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UNIVERSITY OF GHANA

PERFORMANCE OF COMMUNITY BASED AGENTS IN HOME BASED CARE FOR MALARIA IN UNDER FIVES IN JIRAPA AND LAMBUSSIE DISTRICTS OF THE UPPER WEST REGION,GHANA

By

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DECLARATION

I, Phoebe Balagumetime, do hereby declare that except for references to work done by other investigators which have been duly acknowledged, this thesis is the result of my own original research, and has not been presented, either in whole or in part, for another degree elsewhere.

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LIST OF ABBREVIATIONS

AA	ArtesunateAmodiaquine
ACT	Artemisinin based combination therapy
CBA	Community-Based Agents
CCM	Community Case Management
CHPS	Community Based Health Planning and Services
CBSV	Community Based Surveillance Volunteers
CDD	Community Drug Distributors
CHN	Community Health Nurse
CHW	Community Health Worker
C-IMCI	Community Intergrated Management of Childhood Illness
CORPS	Community Resource Persons
CMD	Community Medicine Distributors
DD	Drug Distributors
DDHS	District Director of Health Services
DHIMS	District Health Management Information Systems
FGD	Focus Group Discussion
FMOH	Federal Ministry of Health
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health service
HBC	Home Based Care
HBM	Home Based Management
HBMF	Home Based Management of Fever
HMM	Home Based Management of Malaria
ICCM	Intergrated Community Case Management
IE&C	Information, Education and Communication
ITN	Insecticide Treated Nets
KII	Key Informant Interviews
KNUST	Kwame Nkrumah University of Science and Technology
MOH	Ministry of Health
MDG	Millennium Development Goals
NMCP	National Malaria Control Programme
NMR	Neonatal Mortality Rate
OPD	Out Patient Department
ORS	Oral Rehydration Salt
RBM	Roll Back Malaria
RDHS	Regional Director of Health Services
RHMT	Regional Health Management Team
SDHT	Subdistrict Health Team
TBA	Traditional Birth Attendant
UNICEF	United Nations Childrens Fund
UWR	Upper West Region
WHO	World Health Organisation

ABSTRACT

Introduction: Home-based Management of Malaria (HMM) is a strategy to increase access to malaria treatment in Africa. In 2006, the strategy was launched in the Upper West Region (UWR) of Ghana. Community Based Agents (CBAs) were trained and equipped to provide home-based treatment to children aged 6-59 months with malaria. HMM was expected to reduce the number of children seen in health facilities with malaria. However, there has been a consistent increase in the burden of malaria since 2009 despite the role CBAs are expected to play in reducing the burden of malaria. This study was conducted to assess the knowledge and performance of CBAs on HMM, eight years after it's implementation and to assess the perception of community members and health workers about the services provided by CBAs in the region.

Methods: A cross-sectional study was conducted in two purposive selected districts in the UWR.We interviewed 384 CBAs and 154 mothers/caregivers using a structured questionnaire.We conducted Key Informant Interviews (KII) with 13 community leaders and 15 health workers and held 2 Focus Group Discussions (FGDs) with mothers/caregivers. CBAs and health facility records were also reviewed and we observed the management practices of 37 CBAs offering services at the time of interviews. Variables obtained were age, sex, and indicators on knowledge and management practices. Data entry, cleaning and analysis was done using SPSS software version 18.0. Descriptive data analysis was done and categorical variables expressed as frequencies and relative frequencies. For bi-variate analysis, cross tabulation was undertaken to establish associations and results presented in tables. Significance level of 5% (0.05) was used. Qualitative data from KII and FGDs were translated and transcribed into English, coded and thereafter analysed and separated into the emerging themes.

Results: The mean age of CBAs was 42.71(+/- 9.62) with 369(96%) being females.

Majority of the CBAs 352 (91.7%) knew the cause of malaria and 318(82.8%) knew that , fever is the most common symptom of malaria. However, very few, 171(44.5%) knew the correct dosage of Artemisinin-based Combination Therapy (ACTs) for children aged 6-11 months. Out of the 37 CBAs observed, 86.5% (32/37), (95% CI: 74.2 –97.7) gave correct age appropriate dose, but only 10(27%) observed the children for danger signs. There was no significant association between formal education and knowledge of the correct dosage of ACTs for children aged 6-59 months. Residing in Jirapa was positively associated with knowledge on the correct dosage of ACTs for children 6-11 months old (P-value 0.00). Of the 12,128 children who reported with malaria in 2012, only 5,343 (44%) were seen by CBAs. This was lower than the target of 60% in the guidelines. Monthly reporting rate of CBAs ranged from 53% to 79% in Jirapa and 43% to 88% in Lambussie. Only196(51%) of the CBAs had supervisory visits. Of the 154 mothers/caregivers interviewed, 116(75.3%) had utilized the services of CBAs. Among the 116 who utilized the services of CBAs; 95(81.9%) reported that CBAs took history, 86(74.1%) said their children were assessed before receiving treatment and 66(56.9%) were counseled on treatment compliance. Only 9(7.7%) were educated on malaria prevention in their communities. In all, 104(67.5%) of mothers/caregivers and 12(92.3%) of opinion leaders had good opinions about the role and performance of CBAs in the management of sick children. Mothers/caregivers at the FGDs were however of the view that CBAs are doing well in community education on malaria prevention.

Conclusion: A high proportion of CBAs do not know the correct dosage of ACTs for children aged 6-11 months. Many CBAs were not supervised. Although most CBAs took history and examined children before giving treatment, observing for danger signs, client counseling and reporting on activities was not done regularly. We recommend re-training and regular supervision of all CBAs.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Malaria is a global health emergency killing millions of people each year (Roll Back Malaria [RBM]/World Health Organisation [WHO],2012).The disease affects people of all ages and economic groups,but the most affected are pregnant women and children under five years of age because of their lowered immunity.Over 80% of malaria related illnesses and deaths occur in Africa (United Nations Children's Fund[UNICEF]/WHO,2006) with about 75% of the deaths occurring in children (WHO, 2012a). Malaria kills a child every minute in Africa (UNICEF, 2013;WHO, 2014).

Malaria is not only a cause of severe illness and death, but also a major cause of school and work-absenteeism, low economic productivity and long-term disability from severe illness in endemic countries (National Malaria Control Programme, Federal Ministry of Health[FMOH], Nigeria, 2005). It is further reported that about 2% of children with recurrent episodes of complicated malaria particularly cerebral malaria results in brain damage (WHO/UNICEF, 2003).

The economic toll of malaria on healthcare systems is enormous, with the cost of treatment consuming as much as 40% of national healthcare budgets in developing countries.It is estimated that malaria-related illnesses and deaths cost Africa's economy about US$12 billion per year (Management Strategies for Improving Health Services, 2003;RBM/WHO, 2012) and the cost related to complicated malaria drives households into poverty (The President's Malaria Initiative, 2007 as cited in Ghana Statistical Service & Ghana Health Service , 2009).

Like many other African countries, malaria is a leading cause of morbidity and mortality in Ghana,especially among pregnant women and children under the age of five (National Malaria Control Programme [NMCP], 2009). The disease is prevalent in all parts of the country with seasonal variations.

It is approximated that 3 to 3.5 million suspected cases of malaria are reported yearly in public health facilities, constituting 30-40% of Out Patient Department (OPD) attendance. Out of this figure, more than 900,000 are children less than five years of age (The President's Malaria Initiative, 2007 as cited in Ghana Statistical Service & Ghana Health Service,2009; UNICEF, 2012).Malaria is said to account for about 48.8% of total hospital admissions of children under five years (NMCP, 2010) and about 30% of under-five mortality in Ghana (UNICEF, 2012). According to Asante and Asenso-Okyere (2003), malaria accounts for an average of 9 work days lost per malaria episode by the patient and more than 5 work days by the caretaker in Ghana.School children also loose about four school days due to malaria illness.

In the Upper West Region (UWR), malaria accounts for almost 50% of the total OPD attendance (Ghana Health Service (GHS), 2012) and the prevalence rate of malaria in children aged 6-59 months is 51% (Ghana Statistical Service,2012a). In a study conducted by Akazili, Aikins & Binka (2007) in Northern Ghana, direct or out of pocket expenditure on malaria constituted 29% of the total cost of malaria treatment and the indirect cost, which involves waiting and travel times accounted for 71% of the total cost of a malaria episode. The cost of malaria care was also estimated to be 1% of the income of the rich and 34% of the poor household's income.

The Millennium Development Goals (MDGs), which are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions enjoins all stakeholders to reduce by two- thirds under five mortality and to halt and reverse the

incidence of malaria by 2015 (United Nations Millennium Project, 2006;United Nations, 2010). In Ghana, the under five mortality rate(U5MR) and neonatal mortality rate (NMR) are 80/1000 and 30/1000 live births respectively.The rates are however higher in the UWR with U5MR and NMR being 142/1000 and 45/1000 live births respectively (Ghana Statistical Service & Ghana Health Service, 2009). Malaria is a major contributor to these mortality rates.

Prompt access to effective anti-malarial treatment within 24 hours of onset of symptoms is one of the major strategies for reducing the malaria burden (WHO, 2005a).This can only be achieved if treatment is close to communities or households . In response to this challenge, African leaders committed themselves to actions targeted at ensuring that 80% of malaria episodes are adequately treated within 24 hours of onset of symptoms by 2010 (WHO/RBM, 2005c). However, initiatives to provide such access should take into consideration the poor, rural and vulnerable populations in malaria-endemic countries who are underserved by the formal health system (WHO 2000).

In Ghana for instance, almost 50% of the total population live in rural areas (Ghana Statistical Service, 2012b), thus treatment of malaria is challenged by geographic and socio-economic barriers, inadequate and inequitable distribution of health-care infrastructure and the requisite man power.This means that patients with malaria, particularly children are likely to die before accessing health services. As a result, treatment of children with malaria at home , using shop bought drugs has become a common practice (Foster, 1991; Agyepong, 1992; Mwenesi, Harpham, & Snow,1995;Buabeng**,** Duwiejua**,** Dodoo**,** Matowe,& Enlund, 2007). The risk of taking incorrect doses and non compliance to treatment regimen in such home based treatments is very high. Additionally, self medication may not only result in the use of sub-standard and counterfeit medicines but also increase the risk of resistance to anti-malarials.

In a bid to increase prompt access to early diagnosis and effective anti-malarial therapy,WHO is promoting Home-based Management of Malaria (HMM) in Africa.The strategy promotes access to pre-packed quality anti-malarial drugs within 24 hours of the onset of symptoms delivered through trained community resource persons. Several African countries have adopted the WHO home-based management of malaria in an effort to improve prompt access to treatment. HMM is being implemented and scaled up in countries such as Ethiopia, Uganda, Burkina Faso and Nigeria (UNICEF, 2005)..

The Ghana Health Service (GHS) in collaboration with UNICEF and the Department of Community Health of the Kwame Nkrumah University of Science and Technology (KNUST) have since the year 2003 made efforts to scale up and strengthen the implementation of HMM in the country.The strategy is aimed at increasing access to prompt and effective malaria treatment to children under five years delivered by trained Community Health Workers (CHWs).

1.2 Problem Statement

In 2006, the UWR launched HMM as an initial component of the Community Integrated Management of Childhood Illness (C-IMCI) in eight districts with support from UNICEF.The strategy was implemented through dialogue with opinion and political leaders and community entry and mobilization. A total of 2,583 CBAs were selected and trained on HMM and given pre-packed treatment of a combination of Artesunate and Amodiaquine (AA) to treat children 6-59 months old based on presumptive symptoms of malaria. Subsequent to the implementation, they were supported with logistics to facilitate their work. District and health facility staffs were trained along side the CBAs to enable them provide monthly monitoring and supervision to sustain the quality of case management and to avoid stock out of drugs and non-drug consumables.The implementation of HMM in the region is to ensure that about 60% of children under five years especially in deprived areas which are

particularly under served by the formal health sector have access to prompt and appropriate anti-malarials to reduce the burden of malaria.

A year after the implementation of this strategy, results from the Ghana Demographic and Health Survey [GDHS], 2008, revealed that, only 20.2% of the 41% of children under five years in the region who received anti-malarial drugs received the treatment the same day or the next day. Similarly, an assessment of routine data in 2010 by UNICEF on Integrated Community Case Management (ICCM) in Ghana showed that the coverage of children seen by CBAs falls far short of the set target of 60% in the region. An indication that prompt access to anti-malarials is still a challenge despite the role CBAs are expected to play in improving access.

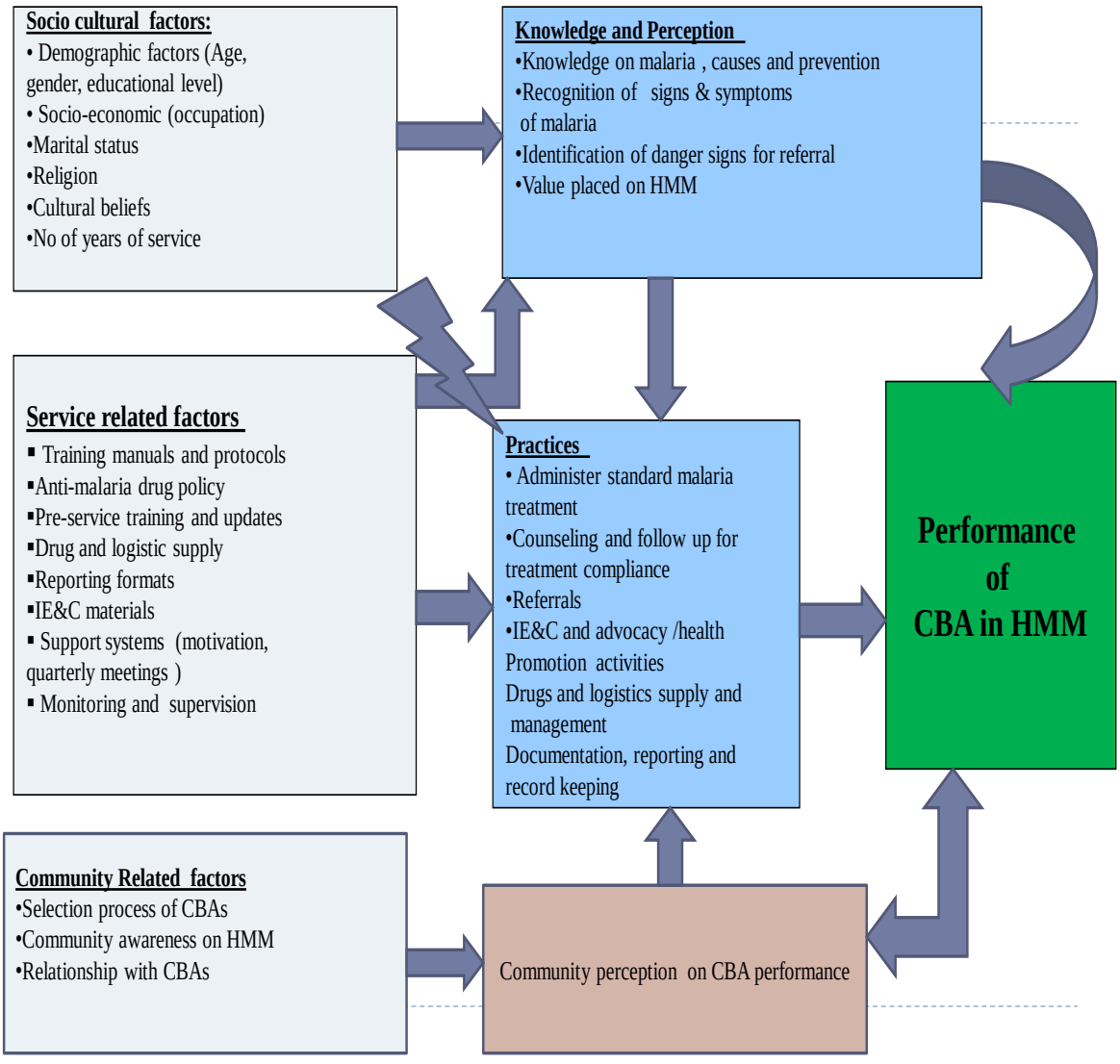
Almost eight years after the introduction of HMM in the region, malaria has remained the top cause of OPD attendance in all health facilities, with malaria in children under five years accounting for 25% of cases in 2009, 29% in 2010 and 31% in 2011 respectively (Upper West Health Sector Annual Report, 2012), yet a decline has been anticipated.The regional routine data from 2010-2012 also indicate incomplete and low reporting rates (>50%) by CBAs and there are undocumented complaints of client dissatisfaction with the quality of care received from some CBAs. A variety of factors ranging from socio-cultural to health service related factors may be responsible for the problems enumerated, but the exact factors are not known.

Thus the apparent lack of and important need for such information and it's related implications is of grave concern. It is for this reason that the study was conducted to assess the knowledge and performance of CBAs on malaria treatment and to assess the perception of community members and health workers about the services provided by CBAs in the region.

1.2.1 Conceptual Frame work

The conceptual framework presented (Figure 1) describes the independent variables, and takes into account contextual and key socio-cultural and health service related factors, which interact differently to impact on the performance of CBAs in the region.

Figure 1:Conceptual Framework



1.3 Justification

Despite the widespread advocacy and strong evidence supporting HMM and the vital role of CHWs in improving outcomes for childhood malaria in some countries (Lewin et al., 2005), several concerns have been raised with respect to the performance of CBAs in the UWR. Many operational aspects such as selection and training of CBAs, drug supply systems, programme supervision, health information management and motivational factors could affect the performance of CBAs.

An earlier study conducted in the region by Bjerrum (2008) focused on incentives and motivational factors for CHWs participation in HMM.This study however incorporated a few of the operational details. At present, there is little good scientific evidence on the performance of CBAs in the UWR, how well they can deliver safe and effective care to children with malaria in the community.

This study will therefore make specific recommendations which will be of immense benefits to policy makers and other development partners such as UNICEF. The NMCP and UNICEF will use the results of the study to assess the effectiveness and impact of HMM on malaria specific morbidity and mortality in children and evaluate the existing implementation guidelines to strengthen HMM in the region and the country at large.The Upper West Regional Health Administration will also use the results to identify the best strategy or mix of strategies to be used for the effective implementation of HMM to reduce the malaria burden.

1.4 Study objectives

1.4.1 General objective

The overall objective of the study is to assess the performance of CBAs in HMM in children under five years of age in the UWR of Ghana.

1.4.2 Specific Objectives

1. To assess the knowledge and perceptions of CBAs in HMM
2. To assess the practices of CBAs in HMM
3. To assess the perceptions of community members and health workers on the performance of CBAs

CHAPTER TWO

2.0 LITERATURE REVIEW

The recognition of home and community role in the management of malaria especially in children under five years has led to the development of many models for what is now called Community Case Management (CCM), although the terms HMM, Home-Based Care (HBC) and Home Based Management (HBM) are also used interchangeably. All these terms refer to the management of malaria and other childhood illnesses in the community (Sundararaman,1999). Likewise, community resource persons used in HMM have been given different names in different countries. In Ghana , they are called CBAs; CHWs in Burkina Faso, Medicine Distributors (MDs) in Nigeria and Drug Distributors (DDs) in Uganda (WHO/ Tropical Disease Research[TDR], 2007).

In recent years, HMM has gained wider acceptance and is endorsed by many (Were, 2004;WHO, 2005a). The strategy has been portrayed as a new paradigm for ensuring early and effective treatment of malaria in children under five years at the community level. It's impact on reducing progression of simple malaria to severe malaria and overall childhood mortality has been well documented in some countries (Sirima et al., 2003;FMOH, 2005).Uganda is currently leading the way, with a large-scale HBM programme, which is now the country's official national treatment policy. The Ugandan programme showed that over 52% of febrile children in implementing areas had access to treatment within 24 hours of onset of fever. Data from Community Drug Distributors (CDDs) also demonstrated a high recovery rate of between 79% – 99% ((Musoba, Lutwama, Kaitiritimba, & Jitta, 2007).

Training of community resource persons and distribution of pre-packed anti-malarial medicines reduced progression of simple malaria to complicated malaria by more than 50% in Burkina Faso and overall childhood deaths by 40% in Ethiopia (Kidane & Morrow, 2000; Baume,2002).

Root, Collins & Munguti (2003) reported that the most promising impact seen in HMM was the reduction in facility based mortality rate. In contrast, a systematic review in Kenya of the impact of HMM on health outcomes in Africa revealed that presumptive treatment of malaria by CHWs had no impact on malaria-specific or overall mortality inspite of the high utilization (Hopkins,Talisuna,Whitty, & Staedke, 2007).

HMM goes beyond the mere distribution of anti-malarials to parents/caregivers of children with malaria. It involves all the actions and commodities needed such as; proper assessment and diagnosis of the sick child, provision of appropriate medicines and support therapy in the form of counseling on the correct dose and follow ups in a timely manner for compliance to treatment regimen (Brieger, Osamor, Salami & Oladepo, 2004).The performance of CHWs can therefore be viewed as a chain of events (UNICEF/ WHO,2006), ranging from selection to management of sick children, documentation and reporting and the drug supply systems .

2.1 Selection and characteristics of CHWs

The overall performance and acceptability of CHWs to the community can be influenced by who is chosen. First and foremost, the individual must come from and reside in the community, must be democratically selected by community members and be willing to work voluntarily (Brieger, 2004). However, cultural, political and social contexts of the programme can sometimes influence the selection and the criteria defining the most qualified CHWs acceptable to the community (UNICEF/ WHO, 2006).

Batega,Greer & Plowman (2004), in an assessmentof implementation and operation of Home Based Management of Fever (HBMF) in Uganda noted that 70% of DDs were democratically selected by community members. The DDs were also working as Community Resource Persons (CORPS), indicating a relatively high degree of integration of HBMF into other community-based health activities.

Similar findings were reported in Ghana from the study conducted by WHO/TDR (2007) where some communities held meetings to select distributors while others selected the distributors through Focus Group Discussions (FGDs).On the other hand, findings from FGDs in a rapid assessment of CCM in northern Uganda revealed that many participants were unhappy with the selection of their Community Medicine Distributors (CMDs).They felt that the selection was politicized and not fairly done, resulting in the most qualified people being left out (Uganda Ministry of Health,2009).Besides where people associate such programmes with monetary gains, selection is usually not based on competencies and commitment but for the monetary gains or as a "perk" rather than those who will perform (Personal Communication).

The characteristics of selected CHWs such as gender, marital status, age and education level can also affect their performance. Meek, Kabwa & Kyomuhendo in 2005, reported that community members in Uganda preferred women as DDs to men. They indicated that mothers were reluctant to utilize the services of male DDs, especially at night, but were more comfortable going to the houses of female DDs at night with sick children. Single female volunteers however had a higher turnover rate than their male counterparts or married workers. Rahman et al., (1995) equally talks about the important role of women volunteers in the community, but added that their household commitments tend to discourage them from getting involved.

Contrary to these findings, community members in Ghana were of the view that male volunteers are able to conduct more follow-ups than women because they have to concerntrate on their household chores (WHO/TDR (2007).).Notwithstanding these concerns, studies have shown that most programmes recommend the selection of women as CHWs to increase acceptability and accessibility to target populations (Bang, Bang,

Sontakke, & the SEARCH Team, 1994; Bang et al., 2005a; Bang, Baitule, Reddy, Deshmukh & Bang, 2005b; Bang, Bang, Baitule, Reddy &Deshmukh, 2005c).

Literacy may also be an important criterion for the selection of CHWs especially for programmes that use treatment guidelines or algorithms. Moreover activities such as training, documentation and record keeping is less complicated when the CHW has the ability to read and write. In Mali, literacy training was provided for chosen CHWs because of the low literacy rates (Winch et al., 2003).

2.2 Training of CHWs

Training is fundamental in the implementation of any activity (WHO,2005b). Studies have shown that, the more exposure CHWs have to 'basic' training, the better the diagnosis and care given to children (Faiz,Abdullah,Kaosar & ShameemAra, 2001). Not only must CHWs be trained, but they must be trained with a formal training manual and for the recommended number of days. Meek et al., 2005 reported that most DDs were trained for two days as recommended, it was however detected in one out of the four districts studied in Uganda that the entire training lasted only three and half hours.The DDs also expressed the need for regular updates. On the other hand, CBAs in Ghana were trained for five days and both CBAs and their supervisors were given regular updates (WHO/TDR, 2007).

2.3 Knowledge of CHWs

In northern Uganda, the evaluation report on HBMF and HBC revealed that almost all CMDs (99.2%) knew how malaria is transmitted and 88.3% could mention at least 3 ways of preventing malaria. When asked about the most common symptom of malaria, 82% knew that it is fever (Uganda Ministry of Health, 2009). These results are similar to findings of the study conducted by Batega et al., 2004 where DD's knowledge on presumptive diagnosis

and treatment of malaria was high with a majority (96%) knowing the correct dosage for children below two years of age and 100% for children 2-5 years of age.

2.3.1 Case Management

In a comparative analysis and documentation of processes that facilitated teams in Ghana, Nigeria, Burkina Faso and Uganda to implement HMM in various settings, it was reported that 59% of children treated with anti-malarial in Burkina Faso, received drugs for the recommended 3-day period. Among the children treated, 51.8% received the correct age-specific dose, 31% were given under dose and 17.2% were given over dose (WHO/TDR, 2007). Hamel, Odhacha, & Roberts (2001) also reported that dosages of drugs given in Kenya were often incorrect.

According to Batega et al., (2004), DDs gave relatively good advice to caregivers about the management of their sick children and on treatment compliance. Majority of caregivers affirmed to this findings and said they were satisfied with the way the DDs handled their sick children. Regardless of the good advice given to caregivers by DDs ,the findings further revealed that only about two-thirds of the DDs received Information, Education & Communication (IE&C) materials, which are important tools for relating to caregivers. Aside the indequate supply of IE&C materials to DDs, almost all aspects of the health system in the districts assessed required support for a successful HMM implementation. A good number of pre-packed drugs were found to be ruptured at all levels of the system, posing a serious threat to the program.

Fapohunda et al., 2004 noted better counseling in districts with HBMF compared to the non-intervention districts; however counseling on danger signs, referral, feeding and giving fluids was rarely given. In the case of Ghana, CBAs counseled and gave the first dose of drugs as a demonstration to the mother/caregivers before giving the rest of the drugs to be taken at home. They also made follow-ups to ensure treatment compliance (WHO/TDR

(2007). Compliance is better and more effective with home visits and follow-ups (WHO, 2005b).

2.3.2 Medicine supply

Stock out of medicines was found to be a major challenge and was the main reason for referral in northern Uganda, with 71.7% of CMDs running out of Artemisinin-based Combination Therapy (ACTs).CMDs attributed non reporting of their activities to children being referred directly to hospitals because of the lack of medicines (Uganda Ministry of Health, 2009).With regards to storage, WHO/TDR (2007) reported that drugs were stored in wooden cupboards and boxes.

2.3.3 Referrals

Of all the 240 CMDs interviewed in some districts in Uganda, 159 (66%) could mention at least four danger signs in children that needed referral. An additional 56 (23%) could mention three dangers signs (Uganda Ministry of Health, 2009). Despite the training given to DDs to understand the scope of their work and to make referrals in complicated cases of fever, adherence to these guidelines was a still a challenge (Meek et al., 2005). CHWs should know the circumstances that need referral and a reliable way of passing information about patients to a health facility and vice versa (Walley & Hubley, 2001). They should also communicate effectively to the mother/caregiver on the reasons and the need for referral to alley fears and ensure compliance.

Stock out of medicines, other than danger signs was the main reason for referrals. Feedback was however good, as 71.3% of CMDs received regular feedback from the health facility staff about referred cases. The feedback was either obtained from the health staff during meetings or by family members of the patient (Uganda Ministry of Health,2009).

2.3.4 Reporting system

In the study conducted by Meek et al, 2005, less than 30% of DDs were reporting regularly, and for those who report there is little or virtually no time for the health workers to have a meaningful interaction with them in the form of support supervision and meetings. Interviews with district and health facility staff in Uganda revealed that information collected by CMDs is rarely used for planning purposes or for the estimation of medicines and other logistics (Uganda Ministry of Health,2009).

2.4 Supervision

Majority of CMDs (83.3%) admitted having received supervision in the last 6 months. For those who got supervision, the median number of times they had been supervised was 4 times in 6 months. CMDs at the FGDs however indicated that supervision was too infrequent and irregular (Uganda Ministry of Health, 2009). Additional workload is said to be the main reason for irregular monitoring of CHWs activities in some places (WHO/TDR, 2007).

2.5 Opinions of Community Members about CHWs

Analysis of caregivers FGDs indicated very positive perceptions and attitudes of the CMDs and their work in all the districts. CMDs were described as understanding, hospitable, committed and kind people, always willing to provide services to clients, even at odd hours. This good attitude has build trust and confidence of the community members in the CMDs, to the extend that caregivers in some areas admitted that they were performing better than the health staff (Uganda Ministry of Health, 2009). All the same, there were concerns regarding the limits of DDs' capacity to handle fevers of varying severity. Fears about the strategy and its appropriateness were also raised by some people and a gap between knowledge and practice was noted (Fapohunda et al, 2004).

2.6 Sustainaibility

Community based health programmes dates as far back as 1970s, but most of these programmes came to a halt due to issues of sustainability. The MDGs have however created a renewed interest in strategies involving CHWs to increase coverage to basic health services especially in the rural and deprived areas (Bhattacharyya, Winch, LeBan, & Tien, 2001). Integrating HMM into other community-based health activities promotes sustainability (Batega et al., 2004). It has been noted that programmes that are often not well integrated into the overall health care system are likely to suffer from supply and management problems, especially when development partners withdraw their support (Rohde et al., 2008).

CHWs work on voluntary basis in most HMM programmes, an approach that has often resulted in high attrition especially after the withdrawal of the funding agency (Pagnoni, 2009). In Nigeria for instance, attrition rate ranged from 10-49% over a period of 12 months (Salako,Afolabi,& Agomo, 2001;Ajayi,Kale, Oladepo, & Bamgboye, 2006;Ajayi, Kale, Oladepo, Bamgboye, 2006), whilst in Uganda, a dropout rate of about 16% was observed after 18 months of service. Majority of the respondents suggested that the CMDs should be given a token in order to encourage them to continue the selfless work they are doing (Bategaet al.,2004). Bjerrum, (2008) recommended that some form of remuneration as well as a mechanism for providing transport and other resources is necessary to ensure continued motivation of CBAs and for sustainability of HMM.With regards to factors that helped to sustain CHWs in their activities, the primary reasons cited for remaining with the programme were; seeing health improvements in their own families, the value placed on their activities by the community and the opportunities to learn (Snetro, 1999). The importance of seeing improvements in the community's health and CHWs having an influence in the community was equally reported in Colombia (Robinson & Larsen, 2001).

CHAPTER THREE

3.0 METHODS

3.1 Study Design

A cross-sectional study was conducted using quantitative and qualitative data collection techniques.Quantitative data was obtained by administering questionnaires to CBAs and mothers/care givers of children under five years of age. Questionaires were adapted from a study conducted by the Ministry of Health in Uganda on HBMF and HBC in 2009. Additional data was obtained from the District Health Information Management System (DHIMS), CBA records and by observing the practices of CBAs using a checklist developed from the CBA training manual.Qualitative data was obtained from Key Informant Interviews (KII) and FGDs .

3.2 StudyArea

The study was conducted in two districts in the UWR namely; Jirapa and Lambussie.The UWR is situated in the north-western part of Ghana. It is bordered to the south by the northern region, to the north and west by Burkina Faso and to the east by the upper east region. The three major ethnic groups are the Dagaaba, Sissala and the Waala. The Lobi and other minority tribes also live in the region. This notwithstanding, these ethnic groups still maintain some salient and unique cultural features and practices.

3.2.1 Demographic Characteristics

The projected population of the region for 2013 using a growth rate of 1.9% is 742,896 with 989 settlements. The population of Jirapa and Lambussie districts are 93,537 and 54,655 respectively. With an area of 18,476 km, the region's population density stands at 32 persons per square kilometer. The bad nature of roads and the poor road network in some

districts makes movement even more difficult. It is estimated that only about 15% of the adult population of the region are literate.

3.2.2 Climate

The climate is tropical with an average minimum temperature of 22.6^{o}C and maximum of 40.0^{o}C. There is one rainy season from May-October with an intensity of 100-115 cm/annum and humidity ranging between 70-90% but falling to 20% in the dry season. The peak season for malaria transmission is from June –September.

3.2.3 Vegetation

The vegetation of the region is generally semi-savannah with light undergrowth and scattered shrubs.The major economic trees are Mango Dawadawa (Parkiafilicondia) and sheanut (Buterospermiumparkii). Food production is poor with resultant seasonal food insecurity. Crops grown are maize, yam, guinea corn, millet, rice, groundnuts and beans. Livestock rearing is buoyant with cattle, sheep, goats, pigs and poultry dominating.

3.2.4 Transport and Communication

The region has the smallest number of kilometres in terms of tarred road. Only two of the district capitals are linked to each other and to the regional capitals by tarred road. The roads linking the region to other regions are untarred and during the rainy season traveling out of the region by road becomes a nightmare.The predominant means of transport is by road using lorries, motorcycles or bicycles. As far as communication within the health sector is concerned, the region is endowed with telephone facilities. These have proved useful in calling for ambulance services in time of need. Staffs have also used the telephone to consult each other on the clinical management of cases when the need arises.

3.2.5 Culture and Religion

Christianity, islam and traditional beliefs are the predominant religions. Traditional life and beliefs, like elsewhere in the country, are more prominent in the rural areas. The notable festivals are the "Dumba" festival in Wa, " Jembenti" of the Dagaaba as well as 'Kobina and "Kakube" in Lawra and Nandom traditional areas respectively.

3.2.6 Family and Kinship

With the exception of the Lobi, inheritance is patrilineal. Marriage is generally polygamous, with the extended family system making sharing of resources the order of the day and this could easily be tapped upon to strengthen community support systems for home based care.

3.2.7 Health Services Organisation

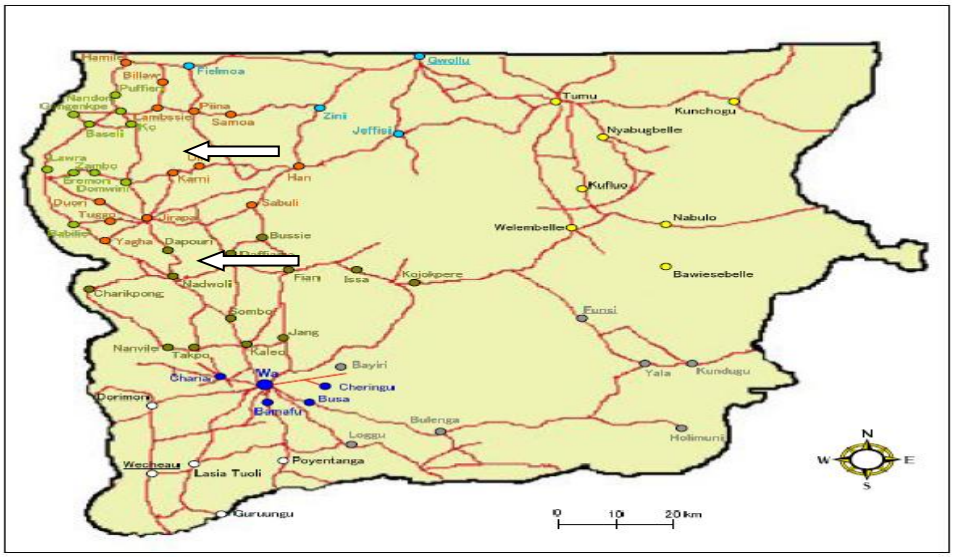
The Regional Health Management Team (RHMT) comprises of three main units: public health, clinical care and health support services. These units in conjunction with the office of the Regional Director of Health Services (RDHS) are responsible for strategic planning, resource mobilization and distribution, training, technical support, monitoring and evaluation of service delivery in the districts.

There are 9 district health directorates managed by District Health Management Teams (DHMTs); 2 additional districts have been created and are yet to be operationalised. The 9 districts are further demarcated into 65 sub-districts and 108 Community based Health Planning and Services (CHPS) zones managed by Sub District Health Teams (SDHTs). A total of 89 health facilities including 6 government hospitals, 5 polyclinics,3 private hospitals and 5 private clinics provide various services in the region. Four out of the 9 districts in the region have no district or private hospitals.The regional hospital operates as a district hospital because of lack of requisite personnel and facilities. Apart from daily provision of services at

the health centres, outreach services are provided every month by staff from the health centres.

With regards to CHWs, the region has 1,209 Traditional Birth Attendants (TBAs), 1,850 Community based Surveillance Volunteers (CBSVs),184 guinea worm volunteers and 2,583 CBAs who are providing services in 3,557 demarcated areas with supervision from sub district health staff. There are 861 outreach points for the provision of immunization and other services and this is done by Community Health Nurses (CHNs) and disease control officers. Community participation in health delivery is facilitated at all levels through community representation on various health committees at regional, district and sub district levels.

Figure 2: Map of UWR showing study districts



3.3 Study Population

The quantitative study participants were CBAs and mothers/caregivers of children under five years. The qualitative study participants also included mothers/care givers of

children under fives, district focal persons for HMM, health facility in-charges and opinon leaders.

3.4 Sampling

3.4.1 Sample Size

Estimating the sample size was based on the assumption that all CBAs in the region were trained on HMM, a confidence level of 95% and an assumption that 50% of CBAs were performing well, with a desired precision level of 5% .The calculation was therefore guided by the formular;

$$n = \frac{z^2 p(1-p)}{d^2}$$

n=required sample size

z = confidence level at 95% (standard value of 1.96)

p = Assuming 50% (0.5) of CBAs were performing well (prevalence of main outcome of interest)

d = **d**esired precision level of 5% (standard value of 0.05)

Thus the sample size for CBAs was;

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2}$$

$$n = 384$$

Sample size of mothers/care givers

The sample size of mothers/caregivers was calculated based on the projected population of children under five years which is 20% of the total population. Data indicates that about 10% of mothers/caregivers of children under fives years have visited a CBA with a sick child.

$$n = \frac{z^2 p(1-p)}{d^2}$$

n= required sample size

z = confidence level at 95% (standard value of 1.96)

p = proportion of mothers/caregivers accessing CBA services at 10%

d = **d**esired precision level of 5% (standard value of 0.05)

$$n = \frac{1.96^2 \times 0.1(1 - 0.1)}{0.05^2}$$

$$n = 138$$

Allowing for losses of 10%

$$n = (0.01 \times 138) + 138$$

$$n = 152$$

3.4.2 Sampling Method

Multi-stage sampling was used for the study. At the regional level, purposive sampling was used to select two of the nine districts because of resource constraints and time. A sampling frame consisting of all the names of the CBAs and their respective communities was obtained from the two district offices and simple random sampling used to select the CBAs to be interviewed. Names of the CBAs in each district were written on pieces of paper. These papers were folded evenly and put in a container and shaken for some time. Each member of the study team was asked to pick one piece of paper at a time containing a name of a CBA until the number of CBAs to be interviewed was obtained.

With regards to mothers/care givers, equal proportions were assigned to each district and randomly selected from the communities in which the CBAs were randomly selected. For the selection of households, data collectors move to a central place in the community and spin a pen. The direction to follow in the selection of households was determined by the direction of the tip of the pen. The first household with a mother/caregiver with a child less than five years in the direction pre-determined through the spin of the pen was selected and

the immediate next household with the target group was repetitively selected until the total number of 2 mothers/caregivers was selected per community.If a household has more than one mother/caregiver with a child under five years,only one was randomly selected and interviewed and if the data collector was unable to get the required number in the community,then the next nearest community was chosen.Purposive sampling was also used in selecting opinion leaders and health facility in-charges in the communities in which the CBAs were randomly selected based on their roles in the intervention and as supervisors to the selected CBAs.

Variables which relate to health worker and community perceptions regarding the performance of CBAs was qualitatively explored through KII with assembly members or chiefs, health facility in-charges and district focal persons for HMM.In addition, one FGD was conducted in each district with 6-12 mothers/caregivers of children under five years moderated by an experienced facilitator who was fluent in daagare and Sissali (the main local languages spoken in the two districts).The FGD and KII guides consisted open ended questions. Interviews with community leaders and mothers/caregivers who could not speak english were conducted in the local language and translated and transcribed into English.Convenience sampling was used for observing management practices of CBAs who were offering services at the time of interviews.

Secondary routine data for the year 2012 from the CBAs, health facilities and district health directorates were reviewed.The records review supplemented the information gathered from the interviews and served as a basis for checking for consistencies in the data collected.

3.4.3 Variables

The scope of the study was guided by the training curriculum on HMM and included; socio-demographics, knowledge and management practices, support systems and community

and health worker perception of CBA performance. Table 1 shows the independent variables and data collection techniques and tools.

Table 1:Variable – Indicator – Data collection technique – Data source Matrix

Variable	Indicator	Data collection technique	Data collection Tools	Data source
Demographic characteristics	Sex	Interviews	Questionnaire	CBAs
	Age			Mothers/care givers
	Occupation			Opinion leaders
	Religion			Health workers
	Educational level			
	Marital status			
	No. of years in service			
Knowledge on causes, signs and symptoms and prevention of malaria	Proportion with knowledge on causes, signs and symptoms and prevention of malaria	Interviews	Questionnaire	CBAs
				Mothers/care givers
Perceptions of CBAs on HMM	Proportion of CBAs with cultural beliefs affecting performance	Interviews	Questionnaire	CBAs
Assessment and management of fevers/malaria	Proportion of children assessed before given treatment	Observation	Checklist	CBAs
	Proportion of children given correct dose of ACTs			
Recognition of danger signs in children and referrals	Proportion of CBAs with knowledge on danger signs	Interviews	Questionnaire	CBAs
	No. of children referred	Records review	Checklist	
Availability of ACTs and other logistics	Proportion of CBAs with ACTs and other logistics	Interviews	Questionnaire	CBAs
	No. of CBAs storing ACTs appropriately	Observation	Checklist	

Variable	Indicator	Data collection technique	Data collection Tools	Data source
Documentation and record keeping	No. of monthly reports submitted by CBAs	Interviews	Questionnaire	CBAs
	No.of copies of reports available	Records review	Checklist	
Health education/ promotion activities	No. of CBAs with IE&C materials	Interviews	Questionnaire	CBAs
	Proportion of CBAs carrying out health promotion activities	Records review	Checklist	CBAs
Perceptions of community members and health staff on CBA performance	Proportion of community members with positive views about the performance of CBAs	Interviews	Questionnaire	Mothers/ care givers
				Health staff Opinion leaders
Frequency of Supervisory visits	Number of supervisory visits received	Interviews	Questionnaire	CBAs
		Records review	Checklist	Health staff

3.44 Outcome Variable Definition

The main outcome measure was CBAs performance; defined as the ability of CBAs to elicit signs and symptoms of malaria, assess and give age appropriate dose of ACTs to children, identify and respond to danger signs. Others include; health education activities carried out and documentation and reporting.

3.5 Ethical Considerations

Ethical clearance to conduct the research was obtained from the Ethical Review Committee of the GHS, the Regional Health Directorate, District Health Directorates and the subdistricts involved in the study.

3.5.1 Consenting Process

Permision to conduct the study in the region was sought from the RDHS through the School of Public Health (SPH). This was followed by a request to the RDHS for a letter to the selected districts seeking for permission to enter their districts. At the district level,letters were circulated to the facility in-charges through their respective District Directors of Health Services (DDHS) about the study and their participation. At the community level,permission to be admitted into the communities was sought from the chiefs and other relevant community leaders through the health facility in-charges.Verbal consent was obtained from the study participants and where the study subjects did not understand English it was interpreted in the local dilect for them.

a) Possible Risks and Discomforts

Participants were assured that the research would not pose any risks to them,but they could experience some minor discomfort when being observed or in answering certain questions and that they had the right to withdraw from the study at any time if they felt uncomfortable.Refusal to participate was not in any way going to affect them.

b) Possible Benefits

The study subjects were informed that participation is voluntary with no inducements,they may not benefit directly from the study but the findings would benefit the DHMT and the GHS in planning health service delivery. Their participation may also help in improving the care given to their children by CBAs in the region**.**

c) Confidentiality

All information obtained from this study has been kept strictly confidential and is used only for the purpose indicated in the study. Numbers linked to particular names are kept confidential and the results of the study will be disseminated in such a manner that no

information will be linked to any person's identity. Reports containing findings and a set of recomemdations will be forwarded to the RDHS and the DDHS of the study districts.

d) Conflict of Interest

The investigator declare that there is no conflict of interest

3.6 Training of Research Assistants and Pretesting

Research assistants who can speak and write english and the local dialects (dagaare and Sissali) commonly spoken in the study areas were carefully recruited and a two day training session organized for them on how to conduct interviews before embarking on the field work; the training content included an overview of the project and objectives of the study and interviewing skills. The data collection tools were also reviewed with research assistants to ensure standardization in the way the questions were to be asked. To improve validity, pre-testing of the data collection tools was carried out prior to the actual fieldwork in seven communities under Jirapa namely;Tizza Boi,Tampoe,Jeffiri,Sigri and Nangyiri.CBAs from these communities were not part of the study subjects .The process allowed for any ambiguous questions to be clarified and also gave the investigator an idea of the length of time it would take for the questionnaire to be administered.

Participants in the pilot also gave their opinion on whether or not the length of time was reasonable and also on the user friendliness and applicability of the questionnaire. The questionnaires from the pilot study were entered into the data entry screen and a frequency analysis obtained using SPSS version 18.0 .This assisted in uncovering problems which were likely to arise during data entry and analysis.

3.7 Data collection

Data was collected from 22nd May to 12th July 2013. Eight data collectors' and two supervisors were used for data collection. A structured questionnaire was used to interview

CBAs in their respective homes, the questionnaire included both closed and open ended questions.Questions included background data, training, knowledge and perceptions on malaria and HMM. Others include; drug and logistics availability , challenges and the support they get from the community and the formal health sector in discharging their duties.A verification and observation component was included in the study because some areas such as assessment and management of the sick child and availability and storage of drugs could only be objectively assessed by observing their practices. A checklist for observation was developed based on the training content and the expected practice after training.

Regarding mothers/caregivers and KII with opinion leaders, the data collection tool included the background data,knowledge on causes,symptoms, mode of transmission and prevention of malaria. The questions also explored the health seeking behavior of community members for sick children,the mode of selection of CBAs and their views about the performance of CBAs and the challenges faced by CBAs .Concerning the health workers, the questions elicited their involvement in the HMM implementation process,supervision and support for the CBAs,drug supply and their perceptions of CBA performance.

3.8 Data Management and Analysis

3.8.1Field Editing

The investigator and supervisors personally undertook field visits and cross checked completed questionnaires in the field for completeness,consistency and accuracy. During this process, missing data were identified and research assistants made to go back to collect the missing data. It also provided an opportunity for any other error in the data to be rectified.

3.8.2 Coding and Transcription

All the close-ended questions in the questionnaire were pre-coded whilst the open-ended questions were coded after reviewing the responses and developing a coding manual.

The FGDs were tape-recorded and comprehensive notes taken during the discussions. The tapes were transcribed and content analysis conducted manually.

3.8.3 Data Entry and Cleaning

Quantitative data was entered by two data entry clerks using SPSS, version 18.0. Missing data was carefully considered and accounted for and data cleaning conducted upon completion of data entry.Where there were discrepancies, these were resolved by cross checking with the hard copies of the data capture tools.

3.8.4 Statistical Analysis

Descriptive data analysis was undertaken using the same software,SPSS version 18.0 . Categorical variables were expressed as frequencies and relative frequencies and results presented in tables and graphs.For bi-variate analysis, cross tabulation was undertaken to ascertain the relationship between formal education and knowledge and practices on the correct dose of ACTs for children aged 6-59 months. Significance level of 5% (0.05) was used.

3.8.5 Quality Assurance

The following measures were adopted to ensure data quality:

- The research assistants involved in the data collection had previous experience in data collection methods,they were fluent in english, dagaare and sissali and were trained prior to the field work.
- A field test was done and relevant amendments made to the questionnaire before data collection.
- The investigator and other supervisors supervised the field work, undertook spot checks and also conducted field editing of the data.

CHAPTER FOUR

4.0 RESULTS

4.1 Background Characteristics of Respondents

A total of 384 CBAs, 154 mothers/care givers,13 opinion leaders and 15 health workers were interviewed. The response rate for each category was 100%. Table 2 shows a summary of the sampling profiles of the two districts.

Table 2: Profiles of Jirapa and Lambussie Districts where the study was conducted, 2013

Variable	Jirapa	Lambussie
Sub districts	7	6
Number of communities	137	77
CBAs interviewed	209	175
Mothers/care givers interviewed	77	77
Health Facility in-charges interviewed	7	6
District focal persons interviewed	1	1
Opinion leaders interviewed	7	6
Number of monthly reports reviewed	11	12

4.1.1 Characteristics of Respondents

Mean age of CBAs was 42.71(+/- 9.62) years, with 369 (96%) being females. Of the 384 CBAs interviewed , 371(97%) were married and almost 267(70%) were christians. More than 200(50%) had no formal education. In terms of sources of livelihood, the most dominant occupation was subsistence farming.

Table 3: Discriptive characteristics of CBAs interviewed in Jirapa and Lambussie Districts,2013

	Jirapa (%)	Lambussie N(%)	Overall N(%)
Sex			
Male	0	15(8.6)	4
Female	209(100)	160(91.4)	369 (96)
Age (Years)			
25-39	85(40.7)	71(40.6)	156(41)
40-54	84(40.2)	88(50.3)	172(45)
55-69	40(19.1)	16 (9.1)	56(14)
Occupation			
Farming	158(75.6)	150(85.7)	308(80.2)
Trading	36(17.2)	18(10.3)	54(14.1)
Others	13(6.2)	2(1.1)	15(3.9)
Formal sector	2(1)	5(2.9)	7(1.8)
Marital Status			
Married	208(99.5)	163 (93)	371(96.6)
Single	1(0.5)	8(4.6)	9(2.4)
Divorced	0	2(1.2)	2(0.5)
Separated	0	2 (1.2)	2(0.5)
Religion			
Christian	168(80.4)	99(56.6)	267(69.5)
Muslim	11(5.3)	36(20.6)	47(12.2)
Traditionalist	28(13.4)	39(22.2)	67(17.5)
Others	2(0.9)	1(.6)	3(0.8)
Educational Level			
None	107(51)	93(53)	200(52)
Primary	42(20)	50(28.6)	92(24)
Middle School	31(14.8)	17 (9.7)	48(12.5)
Junior High School	22(10.5)	9(5.2)	31(8.1)
Senior High School	6(2.8)	5(2.9)	11(2.9)
Other	1(0.5)	1(0.6)	2(0.5)

Tables 4 and 5 presents the demographic and socio-economic characteristics of mothers/care givers and opinion leaders.

Table 4: Demographic and Socio-economic characteristics of mothers/care givers in Jirapa and Lambussie Districts, 2013

	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Sex			
Male	1	4	5 (3.2)
Female	76	73	149 (96.8)
Age (Years)			
18-27	22 (29)	28(36)	50(33)
28-37	45(58)	32(42)	77(50)
38-47	10 (13)	15(19)	25(16)
48-57	0	2(3)	2(1.3)
58-67	0	0	0
Occupation			
Farming	63 (82)	59 (76.6)	122 (79.2)
Trading	11(14.2)	11(14.3)	22 (14.3)
Others	2(2.6)	4 (5.2)	6(3.9)
Formal sector	1(1.2)	3(3.9)	4 (2.6)
Marital Status			
Married	76 (98.7)	71 (92.2)	147 (95.5)
Single	1(1.3)	6 (7.8)	7 (4.5)
Divorced	0	0	0
Separated	0	0	0
Religion			
Christian	65 (84.4)	51 (66.2)	116 (75.3)
Muslim	5 (6.5)	19 (24.7)	24 (15.6)
Traditionalist	5 (6.5)	7 (9.1)	12 (7.8)
Others	2 (2.6)	0	2 (1.3)
Educational Level			
None	37 (48)	37 (48)	74 (48)
Primary	20 (26)	18 (23)	38(24.7)
Middle School	2(3)	3(4)	5(3.2)
Junior High School	16(21)	13(17)	29 (19)
Senior High School	1(1)	2 (3)	3(1.9)
Other	1(1)	4(5)	5(3.2)

Table 5: Demographic and socio-economic characteristics of opinion leaders in Jirapa and Lambussie Districts, 2013

	Jirapa (N%)	Lambussie (%)	Overall (%)
Sex			
Male	7(100)	5 (83.3)	12 (92.3)
Female	0	1(16.7)	1(7.7)
Age (Years)			
20-30	1(14.2)	0	1(7.7)
31-40	3 (42.9)	1(16.7)	4(30.8)
51-60	0	2(33.3)	2(15.4)
60+	3(42.9)	3(50)	6(46.1)
58-67			
Occupation			
Farming	4(57.1)	4(66.7)	8(61.5)
Trading	0	0	0
Others	2(28.6)	0	2(15.4)
Formal sector	1(14.3)	2(33.3)	3(23.1)
Marital Status			
Married	7(100)	6(100)	13(100)
Single	0	0	0
Divorced	0	0	0
Separated	0	0	0
Religion			
Christian	5 (71.4)	3(50)	8(61.5)
Muslim	2(28.6)	3(50)	5(38.5)
Traditionalist	0	0	0
Others	0	0	0
Educational Level			
None	0	2	2(15.4)
Primary	2	0	2(15.4)
Middle School	2	3	5(38.4)
Junior High School	0	0	0
Senior High School	2	0	2(15.4)
Other	1	1	2(15.4)

4.2 CBA Training

In all, 382(99.5%) said they were trained prior to the implementation of HMM. All (100%) admitted that the training covered all the topics in the CBA training content and more than half 220(57.3%) said the training was conducted for the recommended five days.

Table 6:Training details of CBAs in Jirapa and Lambussie Districts, 2013

	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Training before HMM			
Yes	207(99)	175(100)	382(99.5)
No	2(1)	0	2(0.5)
Duration of training			
Less than 2 days	4(1.9)	6(3.4)	10(2.6)
3-4 days	41(19.6)	113(64.6)	154(40.1)
5 days	164(78.5)	56(32)	220(57.3)
Sufficiency of training			
Yes	206(98.6)	167(95.4)	373(97.1)
No	3(1.4)	8(4.6)	11(2.9)
Benefitted from updates			
Yes	202(96.6)	172(98.3)	374(97.4)
No	7(3.4)	3(1.7)	10(2.6)

4.3 Knowledge and Perceptions of CBAs in HMM

4.3.1 Causes and symptoms of malaria

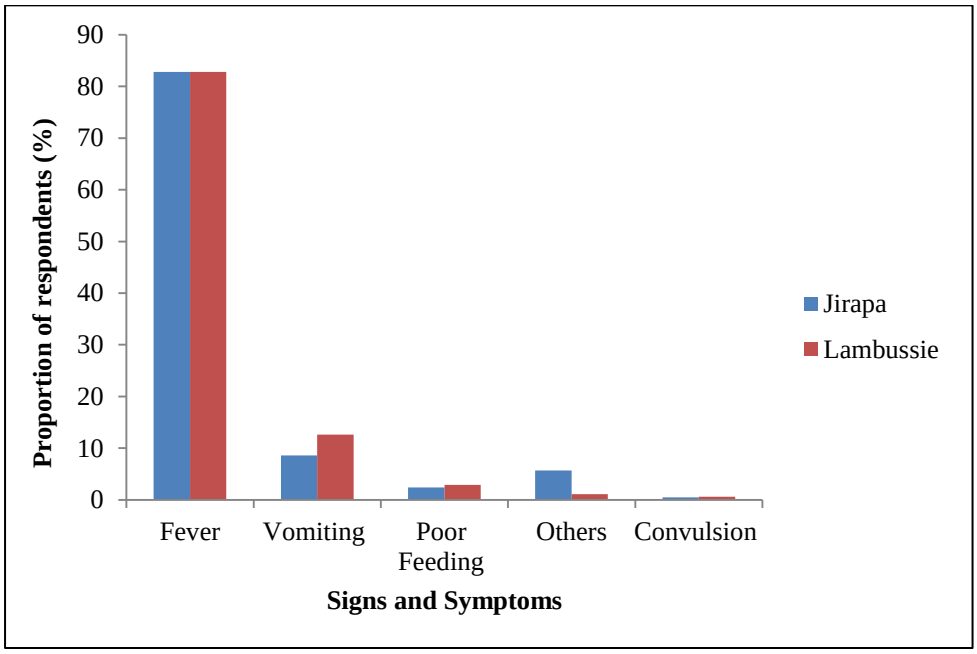
Majority of CBAs, 352 (91.7%) knew that mosquitoes transmit malaria.

Table 7: Knowledge of CBAs in Jirapa and Lambussie Districts on the cause of malaria, 2013

Cause of malaria	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Mosquito bites	198 (94.7)	154(88)	352 (91.7)
Living near stagnant water	6(3)	20 (11.4)	26(6.8)
Drinking dirty water	2(0.9)	0	2(0.5)
Don't know	1(0.5)	1(0.6)	2 (0.5)
Others	2(0.9)	0	2 (0.5)

Three hundred and eighteen (82.8%) knew that fever is the most common symptom of malaria in children (Figure 3).

Figure 3: Knowledge of CBAs in Jirapa and Lambussie Districts on signs and symptoms of malaria, 2013



Three hundred and eighty-three (99.7%) were of the view that the HMM strategy is highly beneficial. Some reasons cited for their satisfaction include; reduction in malaria related complications such as convulsions and a reduction in childhood deaths. The following statement describes the views of a CBA in Jirapa: **"***HMM is very good because I treat my own children with the ACTs when they have malaria*".

4.3.2 Assessing the sick child

Paramount among the responses given by CBAs as to what they will do, if a sick child is brought to them were; take verbal history from mothers/care givers, examine child for fever, sponge child with fever and observe for danger signs. To sum up, 42(11%) mentioned four key assessment areas and 153(40%) mentioned three which was good;127(33%) mentioned two and 58(15%) mentioned one which was rated as poor knowledge.

Others, 4(1%) said they offer seats to care givers and examine the palms of the child for anemia. A higher proportion of CBAs, 108(62%) in Lambussie were able to mention four and three key assessment areas compared to 88 (42%) in Jirapa.

4.3.3 Knowledge of dosage of ACTs

Less than 50% of CBAs knew the correct dose of A/A for children 6-11months old.

Table 8: Knowledge of CBAs on correct dosage of A/A for children 6- 11months in Jirapa and Lambussie Districts, 2013

Dose	Jirapa N(%)	Lambussie N(%)	Overall N (%)
Correct dose	126 (60.3)	45 (25.7)	171 (44.5)
Wrong dose	83(39.7)	130 (74.3)	213(55.5)

Table 9: Association between formal education and knowledge of the correct dosage of A/A for children 6- 11months , 2013

	Knows correct dosage	Does not know correct dosage	POR(95%CI)	P-value
Formal Education				
Yes	82	119	0.76 (0.50 - 1.14)	0.18
No	87	96		

The results in table 10 show that a higher proportion 269(70%) knew the correct dosage of A/A for children aged 12-59 months old.

Table 10: Knowledge of CBAs on correct dosage of A/A for children aged 12-59 months in Jirapa and Lambussie Districts, 2013

Dose	Jirapa N (%)	Lambussie N (%)	Overall N (%)
Correct dose	168(80.4)	101(57.7)	269 (70.1)
Wrong dose	41(19.6)	74(42.3)	115 (29.9)

Table 11: Association between formal education and knowledge of the correct dosage of A/A for children aged 12- 59 months ,2013

Formal Education	Knows correct dosage	Does not know correct dosage	POR(95%CI)	P-value
Yes	130	71	0.67 (0.43 - 1.04)	0.07
No	134	49		

From the bi-variate analysis, residing in Jirapa was positively associated with knowledge on the correct dose of A/A for children aged 6-11 months old as shown in Table 12.

Table 12: Association between CBA District of origin and knowledge of the right dosage of A/A for children 6-11 months old in Jirapa and Lambussie Districts, 2013

	Knows Correct dosage	Does not know correct dosage	POR (95%CI)	P-Value
District				
Jirapa	126	83	4.39(2.83-6.79)	0.00
Lambussie	45	130		

4.3.4 Ensuring Treatment Compliance

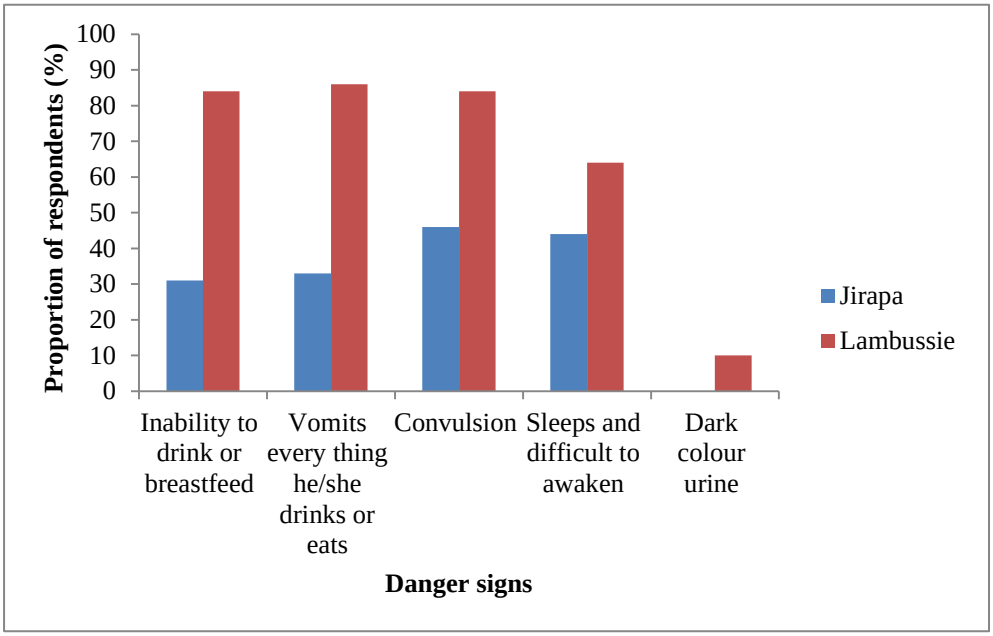
When asked what they do to ensure treatment compliance by mothers/care givers; 149 (71%) of CBAs in Jirapa said they counsel caregivers, 131(63%) said they make follow ups and 115(55%) said they give first dose directly observed. In Lambussie 113(64%) reported that they counsel caregivers, 136(78%) said they make follow ups, whilst 91(52%) said they give first dose directly observed as a way of ensuring treatment compliance.

4.3.5 Knowledge on Danger Signs and Referrals

One hundred and seven (28%) and 113(29%) listed 3 and 4 dangers signs respectively, which is measured as good knowledge and 71(18%) and 113 (29%) listed one

and two respectively indicating poor knowledge.Three percent said they did not know any danger sign. Knowledge of danger signs however varied across districts, with a higher proportion 82 (47%) in Lambussie being able to mention 4 signs compared to 20 (9.5%) in Jirapa.

Figure 4: CBAsknowledge on danger signs in Jirapa and LambussieDistricts, 2013



Overall, 353 (92%) said they refer children with danger signs to health facilities, but could not mention the number of children referred in the last six months. Thirty- Seven percent said they give pre-referral treatment to children above 6 months before referral, 240(62.5%) said they refer straight away and 0.5% said they keep the child and treat. A significant proportion 377(98.2%) admitted that care givers comply with referrals and 323 (84.1%) said they receive feedback.

4.3.6 Knowledge of ways to prevent Malaria

Out of the 384 CBAs interviewed, 91% (190/209) in Jirapa said they educate caregivers on the use of Insecticide Treated Nets (ITNs) for malaria prevention, 108(52%) said they educate them on environmental cleanliness and 91(43.5%) talked about wearing of

protective clothing. In the case of Lambussie, a higher proportion 164(94%) said they educate caregivers on the use of ITNs, 139(79%) educate them on environmental cleanliness and 105(60%) educate them on wearing protective clothing .

4.4 Practices of CBAs in HMM

For the purpose of this study, the areas observed were; drug availability and storage and expiry dates. Others include logistics availability and treatment of children with malaria.

4.4.1 Drug Availability and Storage

In terms of drug availability, 153(73%) in Jirapa and 137 (78%) in Lambussie said they had stock out in the last three months. At the time of the interview only 66 (31.6%) of CBAs in Jirapa had ACTs that were not expired, 2(0.9%) had expired ACTs and the rest had complete stock outs. All the CBAs in Lambussie had run out of drugs at the time of the interview. Per the records at the district level, Lambussie got their last consignment of ACTs in July 2011 and Jirapa in August 2012. Some CBAs used Amoxillin tablets to treat for malaria in place of ACTs. More than half the CBAs 259(67.4%) cited non availability of ACTs at the district and health facility stores as the main reason for stock outs, 8.1% said they failed to make requisitions and 94(24.5%) said they were not getting clients, therefore needless making request for drugs. All the CBAs with drugs stored them in kit boxes.

4.4.2 Logistics Availability

Most of the logistics supplied to CBAs were in a bad state. Table 13 presents the availability and the state of some selected logistics.

Table 13: Availability and condition of CBAs logistics in Jirapa and LambussieDistricts, 2013

Item	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Kit boxes			
Available in good condition	157(75.1)	144(82.3)	275(71.6)
Available in poor condition	47(22.5)	22(12.6)	69 (18)
Not available	5(2.4)	9(5.1)	40 (10.4)
IE&C materials			
Available in good condition	110(52.6)	111(63.4)	221(57.5)
Available in poor condition	98(46.9)	64(36.6)	162(42.2)
Not available	1(0.5)	0	1(0.3)
Raincoats			
Available in good condition	49(23.4)	17(9.7)	66 (17.2)
Available in poor condition	105(50.3)	113(64.6)	218 (56.8)
Not available	55(26.3)	45(25.7)	100 (26)
Wellington boots			
Available in good condition	126(60.3)	52(29.7)	178 (46.4)
Available in poor condition	62(29.7)	84(48)	146(38)
Not available	21(10)	39(22.3)	60(15.6)
Bicycles			
Available in good condition	29(13.9)	11(6.3)	40(10.4)
Available in poor condition	174(83.2)	154(88)	328(85.4)
Not available	6(2.9)	10(5.7)	16(4.2)

4.4.3 Management of Childhood Malaria

Only 37 CBAs in Jirapa were observed offering services at the time of the interviews. CBAs in Lambussie had all run out of ACTs. Of the 37 CBAs observed, 31 (83.8%) asked if the child has fever and 33(89.2%) personally touched the child for the presence of fever. Less than 50% asked for other symptoms of malaria.

Table 14: Assessment of sick children by CBAs in Jirapa district, 2013

Indicator (N=37)	Yes	No
Welcomed mothers	18 (48.6%)	19 (51.4%)
Asked for child's name	4(10.8%)	33(89.2%)
Asked for presence of fever	31(83.8%)	6 (16.2%)
Touched child for fever	33 (89.2%)	4 (10.8%)
Asked for other symptoms of malaria	17 (45.9%)	20 (54.1%)

4.4.3.1 Giving age appropriate dose of ACTs

The overall proportion of CBAs giving the correct age appropriate dosage of ACTs was 32(86.5%),(95% CI: 74.2 –97.7). Eight (88.9%) gave the correct dosage to children aged 6-11 months and 24(85.7%) gave correct dosage to children aged 12-59 months.

Table 15:Proportion of CBAs observed giving age appropriate dose of ACTs to children aged 6-59 months in Jirapa District, 2013

Age and dose	Frequency	Percent
6-11 months		
Correct dose	8	88.9
Wrong dose	1	11.1
12-59 months		
Correct dose	24	85.7
Wrong dose	4	14.3
Overall N(%)		
Correct dose	32	86.5
Wrong dose	5	13.5

There was virtually no relationship between formal education and giving the correct dosage of ACTs to children aged 6-59 months (Table 16). Seventy-three percent (27/37) counselled mothers/care givers on the correct dosage and the need to complete the specified course of treatment.

Table 16: Association between formal education and giving the correct dose of ACTs for children aged 6-59 months in Jirapa District, 2013

	Knows correct dose	Doesnot know correct dose	P-value
Formal Education			
Yes	15	0	0.057
No	17	5	

4.4.3.2 Education on Malaria Prevention

Only 6 (16.2 %) out of the 37 CBAs educated mothers/care givers on prevention of malaria. Out of this number, 5(83%) educated them on the use of Insecticide Treated Nets (ITNs) and 1(17%) talked about wearing of protective clothing.

4.5 Records Review

Monthly reports for the year 2012 were retrieved from CBAs, health facilities and DHIMS. Data collected were; number of reports submitted by CBAs, number of children treated and records of IE&C activities carried out. Others include; number of supervisory visits received and the number of children referred by CBAs to health facilities.

4.5.1 Utilisation of CBA Services

Of the 12,128 children who reported with malaria in the year 2012, only 5,343 (44%) were seen by CBAs. Number of children refered were higher in Lambussie than Jirapa.

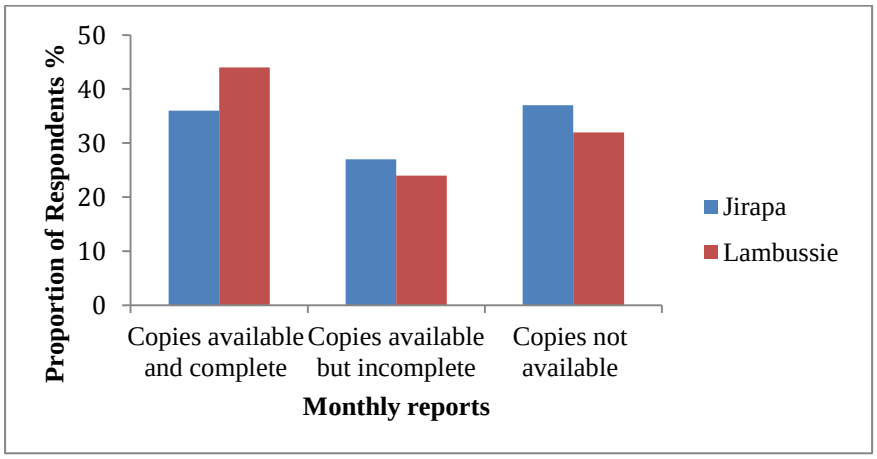
Table 17: Children treated and referred by CBAs in Jirapa and LambussieDistricts in 2012

Jirapa District				Lambussie District		
Month	No. of children 6-11 months receiving treatment	No. of children 12-59 months receiving treatment	No. of referrals	No. of children 6-11 months receiving treatment	No. of children 12-5months receiving treatment	No. of referrals
January	71	381	2	43	209	0
February	75	362	7	25	202	0
March	37	354	10	46	230	18
April	28	257	4	15	201	0
May	51	228	4	21	168	5
June	39	457	6	16	199	5
July	0	0	0	16	160	17
August	17	376	0	15	82	17
September	49	556	0	34	67	2
October	20	125	0	6	11	85
November	0	48	0	14	13	2
December	0	4	0	5	10	5
Total	387	3148	33	256	1552	156

4.5.2 Documentation and Reporting

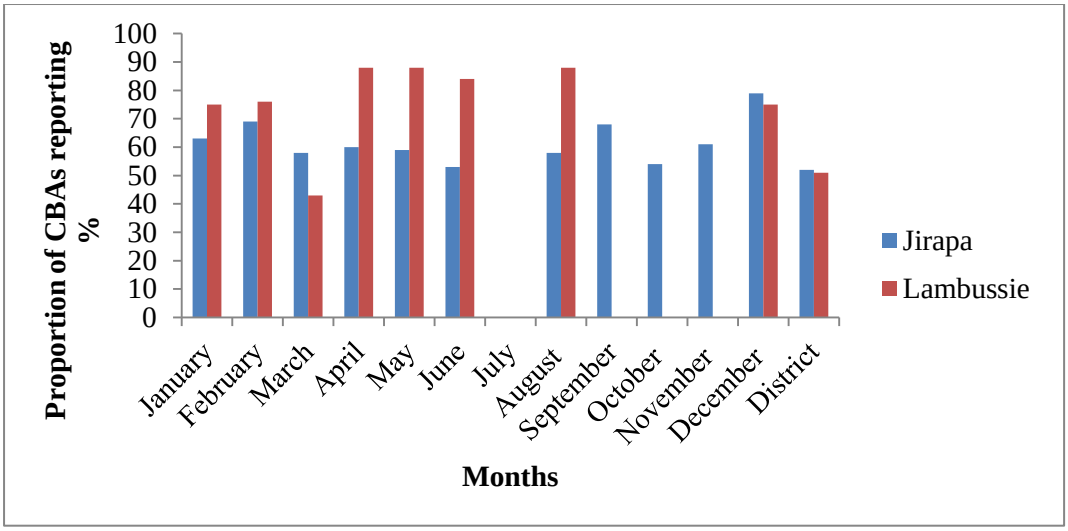
Seventy-six (36%) CBAs in Jirapa and 77(44%) in Lambussie had copies of complete montly reports.

Figure 5: Availability and completeness of CBAs reports in Jirapa and Lambussie Districts for 2012



Records from the facility and district offices indicated low reporting. Monthly reporting of CBAs ranged between 53% to 79% in Jirapa and 43% to 88% in Lambussie as shown in figure 6. In Jirapa, reports for the month of July could not be obtained whereas in the case of Lambussie, reports for the months of May, July, September, October and November were incomplete.

Figure 6: Reporting rates of CBAs in Jirapa and LambussieDistrictsfor 2012



4.5.3 IE&C Activities Carried Out

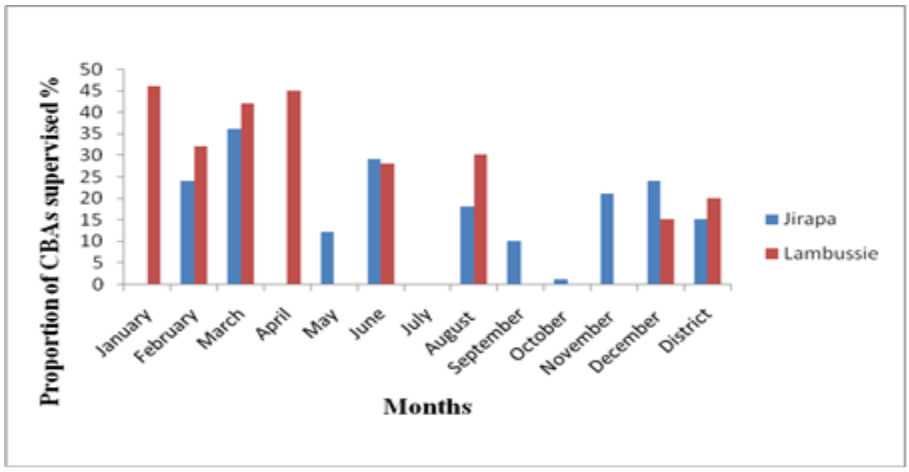
Twenty-five percent carried out IE&C activities with records available, 245(63.8%) admitted verbally that they carried out the activities but had no records and 42(10.9%) did not carry out any IE&C activities.

4.6 Support Systems

4.6.1 Monitoring and Supervision

The frequency of supervision varied across districts ranging from 0% to 36% in Jirapa and 15.1% to 49% in Lambussie.

Figure 7: Proportion of CBAs supervised in Jirapa and Lambussie Districts in 2012



4.6.2 Motivation

In total, 228 (59.4%) reported that they were motivated; 119(68%) in Lambussie and 109(52%) in Jirapa. Out of these numbers 54(49%) in Jirapa and 74(62%) in Lambussie said they were given transport money during meetings at the health facility. Others said they were motivated by the value placed on their activities, in kind and through awards .

4.7.3 Attrition of CBAs

On the whole, 54(14%) said they knew CBAs who had dropped out and the main reason for the attrition is the lack of motivation. Some responses as quoted were, "*they left because there is no volunteerisim anywhere in the world again*" (CBA in Jirapa), "*No pay, only insults from community members*"(CBA in Lambussie) and another CBA in Jirapa summed it by saying "*No free government work so I cannot be doing government work for free*". No district could provide updated information on the attrition of CBAs.

4.8 Perception of Community Members on Performance of CBAs

Seventy-one (46%) of mothers/caregivers did not know how the CBAs were selected. Table 18 shows the responses provided by mothers/caregivers.

Table 18: Responses from mothers/care givers in Jirapa and Lambussie Districts, 2013

Indicator	Jirapa N(%)	Lambussie N(%)	Overall N(%)
How were CBAs selected			
Selected by chiefs/opinion leaders	16(20.8)	27(35)	43(27.9)
Selected by health workers	10(13)	1(1.3)	11(7.1)
Selected democratically	9(11.7)	20(26)	29(19)
Don't know	42(54.5)	29(37.7)	71(46)
Who treats sick children			
CBA	52(67.5)	68(88.3)	120 (77.9)
Health worker	21(27.3)	9(11.7)	30(19.5)
Don't Know	2(2.6)	0	2(1.3)
Herbalist	1(1.3)	0	1(0.6)
Traditional Birth Attendant	1(1.6)	0	1(0.6)
Are CBAs services accessible			
Yes	72(93.5)	72(93.5)	144(94)
No	0	5(6.5)	5(3)
Don't Know	5(6.5)	0	5(3)
Have you visited a CBA before			
Yes	57(74)	59(77)	116(75.3)
No	20(26)	18(23)	38(24.7)

Among the 116 (75.3%) mothers/caregivers who utilized the services of CBAs, 15(12.9%) reported that they checked for danger signs and only 9(7.7%) said they were educated on malaria prevention (Table 19).

Table 19: Responses of mothers/care givers on actions taken by CBAs for sick children in Jirapa and Lambussie Districts, 2013

Action Taken	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Took verbal history	50(87.7)	45(76.3)	95(81.8)
Assessed child before giving treatment	42(73.7)	44(74.5)	86(74.1)
Counselled on treatment compliance	34(59.6)	32(54.2)	66(56.9)
Sponged child to reduce fever	24(42.1)	13(22)	37(31.8)
Observed child for danger signs	5(8.7)	10(16.9)	15(12.9)
Educated caregiver on malaria prevention	1(1.7)	8(13.5)	9(7.7)
Examined child for pallor	4(7.0)	2(3.4)	6(5.2)

Ten (76.9%) of opinion leaders indicated that the selection of CBAs was done by chiefs and opinion leaders (Table 22).

Table 20: Responses of Opinion leaders in Jirapa and Lambussie Districts,2013

Indicator	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Selection of CBAs			
Selected by chiefs/opinion leaders	4(57.1)	6(100)	10 (76.9)
Selected by health workers	1(14.3)	0	1(7.7)
Selected democratically	1(14.3)	0	1(7.7)
Don't know	1(14.3)	0	1(7.7)
Who treats sick children			
CBA	5(71.4)	6	11(84.6)
Health worker	2(28.6)	0	2(15.4)
Don't Know	0	0	0
Herbalist	0	0	0
Traditional Birth Attendant	0	0	0
Are CBAs services accessible			
Yes	6(85.7)	6(100)	12(92.3)
No	1(14.3)	0	1(7.7)
Don't Know	0	0	0
Have you visited a CBA before			
Yes	6(85.7)	6 (100)	12(92.3)
No	1(14.3)	0	1(7.7)

A sizeable number 126(81.8%) of mothers/caregivers said they did not know the poor performing areas of CBAs.

Table 21:Responses of mothers/care givers on good and poor performing areas of CBAs in Jirapa and Lambussie Districts, 2013

Activity	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Activities performed well			
Management of sick children	56(72.7)	8(62.0)	104(67.5)
Health promotion activities	7(9.1)	20(26.0)	27(17.5)
Home visits	9(11.7)	4(5.0)	13(8)
Don't Know	5(6.5)	6(7.0)	11(7)
Activities not performed well			
Don't Know	74(96.1)	52(67.5)	126(81.8)
Disease Surveillance	0	5(6.5)	5(3.2)
Home Visits	1(1.3)	13(16.9)	14(9.1)
Health Promotion activities	0	1(1.3)	1(0.7)
Management of sick children	2(2.6)	6(7.8)	8(5.2)

Some opinon leaders were of the view that CBAs are not performing well in home visits and management of sick children

Table 22:Responses of opinion leaders on good and poor performing areas of CBAs in Jirapa and Lambussie Districts, 2013

Responses	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Activities performed well			
Management of sick children	6(85.7)	6 (100)	12(92.3)
Health promotion activities	0	0	0
Home visits	1(14.3)	0	1(7.7)
Don't Know	0	0	0
Activities not performed well			
Don't Know	0	0	0
Disease Surveillance	0	0	0
Home Visits	6(85.7)	4(66.7)	10(76.9)
Health Promotion activities	0	0	0
Management of sick children	1(14.3)	2(33.3)	3(23.1)

Based on the scale of "very good" and "good" as highly rated positive perceptions and "fair" and "poor" as highly negative perceptions about the performance of CBAs; 31(20.1%) of mothers/caregivers interviewed rated CBAs as "very good" and 109(70.8%) rated them as "good".

Table 23: Views of mothers/caregivers on the performance of CBAs in Jirapa and Lambussie Districts, 2013

Rating	Jirapa (N%)	Lambussie N (%)	Overall N (%)
Very good	8 (10.4)	23(29.9)	31(20.1)
Good	63(81.8)	46(59.7)	109(70.8)
Fair	6(7.8)	8(10.4)	14(9.1)

Only one opinion leader had negative perceptions about the performance of CBAs

Table 24: Views of Opinion Leaders on the performance of CBAs in Jirapa and Lambussie Districts, 2013

Ratings	Jirapa N(%)	Lambussie N(%)	Overall N(%)
Very good	3(42.9)	1(16.7)	4(30.8)
Good	3(42.9)	5(83.3)	8(61.5)
Fair	1(14.2)	0	1(7.7)

On the contrary, responses from FGDs with mothers/caregivers indicate that CBAs were democratically selected. Comments from the participants affirmed that CBAs treat most sick children in the community and their services are accessible. They added that the first point of call with a sick child is the CBA. However, they are sometimes compelled to go straight to a health facility because of proximity or also because of the perception that health workers are better trained. "*The nurses check our childrens' temperature and they make them stand on a scale* " FGD women of Lambussie, "*The nurses give our children*

paracetamol syrup to mange the fever,but the CBAs do not have the syrup" FGD women in Jirapa.

Whereas, mothers/caregivers and opinion leaders reported that CBAs are performing well in the management of sick children, participants at the FGDs are of the view that they perform well in community education on malaria prevention. Analysis of the FGDs also demonstrated that CBA services are utilized by mothers/caregivers and they were satisfied with the treatment received. It was however reported by a mother from Lambussie as quoted, "*we are happy with their services but there are instances when CBAs displace their frustrations on us because they do not get any thing from us or from the health workers*". Another respondent in Jirapa said "*they are usually unhappy and will insult you when you delay in bringing your sick child or when you do not follow their treatment instructions*. Mothers/caregivers complained about the lack of ACTs.

4.8.2 Perception of Health Workers on Performance of CBAs

Very few 4(31%) facility in-charges interviewed were in their current positions at the inception of the HMM programme, 9(69%) have been in their current positions for about 1-2 years. The two district focal persons interviewed have also been coordinating the programme for less than 5 years.

Seventy-seven percent (10/13) of facility in-charges said most CBAs are doing extremely well and are very helpful because they reduce their work load. They added that some CBAs support health staff to mobilise mothers for child welfare services and others bring pregnant women for antenatal care. On the other hand, 2(15%) said their performance was satisfactory and 1(8%) said their performance was poor and they are not commited.

The district focal persons indicated that majority of CBAs are doing well and they are motivated to work because of the improved health status of children in their respective communities, but with the increasing number of CHPS compounds, there has been low

utilization of their services.

4.9 Challenges of CBAs

Majority of CBAs 322 (83.8%) and 346(90.1%) reported broken down bicycles and none replenishment of logistics as barriers to performance respectively. Others cited the lack of motivation and poor recognition by community members. Almost 90% (344/384) complained about the insults received from some community members and added that they are constantly accussed of receiving some form of renumeration from the formal health sector, which is untrue. As a result, they receive very little support from community members. CBAs also lamented on their inability to work on their farms during the farming season thus contributing to the vicious cycle of poverty. Inaccessible roads and adults demanding for treatment were not left out. A sizeable proportion 196(51%) complained of their inability to read and write resulting in low reporting, as one CBA in Jirapa lamented "*I can not afford to continue buying pito (local alcoholic beverage) for the person who helps me to write my reports because I can not read and write"*.Other comments were; "*I have problems with my family because i am not paid but i am committed*" (CBA in Lambussie) and " *mothers prefer going to the hospital because they say we are not nurses*"(CBA in Jirapa). Aside these challenges, the lack of supervisors support and conflicts with some health staff were also enumerated. Irregular supply of ACTs was also mentioned as a significant barrier to their performance.

Responses from the FGDs and KII were not too different from what was reported by the CBAs. Shortage of drugs, lack of motivation and poor recognition and support for CBAs were enumerated as barriers to performance.In the same way, health workers complained about the lack of motivation for CBAs and funds for maintenance of their bicycles resulting in frequent breakdowns thus affecting their performance. Health workers added that CBAs are unable to concerntrate on their farm work due to the nature of their job,yet they are not

given any motivation leading to low commitment " *I pity the CBAs,because they are not given any motivation,but they have to work and also submit reports","any way they are doing well but some of the CBAs misuse their bicycles and we have seized some of them and packed them in the facility"(Health Facility in charges in Jirapa)*

4.9.1 Strategies for Sustainability

Suggestions made by mothers/caregivers for sustaining the programme were; provision of funds for maintainance of CBAs bicycles or the provision of monthly allowances. Other suggestions included; regular supply of ACTs and paracetamol syrup or tablets for CBAs to manage children with fever. Most health workers placed emphasis on regular updates to sustain the competence of CBAs,institute annual awards for hard working CBAs and payment of their health insurance premiums. The health workers also suggested that HMM should be implemented in areas without CHPS compounds to reduce the huge number of CBAs in the system which makes it extremely difficult for the formal health sector to institute any sustainable motivational package.

CHAPTER FIVE

5.0 DISCUSSION

In this study we assessed the knowledge and performance of CBAs on HMM for children under five years and the perception of community members and health workers about the services provided by CBAs in Jirapa and Lambussie districts. One of the foremost concerns in the region is how to ensure a high level of performance by CBAs to attain the programme objectives.

Majority of the CBAs being females is not unexpected as the criteria for selection gave prominence to women but preferably literate women. A similar observation was made in Uganda where the bulk (62.0%) of the distributors were women with most of them attaining primary-level education (WHO/TDR 2007). Again the occupational distribution of the respondents significantly reflects the generality of occupational distribution of the region at large where majority are engaged in subsistence agriculture. This phenomenon in itself creates seasonal barriers to accessing health care given the fact that households are virtually without any income during the lean season.

The study explored concerns regarding CBA development with particular focus on knowledge on malaria and assessing sick children and treatment of malaria. Our findings revealed that a high proportion of CBAs had access to pre -service trainings and updates, with most of them acknowledging that the training covered all the topics in the CBA training content. Most of the CBAs also admitted that the training was sufficient for them to gain adequate knowledge and skills. This is highly commendable. The contents of the training include; causes, symptoms and prevention of malaria, assessing and classifying fevers, caring for the sick child and identifying danger signs and referral. The others are; health education on malaria prevention, documentation and reporting and drugs and supplies management.

Training is central to most approaches (WHO, 2005a) and selected CBAs must be given the requisite knowledge and skills to enable them deliver high-quality care. Trainings should also take the recommended number of days considering that more than 50% of the CBAs had no formal education and may require several days of training to make a significant difference. Moreover, it is believed that effective training facilitates learning and knowledge acquisition, which in tend leads to better practices. Pre-service training should not also be regarded as the end of training but as the beginning, hence the need for regular updates to sustain the competencies and quality of case management by CBAs. This notwithstanding, a few CBAs admitted that, they were not trained and that they took over from relatives or friends who had either left the job or died. This finding is quite disturbing and requires urgent action in the form of training, recognizing the fact that HMM involves the administration of drugs which can be harmful to human life, if not administered correctly.

Key among the findings is the high knowledge of CBAs on the cause and the most common symptom of malaria in children which is fever; it ought to be borne in mind that fever is a potential indicator of malaria in children, it is therefore imperative for every CBA to recognize fever for prompt and appropriate action since majority of children who die from malaria, do so within 48 hours of onset of illness (WHO, 2005a). On the other hand, knowledge on other classical symptoms of uncomplicated malaria such as malaise, vomiting and loss of appetite varied considerably among CBAs. Knowledge on general symptoms of malaria is not only a prerequisite for quality of care but also crucial for the reduction of health cost, not only to the client but also to the health institution. This gap also featured in their knowledge of danger signs of complicated malaria. Only 57% CBAs could mention 3-4 danger signs and very few 15(12.9%) checked for danger signs in sick children. This is similar to the findings in a study conducted by Fapohunda et al., 2004 where counseling on danger signs was rarely given.

CBAs are mandated to manage only uncomplicated malaria in children 6-59 months. It is therefore crucial for every practicing CBA to know the danger signs of complicated malaria for prompt referral. Delaying a few hours for treatment of children with complicated malaria could mean life or death. It is also reported that distributors are sometimes compelled to treat severely ill children because of the insistence of some mothers/caregivers. (Meek et al., 2005). This practice could be dangerous, because if a child dies as a result of the mother's insistence on management at the community level when the child needed to be referred to a health facility, the distributor's credibility could be seriously undermined (WHO/TDR, 2007). CBAs should therefore be given regular updates and made aware of the dangers associated with delays or else there will be the tendency to keep children needing urgent referral which could result in needless deaths. Also, with the increasing emphasis on cost containment in health care provision it has become more important than ever for CHWs and health care providers to adhere to simple guidelines to minimize cost to individuals and their families.

The study also found that majority of CBAs interviewed were more conversant with the dosage of A/A for children aged 12-59 months compared to children aged 6-11 months.The inherent danger is that this age group could be under dosed thus promoting drug resistance or over dosed which could be life-threatening.The national policy (Ministry of Health[MOH],2009) recommends ACTs as the first line drug of choice for the treatment of uncomplicated malaria, but it was noted that a few CBAs gave amoxicillin tablets for treatment of malaria instead of ACTs, which has to be given serious attention.

An association was sought between formal education and knowledge on the age appropriate dose of ACTs.There was no significant difference in terms of formal education and knowledge on age appropriate dose. This could mean that formal education may not be a strong criterion for selection as a CBA; however, other sources such as non-formal education

and the effectiveness of the trainings might have contributed significantly to the improved knowledge. CBAs in Jirapa district were likely (p-value 0.00) to have more knowledge on the correct dose of ACTs for children aged 6-59 months from the bi-variate analysis.

Follow up of clients by CBAs as part of measures to enhance treatment compliance was quite satisfactory, although this could be improved with regular monthly or quarterly meetings to remind CBAs of the importance of follow ups. Such meetings could also serve as a platform for sharing ideas and experiences. With the rising trend of treatment failure and resistance to anti-malarial drugs, it is important to guarantee effective use and compliance to treatment regimes, thus counseling and follow ups for treatment compliance are both essential to prevent treatment failures and drug resistance. Experience from the CHPS concept shows that home visits and follow-ups leadsto treatment compliance for most home based care. It also provides an opportunity for the health care provider to educate the family and community members (personal communication).

The abysmal performance of CBAs in terms of the proportion of children treated from the records reviewed is quite disturbing. This finding substantiates the results of the GDHS, 2008 and the assessment by UNICEF in 2010 which indicated that less than 60% of children had prompt access to anti-malarial drugs in the region. For some of the CBAs who performed poorly, family responsibilities, lack of motivation and low value placed on their activities by community members were some of the reasons cited. It was also observed that CBAs in the urban areas with improved access to health facilities and those in communities with CHPS were under-utilized. It has been demonstrated that community based health interventions are more successful in rural than in urban areas. A typical example is the mass drug distribution for lymphatic filariasis in Ghana, where the programme in urban areas was seriously affected (TDR**,** 2003) because of migration and the busy schedules of formal health workers.

CHPS is a strategy where CHNs are given additional training and deployed to communities especially the rural and deprived areas to provide "close to client" services. At the initial stages of the HMM implementation in 2006, the CHPS zones were few in the region, however with the increasing numbers, where most rural communities now have trained CHNs, mothers/care givers prefer accessing services from nurses because of the perception that they are better trained. It is therefore not surprising that CBAs operating in CHPS zones are under utilized in spite of the increased awareness of their services. It may be helpful to come out with innovative ways such a major decisive shift of CBA services from communities with CHPS to areas without CHPS. Demand for services could be also influenced by the perceived performance of the CBA or knowledge of mothers/caregivers on the symptoms of malaria.

The erratic supply of ACTs as a major challenge raises concerns and the need to re-visit the controversy as to whether to charge a minimal fee for ACTs or allow mothers/caregivers to access CBA services using their National Health Insurance(NHIS) cards to facilitate regular drug procurement and supply.This finding is similar to reports from other countries that adopted ACTs for HMM (Noor, Zurovac, Hay, Ochola&Snow, 2003; Nosten & White, 2007). Lack of drugs was also identified as a threat to the sustainability of HMM in Nigeria (Ajayi ,Jegede , Falade , 2012).

Shortage of drugs could be a result of poor logistics management at the region, district and health facility level. Moreover the bureaucracies and the cumbersome procurement processes at the national level could cause undue delays. Health commodity management requires that health providers establish consumption patterns and start the process of requisition when they reach the minimum stock levels to avoid complete stock out.

Although majority of CBAs had IE&C materials, the proportion that carried out IE&C activities in their respective communities was low. Appropriate dissemination of information

to community members and patient education can improve health-seeking behaviours, treatment compliance and treatment outcomes (WHO, 2005). In the UWR, CBA's role relates to communication and awareness creation about prevention and treatment through community meetings, durbars and home visits using the IE&C materials provided. It is therefore surprising to note the ostensibly disconnect between the proportion of CBAs who knew the cause of malaria and the percentage who actually educated mothers/care givers on malaria prevention especially on the use of ITNs.

Most CBAs refer cases to health facilities, which is a good practice; however stock out of drugs being a reason for referral is highly unacceptable. Shortage of drugs does not only result in interrupted treatment but also damages the reputation of the health sector, thereby undermining all the efforts associated with the programme. Caregivers could also lose confidence in the strategy and resort to alternate sources of care, which could be detrimental to the health of their children. Stock out of medicines was found to be the main reason for referral in northern Uganda (Uganda Ministry of Health, 2009).

The high rate of referrals in Lambussie is not surprising because all the CBAs had run out of drugs.The overall proportion of CBAs who received feedback on referred cases from health facilities was impressive, which is really an important and positive finding. However, the major sources of feedback, which is mainly from family members and during their routine home visits is not good enough. Feedback was mainly obtained from the health staff during meetings in Uganda (Uganda Ministry of Health, 2009). CBAs are partners in health care delivery and it is only fair that health workers give feedback on referred cases to boost their morale and encourage them to work better. Feedback also encourages them to become more efficient and committed to their roles.

Strengthening HMM requires a strong health information system that begins at the front line which is the CBA level. In consequence, the low level of reporting by CBAs and

poor data quality observed in this study could have contributed to the adverse outcomes such as the inadequate supply of drugs and other relevant logistics. Similar findings of poor monthly reporting by CMDs was revealed in some parts of Uganda (Uganda Ministry of Health, 2009).One basic question that needs to be considered is whether CBAs have adequate knowledge and skills to record and report appropriately considering the high levels of illiteracy and the detailed reporting format put in place. Some CBAs said they had to request for the services of literate folks in the community to record their activities and in return for the documentation, give them some motivation either in cash or kind which is quite expensive for them since they are not given any renumeration.

In some countries, DDs who could read and write were chosen for the sake of proper documentation and record keeping (WHO/TDR,2007).This was however not possible because only 15% of the adult population in the region are literates, making it extremely difficult to get literate volunteers for each community. This high illiteracy rate also poses a serious challenge to the uptake of health promotion messages and other health programme implementation generally. One thing that could be done is to provide literacy training as documented in Mali (Winch et al., 2003). Recording and reporting also allows for systematic appraisal of CBA activities, patient progress and treatment outcome. It maintains a regular communication between the CBAs and the health staff and is a requirement for the release of logistics and drugs.

Also, paramount to this study is the use of data by health staff. Most health staff indicated that they send the reports to the higher level. It is prudent to forward data to the next level, but more importantly is the need for analysis and use of data at the lower level. A study by Unicef identified a number of attitudinal and perceptual bottlenecks to CCM on the part of health officials (Haines et al., 2007). Data is vital for making appropriate and evidence based changes;without reliable data; policy makers and development partners are unable to

plan effectively and allocate resources for the programme.The discordance between some of the responses from CBAs and the records reviewed is expected largely because of poor data management and recall bias.

A number of health system deficiencies were identified. Although these factors are not direct appraisable items for the performance of CBAs; they are support systems needed to facilitate their work. Poor supervision of CBAs was identified in this study. This finding is not unique to this study alone, review of existing literature and national reports also noted low and irregular supervision of DDs in most of the districts implementing the HBMF program (Meek et al., 2005).

CBAs are lay people selected from the community and given basic training to care of sick children, they should therefore not be left on their own without support and supervision from the formal health sector. Regular and proper supervision does not only help to identify gaps and areas of poor performance, but also provides recognition and emotional support for the CBAs and strengthens the linkages between them and the health sector. Communities with effective supervision of CHWs had better output with regards to appropriateness of treatment (WHO/TDR, 2007).

The issue of motivation or incentives raised by many CBAs and community members in this study is not new and should be given the needed attention; moreover some CBAs had high expectations in terms of future engagement by the formal health system and other benefits for the services they render. They complain that a lot of time is devoted to caring for sick children, and this prevents them from carrying out their farming or income generating activities which is their source of livelihood. It is therefore not surprising that some respondents cited the lack of motivation as the main reason for attrition of some CBAs; the dilemma is the kind of motivation that should be given to ensure sustainability and not disrupt the existing social network. Individuals have varying degrees of motivation

(Katabarwa, Mutabazi, & Richards, 1999); some CBAs perceive volunteerism as a calling; however others stated that they cannot be volunteers for life. WHO recommends that incentives or remuneration for CHWs should be decided and agreed by the communities involved in the programme implementation (WHO/TDR, 2007).

From the mothers/caregivers point of view, a sizeable number reported that they did not know how the CBAs were selected. On the contrary a large proportion (77%) of the opinion leaders interviewd said they were selected by chiefs and opinion leaders. The FGDs also indicated that CBAs were selected democratically. This gives a confusing image on how the CBAs were selected. Community involvement in the selection of CHWs cannot be undermined because it has been identified as a key strategy for the success of many community based programmes. It was the most important means by which distributors were selected in the lessons learned in home management of malaria in four countries (WHO/TDR, 2007).

Results of a large-scale multi-country study, of similar projects also showed that, the more the target communities are involved, the better and more sustained the programme (Katabarwa & Mutabazi, 1998; Mutabazi & Duke, 1998). In the UWR, health workers were tasked to sensitize community leaders about the strategy, and they were made responsible for guiding the selection of suitable individuals based on the criteria given to them for approval at community meetings and durbars.

The HMM strategy is a relatively new concept, the understanding of which is vital to its successful implementation among all stakeholders. Policy makers and health care providers are therefore expected to pass down information on the selection criteria to the lower levels especially to all community members for maximum support. In the selection of CBAs; first and foremost, the individual must come from, and reside in the community, must be committed, trustworthy and willing to work voluntarily. To also enable CBAs work

effectively, community members must be mobilized to recognize the significance of volunteer service and encourage them in their work

Most sub district in-charges were not in their current positions at the inception of the programme, but assumed responsibilities by either learning on the job or by participating in refresher trainings. Thus majority had inadequate knowledge on HMM and the rationale behind the concept. Staff attrition was one of the main reasons cited; inasmuch as staff movement is necessary for equitable distribution and for career progression, management should put in measures to provide training for newly posted staff, because it is extremely important and crucial for the immediate supervisors of CBAs and other staff to be knowledgeable about HMM; it is only when they understand the concept and the rationale behind HMM that they will attach seriousness to the activities of the CBAs and provide the needed support in terms of supervision and on the job training for quality care and sustainability of the programme.

With regards to the views of community members and health workers about the performance of CBAs, there were diverse opinions. While some respondents said they were satisfied with their performance, others said some of them were not committed. Nevertheless, these few community concerns and negative perceptions could be reasons for clients' dissatisfaction and low utilization of the services provided by CBAs as indicated in the problem statement. There is therefore the need to finds ways of addressing these concerns because "the global public health community recognizes that we can't reach key health goals without community health workers" (Ajayiet al, 2006).

Most respondents were of the view that in future the programme may not be sustainable unless efforts are made to improve the incentive scheme of CBAs. Therefore instituting performance related awards and payment of NHIS premiums for CBAs as suggested by some respondents is significant and could guard against volunteer fatigue and

attrition. One lesson learned from this study, is the use of sub district Internally Generated Funds (IGF) for quarterly CBA meetings where they are given a token for lunch or for transport. Periodic release of funds for maintenance of bicycles could also serve as a motivation and sustain their commitment and retention.

5.1 Limitations of the Study

Some limitations of the study that may have occurred are;

- Recall biasespecially with regards to mothers/caregivers perceptions about CBAs performance.Mothers/caregivers with a particular exposure or outcome may remember their experiences differently from those not similarly affected
- Observer bias: The observers of CBA practices may have pre-conceived expectations of what they should find in an assessment or management of a sick child
- Hawthorne Effect: The presence of the study observers may have affected the performance of the CBAs,they may either perform better than they would have done because they are being observed or perform below standard because of nervousnessor fear.
- Due to limited time and budget coupled with the lack of drugs at the time of the study, it was not possible to conduct many FGDs or observe many CBAs for case management. This may influence the results of some indicators.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The study was not only relevant but also timely as it provided useful information for addressing concerns on the performance of CBAs in relation to malaria case management.The study revealed that a high proportion of CBAs do not know the right dosage of ACTs for children aged 6-11 months old. Although most CBAs take history and examine children before giving treatment, observing for danger signs, client counseling on treatment compliance and education on malaria prevention was not done regularly. There is also poor documentation and record keeping and low reporting of CBA activities.Most CBAs were not supervised regularly. Regardless of the fact that there were varied responses and application of knowledge and skills,majority of health workers and community members had an optimistic opinion about the HMM strategy and were of the view that the CBAs are doing their work well.

6.2 Recommendations

The following recomendations are being made in the light of the findings from the study;

- The Regional Health Directorate and the NMCP should re-train CBAs and institute regular updates to sustain theircompetencies
- The drug and logistics supply system must be re-examined and the following areas need to be considerd;

  a) NMCP,UNICEF, Regional and District Health Directorates should strengthen the utilisation of data to ensure that the drug distribution system is working efficiently to avoid stock outs and to increase public confidence in HMM

b) Regional and district health leadership should train health staff on logistics management to enable them establish consumption patterns and maintain sufficient buffer stocks of drugs at the health facility and district stores

c) NMCP in collaboration with the Regional Health Directorate should put in place a sustainable means of repleninshing CBAs logistics

- The District and SDHMT should strengthen facilitative supervision to CBAs. This could also serve as an opportunity to provide on the job training and for addressing some concerns
- Regional and District Health leadership should partner with community opinion leaders to identify a sustainable way of motivating CBAs to improve their commitment and retention.
- In view of the unacceptable low utilization of CBA services in communities with CHPS, the regional and district leadership should establish a data base of all CBAs and come out with innovative ways such as a major decisive shift from communities with CHPS to areas without CHPS
- Subdistrict staff should support CBAs to improve documentation and record keeping considering the fact that majority are illiterate. They should visit the CBAs on a monthly basis to collect their reports.
- Regional and District leadership should approve of the use of subdistrict IGF to organize quarterly CBA meetings

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APPENDIXES

APPENDIX 1: INFORMATION SHEET/ CONSENT FOR PARTICIPANTS

PERFORMANCE OF COMMUNITY BASED AGENTS IN HOME BASED CARE FOR MALARIA IN UNDER FIVES IN TWO DISTRICTS OF THE UPPER WEST REGION,GHANA

Principal Investigator: BalagumyetimePhoebe

Address: School of Public Health, University of Ghana, Legon

Tel: 0243516077 E-mail: phoebebala55@yahoo.com

General Information:

The purpose of this study is to assess the performance of community based agents in home based care for malaria in under fives in Jirapa and Lambussie districts of the Upper West Region.The study will involve community based agents, mothers/care givers of children under five years ,opinion leaders and health workers in selected districts, communities and health facilities in the region. It is expected that findings from this study will provide information on the performance of community based agents in the region and also document worse and best practices to inform policy makers and other relevant stakeholders to strengthen the implementation of home based care.

As part of this study, you have been selected to help in obtaining information for this study. If you agree to be part of this research, it will involve either one or both of the following:

- Answering some questions that will be posed to you by a member of the research team.
- Allowing a member of the research team to observe your activities and/or review your data.

The expected duration of each process will be between 30 to 45 minutes.

Possible Risks and Discomforts

The research will not pose any risks to you. You may however experience some minor discomfort when being observed or in answering certain questions. You may refuse tobe observed or refuse to answer any question if you feel uncomfortable about it.

Possible Benefits

You may not benefit directly from this study but the findings would benefit the District Health Management Team and the Ghana Health Service in planning health delivery services. Your participation may therefore be helping in improving the care given to your children by community based agents in the region.

Confidentiality

All the information obtained from this study will be confidential and used for the purpose indicated for the study. The information will be securely stored without your name, in a file which will be only be accessible to the research team. A number linked to a particular name will be kept confidential. The results of this study will be disseminated in such a way that no information will be linked to your identity.

Compensation

Participation in this study is purely voluntary. There is no monetary compensation available to you for accepting to be part of this study.

Choice of Participation

You do not have to participate in this study if you do not wish to. Your refusal to participate will not attract any penalty. If you agree to participate, you can withdrawconsent and discontinue participation at any time. This will not affect you in any way.

Contact Numbers

If you have any questions, you may ask them now. You may also contact the following people if you have any challenges relating to your participation in the study:

Dr FrederickWurapa

Tel: 0244221124

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Balagumyetime Phoebe

Tel: 0243516077

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APPENDIX 2: DATA COLLECTION TOOLS

Form A. Questionnaire for interviewing Community Based Agents (CBAs)

Greetings, my name is ……I am a student of the University of Ghana, School of Public Health. As part of my MPhil dissertation, I am interested in finding out whether the training offered to CBAs has contributed to improving job performance, and you were randomly selected to participate. The survey is not meant to check on you as an individual but to help make recommendations to key stakeholders and policy makers on how to support you to strengthen home based management of malaria. I will also like to find out any challenges that might have prevented you from applying your knowledge and skills in your job in the community. I encourage you to be honest with your answers. This interview is strictly confidential and your responses will not be shared with anyone. Your name will not also appear in any of the reports. Participation in this survey is voluntary; you may refuse to answer any question or all the questions, I however hope that you participate because I appreciate your views.This interview would take no longer than 45 minutes. Thank You

Do you agree to participate in this survey? Yes ☐ No ☐

Record time interview begins……

Identification	Codes (official use only)
Questionnaire CODE----------	☐☐☐
District ----------	☐☐
Sub district ----------	☐☐
Community/village----------	☐☐
Name of CBA----------	
Name of interviewer ----------	

Interview date: Day……/Month……/Year…….	

NB: Circle appropriate options and fill in the space where indicated

Section I: Background data

No	Questions	Coding categories	Skips
1.	How old are you	☐☐ Age in completed years	
2.	Sex	Male……1 Female……2	
3.	Religious background	Christian ……1 Muslim ..……2 Traditionalist ……3 Others ……96 specify	
4.	Marital status	Single……..1 Married ……..2 Divorced……..3 Seperated……4	
5.	What is your occupation?	Farming ……1 Trading ……2 Formal sector ……....3 Others ……96 Specify	
6.	What is your level of education?	None ..……1 Primary……...2 Middle school……3 Junior high school……..4 Senior high school ……5 Other……..96 specify	
7.	How long have you been working as a CBA?	1-2yrs ……..1 3-4yrs ……..2 5-6yrs ……..3 Above 6yrs……....4	

Section II: CBA training

No.	Questions	Coding categories	Skips
8.	Were you given any training before you started this job?	Yes ……1 No……..2	→13
9.	Which illnesses have you been trained to manage? (Multiple responses allowed)	Malaria……..1 ARI/Pneumonia……2 Diarrhea……3 Disease surveillance ……4 Others…….96 specify	
10.	How many days did the training you received take?	Less than 2 days ……1 3-4 days……..2 5 days……..3	
11.	How long ago was the training?	Less than 12 months……1 1-3years……2 4-6 years ……3 Don't know …….98	
12	Was the training long enough for you to gain sufficient skills?	Yes……...1 No……2	
13	Have you benefitted from any training updates	Yes……1 No……2	→15
14.	In which areas were you given the updates	Malaria……..……...1 Diarrhea……2 ARI/Pneumonia ……...3 Disease surveillance ……...4 Others ……96 specify	
15	What are the three primary tasks that you perform in your community? (Multiple responses allowed)	Management of sick children …1 Disease surveillance ……..2 Health promotion activities …..3 Conducting deliveries ……4 Referrals…….5 Other ……96 specify	
16	How many children have you treated for malaria in the past one year	[ ][ ][ ] Don't Know …….98	
17.	Are you the only CBA in this community	Yes……1 No... ……2	→19
18.	How many are you?	One……1 Two ……...2 Three……..3	
19.	Do you have any leadership position in the community?	Yes ……1 No……..2	→21
20.	Which position?	Chief……1 Assembly member……...2 Women's leader ……..3 Other(specify)…….96	

Section III: Knowledge and Perceptions

No.	Questions	Coding categories	Skips
21.	What causes malaria?	Mosquito bites ……1 Living near stagnant water……..2 When you offend the gods or ancestors…….. 3 Drinking dirty water ……4 Other ……..96 Specify Don't know……..98	
22.	What is the most common sign of malaria in children?	Vomiting ……1 Convulsion ……2 Poor feeding ……3 Fever ……..4 Others……..96 Specify Don't know……...98	
23.	Mention/describe 3 other signs of malaria in children? (Multiple responses allowed)	Vomiting ……1 Fever ……2 Poor feeding……3 Convulsion ……4 Others ……96 specify Don't know ……98	
24.	What do you do when a sick child is brought to you? (Multiple responses allowed)	Take verbal history from caregiver ……1 Ask and examine child for fever……..2 Observe child for danger signs ……3 Sponge child with fever ……..4 Give treatment ……5 Others ……96 Specify	
25.	What drug do you use for treatment of malaria in your community?	Artemisinin Based Combiniation (ACTs)……..1 SP……2 Chloroquine……..3 Other ……...96 Specify Don't know ……98	
26	What dosage of Atersuanate/Amodiaquine (AA) do you give to a child 6-11months old?	½ tablet of AA……1 ¼ tablet of AA ……...2 1 tablet of AA……3 Other(specify)……96	
27	What dosage of Atersuanate/Amodiaquine do you give to a child 12-59 months old?	½ tablet of AA……1 ¼ tablet of AA ……..2 1 tablet of AA……3 Other ……..96 Specify	
28.	What do you do to ensure mothers/care givers comply with your treatment instructions?	Counsel/educate care givers ……1 Make follow up ……..2 Give first dose of medicines directly observed ……3	

	(Multple responses allowed)	Others …….96 specify	
29	Mention 4 signs of a severely sick child (Multiple responses allowed)	Child is not able to eat or breastfeed …1 Child vomits everything he/she takes …2 Child has convulsions ……3 Child is lethargic and unconscious ……4 Child has dark color urine …….5 Others…….96 specify Don't know ……98	
30	When do you refer a child? (Multiple responses allowed)	Any sick child less than 6 months old …1 No improvement after treating a child for 24hours ……..…….2 Child is severely sick or with the danger signs…….3 Others ……...96 specify	
31	What do you do if you find a severely sick child?	Give pre-referral treatment and refer promptly ……..……1 Refer to health facility……2 Keep child and treat……3 Use herbal preparations ……4 Consult the gods and ancestors ……5 Others ……96 specify	
34.	Do you usually refer patients to the health facility?	Yes ……1 No……..2	→39
35.	How many have you referred in the last 6 months? (check records if available)	☐☐ Don,t know……98	
36.	Do mothers/care givers comply with referrals?	Yes ……..1 No ……...2	
37.	Do you usually get feedback from the health facility on children you have referred?	Yes ……1 No ……2	→39
38.	How do you get the feedback? (Multiple responses allowed)	Through family members……1 During meetings with health staff …….2 Written notes ……3 During home visits……4 Others……96 Specify	
39	What do you educate mother/care takers on to prevent malaria in children (Multiple responses	Sleep under insecticide treated net……1 Use insecticide sprays ……2 Clean your surroundings……3 Wear protective clothing……4	

	allowed)	Drink or smear herbal preparations……5 Use mosquito repellant……...6 Others ……96 Specify	
40	Have you had any medicine stock out in the last 3 months?	Yes ……1 No……2	→42
41	What were the causes of the stock outs?	Failed to make a request ……1 District/health facility did not have drugs ……2 No money for transport to collect drugs ……3 Others……96 Specify	
42.	Do you have any medicines in stock today?	Yes ……1 No……2	
43.	What materials were you supplied with following your training as a CBA? (Multiple responses allowed)	Record books ……1 Kit box ……...2 Wellington boots……3 Job Aides ……4 Bicycles ……...5 IE&C materials (flip charts)……...6 Rain coats……...7 Others……96 Specify	
44.	How many times have you received supervision in the the year 2012	1-3……1 4-6……2 7-9……3 10-12……4 None ……6 Don't, know……7	
45.	Of these, how many took place in your home/community?	☐☐	
46.	Which type of supervision would you prefer?	Supervisor visiting you at home ……1 Supervisor meeting you at the health facility……2 Other ……..96 specify	
47	How many reports have you submitted to your health center in the past year (2012)?	1-3……1 4-6……...2 7-9 ……..3 10-12……..4	

No	Questions	Coding categories	Skips
48	If less than 6 reports, give reasons for low reporting	…… …….....	
49.	What is your opinion about the workload?	O.K……1 Too much……..2 Too little……...3	
50	Are you given any motivation for the work done?	Yes ……..1 No……2	→52
51	In what way are you motivated?	Cash……1 In Kind……2 Awards……...3 T&T during meetings……4 Other ……96 specify	
52	Do you know of any CBA who has dropped out?	Yes ……..1 No……2	→54
53.	If yes, do you know the reasons for the drop out?	…… ……	
54.	What is your general perception about the HMM strategy?	…… ……	
55.	What challenges do you face in the process of doing your work?	…… ……	

Section IV: Practices

I am also interested in knowing whether you use the knowledge and skills acquired from your training in your practice or not? This is not a test; it is to inform us how well the training has helped you to improve your job performance. Please think of any changes you made after the training, whether they are significant or not. If you have never used the knowledge or skills, I am also interested in knowing the challenges that prevented you from using the skills.

Practices

No.	Check for the following;	Coding categories	Comments
56	ACTs	Available and not expired ……1 Available but expired ……...2 Not available ……....3	
57	Storage of medicines	Stored in dry cool place……1 Store in humid place…….2 Exposed to sunlight……..3 Other……96 Specify	
58	Monthly reports (2012)	Copies available and complete ……1 Available but incomplete ……2 Not available ……...3	
59	Records of referred children	Available……1 Not Available…….2	
60	IE&C/health promotion materials	Available……1 Not available……..2	
61	Health promotion activities carried out within the last six months	Carried out and records available…1 Carried out but no records …….2 Not carried out ……3	
	Check for the availability and condition of the following logistics		
62	Kit box with contents (use checklist)	Available in good condition……1 Available in poor condition…….2 Not available……...3	
63	Raincoats	Available in good condition……1 Available in poor condition……2 Not available……3	
64	Welling boots	Available in good condition……...1 Available in poor condition……2 Not available……...3	
65	Bicycles	Available in good condition……1 Available in poor condition…….2 Not available…….3	

Checklist for Observation of CBAs

Observe any CBA treating a sick child using the checklist below

A	Assessing the sick child		
No	Question	Coding categories	Comments
1	Was child brought to CBA or CBA was called	Child brought to CBA…1 CBA called ……2	
2	Did CBA greet and congratulate parent/care taker for seeking health care	Yes ……1 No……..2	
3	Did CBA ask for name of child	Yes ……1 No ……2	
4	Did CBA ask if child has fever	Yes ……1 No……..2	
5	Did CBA touch the child to check for fever	Yes…….1 No……..2	
6	Did CBA ask for other signs and symptoms of malaria	Yes…….1 No……..2	
7	If yes which ones (Multiple responses allowed)	Vomiting……1 Diarrhea ……2 Loss of appetite…….3 Other……..96	
8	Did CBA ask or observe for danger signs	Yes……1 No……..2	
9	If yes, which ones	Child unable to drink or breastfeed……1 Vomits everything she/he drinks or eats……2 Convulsions……..3 Difficult to awaken child or child is very sleepy ……4 Others……96 Specify	
B.	Management of fevers and malaria		
10	Was 25mg/67.5mg (1/2 tablet) of AS/AQ given to child 6-11 months	Yes ……..1 No……2	Skip If child is above 6-11months
11	Was 50mg/135mg (1tablet) of AS/AQ given to child 1-5yrs	Yes ……1 No……..2	
12	Did CBA counsel/educate parent/care giver on correct dosage and treatment compliance	Yes ……1 No……..2	
	Parent/caregiver education;		
	Did CBA educate parent/ care giver on prevention of malaria	Yes……1 No……2	
	If yes,which ones	Use of LLINs……1 Use of insecticide sprays…2 Wear protective clothing…3 Indoor residual spraying…4 Others……96 Specify	

Record time interview ends……

Thank You for your time

Form B. Questionnaire for InterviewingMothers/care givers

Greetings, my name is ……...I am a student of the University Of Ghana, School Of Public Health. As part of my MPhil dissertation, I am interested in finding out your views about the performance of the CBAs in your community regarding home based care for malaria. The purpose of this follow-up is to help make recommendations to key stakeholders and policy makers on how to strengthen Home based Management of Malaria (HMM). I encourage you to be honest with your answers. This interview is strictly confidential and your responses will not be shared with anyone. Your name will not also appear in any of the reports. Participation in this survey is voluntary; you may refuse to answer any question or all the questions. This interview would take no longer than 35 minutes. Thank you for your time and agreeing to participate in this study, I appreciate your feedback

Do you agree to participate in this survey? Yes ☐No☐

Record time interview begins……

Identification	Codes (official use only)
Questionnaire CODE----------	☐☐☐
District ----------	☐☐
Sub district ----------	☐☐
Community/village----------	☐☐
Name of Mother/care giver ---------- ----------	
Name of interviewer ----------	
Interview Date: Day -------/Month/……Year…….	

NB: Circle appropriate options and fill in the space where indicated

Section I: Background data

No	Questions	Coding categories	Skips
1.	How old are you	☐☐ Age in completed years	
2.	Sex	Male……1 Female……2	
3.	Religious background	Christian ……1 Muslim ……..2 Traditionalist ……3 Others ……96 specify	
4.	Marital status	Single……...1 Married ……..2 Divorced……..3 Seperated ……..4	
5.	What is your occupation?	Farming ……..1 Trading ……..2 Formal sector ……3 Others ……..96 Specify	
6.	What is your level of education?	None ……1 Primary……2 Middle school……...3 Junior High School……..4 Senior High School ……5 Other……96 specify	

Section II: Knowledge and Perceptions

No.	Questions	Coding categories	Skips
7.	What causes malaria?	Mosquito bites ……1 Living near stagnant water……..2 When you offend the gods or ancestors ……..3 Drinking dirty water ……...4 Other ……..96 Specify Don't know……98	
8	How is malaria transmitted from person to person	When a mosquito bites an infected person and bites another person ……1 When you cough on another person ……2 Eating from the same bowl …….3 Other ……96 Specify Don't know ……98	
9.	What is the most common sign of malaria in children?	Vomiting ……..1 Convulsion ……...2 Poor feeding ……3 Fever ……4 Others……96 Specify Don't know……..98	
10.	Mention 3 other signs of malaria in children? (Circle allmentioned)	Vomiting ……....1 Diarrhea ……....2 Poor feeding ……....3 Convulsion ……4 Others ……96 specify Don't know ……98	
11.	What do you do when your child has any of the signs and symptoms of malaria?	Visit the CBA……1 Use herbal treatment……..2 Buy drugs from chemist/drug peddlers...3 Consult the gods/ancestors ……6 Other ……96 Specify	
12.	Who manages sick children in this community?	CBA……1 Herbalist……2 Health worker ……....3 Chemical seller/drug peddlers ……....4 Don't know……98	
13	How many CBAs are in this community?	☐☐ Don't know……98	
14.	How were the CBAs selected	Selected democratically……1 Selected by health workers……..2 Selected by the chief/opinion leaders…..3 Other ……96 specify Don't know ……..98	

	Are the services of the CBAs accessible to all ?	Yes……1 No……2	
16.	Have you or any family member visited the CBA before with a sick child	Yes……..1 No……2	→19
17	What did the CBA do when you sent your sick child? (Multiple responses allowed)	Took history ……..1 Assessed child before treatment…….2 Observed child for danger signs …….3 Examined child's palmer for pallor ……4 Counselled on treatment compliance ……5 Educated on malaria prevention……..6 Sponged child to reduce fever ……7 Others ……96 specify	
18	What did the CBA do after giving your child treatment?	Counseled/educated on treatment compliance……1 Made follow up to ensure treatment compliance……..2 Educatedparent/caregivers on malaria prevention……..3 Others……96 specify	
19	What other activities does the CBA carry out in the community on health? (Multiple responses allowed)	Organizes health promotion activities ……2 Keeps surveillance on diseases ……..3 Conducts deliveries ……...4 Other…….96 Specify	
20	What is your view about the performance of the CBAs ?	Very good……1 Good……2 Fair……3 Poor……...4	
21	Are you satisfied with the CBAs performance	Yes……..1 No……2	
22	How does the CBA contribute to the health of your children? (Multiple responses allowed)	Takes care of our sick children……1 Organizes health promotion activities …2 Keeps surveillance on diseases ……3 Conducts deliveries ……4 Other……..96 Specify	
23.	What is the CBA doing well in this community?	Management of sick children……1 Health promotion activities……2 Home visits……...3 Disease surveillance ……4 Other……...96	

		Specify Don't know ……98	
24	What is the CBA not doing well in this community	Management of sick children……..1 Health promotion activities…….2 Home visits……...3 Disease surveillance ……4 Other……96 Specify Don't know ……98	
25	What factors affect the performance of the CBA in providing services to your community?	Lack of medicines……1 Lack of logistics ……..2 Lack/inadequate motivation……3 Poor recognition of CBA activity……4 Lack of confidence in CBA …….5 Other……96 Specify	
26	What do you do to support the CBA,s work?	Provide Food stuff……..1 Farm for CBA ……...2 Cash incentive……..3 Others……96 Specify	
27	What is your general perception about the HMM strategy? Probe: Any thing else	Highly beneficial……1 Beneficial ……...2 Not beneficial ……3 Don't know ……98	
28.	What can be done to improve the performance of the CBAs	Provide incentives……1 Supply medicines……..2 Supply logistics ……...3 Provide refresher training……...4 Increase awareness……..5 Others……96 Specify	

Record time interview ends……

Thank You for your time

Form C. Questionnaire for interviewing District Focal Person

Greetings, my name is ……..I am a student of the University Of Ghana, School Of Public Health. As part of my MPhil dissertation, I am interested in finding out your views about the performance of the CBAs in your community district regarding home based care for malaria. The purpose of this follow-up is to help make recommendations to key stakeholders and policy makers on how to strengthen Home based Management of Malaria (HMM). I encourage you to be honest with your answers. This interview is strictly confidential and your responses will not be shared with anyone. Your name will not also appear in any of the reports. Participation in this survey is voluntary; you may refuse to answer any question or all the questions. As part of the survey I will also be reviewing some of your records. This interview would take no longer than 30 minutes.

Do you agree to participate in this survey? Yes ☐ No☐

Record time interview begins……

Identification	Codes (official use only)
Questionnaire CODE----------	☐☐☐
District----------	☐☐
Name and position of district focal person ----------	
Name of interviewer …… ----------	
Interview Date Day -------/Month/……Year…….	

1. How long have you been coordinating the HMM programme

   ☐ 1-2yrs

   ☐ 3-4yrs

   ☐ 5-6yrs

   ☐ Above 6yrs

2. What do you know about HMM……..
3. In which year was HMM implemented in your district? ……
4. How many sub districts are currently implementing HMM
……
5. What was the implementation process……
6. Were CBAs trained prior to implementation?

   1. ☐Yes 2. ☐No

   a) If yes, for how long? …….

   b) What topics were they trained on?
   ……

7. What are their primary tasks in the community?
   ……
8. Have CBAs been given any kind of updates in the past three years (2010-2012?)

   1. ☐Yes 2. ☐No

   a) If yes what topics were they trained on?.....

   c) If No why? ……

9. How many CBAs are in each community?

   ☐ 1
   ☐ 2
   ☐ 3

10. Who determines the medicine requirements for the CBAs?
……

11. What is the procedure for requesting for medicines by the CBA?
……

12. How long does it take for the CBA to get supplies of medicines?
……

13. When was the last time the CBA received medicines?

- ☐ 1-2months
- ☐ 2-3months
- ☐ 4+ months

14. How does the medicines get to the CBA in the community?.....

15. How are the medicines stored by the CBAs at the community level ?
……..

16. What quantity of medicines was supplied to the CBAs in the last supply? (Check with bin cards and ledger)…….

17. Do CBAs submit reports to the district?

1. Yes ☐ 2. No ☐

18. How often do they submit reports to you?

- ☐ Monthly
- ☐ Quarterly
- ☐ Bi-annually
- ☐ Annually

19. How many reports have you received from the CBAs in the last year (2012)? (Crosscheck with copies of reports submitted)……..

Reports Observed

20. If reports observed are less than 6, any reasons for CBA not reporting regularly……

21. How is the data collected from the CBAs utilized?……

22. What support and supervision has the sub district received on HMM from the district in the last 12 months? ……..

23. What support and supervision has the CBA received on HMM from the district in the last 12 months? (Verify from reports)…….

24. How many meetings have you held with CBAs in the last year? (2012)? (Verify from minutes)……

25. What are your views about the performance of the CBAs?.....

26.What monitoring processes are in place for the programme?.....

27. What plans does the district have for sustainability of the program? ……

Record time interview ends……

Thank You for your time

Form D. Questionnaire for interviewing Health Facility In-charge

Greetings, my name is ……..I am a student of the University Of Ghana, School Of Public Health. As part of my MPhil dissertation, I am interested in finding out your views about the performance of the CBAs in your district regarding Home based Management of Malaria (HMM). The purpose of this follow-up is to help make recommendations to key stakeholders and policy makers on how to strengthen home based management of malaria. I encourage you to be honest with your answers. This interview is strictly confidential and your responses will not be shared with anyone. Your name will not also appear in any of the reports. Participation in this survey is voluntary; you may refuse to answer any question or all the questions.As part of the survey I will also be reviewing some of your records. This interview would take no longer than 30 minutes.

Do you agree to participate in this survey? Yes ☐ No ☐

Record time interview begins……

Identification	Codes (official use only)
Questionnaire CODE----------	☐☐☐
District ----------	☐☐
Sub district ----------	
Name and rank of health facility In-charge ----------	
Name of interviewer …… ----------	
Interview Date:Day/ -------/Month/……Year…….	

1. How long have you been the facility In-charge?

   ☐ 1-2yrs
   ☐ 3-4yrs
   ☐ 5-6yrs
   ☐ Above 6yrs

2. What do you know about HMM……

3. How long have CBAs implemented HMM in this sub district under your support?

_____Months _____Years

4. Have you been or were you involved in any of the following activities for the implementation of the HMM program? Circle all that apply

   1. Selection of CBAs

   2. Training of CBAs

   3. Supervision of CBAs

   Other(specify) ……..

5. How many CBAs are you responsible for supervision and supply of medicines?

   .....

6. Describe the type of support or supervision that you give to the CBA?....……

7. How many supervisory visits have you carried out per CBA in the last 12 months?.....

8. What were some of the observations made during your supervisory visits?

   ……..……

9. Do you give any feedback on supervision on HMM activities to your CBAs?

   1. ☐ Yes 2. ☐ No

a) If yes how do you give feedback and how often? ……

b) If no, any reasons?

10. Have CBAs been making referrals to your health facility?

1. Yes ☐ 2.No (skip to Q12) ☐

a) If yes, approximately how many referrals do they make in a month?.....

11. Do you usually give feed back to the CBA on the referred cases?

1. ☐Yes 2. ☐ No

a) If No, any reasons?.....

b) If yes, how do you give the feedback?.....

Logistics management

12. Who quantifies the medicines for the CBAs?

☐ Sub district In-charge

☐ District focal person

Others (specify)……

13. What is the time lag between placing an order by a CBA and receipt of supplies of medicines at the community?

☐ 0-1 month

☐ 2-3 months

☐ 4 months and above

14. How do the medicines and other supplies get to the CBA?

☐ Sub district sends medicines and supplies to CBA

☐ CBA collect medicines from health facility

Others (Specify)…….

15. Have you had drug stock-out in the last 3 months?

1. Yes 2.☐ No

a) If yes what were the reasons ……

Please check if in store

Balance of drugs and consumption

16. How do CBAs store their drugs in the community?.....

Reporting

17.Do the CBAs report to you on their activities?

1. ☐ Yes 2 . ☐ No

18. How often do they report to you?

- ☐ Monthly
- ☐ Quarterly
- ☐ Bi-annually
- ☐ Annually

19. How many CBAs reports have you received in the last year (2012)?
…….

Reports Observed

a) If reports observed are less than 6, any reasons for CBA not reporting regularly……

Give reasons for any mis-match between stated and observed number ofreports

……

20. How is the data collected from the CBA utilized by the health facility?
……...……

21. Do you give feedback to CBAs on their reports? ……..

22. How many meetings have you held with CBAs in the last year?

(2012)? (Verify from minutes)

23. What is your impression about the performance of your CBAs?.....

24. In your opinion what are the major challenges encountered by the CBA in the implementation of the HMM strategy?.....……

25. What plans does the subdistrict have for sustainability of the program?

……

Record time interview ends……

Thank You for your time

Form E. Key Informant Interview for Opinion Leaders

Greetings, my name is ……...I am a student of the University Of Ghana, School Of Public Health. As part of my MPhil dissertation, I am interested in finding out your views about the performance of the CBAs in your community regarding Home Based Care for Malaria (HMM). The purpose of this follow-up is to help make recommendations to key stakeholders and policy makers on how to strengthen HMM. I encourage you to be honest with your answers. This interview is strictly confidential and your responses will not be shared with anyone. Your name will not also appear in any of the reports. Participation in this survey is voluntary; you may refuse to answer any question or all the questions. This interview would take no longer than 30 minutes.

Do you agree to participate in this survey? Yes ☐ No ☐

Record time interview begins……

Identification	Codes (official use only)
Questionnaire CODE----------	☐☐☐
District ----------	☐☐
Sub district……	☐☐
Community ----------	☐☐
Name of opinion leader ---------- ----------	
Name of interviewer ……	
Interview Date: Day/ ------- /Month/……Year…….	

Section I: Background Data

1. Sex
   1. Male ☐

2. Female ☐

2. Religious background

☐ Christian

☐ Muslim

☐ Traditionalist

Others (specify)……

3. How old are you

Age in completed years

4. Marital status

☐ Single

☐ Married

☐ Divorced

☐ Seperated

5. What is your occupation?

☐ Farming

☐ Trading

☐ Formal sector

Others (specify) ……..

6. Educational level?

☐ None

☐ Middle school

☐ Primary

☐ Junior High School

☐ Senior High School

Section II: Perceptions about CBA Performance

7. What do you do when a child is sick in this community?

☐ Send child to CBA

☐ Visit the traditional birth attendant

☐ Use herbal treatment

☐ Buy drugs from chemist /drug peddlers

☐ Consult the gods/ancestors

8. Who manages sick children with malaria in this community

☐ CBA

☐ Herbalist

☐ Health worker

☐ Chemical seller/drug peddlers

☐ Traditional birth attendants

9. How many CBAs are in this community?

☐ 1

☐ 2

☐ 3

10.How were the CBAs selected

☐ Selected democratically

☐ Selected by health workers

☐ Selected by the chief/opinion leaders

Other (specify)……

11.Are the CBAs services accessible to all in the community?

1.☐ Yes 2. ☐ No

12.Have you or any family member or friend visited a CBA with a sick child

1.☐ Yes 2. ☐ No (If no skip to Q 15)

13.What did the CBA do when you sent the sick child? ((Circle all mentioned)

☐ Took history and gave treatment

☐ Assessed and examined child before giving treatment

☐ Observed child for danger signs

☐ Examined child's palmer for pallor

☐ Counselled on treatment compliance

☐ Educated on malaria prevention

☐ Sponged child to reduce fever

Others (specify)……

14. What did the CBA do after giving the child treatment?

☐ Counseled parents/caregivers on treatment compliance

☐ Made follow up to ensure treatment compliance

☐ Gave child treatment and sent them away

Others (specify)…….

15. What other activities does the CBA carry out in the community on health?
…….

16. What are your views about the performance of the CBAs?

☐Very good ☐Good ☐ Fair ☐ Poor

17. How does the CBA contribute to the health of your children?.....

18. What is the CBA doing well and what is he/she not doing well in this community

……

19. What factors affect the performance of the CBA in providing services to your community? (Good and bad factors, including drugs, management of sick children, referrals).……
20. What do you do to support the CBA in his/her work? …….
21. What are your experiences with regards to CBA practices in management of malaria (probe for assessing children, interpretation of the symptoms, providing treatment, issues of trust, confidence, and competence)?

    ……
22. What is your general perception about the performance of the CBA and the HMM strategy?……..
23. What can be done to improve the performance of the CBA?.....

Record time interview ends……

Thank You for your time

Form F.Focus Group Discussion Guide for Mothers/care givers

Greetings, my name is ……..I am a student of the University Of Ghana, School Of Public Health. As part of my MPhil dissertation, I am interested in finding out from your point of view, the performance of the CBAs in your community regarding Home based Management of Malaria (HMM). The purpose of this follow-up is to help make recommendations to key stakeholders and policy makers on how to strengthen home based management of malaria. I encourage you to be honest with your answers. This interview is strictly confidential and your responses will not be shared with anyone. Your names will not also appear in any of the reports. This Participation in this survey is voluntary; you may refuse to answer any question or all the questions. This interview would take no longer than 45 minutes. I will however ask for your permission to record the proceedings Thank you for your time and agreeing to participate in this discussion .I appreciate your feedback

1. What do you know about the HMM strategy
2. Who manages children sick children in this community
3. How was your CBA selected
4. How accessible are the services of the CBAs in this community
5. What does he/she do when you send a sick child?
6. What does he/she do after giving your child treatment?
7. What are your views about the performance of your CBAs?
8. What is the CBA doing well and what is he/she not doing well in this community?
9. What factors affect his/her performance in providing services to your village?(Good and bad factors)
10. What do you do to support the CBAs in their work?
11. What can be done to improve the performance of the CBA?

Record time interview ends……

Thank You for your time