

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**

**MALARIA PREVENTION AND TREATMENT SEEKING PRACTICES AMONG
MOTHERS OF CHILDREN UNDER FIVE YEARS IN ADENTAN MUNICIPALITY**

BY

KINGSLEY IKHUOSHO OJEIKERE

(10584997)

**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF
MASTER OF PUBLIC HEALTH DEGREE**

SEPTEMBER

2016

DECLARATION

I, Kingsley Ikhuosho Ojeikere, declare that except for the other people's research work which have been duly acknowledged, this work is the result of my own original research, either in whole or part, has not been presented elsewhere for another degree.

.....
Kingsley Ikhuosho Ojeikere

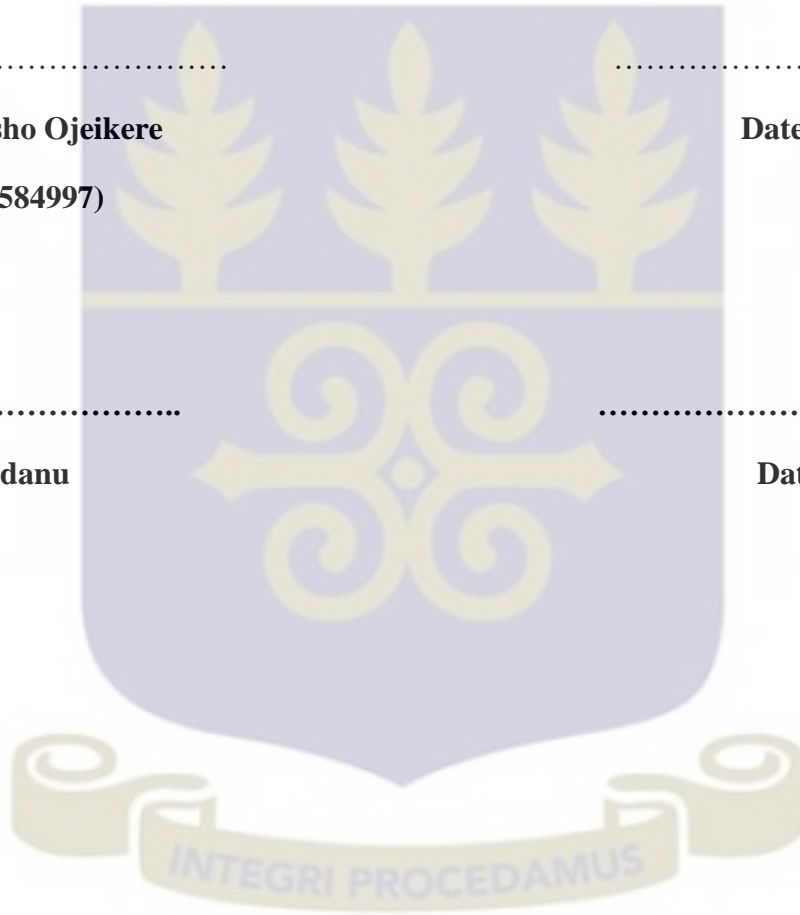
Student ID (10584997)

.....
Date

.....
Prof. Richard Adanu

Supervisor

.....
Date



DEDICATION

I dedicate this work to the Almighty God for the gift of life and strength to complete this work successfully.

I also dedicate it to my late mother, Mrs Felicia Ojeikere, my father Mr Benjamin Ojeikere and my siblings.



ACKNOWLEDGEMENT

I owe a great deal of gratitude to all who contributed in diverse ways to make this study a success. I acknowledge the Almighty God, who endowed me with strength, resilience, knowledge and understanding to produce this dissertation.

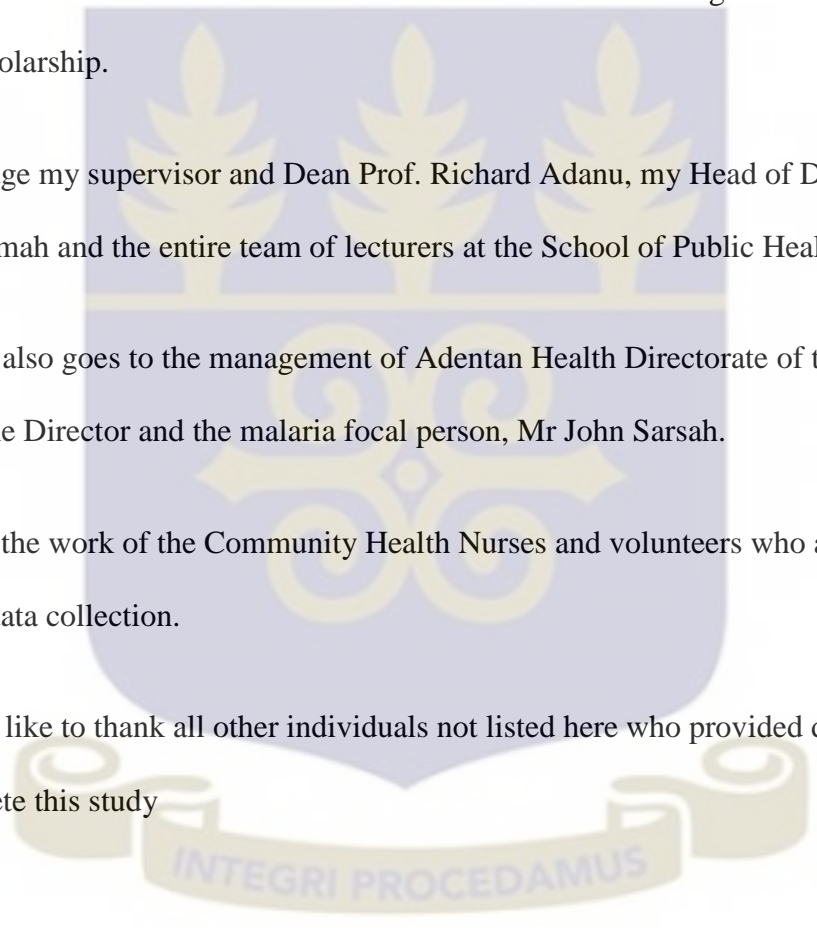
I wish to appreciate WHO/TDR and School of Public Health for deeming me fit for this postgraduate scholarship.

I also acknowledge my supervisor and Dean Prof. Richard Adanu, my Head of Department Dr Augustine Ankomah and the entire team of lecturers at the School of Public Health.

My appreciation also goes to the management of Adentan Health Directorate of the Greater Accra Region, the Director and the malaria focal person, Mr John Sarsah.

I also appreciate the work of the Community Health Nurses and volunteers who assisted in house numbering and data collection.

Finally, I would like to thank all other individuals not listed here who provided diverse support for me to complete this study



ABSTRACT

Background: Malaria is endemic in Ghana, posing serious public health challenge to the development of Ghana. Currently, it is ranked number one among the causes of admission of children under five years; likewise the number one cause of death of children under five years in Ghana. Despite prevention strategies introduced, it maintains its top spot. This study assessed knowledge of mothers of children under five years in Adentan Municipality regarding malaria, their prevention methods practiced, challenges and their treatment seeking practices.

Methods: A cross-sectional study assessed malaria related knowledge, prevention, challenges and treatment seeking practices in Adentan Municipality of Greater Accra Region in Ghana. A structured interviewer-administered questionnaire was administered to 363 mothers of children under five years drawn by systematic sampling to collect information on their socio-demographic characteristics, malaria knowledge, malaria prevention practices, challenges, and treatment seeking practices for their under-five.

Results: Majority of respondents had good knowledge of malaria, 87.6% prevented their child from malaria, the prevention strategies are; use of drugs, repellants, bed nets, insecticide treated nets (ITNs), insecticide spray, protective clothing, environment cleaning and use of multiple strategies. ITN was the commonest strategy utilized. Challenges included discomfort, cost, irritation, skin conditions, allergies, tear and difficulty in tacking ITNs. 74.4% of respondent's child had a positive history of fever, 32.8% had been admitted due to fever, 3.8% had history of unconsciousness, 4% had history of convulsion and 0.3% has lost a child after developing fever, being unconscious or convulsed. 36.3% tepid sponge their child as first response to fever, 86.2% took their child to the health facility on persistence of fever. 41.2% took their first action in less

than 24 hours. There was significant association between mothers' level of education and knowledge of malaria, knowledge and prevention of malaria, child's age and history of fever, knowledge of malaria and history of fever, knowledge of malaria and history of death.

Conclusion: Health information given to mothers during antenatal visits, visits to the infant and child clinic and the adoption of the Community-based Health and Planning Services (CHPS) was responsible for the high knowledge of malaria. The delay in seeking treatment suggests the need for an emphasis of prompt seeking of care.



TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
TABLE OF CONTENTS.....	vii
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS.....	xii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	3
1.3 Conceptual Framework	4
1.4 Justification	5
1.5 Research Questions	6
1.6 Objectives.....	7
1.6.1 General Objective	7
1.6.2 Specific Objectives	7
CHAPTER TWO	8
LITERATURE REVIEW	8
2.1 Knowledge of Malaria.....	8
2.2 Malaria Prevention	11

2.3	Malaria Treatment	14
CHAPTER THREE		18
METHODS		18
3.1	Study Design	18
3.2	Study Area.....	18
3.3	Variables.....	19
3.4	Sampling.....	20
3.4.1	Study Population.....	20
3.4.2	Sample Size.....	20
3.4.3	Sampling Method.....	21
3.5	Data collection, handling and analysis.....	22
3.5.1	Inclusion criteria	22
3.5.2	Exclusion criteria	22
3.5.3	Ethical considerations and approval	22
3.5.4	Training of interviewers.....	23
3.5.5	Data collection:	23
3.5.6	Pre-testing and review of instruments/tools:.....	24
3.6	Data Handling and Analysis:.....	24
3.6.1	Data Storage:.....	24
CHAPTER FOUR.....		25
RESULTS		25
4.1	Background characteristics of respondents	25
4.2	Knowledge of malaria	28
4.2.1	Association between socio-demographic characteristics and knowledge of malaria.	28

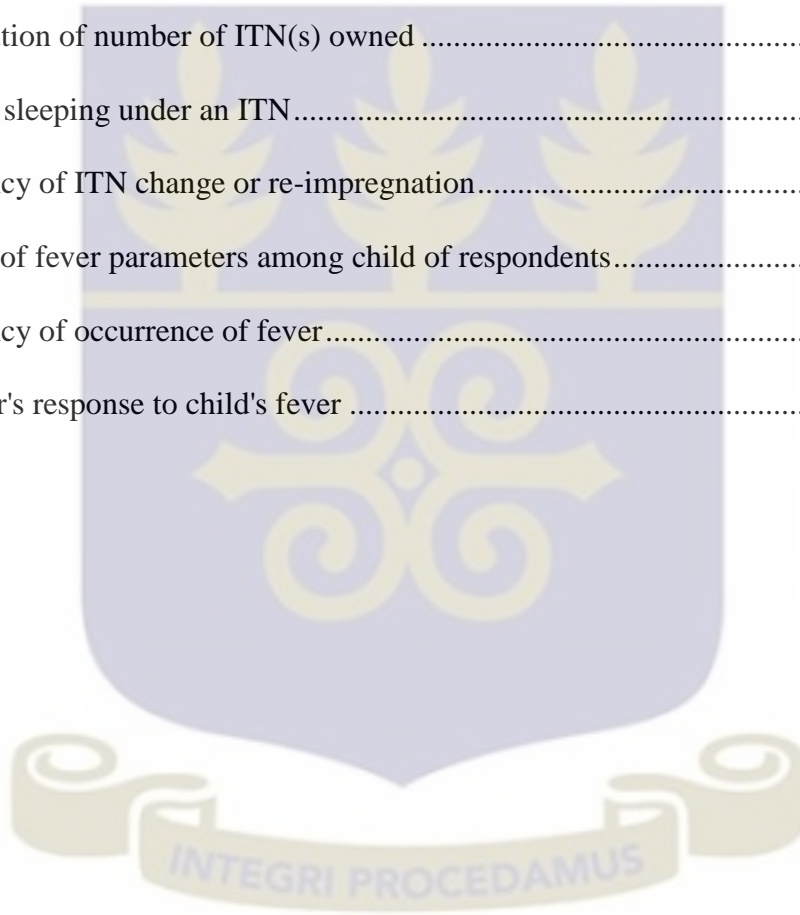
4.3	Prevention of Malaria.....	31
4.3.1	Prevention of malaria, ITN ownership and knowledge of malaria.....	35
4.3.2	Socio-demographic characteristics and ITN ownership.....	36
4.4	Malaria treatment practice.....	37
4.4.1	Child’s age and History of fever.....	39
4.4.2	Knowledge of malaria and history of fever	40
4.4.3	Knowledge of malaria and duration between fever onset and action	41
4.4.4	Knowledge of malaria and fever admission.....	41
4.4.5	Knowledge of malaria and history of unconsciousness.....	42
4.4.6	Knowledge of malaria and history of convulsion.....	42
4.4.7	Knowledge of malaria and history of death.....	43
CHAPTER FIVE		44
DISCUSSIONS.....		44
5.1	Knowledge of malaria	44
5.2	Prevention of malaria	45
5.3	Treatment of malaria	46
CHAPTER SIX.....		49
CONCLUSIONS AND RECOMMEDATIONS		49
6.1	Conclusions	49
6.2	Recommendations	50
REFERENCES		51
APPENDICES		54
CONSENT FORM		54
QUESTIONNAIRE.....		57

LIST OF TABLES

Table 1 Sample allocation to communities.....	22
Table 2 Socio-demographic characteristics of respondents.....	26
Table 3 Socio-demographic characteristics and knowledge of malaria.....	30
Table 4 Malaria prevention strategies.....	32
Table 5 Selected prevention parameters and knowledge of malaria.....	36
Table 6 Association between socio-demographic characteristics and ITN ownership.....	37
Table 7 Duration between fever onset and action.....	39
Table 8 Association between child's age and history of fever	40
Table 9 Association between knowledge of malaria and history of fever	40
Table 10 Association between knowledge of malaria and duration between fever onset and action	41
Table 11 Association between knowledge of malaria and fever admission	42
Table 12 Association between knowledge of malaria and history of unconsciousness	42
Table 13 Association between knowledge of malaria and history of convulsion.....	43
Table 14 Knowledge of malaria and history of death.....	43

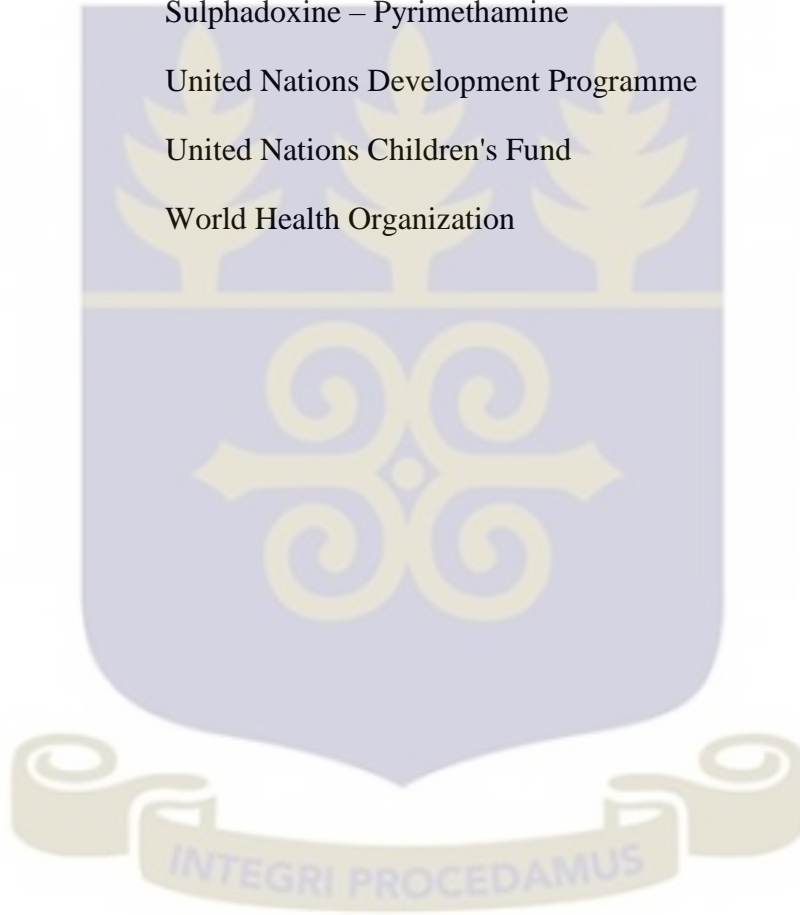
LIST OF FIGURES

Figure 1 Distribution of knowledge of malaria among respondents.....	28
Figure 2 Distribution of mothers who prevent malaria.....	31
Figure 3 Reason for the prevention strategy	32
Figure 4 Distribution of ITN ownership	33
Figure 5 Distribution of number of ITN(s) owned	34
Figure 6 Persons sleeping under an ITN.....	34
Figure 7 Frequency of ITN change or re-impregnation.....	35
Figure 8 History of fever parameters among child of respondents.....	38
Figure 9 Frequency of occurrence of fever.....	38
Figure 10 Mother's response to child's fever	39



LIST OF ABBREVIATIONS

BCC	Behaviour Change Communication
CHPS	Community-based Health and Planning Services
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Net
SP	Sulphadoxine – Pyrimethamine
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
WHO	World Health Organization



CHAPTER ONE

INTRODUCTION

1.1 Background

Malaria is caused by the parasite *Plasmodium (P) species*; there are five species, four are human species transmitted from person to person; *P. falciparum*, *P. vivax*, *P. malariae* and *P. ovale*. The fifth, *P. knowlesi* is spread from monkeys to humans. *P. falciparum* is the most prevalent in Africa (WHO, 2015).

Malaria poses a serious public health challenge, which impedes the development of any nation; as a result of this, a concerted Roll Back Malaria partnership was launched in 1998 by WHO, UNDP, UNICEF and World Bank to combat the disease and reduce morbidity and mortality associated with it. Ghana was committed to the Roll Back Malaria initiative, and to the Abuja Declaration on Roll Back Malaria in Africa (Ghana Health Service (GHS), 2013; WHO, 2000).

Malaria is endemic in Ghana; it is hypoendemic in the Greater Accra Region, hyperendemic in the Upper West Region and mesoendemic in the rest of the country with a parasite prevalence of 39%. It affects all population, but worse in children under five years and pregnant women due to reduced immunity (Ghana Health Service (GHS), 2013; Ghana Statistical Service, 2011). Strategies to control malaria parasite include vector control by use of Insecticide Treated Nets (ITN), Indoor Residual Spray (IRS) and Larval control, Seasonal

Chemoprophylaxis and Case Management which includes prompt diagnosis and treatment (WHO, 2015).

Efforts and progress in implementation of control programs has yielded significant results. Between 2000 and 2015, the incidence of malaria has declined globally by about 37%, likewise death from malaria declined globally by 60%. Progress has been witnessed towards global elimination as increasing number of countries have moved towards malaria elimination (WHO & UNICEF, 2015; WHO, 2014).

Progress in reaching children under five years has been encouraging. It is estimated that 68% of under-fives in sub-Saharan Africa are now sleeping under insecticide treated nets (ITNs), compared to less than 2% in 2000, and over this period the under-five global malaria death rate declined by 65%. However, this progress has been uneven as some countries have a disproportionately high volume of the global burden. Fifteen countries mainly in sub-Saharan Africa accounts for 80 percent of malaria cases and 78 percent of deaths globally (WHO & UNICEF, 2015).

There are several barriers to effective malaria prevention and treatment, especially for children under five years which results in malaria preventable deaths of over four hundred thousand individuals yearly, of whom 70% are under-five (WHO & UNICEF, 2015).

Reduction of these barriers to the barest minimum would make global malaria elimination attainable.

1.2 Problem Statement

About 3.2 billion people worldwide are at risk of malaria. There was an estimated 214 million new cases and 438 000 deaths from malaria in 2015. Fifteen countries account for 80% of malaria cases and 78% of deaths globally, of which Ghana is a part. Though, there has been a steady decrease in annual deaths from malaria, from 1.2million in 2004 to 855,000 in 2013 and presently about 438,000 in 2015; these figures are still huge with a large percentage of the deaths occurring in children under five years. Majority of the deaths (90%) occur in Africa (Murray, 2014; WHO & UNICEF, 2015; WHO, 2015).

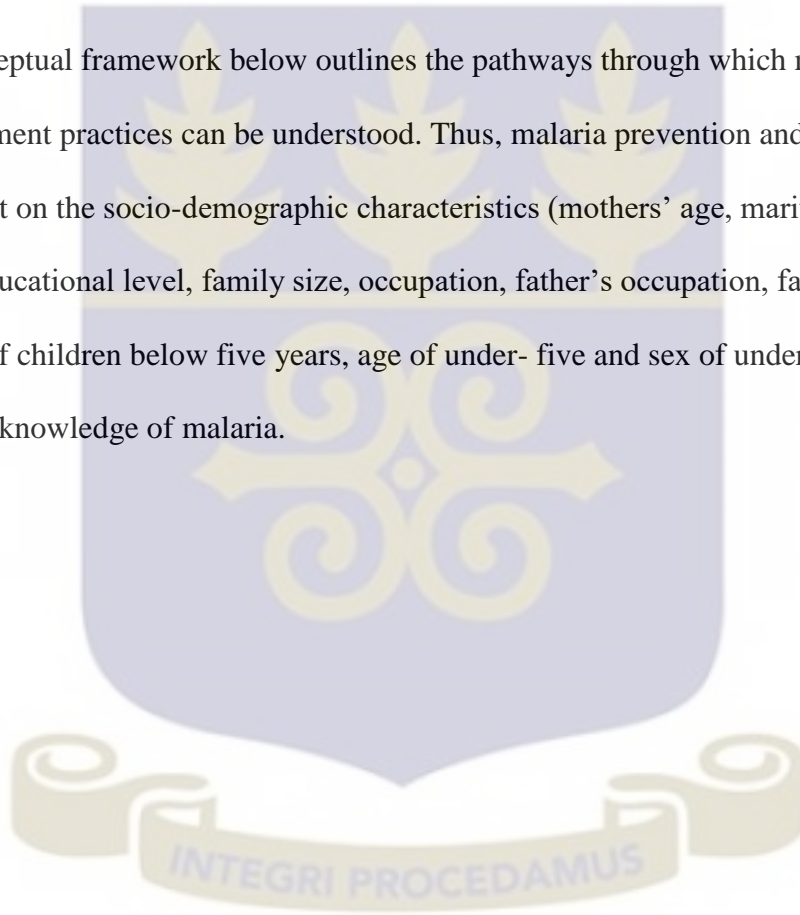
The number of deaths in under-five due to malaria is estimated to have decreased globally from 723,000 in 2000 to 306,000 in 2015. The bulk of which occurred in Africa with a decline from 694,000 in 2000 to 292,000 in 2015. The decline in death attributed to malaria has been due to emphasis on prevention, diagnosis and prompt treatment. Despite this progress, it remains an enormous problem. Large number of people still lack access to services geared towards effective malaria prevention and treatment, and it still remains a major killer of children in Africa responsible for the death of a child every 2 minutes. There are 840 million people at risk of malaria in sub- Saharan Africa, with 269 million of them residing in households without ITN or IRS (WHO & UNICEF, 2015; WHO, 2015).

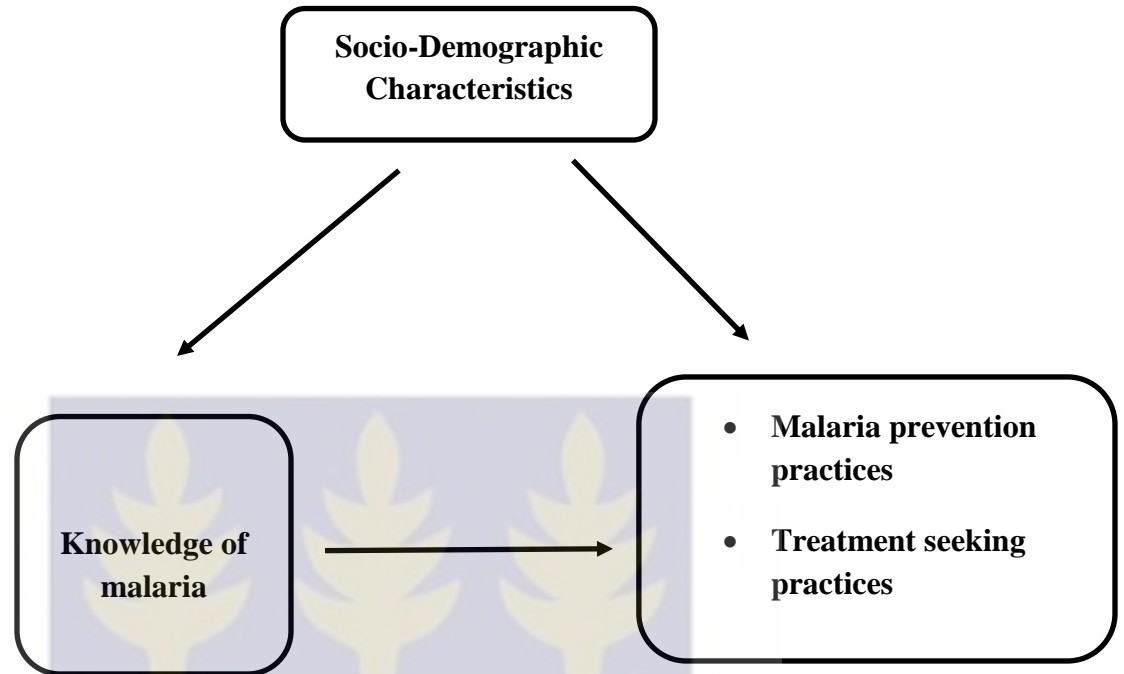
Malaria poses a huge threat to public health in Ghana, it impinges on child survival. It is the leading cause of morbidity and mortality among children under five years, ranking number one among the causes of outpatient morbidity (47.4%), the number one cause of hospital admission of under-five in Ghana (58.1%) and also the number one cause of the death of

under-five (20.2%) in Ghana (Ghana Health Service, 2010). This study therefore seeks to identify the prevention methods practiced by mothers of children under five years in Adentan Municipality, reasons why the methods are not effectively practiced and determine their treatment seeking practice for their under-five.

1.3 Conceptual Framework

The conceptual framework below outlines the pathways through which malaria prevention and treatment practices can be understood. Thus, malaria prevention and treatment is dependent on the socio-demographic characteristics (mothers' age, marital status, ethnic group, educational level, family size, occupation, father's occupation, family income, number of children below five years, age of under- five and sex of under – five) and mother's knowledge of malaria.





Conceptual Framework

Source: Authors Own Construct (2015)

1.4 Justification

Malaria prevention methods are not effectively practiced. Adequate knowledge of malaria transmission, symptoms, and strict practice of prevention methods, and treatment by mothers or caregivers are essential in combating the disease. It was revealed only 47% of under-five in rural areas sleep under ITNs, while only 24% in the urban areas sleep under ITNs. Greater Accra region was revealed to have the lowest percentage (26%) of under-five ITN usage in Ghana (Afoakwah, Nunoo, & Andoh, 2015; Ghana Statistical Service (GSS), Ghana health Service (GHS), & ICF International, 2015; Osero, Otieno, & Orago, 2006). Early detection and commencement of treatment of under-fives curbs progression to severe form of the disease, which is responsible for the deaths associated with the disease. Under-

five mortality would be reduced when malaria prevention methods are effectively utilized (Afoakwah et al., 2015; Iloh, Ofoedu, Njoku, Amadi, & Godswill-Uko, 2012; Iloh, Chuku, Amadi, & Ofoedu, 2013; WHO, 2015).

This study would reveal knowledge and treatment practices of malaria by mothers of under-five. Findings from the study would enable Adentan Health Directorate develop capacity at the community levels to control malaria. Training and enlightenment of the mothers can be instituted at the district level for them to recognize malaria control strategies, which significantly reduces under-five mortality.

1.5 Research Questions

1. What is the knowledge level of the mothers regarding malaria and its prevention methods?
2. How do the mothers prevent malaria?
3. What are the mothers' malaria prevention challenges?
4. What treatment method do the mothers opt for when their child has a fever, becomes unconscious or convulses?

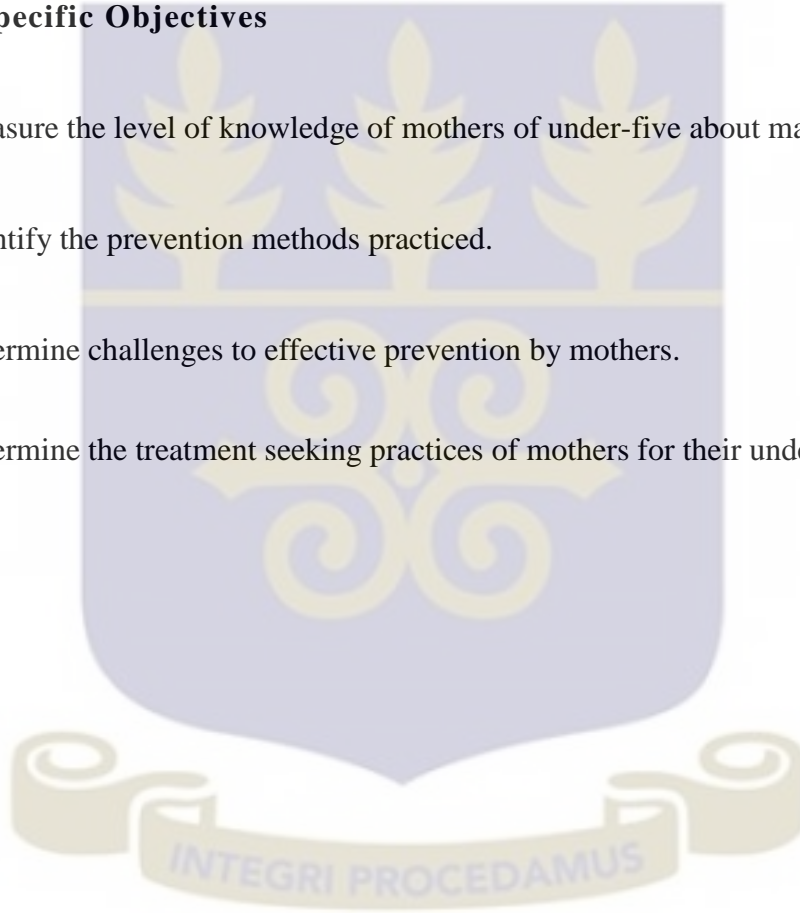
1.6 Objectives

1.6.1 General Objective

To determine the knowledge level of mothers of under-five regarding malaria, their prevention practices, challenges to effective prevention and treatment seeking practices.

1.6.2 Specific Objectives

1. To measure the level of knowledge of mothers of under-five about malaria.
2. To identify the prevention methods practiced.
3. To determine challenges to effective prevention by mothers.
4. To determine the treatment seeking practices of mothers for their under- five children.



CHAPTER TWO

LITERATURE REVIEW

2.1 Knowledge of Malaria

The highest burden of malaria is in Africa, where an estimated 90% of all malaria deaths occur, and children aged less than 5 years account for 78% of all deaths (WHO, 2014). The knowledge of malaria by individuals residing where it is endemic is vital and should essentially be the first step in curtailing it.

Paulander and colleagues interviewed 1652 mothers in Tigray, a predominantly rural community in Ethiopia, where it was revealed that 92.7% were able to mention at least one malaria symptom while 65.3% could mention three or more symptoms. Majority (74.7%) of the women believed malaria is a preventable disease, out of which 82.3% were aware of environmental management, 46.2% Insecticide treated nets (ITNs), 15.6% Indoor residual spraying (IRS) and 15.6% chemoprophylaxis. About 65.9% believed malaria could lead to death while almost all women (92.7%) believed malaria could be cured. Despite the low educational level in this community (90.6% had just a single year of schooling), there was a relatively good knowledge about malaria in this rural community, but their source of knowledge was not revealed (Paulander et al., 2009).

Study done in Nyamira district, Kenya to assess mothers' knowledge of malaria and vector management revealed only 6.5% of the mothers did not know anything about malaria, majority (91.8%) recognized mosquito as a cause of malaria and a large proportion had a

good knowledge of basic symptoms. About 80.3% knew about mosquito nets and Insecticide treated nets (ITNs). A good knowledge about malaria here despite their low educational level was attributed to prior family member attack and health education via the radio (Osero et al., 2006).

In Kuje area council, Abuja, where the knowledge of malaria among mothers of children under-five years was assessed in comparison with a similar area council selected as control. The mothers in Kuje were given health information on malaria, its mode of transmission, prevention and complications with the collection of data prior to health education and after twenty weeks. Mothers in the control did not receive health information. It was revealed that the mothers in both groups had poor knowledge of malaria and its prevention methods. Though there was a remarkable improvement in the knowledge level of the mothers in Kuje area council after the intervention, it was still low. There was however, no information revealing whether it was exactly the same mothers who were interviewed pre and post intervention (Ashikeni M.A, Envuladu E.A, Zoakah A.I, 2013).

Iloh and colleagues were able to associate socio-demographic data with knowledge of malaria complications. The children of mothers who had a low level of education, had severe malaria disease more than those who had a high level of education; likewise separated mothers, lower family social class, and lower maternal educational attainment was associated with severe malaria. Separated mothers were strongly associated with severe malaria as under-five children whose parents were not living together were three times more likely to have severe disease compared with those living together (Iloh et al., 2013). Adongo and colleagues revealed fairly good knowledge of malaria in Kassena-Nankana and Bulsa

district of Upper East Region in Ghana. Majority of the respondents mentioned bed nets as a malaria prevention method, though it was mainly perceived as a nuisance reduction tool (Adongo, Kirkwood, & Kendall, 2005). Another study carried out in thirteen communities in the Afram Plains District of the Eastern Region and twenty communities in the Asikuma-Odoben-Brakwa District of the Central Region in Ghana among mothers of under-five revealed majority of respondents were knowledgeable about the mode of transmission of malaria, prevention methods and symptoms like fever, vomiting, yellowish discoloration of urine, lack of appetite. Only about 27.6% of respondents in Central region and 16% in Eastern region associated chills with malaria. The knowledge however did not translate into prevention practices as respondents whose children do not sleep under bed nets were more knowledgeable about malaria (De La Cruz et al., 2006). This is similar to what Edelu and colleagues found, where 80% of mothers who visited the paediatric outpatient department of the University of Nigeria Teaching Hospital, Enugu between August 2007 and March 2008 had knowledge of Insecticide treated net (ITN), only 26.1% of them had their child sleep under the net (Edelu, Ikefuna, Emodi, & Adimora, 2010).

These points to an assumption that knowledge does not translate to practice. Hence there should be other factors responsible for this such as the cost, colour and shape of bed net, occupation and educational levels, beliefs that certain types of fever are caused by the heat from the sun, residence in an urban setting compared to a rural setting, children sleeping with mothers, the presence of at least one ITN in the household and sickness of a child in the household in the last fourteen days prior to the survey, difficulty in hanging ITN, and holes in the ITN. These were among reasons why prevention methods were not practiced

(Baume, Reithinger, & Woldehanna, 2009; De La Cruz et al., 2006; García-Basteiro et al., 2011; Ng'ang'a et al., 2009; Wiseman, Scott, McElroy, Conteh, & Stevens, 2007).

Knowledge of mothers regarding malaria can be said to be related with level of education, geographical area one resides, the type of community and a previous history of malaria in the family.

2.2 Malaria Prevention

Paulander and colleagues' study in Ethiopia where a large number of mothers were aware of environmental management and ITN, and few of IRS and chemoprophylaxis. Almost all the respondents had at least one ITN in their home which was got from the government, a little above half had enough to protect every member of the family, nothing was said about the other preventive methods (Paulander et al., 2009).

The study done in Nyamira district, Kenya where about 80.3% of mothers knew about mosquito nets and ITNs, most (55.5%) of them do not engage in any preventive methods, 33.5% use bed nets, 6.8% repellants, 2.8% environmental management, 1.0% use clothes, 0.5% use chemoprophylaxis, while 0.3% boil drinking water to prevent mosquitoes and malaria (Osero et al., 2006). An improvement to this was seen in Ng'ang'a and colleagues' study done in Kirinyaga district of Central Kenya where 48.6% had access to bed nets and 46.7% slept under bed net the previous night. Suffice it to say bed nets include both insecticide treated and untreated nets (Ng'ang'a et al., 2009). According to Ghana Demographic and Health Survey (2015), about 48% of under-fives slept under an ITN the

night prior to the survey while about 54% either slept under an ITN the night prior to the survey or in a dwelling sprayed with IRS in the past twelve months.

The number of children in stable malaria-endemic conditions in Africa protected by an ITN increased from 1.8% in 2000 to 18.5% by 2007. This left about 89.6 million children unprotected. In Ethiopia there was an increase from 0% to 30%, 3% to 44% in Kenya, 1% to 3% in Nigeria and 4% to 22% in Ghana (Noor, Mutheu, Tatem, Hay, & Snow, 2009).

Within a seven-year period, a significant increase was noticed in some countries while some others lagged behind, this points to the fact that there are challenges to effective ITN usage, and not until these challenges are surmounted, achieving one hundred percent protection is uncertain.

A study worth mentioning was done by Afoakwah and colleagues who sourced three thousand, eight hundred and thirty nine under-five data from Ghana Demographic and Health Survey (GDHS 2008), where it was revealed in Ghana 52.1% of under-fives do not sleep with nets, 23.1% use ITN while 24.2% use untreated net (Afoakwah et al., 2015)

Under-five mortality among children who use ITN in Ghana is about 18.8% lower than those who do not (Afoakwah et al., 2015). Achieving a hundred percent protection would significantly reduce deaths among under-fives.

A systematic review which examined beliefs and practices concerning malaria in sub-Saharan African countries revealed numerous barriers to malaria prevention. Barriers to the use of bed nets include the cost and ease of use, notion of increased sweating at night, and difficulty to mount it. Beliefs that malaria cannot be prevented or malaria being caused by

factors other than mosquitoes and Plasmodium parasites like environmental factors (excessive heat, wind, or cold), dietary factors (eating oily foods, certain fruits and grains, or too much of the same foods), drinking or bathing in dirty water, and supernatural causes (witchcraft, sorcery, and possession by spirits) (Maslove et al., 2009).

Other barriers include the lack of understanding of the cause and transmission of malaria, the use of ineffective prevention measures which includes eating a balanced diet, drinking herbal teas, wearing charms or amulets, and vaccinating children (Maslove et al., 2009).

Rickard and colleagues created and implemented an intervention to improve ITN use in a rural community, which involves “providing hands-on instructions and assistance in hanging of nets, in-home small group education, and monthly follow-up by trained community members. There was an increase in the usage rates for under-fives from 46% at the baseline to 95.7% at 6 months and 95.4% at 12 months, (both $p < 0.001$) (Rickard et al., 2011).

Mass distribution of free ITN coupled with massive enlightenment programs and the various methods revealed earlier would go a long way to improve malaria prevention methods (Diabaté et al., 2014; Terlouw et al., 2010).

Knowledge of malaria prevention is essential to the adoption and practice of a prevention strategy; however, it has been revealed that knowledge does not always translate to practice. The prominent prevention strategy is the use of ITN which has some challenges associated with its use.

2.3 Malaria Treatment

Malaria is endemic in sub-Saharan Africa, as a result appropriate treatment modalities have to be put in place. In Tigray where about one-third of the respondents Paulander and colleagues interviewed, revealed at least a member of the family had suffered from malaria since the last major transmission. Almost all the mothers' revealed treatment was sought at a public health care facility, and tablets was the main type of treatment given which to a large extent relieved the symptoms (Paulander et al., 2009; WHO, 2014).

Ashikeni and colleagues revealed in Kuje and Rubochi (control) area council in Abuja that most mothers use chloroquine to treat malaria in their under-five; however, this declined in Kuje after they were introduced to health intervention. An increase in the use of Artemisinin-based Combination Therapy (ACTs) was noticed in Kuje from 9.3% to 16.5% after the intervention (Ashikeni, 2013).

A cross-sectional study done in the west of Sudan among mothers who attended a health facility revealed treatment options includes consulting a health worker, the use of traditional medicine, herbs and self-treatment. Self-treatment with chloroquine, aspirin and paracetamol purchased from drug stores in nearby villages was common, however, when symptoms deteriorates the health worker is consulted (Malik, Hanafi, Ali, Ahmed, & Mohamed, 2006).

In a rural district in Burkina Faso, home treatment is the most frequent and the first action taken. 95% of the children received treatment; 72% from modern medication, 18% traditional while 5% mixes both. Most medication was given at home which was majorly

chloroquine, however, there is availability of other antimalarial medication such as quinine, amodiaquine, sulphadoxine-pyrimethamine (SP) in only about 1% of homes, but they were available at the health facility whilst no child received ACT. This study may not be a true representative for the whole district due to the study design (Tipke et al., 2009).

In Dodoma region of Tanzania where two hundred and eighty seven under-fives with fever were studied, 16.8% sought medical care same day of onset of the fever which increased to 27.7% after day one and 29.6% after two days. The number decreased to 20.7% after day three and 4.8% after day four, only one child (0.4%) sought care after five days. It was noticed that children who lived with both parents were less likely to be delayed while those from households with two to three under-fives were more likely to be delayed. Children who reside at distances greater than or equal to five kilometres from the health facility were about twice more likely to be delayed than those from shorter distances (Kassile, Lokina, Mujinja, & Mmbando, 2014).

A study carried out in Kassena-Nankana district located in northern Ghana, which covered a period of two key malaria intervention activities ongoing in the district, revealed 67.4% of mothers were reported seeking treatment for their children under five years within the first 24 hours of their child's febrile illness in the year 2000 community survey, which significantly improved to 93% in year 2003 survey. Most mothers reported seeking treatment for their children from chemical shops and drug vendors (50.5%) and 26.6% attended government clinics in 2000. There was an improvement in 2003 as 36.2% sought treatment at government clinics (Owusu-Agyei et al., 2007). Ahorlu and colleagues conducted a study in Shime sub-district of Keta district in the Volta region of Ghana, where

it was revealed that intermittent preventive treatment for children given three times in a year combined with timely home treatment for malaria reduces malaria prevalence significantly from 25% to 3%. This significantly reduces under-five deaths associated with malaria (Ahorlu, Koram, Seakey, & Weiss, 2009).

In Dangme West District in Greater Accra Region, 75% of fever cases were first managed at home by ingestion of medications in the home or tepid sponging and purchase of over the counter drugs. The sex of the child was revealed to influence how treatment was sought. Female under-five used self-medication, while male under-fives were taken to a public health facility. However, it was revealed that the evidence was not strong enough hence the need for further study. Families with a higher income tend to use public or private providers as against self-medication while those covered in health insurance used public health facilities as against over-the-counter. Longer travel, waiting time in health facilities were factors favouring self-medication and over-the-counter treatment (Nonvignon et al., 2010).

The majority of deaths in under-five Nigerian children associated with malaria are due to severe malaria, deaths occur between one to three days after the commencement of the severe symptoms hence early detection and commencement of treatment by family members especially mothers is key (Iloh et al., 2012; Iloh et al., 2013).

The children under five years are therefore a high risk group for infectious diseases due to the waning of immunity acquired transplacentally, and the transitional period of development of their own immunity (Iloh et al., 2012). The recognition of malaria symptoms and prompt treatment curbs progression of malaria to its severe state. Marital status, distance to health facility, socioeconomic status influences health seeking behaviour.

Adequate knowledge of malaria, effective preventive strategy and prompt treatment affects morbidity and mortality of children under five years.

It is for this reason I aim to determine the knowledge level of mothers of under-five regarding malaria, their prevention practices, challenges to effective prevention and treatment seeking practices.



CHAPTER THREE

METHODS

3.1 Study Design

This study is a community based cross-sectional study in Adentan Municipality to determine the knowledge level of mothers of under-five regarding malaria, their prevention practices, challenges to effective prevention and treatment seeking practices

The study adopts quantitative method. Structured questionnaire interviews of mothers of children under five years was conducted in selected communities in the four zonal councils; Kosee, Gbentanaa, Nii Ashale and Sutsurunaa.

3.2 Study Area

This study was performed in Adentan Municipality of Greater Accra Region, Ghana. The Municipality has a land area of about 928.4 sq km. It shares boundaries with Ashaiman Municipal Assembly and Kpong Akatamanso District Assembly in the east and north, La Nkwantanang Municipal Assembly in the west and south.

It has four zonal councils namely; Koose, Gbentanaa, Nii Ashale and Sutsurunaa. These zonal councils have 12 electoral areas.

The population of Adentan Municipality is 78,215. Males constitute 50.3% and females represent 49.7%. About 62.5 percent of the population resides in urban and 37.5 percent in

rural areas. There is a total of 9870 under-five in the Municipality, 5024 males and 4846 females.

The Municipality has a household population of 76,601 with a total number of 20,478 households. The average household size in the Municipality is 3.7 persons per household. Children constitute the largest proportion of the household members accounting for 35.1%. Spouses form about 12.4%. Nuclear households (head, spouse(s) and children) constitute 26.9% of the household structure in the Municipality. 46.7% have never married, 6.8% are in consensual unions, 2.3% is widowed, 2.4% divorced and 6.6% separated.

Of the population 11 years and older, 91.9% are literate and 8.1% are not literate. Slightly more than five out of ten people (54.8%) could read and write in both English and a Ghanaian language. Of the population aged 3 years and older 24,740 are currently attending school in the Municipality. About 74.1% of the population aged 15 years and older is economically active while 25.9% are economically not active. For those who are economically not active, a larger percentage of them are students (50.9%), 23.9% perform household duties and 2.4% are disabled or too sick to work (Ghana Statistical Service (GSS), 2014).

3.3 Variables

The variables for this study are categorized into dependent and independent as shown below:

Dependent variables: Prevention practice, Treatment practice

Independent variables: mothers' age, marital status, ethnic group, educational level, family size, occupation, father's occupation, family income, number of children below five years, age of under- five and sex of under – five, knowledge of malaria.

3.4 Sampling

3.4.1 Study Population

The population for study is mothers of children under five years who reside within Adentan Municipality.

3.4.2 Sample Size

Sample size was estimated on the basis of the following: Using a 95% confidence level (Z) and the prevalence of malaria among children aged less than five years to be 27% according to Ghana Demographic and Health Survey(2015).

$$n = \text{sample size} = (z^2pq)/d^2$$

Z=1.96 at 95% confident interval (CI)

d= Desired difference between observed proportion and true proportion= 5% (95% CI)

$$n = \text{sample size} = 302$$

To make for attrition, 20% of the sample size would be added to make up for non-responses.

Hence, a total of 363 mothers were recruited for the study.

3.4.3 Sampling Method

A community from each zonal council was selected by simple random method. In the selected community, a systematic sampling method was utilized to recruit mothers of children under five years for the study.

At the first stage, a list of under-five population by community was collected from Ghana Statistical Service (2010 Population and Housing Census) to determine the proportionate sample size for each of the four selected communities. Sample proportions for the four communities were estimated based on under-five population.

A listing of the houses in each of the communities was done, with the list; a sampling interval was calculated for each of the community. The first house was chosen by random and subsequent selection was by the calculated sampling interval. Only one mother of a child below five years was chosen per house by a simple random method and in situation where there is no eligible mother, the very next house was selected.

Table 1 shows the sampling allocation to communities:

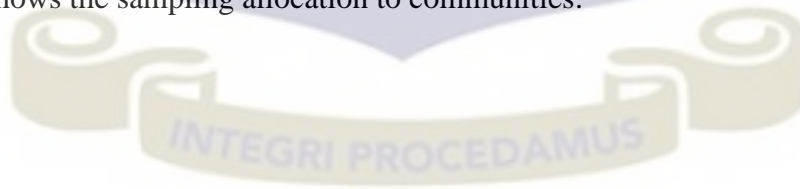


Table 1 Sample allocation to communities

Zonal Council	Community	Total Population	Under-five Population	Proportions	Sample size
Sutsurunaa	Adjiringanor	4708	560	0.262418	95
Koose	Amanfro	675	78	0.036398	13
Gbentanaa	Frafraha	6214	721	0.336444	122
Nii Ashale	Ogbojo	5920	784	0.364442	133
Total			2143		363

3.5 Data collection, handling and analysis

3.5.1 Inclusion criteria

Mothers of children under five years (less than 60 months) in Adentan Municipality

3.5.2 Exclusion criteria

Mothers whose children are aged five years and above.

3.5.3 Ethical considerations and approval

Ethical approval was sought from Ghana Health Service Ethical Review Committee.

Permission from Adentan Health Directorate, Traditional elders and heads of the households before interview.

Informed Consent

Written informed consent was sought from all mothers prior to administration of questionnaires.

Confidentiality

Participant confidentiality was assured throughout the study.

Risks and benefits

There are no risks associated with participating in the study and there are no compensations as well.

3.5.4 Training of interviewers

Data collectors recruited were trained to administer the questionnaires. They were coached specifically on ways of administering questionnaires and conducting the interviews for quality data collection.

3.5.5 Data collection:

Data was collected using structured questionnaire with questions assessing the knowledge level of mothers about malaria, prevention methods practiced, challenges to effective prevention and their treatment seeking practices.

3.5.6 Pre-testing and review of instruments/tools:

Questionnaires were pre-tested at Madina, reviewed with appropriate changes effected accordingly.

3.6 Data Handling and Analysis:

Data from the study was entered, cleaned and analyzed in Stata version 13. Confidentiality was ensured and completed questionnaires were kept under lock and key.

Demographic characteristics are presented in graphs and tables as appropriate. A chi square test was used to determine the association between dependent and independent variables.

The knowledge of malaria was assessed by the use of questionnaire, which contains 49 items. Mothers were asked about the transmission of malaria, symptoms, complications, most risk group, prevention and treatment strategies.

A knowledge score was calculated by giving one point for each item answered correctly and no point for incorrect answer. The total score ranges from 0 to 49. Mothers with scores 0 to 24 were considered to have poor knowledge, while those with scores 25 and above were considered to have good knowledge.

3.6.1 Data Storage:

All manual and electronic data were stored in a secure locked cabinet and access granted to only to the investigator. Data held on computers and flash drives was encrypted with a password which will be made available only on a need to know basis.

CHAPTER FOUR

RESULTS

This chapter presents information on the findings of the study. The data was collected from four communities in Adentan Municipality namely Adringanor, Amanfro, Frafraha and Ogbojo.

It is organized as follows: Socio-demographic characteristics of respondents, knowledge of malaria, prevention methods practiced, challenges to prevention methods and treatment seeking practices of the mothers of children under five years.

4.1 Background characteristics of respondents

This describes the socio-demographic characteristics of the respondents, a total of 363 mothers of children under five years who reside in Adentan Municipality were involved in this study. Ages of respondents in this study ranges from 17 to 47 years. Table 2 shows that majority of the respondents (56.2%) are from the age group 26-35 and this indicates that they are the most populated group. Age group 17-25 and 36-47 make up 26.2% and 17.6% respectively. 76.3% of the respondents are presently married while 23.7% are either single or previously married.

Majority of the respondents are either Akan (33.3%) or Ewe (33.1%). 44.9% acquired secondary school education while 19.8% of the respondents have been to tertiary school. 40.5% of the respondents are traders while 0.8% are students.

A large proportion of the respondents' family income is less than Ghc 1000 (76.3%), while 13.2% has a family income of GHc 1000 and above. 68.9% had a family size of two to four

while 3.6% had a family size of seven to eleven. 68.8% of respondents had only one child aged below five years while 0.3% had four children aged below five years. 46.3% of the children were aged between one to eighteen months while 16.0% were aged thirty seven to fifty nine months. In terms of sex of the child, 52.6% are females while 45.7 were males.

Table 2 indicates the details below:

Table 2 Socio-demographic characteristics of respondents

Variable name	Frequency (n=363)	Percentage (%)
Age		
17-25	95	26.2
26-35	204	56.2
36-47	64	17.6
Marital status		
Married	277	76.3
Unmarried	86	23.7
Ethnic group		
Akan	121	33.3
Ewe	120	33.1
Ga-Dangme	68	18.7
Others	54	14.9
Level of Education		
None	31	8.6
Primary	97	26.7
Secondary	163	44.9
Tertiary	72	19.8
Occupation		
Professional	66	18.2
Artisan	108	29.8
Trader	147	40.5
Housewife	17	4.7

Variable name	Frequency (n=363)	Percentage (%)
Student	3	0.8
Unemployed	22	6.0
Family Income (Ghc)		
Less than 1000	277	76.3
At least 1000	48	13.2
Non response	38	10.5
Family size		
2-4	250	68.9
5-7	96	26.4
7-11	13	3.6
Non response	4	1.1
Number of U5 in households		
1	250	68.8
2	103	28.3
3	5	1.4
4	1	0.3
5	2	0.6
Non response	2	0.6
Age of child (months)		
1-18	168	46.3
19-36	134	36.9
37-59	58	16.0
Non response	3	0.8
Sex of child		
Male	166	45.7
Female	191	52.6
Non response	6	1.7

4.2 Knowledge of malaria

Out of the 363 mothers enrolled, 95.6% had good knowledge of transmission of malaria, its symptoms, complications, most risk group, prevention and treatment strategies as shown in figure 1.

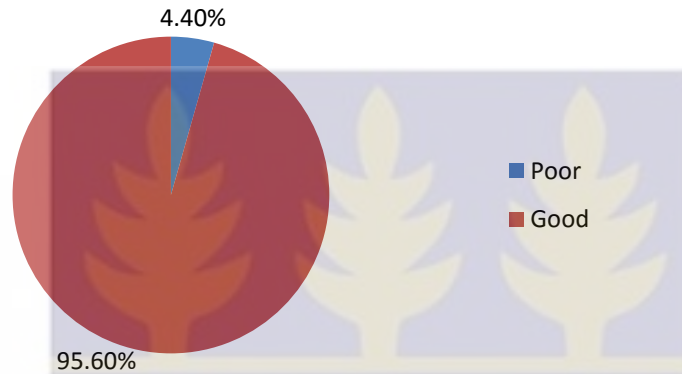


Figure 1 Distribution of knowledge of malaria among respondents

4.2.1 Association between socio-demographic characteristics and knowledge of malaria

Chi-squared test was conducted to check association between socio-demographic characteristics and knowledge of malaria. A P-value less than 0.05 was considered significant. A high proportion of respondents in all age group had good knowledge of malaria, 93.7% among respondents aged 17–25, 96.6% among those aged between 26-35 years and 95.3% among those aged between 36 -47 years. Age was not significantly associated with knowledge of malaria ($p = 0.524$). Knowledge of malaria was higher among the unmarried (97.7%) as compared to the married (94.9%). This difference was however, not statistically significant ($p=0.377$).

All mothers with tertiary level of education had a good knowledge of malaria (100%) while those with no form of education have the least proportion of those with good knowledge of malaria (83.9%). Mother's level of education has statistical significant association with knowledge of malaria ($p=0.002$). All the mothers with a monthly family income of Ghc 1000 and above had good knowledge of malaria with 95.3% of those with a monthly family income of less than Ghc 1000 having good knowledge of malaria. Mothers in families with a size of 7-11 members had the least proportion of those with good knowledge of malaria (84.6%). Both family income and family size was not statistically significant with the knowledge of malaria.

Table 3 indicates the details below:

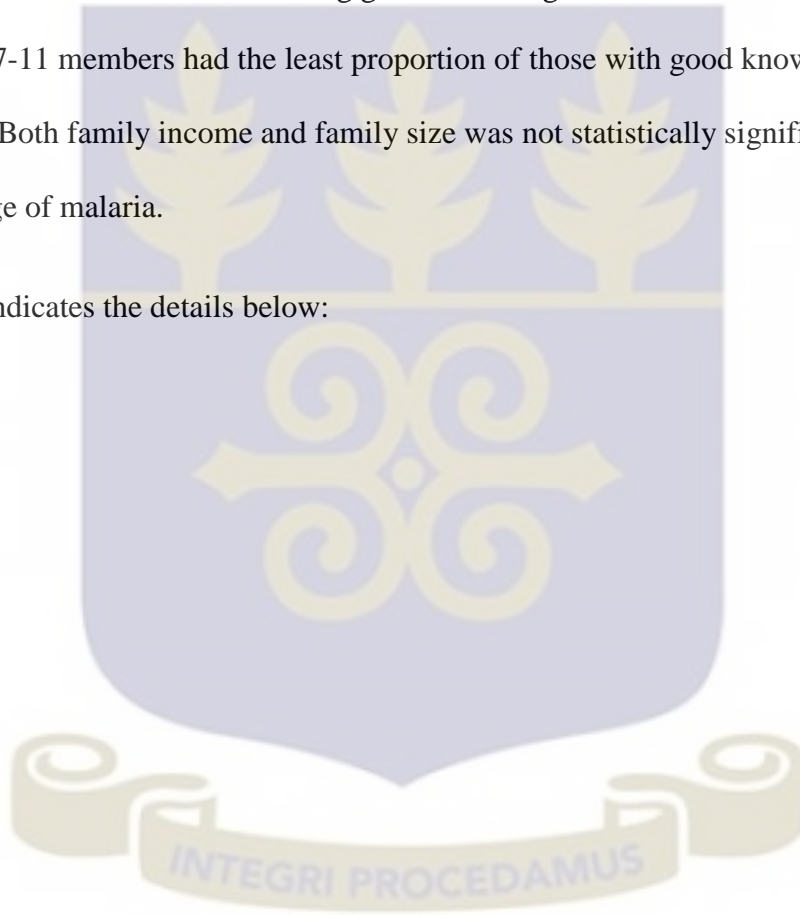


Table 3 Socio-demographic characteristics and knowledge of malaria

Characteristics	N=363(%)			p-value
	Poor knowledge	Good knowledge	Total	
Age				
17-25	6(6.3)	89(93.7)	95(100.0)	0.524
26-35	7(3.4)	197(96.6)	204(100.0)	
36-47	3(4.7)	61(95.3)	64(100.0)	
Marital status				
Married	14(5.1)	263(94.9)	277(100.0)	*0.377
Unmarried	2(2.3)	84(97.7)	86(100.0)	
Level of Education				
None	5(16.1)	26(83.9)	31(100.0)	0.002
Primary	6(6.2)	91(93.8)	97(100.0)	
Secondary	5(3.1)	158(96.9)	163(100.0)	
Tertiary	0(0.0)	72(100.0)	72(100.0)	
Family Income Ghc				
Less than 1000	13(4.7)	264(95.3)	277(100.0)	*0.229
At least 1000	0(0.0)	48(100.0)	48(100.0)	
Family size				
2-4	9(3.6)	241(96.4)	250(100.0)	*0.119
5-7	3(3.1)	93(96.9)	96(100.0)	
7-11	2(15.4)	11(84.6)	13(100.0)	

*Statistical testing using Fisher's exact

4.3 Prevention of Malaria

A higher proportion of mothers (87.6%) prevented their child from malaria using any of the malaria prevention strategies. Majority use multiple strategies to prevent malaria (54.4%), 33.7% use ITN only while 0.3% clean the environment as the only prevention strategy. 56.4% of the mothers chose their malaria prevention strategy because they felt it was effective while affordability of the method was the reason for 6.4% of the mothers, as shown in figures (2, 3) and table 4.

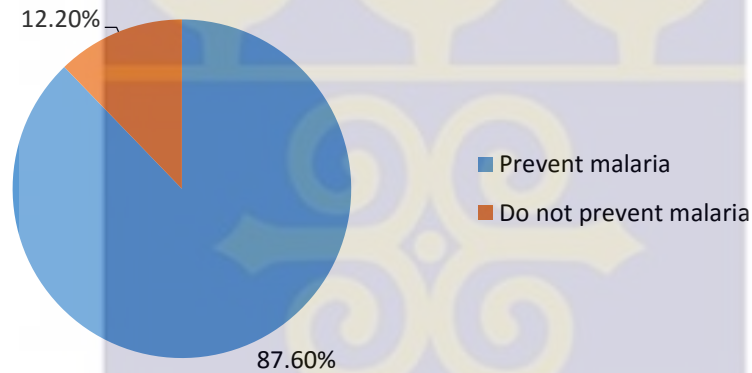


Figure 2 Distribution of mothers who prevent malaria

Table 4 Malaria prevention strategies

Strategy	Frequency (n=318)	Percentage (%)
Drug	3	0.9
Repellant	9	2.8
Bednet	3	0.9
ITN	107	33.7
Insecticide spray	17	5.4
Wear protective clothing	5	1.6
Clean environment	1	0.3
Multiple	173	54.4

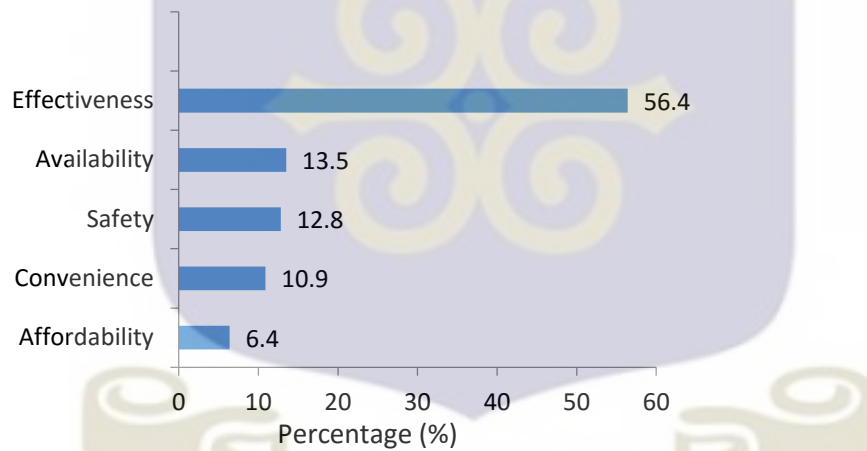


Figure 3 Reason for the prevention strategy

Some challenges identified by study respondent in relation to current malaria prevention method included discomfort, cost, irritation, skin conditions, allergies, tear and difficulty in tacking ITNs. About 29% felt uncomfortable with their current malaria prevention strategy while 12.9% perceived cost was a major determinant of malaria prevention strategy. Among

the 318 mothers who prevent their child from malaria, 74.8% (238) own an ITN. 49.2% of the 238 mothers own one ITN while 1.7% own more than four ITNs as shown in figures (4&5).

Of the 74.8% mothers who own an ITN, no member of the household sleep under the ITN of 2.1% of the mothers while 44.5% revealed a maximum of two members of their household sleep under one ITN. 8.8% reveal their ITN is been changed or re-impregnated in less than six months while 46% has never changed nor re-impregnated their ITN, as shown in figures (6&7).

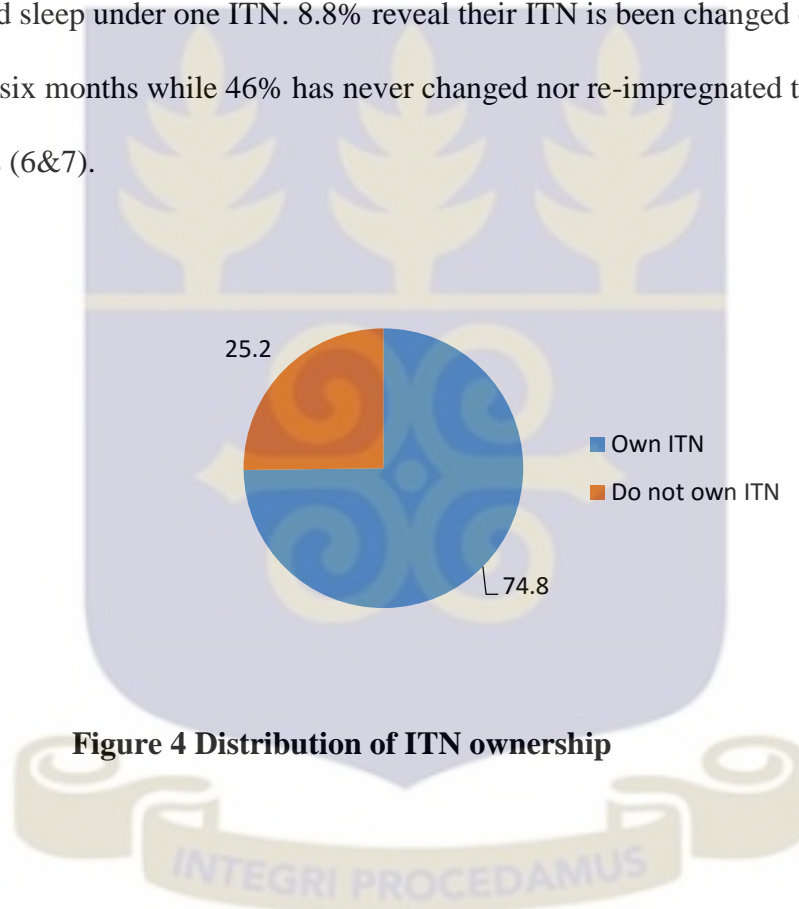


Figure 4 Distribution of ITN ownership

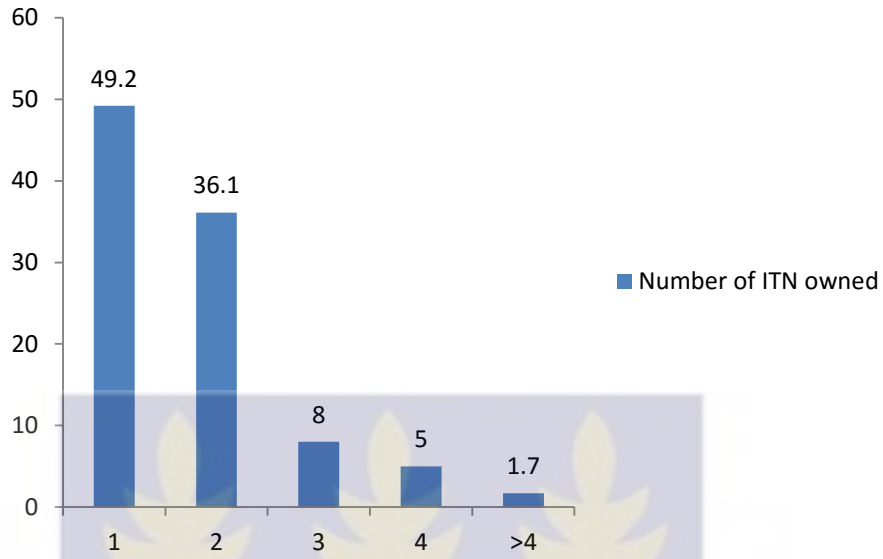


Figure 5 Distribution of number of ITN(s) owned

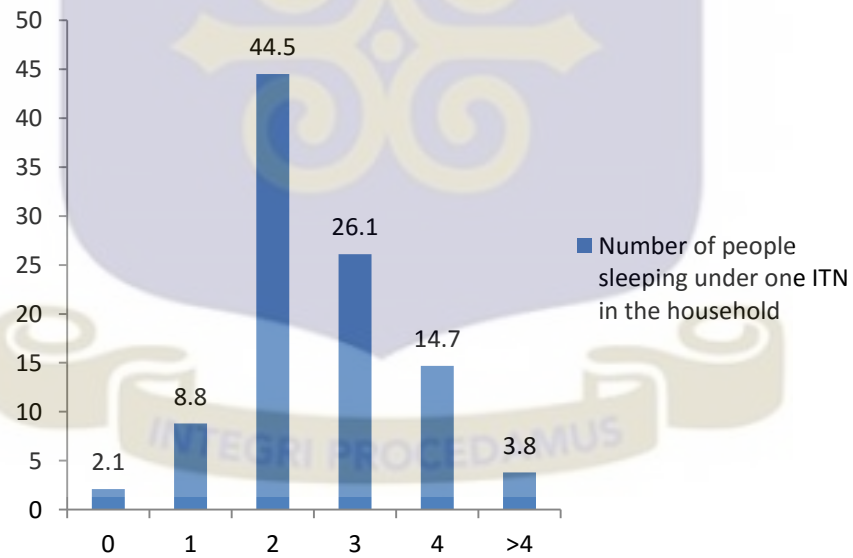


Figure 6 Persons sleeping under an ITN

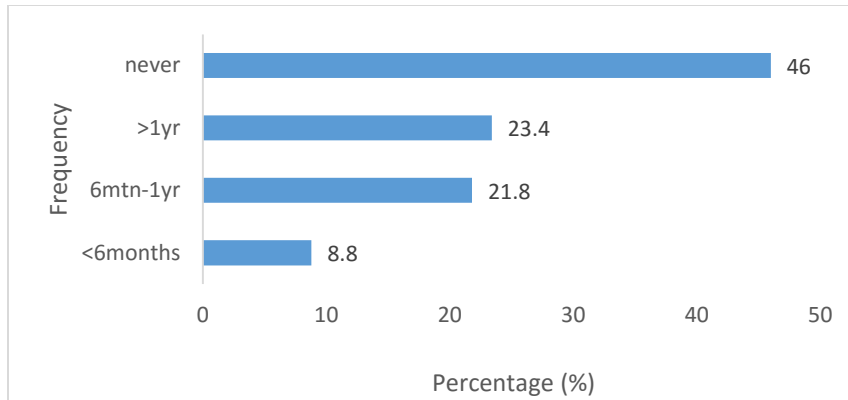


Figure 7 Frequency of ITN change or re-impregnation

4.3.1 Prevention of malaria, ITN ownership and knowledge of malaria

A high proportion of mothers who prevent malaria have good knowledge of malaria (98.1%). Preventing malaria has statistical significant association with knowledge of malaria ($p < 0.001$). A high proportion of both mothers who own and do not own ITN have good knowledge of malaria. This however was not statistically significant ($p = 0.170$).

Table 5 indicates the details below:



Table 5 Selected prevention parameters and knowledge of malaria

N=363(%)				
Characteristics	Poor knowledge	Good knowledge	Total	p-value
Preventing Malaria				
Yes	6(1.9)	312(98.1)	318(100.0)	<0.001
No	10(22.2)	35(77.8)	45(100.0)	
ITN Ownership				
Yes	3(1.3)	235(98.7)	238(100.0)	*0.170
No	3(3.8)	77(96.2)	80(100.0)	

*Statistical testing using Fisher's exact

4.3.2 Socio-demographic characteristics and ITN ownership

From the analysis, 70.7% of respondents with no formal education own ITN, 76.7% of those with primary education own ITN, 81.5% of those with secondary education while 60% of those with tertiary education own an ITN. This, however was not statistically significant (p=0.140).

Out of the 44 mothers with a monthly family income of Ghc 1000 and above, 86.4% own an ITN while 72.6% own an ITN among those with a monthly family income of less than Ghc 1000, this also was not statistically significant as shown in table 6.

Table 6 Association between socio-demographic characteristics and ITN ownership

N=318(%)				
Characteristics	ITN Ownership			p-value
	Yes	No	Total	
Level of Education				
None	58(70.7)	24(29.3)	82(100.0)	0.140
Primary	112(76.7)	34(23.3)	146(100.0)	
Secondary	53(81.5)	12(18.5)	65(100.0)	
Tertiary	15(60)	10(40)	25(100.0)	
Family Income Ghc				
Less than 1000	175(72.6)	66(27.4)	241(100.0)	0.054
At least 1000	38(86.4)	6(13.6)	44(100.0)	

4.4 Malaria treatment practice

Analysis revealed 74.4% of respondent's child had a positive history of fever, 32.8% had been admitted due to fever, 3.8% had history of unconsciousness, 4% had history of convulsion and 0.3% has lost a child after developing fever, being unconscious or convulsed. 8.5% of the children whose mother were interviewed experience fever regularly while 58.5% rarely experience fever. 0.7% visits the laboratory as first action after noticing fever in their child while 36.3% tepid sponge. On persistence of the fever, none of the mothers use herbs while 86.2% take their child to the health facility. Of the mothers interviewed, 41.2% took action in less than 24 hours, while 8.8% took action after three days, as shown in figures (8, 9, 10) and table 7.

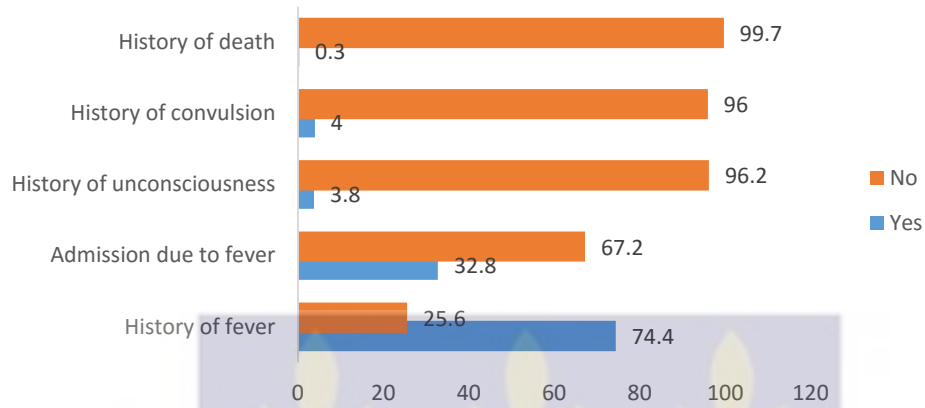


Figure 8 History of fever parameters among child of respondents

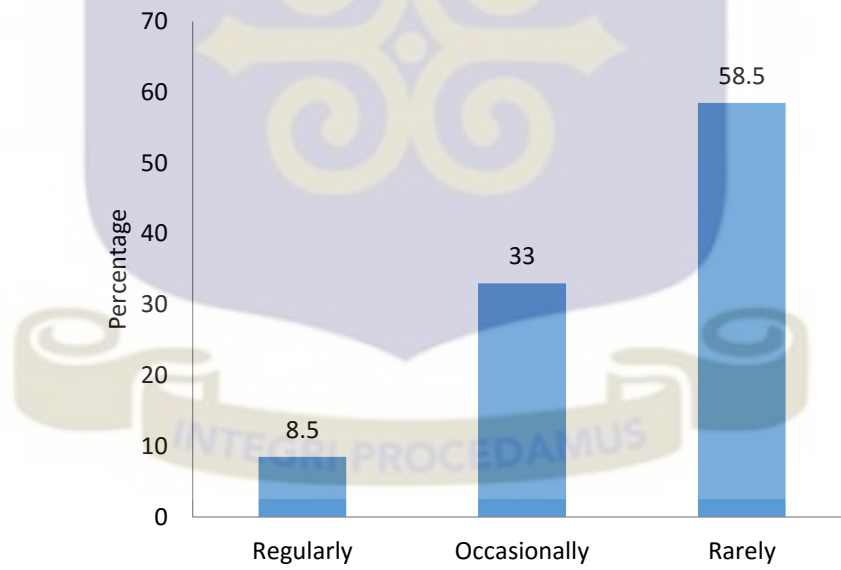


Figure 9 Frequency of occurrence of fever

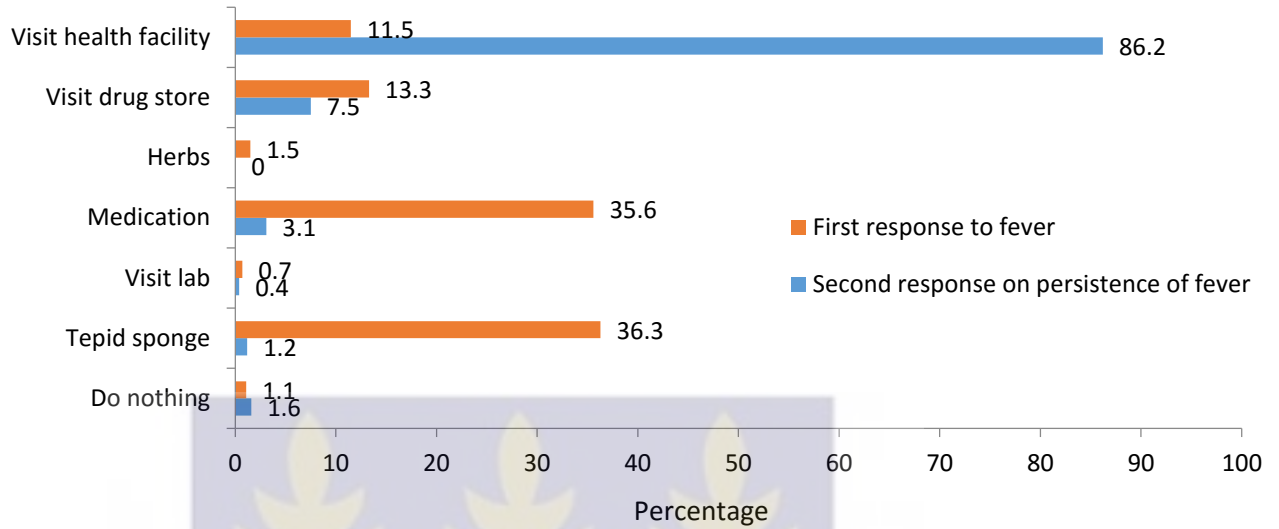


Figure 10 Mother's response to child's fever

Table 7 Duration between fever onset and action

Duration (days)	Frequency n=250	Percentage (%)
<1	103	41.2
1	64	25.6
2	33	13.2
3	28	11.2
>3	22	8.8

4.4.1 Child's age and History of fever

Children in age group 1-18 months had a 66.1% positive history of fever, 81.3% among those between 19-36 months and 84.5% among those between 37-59 months. Age is significantly associated with history of fever, as shown in table 8.

Table 8 Association between child's age and history of fever

History of fever N=360(%)				
Characteristics	Positive	Negative	Total	p-value
Age (months)				
1-18	111(66.1)	57(33.9)	168(100.0)	
19-36	109(81.3)	25(18.7)	134(100.0)	0.002
37-59	49(84.5)	9(15.5)	58(100.0)	

4.4.2 Knowledge of malaria and history of fever

Of the mothers with poor knowledge of malaria, 12.5% of their child had a positive history of fever while 77.2% of the children of the mothers with good knowledge of malaria had a positive history of fever. There was significant association between knowledge of malaria and history of fever ($p < 0.001$), as shown in table 9.

Table 9 Association between knowledge of malaria and history of fever

History of fever N=363(%)				
Knowledge	Positive	Negative	Total	p-value
Poor	2(12.5)	14(87.5)	16(100.0)	
Good	268(77.2)	79(22.8)	347(100.0)	* < 0.001

*Statistical testing using Fisher's exact

4.4.3 Knowledge of malaria and duration between fever onset and action

A higher proportion of the mothers with good knowledge of malaria (41.5%) took action in less than a day. 50% of the mothers with poor knowledge took action two days after onset of fever with the remaining 50% taking action three days after onset of fever. There was no significant association between mothers' knowledge of malaria and the duration between fever onset and action, as shown in table 10.

Table 10 Association between knowledge of malaria and duration between fever onset and action

Knowledge	Duration between fever onset and action (days)					Total	p-value
	<1	1	2	3	>3		
Poor	0(0.0)	0(0.0)	1(50.0)	1(50.0)	0(0.0)	2(100.0)	
Good	103(41.5)	64(25.8)	32(12.9)	27(10.9)	22(8.9)	248(100.0)	*0.109

*Statistical testing using Fisher's exact

4.4.4 Knowledge of malaria and fever admission

The children of most of mothers with good knowledge of malaria had no history of admission due to fever (67.3%), while half of the mothers with poor knowledge had experienced hospital admission of the child due to fever. There was no significant association between knowledge of malaria and fever admission, as shown in table 11.

Table 11 Association between knowledge of malaria and fever admission

Fever admission N=268(%)				
Knowledge	Positive	Negative	Total	p-value
Poor	1(50.0)	1(50.0)	2(100.0)	
Good	87(32.7)	179(67.3)	266(100.0)	*0.550

*Statistical testing using Fisher's exact

4.4.5 Knowledge of malaria and history of unconsciousness

The children of majority of the mothers with good knowledge of malaria (96.5%) have no history of unconsciousness while the children of 25% of mothers with poor knowledge have a positive history of unconsciousness. There was no association between knowledge of malaria and history of unconsciousness, as shown in table 12.

Table 12 Association between knowledge of malaria and history of unconsciousness

History of unconsciousness N=292(%)				
Knowledge	Positive	Negative	Total	p-value
Poor	1(25.0)	3(75.0)	4(100.0)	
Good	10(3.5)	278(96.5)	288(100.0)	*0.143

*Statistical testing using Fisher's exact

4.4.6 Knowledge of malaria and history of convulsion

The children of majority of mothers with good knowledge of malaria (96.1%) have no history of convulsion likewise majority of children of mother with poor knowledge (93.3%) also have no history of convulsion. There was no significant association between knowledge of malaria and history of convulsion, as shown in table 13.

Table 13 Association between knowledge of malaria and history of convulsion

History of convulsion N=351(%)				
Knowledge	Positive	Negative	Total	p-value
Poor	1(6.7)	14(93.3)	15(100.0)	
Good	13(3.9)	323(96.1)	336(100.0)	*0.464

*Statistical testing using Fisher's exact

4.4.7 Knowledge of malaria and history of death

All respondents with good knowledge of malaria has not lost a child after developing fever, unconsciousness or convulsion while 6.7% of mothers with poor knowledge has lost a child after developing fever, unconsciousness or convulsion. Knowledge of malaria was statistically significant with history of death, as shown in table 14.

Table 14 Knowledge of malaria and history of death

History of death N=352(%)				
Knowledge	Positive	Negative	Total	p-value
Poor	1(6.7)	14(93.3)	15(100.0)	
Good	0(0.0)	337(100.0)	337(100.0)	*0.043

*Statistical testing using Fisher's exact

CHAPTER FIVE

DISCUSSIONS

This chapter discusses the findings obtained from the analysis and how they are related to other findings. Data was collected from 363 mothers of children under five years in Adentan Municipality. The Objectives of the study were to measure the level of knowledge of mothers of children under five years about malaria, identify prevention methods practiced, determine challenges to effective prevention and their treatment seeking practices.

5.1 Knowledge of malaria

With 95.6% of the mothers with good knowledge of malaria transmission, symptoms, complications, most risk group, prevention and treatment strategies, awareness of malaria was very high. This is similar to studies done by Paulander and colleagues (2009) in Ethiopia, Kinung'hi and colleagues (2010) in North-western Tanzani, De La Cruz and colleagues (2006) in the Eastern and Central region of Ghana and Ameyaw and colleagues (2015) in Kumasi, Ghana. But different from the study in Kuje, Nigeria where mothers demonstrated poor knowledge both pre and post health information about malaria (Ashikeni, 2013). A possible explanation for the high knowledge was health information given to the mothers during antenatal visits, visits to the infant and child clinic especially for immunization and the adoption of the Community-based Health and Planning Services (CHPS) system which brings trained health care workers directly into the communities (Ghana Statistical Service (GSS), 2014). Among the socio-demographic characteristics, only the level of education was found to be statistically significant with mothers' knowledge of

malaria ($p=0.002$). Majority of the mothers (91.4%) had at least primary education while 64.7% had at least secondary education. Education may lead to an increased knowledge of malaria, its prevention and control in children under five years as it increases the chances to be informed about malaria and better understand information given. This is corroborated by Iloh and colleagues' (2013) where level of education was associated with knowledge of malaria and its complications which had an impact on the decision-making process as regards health seeking behaviour for malaria. However, there was no significant association between level of education and knowledge of malaria in the study done by Appiah-Darkwah (2011) in Accra as non-formal and informal forms of education are attributed to play a role.

5.2 Prevention of malaria

Mothers' knowledge of malaria is important for its prevention and control in their children. 87.6% of mothers prevented their child from malaria. ITN usage was the most common prevention strategy; it is usually combined with other strategies.

Of the respondents interviewed, 65.6% (238) own an ITN while 64.2% (233) use the ITN. The free distribution of ITNs to every pregnant woman and mother of a child under five years who visits the health facility and distribution to the homes by Adentan Health Directorate is a possible reason it is the commonest prevention strategy. This is similar to the study by Paulander and colleagues' (2009) where most households had ITN which was gotten from the government .

The result from this study is higher than the national figure of 48% and that of Greater Accra region which has the lowest percentage (26%) in the country (Ghana Statistical

Service (GSS) et al., 2015) It meets the Abuja target of 60% which should be replicated to the region and entire country (WHO, 2000).

Of the mothers who own ITN (238), the ITN seem to be insufficient for 44.6% of them who have more than two people sleeping in the ITN while 2.1% have ITNs they refuse to use. Knowledge of malaria and prevention practice were significantly associated ($p < 0.001$) in contrast with the findings of De La Cruz and colleagues (2006) and Edelu and colleagues (2010) which revealed that knowledge does not translate into practice.

Challenges with the use of ITNs include tear, tacking difficulty, discomfort in the form of heat, burning of the skin in the initial days used. Mothers prefer the circular ITNs to the rectangular one because of the ease in tacking. Insecticide spray was regarded expensive and causes some form of allergy likewise coils and repellants. Wearing of overall protective clothes and environmental management were perceived ineffective when used alone. Maslove and colleagues' (2009) revealed similar findings; the barriers to effective ITN usage were cost and ease of use, notion of increased sweating at night, tacking difficulty, the unpleasant side effect of coil smokes, repellants and insecticide spray were among the reasons. Ignorance also played a role as the lack of knowledge that mosquitoes causes malaria would render the use of ITNs irrelevant.

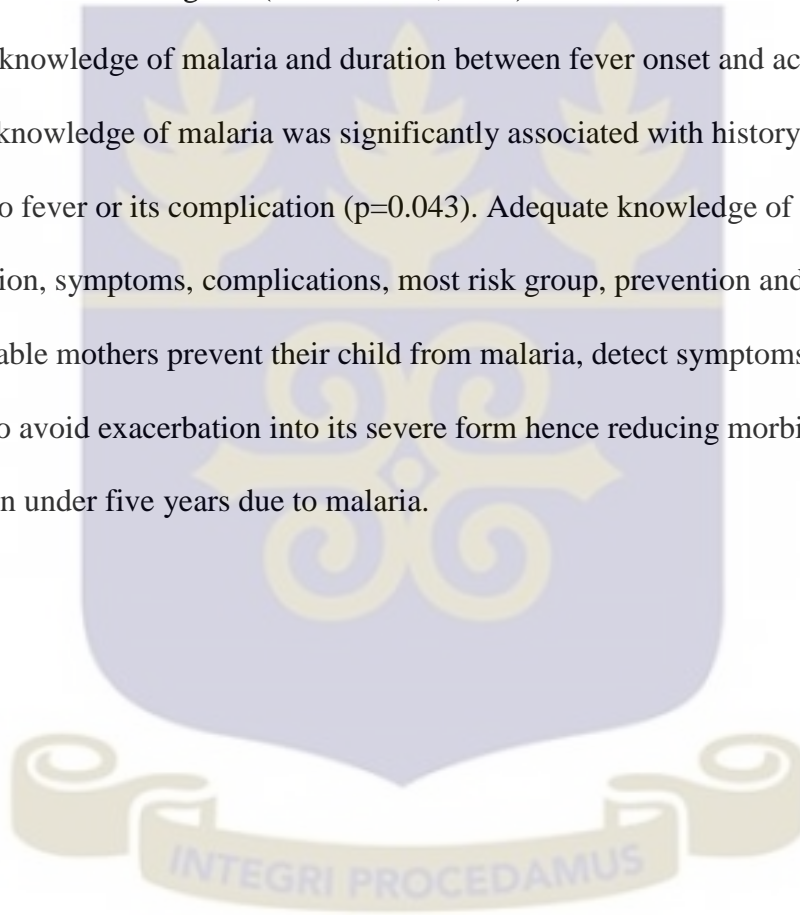
5.3 Treatment of malaria

Malaria in children under five years requires prompt recognition and treatment to prevent complications. Mortality occurs only after 24 to 72 hours after commencement of severe symptoms. Mothers have a key role to play. 74.4% of respondent's child had a positive

history of fever, 32.8% had been admitted due to fever, 3.8% had history of unconsciousness, 4% had history of convulsion and 0.3% has lost a child after developing fever, being unconscious or convulsed. 8.5% of the children whose mother were interviewed experience fever regularly while 58.5% rarely experience fever. Mothers knowledge of malaria and history of fever was significantly associated ($p < 0.001$) likewise child's age was significantly associated with history of fever ($p = 0.002$). Majority of the children in the 37 - 59 months age group (84.5%) have a positive history of fever compared to those between 1-18 months. A possible explanation for this is since the prevalence of malaria in the different age group was not determined in the study, it is logical that the older child would have had more fever experience than the younger ones. Nyarko and Cobblah (2014) study in Ghana revealed a 12% prevalence rate in the younger age group compared to 26% in the 12 – 23 months age group and 24% in the 24-35 months age group. Presence of antibodies acquired from their mothers is a possible reason for the protection in the younger age group.

It was a common practice to tepid sponge, as about 36.3% of the mothers did to reduce the child's body temperature this could be harmful as the fever may worsen to its severe form. About 74.4% of the fever cases were first managed at home (tepid sponge, medication, herbs) which is similar to the study done in Dangme West District, in the same Greater Accra region of Ghana (Nonvignon et al., 2010). This could be due to the average travel time of 16 to 30 minutes and an average waiting time of between one to two hours. Majority of the mothers take their child to the health facility only on persistence of the fever symptoms (86.2%) as against 11.5% who took their child to a health facility as the first response. Cost of care could be another possible reason. Of the mothers interviewed, 41.2%

took action in less than 24 hours, which is less than the recommended 60% Abuja target (WHO, 2000), 25.6% in 24 hours and 13.2% in 48 hours. This is in contrast to a study done in Volta and Eastern region of Ghana where significant proportion of under-five children receiving treatment after 24 hours with only 11% receiving treatment in less than 24 hours (Ahorlu, Koram, Ahorlu, De Savigny, & Weiss, 2006) and to a study done in central Tanzania with similar figures (Kassile et al., 2014). There was no association between mothers' knowledge of malaria and duration between fever onset and action ($p=0.109$), however knowledge of malaria was significantly associated with history of death of under-five due to fever or its complication ($p=0.043$). Adequate knowledge of malaria transmission, symptoms, complications, most risk group, prevention and treatment strategies would enable mothers prevent their child from malaria, detect symptoms and promptly respond to avoid exacerbation into its severe form hence reducing morbidity and mortality of children under five years due to malaria.



CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Mothers' of children under five years knowledge of malaria was high which could be attributed to health information given to them during antenatal visits, visits to the infant and child clinic especially for immunization and the adoption of the Community-based Health and Planning Services (CHPS) system which brings trained health care workers directly into the communities.

The distribution of ITNs to pregnant women and children under five years in Adentan resulted in ITN being the most common prevention strategy, which is usually combined with other strategies, however the number of ITNs available to 44.6% of the respondents is insufficient for their household. Challenges with the use of ITNs include tear, tacking difficulty, discomfort in the form of heat, burning of the skin in the initial days used.

Mothers prefer the circular ITNs to the rectangular one because of the ease in tacking.

Insecticide spray was regarded expensive and causes some form of allergy likewise coils and repellants. Wearing of overall protective clothes and environmental management were perceived ineffective when used alone.

Tepid sponging was the first response to fever while visit to the health facility was mainly the response on persistence of symptoms. The proportion of response within first 24 hours does not meet the Abuja target of 60%, suggesting the need for an emphasis of prompt

seeking of care. Adequate knowledge of malaria, effective preventive measures and prompt treatment would in no small measure reduce under-five morbidity and mortality.

6.2 Recommendations

Malaria control is a concerted effort that involves all stakeholders.

The following measures are being recommended to the Adentan Health Directorate;

- The community health nurses and volunteers who are primarily involved in the CHPS service should be routinely trained for more effective Behaviour Change Communication (BCC) activities as regards mothers' early recognition of malaria symptoms and prompt response.
- Encourage continued ITN distribution particularly to pregnant women and children under five years preferably the circular ITNs.

To the Ministry of Health and National Malaria Control Programme;

- The need to sustain the free ITN distribution in antenatal clinics, child welfare clinics and community based distribution in order to increase access and use.
- Continued sustenance of the CHPS service which improves knowledge of malaria and encourages the adoption of control strategies.
- Feedback to the manufacturers of the ITNs to improve on the design and quality of their product.
- Adequate staffing of the community clinics, with an upward review of the working hours.

REFERENCES

- Adongo, P. B., Kirkwood, B., & Kendall, C. (2005). How local community knowledge about malaria affects insecticide-treated net use in northern Ghana. *Tropical Medicine & International Health*, 10(4), 366–378. <http://doi.org/10.1111/j.1365-3156.2005.01361.x>
- Afoakwah, C., Nunoo, J., & Andoh, F. K. (2015). Effect of insecticide-treated bed net usage on under-five mortality in northern Ghana. *Malaria Journal*, 14(1), 309. <http://doi.org/10.1186/s12936-015-0827-8>
- Ahorlu, C. K., Koram, K. a, Seakey, A. K., & Weiss, M. G. (2009). Effectiveness of combined intermittent preventive treatment for children and timely home treatment for malaria control. *Malaria Journal*, 8, 292. <http://doi.org/10.1186/1475-2875-8-292>
- Ahorlu, C. K., Koram, K. A., Ahorlu, C., De Savigny, D., & Weiss, M. G. (2006). Socio-cultural determinants of treatment delay for childhood malaria in southern Ghana. *Tropical Medicine and International Health*, 11(7), 1022–1031. <http://doi.org/10.1111/j.1365-3156.2006.01660.x>
- Ameyaw, E., Dogbe, J., & Owusu, M. (2015). Knowledge and practice of malaria prevention among caregivers of children with malaria admitted to a teaching hospital in Ghana. *Asian Pacific Journal of Tropical Disease*, 5(8), 658–661. [http://doi.org/10.1016/S2222-1808\(15\)60908-2](http://doi.org/10.1016/S2222-1808(15)60908-2)
- Appiah-Darkwah, I., & Badu-Nyarko, S. K. (2011). Knowledge of Malaria Prevention and Control in a Sub-Urban Community in Accra, Ghana. *International Journal of Tropical Medicine*.
- Ashikeni M.A, Envuladu E.A, Z. A. . (2013). Perception and practice of malaria prevention and treatment among mothers in Kuje Area Council of the Federal Capital Territory, Abuja, Nigeria. *Int J Med Biomed Res*, 2(3), 213 –220.
- Baume, C. a, Reithinger, R., & Woldehanna, S. (2009). Factors associated with use and non-use of mosquito nets owned in Oromia and Amhara regional states, Ethiopia. *Malaria Journal*, 8, 264. <http://doi.org/10.1186/1475-2875-8-264>
- De La Cruz, N., Crookston, B., Dearden, K., Gray, B., Ivins, N., Alder, S., & Davis, R. (2006). Who sleeps under bednets in Ghana? A doer/non-doer analysis of malaria prevention behaviours. *Malaria Journal*, 5, 61. <http://doi.org/10.1186/1475-2875-5-61>
- Diabaté, S., Druetz, T., Bonnet, E., Kouanda, S., Ridde, V., & Haddad, S. (2014). Insecticide-treated nets ownership and utilization among under-five children following the 2010 mass distribution in Burkina Faso. *Malaria Journal*, 13, 353. <http://doi.org/10.1186/1475-2875-13-353>
- Edelu, B. O., Ikefuna, A. N., Emodi, J. I., & Adimora, G. N. (2010). Awareness and use of insecticide-treated bed nets among children attending outpatient clinic at UNTH, Enugu - the need for an effective mobilization process. *African Health Sciences*, 10(August 2007), 117–119.

- García-Basteiro, A. L., Schwabe, C., Aragon, C., Baltazar, G., Rehman, A. M., Matias, A., ... Kleinschmidt, I. (2011). Determinants of bed net use in children under five and household bed net ownership on Bioko Island, Equatorial Guinea. *Malaria Journal*, 10(1), 179. <http://doi.org/10.1186/1475-2875-10-179>
- Ghana Health Service. (2010). The Health Sector in Ghana: Facts and Figures. Ghana Health Service. Retrieved from http://www.moh-ghana.org/UploadFiles/Publications/GHS Facts and Figures 2010_22APR2012.pdf
- Ghana Health Service (GHS). (2013). Ghana Malaria Programme Review: National Malaria Control Program. Ghana Health Service. Retrieved from http://www.ghanahealthservice.org/downloads/ghana_malaria_programme_review_final_report_june_2013.pdf
- Ghana Statistical Service. (2011). Ghana Multiple Indicator Cluster Survey with an Enhanced Malaria Module and Biomarker. *Ghana Statistical Service*. Accra, Ghana: Ghana Statistical Service. Retrieved from http://www.unicef.org/ghana/Ghana_MICS_Final.pdf
- Ghana Statistical Service (GSS). (2014). 2010 Population & Housing Census District Analytical Report - Adentan Municipality. Accra, Ghana: Ghana Statistical Service. Retrieved from http://statsghana.gov.gh/docfiles/2010_District_Report/Greater Accra/Adentan.pdf
- Ghana Statistical Service (GSS), Ghana health Service (GHS), & ICF International. (2015). Ghana Demographic and Health Survey 2014. Rockville, Maryland, USA. Retrieved from <http://statsghana.gov.gh/docfiles/publications/2014 GDHS Report.pdf>
- Iloh, G. U., Ofoedu, J. N., Njoku, P. U., Amadi, A. N., & Godswill-Uko, E. U. (2012). The Magnitude of Under-five Emergencies in a Resource-poor Environment of a Rural Hospital in Eastern Nigeria: Implication for Strengthening the House-hold and Community-integrated Management of Childhood Illnesses. *North American Journal of Medical Sciences*, 4(8), 344–9. <http://doi.org/10.4103/1947-2714.99514>
- Iloh, G. U. P., Chuku, A., Amadi, A. N., & Ofoedu, J. N. (2013). Proximate Family Biosocial Variables Associated with Severe Malaria Disease among Under-Five Children in Resource-Poor Setting of a Rural Hospital in Eastern Nigeria. *Journal of Family Medicine and Primary Care*, 2(3), 256–62. <http://doi.org/10.4103/2249-4863.120739>
- Kassile, T., Lokina, R., Mujinja, P., & Mmbando, B. P. (2014). Determinants of delay in care seeking among children under five with fever in Dodoma region, central Tanzania: a cross-sectional study. *Malaria Journal*, 13(1), 348. <http://doi.org/10.1186/1475-2875-13-348>
- Kinung'hi, S. M., Mashauri, F., Mwanga, J. R., Nnko, S. E., Kaatano, G. M., Malima, R., ... Mboera, L. E. G. (2010). Knowledge, attitudes and practices about malaria among communities: Comparing epidemic and non-epidemic prone communities of Muleba district, North-western Tanzania. *BMC Public Health*, 10, 395. <http://doi.org/10.1186/1471-2458-10-395>

- Malik, E. M., Hanafi, K., Ali, S. H., Ahmed, E. S., & Mohamed, K. A. (2006). Treatment-seeking behaviour for malaria in children under five years of age: implication for home management in rural areas with high seasonal transmission in Sudan. *Malaria Journal*, 5, 60. <http://doi.org/10.1186/1475-2875-5-60>
- Maslove, D. M., Mnyusiwalla, A., Mills, E. J., McGowan, J., Attaran, A., & Wilson, K. (2009). Barriers to the effective treatment and prevention of malaria in Africa: A systematic review of qualitative studies. *BMC International Health and Human Rights*, 9(1), 26. <http://doi.org/10.1186/1472-698X-9-26>
- Murray, C. J. L. (2014). Global , regional , and national incidence and mortality for HIV , tuberculosis , and malaria during 1990 – 2013 : a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*, 384(9947), 1005–1070. [http://doi.org/10.1016/S0140-6736\(14\)60844-8](http://doi.org/10.1016/S0140-6736(14)60844-8).Global
- Ng'ang'a, P. N., Jayasinghe, G., Kimani, V., Shililu, J., Kabutha, C., Kabuage, L., ... Muteru, C. (2009). Bed net use and associated factors in a rice farming community in Central Kenya. *Malaria Journal*, 8, 64. <http://doi.org/10.1186/1475-2875-8-64>
- Nonvignon, J., Aikins, M. K. S., Chinbuah, M. A., Abbey, M., Gyapong, M., Garshong, B. N. A., ... Gyapong, J. O. (2010). Treatment choices for fevers in children under-five years in a rural Ghanaian district. *Malaria Journal*, 9, 188. <http://doi.org/10.1186/1475-2875-9-188>
- Noor, A. M., Mutheu, J. J., Tatem, A. J., Hay, S. I., & Snow, R. W. (2009). Insecticide-treated net coverage in Africa: mapping progress in 2000-07. *Lancet (London, England)*, 373(9657), 58–67. [http://doi.org/10.1016/S0140-6736\(08\)61596-2](http://doi.org/10.1016/S0140-6736(08)61596-2)
- Nyarko, S. H., & Cobblah, A. (2014). Sociodemographic Determinants of Malaria among Under-Five Children in Ghana. *Malaria Research and Treatment*, 2014, 304361. <http://doi.org/10.1155/2014/304361>
- Osero, J. S. O., Otieno, M. F., & Orago, A. S. S. (2006). Mothers' Knowledge on Malaria and Vector Management Strategies in Nyamira District, Kenya. *East African Medical Journal*, 83(9), 507 – 514.
- Owusu-Agyei, S., Awini, E., Anto, F., Mensah-Afful, T., Adjuik, M., Hodgson, A., ... Binka, F. (2007). Assessing malaria control in the Kassena-Nankana district of northern Ghana through repeated surveys using the RBM tools. *Malaria Journal*, 6, 103. <http://doi.org/10.1186/1475-2875-6-103>
- Paulander, J., Olsson, H., Lemma, H., Getachew, A., Getachew, A., & Sebastian, M. S. (2009). Knowledge, attitudes and practice about malaria in rural Tigray, Ethiopia. *Global Health Action*, 2(0), 1–7. <http://doi.org/10.3402/gha.v2i0.1839>
- Rickard, D. G., Dudovitz, R. N., Wong, M. D., Jen, H. C., Osborn, R. D., Fernandez, H. E., & Donkor, C. I. (2011). Closing the gap between insecticide treated net ownership and use for the prevention of malaria. *Progress in Community Health Partnerships : Research, Education, and Action*, 5(2), 123–31. <http://doi.org/10.1353/cpr.2011.0018>
- Terlouw, D. J., Morgah, K., Wolkon, A., Dare, A., Dorkenoo, A., Eliades, M. J., ... Hawley,

- W. A. (2010). Impact of mass distribution of free long-lasting insecticidal nets on childhood malaria morbidity: the Togo National Integrated Child Health Campaign. *Malaria Journal*, 9, 199. <http://doi.org/10.1186/1475-2875-9-199>
- Tipke, M., Louis, V. R., Yé, M., De Allegri, M., Beiersmann, C., Sié, A., ... Jahn, A. (2009). Access to malaria treatment in young children of rural Burkina Faso. *Malaria Journal*, 8(1), 266. <http://doi.org/10.1186/1475-2875-8-266>
- WHO. (2000). The African Summit on Roll Back Malaria, Abuja, Nigeria, April 25 2000. Geneva : World Health Organization. Retrieved from <http://www.who.int/iris/handle/10665/67815>
- WHO. (2014). World malaria report 2014. Geneva: WHO Press. Retrieved from http://www.who.int/malaria/publications/world_malaria_report_2014/wmr-2014-no-profiles.pdf?ua=1
- WHO. (2015). *World Malaria Report 2015*. Geneva: WHO Press. Retrieved from http://apps.who.int/iris/bitstream/10665/200018/1/9789241565158_eng.pdf
- WHO, & UNICEF. (2015). *Achieving the Malaria MDG Target: Reversing the Incidence of Malaria 2000–2015*. WHO Press. Retrieved from http://apps.who.int/iris/bitstream/10665/184521/1/9789241509442_eng.pdf?ua=1
- Wiseman, V., Scott, A., McElroy, B., Conteh, L., & Stevens, W. (2007). Determinants of bed net use in the Gambia: implications for malaria control. *The American Journal of Tropical Medicine and Hygiene*, 76(5), 830–6. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/17488900>



APPENDICES

CONSENT FORM

Malaria prevention and treatment seeking practices among mothers of children under five years in Adentan Municipality

Principal Investigator: Kingsley Ikhuosho Ojeikere

Address: School of Public Health, College of Health Sciences, University of Ghana.

Email: kiojeikere@st.ug.edu.gh, kingsley.ojeikere@gmail.com

Mobile no: +233503268444, +2348184266920

General information about Research

Malaria is known to be endemic in Ghana and poses serious public health challenges to the development of Ghana.

It is currently number one among the causes of admission of children under five years likewise number one cause of death of children under five years in Ghana.

This study would determine the knowledge level of mothers of children under five years, the prevention method practiced, challenges associated with preventing malaria, and treatment seeking practices which would provide relevant information to combat malaria in Ghana.

It would take approximately 15 minutes of your time responding to the questionnaire.

Possible Risks

There is no risk in participating in this research.

Possible Benefits

Participation in this research may not benefit you directly. However, results from this study will be used to inform decisions in implementation and strengthening of programs aimed at controlling morbidity and mortality of children under five years in Ghana.

Confidentiality

We will protect information about you taking part in this research to the best of our ability. We will neither use your name in any reports nor discuss your participation with anyone outside the research team.

Compensation

There is no compensation in taking part in this research.

Additional Cost

There will be no additional cost for the participant

Voluntary Participation and Right to Leave the Research

Your participation in this research is voluntary and you have the right to withdraw without any penalty at any point of participating in the research. You also have the right

not to answer questions that you are not comfortable with.

Termination of Participation by the Researcher

You may leave the research at any time. If you choose not to take part, you can change your mind at any time and withdraw. The researcher may also terminate the research if the respondent is not co-operating.

Contacts for Additional Information

Please call Prof Richard Adanu - 0244 238556 in case you have any problem with participation in the research or want some verification about this research.

Your Right as a Participant

This research has been reviewed and approved by the Ghana Health Service Ethical Review Committee. If you have any questions about your right as a research participant, you can contact the GHS research office between the hours of 8am-5pm through Dr Hannah Frimpong (233 021 681109) or email address Hannah.Frimpong@hru-ghs.org

VOLUNTEER AGREEMENT

I understand all that has been explained to me about the study – objectives, benefits, risks and my rights, and I agree to participate in this study.

Signature of respondent

Date

QUESTIONNAIRE

Zonal Council:..... **Community:**.....

A. SOCIO-DEMOGRAPHIC CHARACTERISTICS

Mother

1. Age (in years).....
2. Marital status: Single { } Married { } Co-habiting { } Separated { } Divorced { }
Widowed { }
3. Ethnic group :
4. Educational Level: Primary { } Secondary { } Tertiary { } None { }
5. Occupation.....
6. Husband's occupation..... (skip if unavailable)
7. Family Income : <100 cedis { } 100 – 499 cedis { } 500 – 999 cedis { } 1000 – 2000 cedis
{ } >2000cedis { }
8. Family size
9. Number of Under – five in household.....

Child

1. Age of child (in months).....
2. Sex : Male { } Female { }

B KNOWLEDGE

1. Have you heard about Malaria? Yes { } No { } If No go to section C
2. How did you hear about Malaria? Radio { } Television { } Family member { }
Health worker { } Others
3. Have you received any teaching or training on malaria? Yes { } No { }

4. How is Malaria transmitted?

- | | |
|------------------------------------|----------------|
| Close contact with malaria patient | Yes { } No { } |
| Unhygienic practices | Yes { } No { } |
| Mosquitoes bites | Yes { } No { } |

- | | | |
|-----------------------------|--|----------------|
| Exposure to Sunlight | | Yes { } No { } |
| Heat | | Yes { } No { } |
| Cold | | Yes { } No { } |
| Eating contaminated food | | Yes { } No { } |
| Drinking contaminated water | | Yes { } No { } |
| Supernatural | | Yes { } No { } |
5. Symptoms of Malaria?
- | | | |
|------------------|--|----------------|
| Fever | | Yes { } No { } |
| Headache | | Yes { } No { } |
| Diarrhoea | | Yes { } No { } |
| Vomiting | | Yes { } No { } |
| Body pain | | Yes { } No { } |
| Coughing | | Yes { } No { } |
| Shivering | | Yes { } No { } |
| Inability to eat | | Yes { } No { } |
6. Complications of Malaria?
- | | | |
|-----------------|--|----------------|
| Anaemia | | Yes { } No { } |
| Unconsciousness | | Yes { } No { } |
| Convulsion | | Yes { } No { } |
7. Who is most at risk to malaria?
- | | | |
|--------------|--|----------------|
| Males | | Yes { } No { } |
| Females | | Yes { } No { } |
| Mother | | Yes { } No { } |
| Father | | Yes { } No { } |
| Teenager | | Yes { } No { } |
| Adolescent | | Yes { } No { } |
| Under- fives | | Yes { } No { } |

8. Can malaria be prevented? Yes { } No { } If No go to No. 10

9. Ways to prevent malaria:

Wear long sleeve clothing Yes { } No { }

Eat balanced diet Yes { } No { }

Drinking herbal tea Yes { } No { }

Use bed nets Yes { } No { }

Use insecticide-treated nets Yes { } No { }

Use mosquito repellents Yes { } No { }

Drain stagnant water Yes { } No { }

Trim bushes around the house Yes { } No { }

Clean dark corners in the house Yes { } No { }

Spray insecticide Yes { } No { }

Take preventive medications Yes { } No { }

Avoid sunlight Yes { } No { }

Wearing charms and amulets Yes { } No { }

Vaccinate child Yes { } No { }

10. Can malaria be cured? Yes { } No { } If No go to section C

11. How can malaria be cured?

Self-limiting (resolves on its own) Yes { } No { }

Tepid sponge Yes { } No { }

Taking medications Yes { } No { }

Taking Herbs Yes { } No { }

Visit Health facility Yes { } No { }

12. Can malaria cause death? Yes { } No { }

C PREVENTION PRACTICE

1. Do you prevent your child from Malaria? Yes { } No { } If No go to Section D

2. How do you prevent Malaria?

Drugs { }

Repellants { }

Net { }

Insecticide Treated Nets { }

Indoor Residual Spraying { }

Wear the child long sleeves { }

Clean the environment { }

Others.....

3. Reason(s) for the prevention method practiced and not other methods?

.....
.....
.....
.....
.....
.....
.....

4. What are the challenges to prevention method practiced?

.....
.....
.....
.....
.....
.....
.....

5. Why are other methods not practiced?

.....
.....
.....
.....
.....
.....

6. Do you own an ITN? Yes { } No { } If No go to section D

7. How many ITN(s) do you own? 1 { } 2 { } 3 { } 4 { } >4 { }

8. How many people sleep under one ITN in your household? 1 { } 2 { } 3 { } 4 { } >4 { }
9. How often is the net changed or re-impregnated? 3 months { } 6 months { } 1 year { } 3-5 years { } Never { }

D TREATMENT PRACTICE

1. Has your child ever had a fever? Yes { } No { }
2. How often does he have fever? Daily { } Weekly { } Bi-weekly { } Monthly { }
Every 3 months { } Others
3. What is the first action taken when your child has a fever? (One response only)
Do nothing and wait for improvement { }
Tepid sponge { }
Visit a laboratory { }
Give medications { }, which?
Give Herbs { }
Visit Drug store { }
Visit Health facility { }
4. Duration between onset of fever and first action? Within 24 hours { } 1 day { } 2 days { }
3 days { } 4-7 days { } others
.....
INTEGRI PROCEDAMUS
5. If symptoms persists what is the next action taken? (One response only)
Do nothing and wait for improvement { }
Tepid sponge { }
Visit a laboratory { }
Give medications { }, which?
Give Herbs { }

Visit Drug store { }

Visit Health facility { }

- 6. What is the distance (in Km) or time it would take to move from the home to nearest health facility? (If applicable).....
- 7. What is the duration of time spent at health facility? (If applicable).....
- 8. Has your child ever been admitted due to fever? Yes { } No { }
- 9. Has your child ever become unconscious? Yes { } No { }
- 10. If yes, what did you do?

.....
.....
.....
.....
.....

11. Has your child ever convulsed? Yes { } No { }

12. If yes, what did you do?

.....
.....
.....
.....
.....

13. Ever lost any child after developing fever, being unconscious or convulsed? Yes { } No { }

