MPH DISSERTATION

TOPIC: TREATMENT PRACTICES FOR MALARIA IN SMALL CHILDREN BY CAREGIVERS IN THE WASSA WEST DISTRICT OF GHANA

THIS DISSERTATATION IS SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH, UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF PUBLIC HEALTH DEGREE.

BY

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DATE OF STUDY: JUNE - AUGUST 2003

DECLARATION

I, Dr Emmanuel Kofi Dzotsi, do hereby declare that this dissertation is my own work being the product of my research while a resident of the Ghana School of Public Health and that the same work has not been submitted anywhere for the same purpose.

Signed.....

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(M.P.H. Resident, 2002/2003)

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DEDICATION

This work is dedicated to my children Selasi Vincent Dzotsi, Senam Samuel Dzotsi and Dzifa Peace Dzotsi.

ABSTRACT

The study was conducted in 5 randomly selected communities in the Wassa West district in the Western region of Ghana using both qualitative and quantitative methods to obtain mothers or caregiver's knowledge on symptoms of childhood malaria (uncomplicated and complicated) in children under five years of age in relation to its management. A total of 300 caregivers were interviewed using a structured questionnaire. Majority of the respondents were mothers constituting 79%. Although the study population was made up of different ethnic groups, the local term used to represent a cluster of symptoms synonymous with the clinical diagnosis of malaria was *"ebun"* or *"fever"* which were used interchangeably. All mothers or caregivers named one or more signs by which they recognized the disease. The percentage of mothers or caregivers who perceived symptoms of malaria in small children to be fever was found to be 91%. Fever (hot body), vomiting and loss of appetite were the three most common signs mentioned. Although 89% of mothers or caregivers had access to a health facility, this does not appear to influence their treatment seeking behaviour. This is indicated by the fact that as many as 60% managed their child's disease at home and used both traditional and modern treatment. The commonest anti-malaria drug was chloroquine. This is a significant finding considering the upsurge of chloroquine resistance, although chloroquine is still currently Ghana's official first line drug for treating malaria. 74.8% of mothers or caregivers treated children under-5 years with malaria at home for 3 days. Poverty was a major factor that encouraged home treatment as confirmed by the fact that 55% of them treated their ill children at home because they had no money to send the child to hospital. The delay in seeking early appropriate treatment may be the cause of the high under-5 mortality. Higher level of education of mothers or caregivers was significantly associated with promptness of sending their sick children to clinic/hospital at the onset of the illness. However, in the event child did not recover with self-medication, 85% of mothers or caregivers would send their children with malaria to clinic or hospital. The results of the study call for prompt educational action targeting mothers for the correct treatment of both complicated and uncomplicated malaria in children under-5 years.

Acknowledgements

I would like to acknowledge the ideas and support from a number of persons: all staff of Nsuaem, Aboso and Dompim Health Centres especially Mr. Osman Ibrahim Moro, Mr Robert Playe, Mary Yebuah, Gladys Dadziwa.

The most important acknowledgement, by far, is to my supervisors Dr. T.S.M Avotri, Dr. Irene Agyepong and Prof. Fred Binka who have worked with me on this desertation. They have made considerable contribution, to which these few lines can hardly do justice; their intellectual vigour and generously given ideas and support have been invaluable.

I also acknowledge the moral support given me by my colleague Dr. Yakubu Mahama.

My sincere thanks also go to the chiefs and people of Wassa West District who willingly provided the necessary information and ideas, especially the chiefs, assemblymen and people of Aboso, Nsuaem, Dompim, and Pieso .

And finally thanks to Mr. J. K. Arthur, Margaret Amponsah and all staff of District Health Administration, Tarkwa for their continued support, patience and tolerance during the course of writing this dissertation.

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LIST OF ABBREVIATIONS

DA – District Assembly

FGD – Focus Group Discussion

GHS – Ghana Health Service

KAP- Knowledge, attitude and practice

MAP – Malaria action plan

MOH – Ministry of Health

SPH – School of Public Health

TC – Traditional Council

CHAPTER ONE

1. INTRODUCTION

1.0 BACKGROUND OF THE STUDY

1.1 Global Malaria Burden

Malaria causes an estimated 300 to 500 million acute cases per year. Malaria is a disease of young and the poor, many of them children who live with no easy access to health service. 80% of the cases occur in Africa resulting in one million deaths per year. Over 95% of deaths occur among under-fives in Africa (Binka 2001). One in five of the world's population is at risk of malaria. Each year, there are up to 500 million episodes of malaria illness and over 1 million malaria deaths. More than 90% of these deaths are in Sub-Saharan Africa. A third of malaria cases and two thirds of all deaths are in young children. Malaria costs US$12 billion every year in lost productivity reduced household income, and expenditure on treatment (Allan 2000). Over a million of malaria deaths are in children aged under-five (Trigg et al 1998).

1.2 Malaria Burden in Ghana

Malaria is the single most important cause of mortality. Malaria is the second major killer after HIV/AIDS. Malaria forms 40% of all outpatient visit and it causes 30% of under-five mortality in Ghana. Only 22% of malaria patients receive prompt and accurate treatment (MOH, 1999). In the Wassa West District of Ghana malaria forms 26% causes of admission and 37% of outpatient attendance (Wassa West District Annual Report 2002).

1.3 What is Malaria?

Malaria is a parasitic disease caused by Plasmodium parasites, and is transmitted by the bite of the Female Anopheles mosquito. The malaria parasite is injected into humans in the saliva of the mosquito when it feeds. In the human, the parasites undergo cyclical changes in the liver and red blood cells causing the symptoms of Malaria. The clinical symptoms are fever, vomiting and diarrhea, headache, cough, chills and muscle pain. Malaria is treated with antimalarials like chloroquine, sulfadoxine-pyrimethamine(SP), artesunate and others (Marsh et al 1998).

2.0 STATEMENT OF THE PROBLEM

Studies conducted in Ghana indicated that 74-97% of people use home treatment for acute malaria. Home treatment most commonly involved the use of herbs. Self-medication for malaria is so common that it is estimated that the unofficial drug sellers in markets, streets and village shops account for as much as half of the antimalarials distributed (Foster 1991). 75% of mothers manage child's disease at home. Although, most caregivers of children under-five manage malaria at home, their treatment practices are inappropriate. In Ghana current studies show that, 92.6% treatment of children with fever at home is inappropriate. Furthermore, mothers or caregivers may not be able to recognize fever in their children and start early adequate and appropriate treatment. More than 50% of mothers are unaware of the correct dosage of antimalarial drugs like chloroquine. Studies (Dunyo et al 2000) have also proven that early and appropriate treatment of malaria detected in children by caretakers may prevent complications and lower mortality risk. The proposed research would enable us know the appropriateness of caregivers treatment practices.

3.0 RELEVANCE OF STUDY

Malaria still remains an important cause of mortality in children under-five. The main objective of WHO adopted Roll Back Malaria strategy is early detection and rapid treatment of malaria. The National Malaria Control Program's objective is to reduce under-five mortality. The study would help know the therapeutic knowledge and treatment practices of malaria by caregivers of children under-five. On the bases of the results caregivers can be trained and educated to recognize the symptoms of malaria early and administer appropriate antimalaria drugs. If caregivers are able to detect early and appropriately treat malaria in children under-five, mortality, which is high in this age group, can be reduced.

Findings from the study will enable the District Directorate of health services develop capacity at both institutional and community levels to control malaria.

CHAPTER TWO

4.0 LITERATURE REVIEW

We know that, caretakers behaviour in response to signs of disease are influenced by a wide range of factors other than accessibility and availability of services, including social networks and socio-economic factors as well as perceptions of severity of illness. Also, local diagnostic categories and local understandings of the etiology of disease affect timing of diagnosis, methods of home treatment, patterns of health seeking behaviour outside of the domestic domain (Kendall 1990).

However, we now know that caretakers may recognize, interpret and act on signs and symptoms of illness in ways that are not necessarily concordant with biomedical understanding of the disease or consistent with health education designed to encourage early treatment (Nicter 1993). This suggests that, caretakers may diagnose malaria based on their own knowledge of the signs and symptoms of the disease and adopt certain treatment methods, which may or may not be in accordance with the scientific way of diagnoses and treatment of malaria.

A study conducted in 2000 in southern Ghana to compare the accuracy of presumptive diagnosis of malaria in children aged 1-9 years by caretakers of the children with health center staff concluded that early and appropriate treatment of malaria detected in children by caretakers may prevent complications that arise as a result of persistence of symptoms and attainment of high parasitemic levels (Dunyo et al 2000). This means that, if caretakers are able to diagnose malaria early and accurately give correct dose of antimalarials then the parasite level in the blood will be reduced. These will prevent complications that can lead to child's death.

4.1 Terminology related to malaria

Agyepong et al (1992) described among Ga Adangme speakers in Dangme West that, fever and 'asra' are used interchangeably to refer to a number of symptoms including hot body and chills, headache, yellow urine, yellow vomit and yellow eyes, bitter taste in the mouth, bodily pains, and loss of energy (child does not play) and refusal to play. Also in a study conducted in rural and urban subdistricts of the Greater Accra Region in 1994, (Agyepong et al 1994) it was found that, among the Ga Adangmes the local term used to approximate the biomedical definition of malaria is ' asra'. Another study in southern Ghana by Ahorlu et al 1997 confirmed that Fever and malaria, which are locally called Asra or Atridi, were found to represent the same thing and are used interchangeably.

A similar study conducted in Tanzania found that although the local term *homa ya* malaria or malaria fever appeared on the surface to correspond closely with the biomedical term malaria, significant and often subtle differences were found between the two terms. It is demonstrated that the position of the local term used to denote malaria in the local taxonomy of febrile illness has important implications for the design of health education interventions (Winch et al 1996). Also a study in Mali indicated that the term *soumaya* was previously associated with uncomplicated malaria (Thera 2000)

4.2 Local diagnostic criteria for malaria in children

(Agyepong et el 1994) it was found that, virtually all mothers used change in body temperature ('hot body') as one symptom of fever, rural mothers looked for other physical signs of illness (vomiting, yellow urine, yellow eyes etc), whilst urban mothers assessed the child on the basis of behaviour (refusal to eat, won't play). These findings suggest that, mothers diagnose malaria in their children on the basis of changes in body temperature and physical and behavioural signs of illness. In another finding (Ahorlu et al 1997), caretakers were well informed about major symptoms of malaria, which corresponds to the current clinical case definition of malaria. However, on the contrary a study conducted in Guinea (Bailo Dialo et al 2001) found that, mothers often failed to identify fever in their children and to consult or to provide antimalaria treatment.

Studying mothers' perceptions and knowledge on childhood malaria in Tanzania, (Tarimo et al 1998), found that the perceived symptoms of childhood malaria included fever and gastrointestinal manifestations (loss of appetite, vomiting and diarrhea) which featured as the most important symptoms with frequencies of 93.5% and 73.8%, respectively. This was followed by other physiological and behavioural symptoms such as prostration, lethargy, inactivity, coldness, shivering and sweating as well as restlessness and excessive cries, at frequencies of 49.4%, 16.2% and 15.0% respectively. Respiratory symptoms and convulsions featured as the least important symptoms of malaria, being mentioned by only 7.3% and 5.8% of respondents, respectively. Mentioning fever alone or in combination with other symptoms was significantly associated with having primary education and above. Furthermore, a study conducted in Mali found that, the three most common signs by which mothers recognized malaria in their children were vomiting, fever and dark urine/yellow eyes/jaundice (Thera et al 2000).

Also in another study in Zambia, 80% of caregivers giving narratives- reported noticing, crying or irritability, diminished activity and/or decreased appetite (Baume et al 2000).

4.3 Health seeking behaviour for uncomplicated malaria

Agyepong et al (1992), found that 60% of children with presumed fever among rural respondents and 76.5% among urban respondents were treated at home using either paracetamol alone or paracetamol with chloroquine or herbal medicine. Among urban respondents, 52.7% of all respondents (76.5% of those administering paracetamol) also gave the sick child chloroquine. In the rural areas, of those who reported giving a child with fever paracetamol, 65.7% also said they would administer chloroquine; 13.8% would give the sick child herbs and an additional 9.2% would give herbs in addition to other medication. Also, their findings revealed that, in the event of a child with fever not improving from self-medication, 87.4% of urban and 90% of rural respondents said they would take the child to either a clinic or hospital.

Furthermore, a study conducted in Mali found that, the health seeking behaviour (whom the mother consulted first at the beginning of the illness) revealed that 75.8% of women managed their child's disease at home and used both traditional and modern treatment, only 7.6% sought advise and treatment from private nurses or health centres. The specificity and sensitivity of mothers' diagnoses was poor. The most common antimalarial drug used was chlorquine, often given at inappropriate dosage (Mahamadou et al 1998). Similarly, recent studies conducted in eastern Uganda Nashakira et al 2002 found that before attending the study sites, 72% of children had already been given some biomedical drugs, and 40% had received the recommended drug, chloroquine.

Although, chloroquine remains the first- line treatment for malaria, studies show that since the late 1980s convincing evidence of a major public health impact of the spread of chloroquine resistance has been available. Hospital studies in various African countries have documented a 2- or 3-fold increase in malaria deaths and admissions for severe malaria, an increase temporarily related to the emergence of chloroquine resistance (Trape 2001).

Also a study in Ibadan, Nigeria documenting the knowledge and home management practices of 376 mothers and caregivers of under five children on malaria fever found that as regards practices, self-medication with modern drugs was common, these drugs had been given in the home by 265(70.5%) mothers while "Agbo", had been used by 95(25.5%) mothers before presenting at the clinic.

Paracetamol was the modern drug often used (217 or 81.8%) followed by chloroquine (57 or 21.5%). However, drug treatment practices were often incorrect. Chloroquine was prescribed correctly by 15(26.3%) mothers, while 109(50.2%) gave the correct dose of paracetamol. Only 16(4.3%) of the children received anti-malarial on the day the illness began. The results revealed that both the knowledge and case management practices were poor. There is the need for educational programmes on malaria for mothers, especially for young, illiterate and unskilled mothers, including the family elders (Fawole et al 2001).

Glick et al 1997 found that, 33% of mothers in rural areas of Guinea reported taking their sick children to a health care worker during the last episode of fever compared with 69% of mothers in urban areas and also mothers living closer to health care facilities were more likely to consult and to give chloroquine early than mothers living farther away.

However, higher proportions were found in a recent study in Uganda, where caregivers reported that if their child had fever, 63% would go to a clinic or hospital as their first action and 97% as their first or second action. (Njama et al 2003).

4.4 Home remedies for uncomplicated malaria

The preferred home treatments are antipyretic and analgesic drugs and herbal preparations. Generally, antimalarial drugs are given to less than 30% of febrile children and they are mostly bought in shops (Glick et al 1997).

Home treatment of malaria combining herbs and over-the-counter drugs and inadequate doses of chloroquine was widespread. There is a need for a strong educational component to be incorporated into the MAP to correct misconceptions about malaria transmission, appropriate treatment and protection of households. Malaria control policies should recognize the role of home treatment and drug shops in the management of malaria and incorporate them into existing control strategies. (Ahorlu et al 1997)

Further studies (Hamel et al 2001) found that, 47% of recently febrile children received home treatment with an antimalarial and that chloroquine was included in 92% of the home treatment. They also noted that the proportion of children receiving appropriate home treatment could be increased if carers could be redirected to administer an antimalarial to children with fever. Home treatment enhances the promptness of antimalaria treatment.

4.5 Health seeking behaviour `for complicated malaria (childhood convulsion)

In the Tanzanian study (Tarimo et al 1998), it was also found that home remedy for childhood convulsions included bathing and aspirin/paracetamol and antimalaria in (17.5%), and traditional treatment (local herbs, smoking etc) in 53.2%. Subsequent action after home remedy for convulsions was to wait till fits cease before the next action in 44.2% of cases, to go to a dispensary/health centre in 86.8% and to go to a traditional healer in only 9.4% of cases. Also a study in Zambia found that, herbal treatments are more commonly used when signs of convulsions appear than when they do not and traditional healers are more likely to be consulted (Baume et al 2000).

5.0 HYPOTHESIS

Reviewing the literature, it can be hypothesized that more than half of mothers or caregivers manage malaria in children under- five years at home with paracetamol, chloroquine or herbal medicine.

6.0 STUDY OBJECTIVES

6.1. General Objectives: To describe mothers or caregivers diagnoses and treatment of malaria in children under-five.

6.2. Specific Objectives:

1. To describe terminology related to malaria in under-fives.

2. To identify the basis on which mothers or caregivers diagnose malaria in children under-five.

3. To describe the treatment seeking practices for complicated and uncomplicated malaria in under- five.

CHAPTER THREE

7.0 METHODOLOGY

7.1 Background of Study Area:

The study area was located in the Wassa-West District in the Western Region of Ghana. The district covers a total estimated area of 3500 sq km. The population has been estimated at 233,016(year 2000 census), with a mean population of 67 per sq. km. This is higher in the central parts of the district and in the mining communities. The male:female ratio is estimated at 1:1.12.

The people in the district are mainly Wassaws. They form the indigenous ethnic group, however, other tribes, the Fantes, Ewes, Ahantas, Nzemas, Asantes, Krobos, Dwiras, Sefwis and the Northerners who have migrated from other parts of Ghana are represented in small proportions.

The district is currently divided into 7 operational health subdistricts. There are 4 hospitals, 7 health centers and 4 rural health centers.

The study was conducted in 5 randomly selected communities from 3 of the subdistricts. They are Aboso, Dompim, Fanti Mines, Nsuaem and Pieso (see district map fig 4). Pieso is a typically rural and deprived area, whilst the others are comparatively bigger towns and have access to clinic. The main economic activities are mining, lumbering, rubber, cocoa and coffee farming.

Malaria is the first among the five top causes of outpatient attendance (29.34%). Malaria is the second cause of admission cases (26%). The annual incidence of malaria for the year 2001 was 158.9/1000. Institutional data (annual report 2002 for Wassa District) indicates that the incidence of malaria in under-five for 2002 was 175.8/1000.

Malaria remains a disease of public health importance in the district. This may be due to the rainfall pattern in the district. There is prolonged rainy season, starting from March to September with a very short period of dry season from October to February. Even this dry period is also interspersed with rainfall. The almost all year rainfall making most dwelling areas marshy and swampy serves as breeding sites for mosquitoes.

The insanitary conditions in most towns and villages in the district is a major factor. The poor drainage system results in the creation of stagnant pools of water that breed mosquitoes transmitting malaria. Even more critical is the numerous galamsey activities in the towns and villages. The 'dig and wash' method used in the extraction of gold creates numerous artificial ponds, which also serve as breeding sites for mosquitoes.

7.2 Variables

7.2.1 Background Variables:

Variable Name	Variable Definition	Variable Measurement
Age of caregiver	Age in completed years	Continuous. Completed years
Relation with the child	Mother, father, guardian	Mother, father, grandmother Grandfather, auntie, sister, Brother, house care, others
Sex of care giver	Female male	Dichotomous Female Male
Marital status	Current marital status	Single Married Cohabiting/consensual Divorced/separated/widowed
Education	Highest educational level achieved	No education Primary Middle school J.S.S S.S.S Technical/vocational training college Teacher training Polytechnic University

The above variables are potential confounding variables in analyzing caregiver's knowledge on signs and symptoms of malaria in under-fives and their health seeking behaviours.

7.2.2. Key Variables:

Variable Name	Variable Definition	Variable Measurement
Local term for malaria in children	The local term commonly used to refer to malaria-associated symptoms.	The local term that includes the following set of symptoms; hot body, loss of appetite, diarrhea & vomiting, yellow urine.
Local diagnostic criteria for malaria	The signs and symptoms by which mothers or caregivers identify malaria.	Fever (hot body) Vomiting Diarrhea Loss of appetite Child not playing Convulsion Chills Yellowish urine/eyes Others
Health seeking behaviour for uncomplicated and complicated malaria (convulsions)	Whom the mother/care giver consulted first at the beginning of the illness	Nothing/wait and see Go to hospital Go to clinic Go to the chemical seller Chloroquine Paracetamol Go to herbalist Herbal treatment Enema Others

Key Variables cont'd

Variable Name	Variable Definition	Variable Measurement
Home remedies for Malaria	Treatment given at home by Mothers/caregivers	Sponging/bathing Chloroquine Paracetamol Herbal treatment Enema
Duration of first action	How long the mother or caregiver does the first action	Same day 2 days 3 days 1 week Others
Next action taken	The subsequent action taken By mother/caregiver if child does not recover.	Nothing/wait and see Go to clinic Go to hospital Go to herbalist Go to chemical seller Chloroquine Paracetamol Herbalist Enema Others
Causes of convulsion	What mothers/caregivers think is the cause of childhood convulsion.	Fever Phlegm Malaria Others

7.3 Study Design

The study was Cross-sectional and descriptive.

The data was collected by both qualitative and quantitative methods.

Qualitative Design: Four Focus Group Discussions were conducted in Dompim, which is one of the five randomly selected communities. Grandparents and parents of children under-five were selected for the FGD. The focus group discussions were grouped into grandmothers, grandfathers, mothers and fathers groups. There were 8 participants in each group. The background of the participants in each FGD namely, ages, marital status, educational level, number of children, and occupations were collected.

Quantitative Design: Structured questionnaire interviews of 300 mothers or caregivers of children under-five were conducted in Dompim, Nsuaem, Aboso, Pieso and Fanti Mines communities proportional to their various populations to supplement the qualitative data, i.e. to validate and check for the representativeness of data obtained from the qualitative research.

7.4 Ethical consideration

The ethical committee of MOH was consulted for approval. Also, approval was obtained from DHMT, District Assembly, and the Traditional Council. Verbal consent was obtained from the heads of the households and individual study units before interviews.

7.5 Data collection

A one-day training session was held for the field assistants. In all, 6 persons were trained as field assistants who assisted in data collection. 4 community health nurses and 2 workers from NADMO were trained. The FGD was first conducted in the selected communities with the help of 2 trained field assistants and the results used to back-up the structured questionnaires. The researcher was the moderator and the trained person the note taker. A FGD Guide was used and the responses of participants recorded with a tape recorder and note taking by the note taker. The trained community health nurses administered the structured questionnaires. The researcher also took part in the administering of the questionnaires.

7.6 Pretesting of Instruments in a Community

The FGD guide was translated to the local language and pre-tested for feasibility and clarity and the results used to update the guide and survey questionnaires before the main study. The participants of the chosen community for pre-testing and that of the main study communities had similar characteristics like age, sex, occupation, and tribe/language.

7.7 Sample Size Calculation:

From review of literature, the proportion of children under-five with malaria managed at home by caregivers = 75%.

n = sample size = $z^2p(1-p)\beta^2$

z = 1.96 at 95% confident interval

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

n= Sample size = 288(300)

7.8 Sampling

The target population was caregivers of children under-five. A caregiver is defined as the parent/guardian who provides the daily essential needs of the child such as bathing, feeding, clothing, sending to school or hospital when sick.

As already described above Wassa West District has been divided into 7 operational health subdistricts. 3 of the subdistricts were selected by simple random sampling method.

The names of the communities in the subdistrict were written on pieces of papers, folded and put in a closed container and shaken vigorously. 5 communities; Dompim, Nsuaem, Aboso, Pieso and Fanti Mines were then selected randomly.

In the selected communities, the first household was selected by locating the approximate center of the community and choosing the nearest compound to identify the household. Then every third household was selected from the first. In each household, one caregiver with at least a child under-five years was interviewed with a structured questionnaire.

The number of respondents interviewed in each community was determined based on a proportion of the population of the various communities.

The table below illustrates the proportion of the population interviewed in each of the communities selected.

Table 0: The proportion of population interviewed in the communities

Community	**Population (X)**	**Sample of population interviewed N = X/T*300**
Aboso	9737	132
Nsuaem	5250	70
Dompim	4749	64
Pieso	2202	30
Fanti Mines	267	4
Total (T)	**22205**	**300**

7.9 Data analysis

The qualitative data was analyzed manually by transcription, coding, and sorting.

Epi Info version 5 was used to analyze the quantitative data.

CHAPTER FOUR

8.0 RESULTS

As already stated both FGDs and cross-sectional household survey methods were used to collect the data. Four focus group discussions were conducted in Dompim, which is one of the randomly selected five communities where the survey was conducted. The findings are presented below.

8.1 Characteristics of study communities and population

8.1.1 The study community characteristics

Out of the total of 300 respondents interviewed, 133(44.3%) were from Aboso, 71(23.7%) from Nsuaem, 64(21.3%) from Dompim, 29(9.7%) from Pieso and 3(1%) from Fanti Mines. This is presented in table 1 below.

Table 1: The communities and the respondents interviewed.

Community	**No. of respondents**	**Percentage %**
Aboso	133	44.3
Nsuaem	71	23.7
Dompim	64	21.3
Pieso	29	9.7
Fanti Mines	3	1
Total	**300**	**100**

8.1.2 Access to health facility

A total of 268(89.3%) respondents had access to clinic, whilst 32(10.7%) had no access to a health facility. This is presented in fig 1 below.

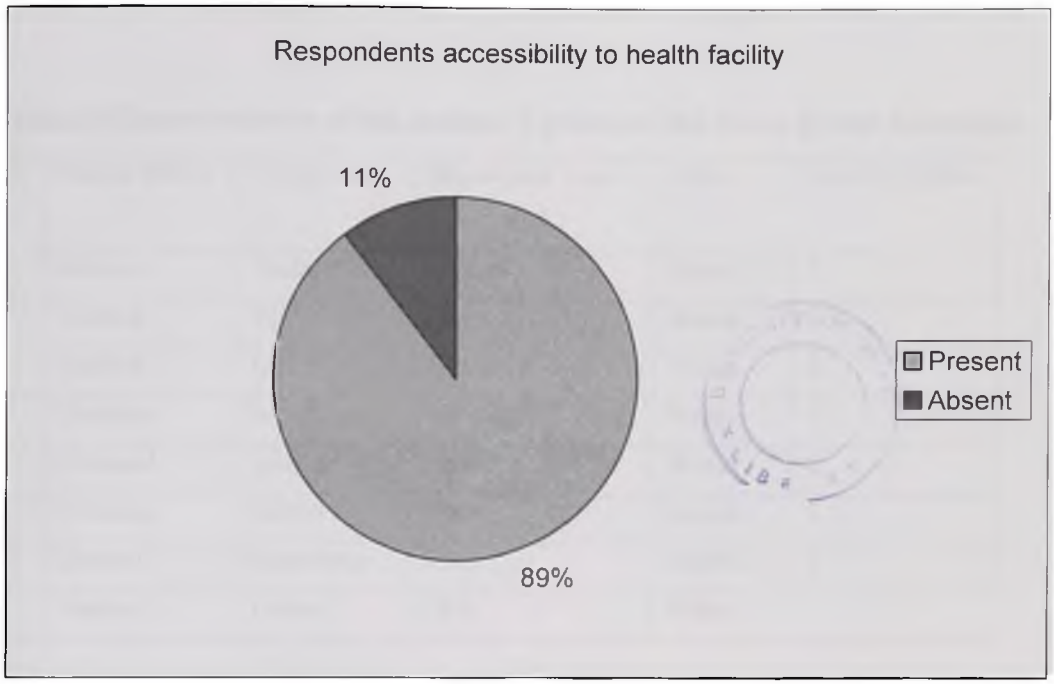

Fig 1: Respondents access to health facility

The figure shows that 89% of respondents had access to health facility whilst 11% did not.

N.B Access to a health facility in this study was defined as whether a clinic was present in the community or not.

8.1.3 Characteristics of participants in FGD

The focus group discussions were held with mothers, fathers, grandfathers and grandmothers of children under-5. The groups were averagely made up of 8 participants. The issues discussed included knowledge, perceptions and treatment practices of malaria in small children. The characteristics of the mothers group are presented in table 2 below. The characteristics of the other groups are presented in tables 17, 18 and 19 (see annex).

Table 2:Characteristics of the mother's group in the focus group discussion

No.	Age	Marital Status	Occupation	Educational Level	Tribe	No. of Children
1.	34	Married	Trader	Primary	Wassa	2
2.	28	Married	Trader	Primary	Wassa	4
3.	24	Married	Trader	Primary	Wassa	2
4.	30	Divorced	Seamstress	Primary	Wassa	4
5.	30	Divorced	Trader	None	Wassa	4
6.	30	Divorced	Farmer	None	Dwura	5
7.	29	Married	Seamstress	J.S.S	Nzema	3
8.	25	Married	Trader	J.S.S.	Wassa	1

8.1.4 Age sex distribution of respondents

In the cross-sectional survey the minimum age of respondents was 15 years and the maximum 75 years. The mean age of the respondents was 31.74 with a standard deviation of 10.74 and the modal age 30 years. Out of the 300 respondents, 261(87.0%) were females whilst 39(13.0%) were males.

8.1.5 Ethnic distribution of respondents

The Wassaws were the highest represented ethnic group among the respondents, constituting 141(45%) of the total respondents of 300. This was also the same with the participants of the FGDs, where the majority were Wassaws.

Table 3 below illustrates the ethnic distribution.

Table 3: Ethnic Distribution of respondents

Ethnic group	No. of respondents	Percentage %
Wassaw	141	47
Asante	47	15.7
Nzema	40	13.3
Fante	33	11.0
Ewe	12	4.0
Northerner	11	3.7
Pepesa	4	1.3
Others	12	4.0
Total	**289**	**100**

8.1.6 Marital status of respondents

Out of the 299 respondents interviewed, 178 (59.5%) were married, 56 (9.7%) cohabiting, 36 (12%) divorced or separated or widowed and 29 (9.7%) single.

8.1.7 Educational status

The highest educational level achieved by the respondents was university level forming 0.3% of the total 300 respondents. However, most of the respondents completed middle school and Junior Secondary School both representing 75 (25%) of the total respondents. 67 (22.3%) had no formal education at all, whilst 61(20.3%) completed only primary level. The rest completed senior secondary school, Technical/vocational training, teacher training and polytechnic representing 10 (3.3%), 6 (2.0%), 4 (1.3%) and 1 (0.3%) respectively. In the FGDs majority of the participants had no formal education.

8.1.8 Occupational status

Of the total of 298 respondents interviewed, majority were petty traders forming 36.6%, peasant farmers 24.5% and a significant proportion of 21.1% were unemployed. The rest were hairdressers 14 (4.7%), teachers 12 (4.0%), students 3 (1.0%) and others 13 (4.4%). However, majority of the participants in the FGDs were farmers and only a few were traders.

8.1.9 Relationship of respondents with child

The distribution of respondent's relationship with the child in the cross-sectional survey is summarized in table 4.

Table 4: Relationship of respondents with child

Relationship	**No.**	**%**
Mother	237	79.3
Father	30	10.0
Grandmother	22	7.4
Grandfather	3	1.0
Auntie	3	1.0
Sister	1	0.3
Brother	1	0.3
Other	2	0.7
Total	**299**	**100%**

As noted, survey participants were caregivers of a child or children under-5 years. Majority of the respondents were mothers constituting 79.3%.

8.1.10 Knowledge of malaria

All the respondents (100%) knew what malaria was.

8.1.11 Perception of malaria

In the cross-sectional survey, people were asked whether malaria worries them or not and out of a total of 298 respondents, as many as 277(93%) said malaria worries them, whilst only 20(6.7%) said malaria does not worry them and 1(0.3%) did not know whether malaria worries them or not.

8.2 Terminology related to malaria

All the participants in the focus group discussions conducted agreed that the local term they use to refer to malaria is *"ebun"*. The term *"fever"* is used interchangeably with *"ebun"*to refer to a set of symptoms including hot body and chills, vomiting, yellowish urine and stool, yellow eyes, the child not eating, the child weak, sleeping and not playing. Most of them use the three terms "malaria", "fever" and "ebun"interchangeably to mean the same. As a participant put it, "*fever* is the commonest name all of us use, but malaria is what the hospital people use. *"Ebun"* is the local term we use here". These were confirmed in the cross-sectional survey, where out of a total of 298 people interviewed as many as 202 (67.7%) respondents said the local name for malaria was *"ebun"*, whilst 120 (40.2%) said *"fever"* and only 12 (4.0%) mentioned *"atridii"*. 24 (8.1%) of the respondents did not know the local name for malaria. (See table 5 below)

Table 5: Local names for malaria (n = 298*)

Local name	Frequency	%
Ebun	202	67.7
"fever"	120	40.2
"atridii"	12	4.0
Don't know	24	8.1

*Total number of names mentioned is more than the sample size due to multiple responses

Among other terms mentioned during the FGDs was *"niwura"*, this is used to refer to a set of signs and symptoms that approximate the biomedical disease defined clinically as complicated malaria, although the respondents claim is not the same as malaria. The signs mentioned included very hot body, excessive cry and shouting, static attacks and convulsion. As one woman described it, *"niwura* starts with hot body (as hot as burning fire, hotter done that of malaria), the child shouts and cries, becomes spastic and holds you firmly". Another woman also said, " if my child has *"niwura"* he has

static attacks if he hears someone shouting, and if I carry him on my back and a car passes-by, the child becomes spastic and grips me firmly". Other local terms used synonymous to complicated malaria were "*atowosu*", "*asinsin*" and "*abobrim*".

8.3 Mothers or caregivers diagnostic criteria for malaria in children under-five years

Mothers or caregivers diagnose malaria in small children based on their own knowledge of certain signs and symptoms observed in the children. During the focus group discussions, all the participants agreed that they diagnose malaria in their children if the child's body is hot. "*Ahodo*"is the local term used to refer to a rise in body temperature, which is synonymous to English clinical term fever. As one of the participants in the focus group discussion said and I quote " if malaria attacks my child the child becomes hot and if I give some medicine he becomes cold and after sometime becomes hot again". Another participant also said, "if I am breast feeding the child and I feel the mouth of the child is hot then I know my child has malaria". A father also said "I use my hand to touch the head to feel whether the child is hot, if the child is hot then I know the child has malaria".

The other symptoms mentioned were vomiting, yellowish urine and stool, yellow eyes, mouth and palm, child weak and not playing, child doesn't eat. As a participant said, "if my child has malaria the toilet becomes yellow and even stains my cloth". Another also said, "if my child has malaria and wakes up in the morning the face becomes "bosaa" (meaning ill looking face), if I give him food he doesn't eat and vomits every food and even water given". "In the morning the child plays but in the evening the child becomes weak and sleeps, the body becomes hot and child refuses breast milk, urinates frequently then I know child has malaria"; a participant said.

Most mothers were also able to recognize complicated malaria. The signs recognized were convulsion and anaemia. As one woman puts it, "if the child has malaria the child becomes very hot and if you don't see it early and sponge the child with cold water, convulsion attacks the child. The child's face becomes white and the more the child becomes hot the more the child's blood falls". A grandmother also said, if "*ebun*" attacks my grandson, the eyes become white and the child's blood reduces".

The same findings were obtained during the cross-sectional survey where it was found that, mothers or other caregivers diagnosed "*ebun*" or "*fever*" in small children based on one or more symptoms. 17.6% of the respondents diagnosed malaria based on only one symptom. Out of this, 10.7% mentioned change in child's body temperature-fever as the only sign of diagnosing malaria,

whilst the remaining 6.9% used other single symptoms like vomiting, loss of appetite, convulsion, yellow urine/eyes and white face, hands and feet.

Majority of the mothers and other caregivers 138 (46.3%) diagnosed malaria on the basis of two symptoms only and the rest 109 (36.3%) diagnosed malaria on the basis of 3 or more symptoms. The three most common signs by which mothers and other caregivers recognized malaria was found to be fever, vomiting and loss of appetite representing 32 (10.7%) of the total respondents of 297. The percentage of mothers and other caregivers who perceived symptoms of malaria in small children to be fever was found to be 91%.

Furthermore, the percentage of mothers or caregivers who perceived symptoms of childhood malaria to be gastrointestinal manifestations (lost of appetite, vomiting and diarrhoea) was found to be 73.9%. The other symptoms such as convulsion, chills, child not playing/child sleeping a lot, yellow urine/eyes, white face, hands and feet and headache were mentioned by 32.2% of the respondents. (Tables 6 & 7 below)

Table 6: Perceived symptoms of malaria in small children (respondents n = 297)*

Symptoms	**No**	**%**
Fever	273	91.3
Vomiting	147	49
Lost of appetite	116	38.8
Child not playing	86	14.3
Diarrhoea	53	18.5
Yellow urine/ eyes	25	8.4
Convulsion	17	5.6
White face, hands and feet	2	0.6

*Total number of symptoms is more than the sample size due to multiple responses

Table 7: Number of signs mentioned as indicating malaria in small children

Number of respondents giving:	No	%
1 sign of malaria	51	17.6
2 signs of malaria	138	46.3
3 signs	74	24.7
4 signs	34	11.3
Total	297	100

8.4 Treatment seeking practices for uncomplicated and uncomplicated malaria

8.4.1 Treatment seeking practices for uncomplicated malaria

In the focus group discussions, most mothers said that they first give paracetamol and chloroquine syrup to their small children at the onset of *"fever"*. If the child does not recover, they send the child to clinic or hospital. As one mother puts it, " if my child is sick I first give para, malarex, B'co and sponge him for 3 days, if he does not improve I send him to hospital". A father also said, "as for malaria we normally give first aid by giving chloroquine, paracetamol, and multivite and if the child does not recover before we send to clinic".

However, some participants claimed that they first give the child enema and herbal drink if there is no improvement, and then they send the child to clinic. A grandmother said and I quote, " we were brought up with herbs so I will first use herbs, if the child does not recover before I would send to hospital". Another also said, "I will go to the farm and collect herbs for the child". As a father puts it, "if my child has "*ebun*" I first use small herbs to give the child enema and if the child does not recover then I send to clinic". A father also claims "because of financial problems we resort to herbal medicine and give the child enema and if the child does not recover before we send to hospital, but if there is money we send the child to hospital straight".

Some also said they go to the chemical seller to buy *"fever"* medicine for the child. The chemical seller usually sells chloroquine and paracetamol syrup over the counter if they describe the symptoms of the child: "if my child is hot I will go and buy medicine at the drug store", a participant said. A participant also said, "we send the children to the drug store because the chemical seller have been trained to know what is wrong with the child and give treatment". Another also maintains that, "if my child has *fever* I go to the drug store to buy a previously prescribed drug at the clinic for the same condition".

The majority of the participants in the focus group discussion agreed that they do not send their children to the herbalist. As one of the participants put it, "as for herbalist I don't have fowl so I will not send the child there".

Almost all the participants disagreed going to the "injectionist". A grandmother said, " if I send my child to clinic for injection nothing bad will do the child but if the child takes injection outside the clinic the child may paralyse ". A grandfather also claim he saw a child die after receiving injection from an injectionist in the house.
A few send their children to the priest because there is some illnesses that are not hospital sickness so need prayers from the priest to heal the child.

The findings from the FGDs were confirmed in the cross-sectional survey where it was also found that, the majority of the respondents reported giving some form of self-medication at home at the onset of *"fever"* in their small children. 60.4% of mothers or caregivers treat children under-5 years with malaria at home with either modern or traditional medicine. At the onset of *"fever"* in their small children, 48.4% of the respondents gave paracetamol to their children at home, 35.2% gave chloroquine and 11% gave herbal treatment, which included herbal drinks and enema. The drugs were either used alone or in combination. As for example, 10.7% used paracetamol alone, 3.7% chloroquine alone and 27.9% combined paracetamol with chloroquine. There was also combination of European medicine and that of herbs. For example, some combined chloroquine with enema 0.3%, paracetamol with enema 3.4% and chloroquine with herbal drink 0.3%.

Only 26.2% of mothers or caregivers sent their children under-5 years to the clinic or hospital as first line of action in the event of their child having malaria. Also 13.4% of the respondents took their sick children to the chemical seller and 1% to the herbalist for treatment as the first line of action. (See table 8 below).

Table 8: First treatment/actions for small children with malaria (n = 298)*

Treatment/action	No.	%
Go to hospital/clinic	78	26.2
Go to chemical seller	40	13.4
Paracetamol	144	48.4
Chloroquine	105	35.2
Sponging/bathing	16	5.3
Traditional treatment (herbal drink, enema)	33	11
Go to herbalist	3	1

*Total actions exceed number of respondents as respondents undertook two or more actions concurrently

The first line of action taken by a mother or caregiver if child has malaria was strongly associated with the educational level of the mother or caregiver (Chi square =160 P value = 0.00). Respondents with educational level above primary are more likely to send their sick children to clinic/hospital at the onset of the illness than those without any formal education. (See table 9 below).

Table 9: Comparison of first treatment/actions for malaria in a child and educational level of Respondents

Treatment/action	Educational level of respondents			
	No formal education	Primary education	Above primary Education	Total
Go to clinic/hospital	17 (28%)	12 (23.5%)	49 (31.6%)	78 (29.3%)
Go to chemical seller	7 (11.7%)	9 (17.6%)	13 (8.4%)	29 (10.9%)
Home treatment with paracetamol, chloroquine or herbs at home	36 (60%)	30 (58.8%)	93 (60%)	159 (59.8%)
Total	60 (100%)	51 (100%)	206 (100%)	266 (100%)

Chi square = 112.79 p value = 0.00

Table 9 shows that 28.3% of respondents with no formal education sent their children to hospital or clinic at the onset of the illness whilst 31.6% of those with educational level above primary sent their ill children to hospital or clinic as first line of action.

The first line of treatment/action by mothers or caregivers was also significantly associated with the duration/time the treatment or action was taken. This is presented in table 10 below.

Table 10: Comparison of first treatment or action for child with malaria and duration/time the treatment/action was taken

Treatment/action	Duration/time of treatment/action taken			
	Same day of illness	2 days	3 and more days	Total
Go to clinic/hospital	43 (53.1%)	19(18.6%)	15 (13.2%)	77 (25.9%)
Go to chemical seller	19 (23.5%)	7 (6.9%)	14 (12.3%)	40 (13.5%)
Home treatment with paracetamol, chloroquine or herbs	19 (23.5%)	76 (74.5%)	85 (74.6%)	180 (60.6%)
Total	81 (100%)	102 (100%)	114 (100%)	297*(100%)

Chi square = 230.50 * less than the sample size due to non- responses

Degrees of freedom =100

P value =0.00

Table 10 indicates that 53% of respondents sent their ill children with malaria to hospital or clinic on the same day of child's illness, 18.6% after 2 days, 13.2% after 3 or more days and overall 26% sent their ill children to hospital or clinic. 23.5% of respondents also went to the chemical seller the same day of child's illness. Furthermore, 74.6% of mothers or caregivers treated children under-5 at home with paracetamol, chloroquine or herbs for 3 days.

There was also a significant association between duration/time mothers or caregivers took the first line of treatment or actions when their small children had malaria and educational level achieved. (See table 11 below).

Table 11: Comparison of duration/time first line of treatment or action was taken and education of mothers/caregivers.

Duration/time first treatment/action was taken	Educational level of respondents			
	No formal Education	Primary Education	Above primary Education	Total
Same day of illness	20 (29.9%)	18 (30%)	44 (25.9%)	82 (27.6%)
2 days	27 (40.3%)	15 (25%)	61 (35.9%)	103 (34.7%)
3 and more days	20 (29.9%)	27 (45%)	65 (38.2%)	112 (37.7%)
Total	67 (100%)	60 (100%)	170 (100%)	297* (100%)

An expected value is < 5. chi square not valid *less than sample size due to non-responses.

Chi square = 31.38

Degrees of freedom = 40

P value = 0.833

Table 11 shows that of those of the respondents who took the first line of treatment or action on the same day of the illness in the child, 29.9% had no formal education, 30% had completed primary level, 25.9% had above primary education. Overall 27.6% took the first treatment/action the same day of the illness. Furthermore, of those respondents who took the first treatment/action for 3 or more days 29.7% had no formal education whilst 38.2% had above primary level education.

However, there was no association between the duration/time the first line of treatment or action was carried out and the knowledge of malaria. (Chi square = 0.00: p value = 1.00)

However, in the event child did not recover with self-medication, 85% of mothers or caregivers said they would send their children with malaria to clinic or hospital, 8.6% said they would seek herbal treatment and 2.7% would go to the chemical seller. (See table 12 below)

Table 12:Subsequent treatments/actions taken when child did not recover with first line of action

Treatment/actions	**No.**	**%**
Go to clinic/hospital	254	84.9
Seek herbal treatment	26	8.6
Go to chemical seller	8	2.7
Home treatment with chloroquine and paracetamol	5	1.7
Others (wait and see)	6	2.1
Total	299	100

There was an association between the subsequent treatments or actions taken by mothers or caregivers if the child did not recover from the first treatment or action with accessibility to health facility. (Table 13 below). N.B Accessibility to health facility was defined as the presence or absence of a clinic in the community. Table 13 shows that, of a total of 262 respondents who had access to clinic, 85.9% took their sick child to clinic/hospital as the second line of treatment/action, 2.7% went to the chemical seller, whilst 11.4% self medicated at home with chloroquine, paracetamol or herbs.

Table 13: Comparison of second treatment/actions if child not recovered and access to clinic

Second treatment/actions	Clinic		
	Present	Absent	Total
Go to clinic/hospital	225 (85.9%)	28 (90.3%)	253 (86.3%)
Go to chemical seller	7 (2.7%)	1 (3.2%)	8 (2.7%)
Home treatment with chloroquine, paracetamol or herbs	30 (11.4%)	2 (6.5%)	32 (11.0%)
Total	262 (100%)	31 (100%)	293*(100%)

An expected value is < 5. Chi square not valid Chi square= 10.97 Degrees of freedom = 11 P value= 0.446

*Less than sample size due to non-responses.

8.4.2 Treatment seeking practices for complicated malaria (childhood convulsions)

Most of the participants in the focus group discussions claim they would self-medicate with herbs first and if the child doesn't recover before sending to clinic or hospital. They usually send the child to "a person in the community who knows the herb for treating convulsion".

A grandmother said "I give enema first for the child to defeacate all the 'phlegm in the body' and squeeze the liquid from the herb into the child's nostrils for the child to sneeze and wake up". A grandfather also said, "As for here we have people who know herbal medicine to treat childhood convulsion so we don't normally send the children to hospital. The medicine man plugs the herbs and squeezes it's fluid into the nostrils of the child causing the child to vomit all the phlegm in the stomach and head and after, the child gets up and start playing".

A few sponge or bath the child and rush to the clinic. Others turn the child's head upside down before running to the hospital. The man usually carries the child because "the man is brave and can run faster".

Similar findings were obtained during the cross-sectional survey. Mothers' or caretakers perception and knowledge on the management of childhood convulsions are shown in table 14.

Table 14: Perceptions and knowledge on management of childhood convulsions (n = 300*)

Remedies/actions for childhood convulsions	No.	%
Go to hospital/clinic	186	62.2
Herbal treatment at home	95	31.8
Go to herbalist	12	4
Bathing & paracetamol & chloroquine	8	2.6
Others	6	2

*Total number of remedies/actions exceeds sample size due to multiple responses

Table 14 shows that, 62.2% of respondents sent children with convulsion to clinic/hospital whilst 2.6% self-medicated with sponging/bathing, chloroquine and paracetamol, 31.8% with herbs. 4.0% of respondents send the child with convulsion to the herbalist.

8.4.3 Perceived causes of childhood convulsions

Almost all the participants in the focus group discussions mentioned phlegm in the child's body as the main cause of childhood convulsion. As a participant puts it, "as for this illness everybody knows is caused by phlegm in the stomach of the child and every child is supposed to get it". The phlegm they claim is got from eating only starchy foods like cassava, rice etc. Another also said "I always give my children palm oil and fish so that they do not get convulsion.

A few mentioned hot body and malaria as the cause of convulsion in children. A participant also said "worm can cause convulsion".

Another cause mentioned was that "if during pregnancy the mother runs unnecessarily, the water around the baby in the womb will enter into the baby so after delivery the child will be having convulsion".

In the cross-sectional survey, the perceived causes of childhood convulsions mentioned by the respondents are presented in table 15 below.

Table 15: Mothers or caregivers perceived causes of childhood convulsions (n = 300*)

Perceived causes of childhood convulsion	No.	%
Fever (hot body)	114	38.1
Phlegm in the child's body	178	59.5
Malaria	25	8.2
Worms	3	0.9
Don't know	43	14.4
Others	4	1.3

*Total causes of convulsions mentioned exceeds sample size due to multiple responses

Table 15 indicates that majority of the respondents, 59.5% mentioned phlegm in the child's body as the cause of childhood convulsion, 38.1% said fever (hot body) and only 8.2% said malaria. 14.4% did not know the cause of convulsion.

The main reasons respondents sent their children to the hospital/clinic are presented in table 16.

Table 16: Reasons mothers/caregivers send sick children to hospital/clinic

Reasons	No.	%
For better treatment	120	65.2
I do not know the cause/treatment for disease	31	16.8
Child not recovered from self-medication	24	13.1
For injection	3	1.6
Others	6	3.3
Total	184*	100

* Less than sample size of 300 because only respondents who sent their children to hospital were interviewed

Table 16 shows that, the majority of mothers or caregivers, 65.2% said they send their children to hospital/clinic for better treatment, 16.8% said because they do not know the cause or treatment of the disease, 13% because the child did not recover with self-medication and only 1.6% went to hospital/clinic for injection.

Mothers or caregivers were also asked the main reasons they treat their sick children at home. Their responses are presented in fig 3 below.

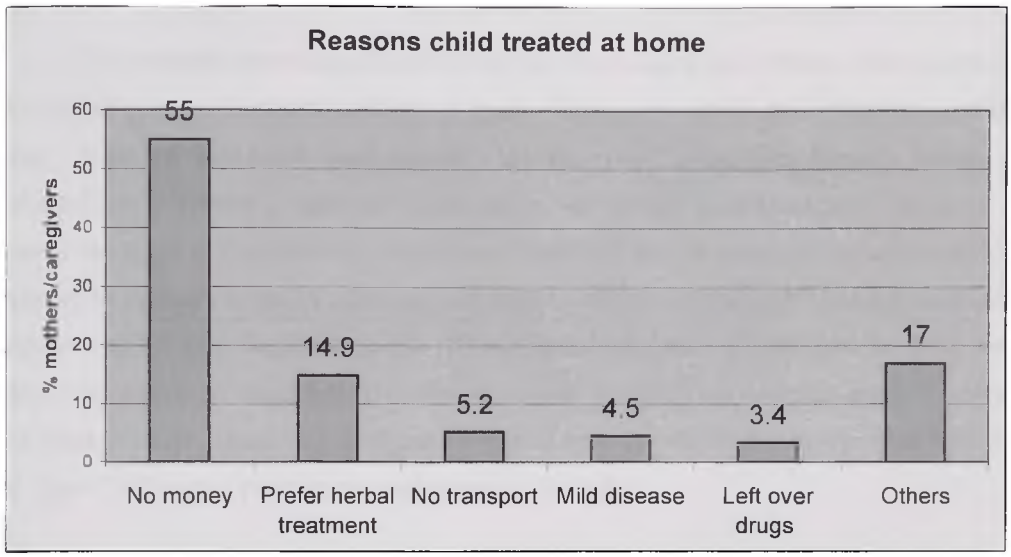

Fig 3: The main reasons mothers/caregivers treat sick children at home

Figure 3 shows that, 55% of mothers or caregivers treated ill children at home because they had no money to send child to hospital, 14.9% of respondents prefer herbal treatment that was why they did not send the sick child to hospital or clinic. 5.2% treated ill children at home because of lack of transport, 4.5% because the disease was mild. The other reasons mentioned included, the illness is not hospital sickness, the illness started suddenly, to prevent complications from the illness.

8.4.4 Home remedies for childhood malaria

At the onset of symptoms of *"fever"* almost all the participants tend to treat the small children at home. This treatment involves the use of herbal medicine, herbal inhalation, herbal bath and self-prescribed orthodox medicines like paracetamol, chloroquine, amoxcillin, vitamin B-complex, and multivitamin syrup.

For uncomplicated malaria most of the participants give paracetamol, chloroquine and vitamin B-complex syrup to the small children at home. Others give enema and herbal drink at the onset of fever. Some of the herbs used include, the leaves of neem tree, cassava leaves, "egyama", "nkokodabre", "kwaasi", "kwabisi" (these are names in their local language). The herbs are boiled, sieved and given to the children. A participant described how he prepares the herbal drink: "I boil the mixture of different herbs in a pot, sieve it into a container and give the child 2 teaspoons morning and evening for three days". Some also practice herbal inhalation. ("I will boil the herbs and cover the child with a cloth to allow him to inhale the vapour"). Others put camphor into hot water and allow the child to inhale. There was combination of both orthodox and herbal medicine as well. At the onset of *"fever"* a few give paracetamol and enema to the child.

During the survey similar findings were ascertained. The home remedies for uncomplicated malaria in small children included giving paracetamol in 48.4%, chloroquine in 35.2% and herbal drink and enema in 11% of cases.

Complicated malaria- convulsion was managed at home with herbs. As already described above, when a child is convulsing they plug some herbs and squeeze the fluid into the nostrils of the child and the child sneezes and wakes up. This was also found by the cross-sectional survey where 31.8% of respondents managed childhood convulsion at home with herbs. Only a few 2.6% treated childhood convulsions at home with bathing/sponging, chloroquine and paracetamol.

CHAPTER 5

9.0 DISCUSSIONS

Home treatment and self-medication for uncomplicated malaria is common (Slutsker et al. 1994; Mwenesi et al. 1995; Ruebush et al. 1995; Djimde et al. 1998) and the results from this study confirm a situation that is probably prevalent throughout the Africa continent, at least in the rural areas. However, practices and beliefs might vary between or even within a given country. For this reason locally generated data are important and should be considered when planning, implementing and evaluating control strategies. The results of this survey, while confirming a common pattern, also reveal some peculiarities that are worthwhile considering.

9.1 Characteristics of respondents

The greater proportion of respondents 89.3% had geographical access to a health facility; only 10.7% had no access. N.B Access to a health facility in this study was defined as whether a clinic was present in the community or not.

The mean age of the caregivers was 32 years. This indicates that, averagely the caregivers in this study were matured enough to take care of their sick children. Females formed the majority of the respondents 88%, out of which mothers represented 79.3%. This finding shows that mothers are the primary caregivers of small children at home so that if home management of malaria is to be improved, mothers should be the target group for educational activities.

Majority of the respondents, 77.7% had at least primary and above educational level. This may be due to the on-going campaign to educate the girl child. This is a significant finding since education may lead to positive knowledge and treatment practices of malaria in small children. However, analyzing the occupational status of the respondents, it was found that majority of the mothers or caregivers were petty traders, peasant farmers and a significant proportion was unemployed. This negatively influenced their treatment practices for malaria in their small children since they could not afford to send their sick children to a health facility promptly.

9.2 Terminology related to malaria

Although the study population was made up of different ethnic groups with the Wassaws forming the highest represented ethnic group among the respondents, constituting 45% of the total respondents of 289, the local term used to represent a cluster of symptoms synonymous with the clinical diagnosis of malaria was *"ebun"* or *"fever"* which were used interchangeably. Both the FGD and the survey confirmed this. As a participant in FGD put it, *"fever* is the commonest name all of us use, but malaria is what the hospital people use. *"Ebun"* is the local term we use here". Furthermore, in the cross-sectional survey, 67.7% respondents said the local name for malaria was *"ebun"*, whilst 40.2% said, *"fever"* and only 4.0% mentioned *"atridii"*.

This is comparable with the findings in a study among the Ga Adamgmes where similarly fever and asra is used (Agyepong et al 1992). Also in the District of Yanfolila in southern Mali the local term used to refer to malaria was *soumaya* (Mahamadou Aly Thera et al 1998). In Tanzania the local term used is *homa ya malaria* (Winch et al 1996). These findings indicate that the local name for malaria varies across different groups of communities in different localities.

It is demonstrated that the position of the local term used to denote malaria in the local taxonomy of febrile illness has important implications for the design of health education interventions (Winch et al 1996).

9.3 Mothers or caregivers diagnostic criteria for malaria in children under-five years

Mothers or caregivers included both physical and behavioural changes in their child's condition as the diagnostic criteria for malaria with the majority of them using two symptoms to make such diagnosis. However, it is worth observing that virtually all mothers or caregivers used change in body temperature (hot body) as one of the symptoms of malaria in small children. As one of the participants in the focus group discussion said and I quote " if malaria attacks my child the child becomes hot and if I give some medicine he becomes cold and after sometime becomes hot again" The percentage of mothers or caregivers who perceived symptoms of malaria in small children to be fever was found to be 91%. This finding indicates that mothers or caregivers were able to identify fever and used it as one of the major signs in diagnosing malaria in small children. This confirms the findings of a study (Agyepong et al 1994) in which, virtually all mothers used change in body temperature ('hot body') as one symptom of fever. This finding is also comparable with a study in Tanzania (Tarimo et al 2000) in which caregivers perceived symptoms of malaria to be fever was

found to be 93.5%. (Hamel et al 2001) also found that, carers demonstrated a high level of awareness that malaria was a frequent cause of childhood febrile illness. On the contrary, a study conducted in a rural area in Guinea where a high proportion of children are infected by malaria, showed that mothers had a low ability to identify fever and to diagnose malaria (Bailo Diallo et al 2001)

The three most common signs by which mothers or caregivers recognized malaria were found to be fever, vomiting and loss of appetite. This can be compared with the study (Ahorlu et al 1997) who found the three common signs to be vomiting, fever and dark urine. These findings suggest that, mothers or caregivers diagnose malaria in their children on the basis of changes in body temperature, physical and behavioural signs of illness. This showed that Mothers or caregivers were well informed about major symptoms of malaria, which corresponds to the current clinical case definition of malaria.

Although mothers and caregivers diagnose malaria in small children on the basis of the clustering of symptoms, it appears the clustering of particular symptoms is not systematic but rather, the coincidence of two, three or more symptoms taken together to indicate malaria.

9.4 Treatment practices of uncomplicated malaria

We know that, caretakers behaviour in respond to signs of disease are influenced by a wide range of factors other than accessibility and availability of services, including social networks and socio-economic factors as well as perceptions of severity of illness. Also, local diagnostic categories and local understandings of the etiology of disease affect timing of diagnosis, methods of home treatment, patterns of health seeking behaviour outside of the domestic domain (Kendall, 1990)

In this study, although the knowledge of malaria was 100% among mothers or caregivers this did not correspond with appropriate treatment practices. Besides, although as much as 89.3% of mothers or caregivers had access to a health facility, this did not appear to influence their treatment seeking behaviour. Comparing taking the ill child to hospital or clinic by caregivers accessibility to health facility it was found that, although 262 respondents had access to a health facility not all of them sent their children to the health facility. This means that not only availability of a health facility in the community that determines whether caregivers would take their children to the health facility but there could be other factors like socio-economic factors, attitude of health workers etc. This study found that economic reasons were the major factor that hinders accessibility to the health facility as

showed by the fact that, 55% of mothers or caregivers treated ill children at home because they had no money to send child to hospital. This is also indicated by the fact that as much as 60% of mothers or caregivers treat children under-5 with malaria at home with either modern or traditional medicine. This is however slightly lower compared with the studies (Agyepong et al 1994; Mahamadou Aly Thera et al 2000) who found the percentage of mothers treating their child's disease at home to be 76.5% and 75.8% respectively.

The primary first course of treatment is by self-medication, which include the use of pharmaceautical products like paracetamol and chloroquine and herbal treatment like giving herbal drink and enema to the child. As a mother in the FGD puts it, " if my child is sick I first give para, malarex, B'co and sponge him for 3 days, if he does not improve I send him to hospital" The commonest anti-malaria drug used was chloroquine. This is a significant finding considering the upsurge of chloroquine resistance. Although chloroquine remains the first- line treatment for malaria, studies show that since the late 1980s convincing evidence of a major public health impact of the spread of chloroquine resistance has been available. Hospital studies in various African countries have documented a 2- or 3-fold increase in malaria deaths and admissions for severe malaria, an increase temporally related to the emergence of chloroquine resistance (Trape 2001).

In this study, 48.8% of mothers or caregivers gave paracetamol and 35.2% gave chloroquine to their children at home when they suspect malaria. This finding is comparable with the study (Hamel et al 2001) where it was found that, 47% of recently febrile children received home treatment with an antimalarial and that chloroquine was included in 92% of the home treatment. They also noted that the proportion of children receiving appropriate home treatment could be increased if carers could be redirected to administer an antimalarial to children with fever. However, a comparably lower proportion was found in rural Guinea, where 18% of mothers gave chloroquine when they suspected malaria in their children (Amadou et al 2001). The higher usage of chloroquine in this study may be attributed to the Roll Back Malaria educational programme currently being carried out on radio stations in Ghana and also during maternal and child health clinics where mothers are educated to give chloroquine and paracetamol to their children if they have fever.

23.5% of mothers or caregivers started the home treatment with chloroquine, paracetamol or herbs the same day of onset of illness in their children. This finding indicates that mothers or caregivers are able to start prompt treatment at home after diagnosing malaria in their children. This important practice needs to be corrected and encouraged to ensure prompt and adequate treatment of

children at home. Home treatment enhances the promptness of antimalaria treatment (Hamel et al 2001). Comparably a study in Nigeria showed that only 16(4.3%) of the children received anti-malarial on the day the illness began (Fawole et al 2001).

Only 26.2% of mothers or caregivers sent their children under-5 to the clinic or hospital as first line of action in the event of their child had malaria. This finding was similar to that of (Bailo Diallo et al 2001), which demonstrated that the vast majority of children affected by malaria do not consult the official health system. However, higher proportions were found in a recent study in Uganda, where caregivers reported that if their child had fever, 63% would go to a clinic or hospital as their first action and 97% as their first or second action. (Njama et al 2003). Taking the sick child with malaria to the hospital or clinic as first-line of action was significantly associated with the educational level of caregivers (chi square = 112.79 p value = 0.00). This indicates that mothers or caregivers with educational level above primary are more likely to send their sick children to clinic/hospital at the onset of the illness than those without any formal education.

The low proportion of respondents who sent their ill children with malaria to a health facility as the first-line of action in this study may be explained by the fact that majority of them were petty traders, peasant farmers and unemployed so have no money to pay for the hospital/clinic charges. Poverty was a major factor, which encouraged home treatment as confirmed by the fact that 55% of mothers or caregivers treated ill children at home, because they had no money to send child to hospital. Caregivers indicating lack of money as a reason for not taking the child to the clinic was also found in a study in Zambia (Baume et al 2000). The link between poverty and economic accessibility to health facility have also been found in another study in Accra, Ghana where a child from the poorer community was less likely to have been taken to a clinic or hospital to be treated for malaria than a child from the better-off community (27% v. 42%). Treatment of malaria in young children is likely to be less effective in the poorer community, where lack of economic access to health services was demonstrated (Biritwum et al 2000). In many African countries, access to a health facility where children can be diagnosed and receive antimalarial treatment is often poor because of geographical or economic barriers, and carers may not be able to reach health care providers even though they recognize that their children are ill (Hamel et al 2001).

Mothers or caregivers also send their children to the chemical seller as the first-line of action if their children have malaria. In the FGD a participant said, "we send the children to the drug store because the chemical sellers have been trained to know what is wrong with the child and give

treatment". This finding suggests that chemical sellers should be involved in the planning of malaria control strategies. In the cross-sectional survey only 13.4% of the respondents took their sick children to the chemical seller at the onset of fever, although most of the respondents gave paracetamol (48.8%) and chloroquine (35.2%) to their sick. So one may ask where did they get the drugs? This may be explained by the fact that mothers or caregivers may have had leftover drugs from previous hospital or clinic attendance.

The very low, almost negligible, 1% of respondents who sent their sick children with malaria to the herbalist for treatment as the first line of action, may be due their perceived belief that herbalist cannot treat uncomplicated malaria, although 11% gave herbal drinks and enema. This indicates that herbalist do not play a major role in the treatment of childhood febrile illness. The use of traditional treatments (herbal drinks and enema) may be explained by lack of money to send child to hospital/clinic. As a father in FGD claims "because of financial problems we resort to herbal medicine and give the child enema and if the child does not recover before we send to hospital, but if there is money we send the child to hospital straight". As already indicated above, this finding was confirmed by the cross-sectional survey.

Sponging or bathing with tepid cold water to lower fever as one of the initial responses at the onset of child's fever was practiced by only 5.3% of respondents, although this has been encouraged in the health centers. This can be explained by the fact that as many as 59.8% of caregivers think convulsion is caused by phlegm, so there will be no need for tepid sponging. This contrast with the finding of Baume et al 2000 where the practice was widely adopted by mothers. The lower proportion of sponging or bathing of febrile children by caregivers may be explained by the fact that, mothers or caregivers still do not perceive this practice as an important method of reducing the child's temperature to prevent convulsion.

This study also found that, as high as 74.8% of mothers or caregivers treated children under-5 with malaria at home for 3 days. The delay in seeking appropriate treatment is particularly significant in terms of the outcome for sick children under-5, for whom malaria remains the major cause of death. Higher level of education of mothers or caregivers was significantly associated with promptness of sending their sick children to clinic/hospital at the onset of the illness (chi square = 31.38 p value = 0.833). This confirms the recent finding (Njama et al 2003) where it was also noted that higher levels of education for the caregiver were associated with positive malaria related knowledge, attitude and practices.

However, in the event child does not recover from self-medication, 85% of mothers or caregivers would send their children with malaria to clinic or hospital. This is comparable with the findings (Agyepong et al 1992) who found it to be 90% in rural Ghana. The study also found that majority of mothers or caregivers 32.6% sent their children to hospital/clinic for better treatment.

9.5 Perceived causes and Treatment practices of complicated malaria (childhood convulsion)

It must be noted that the knowledge of the causes of childhood convulsion was low among the studied population. In describing the local causes of childhood convulsion, it was noted from the survey that majority of the respondents, 59.5% mentioned phlegm in the child's body as the cause of childhood convulsion, 38.1% said fever (hot body) and only 8.2% said malaria. 14.4% did not know the cause of convulsion. This finding indicates that majority of mothers or caregivers are not able to link fever and malaria to childhood convulsions. This contrast the study in Tanzania (Tarimo et al 2000) where childhood convulsions were associated with high fever and cerebral malaria by 63.4% and traditional causes by only 5.5% of the mothers. This affected the treatment seeking behaviour for childhood convulsions.

If the child develops convulsion the patterns of treatment somewhat differs, as majority of mothers or caregivers turn to send their children to hospital as compared to when the child had simple and uncomplicated malaria. Although, most of the participants in the FGD claim they give herbal treatment at home if their children have convulsion, during the cross-sectional survey 62.2% of the respondents sent their children with convulsion to clinic/hospital which was quite low compared to the study conducted in Tanzania (Tarimo et al 2000) who found that 86.8% of childhood convulsions were sent to health facility. This contrast the finding in Zambia that herbal treatments are more commonly used when signs of convulsions appear than when they do not and traditional healers are more likely to be consulted (Baume et al 2000). However, the role of traditional treatment cannot be totally ruled out since during the survey 31.8% of home remedy for childhood convulsions used traditional treatment ('herbal nasal administration', herbal bath and enema) that is lower compared to 53.3% found by (Tarimo et al 2000) in Tanzania. Only 2.6% self-medicated at home with sponging/bathing, chloroquine.and paracetamol, which is very low, compared with 17.5% found by (Tarimo et al 2000). The lower proportion of mothers or caregivers who gave chloroquine and paracetamol to child with convulsion may be explained by the fact that majority could not link

malaria to childhood convulsion. These findings indicate that, there are inappropriate treatment practices of childhood convulsion by mothers or caregivers.

10.0 CONCLUSIONS

The study has shown that the people of Wassa West district use *"fever" or "ebun"* interchangeably to refer to a set of symptoms synonymous with the clinical definition of malaria. The knowledge of malaria is high among the populace. Almost all mothers or caregivers are able to diagnose malaria in small children with one or more symptoms. Fever (hot body) is well recognized and always used as the major sign to diagnose malaria. However, it is worth noting that, although the knowledge of malaria is high, their treatment practices does not follow suit. At the onset of the disease, mothers or caregivers treat the small children at home with modern or traditional medicine for a period of three days. The delay in seeking appropriate treatment is particularly significant in terms of the outcome for sick children under-5, for whom malaria remains the major cause of death.

It is only when the child does not recover from self-medication that they seek better treatment at a health facility. The higher the educational level of the caregiver the promptness appropriate medical care is sought at a health facility. Poverty is a major factor that encourages home treatment since majority had no money to take the sick child to hospital.

The study therefore concludes that the treatment practices of malaria in small children by caregivers are inappropriate so urgent educational actions must be taken to correct them. Without great efforts to improve home care, it is unlikely that the morbidity and mortality due to malaria in young children will be greatly reduced.

11.0 RECOMMENDATIONS

Based on the research findings the following recommendations are made:

1. There is the need to intensify health educational talks targeting particularly mothers to correct the treatment practices of uncomplicated malaria in small children.

2. Mothers or caregivers need to be educated on the causes of childhood convulsion and the appropriate treatment practices to adopt when the child has convulsion.

3. There is urgent need to train mothers in income generating activities to empower them financially so that they would be able to send their children to a health facility.

4. Measures must be put in place to encourage and improve the girl child education.

5. Health facilities need to be made economically accessible by putting in measures to implement the government's policy of free treatment in public health facilities for children under 5 years.

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13. 0 ANNEX

Table 17: Characteristics of the men's group in the FGD

No.	Age	Marital Status	Occupation	Educational Level	Tribe	No. of Children
1.	30	Married	Farmer	No formal education	Wassa	3
2.	48	Married	Driver	Middle school	Fante	3
3.	39	Married	Unemployed	Middle school	Wassa	4
4.	32	Married	Carpenter	Middle school	Wassa	3
5.	29	Married	Fitter	S.S.S	Fante	2
6.	38	Married	Driver	Technical training	Nzema	2

Table 18: Characteristics of the grandfather's group in the FGD

No.	Age	Marital Status	Occupation	Educational Level	Tribe	No. of grand-children < 5
1.	54	Married	Unemployed	Middle school	Wassa	9
2.	54	Married	Farmer	Middle school	Wassa	4
3.	75	Married	Farmer	No formal education	Wassa	9
4.	78	Married	Farmer	Secondary school	Wassa	5
5.	80	Married	Farmer	No formal education	Wassa	6
6.	68	Married	Farmer	Primary school	Wassa	4

Table 19: Characteristics of the grandmother's group in the FGD

No.	Age	Marital Status	Occupation	Educational Level	Tribe	No. of grand-children < 5
1.	70	Married	Farmer	No formal education	Wassa	4
2.	50	Divorced	Farmer	No formal education	Wassa	5
3.	70	Married	Farmer	No formal education	Wassa	6
4.	80	Widow	Farmer	No formal education	Wassa	6
5.	70	Widow	Farmer	No formal education	Dwura	5
6.	60	Married	Farmer	No formal education	Wassa	2
7.	60	Divorced	Farmer	No formal education	Wassa	6
8.		Married	Farmer	No formal education	Wassa	3

13. 1 FOCUS GROUP DISCUSSION GUIDE

1. What illnesses of children in this community presents with fever?
    - Name them.
    - What are the differences between the names mentioned?
    - Describe the various terms mentioned.

2. What is the local name for malaria?

3. How do you recognize that a child has malaria (use all the local names mentioned).

4. Who usually first detects illness in the child?

5. Who decides what should be done about this illness? We are interested to know everyone who gets involved in this process.

6. How do you treat (malaria) or fever? When do you treat it?
   Probe to check all treatments are mentioned, and that information is given on first line treatment (self-medication, drugs bought without seeking medical advice) as well as treatment if the child does not respond to first treatment.

7. If your child has malaria where will you go?
   Probe to find out other places of treatment.

8. When would you send a child with malaria to a clinic/ hospital, health post, priest, chemist, injectionist, drug peddler, grandmother or family elder?

9. What causes convulsion?

10. What will you do when a child has convulsion?

NB: Any childhood fever is malaria until proven otherwise.

13.2 CROSS-SECTIONAL SURVEY QUESTIONNAIRE

Research into treatment practices of malaria in small children by caregivers in the Wassa West District of Ghana.

A. Instructions for Interviewer:

Interview all mothers and caretakers (including house cares, grandmothers, grandfathers, or fathers) of children under-5 in selected compounds or households.

Circle all answers given.

Do not read out answers to respondents.

Write in answers if respond is not covered by checklist.

B. Identification

1. Community Name:
2. Clinic present No Yes

   Name:……..
3. Interviewer:……
4. House number/house identification.

C. Introduction

I am doing health research in this community. I am trying to learn more about health problems here, and am very grateful to you for agreeing to talk with me. May I ask you a few questions about (malaria).

D. Respondent characteristics:

1. Age in completed years:
2. Sex:

   Male (M) Female (F)

3. Tribe/language group/ethnic group:

4. Marital status: (a) Single (b) Married / Cohabiting / consensual union

   (c) Divorced, separated or widowed

5.Highest educational level achieved

(a) No formal education

(b) Primary

(c) Middle school.

(d) J.S.S.

(e) S.S.S.

(f) Technical/Vocational Training College

(g) Polytechnic/Teacher Training.

(h) University

6. Occupation of caregiver

(a) None

(b) Farmer

(c) Trader

(d) Teacher

(e) Others (Specify):

7. Relation with the child

(a) Mother

(b) Father

(c) Grandmother

(d) Grandfather

(e) Others

E <u>Health Questionnaire</u>

1.Do you know what malaria is? Yes No

2.Does (malaria) worry you here? Yes No

3.If yes what are the signs of (malaria) in a child?

TICK ALL CAUSES MENTIONED

(a) Fever

(b) Vomiting

(c) Loss of appetite

(c) Diarrhea

(d) Child not playing

(e) Convulsion

(f) Others

4. What is the local name for malaria?

Write down all names mentioned

5. What is your usual first action when your child has malaria?

(a) Nothing/wait and see.

(b) Go to Clinic

(c) Go to hospital

(d) Go to herbalist

(e) Go to Chemical seller.

(f) Chloroquine

(g) Paracetamol.

(h) Herbal treatment

(i) Enema

(j) Others

6.How long do you do the above?

(a) Same day

(b) 2 days

(c) 3 days

(d) Others

7. If your child does not recover, what would you do next?

(a) Nothing/wait and see.

(b) Go to Clinic

(c) Go to hospital

(d) Go to herbalist

(e) Go to Chemical seller.

(f) Chloroquine

(g) Paracetamol.

(h) Herbal treatment

(i) Enema

(j) Others

8. What causes convulsion?

(a) Fever (hot body)

(b) Phlegm in the body.

(c) Malaria.

(d) Fever.

(e) Others.

9. If your child has convulsion, what would you do?

(a) Sponging/bathing

(b) Paracetamol

(c) Chloroquine

(d) Go to hospital

(e) Go to clinic

(f) Herbal treatment

(g) Nothing

(h) Others

IF CLINIC/HOSPITAL IS NOT MENTIONED SKIP QUESTION 10

10. What are the main reasons why you would take the child to hospital/clinic?

11. What are the main reasons why you would treat the child at home?

Fig 3: Map of Wassa West District Showing the Main Subdistricts