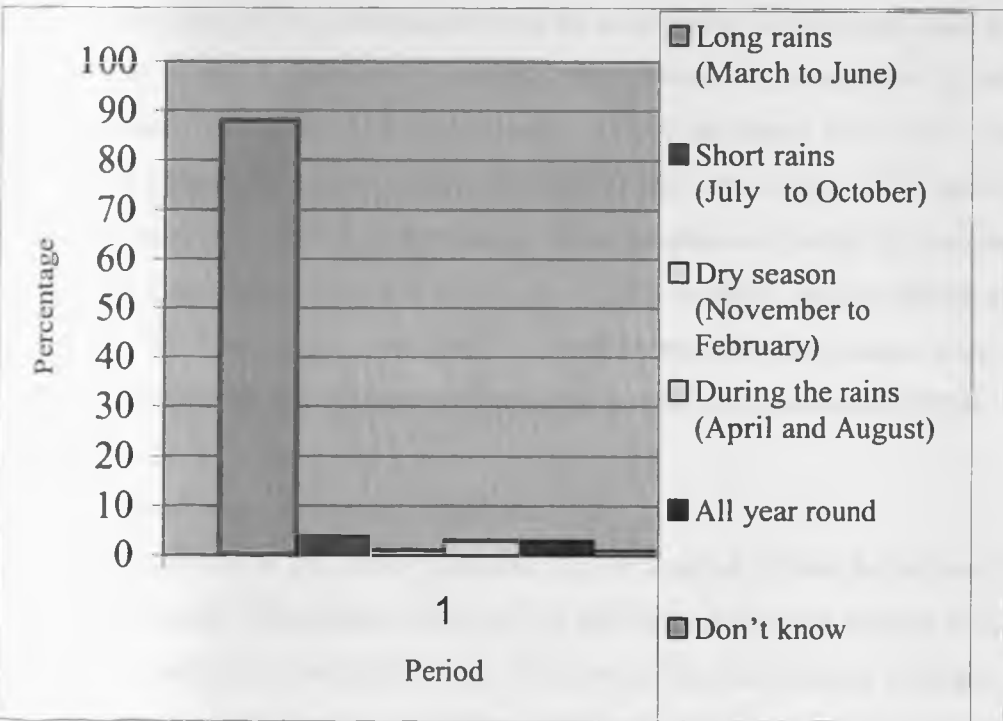
On curability, ninety-two (92%) of the respondents to the survey felt that malaria is curable while the remaining eight (8%) felt that malaria cannot be cured. Those who perceived malaria as curable gave various ways which included treatment in hospital by qualified personnel, use of traditional herbs, prayers and by over-the-counter drugs

(OTCDs). Those who perceived malaria as not curable said that although their children got treated, the disease always recurred. They, therefore, concluded that malaria has a way of hiding itself in a person's body to avoid getting detected and treated by modern medicine.

4.2.5 Perceived prevalence of malaria

When asked to state the commonest diseases that occur in Nyang'oma most of the respondents to the questionnaire (98%) mentioned malaria in their list. Other diseases mentioned include "angieu", "nimonia", "homa", coughs, chest pains, typhoid, stomach problems, ringworms, "hima", "mbaha" and skin infections.

Figure 4.5: Time of year when malaria is most prevalent.



Majority of the respondents to the survey, eighty-eight (88%) said that malaria was most prevalent in Nyang'oma during the months of March to June. This is the time when the long rains occur in the area. Four (4%) of the respondents interviewed said that malaria was common during the months of July to October. This is the time Nyang'oma

area receives the short rains. Three (3%) of the respondents indicated that malaria is most prevalent in April and August. Another three (3%) said that malaria was common between the months of November to February (dry season) and another respondent one (1%) did not know when malaria was most prevalent.

The period during the short and long rains were believed to be the time when malaria transmission was at its peak by a majority of the respondents to the survey questionnaire. Various reasons were given for the high incidence of the disease. These reasons include presence of many mosquitoes during this period, the rains and accompanying chilly weather, consumption of freshly harvested foods, sudden changes of weather from hot to cold, presence of evil winds called "*Nyawawa*" and a lot of sunshine which heats the body. Of all the reasons given, only nine (9%) respondents to the survey questionnaire thought that mosquitoes were the sole reason for the many cases of malaria. Fifty (50%) of the respondents mentioned the presence of mosquitoes in addition to another reason such as cold (chilly) weather, freshly harvested foods, rain, "*nyawawa*" and sudden change of weather. Thirteen (13%) of the respondents to the survey thought that malaria incidence was high because of chilly weather only, while the rest twenty-five (25%) associated the high malaria incidence to chilly weather, sudden change of climate, "*nyawawa*" and consumption of freshly harvested crops. Similar reasons were given for the high incidence of malaria during the rains by in-depth interviews and FGDs.

4.2.6 Perceived consequences on children

Respondents to the survey questionnaire were asked to state the adverse effects of malaria they knew. Ninety-nine (99%) of the respondents felt that malaria kills but only after a long period in the child's body. Those who felt that malaria kills gave various reasons. Malaria was thought to reduce blood and water content in the body causing stiffness and this killed the victim. The high body temperature was said to dry up the victim's blood and water. Another reason given was that malaria causes the victim to loose appetite which then weakens the body leading to death. Malaria also kills through bringing other diseases and interfering with body organs. Diseases brought by malaria according to respondents to the survey, FGDs and in-depth interviews include meningitis,

"*nmonia*", typhoid, "*mbaha*", "*orip*" *orienyanja*" and "*hima*". In addition, malaria was said to interfere with the respiratory system causing the victim to suffocate to death. It also interferes with the backbone, neck, heart and the brain.

According to one in-depth interview respondent;

When one has severe headache due to "malaria of meningitis", the brain turns and this causes mental disturbance/madness. Malaria also causes deafness, paralysis and epilepsy (Auma, 39, Mother of a young child).

Table 4.8: Possible adverse consequence of malaria to a victim/children

Consequence	Frequency	Percentage %
Reduces/finishes/dries blood and water in the body	77	77
Brings other diseases	39	39
Cause lack of appetite which weakens the body then kills the victim	11	11
Interferes with the brain	3	3

Another consequence mentioned is stunted growth. According to one key informant;

If a child is badly affected before he/she can start walking, he/she may take longer than usual to start walking. The child also grows very slowly because the severe headache associated with malaria makes the child weak for a long time" (Akoth, 40, Mother of two young children).

CHAPTER FIVE

MANAGEMENT OF MALARIA

5.0 INTRODUCTION

This chapter will cover ways in which mothers in Nyang'oma deal with malaria-associated illnesses. These are the actual stages in the mothers' treatment seeking practices associated with malaria-associated illnesses. The decisions were determined on the basis of reported actions the mothers take when they perceived malaria in their children. The reasons given for prompt action, delayed treatment, and preference for a therapeutic resource were recorded. Responses were obtained from key informants, in-depth interviews, narratives, a survey questionnaire and Focus Group Discussions (FGDs). The findings are presented under two sub-headings namely ethnomedical and biomedical practices.

5.1 ETHNOMEDICAL PRACTICES

Ethnomedical practices include the respondents' indication that they used medicinal plants and rituals to treat malaria-related illnesses. An indication of use of prayers shows the use of magico-religious healing and is for the purpose of this study considered a component of ethnomedicine.

5.1.1 Ethnomedical Management Practices

Traditional medicines used to treat malaria are concocted from various plants. One type or a combination of herbs, - either roots, leaves or bark were pounded, boiled or soaked. The resulting concoction was administered to the child either orally, as an inhaler or as a balm. Use of traditional medicine for treatment of malaria was very wide spread in Nyang'oma as shown in Table 5.1 below.

Table 5.1: First management action on suspecting malaria

Action	Frequency	Percentage
Buy Over-the-Counter Drugs (OTCDs)	42	42
Go to hospital	4	4
Use herbs	53	53
Pray	1	1
Total	100	100

Of the hundred mothers interviewed through the survey questionnaire, a majority, fifty-three (53%) said that they normally use traditional herbs once they suspect malaria in their children. Herbs used included “*dwele*”, “*ombasa*”, “*olandra*”, “*mwarobaine*” “*yago*” “*ochuogal*”, “*ochol*”, “*ober*” and “*pedo*” (see Appendix II for botanical and English names). Charms were also used to prevent ordinary malaria from developing into strong malaria.

“*Ober*” and “*pedo*” are herbs whose roots, leaves and bark are boiled and the solution therefrom administered orally. “*Ochol*” is a herb whose leaves are soaked and the solution stored so that in case of a fever the child is immersed in it. This solution is believed to cool the body. “*Yago*” is administered to the child through the nose and is mostly used in the case of cerebral malaria. This herb is believed to calm down a worm resident in children’s heads and causes strong malaria. “*mwarobaine*” is another herb whose leaves are used in making antimalaria medicine in addition to other medicines believed to cure up to forty diseases.

Various reasons were given for the preferred use of traditional medicine as a first treatment option for perceived malaria in children.

Table 5.2: Reasons for using herbs

Reason/s	Frequency	Percentage
As first aid/see whether they can cure	33	62.3
Cheaper and more easily obtainable than OTCs or hospital	5	9.4
*Helps know whether the disease is “ <i>angieu</i> ” (measles) or malaria	11	20.6
Only herbs can cure malaria	4	7.5
Total	53	100

*It is believed that “*angieu*” should never be treated with modern medicine because modern medicine cannot manage it and always kills victims of “*angieu*” Since many mothers of young children claim that measles and malaria present in the same way they prefer to take caution by delaying to make sure the illness is not “*angieu*”. Traditional herbs are believed to speed up the development and the rash which clearly distinguish between “*angieu*” and malaria.

Of the fifty-three mothers who indicated using herbs as a first treatment option for malaria, thirty-three (62.3%) said that herbs are used as the lowest level so that if they do not heal the child they can then go to hospital. Eleven (20.6%) of the fifty-three respondents who use herbs said that herbs help them in identifying whether the disease is “*angieu*” or malaria, four (7.5%) said that malaria can only be cured by traditional medicine and the remaining five (9.4%) said that herbs are cheaper and more easily available than OTCDs or hospitals. One respondent reported praying as a first option on suspecting malaria because she was saved.

The herbal concoctions used were either obtained from a specialist or prepared by the mothers most of who have the knowledge and skills of preparing and administering the herbs to themselves and the children.

According to FGDs and in-depth interviews, herbs are used because most of these mothers perceive malaria to be caused by agents that modern medicine cannot cure. Such agents are witchcraft, a worm in the head, evil eyes, or supernatural causes such as ancestral spirit or evil spirits from the lake (“*nyawawa*”). Malaria is also viewed in term of different symptoms and each symptom treated as a disease by itself. One key informant narrated that;

We have knowledge of herbs that can stop vomiting, others that stop stomachache and one for diarrhoea, (all perceived symptoms of malaria). But if malaria symptoms are many in the body, one can in addition to herbs use drugs bought in shops such as chloroquin syrup and panadol. One can also go to hospital if these do not bring improvement (Akinyi, 33, mother of young child).

An evil eye is believed to cause strong malaria in children. The “malaria” so caused can only be treated using charms tied around the child’s waist once she/he develops fever. The charm is believed to prevent the child from convulsing and getting mental disturbance according to FGDs and some key informants.

Mothers often used herbs when they were not sure whether the disease was malaria or “*angieu*”(measles). This is because they believed that “*angieu*”, if treated by

modern medicines kills the child because it hinders in the body and damages the intestines. Herbs such as “ombasa” and “dwele” are used.

There were illnesses that when in-depth information was sought from medical personnel of Nango Health Centre and Nyang’oma Mission Hospital turned out to be cases of adverse effects of malaria that had not been well managed. These are “hima”, “mbaha” and orip”. “Hima has symptoms of a hard protruberant abdomen. These are cases of enlarged spleen due to high levels of parasites in the body. “Mbaha” on the other hand was said to cause the child’s body turns yellow. These were cases of anaemia mostly due to malaria although some cases could also be due to malnutrition. Both “mbaha” and “hima” are believed to be only treatable by traditional herbs. “Mbaha” was said to accompany malaria. Mothers preferred to treat “mbaha” first because it is believed to have more adverse effects than malaria.

It came out clear that whenever most mothers were not sure whether the disease was malaria, they first treated other perceived diseases with herbs and if the child did not feel well they bought OTCs, went to hospital or for prayers. It is worth noting that at times all the treatment options mentioned were employed simultaneously (see Table 5.3).

Table 5.3: Action/s taken to deal with last malaria attack.

Action/s	Frequency	Percentage
Gave OTCs	33	33
Took to hospital	10	10
Gave traditional herbs	2	2
Took for prayers	2	2
Gave herbs then took to hospital	7	7
Gave OTCs then took to hospital	21	21
Gave OTCs at the same time gave herbs then took to hospital	10	10
OTCs in addition to herbs and prayers	3	3
Gave OTCs and herbs	9	9
Nothing	3	3
Total	100	100

From Table 5.3 above, thirty-three (33%) of the mothers who responded to the questionnaire stated having used an ethnomedical management strategy at some point during their children's last perceived malaria illness. Of the thirty-three mothers, two (6.5%) went for prayers, another two (6.5%) used herbs only, seven (22.6%) used herbs and went to hospital; ten (32.3%) used herbs in addition to OTCs and hospital; three (9.7%) gave herbs, OTCs and went to prayer men while nine (29%) used OTCs and herbs. Three (3%) of the total number interviewed did not take any action against malaria during the last attack.

Key informants informed us that some mothers do not take any treatment action because they believed that a child's body has the ability to fight malaria through sweating. The sweat is believed to 'come out with malaria'. In addition to sweating the child can also vomit bile ("*kedhino*") and this too is believed to come out with malaria. Others just sit and wait for the disease to go away by itself, yet, others believe that God is the only one who heals, therefore, no use trying anything else "because if the child is meant to die he/she will die anyway no matter what you do".

Other practices included pouring cold water on the child to cool the body, washing the child with warm water to open the pores on the skin so that the sweat comes out with malaria, massaging painful body parts with warm water and a washing detergent ("*Omo*"), avoiding giving any medication because it is believed that if a child is given antimalarials all the time he/she is sick the body gets used to the drugs and a time comes when the drugs will not work.

1.2 Ethnomedical prevention practices

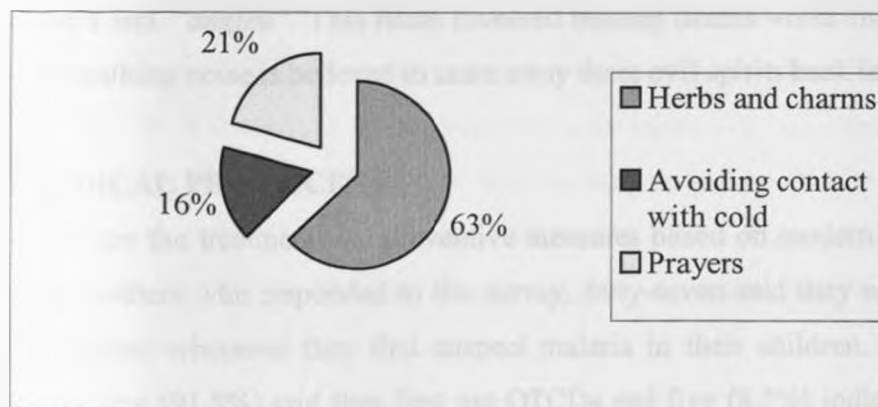
Mothers were asked whether they were taking any preventive measures for their children against malaria after the last attack. Sixty-four (64%) of the mothers indicated that they were using a preventive method while the rest thirty-six (36%) were not doing anything to protect their children against another attack (see Table 5.4).

Table 5.4: Preventive measures taken after the last attack

Measure	Frequency	Percentage %
Mosquito net and coil, clearing compound	4	4
Giving preventive drugs	11	11
Herbs and charms	8	8
Avoiding contact with cold	10	10
Mosquito nets, preventive drugs, charms, herbs and avoiding contact with cold	18	18
Herbs, charms, prayers, giving clean food and avoiding contact with cold	13	13
None	36	36
Total	100	100

Of the sixty-four who took preventive measures, the majority, forty-nine (76.6%) took ethnomedical measures to prevent malaria. The ethnomedical measures taken included use of herbs and charms by thirty-nine mothers, avoiding contact with cold by ten of the mothers and use of prayers by thirteen of the mothers who responded to the survey.

Figure 5.1: Ethnomedical preventive measures usually taken



From Figure 5.1, it is evident that use of ethnomedical practices to prevent malaria is very widespread. Other ethnomedical preventive measures taken according to key informants and in - depth interviews included burning of cow dung and herbal plants which are believed to produce a scent that scares away mosquitoes.

There were mothers who felt that malaria just comes on its own; therefore, there was no way it can be prevented. Others felt that it was useless to try to prevent malaria because “it will come anyway”. Most mothers sounded desperate because according to them “we have always dressed our babies with warm clothes but they still catch malaria. “Feto” is used to prevent against malaria but is done only once before a child is three months old.

The herbs used to repel mosquitoes according to FGDs and in depth informants included “atek”, “bap”, “mieny”, and “bwar” (see scientific names in appendix II). Charms used included pigs' bones or teeth tied around the child’s waist, a "treated" small bag also tied around the child’s waist, or medicinal herbs inserted under the child’s skin. These (charms) are believed to protect the child from evil eyes which in turn cause strong malaria. Anyone looking at a child so protected with the intention of causing strong malaria causes the illness to bounce back to her.

A ritual was also performed to chase away “nyawawa” an evil spirit said to cause strong malaria and “angieu”. This ritual involved beating drums while chanting certain words. The resulting noise is believed to scare away these evil spirits back into the lake.

5.2 BIOMEDICAL PRACTICES

These are the treatment and preventive measures based on modern medicine. Of the hundred mothers who responded to the survey, forty-seven said they normally use a biomedical option whenever they first suspect malaria in their children. Of the forty-seven, forty-three (91.5%) said they first use OTCs and five (8.5%) indicated going to hospital as a first treatment option.

Table 5.5: First treatment option/s on perceiving malaria

Option	Frequencies	Percentage %
Give OTCs	42	91.5
Go to hospital	5	8.5
Total	47	100

Most of these mothers indicated that they first bought OTCs for various reasons. Reasons given for use of OTCs included; they are more readily available in terms of distance than hospitals or modern health facilities (16.3%), they are cheaper than hospital (0.2%), they can be obtained from shops or friends on credit (9.3%), they help relieve symptoms as the mother “waits and sees” what exactly the child is suffering from so as to know the next action to take (hospital or herbs) 30 (69.8%), OTCs always cure the children (0.2%), and that malaria is not a serious disease that warrants going to hospital (0.2%).

Those who sought treatment in hospital as a first option said they did so because they have faith in trained personnel (25%), the disease is severe (25%), hospitals always perform tests and confirm exactly what the child is suffering from, therefore, gave the right treatment (25%). Modern health facilities often visited are Nango, a government health post and Nyang’oma mission clinic. Nango was preferred to Nyang’oma because of its relatively lower charges than Nyang’oma.

The fact that a majority of the mothers first used OTCs on their children can further be explained by the fact that most of the respondents (68%) lived within a radius of one kilometer of a shopping center, shop or a drug vender. It was therefore easy to obtain OTCs compared to only 6% who lived within a similar distance to a modern health facility. A majority of the respondents 75% lived within a radius of 3-6 kilometers from a modern health facility. This, therefore, means that the health facilities are located far from the patients.

On management of the last malaria attack in their children, survey data shows that thirty-three (33%) of the mothers gave OTCs, ten (10%) took to hospital, seven (7%) in addition to using herbs took to hospital, twenty-one (21%) used both OTCs and took to hospital, three (3%) used OTCs, herbs and prayed, nine (9%) used OTCs and herbs and three (3%) did not do anything. A total of ninety-three (93%) of the mothers indicated having used a biomedical treatment option at some point during the last attack of their children.

In-depth and key informant interviews revealed interesting information on the use of OTCs and hospitals. First, OTCs used for what the mothers perceived to be malaria were not necessarily antimalarials. In most cases, mothers bought *panadol* - which is a painkiller. Various reasons were given for the widespread use of *panadol*; it is thought to cure many diseases with no side effects; it “cures” fever and it is the cheapest drug available in the local shops. Mothers also said they normally bought any drug since “drugs are meant to cure disease and not to fight the body”. The mothers, therefore, gave a combination of drugs so that “the drugs can discover which disease is in the body and cure it. Drugs that do not find a suitable disease to cure do not cause any harm to the child”.

You know, malaria and “*angieu*” have similar symptoms at the onset. We, therefore, avoid going to the hospital because if the disease turns out to be “*angieu*” and the child is treated with modern medicine or is injected, s/he cannot survive. Therefore, whenever we are not sure what the disease is, we treat with OTCs or herbs so that if it is “*angieu*” it appears by the time we have finished giving the OTCs or herbs. If “*angieu*” does not appear then we know it is malaria and buy malaratab (Aoko, 25, Mother of two young children).

Children are also given different drugs to treat each perceived symptom of malaria. For instance, *panadol* is given for fever, *diastop* and *eno* is given for diarrhoea and vomiting and multivitamins are given for to bring back a appetite. If the symptoms do not disappear, antimalarials are given (as a last result). One mother had this to say on managing malaria;

For malaria of high body temperature, I give *panadol*, but for malaria that makes the feet to grow cold I take to an injectionist and request for an injection which makes the body warm (Alice, 40, mother of young child).

There are drug vendors within the villages who are consulted on a number of occasions. They are referred to as doctors. These “doctors “ either sell the drugs to mothers (if they have ready cash) or give prescriptions for the mothers to buy the drugs in chemists. One such “doctor” “diagnosed” malaria and prescribed multivitamin and *panadol*. In most cases, the mothers buy one drug and leave out the others because they do not have enough money for all the drugs prescribed. Four such “doctors” were interviewed on the management of malaria among residents of Nyang’oma. They all

indicated that they were consulted by mothers of young children on a number of occasions. All four said that they often prescribe antimalaria drugs for mothers of young children. Further discussions showed that three out of the four “doctors” interviewed normally prescribe non-antimalarials such as panadol or feroB for what the mothers perceived as malaria, or for what they (“doctors”) diagnosed as malaria. It is worth noting here that three of the “doctors” identified some symptoms which are not biomedical recognized as those of malaria (such as coughing and sneezing) as malaria. This inevitably has negative implications for proper management of malaria.

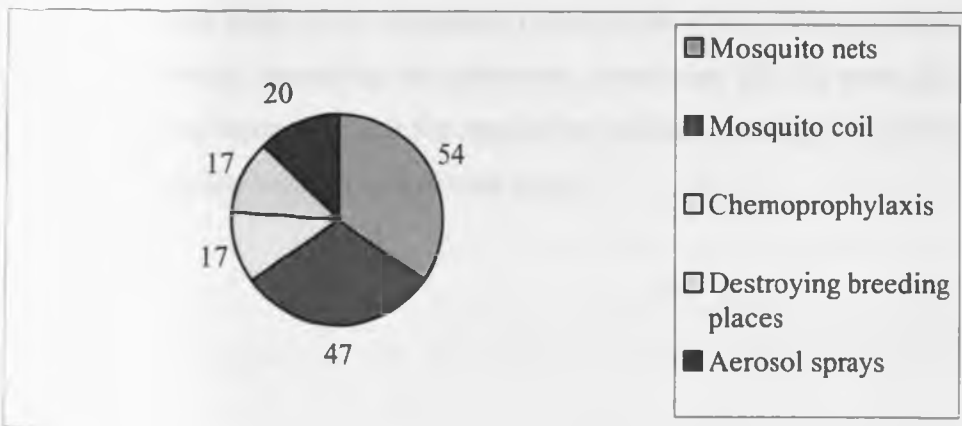
Drugs are also bought and stored in the home to be used in case of an illness. These drugs are shared by all household members. Drugs are also borrowed from friends and neighbours.

There was the belief that drugs that cause itching were effective because the itch, it was thought, goes away with the malaria. There was, therefore, a tendency of buying chroloquin which has long been discovered to be ineffective in curing malaria.

5.2.1 Biomedical preventive measures.

The majority of the mothers interviewed in the survey, ninety-three (93%) said that malaria was preventable. Four (4%) said malaria was not preventable and the rest, three (3%) did not know whether malaria was preventable or not.

Figure 5.2: Biomedical preventive measures used



When asked which method of malaria prevention they (the mothers) themselves used, only seven (7%) used the recommended biomedical methods. Forty-seven (47%) used a combination of ethnomedical practices and recommended biomedical methods, thirty-nine (39%) used ethnomedical and non-recommended biomedical methods, and seven (7%) did not use any prevention method.

Even for those who said that they kept their surroundings clean, we observed that most of the homes had bushy surroundings in addition to broken pots and tins which all act as mosquito breeding grounds.

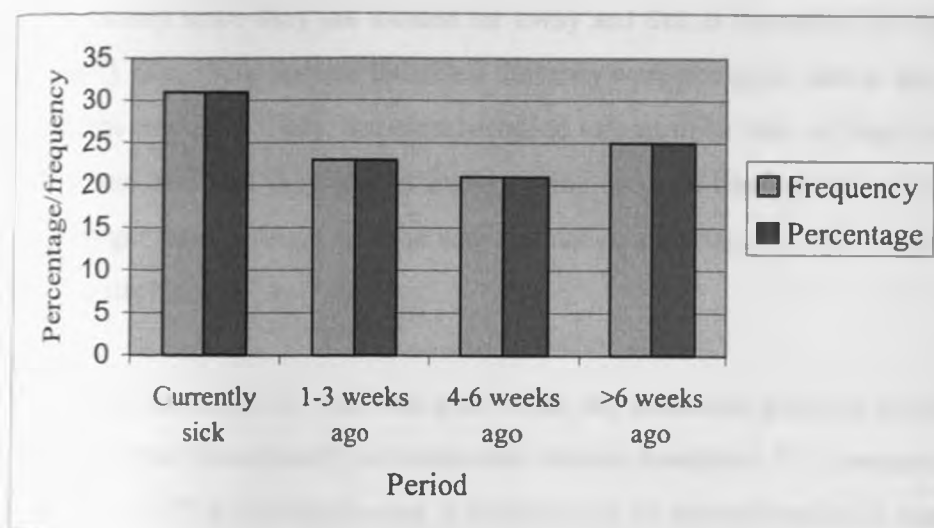
Answers to the question whether any preventive measures were being taken after the last attack revealed that sixty-four (64%) of the mothers were taking some measure while thirty-six (36%) were not. Of the sixty-four, who took preventive measures, only fifteen (23.4%) took biomedical measures which included use of mosquito nets and coils, aerosol sprays and destroying mosquito breeding places. Reasons for not using biomedically proven preventive measures included; lack of money to purchase them, the child was cured of the last attack, therefore, no use protecting him/her and that the lack of knowledge about ways of preventing malaria.

5.2.2 Responsiveness to symptoms

Time taken before any treatment action.

All the mothers interviewed in the survey indicated that their children had suffered a “malaria” attack at one time or another. Thirty-one (31%) said their children had malaria at the time of the interview, twenty-three (23%) of the children had malaria one to three weeks preceding the interview, twenty-one (21%) were sick four to six weeks before the interview, and the rest of the children, twenty-five (25%) had malaria more than six weeks before the interview date.

Figure 5.3: Time of last malaria attack.



Although most of the mothers did something about the last perceived malaria attack, all of them waited for some time before taking any action (Table 5.5).

Table 5.6: Time taken between recognition of perceived malaria symptoms and first treatment action of last attack

Time taken	Frequency	Percentage
Immediately (0 - 5 hours)	0	0
6 - 23 hours	67	67
One day	14	14
Two days	10	10
Three days	4	4
>3 days	2	2
No action	3	3
Total	100	100

Table 5.6 shows that none of the respondents took an immediate action against malaria in their children. The majority, sixty-seven (67%) took between six and twenty-three hours, twenty-eight (28%) took between one and three days, two (2%) took more than three days, while, three (3%) did not take any action at all. Various reasons were given for the delays in taking action. The main reason given was the lack of money to attend a health facility or buy OTCs. Other reasons given were that the illness did not seem serious, disagreements between household heads and the children's mother on where to seek treatment or over financing for the children's treatment, time of day (many

said they recognised symptoms late in the evening or during the night so could not go to a health facility since they are located far away and this is worsened by lack of means of transport). Some respondents indicated that they were not quite sure at the onset what the symptoms stood for. They, therefore, decided to wait to be sure of what kind of action to take. Some said that they always avoid giving drugs to their children “so that the body does not get used to drugs”. Those who did not do anything said that malaria always goes away by itself.

It is important to note that even when any treatment action was taken, it was not necessarily the biomedically recommended malaria treatment. For instance, most of those who used OTCDs indicated using a combination of non-antimalarials such as *panadol*, *septrin*, *indocine*, and *eno*. Some mothers however, used anti-malarials (25%). Of the twenty-five, most i.e., fifteen gave incomplete doses in addition to other drugs such as *FeroB*, *hedex* and *panadol*. Those who gave a combination of drugs said that medicine does not harm the body; hence those that do not find an appropriate disease to treat are excreted. In addition to use of OTCDs herbal medicine was also used either simultaneously, before or after OTCDs or hospital by 29% of the respondents to the survey.

Some of those who went to hospital went to more than one hospital for the same illness episode. This scenario happened if the mother did not find improvement in her child. Nango health post was visited first, then on seeing no improvement Nyang’oma mission hospital. Still if no improvement occurred, the mothers went to Bondo or Kisumu District hospitals. One respondent after going up to Kisumu Provincial Hospital did not find any improvement and decided to go to a traditional healer who gave herbs, and according to her the child was cured of malaria.

Those who indicated having used OTCDs and going to hospital for a single illness episode started with OTCDs and when the symptom did not go away, they went to hospital. Those who used herbs and went to hospital said that they first used herbs as they wanted to confirm whether it is a disease that can be treated in hospital. For those who

used OTCs, herbs and prayers, or OTCs and herbs, all the options were employed simultaneously or any before the other and when no improvement was seen, they went to hospital.

To further identify the various therapeutic resources that were employed to counter perceived malaria in their children, mothers were asked to indicate what they normally do when their children have malaria. Table 5.7 below shows the responses given:

Table 5.7: Action/s normally taken when “malaria” strikes.

Action/s	Frequency	Percentage
A. COMBINATION OF ETHNO AND BIOMEDICAL RESOURCES		
Go to prayer men/women and OTCs	2	2
Give OTCs, go to hospital, go to prayer men/ women, go to an injectionist, go to a traditional healer	19	19
Give OTCs, go to hospital and go to a traditional healer.	49	49
Ethno & biomedical resources sub-total	70	70
B. BIOMEDICAL RESOURCES		
Go to hospital	7	7
Go to injectionist	1	1
Give OTCs and go to hospital	15	15
Give OTCs, go to an injectionist	1	1
Biomedical resources sub-total	24	24
C. ETHNOMEDICAL RESOURCES		
Prayers	2	2
Prayers and traditional healers	4	4
Ethnomedical resources sub-total	6	6
Total	100	100

Table 5.7 further indicates that a majority of the respondents seventy (70%) utilized a combination of bio and ethno medical resources to counter perceived malaria in their children as follows; prayer men/women and OTCs (2%), OTCs, hospital, prayer men/women, injectionists and traditional healer (19%), OTCs, hospital and traditional healers (49%). These are used either subsequently or simultaneously. Twenty-four (24%), utilised purely biomedical resources to counter malaria as follows; hospital (7%), injectionist (1%), OTCs and hospital (15%) and OTCs and injectionist (1%). The rest, (6%) employed purely biomedical ways to counter malaria in their children.

CHAPTER 6

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter covers discussion of observations made in the preceding chapters with a view of getting the perceptions of malaria and the management strategies employed by mothers of young children in Nyang'oma area of Bondo District. The discussions will in addition try to establish the extent to which the study answered the research questions. These research questions were: a) how do the mothers of young children in Nyang'oma perceive malaria?, b) how do the mothers' perceptions about malaria in their young children influence health-seeking behaviour for these children?, and c) what health care options do the mothers utilise in the management of malaria among their children?. The inferences made from the study are used to make apt policy recommendations.

DISCUSSION

This study reveals that malaria means various illnesses and diseases for the mothers of young children in Nyang'oma. This in extension shows the ambiguity of the term malaria among residents of Nyang'oma. Malaria according to the mothers is any disease that presents with fever accompanied by other symptoms that are not necessarily clinically recognised as signs of malaria. Such symptoms include coughing, diarrhoea, cold feet and hands, red lips and eyes. This shows that diseases such as Respiratory Track Infections (RTIs), eyes infections and digestive track infections could pass for malaria. This has great implications for proper management of both malaria and other diseases since such diseases were often treated with anti-malarial drugs bought from shops or borrowed from family members or friends. Herbs and magico-religious rituals were also often used for managing perceived malaria illnesses in children. These findings are similar to those of Mwenesi et al. 1996.

On causes of malaria, various agents were identified. Most of the respondents (95%, see Table 4.) perceived malaria cases to be prevalent during the rainy season. The reason for high incidences of malaria during this period was, however, not fully linked to the presence of mosquitoes, the malaria-carrying vectors. In addition to the mosquito, the

causes of malaria were linked to rains and rain related phenomena such as cold, mist and rainwater. Other agents that were believed to cause malaria include social, natural and supernatural agents, according to key informants narratives and in-depth interviews.

The perceptions on the agents that cause malaria no doubt affect the way the mothers manage the malaria “since the perceptions one has about a situation or phenomenon normally guide action one takes regarding the situation” (King 1962). Mothers stated using drugs meant for treating colds to treat malaria perceived to have been caused by cold. They, in addition, took measures to prevent contact with cold as a way of preventing malaria attacks in their children.

Witchcraft and evil eyes were blamed on individuals said to have evil intentions. Such individuals are believed to cause “strong malaria” which according to in-depth interviews is malaria which causes convulsions (cerebral malaria). Such evil individuals were said to be either co-wives or neighbours. Such neighbours and co-wives were said to be jealous due to signs of prosperity by the victim and so meant to cause harm on the victim, her children or her property. Co-wives among the Luo as in other African societies are traditionally jealous. Such jealousy causes ill feelings between co-wives and their children and often leads to accusations of witchcraft. Evans-Pritchard (1976) found in his study of the Azande of Southern Sudan that accusations of witchcraft provide people with the natural philosophy upon which relations, between people and unfortunate events are explained. These relations are brought about because of jealousy and hatred. “Strong malaria” in Nyang’oma was perceived to be due to acts of such jealous co-wives or neighbours. Such perceptions negatively affect the mothers’ decisions and ability to deal with cerebral malaria since cases of “strong malaria” are frequently referred to a traditional or spiritual healer. Similar findings have been reported elsewhere (e.g., Nyamongo 2001 - among the Abagusii of Western Kenya, Mwenesi 1992 at the Kenyan Coast and Tanner et al.1996 in Southern Tanzania).

Although majority of the respondents perceive malaria as a common health problem, it was not perceived as the most serious health problem. These finding agree with many other studies on malaria among African populations (e.g., Steketee et al.1994 which find that people in hyperndemic areas regard malaria as such a common disease that they do not consider it as a serious health problem. This further explains why most respondents do not take measures to prevent against a possible malaria attack in their children. Although most of them perceived malaria as preventable, only few took measures to prevent malaria. In addition, most of those who mentioned the ways in which malaria can be prevented such as cleanliness of the compound to discourage breeding of mosquitoes did not take such measures since direct observations showed that most of the houses were surrounded by bushy surroundings in addition to broken tins and pots. Houses are constructed with wide unscreened eaves and windows which gave easy entry for mosquitoes.

Malaria was thought to kill children but only after sometime in the child's body. Most mothers (77% Table 4.8) thought that malaria "dries" up blood and water in the child's body due to high body temperature. This, however, is in no way associated with anaemia by the mothers as is clinically identified. The "drying up" of blood meant that the amount of blood is reduced leaving the child's skin scaly, stiff and pale.

Diseases such as "*hima*" and "*mbaha*" were said to affect children. "*Mbaha*" presents with symptoms of paleness of the child's body. "*Mbaha*" turned out to be cases of anaemia due to poorly managed malaria and malnutrition. "*Hima*" on the other hand are instances of a hard swollen abdomen. This too is a further complication of malaria due to an increased number of parasites in the spleen. Both "*hima*" and "*mbaha*" were in no way associated with malaria by the respondents. The manner in which they were managed further complicates the adverse effects of malaria. This is because these diseases according to respondents are never treated with modern medicines. Only herbs are believed to cure "*mbaha*" and "*hima*".

Management of malaria among children depended on perception of various aspects such as causality, severity and symptoms. Other factors noted to influence management of malaria include: religion, distance to health facilities or healers, cost of treatment, availability of transport means, gender relations within the household and time of attack. These aspects on perception about severity, prevention, management, causation either act as enhancing or hindering factors in malaria control as also noted by Agyepong (1992a) in Ghana, Mwenesi (1992) at the Kenyan Coast, Nyamongo (1999, 2000, 2001) among the Abagusii of South Western Kenya and Tanner et al. (1996) in Southern Tanzania. The lay perceptions greatly influence the management strategies that the mothers take when the disease occurs.

There was only one modern health facility in Nyang'oma. Most of the respondents interviewed live three or more kilometers away from the facility and stated the distance to the facility as a hindrance to its use. Khayundi (2000) had similar findings in his study of perceptions of malaria in Bar Chando sub-location whereby distance to health facilities influenced their use. The cost of treatment at the Nyang'oma mission clinic was high and unaffordable to most of the residents. This was made worse by lack of proper transport means and poor road network within the villages. All these factors force most people in Nyang'oma to resort to non prescription patent medicines obtained from local shops or friends or visit traditional and spiritual healers, injections or use local herbs all of which were locally and more readily available than the modern health facilities. Most people go to the modern health facilities only after exhausting all the option within their easy reach.

The findings revealed that most of the respondents, over 75%, lived within a radius of one kilometer from a shopping centre or shop, a traditional and or a spiritual healer or injectionist. Most (69%) also indicated having the knowledge of preparing and administering herbs.

Both biomedical and ethnomedical resources are applied in managing malaria among children. In most cases (70%), mothers used a combination of the two types of resources. Findings revealed that most mothers administered over-the-counter or herbal medicine when malaria was first suspected. If their condition did not improve they were either referred to a traditional or spiritual healer or to a modern health facility. This indicates that in most cases mothers took their children to a modern facility when the situation got out of hand. This affects proper management since successful management of malaria depends on early and prompt diagnosis and treatment. Most mothers indicated taking their children to a modern health facility after two days when OTCDS or herbs seemed not to cause improvement to the child's condition. These findings agree with those of Mulemi (1998) and Khayundi (2000) who found out that most people only went to hospital when they felt that the locally available remedies were not treating them. These findings however, contradict those of Halima (1984:100) whose study of the Luo of Karateng' found that "malaria was caused by naturalistic objects and does not have traditional means of treatment". The respondents in Nyang'oma claimed to have herbs that have been used over time to cure malaria.

Information from in-depth interviews revealed that chloroquin was widely used in Nyang'oma to treat perceived malaria. A particular "doctor" has sons working in a hospital who supply all drugs including chloroquin which has been banned for sale over the counter. Mothers indicated that they have faith in the curing ability of chloroquin because it caused itching which was believed to go away with the malaria. The itching did not discourage them from using the drug as has been found in other studies e.g., (Halima 1984, Mulemi 1998 and Steketee et al. 1994), who have reported itching caused by chloroquin as a hindrance to its use.

Religion plays a major role in shaping the perceptions of malaria, hence its management. Findings from this study revealed that religious sects had their members' views and actions greatly influenced by their various doctrines. Diseases (malaria included) are perceived to be caused by some supernatural powers as a result of punishment due to failure to perform certain religious obligations or by human causes

since such sects strongly believed in witchcraft and ancestral spirits to influence the course of life. These perceptions determine the management strategies employed. In most instances, believers result to spiritual and traditional healers to cure diseases. Interviews with spiritual healers revealed that they were consulted on numerous occasions by their followers to treat perceived malaria and its complications. Although modern health resources such as OTCDs and hospitals were often used by some of these followers indications were that they first went for prayers and only resulted to hospital or OTCDs later. Some followers secretly went to modern facilities to avoid being detected and rebuked by their sect members. Three sects emerged as completely opposed to any other management strategies but prayers. These are Miracle Church, Nomiya and Legio Maria sects. Others such as Roho church, Pentecostal church, Power Church and Soul Winning Church emphasized prayers for cure although they did not have a problem with followers using modern health resources.

Though intrahousehold gender relations may not have influenced perceptions of malaria, it had a big role to play in its management. This is because men are the overall decision makers to matters relating to their households. Most women (52%) indicated having disagreements with their husbands on matters relating to treatment for themselves and the children. They are often forced to do as their husbands wish since most have little or no incomes. Disagreements were also on husbands' refusal to give money for treatment. This often resulted in delays in taking prompt action or mothers using locally available remedies such as herbs or drugs either bought or borrowed from friends.

CONCLUSION

This study set out to investigate the perceptions of malaria among mothers of young children in Nyang'oma and how these perceptions influenced the ways in which malaria is managed by these mothers.

Malaria means various illnesses and diseases for the mothers in Nyang'oma. This conclusion came up as a result of respondents to in-depth interviews and the survey describing malaria in terms such as "strong malaria", "malaria of meningitis", "malaria of

typhoid" and "malaria". Symptoms given for various "malarias" also differed with some agreeing with what is biomedically recognized as malaria and most being a mixture of symptoms of biomedical malaria and other diseases.

Agents perceived to cause malaria are varied and diverse. Causes of malaria varied from human, supernatural, to natural. Human beings caused malaria through performing evil magic to cause harm. Supernatural agents believed to cause malaria are "nyawawa", ancestral spirits or the devil. Natural agents of malaria causation include mosquitoes, weather conditions (heat, cold, rains and mist), food and dirt. A large proportion of the survey respondents attributed malaria to the mosquito in addition to other agents mentioned above.

Most of the respondents were aware of malaria as a common health problem in the area although they did not consider it to be the most serious one. Measles, "mbaha" and "hima" were perceived to be more serious than malaria. This affected the way malaria was managed. In most cases mothers waited for long periods of time before taking an appropriate action to counter malaria. This in turn either killed or brought severe consequences such as anaemia ("mbaha") or infection of the spleen ("hima") which were all too common among children in Nyang'oma.

Various management strategies were employed to counter perceived malaria. These involved the use of biomedical or ethnomedical resources or a combination of both. Biomedical remedies employed involve the use of OTCDs, injectionists or modern health facilities. Ethnomedical resources include use of herb preparations or magico-religious rituals. These resources were applied in stages or simultaneously depending on the mother's interpretation of the child's condition. In most instances, OTCDs and herbs were used either simultaneously or subsequently as the first action, and if no change was observed, either a modern health facility or a spiritual or traditional healer would be consulted.

Various factors affect the management strategies employed. These factors include the cost of treatment, distance to health facilities, availability of transport means, religion, intrahousehold gender relations and perceived cause, symptoms and severity of the disease.

From the preceding findings, discussion and conclusion, the recommendations given here will be useful in enhancing proper management of malaria not only in small children but also in all the people of Nyang'oma area and Bondo district in general.

RECOMMEDATIONS

This study reveals that the perception of various aspects of malaria in Nyang'oma partly differed with the established biomedical aspects of the diseases. Such aspects include perceptions on causality, prevention, severity, symptomatology and management. On this basis it is proper to argue for the need for health education on malaria aimed at making the people understand about its cause, symptoms, severity, consequences, prevention and proper management. It is only through knowing these aspects of malaria that proper control and management can be achieved. Health education entails teaching people about prevailing health problems and the methods of preventing and controlling them (WHO 1978). Health education in Nyang'oma, it is suggested, should be entrusted to the Ministry of Health and NGOs operating in the area. Venues for the health education should be carefully chosen to avoid a waste of time and resources. Other factors such as gender, time, location and religious affiliation should also be put into consideration. These are discussed below.

Gender: It is generally known that men tend to attend community educational training programs leaving behind women (Mwenesi et. al 1996; Sivard 1985; Tanner et al.1996). There is need to emphasise participation of women in these programs since they were found to be playing a leading role in initiating malaria control measures such as clearing of bushes around their homes and community clean up exercises in addition to taking the biggest responsibility for the young children who are most vulnerable to

malaria. If need be, separate venues to pass educational messages for men and women are suggested to avoid women's views being overshadowed by those of men.

Time: Timing of the education programmes also needs to be considered. Seasonal variations in availability of free time will definitely affect the number of people available for the education. Rainy seasons in Nyang'oma proved to be a busy time for the residents therefore this would be inappropriate, since they are busy in their farms.

Location: The places for the health education messages to be passed should be conveniently placed distance wise. If possible, village level education venues would be most appropriate. People tend to be discouraged if they have to travel far.

Religious affiliation: The findings revealed that religion plays a major role in influencing management of malaria. Some sects such as the Legio Maria, Miracle church, Roho church and Nomiya Church had spiritual interpretation of diseases (malaria included) hence management is spiritually oriented with followers praying or performing rituals to get cured. Careful consideration is necessary and possibly a different approach is required.

Malaria control and management can be greatly enhanced by education. However, education is not the only factor in successfully bringing malaria under control. All aspects of community development should be addressed through improving the general well being of the people by empowering them to attain the basic necessities of life such as water, food, housing and proper communication network. This will leave people with time and energy to deal with malaria and other health problems affecting them. Various individuals have argued that Third World populations do not prioritise malaria as a serious issue compared to the daily problems of poverty, hunger and lack of basic services such as roads, electricity and employment Kloos (1995: 1503). Etkin (1991) also points out that in endemic areas such as Africa malaria is so common that people perceive it as a "norm" that does not warrant expenditure of their limited resources. If people are empowered through being able to acquire the basic needs they will have the time and energy to effectively control and manage malaria.

There is need for scientific studies on the herbs used for treatment and prevention of malaria so that their safety and efficacy can be established. Those found safe and effective in prevention and treatment should be incorporated in the current health care system. The community can then be educated on the right preparation and administering procedures. Such efforts will no doubt be of great benefit to the community in terms of financial implications since most people earn little or no incomes, and on the social aspect since the community will readily accept what they have always known with minor adjustments in terms of dosages. Herbs found inefficacious can then be discarded with little or no resistance.

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APPENDIX 1

INTERVIEW SCHEDULE

THE PERCEPTION AND MANAGEMENT OF MALARIA.

INTRODUCTION.

Greetings. My name is Lucy Nkirote K. Nyaga. I am a student at the University of Nairobi carrying out a study on malaria in this area. My major concern is finding out how mothers in this area think about malaria and how they respond to it when it affects their children, since they are generally known to be the principal primary health care providers within households. I will, therefore, request you to give me answers to questions I will ask you on this subject. I would like to assure you that every information you give me will be treated with strict confidentiality.

BACKGROUND INFORMATION

1. Please provide the following information about yourself and the household head.

	Name (optional)	Age (years)	Education level	Religious affiliation
Respondent				
Household head				

2a) What are your sources of income?

b) How much do you earn from the mentioned sources per month?
(Approximations/exact).

3a) How many members does your household have? _____

b) How many of them are children under five years? _____

4. What means of transport do you usually use to take a sick member of the family to a health facility? _____

PERCEPTIONS ABOUT MALARIA

5. Which diseases commonly affect children in this area? (freelist in the order which they are mentioned)

6. Which of the mentioned diseases do you consider to be the most severe among the children in this area?

7. What causes malaria? _____

8a). What are the signs and symptoms of your child/ren's last malaria attack that made you believe that she/he/they were actually suffering from malaria and not any other disease?

b) Do malaria symptoms present in the same way in children and adults?

Yes []

No []

c) If no, what are the differences? _____

9.a) Please explain how you perceive malaria in children during the initial stages of attack.

b) Please explain what happens if a child with malaria is not treated promptly? _____

10a) What period of the year does malaria occur most in this area?

b) Why do you think malaria is most prevalent during the mentioned period?

11a). How is malaria transmitted to young children? _____

b) How is it transmitted to adults? _____

12a) Does malaria lead to death among children? _____

Yes

No

Don't know

b) If yes, why does it kill? _____

c) If no, why not? _____

13. Which adverse effects of malaria do you know?

14.a) In your view, can malaria be prevented? _____

Yes

No

Don't know

b) If yes, how? _____

c) If no, why not? _____

15a) Which methods do you use to protect your child /children from malaria attacks?

1)

2)

3)

4)

16.a) Is malaria among children completely curable?

Yes

No

Not sure

b) If yes, how? _____

c) If no, why not? _____

17.a) Is it easy for you to distinguish malaria from other illnesses that occur in this area?

Yes

No

b) If no, which diseases do you think are likely to be confused with /for malaria among children? _____

MANAGEMENT OF MALARIA

18. How far is it from your home to the nearest:

a) Health facility of any kind? _____ Kms

b) Shopping center/ Shop(s)/ Canteens? _____ Kms

c) Traditional healer/ Medicine man? _____ Kms

19.a) Once malaria is suspected or symptoms recognised in children, what do you?

20. a) When did your child/ren last experience a malaria attack?

1. Currently sick

2. 1-3 weeks ago

3. One month ago

4. One month ago

b) Please describe the attack _____

21. Describe in details what you did/are doing to treat your child/ren's illness (i.e., the last malaria attack).

22 a) How long did you take between the time you recognized the symptoms and your first treatment action? _____

b) Why did you take that time?

c) If no treatment action(s) was/were taken, what was/were the reasons?

23. a) After the last attack, are you taking any measure(s) to prevent your child from being sick again?

Yes []

No []

b) If yes, what are you doing? _____

c) If no, why haven't you taken any action? _____

24. Where do you normally take your child for treatment?

25. a) When your child/ren has/have malaria attacks, do you usually receive any assistance from anyone towards treatment of the illness?

Yes []

No []

b) If yes, what kind of help do you receive and from who?

26a) Do you consult anyone most of the times before you embark on finding treatment for your child/ren?

Yes

No

c) If no, why do you not consult?

27. What are the major problems that you face in dealing with malaria when it strikes your child/ren?

INTRA HOUSEHOLD GENDER RELATIONS AND RELATED ISSUES

28. Culturally, what is the role of each of the following people in performing tasks related to malaria control and management in this household?

29. Do men and women (spouses) relate well towards one another in this community? (Explain)

30. Do you face any obstacles from the head of your household in finding appropriate treatment for malaria when it attacks you or your young child? (Explain)

31. What do you think should be done to assist women in this area to best deal with the malaria problem affecting their children?

32. You may kindly comment or give additional information on malaria and its control if you have any.

Thank you so much and stay well

APPENDIX II

BOTANICAL NAMES FOR TRADITIONAL MEDICINAL HERBS

LOCAL NAME	BOTANICAL NAME
Dwele	<i>Melia azedarach</i>
Mweny	<i>Lantana camalla</i>
Ober	<i>Carissa edulis</i>
Ochal	<i>Cissampelos mucronata</i>
Ochuogal	<i>Ximenia Americana</i>
Olandra	<i>Albizia coriara</i>
Ombasa	<i>Leonotis spp</i>
Pedo	<i>Harrispamoa abyssinia</i>
Yago	<i>Kigelia africana</i>

Source: Kokwaro, J.O. 1992

APPENDIX III

KEY INFORMANT INTERVIEW GUIDE

1. How do mothers of young children in Nyang'oma view malaria among their children?
2. Why do they view malaria the way they do?
3. How do mothers in this area generally respond to illnesses among their children?
4. How do they specifically respond to malaria-related illnesses when the children get sick?
5. Why do they respond to malaria-related illnesses in their children the way they do?
6. What are the culturally prescribed roles of men and women when it comes to household health in the community?
7. How are the health care tasks shared between spouses in the community?
8. What is the nature of the Luo intrahousehold decision-making dynamics?
9. What constraints do women often face at the household level in doing something about illness:
 - i) When they are themselves sick?
 - ii) When other members of their household especially children are sick?
10. What generally affects their utilization of malaria control measures?
11. Are the local women generally keen in malaria prevention? If not, what are the reasons

APPENDIX IV

DIRECT OBSERVATIONS

(To be filled by the researcher)

1. House (s') roofing material

Grass

Corrugated iron sheet

Others (specify)

2. House wall made of

Mud

Blocks

Wood

Other (specify)

3. house windows made of

Grass

Wood

Other (specify)

4. Are windows:

Screened?

Unscreened?

5. House(s) with eaves?

Yes No

6. Are the eaves:

Screened?

Unscreened?

7. Vegetation around the house?

Yes No

8. Broken tins and containers around the compound?

Yes

No

9. Cleanliness of house and compound?

Satisfactory

Unsatisfactory

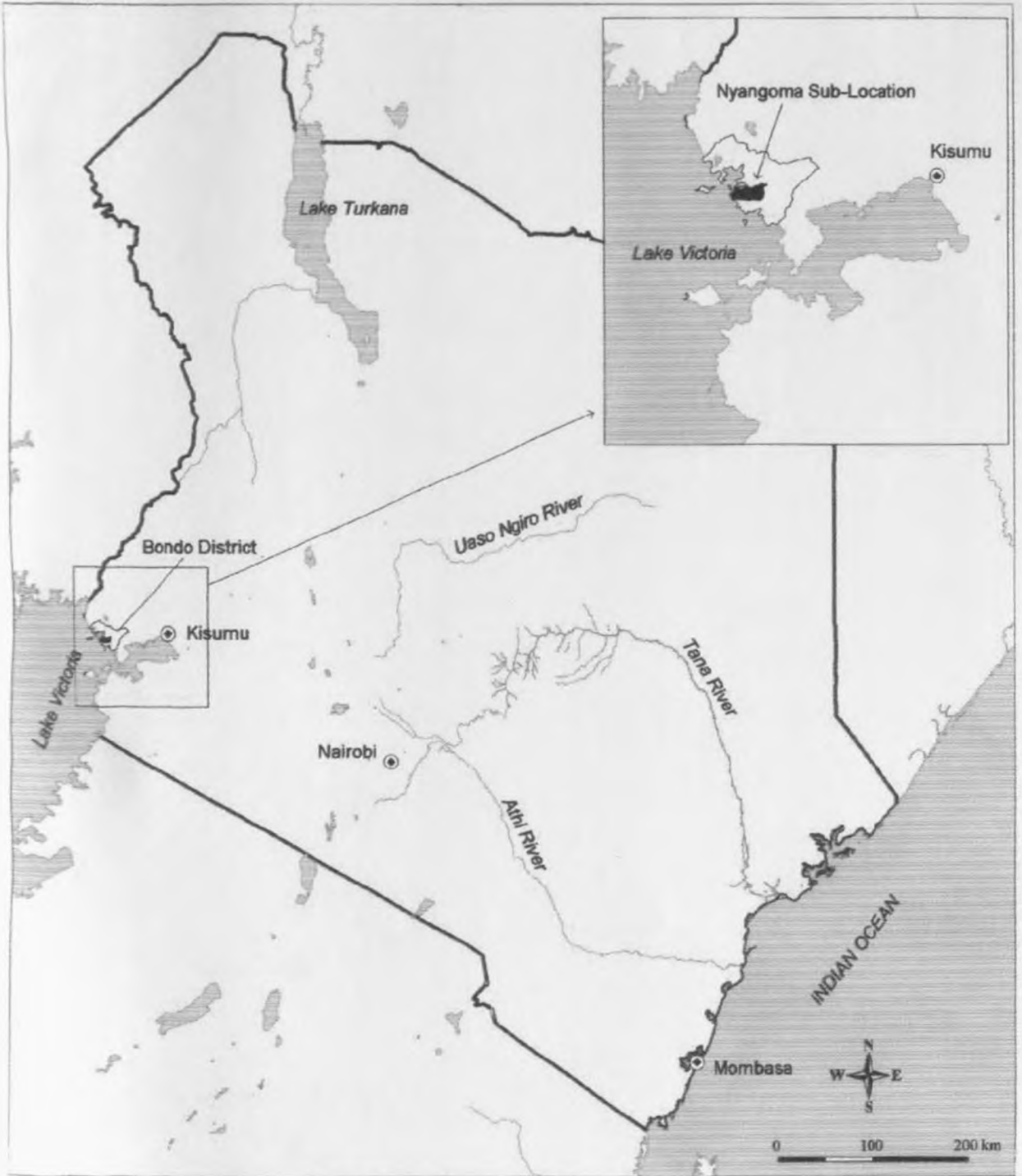
10. Who clears vegetation around the home compound?

Adult male

Adult female

11. Who clears vegetation outside the house compound?

Map of Kenya showing Nyang'oma Sub-location in Bondo District



Key:
■ Research site