EXTENT OF HOME TREATMENT OF FEVER IN UNDERFIVES BY CAREGIVERS USING MODERN ANTIMALARIALS AND ASSOCIATED FACTORS IN KYELA DISTRICT, TANZANIA

By

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Public Health (MPH) of the Muhimbili University of Health and Allied Sciences

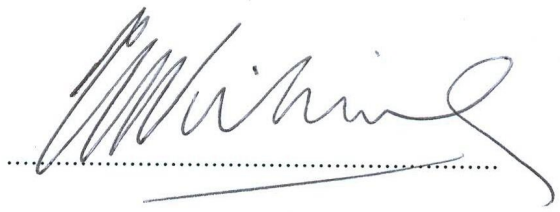
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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance of a dissertation titled "**Extent of Home Treatment of Fever in Underfives by Caregivers Using Modern Antimalarials and Associated Factors in Kyela District, Tanzania**" in partial fulfillment of the requirements of the Master of Public Health Degree of Muhimbili University of Health and Allied Sciences.



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DECLARATION

I, **Samwel Lazaro**, declare solemnly that the whole or part of this dissertation has never been submitted for a degree in any other University. It is a result of my own sole effort and field work in partial fulfillment of the requirement for the degree of Master of Public Health (MPH) of Muhimbili University of Health and Allied Sciences

Signature.....

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DEDICATION

This dissertation is dedicated to my lovely family.

ABSTRACT

Home treatment of fever in underfives is a common practice in our communities and majority of caregivers have not been trained to provide it appropriately. This has lead to exposure of children to potential risks such as under or over dosage. Broadly, the objective of this study was to determine the extent of home treatment of fever in underfives by caregivers using modern antimalarials and associated factors in Kyela District, Tanzania. A cross-sectional, community-based study using close-ended questionnaire was conducted in Kyela district in July, 2008. The study involved 300 caregivers of children aged between 2 to 59 months. Results showed that 104 (34.7%) of caregivers reported history of fever to their underfives within two weeks prior to the study. Forty two (40.4%) out of 104 caregivers whose children had history of fever, treated them at home using various drugs. Modern antimalarials were used in home treatment of about 74% of the underfives, commonly with Artemether-Lumefantrine (ALu) which amounted to 51.6%. Age of 30 years or above of caregiver, perceived less severity of illness and perceived poor quality of health services were significantly associated with home treatment. From this study, it is concluded that inappropriate home treatment for underfives is a major public health problem in some communities and that majority of caregivers have not been trained to offer appropriate home treatment. The study therefore recommends that caregivers should be trained, through Community Integrated Management of Childhood Illnesses, on appropriate ways of providing home treatment for underfives with fever and other illnesses in order to prevent them from any possible negative effects and to improve early diagnosis and prompt treatment.

DISSEMINATION OF RESEARCH FINDINGS

Research findings will be disseminated to the following bodies:-

- Muhimbili University of Health and Allied Sciences.
- Ministry of Health and Social Welfare.
- Executive Director of Kyela district.

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LIST OF ACRONYMS /ABBREVIATIONS

ACT	-	Artemisinin Combination Therapy
AIDS	-	Acquired Immunodeficiency Syndrome
ALu	-	Artemether/Lumefantrine
CCHP	-	Comprehensive Council Health Plan
cIMCI	-	Community Integrated Management of Childhood Illnesses
DAS	-	District Administrative Secretary
DED	-	District Executive Director
DMO	-	District Medical Officer
DHS	-	Demographic Health Survey
HIV	-	Human Immunodeficiency Virus
IMCI	-	Integrated Management of Childhood Illnesses
ITNs	-	Insecticide Treated Nets
LUWADA	-	Lusungo Ward Development Association
MOH&SW	-	Ministry of Health and Social Welfare
RAS	-	Regional Administrative Secretary
TGPSH	-	Tanzania-Germany Programme to Support Health
UNICEF	-	United Nations Children's Fund
VEO	-	Village Executive Officer
WEO	-	Ward Executive Officer
WHO	-	World Health Organization

CHAPTER ONE

1.0. INTRODUCTION

1.1. Background

In sub-Saharan Africa, fever is commonly treated as malaria (Emeka, 2005) a disease caused by the parasite of *Plasmodium* species and is transmitted through the bite of an infective female *Anopheles* mosquito. The clinical features of malaria vary from mild to severe, according to the infecting species of the parasite, the patient's state of immunity, the intensity of the infection and the presence of conditions such as malnutrition, anaemia and other diseases. Malaria remains the most important parasitic disease and is globally responsible for 300-500 million fever episodes. The greatest burden of malaria is in sub-Saharan Africa where it has been estimated that 40% of fever episodes are caused by malaria (WHO, 2006)

Malaria is a major public health problem in more than 90 countries, inhabited by more than 2.4 billion people - 40% of the world's population. The disease is estimated to kill a child every 30 seconds equivalent to 3,000 children each day and more than one million each year. It causes up to 600 million new infections worldwide annually, the majority being in sub-Saharan Africa (WHO, 2006).

The United Republic of Tanzania has a population of over 35 million, all of whom are at risk of malaria. However, endemicity and risk of transmission varies from one region to

another. Studies show that, 75% of the population is subject to stable perennial or stable seasonal malaria transmission, 8% to unstable highly seasonal transmission and 17% to no malaria transmission in the average year, but still at risk of epidemic malaria (de Savigny *et al*, 2004)

Tanzania has the third largest population at risk of stable malaria in Africa after Nigeria and Democratic Republic of Congo. It is believed to be directly or indirectly responsible for about 16 million annual malaria episodes and 100,000 to 125,000 annual deaths (70-80,000 in underfives) (de Savigny *et al*, 2004)

In Tanzania, studies show that 25% of children under age five had a fever, among those sick with fever, 58% received antimalarial drugs (Demographic Health Survey report, 2004/2005). There have been several country wide interventions against malaria for underfives. These have included free treatment for underfives, introduction of efficacious first line Artemisinin combination therapy e.g.(ALu), emphasis on early diagnosis and effective treatment of malaria cases through community Integrated Management of Childhood Illnesses (cIMCI), global fund project against HIV/AIDS, Tuberculosis and Malaria, subsidizing the price of Insecticide Treated Nets (ITNs) for pregnant women and the ongoing efforts of subsidizing ITNs for underfives as well as scaling up of health services delivery by constructing a dispensary to every village and health centre to every ward.

1.2. Statement of the problem

Home treatment for underfives with fever is common in our communities. Evidences from 21 African countries indicate that 44% of caregivers whose underfives had fever treated them at home with the use modern antimalarial (WHO/UNICEF, 2003).

In Tanzania, about 31% of caregivers whose underfives had fever treated them at home by the use of modern antimalarials (de Savigny *et al*, 2004). This is likely to occur due to diverse of barriers on health facility utilization such as distance from health facilities, perceived poor quality of health services, absence of drugs in health facilities, perceived severity of illness, lack of money to pay for treatment, availability of drugs in shops and good response to initial treatment of fever (Baume *et al* & Thera *et al*, 2000).

To protect the underfives from severe complications and death from malaria, it is world wide recommended that, treatment should be initiated within 24hrs of onset of symptoms by early utilization of health care facilities or by training individuals, families and communities in early diagnosis and prompt treatment (MOH&SW, 2006). In this regards, fever in underfives is almost always treated as malaria aiming at increasing community's sensitivity in diagnosing malaria on clinical grounds.

However, home treatment of fever might be dangerous to the overall health of the child if no training done to strengthen the capacity of the caregivers, families and communities at large in fulfilling their rights and obligations of providing quality health

care to children as the chances of inappropriate treatment are higher. A study done in three districts in Kenya show that, 88% of children with fever were inappropriately treated at home using modern antimalarials (Abuya *et al*, 2007).

In view of this, Tanzania adopted a National health policy that enables communities to participate in early detection and prompt treatment of fever (among other childhood illnesses) with antimalarials in 1996 through cIMCI in collaboration with UNICEF, WHO and other partners to address problems of child mortality. Since cIMCI program started 12 years ago, only 41(34%) of the districts have been covered, leaving the majority of districts being not covered on cIMCI, therefore depend solely on health facility utilization for rational diagnosis and treatment of malaria. Home treatment of fever (malaria) in these communities (where cIMCI program has not reached) raise a public health concern as regards to possible under or over treatment of the underfives and likely chances of drug resistance of current modern antimalarials.

To the knowledge of the researcher, no study has been done to find out extent of home treatment of fever in underfives by caregivers using modern antimalarials and associated factors in Kyela district, Tanzania. There is a need to investigate the extent of home treatment and understand the associated factors in order to have timely health facility utilization for proper diagnosis and treatment in the district and elsewhere in the country where cIMCI has not been in place.

1.3. Rationale of the study

Understanding the extent of home treatment of fever and its associated factors will help local implementers and other stakeholders in districts where cIMCI has not been started to either change or strengthen their strategies. This will ensure prompt health facility utilization and effective treatment of malaria for underfives so as to prevent them from severe manifestations and death due to malaria.

The information obtained from this study will also quicken the scaling up of cIMCI and help smooth take-off of cIMCI intervention in the district and nation at large. It may also add some information on what is currently known from other literature. Findings from this study will as well be useful for comparison with other studies done in Tanzania and other parts of the world.

1.4. Research questions

- What is the extent of home treatment of fever in underfives by caregivers using modern antimalarials and what are the associated factors of this home treatment in districts with no community IMCI intervention?
- Do caregivers have general awareness on fever, malaria and Artemether Lumefantrine (ALu)?
- What are caregivers' opinions on improving home treatment?

1.5 Research objectives

1.5.1. Broad objective

To determine the extent of home treatment of fever in underfives by caregivers using modern antimalarials and associated factors in Kyela District, Tanzania.

1.5.2. Specific objectives

1. To determine magnitude of fever for underfives in Kyela district, Tanzania.
2. To determine extent of home treatment of fever of underfives by caregivers in Kyela district, Tanzania.
3. To investigate association between demographic factors of caregivers and home treatment of underfives with fever in Kyela district, Tanzania.
4. To assess the relationship between perceived severity of illness and home treatment of underfives with fever in Kyela district, Tanzania.
5. To examine the association between traveling time to reach the health facility and home treatment of underfives with fever in Kyela district, Tanzania.
6. To investigate the association between perceived quality of health services and home treatment of underfives with fever in Kyela district, Tanzania.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1. An overview

Efforts to develop a useful clinical definition of malaria that has a predictive value higher than fever alone have been mostly unsuccessful (Mc Combie, 2002) and at the moment there are no universally agreed clinical criteria for malaria.

However, common experiences in endemic areas correlates high temperatures (>37.5°C) with malaria. It is therefore concluded that individuals and families can confidently recognize malaria on clinical grounds based on the presence of fever through feeling of body temperature (Tumwesigire & Watson, 2002)

Fever in children remains to be the most common feature of malaria. In this respect, caregiver's ability to suspect malaria in the presence of fever and other physiological and behavioral changes associated with the disease has important consequences for child survival in malaria-endemic areas (WHO, 2006). Global malaria control strategies highlight the need to increase early uptake of effective antimalarials at home for childhood fevers in endemic settings, based on a presumptive diagnosis of malaria in this age group.

Many control programmes therefore have identified ways to strengthen the capacity of the caregivers, families and community as important targets to promote effective early treatment. These targets have been set based on reported widespread inadequate childhood fever treatment practices in different communities (Abuya *et al*, 2007).

In Africa, malaria control relies primarily on early effective treatment (within 24 hours of onset of malaria symptoms or immediately in the case of severe malaria) for clinical disease, but most early treatments for fever occur through self-medication (Marsh, 1999), this is due to existence of socioeconomic and geographic barriers to treatment through government clinics and hospitals that has led to a proliferation of untrained private medicine sellers in many settings (Abuya *et al*, 2007)

There are advantages for the availability of drugs in patient medicine venders, at home with drugs bought from drug stores due to ease of access, convenience and expeditious treatment. However, home treatment of fever for underfives by caregivers in areas where training to individuals, families and communities have not been done is highly associated with inappropriate treatment such as under or overdosing the child, inappropriate number of days, increased risks of toxicity and accelerating drug resistance for the respective medicines (Emeka, 2005)

2.2. General awareness of caregivers on fever, its detection and its relation with malaria

In any community, every illness has its socially constructed name. The term *fever* may have different names in different communities. Understanding these terms and how they relate with different diseases in any study is of paramount importance in order to come up with correct interpretations.

A study done in Tanzania found that most of the households (77%) in the surveyed populations had socially constructed local names for the disease (Premji and Leshabari, 1999).

In Nigeria a study done in three rural communities to determine the baseline understanding of childhood fever and other illness behaviour revealed local terms *iba* and *oyi* to be used to describe malaria (Salako *et al*, 2001).

In Kilifi district, Kenya, the term *homa* was used to describe a range of illnesses and in association with symptoms including fever (hot body), cough and headache (Schellenberg *et al*, 1998).

In Ghana various terms like *pua* and *sa-ar* were used to describe malaria, while in Ethiopia and Malawi official local terms for malaria were *bussa* and *malungo*, respectively (WHO/TDR, 2003). In Mali, *soumaya* was used to refer uncomplicated malaria (Thera *et al*, 2000).

Apart from the terms used to refer to diseases, awareness of diseases in community is also important. This enables one decide how to plan an intervention. For example in a study done in Tanga found that only 46% of the population was aware of the cause of malaria (Fivawo, 1986).

In Bagamoyo it was found that the majority of respondents (68.8%) knew malaria could be the possible cause of fever (Mujinja *et al*, 2003).

2.3. General awareness of caregivers on ALu, first source of information on ALu and relation with malaria treatment

Caregivers' awareness on ALu and the source of information matters in predicting the correctness of home treatment in any suspected malaria condition.

In a study done in Mali, 99% of the mothers who had recently treated their child for *soumaya* mentioned to be aware of Chloroquine as the antimalarial. In this group of women, dosage of Chloroquine was grossly under- or over estimated. The source of information on Chloroquine, 40% of the women were unable to answer, 27.1% had it from a member of the family and 25.9% from the health centre and 6.5% from the shopkeeper (Thera *et al*, 2000). In a study done in Tanzania found that, awareness of antimalarials was associated with health care utilization (Tarimo *et al*, 2001)

2.4. Extent of home treatment

The ability of mothers or caregivers to suspect malaria in the presence of fever has important consequences giving that early diagnosis and adequate treatment are basic elements of an adequate malaria control programme (Emeka, 2005). This is likely to have early positive health seeking behaviuor and consequently prevent complications or death due to diseases such as malaria by doing home treatment or seeking appropriate health care services.

Home treatment (by the individuals, families and community) of childhood illnesses particularly malaria, is highly encouraged especially in malaria endemic areas by making sure that, treatment is started within 24 hours of malaria symptoms. But this is particularly important in communities where home treatment has been trained.

However, in communities which have not been trained on home treatment, the act may be associated with a number of problems due to inappropriate treatment. Studies in rural Burkina Faso show that, 69% of children aged 6-31 months who had fever were treated at home with drugs or traditional remedies available at home,16% in local health centre, 14% in the village(shops, traditional healers, village health workers),1% in a hospital (Muller et al,2003). A study in Mali found that, 75.8% of mothers whose child had soumaya (uncomplicated malaria) they managed the child at home with modern antimalarials (Thera *et al*, 2000). A study done in Uganda shows that, among the modern drugs given to children suspected of having malaria, 50% were antimalarials.

The most commonly used antimalarial was chloroquine tablets. Mothers indiscriminately administered antimalarials to children irrespective of the perceived cause of the fever (Lubanga *et al*, 1997).

In Tanzania, 74% of mothers/guardians in Kibaha district reported giving medications at home prior to visiting the public facilities (Nsimba and Rimoy, 2005) and 69% of children aged less than five years who had fever in Rufiji and Kilombero districts were treated at modern health care while 31% of caregivers provided treatment with modern antimalarials to their underfives with fever at home (de Savigny *et al*, 2004)

2.5. Socio-demographic factors of caregivers and home treatment

Factors such as sex, age, marital status, occupation, residence and education of a caregiver may influence health-seeking behaviour of individuals, families and the place where an underfive obtain treatment.

In Zambia, caregivers were autonomous regarding treatment needed for their ill children regardless of their marital status. They infrequently report consulting with other family members, and none reported being prevented by other family members from acting on their treatment decisions (Baume *et al*, 2000).

In Nigeria, it was indicated that home treatment of fever using modern antimalarial significantly correlated with maternal educational status, maternal age and source of treatment (Emeka, 2005).

In study done in Uganda for 209 respondents, 138(66%) were mothers of sick children, 18% were fathers, 12% were grand parents and 4% older siblings. Peasantry was the main economic occupation (66.5%) of families. It further indicated that, there was little or no formal education as only 8% were educated beyond primary school level (Tumwesigire & Watson, 2002).

Prior experience with the disease is a factor that influences treatment choices. In Burkina Faso, the most common reason for choosing home treatment was confidence in treating the disease (Mugisha *et al*, 2002). Past experience with malaria has been related to higher rates of home treatment in the Philippines (Espino and Manderson, 2000). This suggests that prior experience may have taught women and other caregivers that they could provide home treatment.

In Kenya, poverty and low literacy of caregivers was associated with seeking treatment of fever for underfives outside formal health sectors especially home treatment through drugs bought from shops (Mwenesi *et al*, 1995).

In Tanzania, a study done in Kibaha district (Nsimba and Rimoy, 2005) found that, Mothers/Guardians of the sick underfive children had a mean age of 25years. Ninety eight percent were females and 71% of them had primary school education.

In another study, higher level of education was associated with promptness in seeking care from a health facility (Tarimo *et al*, 2001). In Malawi, higher educational level of the caregiver was associated with attending a clinic (Slutsker *et al*, 1994)

2.6. Drugs used for home treatment and their source

Home treatment of fever for underfives depends greatly on the availability of drugs in the community, background information and its cost. These drugs may come from health facilities brought by health workers and from drug shops. But due to a well known and wide spread pattern of stopping medication when symptoms resolve, drugs may be saved and used for treating future episodes or given to the family and friends (Mc Combie, 2002).

Many studies of treatment-seeking do not report on what therapies were actually used for an episode of illness, whether it was treated at a health facility or not. However, some studies reported that most malaria cases are managed outside the formal health sector (Mwenesi *et al*, 1995) with drugs bought from shops or kiosks (Snow et al, 1992) and that, 'most' treatments sought obtained from shops or kiosks were antimalarials (Mc Combie, 2002)

A study done in Owerri, Nigeria indicated that, 64% of children with fever were treated at home with drugs brought from drug stores or Patient Medicine Vendors. It also indicated that, the commonest drugs administered were analgesics, antimalarial drugs and antibiotics in which chloroquine were the most commonly administered drugs. (Emeka, 2005). Similar findings were also observed by studies done in Kenya by Marsh *et al* (1999) and by Abuya *et al* (2007) which showed that, most home treatment of fever in underfives occur through self-medication with drugs obtained from drug shops and over-the-counter respectively.

In Zambia, studies show that most of the fever cases received treatment at household levels through left-over drugs from former disease episodes, drug shops and village health workers. (Baume *et al*, 2000), in Burkina Faso drugs were obtained from household/village and health centre/hospital level. (Muller *et al*, 2003). Studies in Uganda show that, 31% of caregivers sought treatment from government health facilities, 53% sought treatment from drug shops/vendors (Tumwesigire & Watson, 2002). Foster (1991) pointed out that, unofficial drug sellers in markets, streets and village shops account for as much as half of antimalarials distributed and used for home treatment.

In Tanzania, 31% received there care at home with the modern antimalarials obtained from private shops (de Savigny *et al*, 2004). In Kibaha district, 20% used previous stocks obtained from health facilities, 21% did nothing and 5% used traditional

remedies. Of all the drugs used at home, 45% were antipyretics, 22% antimalarials mostly chloroquine and antibiotics (13%) were the most common reported drugs administered. The other 20% were other drugs (Nsimba and Rimoy, 2005).

2.7. Distribution of health facilities, traveling time to reach and home treatment

Physical barriers such as distance from the nearest health facility may affect its accessibility in a positive or negative way. It is generally observed that there is relatively high utilization of health care facility when it is within reach of the majority provided other factors such as cost of utilization, quality of care and others are relatively fair.

In Uganda, there was relatively easy access to health facilities as 97% of respondents lived within 5 kilometers of health units, and could reach it in less than 2hours (Tumwesigire & Watson, 2002).

In Zambia, distances from health care facilities-Children who live closer to the health center were more likely to be taken there for treatment than are children who lived farther away. Caregivers indicate that 79% of children living within 1 hour's traveling time were taken for treatment at the health center irrespective of the severity, compared with 58% of children who resided more than an hour from the health center (Baume *et al*, 2000).

The Ministry of Health and Social Welfare recommends the health facility to be within 5 kilometers reach and not more than 10 kilometers though this could also be affected by geographical barriers such as mountains, rivers, to name the few. In Tanzania, majority of its people enjoy relatively good geographic access to primary health services. About 90% of the population is within one hour of a government health services. Public health services for underfive years of age officially free. However, household health needs and demands are great (de Savigny *et al*, 2004)

2.8. Perceived severity of illness and home treatment

Caregiver's perception on the severity of illness is crucial on the health seeking behaviour. It is one of the most important factors related to taking a treatment action. Fever in underfives usually prompt action from their caregivers.

A number of studies have found overall treatment rates of 90% or more of fever (Deming *et al,* 1989; Mwenesi *et al*, 1995; Molyneux *et al*, 1999). In Ethiopia, mothers reported that high fever, shivering, vomiting and inability to feed were cues for action (Yeneneh *et al*, 1993). In Kenya, number of symptoms was related to taking action (Ruebush *et al*, 1995).

However, in Uganda perceived severity was more important than number of symptoms in reaching a decision to go to the hospital. In a facility based studies done in Tanzania, 87% of women with children underfive years said they would go to a health centre if

their child had convulsions, while only 9% said they would go to traditional healer. However, 76% believed injection in a child with high fever would precipitate convulsions or cause death, which indicate why some might be reluctant to go to health facilities in these cases (Tarimo *et al*, 2000). The study was done among mothers who brought their children with fever to a health facility, and thus suffers from selection bias. These kinds of studies may seriously misrepresent the prevalence of beliefs and behaviour among the general population, and can lead ton spurious conclusions (Brown, 1976). This bias can be especially serious if the beliefs are related to decision to seek care from a clinic.

Another study done in Rufiji and Kilombero rural district of Tanzania, it was found that Cases with simple fever or uncomplicated malaria are more likely to be treated at home by modern biomedical care and antimalarial drugs, while severe such as convulsions are more likely to be managed by traditional healer or at health facilities. Caregivers reported that 'Homa' and 'Malaria' are seen as conditions that can be managed at home with modern medicine available from health facilities. But 'dagedege' is perceived as a serious life threatening for which prompt treatment-seeking is required from traditional healer or health care facility (de Savigny *et al*, 2004)

2.9. Perceived quality of health services and home treatment

Individual, family and community perception on the quality of health care services bear an important role on its utilization. Perceptions of poor health care services vary

considerably among individuals. It may be perceived poor once the quality of care services fail to satisfy one's expectations or when it is low compared to the past experiences.

Unavailability of drugs at health care facilities, absence or inadequate physical examination, ineffective treatment of child's illnesses and absence of qualified medical personnel reduced health care facility utilization by caregivers. These caregivers did not see the importance of taking their children to health centre, they rather treated them at home (Baume *et al*, 2000).

In Uganda, the practice of home treatment of children was the manifestation of reduced trust and confidence in the public health system due to poor services available such as lack of drugs, few trained personnel and inadequate diagnostic facilities (Tumwesigire & Watson, 2002)

CHAPTER THREE

3.0. METHODOLOGY

3.1. Study area

The study was conducted in Kyela District which is in Mbeya Region. According to the 2002 National Population Census, it has a total population of 173,830 (82,920 males and 90,910 females) in which the underfives are 25,289. In this particular study, Kyela District was chosen because it reflects periphery rural districts that are endemic for malaria in the country.

Kyela is among seven districts, south of Mbeya region which is in the southern highlands part of the country. It is 986 kilometers from Dar es Salaam and 120 kilometers from Mbeya regional head quarters. It is bounded by Rungwe district in the north, Ileje district in the northwest, Malawi in the southwest, Lake Nyasa in the south, Makete and Ludewa Districts on the eastern part. It has an area of 1892 square kilometers being the smallest district in the region. The natives are the Wanyakyusa but being at the border with Malawi and highly active business town, some people of different ethnicity have immigrated.

Administratively, Kyela district is divided into 2 divisions, 15 wards and 101 villages with a total of 49,467 households of which 7858 are households with underfives (Comprehensive Council Health Plan (CCHP), 2007/2008).

The district has 33 operating health facilities out of which 2 are hospital (government and voluntary agency), 1health centre (government), 30 are dispensaries (25government, 4 voluntary agencies and 1 parastatal) which are fairly distributed. It has 1 pharmacy and at least one drug shop in every village .These health facilities provide spectrum of services ranging form primary to tertiary preventive health services.

The local routinely collected data (Kyela District Annual Report for 2006) shows that, malaria is the most common occurring disease in the district. The other common diseases are acute respiratory infections, Diarrhoeal diseases, Pneumonias, Intestinal worm infestations, Minor surgical conditions, non fungal skin conditions, Urinary tract infections, fungal skin infections and Ear infections. Also data (annual report for 2006) shows that, malaria is the most cause of admission (63%) and death (58%) in the district.

3.2. Study design

A cross sectional, community based study was conducted in July; 2008.A quantitative technique using structured questionnaire with closed questions was used.

3.3. Target population

Target population was caregivers with underfives having history of fever two weeks prior to study period.

3.4. Inclusion criteria

Were all caregivers with children aged 2 to 59 months with MCH-card No.1

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3.5. Exclusion criteria

Were all caregivers with children aged less than two months and those whose children had no MCH-card No.1 during the study period. This is because fevers due to malaria are not common in children under the age of two months.

3.6. Sample size

The minimum sample size for the study was obtained from the formula:

$$n=\frac{Z^2\, p\,(100-p)}{E^2}$$

Where, n= Sample size

p= Expected proportion of caregivers who treated their underfives with fever at home with modern antimalarials-38%

E= Margin of error (6%)

Z=1.96(confidence interval at 95%)

$$n=\frac{1.96 \times 1.96 \times 38(100-38)}{6 \times 6} = 251$$

Assuming that 10% of the study population will not respond, therefore the minimum sample size was 276 of caregivers with children aged less than five years. But a total of 300 caregivers were interviewed in this study.

3.7. Sampling procedure

The sample size for the study was 300 caregivers of underfives. The district has 49,467 households out of which 7,858 households have at least one child aged less than five years. Participants for the study were selected using a multi-stage sampling technique.

1. Unyakyusa was selected randomly out of the two divisions, the other being Ntebela.
2. Four out of seven wards namely Kyela mjini, Bujonde, Ikolo and Katumba Songwe were randomly selected from Unyakyusa division.
3. By using simple random sampling 8 villages (two from each ward) namely Ndandalo, Bondeni, Lubaga, Itope, Ikolo, Muungano, Njisi and Ndwanga were selected from Kyela district.
4. All households found to have caregivers with underfives in the village were enumerated and randomly picked to provide a sample of 300 households.
5. The number of households sampled in each village depended on the proportion contribution to the total sum of all households with underfives in all 8 villages. The procedure is shown below:

DIVISION	**UNYAKYUSA**								
Wards	KYELA		BUJONDE		K/SONGWE		IKOLO		TOTAL
Villages	1	2	3	4	5	6	7	8	
Total households	901	665	431	392	625	196	425	274	**3909**
Households with Underfives	143	106	73	72	100	50	69	45	**658**
Percentage of Underfives	22	16	11	11	15	8	10	7	**100**
Households with underfives studied	66	48	33	33	45	24	30	21	**300**

NB:1. Ndandalo 2. Bondeni 3. Itope 4. Lubaga 5. Njisi 6. Ndwanga 7. Ikolo 8. Muungano.

6. From each of the selected households, only one caregiver of underfives was included in the study.

7. A caregiver who had more than one underfives was interviewed based on only one child. The child to be included was enumerated and randomly selected.

8. If the selected underfive had more than one episodes of fever, the most recent history of fever was studied.

3.8. Development of data collection tools

Questionnaire with closed questions was developed in April, 2008. This was then used to collect information needed to answer the questions asked. One close-ended question asking the 300 respondents who participated in this study to give their own views on what should be done to improve home treatment of underfives to prevent complications or death from fever due to malaria. Data collection tool was tested in Kibaha district. The research tool was modified and finalized to suit the requirements.

3.9. Study procedures

Four Research Assistants were recruited to assist the researcher during data collection. Age of the research assistants was relatively similar to those of the respondents and had the ability to work for long hours in rural areas. The research assistants were fluent in Kiswahili and Kinyakyusa as well as skilled in questionnaire administration. The research assistants were trained for one day on how to fill in the questionnaires and how to conduct the interviews. The researcher and research assistants administered the

questionnaires and at the end of everyday of research, questionnaires were checked for completeness. The researcher then coded all questionnaires and gave each a serial number.

3.10. Data entry validation and analysis

Before computer data entry, all the questionnaires were reviewed and the necessary corrections effected. Finally, data entry was done using EPI Info 6 version and analysis done by SPSS programme. Explorative analysis was carried out using frequency distributions. Proportions were compared by Chi-square test at the significance level of 0.05.

3.11. Variables

Independent variables

These are: Age, sex, education level, marital status and occupation of caregivers, number of children, distance from health facility, availability of drug shops, perceived severity of illness, perceived quality of health care services, age and sex of the underfives and awareness on ALu

Dependent variable

This is: Home treatment.

3.12. Ethical issues

Before the study was undertaken, ethical approval was obtained from the Research and Publication Committee of the Muhimbili University of Health and Allied Sciences. The permission to conduct the study in the study area was sought from the RAS-Mbeya regional, DAS, DED and DMO from Kyela district. Also the permission was obtained from WEO and VEO in wards and villages that were involved in the study. Heads of household and caregivers of underfives were asked for their verbal consent as well as the purpose of the study before asking them to participate in the study.

The participants were also assured the fact that in no way their names would be used and that the information provided by them would only assist to improve implementation of quality health services in the district. Participants who would wish to withdraw from the study were freely allowed to do so.

3.13. Study biases and limitations

Caregivers who treat their underfives at home may feel accused when asked reasons for not sending their sick children to health facilities. They may just jump to simple answers or responses which they think to make sense instead of true reasons. Mild fevers are more likely to be forgotten, especially if they were not treated. Because of floods that has badly hit the district this rainy season, magnitude of fever due to malaria may go higher than expected and some areas were not easily reachable.

3.14. Definition of terms

Awareness on ALu: It means having ever heard of ALu from any source.

Caregiver- A person who is primarily responsible for well being of underfive under study; can be parent or guardian.

Fever- History of raised body temperature or >37.5 degree Celsius.

Home treatment- Treating the underfive with fever at home using modern antimalarials without medical consultation on that occasion.

Household- Refers to all people living together in a house, sharing fire and food on a regular basis. These people may be related by blood or ritual such as marriage.

Malaria- Means clinical malaria and not the fact of carrying malaria parasites in the blood.

Modern antimalarials-any non traditional medicines, which are used for treatment of malaria that are in the market.

Spouse- It means officially living together with sexual relationship between man and woman.

Underfive- any child aged less than 60 months.

CHAPTER FOUR

4.0. RESULTS

4.1. Socio-demographic characteristics of the study sample.

Table 1: Socio-demographic characteristics of the study sample in Kyela district

Characteristic of respondents, n=300	No	%
Sex		
Male	19	6.3%
Female	281	93.7%
Age (years)		
<30	204	68.0%
≥30	96	32.0%
Religion		
Christians	267	89.0%
Muslims	19	6.3%
Others	14	4.7%
Marital status		
With spouse	223	74.3%
Without spouse	77	25.7%
Education		
No formal education	30	10.0%
Primary education	250	83.3%
Secondary education or >	20	6.7%
Occupation		
No job	18	6.0%
Peasants	215	71.7%
Employees(salaried)	13	4.3%
Petty traders	54	18%
No. of children		
1	92	30.7%
2	81	27.0%
3	43	14.3%
4	43	14.3%
5 +	41	13.7%

A total of 300 respondents who are caregivers of underfives were interviewed from 8 villages namely Ndandalo, Bondeni, Ikolo and Muungano. Other villages were Itope, Lubaga, Njisi and Ndwanga.

Table1 shows that the community caregivers' age ranged from 15 to 60years with the mean age of 27 years, 68% aged less than 30years and the rest were 30years or above, among them 19(6%) were males and 281(94%) were females. Of all the respondents, 89% were Christians, 6% were Muslims and the rest were from other religions. About 74% of caregivers were having spouses while the rest were not. It also shows that, the majority (83%) of respondents had primary school education, 10% had no formal education and the rest had at least secondary school education. Seventy two percent were peasants, 18% were petty traders, 6% had no jobs and 4% were salaried employees. About thirty one percent of respondents had one child, 27% had two children, 14% had 3, 14% had 4 children and 13.7% had 5 or more children.

4.2. General awareness of caregivers on fever, its detection and its relation with malaria

Table 2: Distribution of terms used by caregivers to imply 'hot body', techniques used for clinical detection of fever and caregivers who reported malaria as a possible cause of fever

n=300	No	%
Hot body referred to as		
Fever	196	65.3%
Malaria	104	34.7%
Technique used		
Feeling by hand	283	94.3%
By thermometer	9	3.0%
Do not know	8	2.7%
Malaria causes fever		
Yes	250	83.3%
No	23	7.7%
Do not know	27	9.0%

This shows the distribution of caregivers in relation to terms used to refer a hot body of an underfive. Most of them referred to as fever (65.3%) while 34.7% referred to as Malaria.

It also shows that 97.3% of caregivers were aware of how to detect fever while 2.7% were not. Over eighty three percent of caregivers reported malaria to be the possible cause of fever, 7.7% reported malaria was not the possible cause while 9% were not aware whether or not malaria could be the possible cause of fever.

4.3. General awareness of caregivers on ALu, first source of information on ALu and relation with malaria treatment

Table 3: Distribution of Caregivers who reported to have ever heard of ALu, the source of information on ALu and awareness on whether ALu treats malaria or not

	No	%
Ever heard of ALu		
Yes	251	83.7%
No	49	16.3%
Total	**300**	**100%**
1st source of information		
Health workers	185	73.7%
Drug sellers	7	2.8%
Media	47	18.7%
Relatives/ Friends	12	4.8%
Total	**251**	**100%**
ALu treats malaria?		
Yes	245	97.6%
No	6	2.4%
Total	**251**	**100%**

Table 3 shows that majority of caregivers (84%) reported to have ever heard of ALu while 16% reported to have never heard of ALu. Health workers were the most common source of information on ALu to caregivers (73.7%), followed by media (18.7%), relatives or friends (4.8%) and drug sellers (2.8%). Of all caregivers who reported to have ever heard of ALu, 97.6% of them knew ALu is used to treat malaria while the rest (2.4%) did not.

4.4. Magnitude of fever and extent of home treatment of underfives in Kyela district

Table 4: Proportions of caregivers who reported history of fever two weeks prior to interview and caregivers who offered home treatment for their underfives in Kyela district

	No	%
History of fever in two weeks time		
Yes	104	34.7%
No	196	65.3%
Total	**300**	**100%**
Home treatment		
Yes	42	40.4%
No	62	59.6%
Total	**104**	**100%**

Table 4 shows that of 104 (34.7%) the studied caregivers reported history of fever for their underfives two weeks prior to interview while 196 (65.3%) reported no history of fever during that period. Of 104 caregivers who reported history of fever, 42 (40.4%) of them treated their underfives at home using various medications.

4.5. Distribution of drugs used for home treatment of fever in underfives, their source and the common antimalarials in Kyela district

Table 5: Distribution of drugs that were used for home treatment of fever, their source and the common modern antimalarials used for home treatment

	No	%
Type of drugs		
Antimalarials alone	20	47.6%
Antimalarials + paracetamol	11	26.2%
Paracetamol alone	7	16.7%
Antibiotics	4	9.5%
Total	**42**	**100%**
Source of drugs		
Drug shops	21	50.0%
Kept at home	12	28.6%
Health facility	5	11.9%
Relative/ friend	4	9.5%
Total	**42**	**100%**
Type of antimalarials		
ALu	16	51.6%
SP	9	29.0%
Amodiaquine	5	16.2%
Quinine	1	3.2%
Total	**31**	**100%**

Table 5 shows that 47.6% of caregivers treated their underfives using antimalarials alone, 26.2% using antimalarials in combination with paracetamol, 16.7.5% were given paracetamol alone and 9.5% were given antibiotics. Drug shops were the commonest source of drugs (50%), followed by drugs kept at home 28.6%, then health facilities (11.9%) and lastly from relatives or friends (9.5%). ALu was the commonest modern

antimalarials (51.6%) used for home treatment of fever, followed by SP (29%), amodiaquine (16.1%) and quinine (3.2%).

4.6. Caregivers' opinions on how to improve home treatment of underfives

Table 6: Caregivers' opinions on how to improve home treatment of underfives in Kyela district

Caregiver's opinion	**No**	**%**
Health education	171	57%
Drugs availability in shops	78	26%
Need more health facilities	45	15%
Other opinions	6	2%
TOTAL	**300**	**100%**

Table 6 shows that 57% of caregivers suggested to be given health education in order to improve home treatment for underfives. Others suggested to have more drug shops (26%), to build more health facilities (15%) and 2% had other opinions.

4.7. Home treatment and the associated factors

Table 7: Association between age of caregivers and home treatment in Kyela district

Age (years)	Home treatment		Total
	Yes	No	
<30	21 (39.6%)	53 (60.4%)	74 (100%)
≥30	21 (70.0%)	9 (30.0%)	30 (100%)
TOTAL	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

Chi square=15.4 P-value<0.01

The above table shows that, about 40% of caregivers aged less than 30 years practiced home treatment and 70% of those aged 30 years or above practiced home treatment. So, caregivers aged 30 or more significantly treated their underfives at home more than those below 30 years ($p<0.01$)

Table 8: Association between sex of caregivers and home treatment in Kyela district

Sex	Home treatment		Total
	Yes	No	
Males	5 (62.5%)	3 (37.5%)	8 (100%)
Females	37 (38.5%)	59 (61.5%)	96 (100%)
TOTAL	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

P-value =0.264

The table above shows that, about 63% of males practiced home treatment for their underfives while about 39% of females treated their underfives at home. Although males appear to have treated their underfives at home more than females, the observed difference is not statistically significant (p>0.05)

Table 9: Association between marital status of caregivers and home treatment of underfives with fever in Kyela district

Marital status	Home treatment		Total
	Yes	No	
With spouse	26 (37.7%)	43 (62.3%)	69 (100%)
Without spouse	16 (45.7%)	19 (54.3%)	35 (100%)
Total	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

Chi-square =0.62 P-value =0.43

The table above shows that, 45.7% of caregivers without spouses offered home treatment for their underfives while 37.7% of caregivers with spouses treated their children at home. The observed difference is not statistically significant (p>0.05)

Table 10: Association between level of education of caregivers and home treatment of underfives with fever in Kyela district

Level of education	**Home treatment**		**Total**
	Yes	**No**	
No formal education	5 (55.6%)	4 (44.4%)	9 (100%)
Primary education	29 (34.9%)	54 (65.1%)	83 (100%)
Secondary education and above	8 (66.7%)	4 (33.3%)	12 (100%)
Total	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

P-value = 0.023

The table above shows that, 55.6% of caregivers with no formal education, 34.9% of caregivers with primary education and 66.7% of caregivers with secondary education treated their underfives with fever at home. Having no education and having at least secondary education was associated with home treatment and this is statistically significant ($p< 0.05$)

Table 11: Association between occupation of caregivers and home treatment of underfives with fever in Kyela district

Occupation	**Home treatment**		**Total**
	Yes	**No**	
Peasants	29 (39.7%)	44 (60.3%)	73 (100%)
Employees(salaried)	4 (80%)	1 (20%)	5 (100%)
Petty traders	9 (34.6%)	17 (65.4%)	26 (100%)
Total	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

P-value = 0.360

The table shows that, 80% of salaried caregivers treated their underfives with fever at home, peasants (39.7%) and petty traders (34.6%). It shows that, there is no association between home treatment and occupation of caregivers.

Table 12: Association between perceived severity of illness of underfive by caregivers and home treatment of underfives with fever in Kyela district

Perceived severity	**Home treatment**		**Total**
	Yes	**No**	
Severe	8 (14%)	49 (86%)	57 (100%)
Not severe	34 (72.3%)	13 (27.7%)	47 (100%)
Total	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

Chi-square = 36.4 P- value < 0.01

There is very strong association between perceiving an illness as 'not severe' and treating the underfive at home. Seventy two percent (72%) of caregivers who perceived an illness as 'not severe' treated their underfives at home while the rest perceived it as 'severe'. This difference is observed to be statistically significant ($p<0.01$)

Table 13: Association between time to reach the health facility and home treatment of underfives with fever in Kyela district.

Time to reach h/ facility	Home treatment		Total
	Yes	No	
Within ½ an hour	23 (51.1%)	22 (48.9%)	45 (100%)
> ½ an hour	19 (32.2%)	40 (67.8%)	59 (100%)
Total	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

Chi-square = 3.8 P-value >0.05

Results from table 13 indicate that, 51.1% of caregivers who live within half an hour traveling time to the health facility treat their underfives at home and 32.2% of those who live more than half an hour traveling time to reach the health care facilities treated their underfives at home. However, there is no association between home treatment and time taken to reach the health facility ($p>0.05$)

Table 14: Association between perceived quality of facility health services and home treatment of underfives with fever in Kyela district

Perceived quality	Home treatment		Total
	Yes	No	
Generally good	19 (24.1%)	60 (75.9%)	79 (100%)
Generally poor	23 (92.0%)	2 (8.0%)	25 (100%)
TOTAL	**42 (40.4%)**	**62 (59.6%)**	**104 (100%)**

Chi-square = 36.4 p-value <0.01

As table above shows, ninety two percent of caregivers who perceived quality of health service to be poor, treated their underfives at home, 8% perceived health care services to be good. Therefore, there is very strong association between perceiving health care services as poor and treating the underfive at home ($p< 0.01$)

4.8: Logistic regression

Table 15: Logistic regression on factors that are associated with home treatment which include sex, age, level of education, traveling time to reach the health facility, perceived severity and perceived quality of health services.

Variables	Home Treatment		Univariate		
	No	Yes	OR	95%CI	p-value
Sex					
Male	3(37.5%)	5(62.5%)	.....	.....	.....
Female	59(61.5%)	37(38.5%)	0.38	0.08 – 1.67	0.198
Age group (yrs)					
<30	53(60.4%)	21(39.6%)	.....	.....	.....
≥ 30	9(30.0%)	21(70.0%)	3.87	3.20 – 4.99	0.028
Education					
Secondary and above	3(27.3%)	8(72.7%)	.....	.....	.....
Primary	55(65.5%)	29(34.5%)	0.20	0.05 – 0.80	0.023
None	4(44.4%)	5(55.6%)	0.47	0.07 – 3.04	0.427
Traveling time					
Within half an hour walk	22(48.9%)	23(51.1%)	.....	.....	.....
More half an hour walk	40(67.8%)	19(32.2%)	0.45	0.20 – 1.01	0.053
Perception of severity					
Severe	49(86.0%)	8(14%)	.....	.....	.....
Not severe	13(27.7%)	34(72.3%)	16.02	5.99 – 42.83	0.000
Perception of quality					
Generally good	60(76.0%)	19(24.0%)	.....	.....	.....
Generally poor	2(8.0%)	23(92.0%)	36.32	7.83 – 168.4	0.000

The table above shows that, female caregivers were insignificantly ($p>0.05$) three times less likely to treat their underfives at home than males.

Caregivers aged 30 years or above were significantly four times more likely to offer home treatment for their underfives than caregivers whose ages were less than 30years ($p<0.05$).

Caregivers who had primary education were significantly ($p<0.05$) five times less likely, while those with no formal education were insignificantly ($p>0.05$) two times less likely to treat their children at home than those whose education level was secondary or above.

Those who resided more than half an hour traveling time to reach the health facility were about two times less likely to offer home treatment than those who resided less than half an hour reach. This was not statistically significant ($p>0.05$).

Caregivers who perceived an illness as less severe were significantly ($p<0.01$) sixteen times more likely to treat their underfives at home than those who perceived to be severe.

It also shows that, caregivers who perceived health care services to be poor were significantly ($p<0.05$) thirty six times more likely to treat their underfives at home than those whose perception about health care services was good.

CHAPTER FIVE

5.0 DISCUSSION

In sub-Saharan Africa, malaria is a major public health problem. In Tanzania, the whole population is at risk of malaria transmission which varies from one geographical area to another and from one group of people to another. Children of underfive and pregnant women are more vulnerable than the rest of the population, mostly because of biological reasons. In underfives, fever is the commonest manifestation of malaria and it has almost always been treated as malaria (WHO, 2006). Because of its rapid progression to severe complications and death, there have been several strategies aiming at early diagnosis and treatment. One of these strategies is utilization of health care services as early as possible, preferably within 24 hours from onset of symptoms.

However due to some reasons, some caregivers do treat their underfives with fever at home using various medications including modern antimalarials. This study therefore focused on caregivers' awareness on home detection of fever and its treatment, general awareness on ALu, first sources of information of ALu and its relation with malaria treatment. It also sought to understand their opinions on how to improve home treatment and the proportion of underfives who had history of fever two weeks prior to the study. It also focused on determining the proportion of caregivers who offered home treatment, the common drugs used for home treatment and their sources as well as determining various factors associated with home treatment.

5.1. General awareness of caregivers on fever, its detection and its relation with malaria

The study has shown that *homa* and *malaria* are local terms used by caregivers in the community to refer hot body of the underfives. Of all the respondents, 65.3% referred hot body to as *homa* and 34.7% referred it to as *malaria*. Other study done in Tanzania found that most of the households (77%) in the surveyed populations had socially constructed local names for the disease (Premji and Leshabari, 1999).

In Nigeria a study done in three rural communities to determine the baseline understanding of childhood fever and other illness behaviour revealed local terms *iba* and *oyi* to be used to describe malaria (Salako *et al*, 2001).

In Kilifi district, Kenya, the term *homa* was used to describe a range of illnesses and in association with symptoms including fever (hot body), cough and headache (Schellenberg *et al*, 1998).

In Ghana various terms like *pua* and *sa-ar* were used to describe malaria, while in Ethiopia and Malawi official local terms for malaria were *bussa* and *malungo*, respectively (WHO/TDR, 2003).

In Mali, *soumaya* was used to refer to uncomplicated malaria (Thera *et al*, 2000). More than 97% of respondents knew how to detect fever (hot body) from their ill underfives.

Majority of them reported to be able to detect hot bodies by feeling using hands or other parts of their body (94.3%), few of them using thermometers (3%) and 2.7% reported to be unaware to detect it. More interestingly is that, over 83% of all respondents were able to associate malaria to be the possible cause of fever.

However, a study done in Tanga found that only 46% of the population was aware of the cause of malaria (Fivawo, 1986). In Bagamoyo it was found that the majority of respondents (68.8%) knew malaria could be the possible cause of fever (Mujinja *et al*, 2003). High awareness in Kyela could partly be explained by the availability of many health facilities from which majority of respondent obtain health related information. The presence of an NGO known as LUWADA (Lusungo Ward Development Association) which engage itself in community sensitization of diseases particularly malaria and HIV/AIDS could also explain the high awareness among caregivers.

5.2. General awareness of caregivers on ALu, first source of information on ALu and relation with malaria treatment

Apart from the awareness of fever and malaria, the study also found that, majority of caregivers (84%) reported to have ever heard of ALu, which is the first line antimalarial in Tanzania. The sources of information being health workers (73.7%), media (18.7%), relatives/friends (4.8%) and drug sellers (2.8%).Further more; over 97% of respondents who had ever heard of ALu knew it was used to treat malaria. The high awareness on ALu in Kyela can be due the presence of LUWADA, an NGO used to sensitize on

various health related issues including drugs as well as the good distribution of health facilities in the district. However, it was found in this study that, there was no association between awareness on ALu and home treatment ($p>0.05$) this is contrary to the study done by Tarimo *et al* (2001) which found that, higher level of awareness of antimalarials was associated with health facility utilization.

5.3. Magnitude of fever for underfives in Kyela district

According to WHO (2006), about 40% of fever episodes in sub-Saharan Africa are caused by malaria. In Tanzania, 25% of children under age of five had fever (DHS report, 2004/2005). In Kyela district, 34.7% of children under the age of five were reported to have had history of fever within two weeks prior to study. The difference from that of DHS can be the fact that, DHS reports take an average magnitude of fever from all the districts all over the country. The higher proportion of fever in Kyela could also be due to its endemicity on malaria as compared to most districts in the country.

5.4. Extent of home treatment of fever for underfives in Kyela district

In this study, home treatment of fever was observed to occur in more than 40% of all respondents whose children have had history of fever. In Kibaha district, Tanzania, 74% of mothers/guardians reported giving medications at home prior to visiting the public health facilities (Nsimba and Rimoy, 2005). The Kibaha study was facility based (therefore subject to selection bias) as compared to community based study of Kyela.

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Studies in rural Burkina Faso show that, 69% of children aged 6-31 months who had fever, were treated at home with drugs or traditional remedies available at home (Muller *et al*, 2003). The higher home treatment rate observed in Burkina Faso is probably because of differences in target population and including traditional remedies as home treatment which was excluded in this study. Also the Burkina Faso study included children aged 6-31 months who are more vulnerable to diseases than the under six months who usually still have maternal antibodies.

5.5. Distribution of drugs used for home treatment of fever in underfives in Kyela district

It was also found in this study that, about 74% of respondents who offered home treatment, treated their children at home using modern antimalarials [either alone (48%) or in combination with paracetamol (26%)], paracetamol alone 16.7% and antibiotics 9.5%.

In Rufiji and Kilombero districts, 31% of caregivers provided home treatment with modern antimalarials to their underfives with fever (de Savigny *et al*, 2004). This can partly be explained by availability of drug shops in almost every village in Kyela which may have facilitated home treatment. ALu were the most commonly used modern antimalarials in Kyela (51.6%) than the rest modern antimalarials.

Similar results were observed in the study done in Owerri, Nigeria which found that the commonest administered drugs were antimalarials, analgesics and antibiotics in which chloroquine were the most commonly administered drugs (Emeka, 2005). This is because ALu is the first line drugs for treating uncomplicated malaria in Tanzania and chloroquine was the first line drugs for treating uncomplicated malaria.

In Kibaha district, of all the drugs used at home, 45% were antipyretics, 22% antimalarials mostly chloroquine and antibiotics (13%) were the most common reported drugs administered (Nsimba and Rimoy, 2005). The Kibaha study was facility based (suffers from selection bias), therefore, the higher rate of antipyretic use may be because parents wanted to relieve symptoms such as fever prior to visiting the health facility while in Kyela study, the aim was to cure the underfives from malaria at home.

5.6. Source of drugs and home treatment

As far as sources of drugs for home treatment are concerned, the study showed that drug shops were the commonest source of drugs for home treatment (50%), followed by drugs kept at home (28.6%), from health facilities (11.9%) and from relatives or friends (9.5%).

Similar results were found in a study done in Owerri, Nigeria which indicated that 64% of children with fever were treated at home with drugs bought from drug stores or Patient Medicine Venders (Emeka, 2005).

Another similar findings were also observed from studies done in Kenya by Marsh *et al* (1999) and Abuya *et al* (2007) which showed that, most home treatment of fever in underfives occur through self-medication with drugs obtained from drug shops and over-the-counter respectively.

In Uganda, it showed that 51% of caregivers sought treatment from drug shops/venders, 31% sought treatment from government health facilities (Tumwesigire & Watson, 2002). Foster (1991) pointed out that, unofficial drug sellers in markets, streets and village shops account for as much as half of antimalarials distributed and used for home treatment.

In Zambia, studies show that most of the fever cases received treatment at household levels through left-over drugs from former disease episodes, drug shops and village health workers (Baume *et al,* 2000). The similarities observed may be due to the ongoing health sector reforms in most of African countries of liberalizing health care market where private and public health providers work together to provide health services. Private sectors have expanded tremendously especially in selling different drugs. These drugs are easily obtained to whoever in need provided he can afford. This, in some way has become the commonest source of drugs for home treatment in areas where health care market has been liberalized.

However, other studies showed different results. A study done in Kibaha, Tanzania (Nsimba and Rimoy, 2005) showed that 20% used previous stocks obtained from health facilities, 21% did nothing and 5% used traditional remedies. In Burkina Faso drugs were obtained from household/village and health centre/hospital level. (Muller *et al*, 2003). Keeping drugs at home for future use may be due to unavailability of drugs in private shops in some areas or the cost of drugs in the private market may be unaffordable to the majority of caregivers. This may lead to tendency of keeping drugs obtained from various sources which may be the case with studies done in Kibaha and Burkina Faso.

5.7. Socio-demographic factors and home treatment

Factors such as sex, age, marital status, occupation, residence and education of a caregiver may influence health-seeking behaviour of individuals, families and the place where underfives obtain treatment. Caregivers' age ranged from 15 to 60 years with the mean age of 27 years, among them 19(6%) were males and 281(94%) were females. Of all the respondents, 89% were Christians, 6% were Muslims and the rest were from other religions. About 74% were in couples while the rest were not. The majority (83%) of respondents had primary school education, 10% had no formal education and the rest had at least secondary school education. Seventy two percent were peasants, 18% were petty traders, 6% had no jobs and 4% were employees. On average, the number of children per caregiver was 2.6.

In this study, being 30 years old or more, having no formal education and having secondary education was associated with home treatment. This finding is statistically significantly ($p< 0.05$). However, sex of caregiver, having spouse or not, occupation and number of children per caregiver were not associated with home treatment.

In Kenya, it was found that low literacy of caregivers was associated with seeking treatment of fever for underfives outside formal health sectors especially home treatment (Mwenesi *et al*, 1995). In another study, higher level of education was associated with promptness in seeking care from a health facility (Tarimo *et al*, 2001). In Malawi, higher educational level of the caregiver was associated with attending a clinic (Slutsker *et al*, 1994). One hundred and seventy (57%) of children were males and 130 (43%) were females. About 82% of them aged one year or above, the rest (18%) were infants. The overall mean age of the underfives was 24 months. It also shows that, majority of them (93%) were taken care of by their parents while the rest (7%) were taken care of by their guardians. Almost similar results were found in a study done in Uganda, where 12.5% of children were below one year of age, 62% ranged between one to five years while 25% were older. Both sexes were equally represented (Tumwesigire & Watson, 2002)

5.8. Distribution of health facilities, traveling time to reach the health facility and home treatment

Results showed that, Kyela district has fairly good health facility distribution; this is because over 95% of caregivers of children were living within an hour traveling time to

reach the health facilities. Similar results were found in a study done (de Savigny *et al*, 2004) in Rufiji and Kilombero districts where about 90% of the population was within one hour reach of a government health services. This may be due to response to the Ministry of Health and Social Welfare's recommendation that the health facility should be within 5 kilometers reach and not more than 10 kilometers. In Uganda, there was relatively easy access to health facilities as 97% of respondents lived within 5 kilometers of health units, and could reach it in less than 2hours (Tumwesigire & Watson, 2002). Despite good health facility coverage in Kyela district, the study showed that there was no association between traveling time to the health facilities and home treatment ($p > 0.05$).

In Zambia, distances from health care facilities-Children who live closer to the health center were more likely to be taken there for treatment than are children who lived farther away. Caregivers indicate that 79% of children living within 1 hour's traveling time were taken for treatment at the health center irrespective of the severity, compared with 58% of children who resided more than an hour from the health center (Baume *et al*, 2000). The observed difference between Kyela and Zambia could be the high coverage of health facilities which are within 1 hour traveling in Kyela (95.2%) compared to that in Zambia (79%)

5.9. Perceived severity of illness and home treatment

Caregiver's perception on the severity of illness is crucial on the health seeking behavior. This study showed a very strong association between perceiving an illness as 'not severe' and treating the underfive at home ($p< 0.01$). Seventy two percent (72%) of caregivers who perceived an illness as 'not severe' treated their underfives at home while 14% of those who perceived it as 'severe'. In other words, sick children who were perceived to be severely ill were more likely to be sent to health facilities than those whose illnesses were perceived as not severe.

Another study done in Rufiji and Kilombero rural district of Tanzania, it was found that cases with perceived simple fever or uncomplicated malaria were more likely to be treated at home by modern biomedical care and antimalarial drugs. But 'dagedege' was perceived as a serious life threatening for which prompt treatment-seeking was required from traditional healer or health care facility (de Savigny *et al*, 2004). Also in a facility based studies done in Tanzania found that, 87% of women with children underfive years said they would go to a health centre if their child had convulsions, a condition perceived to be more severe (Tarimo *et al*, 2000). Similarly in Uganda, perceived severity of an illness was more important in reaching a decision to go to the hospital (Lubanga *et al*, 2007). Similarities shown from these studies could be explained by the fact that, once an illness is perceived as severe means that, it is beyond caregiver's ability to take care of, therefore increasing the chances of taking the child to health

facility. Other studies showed different experiences in that health seeking behavior was determined by the number of symptoms.

The study done in Ethiopia (Yeneneh *et al*, 1993) showed mothers who reported high fever; shivering, vomiting and inability to feed were more likely to seek health care from health facilities. And that done in Kenya (Ruebush *et al*, 1995) indicated that, number of symptoms was related to health facility utilization.

5.10. Perceived quality of health services and home treatment

Perceptions of poor health care services vary considerably among individuals. It may be perceived poor once the quality of care services fail to satisfy one's expectations or when it is low compared to the past experiences. In this study, caregivers who perceived quality of health service to be poor, treated their underfives at home more (92%) than those who perceived health care services to be good (8%). Therefore, there was very strong association between perceiving health care services as poor and treating the underfive at home ($p < 0.01$).

Similar results were also found in a study done in Zambia (Baume *et al*, 2000) which showed that, poor quality of health services such as unavailability of drugs at health care facilities, absence or inadequate physical examination, ineffective treatment of child's illnesses and absence of qualified medical personnel reduced health care facility

utilization by caregivers. These caregivers did not see the importance of taking their children to health centre; they rather treated them at home.

In Uganda, the study reports that, practice of home treatment of children was the manifestation of reduced trust and confidence in the public health system due to poor services available such as lack of drugs, few trained personnel and inadequate diagnostic facilities (Tumwesigire & Watson, 2002). Caregivers who perceive quality of health care service to be good have confidence on utilizing its services and may prefer health facilities than home treatment.

5.11. Training of caregivers and their opinions on home treatment

In order to prevent severe complications of malaria, treatment has to be initiated as early as possible once signs and symptoms are detected, preferably within 24 hours from the onset of symptoms. To achieve this, caregivers of underfives need to be trained to early diagnose and initiate treatment or to treat their underfives at home as soon as they detect these symptoms. However, if caregivers have not been trained on home treatment, it is advisable to visit health care facilities as soon as they detect symptoms because any attempts to offer home treatment, may have more negative consequences to the child than the gains. For instance a study done in three districts in Kenya show that, 88% of children with fever were inappropriately treated at home using modern antimalarials (Abuya *et al*, 2007)

In this study therefore, it was found that over 92% of caregivers reported to have not officially been trained on home treatment for the underfives. This implies that, home treatment for underfives subject them to possible inappropriate treatments such as over or under dosage and use of wrong drugs. When asked on their opinions on how to improve home treatment for underfives, 57% of caregivers suggested that they need to be given health education in order to improve home treatment for underfives. Others suggested to have more drug shops available (26%), to build more health facilities (15%) and 2% had other opinions. These opinions are in line with national strategies of community IMCI, Private-Public Partnership and that of constructing health facilities in every village and ward.

5.12. Logistic regression

It was found in this study that there was no significant differences in likelihood of home treatment based on sex of caregivers ($p>0.05$).

Caregivers aged 30 years or above were significantly four times more likely to offer home treatment for their underfives than caregivers whose ages were less than 30years ($p<0.05$). This could probably be explained by the fact that, caregivers whose ages are 30 or above are more likely to have good number of children therefore have confidence of treating their underfives at home due to experiences gained from their previous children.

Caregivers who had primary education were significantly ($p<0.05$) five times less likely, while those with no formal education were insignificantly ($p>0.05$) two times less likely to treat their children at home than those whose education level was secondary or above. This could be due to the fact that, caregivers with high education level are more knowledgeable and are therefore more confident to offer home treatment, probably because they are able to interpret various instructions available on the leaflets.

Home treatment offered by caregivers who resided more than half an hour traveling time to reach the health facility was not significantly different from those who resided less than half an hour reach. This similarities could be due to the fact that, over 95% of caregivers in Kyela district are within an hour reach to the health facilities, this rarely would interfere with facility health care utilization.

Caregivers who perceived an illness as less severe were significantly ($p<0.01$) sixteen times more likely to treat their underfives at home than those who perceived it to be severe. Perceiving an illness as less severe may give confidence to caregivers to opt for home treatment and may not threaten caregivers to look for assistance from more specialized health care such as health facilities. This may probably explain why there was more home treatment for those who perceived illnesses as less severe.

The study also showed that, caregivers who perceived health care services to be poor were significantly ($p<0.05$) thirty six times more likely to treat their underfives at home

than those whose perceptions about health care services was good. Perceived poor quality of health care services in the facilities may greatly reduce trust and confidence on utilizing them. This may have contributed to high likelihood of home treatment by caregivers whose perceptions towards quality of health care services were bad.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

From this study, the following can be concluded;

- Inappropriate home treatment for underfives using modern antimalarials is still a major public health problem in some communities despite the fact that majority of caregivers have not been trained to offer appropriate home treatment.
- Caregivers have good general knowledge on how to detect fever, its relation to malaria and they know ALu is used for malaria treatment.
- Being 30 years old or more, perceived poor quality of health care services and perceived less severity of illness are factors associated with home treatment.

6.2. Recommendations

- Further studies should be done to explore what exactly caregivers who practice home treatment to their underfives do when the child's condition worsens despite the initiated home treatment, and what are the complications which determine their decisions most.
- The perception about the quality of health care services at the health facilities should be more explored to come up with specific reasons for any perceived good or poor quality of health services made.

- Caregivers should be trained to provide appropriate home treatment for underfives with fever and other illnesses in order to prevent severe manifestations.
- The speed to scale up Community Integrated Management of Childhood Illnesses (a national strategy of training individuals and families to offer home treatment) should be increased in order to empower caregivers on appropriate home treatment of childhood illnesses.

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