FACTORS INFLUENCING HEALTH CARE SEEKING BEHAVIOUR FOR CHILDHOOD MALARIA IN MAKUYU DIVISION OF MARAGUA DISTRICT, KENYA

BY

Agnes Muthanje Daniel (HND-Occupational Health and safety)

Reg. No. I57/CM/0311/04

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF PUBLIC HEALTH IN THE SCHOOL OF HEALTH SCIENCES OF KENYATTA UNIVERSITY

September 2010
DECLARATION

This Thesis is my original work and has not been presented for a degree or any other award in any other University or any other institution of higher learning.

Signed-------------------------------------- Date------------------------------------------
Agnes Muthanje Daniel

SUPERVISORS:

This Thesis has been submitted with our approval as University supervisors

Signed-------------------------------------- Date--------------------------------------
Prof. John H.Ouma (PhD)
Department of Public Health, School of Health Sciences
Kenyatta University

Signed ------------------------------------- Date-------------------------------------
Dr.Isaac Mwanzo (PhD)
Department of Public Health,School of Health Sciences
Kenyatta University
DEDICATION

To my loving Husband, L.Bosire Mong’are, my children Sylvia Karimi and Frank Nyamboki who were always there for me, and all those who encouraged me to pursue this study to the end.
ACKNOWLEDGEMENT

I acknowledge with gratitude the tireless efforts and support made by the following; the lectures of Department of Public Health Kenyatta university for their advisory contributions in various ways. In a very special way, I thank my supervisors Prof John H. Ouma and Dr. Isaac Mwanzo both of the Department of Public Health without whose patience and guidance this work would not have been successful.

My research assistants; Josephine, Gladys, and Robert without whose profound commitment and assistance this work would not have been completed. I am especially indebted to my family; loving Husband Ludovick Bosire, children Karimi and Nyamboki who sacrificed a lot to ensure that I got all that I needed for my study. This project was fully sponsored by them. I cannot forget to thank my Brother William Kinyua of St Marks Teachers Kigari who patiently and diligently did the typesetting amidst other duties. Mr.Samuel Makenywa for allowing me access to his computer and printer whenever I needed it, and the community of Makuyu Division who cooperated and enabled my data collection in various ways.

Over and above all, I thank the Almighty God for all his care and favors for me.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title page</td>
<td>i</td>
</tr>
<tr>
<td>Declaration</td>
<td>ii</td>
</tr>
<tr>
<td>Dedication</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>iv</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>x</td>
</tr>
<tr>
<td>List of figures</td>
<td>xi</td>
</tr>
<tr>
<td>Operational Definitions of terms</td>
<td>xii</td>
</tr>
<tr>
<td>Acronyms and Abbreviations</td>
<td>xiii</td>
</tr>
<tr>
<td>Abstract</td>
<td>xiv</td>
</tr>
</tbody>
</table>

## CHAPTER ONE: INTRODUCTION

1.1. Background information
1.1.2 Occurrence and distribution of malaria
1.1.3 Malaria burden
1.1.4 Care seeking behavior
1.2 Problem statement
1.3 Justification of the study
1.4 Research questions
1.5 Null Hypothesis
1.6 General objectives
1.6.1 Specific Objective
CHAPTER TWO: LITERATURE REVIEW

2.1 Malaria global situation -------------------------------------------------9

2.2 African situation--------------------------------------------------------9

2.2.1 Social –Economic impact of malaria in Africa--------------------------10

2.2.2 Response to malaria by African Governments--------------------------11

2.3 Care seeking behavior for malaria--------------------------------------12

2.3.1 Mothers/caretakers’ knowledge on signs -----------------------------14

2.3.2 Care seeking options -----------------------------------------------16

2.4 Barriers to Health care seeking----------------------------------------17

CHAPTER THREE: METHODOLOGY

3.1. Study area---------------------------------------------------------------21

3.3. Research design--------------------------------------------------------21

3.4 Variables---------------------------------------------------------------22

3.4.1 Dependent variable---------------------------------------------------22

3.4.2 Independent variable-------------------------------------------------22

3.5 Target population-------------------------------------------------------23

3.6 Selection criteria-------------------------------------------------------23

3.6.1 Inclusion criteria ---------------------------------------------------23

3.6.2 Exclusion criteria----------------------------------------------------24
3.6.3 Sample size determination ----------------------------------------24
3.6.4 Sampling technique and procedure-------------------------------24
3.6.5 Selection of Focus Group Discussions (FGDs)-------------------25
3.7. Construction of the research instruments------------------------26
3.8 Pre-testing-------------------------------------------------------26
3.8.1 Validity--------------------------------------------------------26
3.8.2 Reliability-----------------------------------------------------26
3.9 Data collection technique----------------------------------------27
3.10. Data management and analysis----------------------------------27
3.10.1 Logistical and Ethical considerations--------------------------28

CHAPTER 4: RESULTS AND DISCUSSIONS

4.1.1 Social demographic characteristics of the respondents---------29
4.1.2 Distribution of the respondents by age------------------------29
4.1.3 Religion of the respondents-----------------------------------30
4.1.4 Marital status-----------------------------------------------31
4.1.5 Respondent’s relationship to the child------------------------31
4.1.6 Level of education of the respondents-------------------------32
4.2.1 Occupation of the respondents-----------------------------33
4.2.2 Occupation of the partners----------------------------------34
4.2.3 Main source of family income--------------------------------35
4.2.4 Approximate monthly income levels of the respondents-------36
4.2.5 Respondents involvement in budgeting of the family income---37
4.2 Mothers/Caretakers’ response to childhood malaria-----------------------------34
4.3.1 Level of Knowledge of signs of childhood malaria among caretakers--------38
4.3.2 Modes of transmission of malaria------------------------------------------38
4.3.4 Common Childhood diseases reported--------------------------------------39
4.3.5 Reported Malaria episodes-----------------------------------------------40
4.3.6 Response to childhood malaria---------------------------------------------40
4.3.7 Payment for treatment of childhood malaria in health facilities----------41
4.3.8 Drugs mainly used to manage childhood malaria by caretakers------------42
4.3.9 Handling of unused drugs------------------------------------------------43
4.4 Symptoms treated using herbs---------------------------------------------43
4.4.1 Symptoms considered minor by the respondents---------------------------44
4.4.2 Malaria prevention-----------------------------------------------------45
4.4.3 Strategies used by the respondents to prevent malaria-------------------45
4.4.5 Commonly used malaria prevention methods------------------------------46
4.4.6 Suggested best malaria prevention strategies---------------------------47
4.4.7 Bed Net use by children-----------------------------------------------48
4.4.8 Reasons for not using nets---------------------------------------------48
4.4.9 Taking the lead in childhood malaria prevention------------------------49
4.5.1 Key decision makers at household level----------------------------------50
4.5.2 Stage of illness at which household consultations were made------------51
4.5.3 Time taken to consult a clinician after the onset of the signs----------51

CHAPTER 5: DISCUSSIONS ------------------------------------------------------53
5.1 Socio-Economic and demographic characteristics of the mothers/caretakers—53
5.1.2 Marital status------------------------------------------------------------53
5.1.3 Level of education and occupation of mothers/caretakers----------------------55
5.1.4 Occupation, income and health seeking behavior-------------------------57
5.1.5 Religion---------------------------------------------------------------58
5.2 Mothers/caretakers, level of knowledge on mode of transmission, sign, treatment and prevention of malaria--------------------------------59
5.2.1 Care seeking behavior---------------------------------------------------59
5.2.2 Self diagnoses medication and use of herbs-----------------------------63
5.2.3 Time taken to consult a physician---------------------------------------63
5.2.4 Malaria prevention------------------------------------------------------64
5.2.5 Community based malaria prevention strategies------------------------65

CHAPTER SIX; CONCLUSION AND RECOMMENDATIONS
6.1 Conclusion----------------------------------------------------------------67
6.3 Recommendations------------------------------------------------------------69
6.4 Suggestion For further research------------------------------------------70

REFERENCES-------------------------------------------------------------------71
APPENDICES-------------------------------------------------------------------76
Appendix 1 Data collection tool (FGD guide)-----------------------------------76
Appendix 2 Data collection tool (questionnaire)-------------------------------77
Appendix - Authority to conduct research
Appendix - Map of Maragua District
LIST OF TABLES

Table 4.1 Marital status of the respondents-----------------------------31
Table 4.2 Occupation of the partners--------------------------------35
Table 4.3 Approximate monthly income levels of the respondents-------37
Table 4.4 Level of knowledge of signs of childhood malaria-----------38
Table 4.5 Transmission of malaria-------------------------------------39
Table 4.6 Actions taken on childhood malaria--------------------------41
Table 4.7 Payment for childhood malaria treatment--------------------42
Table 4.8 Handling of un used drugs ----------------------------------44
Table 4.9 Symptoms treated using herbs-------------------------------44
Table 4.10 Symptoms considered minor -------------------------------45
Table 4.11 commonly used malaria prevention methods -----------------48
Table 4.12 Suggested best malaria prevention approaches --------------49
Table 4.13 Reasons for not using bed nets-----------------------------50
Table 4.14 Consultations at household level---------------------------51
Table 4.15 Stage of illness at which consultation at home were made--52
LIST OF FIGURES

Figure 4.1. Distribution of respondents by age----------------------------- 29
Figure 4.2 Religious backgrounds of the respondents--------------------- 30
Figure 4.3 Respondents relationship to the child------------------------ 32
Figure 4.4 Level of education of the respondents------------------------ 32
Figure 4.5 Occupation of the respondents------------------------------- 33
Figure 4.6 Main source of family income---------------------------------- 36
Figure 4.7 Respondents involvement in budgeting of the family income---- 37
Figure 4.8 Common childhood Diseases----------------------------------- 40
Figure 4.9 Drugs used to manage childhood malaria by caretakers-------- 43
Figure 4.10 Whether attempts were made to protect child from malaria--- 46
Figure 4.11 Methods applied by the respondents to prevent malaria------ 47
Figure 4.12 Taking the lead in childhood malaria prevention------------ 50
Figure 4.13 Time taken to consult a physician after onset of signs------ 53
OPERATIONAL DEFINITION OF TERMS

**Care Taker** - any person other than the mother charged with the responsibility of looking after the under fives and stays with the child most of the time.

**Health Care Seeking Behaviour** - any actions taken by the mother/care taker to treat malaria.

**Childhood Malaria** - presentation of an under five with fever or any other sign perceived to be malaria by the caretaker or health service provider. Also refers to microscopically proven malaria.

**Health Service Provider** - person trusted by the mother/care taker to manage the health problem of his/her baby.

**Appropriate Case Management** - timely, correct diagnoses and treatment with the right drugs and the right dosage.

**Herb** - A plant whose leaves, roots stem, seeds or any other part of it used for medicinal purposes.
ACRONYMS AND ABBREVIATIONS IN THE THESIS

AL  - Atemether Lumefandrin
AIDS - Acquired Immune Deficiency Syndrome.
CBS  - Central Bureau of Statistics
DVBD - Division of Vector Borne Diseases
DMC  - Division of Malaria Control.
FGD  - Focus Group Discussions
GDP  - Gross Domestic Produce
GOK  - Government Of Kenya
HIV  - Human Immune Deficiency Syndrome.
IMCI - Integrated Management of Childhood Illnesses.
ITN  - Insecticide Treated Nets
KAP  - Knowledge Attitude and Practice
KDHS – Kenya Demographic and Health Survey
MOH  - Ministry of Health.
NMS  - National Malaria Strategy
OTC  - Over The Counter
PHO  - Public Health Officer.
RBM  - Roll Back Malaria.
SSA  - Sub-Saharan Africa
USAID - United States Agency for International Development
WHO  - World Health Organizations.
WBC  - White Blood Cells
Malaria is a life threatening parasitic disease of major Public Health concern especially in Sub-Saharan Africa, where it kills more than 1 million children every year. The main objective of the study was to investigate the factors that influence health care seeking behavior for childhood malaria in Makuyu Division of Maragua District, Kenya. To achieve a desired representation, simple random sampling of the households with under fives was carried out. About 306 mothers/caretakers of the under fives from Makuyu Division were interviewed using structured interview schedules. Focus group discussions were also used to gather information on how mothers/caretakers recognize childhood malaria and the general community health care practices. Structured observations were carried out to identify environmental and visible evidence of malaria control activities. The data obtained was analyzed using a Statistical Package for Social Sciences (SPSS) 11.5 and excel computer programs. Chi square was used to test for association between various selected variables. Eighty four (84%) of the respondents were mothers to the children, while fathers formed only 8.2%. Malaria remained a major cause of childhood morbidity as 75.2% caregivers reported that their children had malaria episodes two weeks prior to the study. More than half (54.9%) of the caretakers preferred taking their children to health facilities for management of malaria, while 32.7% bought over the counter drugs. Slightly more than a half (51%) used Sulphanomide (fansidar) bought from the shops to manage childhood malaria. Male partners, especially among the married couples played a key role in decision making at the household level regarding actions taken against childhood malaria. The level of knowledge of the signs, transmission, treatment and prevention of childhood malaria among the respondents was significantly high at ($\chi^2=0.175$, d.f=1, p<0.05) among the respondents. A significant relationship between the level of knowledge of symptoms of childhood malaria and use of health facilities for case management was noted at ($\chi^2=157.078$, d.f=2, p< 0.05). Low socio-economic status of the caretakers/mothers negatively affected appropriate care seeking for childhood malaria. A significant relationship between the respondents occupation and the time taken to take the sick child to the health facility for case management of childhood malaria was noted at ($\chi^2=155.99$, d.f =4, p<0.05). The study concludes that due to the belief that the child’s symptoms are self abating, and that the treatment is available at home in a form of purchased or left over drugs, some mothers/caretakers delay appropriate care. The study recommends intensified health education in the community and strengthening of the community based systems such as the community health workers to enable them disseminate health messages and interpret the GOK guidelines on the management of childhood malaria. The government agencies need to intensify surveillance to ensure implementation of its guidelines such as ensuring that the banned drugs such as chloroquin and fansidor do not find their way to the public.
CHAPTER ONE: INTRODUCTION

1.1: Background information

Malaria is a life-threatening parasitic disease transmitted from person to person through the bite of a female Anopheles Mosquito, which requires blood to nature her eggs. It is one of the major Public Health problems facing sub-Saharan Africa (Hill, 1996).

Malaria in humans is caused by a protozoon of the genus *Plasmodium* which contains four subspecies; *falciparum, vivax, malariae, and ovale*. The species that causes the greatest illness and death in Africa is *P. falciparum*. The disease is transmitted by the bites of mosquitoes of the genus *Anopheles*, of which the *Anopheles gambiae* complex (the most efficient) is responsible for the transmission of the disease in Africa. Persons with asymptomatic parasitaemia constitute an important reservoir. Fever is the main symptom of malaria. The most severe manifestations are cerebral malaria (mainly in children and persons without immunity), anemia (mainly in children and pregnant women), and kidney and other organ dysfunction e.g., respiratory distress syndrome (Bhatnagar, 2006). Persons repeatedly exposed to the disease acquire a considerable degree of clinical immunity, which is unstable and disappears after a year away from the endemic-disease environment (Brinkmann, 1996). Most likely to die of malaria are persons without previous immunity, primarily children or persons from other parts of the same country (e.g., high altitudes) where transmission is absent, or persons from more industrialized countries where the disease does not exist (WHO, 2006).
1.1.2 Occurrence and distribution of malaria

Malaria most commonly is found in warmer regions of the world that have tropical and subtropical climates. Anopheles mosquitoes thrives in higher temperatures, and malaria parasites, which grow and develop inside mosquitoes, need warmth in order to grow to a maturity stage in which they can be transmitted to humans (WHO, 2004).

One million or more deaths occur from malaria worldwide each year with majority being African children under the age of 5 years (WHO, 2002). All persons who become exposed to malaria parasite either by visiting or living in malaria endemic areas are a population at risk (Munguti, 1998). The under – five mortality rate in Kenya is based on the 1999 population census, and was estimated at 116 deaths per 1000 live births for 1989-1999 (Central Bureau of Statistics 2000c). This is almost identical to the under five mortality based on the 2003 Kenya Demographic and Health Survey (KDHS), which has an estimate of 77 deaths per 1000 live births. The survey revealed that malaria is still a priority disease in Kenya. The District health reports indicate that it is the leading cause of morbidity in under fives in Maragua District where the study was conducted. The Makuyu Health center reports from the DVBD laboratory indicates that the malaria prevalence rate for the year 2004 was 48.75% while that of the under fives was 27% (DVBD, 2004). Combating malaria and other diseases is one of the Millennium Development Goals (WHO, 2000).
1.1.3 Malaria burden

The disease consumes a large proportion of the health budget in many African countries thus accounting for 20 to 40% of outpatient visits and 10 to 15% of admissions (WHO, 2000). It exacts an unacceptable toll on the economic welfare of the world’s poorest communities and perpetuates a vicious cycle of poverty (UNICEF, 2004). The estimated annual direct and indirect cost of malaria in Africa alone is more than 2000 million Euros (WHO, 2004). In Africa today, malaria is understood to be both a disease of poverty and a cause of poverty. Annual economic growth in countries with high malaria transmission has historically been lower than in countries without malaria. Economists believe that malaria is responsible for a growth penalty of up to 1.3% per year in some African countries. When compounded over the years, this penalty leads to substantial differences in GDP between countries with and without malaria and severely restrains the economic growth of the entire region (Anonymous, 2000). Malaria also has a direct impact on Africa's human resources. Not only does the disease result in lost life and lost productivity due to illness and premature death, but malaria also hampers children's schooling and social development through both absenteeism and permanent neurological and other damage associated with severe episodes (Nchinda, 1998).

1.1.4 Care seeking behavior

African populations have traditional perceptions about disease causation and management. Some diseases are considered suitable for management by western medicine, while others are considered the exclusive domain of local traditional
health practitioners. Decisions to seek western medicine for any illness are often considered a last resort (Nchinda, 1998).

In the many studies conducted on childhood malaria and health care seeking, a large proportion of the caretakers have been found to be aware of the disease (Kipkorir, 2002). Fever has always been used in the communities as the diagnostic tool for malaria. The caretakers, who are in most cases mothers of the children, have various options to deal with the problem. Some of these options include self-treatment, consulting traditional healers, health facilities both governmental and non-governmental (Baume, 1999). Among the barriers to care seeking are inaccessibility of the health facilities in terms of the distance, availability and adequacy of the drugs, and the problems of the user fee. This study focused on factors influencing utilization of health facilities and services for case management.

1.2 Problem Statement

In the last decade, the prevalence of malaria has been escalating at an alarming rate, especially in Africa. It has been estimated to cause 2.3% of global disease and 9% of disease in Africa. In Kenya, it has been one of the leading causes of morbidity for the last 10 years. Approximately 70% of the population (20 Million) is at risk of malaria. It is also the leading (70%) cause of morbidity in children under five years of age. Approximately 34,000 Kenyan children aged below 5 years die each year of malaria; hence approximately 93 and 4 children die every day and every hour respectively. A child suffers 3-5 episodes of Malaria per year, and if untreated most deaths occur within 72 hours of attack.
In Maragua District, infant mortality rate was at 29/1000 in 2004, and Malaria, which is endemic in the area, is a significant contributor to this. According to the DVBD laboratory records for the same year, Malaria infection rate within Makuyu Division was 48.75%. On average, the health facilities within the division received three to five cases of complicated childhood malaria per month. This serious situation is an indication of delayed appropriate diagnoses and treatment of childhood malaria.

A baseline survey report by the World vision malaria control project in Gakungu sub location of Makuyu Division in the year 2004 indicated a low (40%) uptake of intermittent presumptive treatment (IPT) by pregnant women. To treat malaria, they used un recommended drugs. According to Maragua District Health statistics; management of fever in under fives is poor as only 28.73% took action the same day. The DVBD laboratory records for 2004 indicate Malaria infection rate within Makuyu was 48.75%. One survey conducted in the division indicated availability of Health facilities at reasonable distances to the population, yet not all the under fives access the services. Despite the availability of diagnostic and treatment facilities in Makuyu division, children suffering from malaria are denied timely appropriate case management due to the factors investigated in this study.

1.3 Justification of the study

Malaria is an important social, economic, and developmental problem affecting individuals, families, communities, and countries. Falciparum malaria is a complex
disease with a patchy non-uniform distribution and clinical manifestations that vary from one area to another within an endemic-disease zone, often showing space-time clustering of severe malaria in the community. The determinants of severe life-threatening malaria need further elucidation. The best chance for successfully combating the disease is placing the control strategy on a strong research base.

The greatest burden of malaria and the greatest need for prevention and treatment occur in poorly accessible rural settings, where cases are often managed at home rather than in a formal health-care setting. The heaviest malaria burden among the under five children in Kenya is at the community level. The interventions put in place by the government targeting this population does not reach them appropriately. A lot of donor funds, government resources and efforts go to Malaria control activities yet many lives in communities in the rural areas, such as Makuyu, which carry the greatest malaria burden, continue to be lost as a result of malaria related complications.

The study was conducted in Makuyu division because it has the highest cases of both clinical and microscopically proven malaria compared to the other Divisions of the District. On average, the health facilities in Makuyu division receive three to five cases of severe childhood malaria per week. It is against this background that the study investigates the factors that determine care of the childhood illnesses especially malaria, with a view to make recommendations that will go a long way to help mothers/caretakers take the necessary actions to prevent malaria related childhood morbidity and mortality. It not only gives an insight into directing
malaria control resources to appropriate areas, but also shows the intervention planners, which actions in the home should be reinforced and which should be changed because they are ineffective or harmful. The study findings will aid the intervention planners design effective messages and projects, and direct them to the right people. It also points out the need to address delay in taking suitable actions or in seeking care at a health facility. The finding of this study directly supports integrated management of childhood illness by providing information that has implication for community aspects of IMCI.

1.4. Research questions

a. How do the mothers /caretakers of the under fives respond to childhood malaria?

b. Who are the key players involved in decision-making regarding actions taken on childhood malaria at household level?

c. How does the socio-economic status of the mother/caretaker influence the care-seeking behavior in childhood malaria?

1.5: Null Hypotheses

1. The mother or caretakers’ socio-economic status does not influence health-seeking behavior.
2. There is no relationship between the caretaker’s level of knowledge of signs and symptoms of childhood malaria and utilization of the Health facilities for case management.

1.6: General objectives

To investigate the factors that influence health care seeking behavior for childhood malaria in Makuyu Division of Maragua District Kenya.

1.6.1: Specific objectives

a. To describe the mothers’/caretakers’ response to childhood malaria and reasons for their actions

b. To identify the key actors/players involved in decision making in the actions taken on childhood malaria at the household level.

c. To establish and explain the relationship between the socio-economic status and the health seeking patterns with regard to childhood malaria.
CHAPTER 2: LITERATURE REVIEW

2.1 Malaria: Global situation

At present, about 100 countries or territories in the world are considered malarious, almost half of them being in Africa, south of the Sahara. An estimated 243 million cases, and 863,000 deaths were reported in 2008 (WHO, 2008). Once a person develops malaria, the only means of reducing suffering and preventing death is by diagnosing and treating the disease (Goodman et al., 1999).

An increasing number of malaria epidemics have recently been documented throughout the world. The major reasons for such epidemics are climatic factors such as abnormal rains, long periods of increased humidity and temperature and/or more permanent changes of microclimate as a result of irrigation, agriculture or tree plantations (Nchinda, 1998). Military conflicts and civil unrest, along with favourable ecological changes have greatly contributed to malaria epidemics, as large numbers of unprotected and non-immune refugees move into malarious areas. Temporary migrant persons engaged in gem or gold mining in South America and South-East Asia are exposed to very intense transmission of malaria and such a situation leads to serious malaria outbreaks/epidemics too (WHO, 2008).

2.2 African situation
The vast majority of malaria deaths occur in Africa, south of the Sahara. It is one of the most important infectious diseases in children. It is estimated that 74% of the African population lives in highly endemic areas and 5% of the African children are likely to die of malaria before reaching age 5 years. It has been recorded to be responsible for deaths of 1 million children per year or 25% of all childhood deaths in sub-Saharan Africa, mainly due to anemia and cerebral malaria. Malaria also presents major obstacles to social and economic development. It has been estimated to cost Africa more than US$ 12 billion every year in lost GDP, even though it could be controlled for a fraction of that sum (Kagen, 2002).

These sad estimates of malaria caused deaths by the World Health Organization show that it is one of the great global killers and weighs most heavily on Africa. Yet malaria can be prevented and treated. Bed nets treated with insecticide can protect young children (and pregnant women, another high risk group) against the bites of malaria-carrying mosquitoes (Thomas, 2000).

Sub-Saharan Africa region is also home to the most efficient and therefore deadly, species of the mosquitoes which transmit the disease. Moreover, many countries in Africa lack the infrastructures and resources necessary to mount sustainable campaigns against malaria and as a result few benefited from historical efforts to eradicate malaria (Snow et al., 1996).

2.2.1 Socio-Economic impact of Malaria in Africa

Malaria has a significant impact on the economies of the most affected countries. It results in so much illness and death, facilitating a cycle of disease and poverty in
already resource-poor nations. Every thirty seconds a child dies in Africa, killed by malaria (Nchinda, 2004).

In Africa today, malaria is understood to be both a disease of poverty and a cause of poverty (WHO, 2000). A survey by the WHO has revealed that economically, households in Africa spend 2 to 25 Euros on treatment annually and 0.2 to 15 Euros on prevention per month. In small households in Kenya and Nigeria 5 and 13% of the households’ expenditure, respectively was on malaria (WHO, 2006). Approximately 172 million working days are lost annually due to malaria, thus contributing to high levels of poverty in Kenya.

2.2.2 Response to Malaria by African Governments

Growing political commitment by African leaders for action on malaria was given a boost by the founding of the Roll Back Malaria global partnership in 1998. Less than two years later African Heads of State and their representatives met in Abuja, Nigeria to translate RBM's goal of halving the malaria burden by 2010 into tangible political action. The Abuja Declaration, signed in April 2000 endorsed a concerted strategy to tackle the problem of malaria across Africa. The Abuja Declaration endorsed RBM's goal and established a series of interim targets for the number of people having access to treatment, protective measures or, in the case of pregnant women, receiving intermittent preventive treatment to ensure that progress would be made towards the goal and malaria-endemic countries and other RBM partners held responsible.
Considerable progress has been made since Abuja. Almost 20 African countries have reduced or eliminated taxes and tariffs on insecticide-treated nets (ITNs) to make them more affordable. More than half the malaria-endemic African countries, representing almost half the population at risk have established Country Strategic Plans (CSPs) to achieve the RBM goal and the targets set in Abuja. CSPs are all based on the four technical elements of Roll Back Malaria and the evidence-based interventions associated with them prompt access to effective treatment, promotion of ITNs and improved vector control, prevention and management of malaria in pregnancy and improving the prevention of, and response to, malaria epidemics and malaria in complex emergencies (Johnson, 2005).

Countries are now working through local partnerships to develop the capacity to fully implement their CSPs using ongoing health sector reforms and linkages to other initiatives, such as IMCI (Integrated Management of Childhood Illness) and MPS (Making Pregnancy Safer), to improve access to key interventions. CSPs have been successful in attracting new resources for malaria control. However, given projected resource needs to the year 2010, only 20% of necessary funds will be available locally. African countries, working with their partners and donors, must identify and mobilize resources for the remaining amount. Countries are looking to a variety of sources to ensure sustainable financing of their efforts to Roll Back Malaria this includes traditional sources of funding, from the national treasury and donor community as well as the exploration of new opportunities through debt relief schemes and the newly formed Global Fund to Fight AIDS, TB and Malaria (WHO, 2006).
2.3 Care seeking behavior for malaria

Health seeking behavior is influenced by many factors which cut across traditional beliefs, customary laws and social economic characteristics of that community. The decision on as to whom or when to seek medical treatment is vested on a particular individual in the family. This is usually the prerogative of the head of the household (WHO, 2000). At an individual level, the capacity to earn a living, participate in family and community life as well as a sense of personal well being, are all governed by health status. However, the readiness to accept responsibility for one’s health depends partly on the views held about the etiology of illness and the circumstances where blame is attributed. This view is applied by the mother/caretakers on their children in the case of childhood malaria.

Among the Mijikenda, (Mwenesi et al., 1995) found that traditional home therapy was herbal medicine prepared from the “neem” (Azindiracta indica) locally known as”Mwarubaine,” Literally meaning that it cures forty diseases and malaria is one of them. The medicinal value of this tree is also recognized among the Kikuyus, where the leaves of the said tree are boiled and then mixed with bone soup. This is believed not only to cure but to prevent malaria, intestinal worms and others.

In malaria endemic areas any deviation presenting with fever is presumed to be malaria. Most caregivers link twitching/convulsions with malaria. The mothers/caregivers especially the older ones often suspect witchcraft as a cause. Therefore, traditional treatments are sought if these signs appear. Herbal remedies are considered especially appropriate (Nchinda, 1998).
Optimum care seeking involves a sequence of steps leading to the resolution of the illness; recognition of the symptoms, appropriate homecare and monitoring, treatment at a health facility, compliance and monitoring for treatment failure, and return to the health facility for treatment failure. Performance of the optimal behavior maximizes the likelihood that illness will be resolved. For example if the caregiver gives correct anti-malarial in the correct dose at home, the child is likely to recover and it is not necessary to proceed to health facility (Baume, 2002). An important malaria control strategy is adequate case management. This proper case management can occur only if symptoms are recognized at the time they occur, are seen as abnormal, and are considered amenable to modern medicine (Tarimo et al., 1998). The success of this strategy however does not depend on diagnoses and treatment alone, only when patients go through these steps successfully will they be cured (Townson et al., 2005). Malaria should be treated as early as possible in the course of the disease, before it becomes severe and poses a risk to the person's life (WHO, 2005).

2.3.1 Mothers/caretakers knowledge of malaria symptoms

When an illness term such as “malaria” is used, even in translation, one cannot be sure that all parties understand the term to mean the same thing. Ethnographic studies from various parts of the world show that local people may use the term to cover a wider range of illnesses than clinical malaria (thereby calling something malaria when it is not), or they may interpret some signs of malaria, especially convulsions, as something else (thereby not calling something malaria when it
The course of action therefore depends on the individuals perception of the ailment (Kothari, 1971).

Fever has traditionally been used as the yardstick for clinical diagnoses of malaria for a long time even before WHO recommended it. It is estimated that in endemic areas at least 80% of the people have the basic knowledge concerning the relationship between mosquito, fever and malaria (Munguti, 1998) but even when mothers/caretakers are familiar with malaria, they may find it difficult to identify fever particularly when it is relatively low. As a result, these mothers leave several patients out of diagnoses (Lubanga et al., 1997). A study conducted in Kenyatta National hospital reported over diagnoses of malaria as a result of reliance on fever as a diagnostic tool. A similar study conducted in Asembo Bay of Western Kenya showed that fever was the most frequently reported symptoms of illness (82.2%) and also had the strongest association with clinical malaria (Okuoch, 2001).

Studies in and outside Kenya have shown that the populations appear to be well informed on various aspects of the disease with the regard to etiology, symptoms, treatment and prevention. In a study conducted in Soy division of Uasin Gishu District, all the study subjects had knowledge of at least one of the classical symptoms of malaria. Most of the respondents reported that the main symptom of malaria were a combination of one or more signs such as fever, headache, general body weakness, chills and lack of appetite among others (Maina, 2008). Similar results were found in studies conducted by (Wakgari et al.,1999) in Ethiopia. In the
study, fever, headache, chills and shivering were the most frequently mentioned symptoms of malaria.

2.3.2 Care seeking options

Often patient and their caretakers have several options from which to choose such as; self treatment, traditional healers, government or private health facilities. In particular, self-treatment prior to consulting a biomedical health facility is widespread. It is regarded as one of the major factors that contribute to delayed and poor diagnoses of malaria (WHO, 2006). Although caretakers are known to undertake homecare services such as tepid sponging, administration of anti-malaria’s, majority end up taking their children to health facilities; either governmental or non governmental (Snow et al., 1996).

Homecare also includes traditional remedies such as herbs and pharmaceuticals on supply in the homes or obtained from the community sources such as pharmacies when drugs are obtained without prescriptions. A survey conducted by the World Vision in Makuyu revealed unrecommended drugs are used to treat malaria in the households (World Vision,2004).Many adults consider malaria as the normal part of life and so do not seek help. Instead they seek traditional treatment or buy over the counter drugs (OTC), when the symptoms are severe (Besset et al, 1997). This leads to inappropriate use of the anti-malarial drugs as the retailers are not well informed about their dosages and contribute to the development of resistance. Facility-based interventions alone are not sufficient to reduce the burden of
morbidity and mortality (Spencer et al., 1987). The widely adopted method to prevent malaria is the use of Insecticide Treated Nets (ITN). Studies have shown that ITNS have reduced malaria cases by 50% among children under five years and deaths by 20%. However, a sport check in several rural areas in Kenya revealed that the availability of the nets look like luxury which is hard to afford by many families (Ochola, 2006).

2.4 Barriers to health care seeking

Socio economic factors are said to influence health-seeking behavior. Poor people are both at increased risk of becoming infected with malaria and becoming infected more frequently. Child mortality rates are known to be higher in poorer households and malaria is responsible for substantial proportion of deaths. In a demographic surveillance system in rural areas of the united republic of Tanzania, (Mwageni, 1998) observed that under five mortality following an acute fever, (much of which would be expected to be due to malaria) was 39% higher in the poorest social economic group than in the richest. The cost of illness due to malaria presents a substantial burden on poorer households. Still many child deaths occur at home before access to life saving treatment and prevention. It afflicts primarily the poorer who tend to live in dwellings that offer few if any barriers against mosquitoes (Neil et al., 2006).

Studies indicate several other factors that influence the motivation of patients to visit a health facility. Tanahashi, (1978) observed that accessibility and acceptability of health services motivated the patients/caretakers choice of the
health facility, as well as the patients’ perception of the severity (Lindblade et al., 2000) and curability of the disease by modern medicine (Tarimo et al., 2000). Sometimes it is felt that the disease is simple enough to be treated at home (Thera et al., 2000) while the presence of high fevers make the mothers become inclined to visit a modern medical facility immediately after the onset, (Govere et al., 2000). Those facilities perceived as qualitatively better will be preferred for treatment while those that for example lack drugs will be avoided (Lindblade et al., 2000). In a focus group discussion conducted by WHO in Chipata Kakumbi in Zambia, it was heard that if a caregiver knows that the clinic is out of drugs, she would probably not go there for treatment. She stays at home and waits for fate or try homecare procedures (WHO, 2000). User fee and travel costs are sometimes considered barriers to visit government health centers (Thera et al; 2000). The close proximity to pharmaceutical shops compared to health facility makes some people go there first for treatment (Lindblade, 2000).

Failure of the mothers/caretakers to understand chemotherapy prescriptions leads to inappropriate use and sometimes non compliance. Although most malaria regimens are relatively short, many children do not get the full doses (Baume et al., 2000). Home administration of medication often is incomplete. Once at home, caregivers sometimes stop giving the medication because the child often vomits it. More often, caregivers give only as much as is needed to see signs of improvement in the child, thinking that no more is needed. It may be felt that the frequency of the drug taking is too high and the duration of treatment is too long particularly after symptoms have disappeared. In some cases, perceived side effects can contribute to poor
compliance (Bussaratid et al., 2000) particularly for special groups such as pregnant women, anti-malarials can be perceived to be harmful or cause minor side effects (Omumbo et al., 1998).

Traditional perception of ill-health determine the steps taken by the mother/caretaker, and can also be a barrier to appropriate health care-seeking. Convulsions are rarely identified with malaria (Tarimo et al., 1998) and are often associated with local illness that are thought best solved outside biomedical realm. Also among traditional healers, symptoms of severe malaria are not generally associated with malaria (Goodman et al., 1999). Consequently, such emergencies are not referred to medical facilities early enough (Nchinda et al., 1998).

Motivation of mothers/caretakers to take an ill child to a specific health facility is encouraged or discouraged by several factors. In a study conducted in Zambia to find out the factors that encourage or discourage a desired behavior, Baume observed that mothers/caretakers are encouraged when the competence of the health provider is perceived to be high. In such cases, the provider is seen to thoroughly examine the child, works at hours convenient for the caretakers/mothers (one health center was open 24 hours), availability of drugs and the attitude of staff is friendly and empathetic (Baume et al., 2000). Mothers/care givers are also greatly encouraged when the child recovered from the previous visit. Lack of external constraints such as need for transport, childcare for other children and permission from someone else also encourages seeking care at the health center.
In the same study, it was found out that mothers/caretakers were discouraged from seeking care at the health center when they had to travel long distance to get to the health facility. When treatment is available at home, e.g., drugs accessible at home whether purchased or left over, mother/caretaker do not take the sick child to the health facility. The attitude and behavior of the health providers, e.g., scolding for such thing as prior treatment given, or loosing of the under five’s clinic card made the mothers/caretakers fear to seek care from the same health facility. Their perception of low level of competence of the trained staff or absence of trained staff also discourages them from seeking care.
CHAPTER 3: MATERIALS AND METHODS

3.1: Study area

This study was conducted in Makuyu Division of Maragua (Murang’a south) District of Central Province Kenya. It is a semi arid area where malaria is endemic and major source of childhood morbidity. The climate is warm and the soils have pockets of clay and black cotton soil which holds water when it rains. This coupled with manmade earth dams that have been constructed to supplement the water supply, provide the conducive environment for breeding of the anopheles mosquito that is responsible for transmission of malaria. The population is of low socio-economic status and relies on peasant farming and casual laborer. The health facilities in the division receive at least five cases of complicated childhood malaria on average per month. This is according to the District annual report 2005. Monthly and annual reports from the district in the subsequent years up to year 2008 indicate malaria as the leading cause of morbidity for both children and adults. Malaria ranks first in the least of the top ten diseases in the district.

3.3: Research Design

This research adopted a descriptive cross-sectional study design to understand how mothers/caretakers of the under fives recognize and respond to childhood malaria and the factors that shape their health seeking behavior in Makuyu Division Maragua District Kenya. Both quantitative (number of respondents per variable) and qualitative data was collected using structured questionnaire, focus group
discussions (FGD) to help probe further qualitative information on factors that shape health seeking behavior and structured observations, to check environmental and visible indicators of malaria control activities.

3.4 Variables

Variables are measurable characteristics that assume different values among the subjects (Mugenda and Mugenda, 1999).

3.4.1 Dependent variable

This is a variable that indicates the total influence arising from the effect of the independent variable. In this study, Health care-seeking behavior was the dependent variable, and was measured by the number of the respondents taking a particular action or with a certain characteristic as pertains to health seeking. These actions or characteristics were further categorized as good, moderate or bad to enable measurement of health seeking behaviour. Those that took acceptable immediate actions such as taking the child to the health facility were categorized as having good health seeking behaviour that needed to be encouraged. The rest required further health information and counseling to discourage the unacceptable health behaviour such as self diagnoses and not taking any action at all.

3.4.2 Independent variable

The independent variable is that which the researcher can manipulate to determine its effect on the dependent variable. In this study, they were the mothers/caretaker’s socio-economic status (determined by the respondents religion, level of education,
occupation, family income per month) their level of knowledge of the causes, signs, mode of transmission, treatment and prevention of malaria (determined by the number of correct answers given). Ranking of the answers into high, medium and low was done to measure the level of knowledge. Those that gave at least 3 correct answers were ranked highly knowledgeable, those that mentioned two correct answers were ranked medium knowledgeable, while those that mentioned one or no correct answer were ranked as low knowledgeable. The study also assessed utilization of health facilities for childhood malaria case management as well as the mothers’/caretaker’s malaria prevention approaches.

3.5 Target population

The study targeted the households with children below five years of age in Malaria endemic zones such as the semi arid areas of the Central Province of Kenya. According to the Kenya health and demographic survey report 2005, the households with children below five years of age in Central Province are 16% of the total households. The sample population was the representatives of the households with under fives in Makuyu division of Maragua District.

3.6 Selection criteria

3.6.1 Inclusion criteria

The households with children below five years of age and had resided in the region for not less than one year were included in the study.
3.6.2 Exclusion criteria

Those excluded from the study were the households with children below five years of age and had stayed in the region for less than one year. Excluded also were the households with the under fives and in the area which had been the focus of intensive intervention project, the Gakungu RBM project by the World Vision.

3.6.3 Sample size determination and sampling techniques

Sample size was calculated using the formula used by Fisher et al., (1998)

\[ n = \frac{Z^2 pq}{d^2} \]

Where \( n \) = required sample size

\( Z = \) Confidence level of 95% that corresponds to the normal standard deviation of 1.96 or 2

\( P = \) Proportion in the target population estimated to have a particular characteristic. (In my case it is the proportion of the households

With the under fives who are at risk of getting malaria = 16%)

\[ q = 1.0 - p \]

\( d = \) the level of significance being measured. In my case it is 5%.

\[ n = 1.96^2 \times 0.16 \times 0.84 \div 0.05 \times 0.05 = 207 \]

Hence the minimum sample size was 207 households. However, a total of 306 households participated in the study.

3.6.4 Sampling Technique and procedure
Simple random sampling was used to get the study participants. All the households in all the sub locations had equal chances of participating in the study. However, only the households with the under fives were eligible to participate. The number of the respondents from each sub location was calculated proportionate to its population and to the sample size. Random start for every sub location was determined by randomly picking the name of a household head from the household list provided by the area assistant chief. By spinning a pen or a pencil, the research team randomly identified the direction to be followed in order to interview the next respondent. All the houses along that direction would be visited but only those with the under fives would be interviewed.

3.6.5: Selection of Focus group discussions (FGD)

A focus group discussion was conducted in each of the three locations of the division. Each group was made up of six to eight participants drawn from all the sub locations involved. One focus group was made up of the male study participants only. The selection of the participants of the FGD depended so much on their willingness to participate in the study. Efforts were made to have those that had not responded to the questionnaire participate in the FGD in order to capture unbiased information.

3.7 Construction of research instruments

Construction of the research instruments refers to the process of designing the research tools(questionnaires, FGD guide, structured observation seas ). This was carefully done in reference to the study objectives in order to ensure that all the
areas of interest pertaining to study were adequately covered. The instruments used to collect data were structured questionnaire, focus group discussion guide and structured observation guide. The objectives of the study guided the nature of the questions asked while the possible responses to the questions were guided by the literature review. Interpretation of each question in the local language was done during the training of the research assistants to ensure that the original idea or the intended meaning was not altered during the interview.

3.8 Pre-testing
Pre-testing of the questionnaire was conducted in the neighboring Kandara Division of the district. This division has the same characteristics as the study area. The village immediately neighboring Makuyu Division was purposely selected to ensure as much similar characteristics as possible.

3.8.1 Validity
Validity is the accuracy and meaningfulness of inferences, which are based on the research results. It is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study (Kothari, 2004). It has to do with how accurately the data obtained in the study represents the variables of the study. Content validity is a measure of the degree to which the data collected using a particular instrument represents a specific domain of indicators or content of a particular concept (Mugenda et al., 1999). To ensure content validity, the questionnaire and the FGD guide used in data collection adequately covered the topic of the study.
3.8.2 Reliability

Reliability is one of the measures of relevance and correctness of the data collected to the research hypothesis. It is the measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda, 1999). Reliability in research is influenced by Random error such that as the random error increase, reliability decreases. In this study, reduction of random error was achieved by ensuring accurate coding, instructions to and supervision of the research assistants. This was also enhanced by pre -testing the data collection tools on a population with similar characteristics to the study population.

3.9. Data collection technique

Data was collected by administering questionnaire to the respondents. The research assistants read out the questions and they ticked the responses, while some respondents chose to read and answer the questions by themselves. Focus group discussions were conducted to probe further the issues that were not adequately covered by the possible response list of the structured questionnaire. A total of four-focus group discussions (FGDs) were conducted each consisting of six respondents. The FGD group members were selected according to education level age and gender. One FGD group consisted of male only.

3.10: Data management and analysis

Data from the field was cleaned and coded before being entered into the computer. The research assistants supervised by the principal researcher went through each
sheet to ensure that the presented information was correct, consistent, and free from errors. The coded data was entered into the computer using SPSS version 11.5. The analysis involved generation of frequencies and cross tabulation among selected variables to express quantitative information. Qualitative data especially from the Focus Group Discussions (FGD) were transcribed and organized into themes. The relevant and important quotes from the discussions were made to enhance and support the quantitative data. The Chi square test was used to determine the relationships between various selected variables. This test was applied to establish the association between the level of the knowledge of signs, treatment and prevention of malaria and the utilization of the health facilities for case management, the relationship between marital status to the respondents and the time taken to take a sick child to the health facility. The significance of the relationships was done at 95% confidence level. Chi square reports were then expressed as significant or insignificant depending on the level of association and the relevant interpretation of the results were made.

3.10.1 Logistical and ethical consideration

Before the implementation of data collection, permission was obtained from the following authorities; Graduate School Kenyatta University, who approved the proposal, and the Ministry of Higher Education, Science and Technology, who offered authority to conduct the research. The community where the research was carried out was briefed by the researcher, the provincial administration and the Public health officers. Informed consent was sought from the individual respondents.
CHAPTER FOUR: RESULTS

4.1.1 Social demographic characteristics of the respondents

The socio demographic characteristics of the respondents included age, religion, level of education, Marital status and the relationship of the respondent to the under five.

4.1.2 Distribution of the respondents by age

This study noted that 129 (42%) were aged between 20 and 30 years of age, 124 (41%) between thirty and forty years, while only 43 (14%) were between 40 and 50 years of age. Six (2%) were over fifty years of age. Those aged below 20 years of age were 4 (1%). Figure 4.1: below has the detail.
The religion of the respondents was looked at with the aim of identifying its influence on the health care seeking behavior. Just slightly below a half of the informants 147 (48%) were Protestants (These include all the other sects that do not profess Catholic faith). About 128 (42%) were Catholics, 19 (6%) were traditionalists while 12 (4%) were Muslims. (See figure 4.2 below for details).
4.1.4 Marital status of the respondents

The Majority of the respondents 219 (71.6 %) reported to be married, while 39 (12.8 %) were single. The remaining were either divorced 24 (7.8 %), separated 12 (3.9%) or widowed 12(3.9%). Table 4.1 below has the details.

<table>
<thead>
<tr>
<th>TABLE 4.1: Marital status of the respondents</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>219</td>
<td>71.6%</td>
</tr>
<tr>
<td>Single</td>
<td>39</td>
<td>12.8%</td>
</tr>
<tr>
<td>Divorced</td>
<td>24</td>
<td>7.8%</td>
</tr>
<tr>
<td>Separated</td>
<td>12</td>
<td>3.9%</td>
</tr>
<tr>
<td>Widow</td>
<td>12</td>
<td>3.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Married</td>
<td>219</td>
<td>71.6</td>
</tr>
<tr>
<td>Single</td>
<td>39</td>
<td>12.8</td>
</tr>
<tr>
<td>Divorced</td>
<td>24</td>
<td>7.8</td>
</tr>
<tr>
<td>Separated</td>
<td>12</td>
<td>3.9</td>
</tr>
<tr>
<td>Widowed</td>
<td>12</td>
<td>3.9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>306</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### 4.1.5 Respondent’s relationship to child

The greatest percentage of the respondents 257 (84%) were mothers to the children, followed by fathers who were 25 (8%). Grand parents comprised of 11(4%) while aunt and house helps formed 8 (3%) and 4 (1%) respectively. See Figure 4.3 next page.

![Respondents relationship to the child](image)

**Figure 4.3**: Respondents Relationship to the child

### 4.1.6 Level of Education of the respondents
The level of education of the respondents was investigated to enable the researcher to relate it with mothers/caretakers’ response to childhood malaria and other aspects of health care seeking. Slightly over a half of the respondents 182 (60%) had obtained primary level of education while 91 (30%) went up to secondary school. A few 26 (8%) had reached college level. Only 7 (2%) did not have formal education. Figure 4.1.4 next page has the details.

FIGURE 4.1.4: Respondents’ Level of Education

4.2. The relationship between the social –economic status and health seeking patterns with regard to childhood malaria

The third objective was to establish and explain the relationship between the social –economic status and the health seeking patterns with regard to childhood malaria. The socio-economic status of the respondents was established through their level of education, their occupation, the occupation of their partners, the approximate monthly income of the family and the involvement of respondents in the budgeting of the family income.
4.2.1 Occupation of the respondents

It is noted that 141 (46%) of the respondents were housewives and mainly mothers to the children. About 62 (20%) were business people while 57 (19%) were casual workers. Farmers were 34 (11%) while only 12 (4%) were teachers. Figure 4.5 next page provides details.

![Graph showing occupation distribution](image)

**Figure 4.5. Occupation of the respondents**

There was a significant relationship between the respondents occupation and the time taken to take the sick child to the health facility for management of childhood malaria, ($\chi^2=155.99$, d.f = 4, p<0.001). Almost half 141(46.1%) of the respondents were housewives who, as the study revealed, depended on their spouses for decision making. Similarly, a statistically significant relationship ($\chi^2= 200.272$, df =5, p<0.001) between the respondents occupation and commonly used drugs for management of childhood malaria was noted. The commonly used drugs were the ones bought from the shops (mainly fansidar). Hence the occupation influences the actions taken on childhood malaria.
4.2.2 Occupation of the Partners

The occupation of the partner influences the family income levels and subsequently their socio-economic status. Childhood malaria has got its own financial implications. The ability of the family to cater for the medical expenses depends on their financial status. A significant relationship the source of drugs used to manage childhood malaria at household level and the occupation of the partners was noted ($x^2=123.673$, d.f.=3, $p<0.001$). Just about 93 (30.3 %) of the respondents reported that their partners were farmers, while 79 (25.8 %) were engaged in small scale business, and 68 (22.2 %) were casual workers and only 4 (1.3 %) were reported to be teachers. Only 62 (20.3 %) did not have partners. Table 4.2 below has the details.

Table 4.2: Occupation of the Partners

<table>
<thead>
<tr>
<th>Partner Occupation</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>93</td>
<td>30.4</td>
</tr>
<tr>
<td>Small Scale Farmers</td>
<td>79</td>
<td>25.8</td>
</tr>
<tr>
<td>Casual laborers</td>
<td>68</td>
<td>22.2</td>
</tr>
<tr>
<td>No partner</td>
<td>62</td>
<td>20.3</td>
</tr>
<tr>
<td>Salaried Employee</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>306</td>
<td>100</td>
</tr>
</tbody>
</table>

4.2.3 Main source of family income

There was a significant relationship between the main source of family income and the actions taken against childhood malaria at the household level ($x^2=58.843$, d.f.=2
p<0.001). The main source of income for the interviewed families was reported to be peasant farming 107 (34%), followed by wages from casual work 103 (34%). About 76 (25%) engaged in small business while only 20 (7%) were in formal employment. Figure 4.6 next page shows the main source of the respondents’ family income.

![Percentage of the frequency](chart.png)

**Figure 4.6: main Source of Family Income**

**4.2.4 Approximate monthly Income Levels of the Respondents**

There was a significant relationship between the family income levels and the use of ITNs for childhood malaria prevention ($x^2=237.170$, d.f=4, p<0.001). Those with a higher income are more likely to invest in ITNs than those with less income. The greatest percentage of the respondents 127 (41.5%) reported to have an income of less than Ksh10,000 per month, 94 (30.7%) earns an income of more than Ksh.10,000 but less than Ksh.15000 while 60 (19.5%) earns an income of less than Ksh.5000 a month.
while only 24(7.8%) gets an income of more than Ksh.15000 but less than Ksh.20,000

Almost negligible number 1 (0.3 %) gets an income of more than Ksh.20,000 a month. Table 4.3 next page has the details.

| TABLE 4.3 Approximate monthly Income Levels of the Respondents |
|------------------|-----------------|---------|
| AMOUNT (KSH.)    | Frequency | Percent |
| BELOW 5000       | 60       | 19.6   |
| 5000-10000       | 127      | 41.5   |
| 10000-15000      | 94       | 30.7   |
| 15000-20000      | 24       | 7.8    |
| 20000 and above  | 1        | 0.3    |
| Total            | 306      | 100    |

4.2.5 Respondents involvement in budgeting of the family income

This study investigated the direct involvement of the mothers/caretakers in the budgeting of the household income. Involvement of the mother/caretaker in the budgeting increases the chances of allocation of funds to cater for eventualities such as childhood illness and items such as ITNs for malaria prevention. It was revealed that just over a half 182 (59%) were directly involved, while 124 (41%) were not directly involved. Figure 4.7 below has the details.
Figure 4.7: Respondents involvement in budgeting of the family income

4.3 MOTHERS/CARETAKERS’ RESPONSE TO CHILDHOOD MALARIA

Objective one of this study was to investigate the mothers/caretakers’ response to childhood malaria and reasons for their actions. In order to achieve this it was important to first establish whether the respondents had adequate knowledge on the cause, mode of transmission, signs and symptoms of childhood malaria.

4.3.1 Level of knowledge of signs of childhood malaria among the care takers

The findings show that less than a half 129 (42%) mentioned at least 3 correct signs of childhood malaria with fever as the most commonly reported symptom. These were ranked highly knowledgeable. About 131 (42.7%) mentioned at least two correct symptoms and were ranked as average while 35 (11.3%) mentioned only one correct answer and therefore ranked as low. Only 11 (4%) respondents did not
mention any correct symptom of malaria and were therefore ranked as having no knowledge on symptoms and signs of childhood malaria. (See table 4.4. below for the details).

Table 4.4: Level of knowledge on signs of childhood malaria

<table>
<thead>
<tr>
<th>Level of knowledge</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>129</td>
<td>42.2</td>
</tr>
<tr>
<td>Average</td>
<td>131</td>
<td>42.8</td>
</tr>
<tr>
<td>Low</td>
<td>35</td>
<td>11.4</td>
</tr>
<tr>
<td>Lack of knowledge</td>
<td>11</td>
<td>3.6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>306</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.3.2 Modes of transmission of malaria

With regard to transmission, majority 223 (72.9%) reported that malaria was transmitted through mosquito bite. Those that believed malaria was transmitted through exposure to cold were 52 (17%), while 7 (2.3%) and 24 (7.8%) cited eating mangoes and contaminated water respectively as modes of malaria transmission.

Table 4.5 below shows the details.

Table 4.5: Transmission of malaria

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquito Bites</td>
<td>223</td>
<td>72.9</td>
</tr>
<tr>
<td>Exposure To Cold</td>
<td>52</td>
<td>17.0</td>
</tr>
<tr>
<td>Eating Mangoes</td>
<td>7</td>
<td>2.3</td>
</tr>
<tr>
<td>Contaminated Water</td>
<td>24</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>306</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

4.3.4 Common childhood diseases Reported
Malaria was reported as the most common cause of childhood morbidity by 230 (75.2%). Those who reported diarrhoea were 52 (17%), while URTI was reported by 15 (4.9%). Only 9 (2.9%) reported pneumonia to be the most common cause of childhood morbidity in their area. See Figure 4.8 on page 40 for the details.

![Common childhood diseases reported](image)

**Figure 4.8 Common childhood diseases Reported**

### 4.3.5. Reported Malaria Episodes

It was noted that about 190 (62.12%) reported episodes of malaria in the month preceding the survey. Only 116 (37.9%) had not experienced any symptoms of malaria.

### 4.3.6 Response to Childhood Malaria

On suspicion of malaria, slightly more than a half 168 (54.9%) preferred taking their
Children to the health facilities while 100 (32.7%) bought drugs from the local shops and pharmacies. About 24 (7.8%) dressed their children warmly because they associated malaria with exposure to cold, while only 7 (2.3%) gave herbs and another 7 (2.3%) did not act immediately. Table 7 below has the details. Statistical analysis revealed a significant correlation between the source of income and the actions taken against childhood malaria at 0.05 level. Thus the meager sources of family income negatively affects care for childhood malaria as it causes delay in appropriate care.

There was a strong relationship between religion and the actions taken against childhood malaria, ($\chi^2 = 157.078$, d.f = 2, $p<0.001$) was noted. A strong statistical relationship between the level of education and the actions of the caretakers towards childhood malaria, ($\chi^2 = 157.075$, d.f = 2, $p< 0.001$) was also recorded. Table 4.5 below has the details.

**Table 4.6. Actions Taken On Childhood Malaria**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take to health facility</td>
<td>168</td>
<td>54.9</td>
</tr>
<tr>
<td>Bought drugs</td>
<td>100</td>
<td>32.7</td>
</tr>
<tr>
<td>Cloth warmly</td>
<td>24</td>
<td>7.8</td>
</tr>
<tr>
<td>Gave Herbs</td>
<td>7</td>
<td>2.3</td>
</tr>
<tr>
<td>No immediate action</td>
<td>7</td>
<td>2.3</td>
</tr>
</tbody>
</table>
4.2.7 Payment for treatment of childhood Malaria in health facilities

Of those who went to the hospital, more than ¾ or 241 (78.8%) reported that they did not pay while 65 (21.2%) stated that they had to pay for their children to be treated. It was noted that of those that paid for treatment, they had taken their children to private clinics. There was a statistically significant relationship between payment for treatment of childhood malaria and the use of the health facilities for case management ($\chi^2=5.635, \text{df}=6, p<0.05$). Table 4.6 next page has the details.

Table 4.7: whether treatment for childhood malaria was paid for

<table>
<thead>
<tr>
<th>Payment</th>
<th>Frequency</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>65</td>
<td>21.2</td>
</tr>
<tr>
<td>NO</td>
<td>241</td>
<td>78.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>306</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3.8 Drugs mainly used to manage childhood malaria by the caretakers

This study shows that about a half 156 (51%) of the respondents used fansidor (sp) and almost 80 (27%) used camoquin obtained from the health facilities, while 40 (13%) of the respondents used herbs and other home based care remedies while AL was used by only 30 (10%). Chi square test revealed
a strong relationship between the level of education and the choice of drugs for home-based management of childhood malaria, \( (x^2=244.719, \text{d.f} = 4, p< 0.001) \). Fig 4.9 on page 43 has the details.

**FIGURE 4.9: Drugs used to manage childhood malaria by caretakers**

**4.3.9 Handling of unused drugs**

This study shows that only 135 (44.1%) used all the drugs received from the health facilities or bought from the shops while 77 (25.2%) did not use all the drugs. An equally significant proportion, 84 (27.4%) kept them for the next use while 10 (3.3%) gave them to a neighbor in need. Table 4.7 next page has the details.
TABLE 4.8 Handling of un used Drugs

<table>
<thead>
<tr>
<th>Action</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used all</td>
<td>135</td>
<td>44.1</td>
</tr>
<tr>
<td>Discarded them</td>
<td>77</td>
<td>25.2</td>
</tr>
<tr>
<td>Kept them for next use</td>
<td>84</td>
<td>27.5</td>
</tr>
<tr>
<td>Gave to neighbor in need</td>
<td>10</td>
<td>3.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>306</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4 Symptoms treated using herbs

It is shown here that 108 (35.3 %) respondents used herbs to treat various symptoms. Out of these, 32 (30 %) used herbs to treat fever, 36 (33 %) to treat lack of appetite, 22 (20 %) used herbs to treat chills while 18 (17 %) used herbs to treat diarrhea. Such symptoms were considered transient and therefore not enough reason to visit a health service provider. Some of these conditions were also considered self abating and so herbs were applied when they persisted. Table 4.8 below has the details.

Table 4.9: Symptoms treated using herbs

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>32</td>
<td>30</td>
</tr>
</tbody>
</table>
4.4.1 Symptoms considered minor and do not require treatment

Majority of the respondents 198 (65%) acknowledged that any symptom indicating deviation from the normal health of a child should be taken seriously and treated immediately. However, a total of 108 (35%) respondents considered some signs and symptoms minor and self abating hence not necessary to consult a clinician. About 36 (12%) respondents considered lack of appetite as a minor condition as shown on table 4.9 below.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td>Lack of appetite</td>
<td>36</td>
<td>12</td>
</tr>
<tr>
<td>Chills</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>108</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

4.4.2 Malaria prevention

Whether attempts were made to protect children from malaria
One of the positive actions against childhood malaria is to protect children from mosquito bites. Of the 306 respondents, a high proportion (93%) had made efforts to protect their children from childhood malaria while only 21(7%) had not made any attempts. Out of the 21 that did not make any efforts, 15 said that they did not know preventive measures while 6 said that the measures were too expensive (Figure 4.10 below).

![Graph showing percentage of respondents who made efforts to protect their children from malaria](image)

**Figure 4.10 whether attempts were made to protect children from childhood malaria**

### 4.4.3. Strategies used to prevent malaria by the respondents

To prevent childhood malaria, slightly less than a half 134 (44%) used bed nets in their sleeping place, 70 (23%) burnt dry cow dung in the room at night, 35 (12%) burnt mosquito coils to repel mosquitoes, 10 (4%) sprayed chemicals with residual effects, 30 (7%) used knock down chemicals such as doom to spray in the houses before sleeping, 17 (6%) cleared their compound of overgrown vegetation, 10 (3%)
ensured that their children were well covered at night while sleeping. Figure 4.11 next page has the details.

![Methods applied by the respondents to prevent malaria](image)

Figure 4.11: Methods applied by the respondents to prevent malaria

### 4.4.5 Commonly Used Malaria Prevention Methods

This study reported that 240 (78.4%) used mosquito nets as a measure to prevent malaria. About 27 (8.8%) burn dry cow dung, while 21 (6.9%) used chemicals such as insecticides or mosquito coils to keep mosquitoes away. Others 18 (5.9%) used environmental management, such as clearing bushes around their houses, draining stagnant water and burning refuse to discourage mosquito breeding sites. The level
of significance of those that used bed nets on sleeping space of their children was at p<0.05. Table 4.10 next page has the details.

Table 4.11. commonly used malaria prevention methods

<table>
<thead>
<tr>
<th>Malaria prevention method</th>
<th>Frequency</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of ITN</td>
<td>240</td>
<td>78.4</td>
</tr>
<tr>
<td>Burning dry cow dung</td>
<td>27</td>
<td>8.8</td>
</tr>
<tr>
<td>Insecticide</td>
<td>21</td>
<td>6.9</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>18</td>
<td>5.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>306</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.6 Suggested best Malaria prevention approaches

When asked to suggest the best malaria prevention approaches, 164(53.6 %) of the respondents stated that the use of ITNs was the best approach, while 107(35%) of the respondents said that environmental management was the best and most affordable of all the approaches. About 21(6.9%) preferred indoor residual spray as the best approach. Advocacy was proposed by 12 (3%) while only 2(0.7 %) suggested enhanced access to health services. See Table 4.11 on page 49 has the details.
Table 4.12: Suggested best Malaria prevention approaches

<table>
<thead>
<tr>
<th>Suggested method</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of ITNs</td>
<td>164</td>
<td>53.6</td>
</tr>
<tr>
<td>Environmental management</td>
<td>107</td>
<td>35</td>
</tr>
<tr>
<td>Indoor Residual spray</td>
<td>21</td>
<td>6.9</td>
</tr>
<tr>
<td>Promote Advocacy</td>
<td>12</td>
<td>3.9</td>
</tr>
<tr>
<td>Make accessible Health Facilities</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>306</td>
<td>100</td>
</tr>
</tbody>
</table>

4.4.7 Bed net use by children

A huge proportion, 291 (95%) of the informants had nets in the sleeping place of their children. Only 15 (95%) did not have. This was also confirmed by observation although only 85% of the observed bed nets were found to be in a condition suitable for use to prevent mosquito bite.

4.4.8. Reasons for Not Using Nets

Out of 306 respondents, only 15 did not use mosquito nets on their sleeping place and that of their children. Among the reasons given as to why bed nets were not used, about 10 (67%) could not afford, 2 (13%) reported that the nets were not available, 2 (13%) reported that the nets were not accessible to them while 1 (7%)
did not have any specific reason for not using nets. Table 4.12 next page shows the details.

Table 4.13: Reasons for not using the bed nets

<table>
<thead>
<tr>
<th>Reason</th>
<th>Frequency of use</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cant Afford</td>
<td>10</td>
<td>67</td>
</tr>
<tr>
<td>Not Available</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Not accessible</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>No Reason</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.4.9 Taking the lead in childhood malaria prevention

Slightly below a half of the informants 149 (48.7%) stated that mothers should take full responsibility in childhood malaria prevention. Another 95 (31.0%) were of the view that this should be governments responsibility, while 62 (20.3%) stated that the whole community should take the lead. Figure 4.12 below has the details.
The group that is supposed to lead the childhood malaria prevention campaign

Figure 4.12: Taking the lead in childhood malaria prevention

4. 5.1: The key actors/players involved in decision making at the household level

The third objective was to identify the players involved in decision making at the household level regarding actions taken on childhood malaria. Majority of the respondents, who were married, reported to consult their partners at various stages of the child’s illness. The study also revealed that before any action is taken on a sick child, there are some consultations that are done at the household level. A half of those that are married consulted their partners 154 (50.3%), 57 (18.6%) consulted grand parents. Only 56 (18.3%) stated that they did not have to consult anybody while 32 (10.5%) consulted their neighbors and 7 (2.3%) consulted either their brothers or sisters. Table 4.12 below has the details.

Table 4.14 Consulted at household Level

<table>
<thead>
<tr>
<th>Consulted at HH level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td></td>
<td>48.70%</td>
</tr>
<tr>
<td>GOK</td>
<td></td>
<td>31%</td>
</tr>
<tr>
<td>Community</td>
<td></td>
<td>20.30%</td>
</tr>
<tr>
<td>Relationship</td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>Partner</td>
<td>154</td>
<td>50.3</td>
</tr>
<tr>
<td>Grandparent</td>
<td>57</td>
<td>18.6</td>
</tr>
<tr>
<td>Self</td>
<td>56</td>
<td>18.3</td>
</tr>
<tr>
<td>Neighbor</td>
<td>32</td>
<td>10.5</td>
</tr>
<tr>
<td>Brother/Sister</td>
<td>7</td>
<td>2.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>306</td>
<td>100</td>
</tr>
</tbody>
</table>

### 4.5.2 Stage of illness at which consultations at home were made

Just about a third (1/3) of the respondents (35%) made consultations with other members at home only after home based remedial actions failed, while 102 (33%) consulted immediately the signs of ill health appeared. Only 97 (32%) consulted when the situation got worse. (See table 4.13 below).

#### Table 4.13: Stage of illness at which consultations at home were made

<table>
<thead>
<tr>
<th>Stage of illness when consultations are made at home</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>First appearance of symptoms</td>
<td>102</td>
<td>33</td>
</tr>
<tr>
<td>Failure of home treatment</td>
<td>107</td>
<td>35</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Condition deteriorates</td>
<td>97</td>
<td>32</td>
</tr>
<tr>
<td>TOTAL</td>
<td>306</td>
<td>100</td>
</tr>
</tbody>
</table>

4.5.3 Time taken to consult a physician after the onset of the signs

This study observed that 115 (38%) of the respondents took at least one day to consult a physician after their child showed signs of malaria and after consultations at the household level, 100 (33%) took at least two days while 91 (30%) took more than three days. There was a significant association between marital status and the time taken to take the child to the health facility $p<0.0001 (x^2 = 188.216, \text{ d.f.}=4)$. (See figure 4.13 next page has the details).

![Pie chart showing time taken to consult a physician after the onset of the signs]

**Figure 4.13.** Time taken to consult a physician after the onset of the signs
CHAPTER 5: DISCUSSIONS

5. Introduction

This descriptive study was carried out to identify the mothers’/caretakers’ response to childhood malaria and the reasons for their actions. It also aimed to establish their level of knowledge on the signs of malaria, mode of transmission, treatment and prevention measures, as well as the effect of this knowledge on health seeking behaviour. The study also established the socio-economic status of the caretakers of the under fives, and how this affects the health seeking behavior. Established also were the key actors in decision making process with regard to actions taken against childhood malaria at the household level.
5.1 Socio-Economic and demographic characteristics of the mothers/caretakers

5.1.0 Age, marital status and social responsibility

A large proportion (83%) of the respondents was women aged between 20 and 40 years of age. Majority of the respondents (71.6 %) were married. The study revealed that marital status affects the process of decision making at the household level, regarding the actions to be taken in the event of a child falling sick. The married women reported to consult their partners before taking any actions. Their partners either suggested the preferred actions or provided resources to facilitate action taking. This is likely to delay appropriate care for the sick child especially when the partner is not immediately available. A statistically significant relationship between marital status and the time taken to consult a clinician was noted. This indicates that the housewives are more likely to take more time before taking the sick child to the health facility as they consulted their partners than those who are not married.

Fathers were key stakeholders in this process and the study revealed that they were mostly consulted before any action on childhood malaria was taken. This finding agrees with (Ogutu, 2004) in her study in Kibera. Ogutu found out that in households having couples, the wives consulted husbands on where to take their ill children for treatment. This finding also agrees with the report on women empowerment (GOK, 2003) which shows that 43% of the married women left decision making to their husbands. Only 40% make decisions on their own. After
consultation at the household level, the family may decide to buy drugs or take the child to the health facility, or in some cases apply herbs.

Although the general feeling of the community is that women should take the leading role in care seeking, this study revealed significant role played by their male counterparts. Participation of men in childhood health care is not only significant during decision making as household heads but also as active caretakers. Out of 306 caretakers who participated in the study, 8.2% were men who happened to be fathers to the children of the age under review. This compares favorably with the study by (Ogutu, 2004) at Muthurwa which revealed 6.6% fathers preferred taking their children to health facilities by themselves. Men also play an important role in health care seeking by providing the resources (financial support) that are required to facilitate seeking health care for childhood malaria. Being the household heads, the responsibility of providing all the other basic requirements for their families rests solely on them.

5.1.3 Level of education and occupation of mothers/caretakers

The level of education determines the level of understanding, judgment and interpretation of health messages. It also influences the socio-economic status, being a fundamental consideration in employment and salary bargain in some cases. This in turn influences accessibility to health services in terms of affordability and interpretation of health messages. The low socio-economic status of the caretakers/mothers negatively affects health seeking behavior for childhood
malaria. Slightly over half of the mothers/caretakers 59.5% had obtained primary level of education. This means that only a few had obtained education levels higher than primary level. This finding compares favorably with the one conducted by (Baume, 2002) in Bungoma in Western Kenya which found out that 60% had obtained primary level of education, 27% had obtained secondary level, 2% had obtained post secondary while only 11% had no formal education.

A strong statistical relationship was established between the mothers’/caretakers, level of education and the treatment options. Those with low level of education were more likely to assume that they understood their child’s health condition hence purchased inappropriate medication than those with higher level of education. The study findings indicated that half 51% of the respondents opted for Sulphanomide (Fansidor) as the drug of choice to manage childhood malaria at home while only the other half took their children to the health facility. As regards the treatment, these findings agreed with those by (Maina, 2008), who reported that 82.2% used Sulphadoxine Pyrimethamine (SP) for treatment of the disease while 7.2% purchased painkillers in the shops and 1.7% used traditional herbs. This also reflected on the level of understanding of health massages by those with low level of education as compared to those with higher level of education. The ministry of health has warned against the use of Sulphur based drugs as first line for malaria treatment citing development of resistance by the parasite. Yet this appeared to be the drug commonly purchased from the shops by the caretakers for the management of malaria.
The findings of the current study indicate a strong relationship between the mothers/caretakers level of education and their health seeking behavior. The health seeking behavior is characterized by actions such as taking the child to the health facility and buying drugs from the shop and the time taken to respond after the appearance of the first signs. This study differed with the findings by (Maina, 2008) as regards the relationship between the level of education of the respondents and treatment seeking behavior. In the study carried out in Uasin Gishu District Rift Valley province Kenya, he reported that there was no relationship between the level of the respondents’ education and treatment seeking behavior. Among those who had primary education, 88.2% reported that they sought treatment when they suffered from malaria. This also happened to 88.4% of those with secondary education, 100% of post secondary education level and 94.9% of those who never went to school. However, this can also be interpreted to mean that people with higher level of education are more likely to seek better health care services than those with low level of education.

5.1.4 Occupation, income and health seeking behavior

Occupation was closely related to education. In this study, there was a significant relationship between level of education and occupation. As a result, almost half of the mothers, 46.1%, were housewives with some being casual labourers. In fact the majority 41.4% had a monthly family income of less than Ksh.10, 000. This state of affairs influenced their health seeking behavior in several ways. On the onset of
signs of illness, home based remedies are first tried as most caretakers are engaged in casual labor in order to finance other household needs. In addition, the study indicates that more than a half of the married couples consulted their partners before actions were taken against childhood malaria. One of the reasons why household consultation was important was due to financial implication of the action to be taken. Household consultations sometimes delayed appropriate diagnosis and treatment of childhood malaria. In most cases, housewives depended on their husbands to meet financial requirements of the family.

Almost half 41% of the study participants were not directly involved in the budgeting of the family income. A participant in one of the group discussions described women as the pillars of healthy habits in a family. This proves that women are key players when it comes to management of childhood malaria. Thus, economic empowerment of women, who are important stakeholders in health issues, cannot be over emphasized. They are the first to notice that the child is unwell, and then the rest of the process follows. They are the first recipients of the inconveniences brought about by sicknesses in the family. Their actions immediately or later determine the progression of the illness of the under five.

5.1.5 Religion

Religion is an important social aspect. It influences a person’s way of thinking, understanding and has been found to influence health seeking behavior. Majority (90%) of the mothers/caretakers were Christians, while 6% were traditionalists.
Unlike traditionalists, most Christians recognize the importance of seeking professional services for management of health problems that affect them. However, some religious sects that are Christian based belief that healing comes directly from God. These discourage seeking medical attention in case of ill health. In one of the group discussions, a participant gave his own experience with one family where the sick are prayed for without seeking medical attention. Such faiths were responsible for delayed appropriate diagnosis and treatment for Malaria. This study, however, established that majority of the respondents preferred taking their children to the health facilities when they fell sick.

5.2 Mothers/caretakers, level of knowledge on mode of transmission, signs, treatment, and prevention of malaria

The study established that the level of knowledge of the cause of malaria was high among the mothers/caretakers as supported by the majority (72.9 %) of the respondents, who associated malaria with mosquito bites. It was, however, noted that some of them believed that malaria comes as a result of exposure to cold weather or water (17 %), eating mangoes (2.3 %), contaminated water and food (7.8 %). Those with this wrong view are likely to take the wrong corrective measures towards prevention and control such as overdressing the child when it has fever or withdrawing some nutritious food from the diet of a sick child in their attempt to deal with childhood malaria. Such actions are detrimental to effective management of childhood malaria. This study finding compared favorably with the one by (Ogutu, 2004) at Kibera where 91% positively identified mosquito with malaria, 64 % identified malaria with unhygienic conditions while 3.3% associated malaria with
cold water. The level of the knowledge was ranked as high, medium or low depending on the reasons given by the respondents. Those ranked high mentioned all correct causes and signs of malaria. Those ranked to have medium knowledge gave at least two correct answers to the causes and signs of childhood malaria, while those ranked low gave one or no correct answers to the questions asked regarding causes and signs of childhood malaria.

5.2.1 Care seeking behavior

Some major signs such as tremor, fever and lack of appetite were not linked to malaria in the community studied. As a result, these conditions were treated using herbs and other home made remedies instead of taking the affected to the health facility. This delayed appropriate management in the cases where such signs were due to malaria. In one of the group discussions, a participant said that he did not think that fever is a serious problem. The WHO recommends that any child in malaria endemic areas presenting with fever should be treated for malaria.

The high knowledge of the causes and transmission of malaria in the community is commendable. It is however noted with concern that there exists ignorance in recognizing the signs in the under fives. Some major signs such as fever, diarrhea lack of appetite are considered minor and were in some cases treated using herbs, drugs bought from the shops or borrowed from the neighbor. This delayed correct diagnoses and appropriate treatment. This finding compares with study conducted by (Baume, 2000), in Chipata Zambia which showed that mothers had good general knowledge of signs of malaria associating it with high or intermittent fever,
vomiting “yellow stuff” chills and sweating. In this study, fever was considered something that warranted attention. No case presenting with fever was left unattended. At the same time, fever was extremely common and was not immediately considered serious. The initial response typically was to treat it at home, often with a mix of traditional and modern remedies, and to monitor the child’s condition. A participant in one of the group discussions said that some of the common home responses were; tepid Sponging with cold water to lower the fever, herbal remedies which were either ingested, inhaled in steam or rubbed on the body, commercial medications, usually antipyretics such as paracetamol.

According to the study some of the major signs of childhood malaria such as fever, lack of appetite, chills and diarrhea were considered mild, transient and insignificant hence no need to take the child to a physician. These were dealt with using home based remedies. This study agrees with other studies in Africa which revealed that 80-90% of presumed, malaria cases were treated at home (Thera et al., 2000). It also indicated that there was widespread use of home treatment for uncomplicated malaria and therefore confirmed what was found out that the practice was prevalent in most parts of Africa. The findings also agreed with a study by (Ahorlu et al., 1997), which indicated that traditional herbal remedies are equally used for childhood malaria. Among the symptoms said to be treated using herbs included fever, chills, diarrhea, and loss of appetite.

In a descriptive study on quality of care of private clinics in a malaria endemic area of the Kenyan Coast, (Osebe, 2002) observed that a large proportion (50%)
preferred having their health problems managed in private clinics. They had more than one's previous visit to a private clinic. The same study revealed that a large proportion (36%) of dosages and (33%) of all regimen of anti-malarial prescribed in private clinics were incorrect. There were indications from responses of the focus group discussions that the community studied had preferences for private clinics. Mismanagement in the private clinics was likely to be the cause of the complicated cases recorded in the District.

The strong belief in home remedies was likely to delay appropriate diagnoses and management of the case which might have led to complications. A child was supposed to receive appropriate treatment within 24 hours from the onset of the symptoms. There was a significant relationship between the level of knowledge of the signs of childhood malaria among the mothers/caretakers and the utilization of health facilities for case management. Those that positively recognize childhood Malaria were more likely to respond positively by taking their children to the health facility for appropriate management than those who did not.

The study revealed that slightly more than a half of the caretakers, 55%, preferred taking their children to the health facilities on realization of the manifestation of ill health. However 32.6% bought over the counter drugs. The study indicates that some of the drugs the caretakers choose to buy are not in line with the government guidelines for the treatment and management of malaria. For instance the findings indicate that 65% of the caretakers who bought drugs from the shops went for fansidar or any other sulphur based drug. This implies that malaria is still
mismanaged. The findings agree with a study done by (Snow et al., 2000) which indicates that 60% of fevers in Kenya are managed during their clinical course with drugs purchased over the counter.

The study also revealed that less than a half, only 45.3% of the respondents used all the prescribed drugs. In most cases, administration of the drugs is stopped immediately a child’s health improves. Many believe that drugs are dangerous chemicals which should not be continued once the child feels better, and thus the dose is never completed. The remaining drugs are either discarded, kept for use another day, or given to a neighbor in need. This leads to under treatment or even misuse of drugs, because there is a chance of taking the wrong medication for a particular health problem. It is also a possible reason for complicated malaria cases and drug resistance.

5.2.2 Self diagnoses medication and use of herbs

The findings indicated that Sulphanomide (fansidor) was the drug mostly bought from the shops to treat malaria. Almost 32.6% bought drugs from the shops while the other half (50%) used fansidor. This means that those who bought fansidor believed that their children were suffering from malaria,( thus self prescription). A care taker/mother doing this will in effect be delaying appropriate care which is likely to cause complications to the sick child. This can be interpreted to mean that those that buy over the counter drugs do self diagnosis and prescribe the wrong medication. Traditional medicine men in the community studied are involved in the
management of childhood malaria. Although a few admitted having used their services, quite a large number 143 or 46.7% agreed that they know and are aware of people giving the service. A few respondents 108 or 34% admitted having used the herbs to treat conditions such as fever and loss of appetite, which also happen to be signs of malaria.

5.2.3. Time taken to consult a physician

The findings indicated delays in seeking appropriate care for childhood malaria. This is attributed to the process of consultations at the household level, where the caretaker/mother has to seek advice from the spouse, a relative or a neighbor. This is noted in the cases where the mothers/caretakers were married. A significant relationship was noted between marital status and the time taken to take a sick child to the health facility. The married women were more likely to delay taking their children to the health facility as they waited to make consultations than those that were not. The purchase of over the counter drugs especially fansidor was also significantly related to occupation. Most of the respondents were housewives and casual labourers. Hence buying over the counter drugs was the first immediate action with the hope that this could mitigates the child’s symptom. This explains why the use of health facility was considered only when the condition of the child deteriorated.

Also found important were the preferred actions in the event of a sick child. There was a significant relationship between the caretakers/mothers immediate action and the time taken to visit a health facility. Once a mother or caretaker applies a home
based medication or buys over the counter drugs, she waits for the child to get better. The child is taken to the health facility only when the condition deteriorates. Otherwise it is assumed that the child is healed when the signs or symptoms disappear even if this status is short lived. This amounts to delay visiting the health facility where proper diagnosis and appropriate treatment is done.

5.2.4 Malaria prevention

On prevention of malaria, the community studied indicated high knowledge of use of mosquito nets as a prevention measure. This is mainly because they are available in most of the health facilities where the children are taken for immunization, growth monitoring and treatment of ailments. This is a positive aspect that needs to be encouraged. This finding differs from the results by (Maina, 2008) in Soy division of Uasin Gishu District which shows a small percentage, 18%, using bed nets for malaria prevention. In Soy division majority 37.5% used repellants while in Makuyu, this approach was used by only 6.9%. It was also recorded in one of the group discussions that the nets were sold by the community health workers at affordable prices. This confirms the important role played by the community resource persons in health promotion in Makuyu Division. They, however, did not seem to know very clearly the different types of nets available in the markets and the clinics (the Insecticide treated mosquito nets (ITN) and the Long lasting insecticides treated nets). In one of the focus group discussions, a participant said “the only difference is the colour”

5.2.5 Community based malaria prevention strategies
Environmental management was not mentioned by many as a method of malaria prevention, yet it is affordable and effective when combined with other measures. Few people used chemicals as repellants and for indoor residual spray but were quick to mention that the methods were expensive. The technical aspect of IRS application was not within reach. However, burning of dry cow dung to keep away mosquitoes was common and acceptable practice in the community studied. It was said to be readily available, accessible and did not have any cost implication. Some of the respondents however said that the strategy works while others were not sure whether it works or not.

Ideally, malaria prevention activities should be the responsibility of everyone because all are at risk. The findings however indicate that women were viewed as the torch bearers when it comes to prevention. A man in one of the group discussions said, “It is the role of women to take the lead in malaria prevention since they are the ones with the children most of the time”. The community also looks up to the government to provide the necessary resources and guidance for malaria prevention. Slightly more than a half of the respondents (53.5%) believed that the use of ITNs is the best malaria prevention method.
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The following were the conclusions drawn from the study:

1. Malaria is still a major cause of childhood morbidity and mortality in Makuyu Division of Maragua (Murang’a South) District. Reports from the health facilities in the Division indicate malaria as being the leading cause of morbidity in the last 5 years.

2. Mothers/caretakers of the under fives in Makuyu Division had good general knowledge of the transmission and signs of malaria. They associated it with mosquito bites, high or intermittent fever, and lack of appetite, chills and sweating.

3. Some members of the community could not seek treatment at the health facilities because they believed that the signs and symptoms manifested in a child were self abating. They were also convinced that treatment was available at home by way of drugs left over from previous prescriptions or easy purchase from the nearby shops. Some of them also perceived that the cause of illness is not biomedical in which case the care giver tended to seek for other traditional remedies.
4. Some Mothers/caretakers considered cardinal signs of malaria such as fever, diarrhea, chills and lack of appetite as transient and self abating. As a result, they were sometimes ignored or treated using herbs or home based preparations. This resulted to delayed appropriate care and management of childhood malaria.

5. The mothers/caretakers of the under fives in Makuyu division considered the use of insecticide Treated Mosquito Nets (ITNs) the best malaria prevention approach. They however acknowledge the importance of Indoor Residual Spray (IRS) which they said was expensive and requires technical skills to apply. Many of them practiced environmental control methods which they reported to be practical, cheap but temporally and not as effective as the methods earlier mentioned.

6. The community generally expected the mothers to take the leading role in malaria prevention activities. However, the contribution of the government and the general population was expected to enhance availability of the resources required for the course.

7. Though mothers are regarded as the major decision makers as regards the health of their families, participation of men was highly acknowledged as they were mainly consulted by their spouses for actions/decisions related to expenditure of the family income and other important decisions in the household.
6.3 Recommendations

This study makes the following recommendations

1. The government agencies need to intensify surveillance to ensure implementation of its guidelines such as ensuring that the banned drugs such as chloroquin and sulphanomide (fansidar) do not find their way to the public through the hands of the business men.

2. There is need for the government to implement an integrated approach requiring a comprehensive consideration of social, environmental and gender roles, all to work and coordinate activities that will improve health and economic status of the community in general.

3. The Ministry of Public Health and Sanitation to ensure sustainable availability and accessibility of ITNs and IRS services, as well as empowering the community with the technical knowledge of their application. These are considered by the community as the best malaria control methods.

6.4 Suggestion for further research
This study recommends further research conducted on the factors that motivate or de-motivate the community owned resource persons participation in malaria control activities.

REFERENCES


Besset,M.I; Taylor, P;Bvsrakare,J; Chiteka, F and Govere,E. (1997).Clinical diagnoses of malaria; Can we improve? Journal of tropical medicine and hygiene.94 (i); 65-69


Central Bureau of Statistics, 2000C


Neil cracy, Bil wright, Philhanlon and Sam Galbrath, 2006 does healthcare improve health. *journal of health sciences research and policy ii(i)* 5-7

Ochola (2006), fighting Malaria by all means. *Climed Journal January / March* 2006, 04 – 06


WHO (2002) RBM Strategic direction for research for malaria information sheet..pg 1-6


APPENDICES.

APPENDIX 1: FGD GUIDE FOR THE MOTHER/CAREGIVERS

1. What are the common childhood Health problems in this village?

2. What are the common practices of mothers/caretakers when their children get malaria attacks?

3. What in your opinion leads to malaria?

4. What activities does the community in this area engage in to prevent and control malaria?

4. Who should take the leading role in malaria prevention activities? (Probe further for reasons to the answers given.)

5. Do you think there is a relationship between economic empowerment of women and their role in childhood malaria control? (Probe further)

6. Who decides on what actions to be taken in case of childhood illness at the household level?
APPENDIX 2

CROSS SECTIONAL SURVEY QUESTIONNAIRE

Introduction
My name is------------I am doing health research in this community. My interest is to know about health problems affecting children below five years of age. I’m very grateful for allowing me access to your home and talk with you. Kindly allow me to ask you a few questions about yourself and the health of your child. You may also ask me questions that you feel are necessary.

Social Demographic information.

Q1. How old are you?

Q2. What is your Religious background?
   i. Catholic
   ii. Protestant (specify)
   iii. Muslim
   iv. None

Q3. What is your main occupation?
   i. House wife
   ii. teacher
   iii. Casual worker.
   iv. Business
   v. Other (specify)

Q4. What is your highest level of education?
   i. Primary
   ii. Secondary
   iii. College
   iv. No formal education.

Q5. What is your marital status?
   i. Single
   ii. Married
   iii. Divorced
   iv. Separated
   v. Windowed
Q6. If married, what is the occupation of your partner?
   i. Teacher
   ii. Casual worker
   iii. Business
   iv. Other (specify)

Q7. What is the main source of the family income?
   i. Salary
   ii. Wage (casual worker)
   iii. Business
   iv. Peasant farming
   v. Other (specify)

Q8. What is the approximate monthly income for the family?
   i. Below Sh. 5000
   ii. Between Ksh. 5000 and 10,000
   iii. Over Ksh. 10,000 but less than Ksh. 15,000
   iv. Between Ksh. 15,000 and Ksh. 20,000
   v. Above Ksh. 20,000

Q9. What is your respondents relationship with the child?
   i. Mother
   ii. Father
   iii. Grand parent
   iv. Aunt
   v. House help

**Common childhood illnesses**

Q.10. What in your opinion are the most common diseases affecting children in this area?
   i. Malaria
   ii. Diarrhea
   iii. URTI
   iv. Other (specify)

**Mother/caretakers Knowledge on signs, mode of transmission, treatment and preventive measures.**
Q11. What in your opinion leads to malaria? (List the answers as mentioned)

Q 12. Do you think there are a lot of mosquitoes here?

Q13. Why do you think we have mosquitoes in your environment?

Q14. What do you do to keep them away?

Q15. Do you use a bed net on your child/children bed/sleeping space?
   i. Yes
   ii. No

Q16. If no, give reasons.

Q17. Has your child suffered from malaria in the last one month?
   i. Yes
   ii. No.

Q18. If yes, how did you know that it was malaria? (List the signs/symptoms as mentioned by the respondent: - perceived malaria)
   i. Fever
   ii. Loss of appetite
   iii. Diarrhea etc

Q19. What actions do you take once you realize that your child has malaria?
   i. No actions
   ii. Buy drugs from the shops
   iii. Take to the nearest health facility herbs.
   iv. Give herbs
   v. Any other remedy (specify)

Q20. How is malaria transmitted?
   i. Mosquito bite
   ii. Unhygienic conditions
   iii. Exposure to cold.
   iv. Cold weather etc.

Q21. What drugs do you normally use to treat childhood malaria?
   i. Fansidor
   ii. Chloroquin
   iii. AL
iv. Herbs etc

Q.22. From where do you get these drugs?
   i. Chemist
   ii. Shop
   iii. Health Facility
   iv. Vendors
   v. Others (specify)

Q.23. Do you use all the drugs bought or given?
   i. Yes
   ii. No

Q24. If no, what happens to the drugs when the child recovers before they are over? (List the answers as given.)

Q.25. When you take your child to the health facility, do you pay for the malaria treatment?
   i. Yes
   ii. No

Q26. How long does it take you to take your child to the health facility after the signs appear?
   i. Same day,
   ii. 2 days
   iii. 3 days

Q 27. Do you know someone in this or another village who treats people with traditional medicine?
   i. Yes
   ii. No

Q28. Do you use herbal medicine to treat your child when he falls sick?

Q.29. What symptoms/signs do you apply herbal treatment? (List as mentioned)
   i. None
   ii. Fever
   iii. Chills
iv. Lack of appetite
v. Diarrhea

Q. 30. What symptoms/signs do you think do not require treatment or are considered minor such that consultation of a health provider is not necessary?
   i. None
   ii. Fever
   iii. Chills
   iv. Lack of appetite
   v. Diarrhea

Q.31. Have you made any attempt to protect your child from malaria?
   i. Yes
   ii. No

Q32. If no above, why haven’t you taken any measure?
   i. Don’t know preventive measures
   ii. Measures are too expensive
   iii. Other (specify)

Q33. If Yes what strategies? (List as mentioned)

Q34. Are these strategies working?
   i. Yes
   ii. No

Actors/players in decision making.

Q34. Do you consult anyone else in the household for actions to take when your child falls ill?
   iii. Yes
   iv. No

Q35. If yes, who?
   v. Partner
   vi. Grandparent
   vii. Other (Specify?)

Q36. At what stage of illness do you consult the person you’ve just mentioned?
Q37. After consulting the above person, how long does it take you to seek help for the outside for the child?

Q38. What would be the best approach to malaria prevention in your area?

Q39. Who should take leading role in childhood malaria prevention? Give reasons for your answer.

Q40. Are you directly involved in budgeting of the family income?
    Yes
    No