THE NEGATIVE ECONOMIC IMPORTANCE OF MALARIA ON HOUSEHOLDS. A CASE OF MOROGORO RURAL AND PERI URBAN AREA.

BY

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ABSTRACT

This study investigates the negative economic importance of malaria on households in Morogoro rural and peri urban. It specifically aimed at: 1. assessing the extent to which malaria affects production at the household level. 2. Ranking different factors which contribute to reduced household income.3. Assessing the manpower lost due to deaths of adult household members hence affecting the economy. The study was conducted using cross-sectional research design, structured and standardised interview schedules as well as personal observation. Using SPSS (Statistical Package for Social Sciences), descriptive statistics were obtained that is frequencies and percentages in accordance with the objectives of the study. The study was undertaken in Morogoro Rural District and peri urban area, the entire sample size of the population was 100 respondents whereby 40 heads of households were randomly selected from peri urban and 60 from Morogoro Rural area. Major negative effects of malaria which were obtained from the study included reduced households income, reduced households production, reduced farm performance, effect on family labour. It was clearly shown that Malaria affected more the Rural areas than Peri- Urban due to the fact that the rural areas where seen to have low economic status hence their efforts to fight against Malaria was very limited. Because of that it was obviously seen that the Peri- Urban areas had few death due to Malaria in their Households because they could better fight against the disease in comparison to the Rural areas. Not only that but also the Level of Education was seen to low in Rural areas compared to the Peri –Urban, this brought a very big difference regarding the capability of fighting the diseases between the Rural and Peri- Urban areas. After all these assessments it was clearly found that Malaria had bigger negative economic importance on rural households in relation to Peri – Urban. Since that difference is not very big the recommendations regarding the efforts which have to be taken in fighting the disease have to consider not only the Rural areas but also the Peri- Urban and Urban as well.

DECLARATION

I, LEONCE STEPHEN MUJWAHUZI, do hereby declare to the Senate of Sokoine University of Agriculture that the work presented here is my own original work, and has not been submitted, nor concurrently being submitted for a degree award in any other University.

Leonce Stephen Mujwahuzi
(M..A. Candidate)

Date

The above declaration is confirmed by:

Prof. P.S. Gwakisa
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Date

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DEDICATION

This work is dedicated to my beloved parents The Late Mr. Stephen Mujwahuzi and Mrs. Hellen Kagemulo to whom I am indebted for the profound foundation they laid for me. May God bless them abundantly.

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ACRONYMS

ACTs	Artemisinin Combination Therapy
AIDS	Acquired Immune-Deficiency Syndrome
c-GMP	Current Good Manufacturing Practice

DDT	Dichlorodiphenyltrichloroethane
GDP	Gross Domestic Product
GNP	Gross National Product
HIS	Health Information Systems
HIV	Human Immune-deficiency Virus
MARA	Mapping Malaria Risk across Africa.
MDGs	Millennium Development Goals
NBS	National Bureau Statistics
R&D	Research and Development
RBM	Roll Back Malaria
REPOA	Research for Poverty Alleviation
SIMA	System wide Initiatives on Malaria and Agriculture
SNAL	Sokoine National Agricultural Library
SP	SulphadoxinePyrimethamine
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
WHO	World Health Organizations
WMR	World Malaria Report

CHAPTER ONE

1.0 INTRODUCTION

1.1 Back ground information

Many years back malaria came to be known as a serious and often fatal disease caused by the malarial parasite. P*lasmodium falciparum* malaria parasite is the most life threatening, and accounting for the majority of malaria deaths in the developing world (WHO, 2005). One of the most important aspects of malaria is its negative economic importance on households. According to the World Health Organization acute and chronic malaria infection substantially reduces the Gross Domestic Product (GDP) growth in countries with high malarial transmission, most of which are in Africa, Asia and else where (World Health Organizations, 2005). It is further estimated that 40% of the world's population mostly those living in the poorest countries are at risk for malaria; however, high malaria risk areas include large portion of central and South America, Africa, the Indian subcontinent, South East Asia and the Middle East. (Centre for Diseases Control, Malaria: Geographic Distribution, 2005).

The United Republic of Tanzania has a population of 34.5 million, all of whom are at risk of malaria. However, endemicity and risk of transmission varies as it has recently been mapped by the MARA (Mapping Malaria Risk across Africa) collaboration. Tanzania has the third largest population at risk of stable malaria in Africa after Nigeria and the Democratic Republic of Congo.

(http://www.mara.org.za/).

The variations in endemicity are conveniently classified as unstable seasonal malaria, stable malaria with seasonal variations and stable perennial malaria. Unstable seasonal malaria occurs with a transmission period of not more than 3 months a year. In such situations malaria may occur in epidemics when there is increased transmission, morbidity and mortality (Mboera & Kitua, 2001; Mboera, 2004). Areas with unstable malaria transmission include the highlands with altitudes up to 2000m, temperatures up to 20ºC and mean vapour pressure of 13-15 millibars. In higher altitude areas, there is usually no malaria transmission. Recent studies indicate an expansion of malarias areas to include the highlands of Tanzania, which previously were malaria free (Mboera *et al*.,2002;2005 Kamugisha et al.,2005;Maegga *et al*.,2005;2006).**;** Such areas have been experiencing malaria epidemics in recent years. To date, about 25% of the Tanzania populations live in epidemic prone areas, generally with little immunity. Heavy rainfalls, long drought seasons, high temperatures, change in host preference by the vectors and increased antimalarial drug resistance have been common features in the history of malaria epidemics in Tanzania (Mboera, 2004).

Stable malaria with seasonal variations occurs where there is seasonal intense transmission for 3 to 6months in a year. It occurs in high altitude plains, with temperature above 15ºC and mean vapour pressure of 10-20 millibars. About 33% of the population in Tanzania lives in these areas (MoH, 2002). Stable perennial occurs along the cost extending inland as far as 240km. Areas around the lakes Nyasa and Victoria experience a similar endemicity. These areas have mean annual temperatures of 24-32 ºC, mean vapour pressure of 26-29millibars, and are inhabited by about 42% of the population. Most age groups have considerable immunity increasing with age. In such areas, malaria is common in children under 5 years of age and pregnant mothers.

In Tanzania malaria is mainly transmitted by *Anopheles gambiae*, *Anopheles arabiensis* and *Anopheles funestus* (White, 1974; 1974; Mboera, 2000). *Anopheles Merus* is also an important vector in some coastal areas of the country (Mzava, 1991; Kigadye, 2006). *Anopheles rivulorum* and *Anopheles Marshallii* have also been identified as vector distribution in Tanzania follows the distribution of malaria endemicity. In the humid coastal and humid lacustrine areas where malaria is holoendemic, the predominant species are *Anopheles gambiae* and *Anopheles funestus*. In the dry and semi arid areas, where malaria ranges from the epidemic to hyperdemic status, *Anopheles arabiensis* is the main vector (Mnzava 1991).

In socio-economic terms, directly, malaria causes illness, death and disability. Indirectly, it causes loss in terms of time spent with sickness and treatment costs in terms of family time spent to care for the sick. Furthermore, loss of productive time, time spent by families and communities to grieve for the dead and funeral costs are also indirect costs due to malaria. In many rural areas of sub-Saharan Africa, malaria is the major cause of illness and hence, it undermines productivity and incomes (Ukoli, 1990).

1.2 Problem statement

Despite the fact that the WHO has seen that in Africa alone, more than a million people die from malaria each year, many of them being children under five years of age and pregnant women (SIMA, 2007) yet, Malaria continues to be a burden in sub-Saharan Africa. Even though simple, effective and affordable treatments exist, malaria’s pervasive morbidity and high mortality persist. The consequence is not just an intolerable burden for individuals, their families and national health systems, but is also a devastating and continuing impediment to economic development on the continent.

Malaria is a classic of the most important diseases, characterized by a high disease burden in the developing world, a low disease burden in high-income nations, and a low level of funding in relation to the disease burden (Anderson, 1991). This raises important questions for policy makers and health systems not only in Africa at large but also in Tanzania, particularly Morogoro region, where there has been little research on the linkages between malaria and rural areas, little exchange of views between medical and social scientist researchers, and even low findings on how people are negatively affected economically by malaria.

The information on the negative impact of malaria on household food security, labour, and general investment in agriculture in Tanzania is inadequate. The impact of malaria on farming households' food security and on agricultural productivity needs to be established under different geographical, socio-economic impact studies are needed to better quantify the impact of malaria on agricultural productivity, human nutrition, food security and poverty. The actual costs borne at the household level and how such costs hinder economic development are not well documented. Such information is important to understand the negative economic impact of the disease and to justify additional efforts and resources directed towards control and prevention activities (Mboera *et al*., 2007).

1.3 Problem Justification

This study will be important not only to rural and peri urban areas but also to the government in its strategic planning. In September, 2000, the United Nations Millennium

Summit endorsed the MDGs in what was called the millennium declaration. The MDGs have been embedded in several international initiatives and have continued to increasingly influence policy discourses through out the developing world.

1.4 Research Objectives.

1.4.1 Broad Objective

To examine the negative economic importance of malaria on households in Morogoro rural and peri urban areas.

1.4.2 Specific Objectives

1. To assess the extent to which malaria affects production at the household level.
2. To rank different factors which contribute to reduced household income.
3. To assess the manpower lost due to deaths of adult household members hence affecting the economy.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Definition

2.1.1 Malaria

Malaria is a mosquito-borne disease that causes over 2.7 million deaths per year, is a potentially fatal blood disease caused by a parasite that is transmitted to human and animal hosts by the *Anopheles* mosquito. The human parasite, *Plasmodium falciparum,* is dangerous not only because it digests the red blood cell's hemoglobin, but also because it changes the adhesive properties of the cell it inhabits. This change in turn causes the cell to stick to the walls of blood vessels. It becomes especially dangerous when the infected blood cells stick to the capillaries in the brain, obstructing blood flow, a condition called cerebral malaria. (World Health Organization, 1998).However, it is a preventable disease that afflicts hundreds of millions of people causing among them socio-economic suffering including a vicious circle of abject poverty, other irreversible disabilities (Luria, 1975). In this study, malaria is defined as a self report of malaria or fever and any of the symptoms of vomiting, joint pains or headache (Mugisha *et al*., 2002).

2.1.2 Vulnerability

Vulnerability is closely related to malaria and economy hence poverty. However, vulnerability is dynamic and captures processes of change, while poverty is a static concept describing a situation at a fixed point in time (Lipton , 1992) Chambers refers to vulnerability as "the exposure to contingencies and stress and difficulty in coping with them. Vulnerability has thus two sides: an external side of risk, shocks and stress to which an individual or household is subjected, and an internal side which is defenseless, meaning a lack of means to cope without damaging loss" (Chambers R , 1998).Poor households are usually the most vulnerable to any type of risks, but not all vulnerable households are poor. Wealthy households can be vulnerable if their resources are directed towards meeting needs that do not contribute to development and sustainability of livelihoods.

Bates et al. have considered vulnerability specifically in relation to infectious diseases (2004). They considered vulnerability as the product of a set of processes and factors operating at the individual, household/community and meso/macro level to increase an individual or group's probability of experiencing a reduction of well-being. The processes and factors they consider range from biological to institutional.

In this paper vulnerability is defined as the factors that increase risk of households being subjected to the economic costs of malaria. Three dimensions of vulnerability are considered: the factors that influence cost levels, factors that determine the ability to cope with financial and time costs, and factors influencing ability recover.

2.2 The Historical perspectives of Malaria

Hippocrates was the first to describe malaria manifestations and related them to the time of year and to where the patients lived. Before this time the manifestations were blamed on supernatural powers. The association with stagnant waters now known to be breeding sites for Anopheles mosquito vectors led the Romans to begin drainage programmes, which was therefore the first intervention against malaria.

The aetiological agent of malaria was in 1889 elicited to be protozoa by Laveran while working in Algeria, and the *Anopheles* mosquito was demonstrated in 1897 to be the vector for the protozoa. At this point the major features of the epidemiology of malaria seemed clear, and control measures started to be implemented.
(http://www.malariasite.com/malaria/history_parasite.htm)

The Second World War (WW II) was a boon to the malaria control efforts by bringing the warring powers into the tropics where malaria was rife. It was, that time when DDT and SP were introduced. After the WWII both DDT and chloroquine entered civilian use in Vietnam (AMANET, 2005).

2.2.1 Malaria resurgence

High costs, and subsequent maintenance, must have all contributed to hindrance of the eradication of malaria. Also, the eradication programmes period coincided with the colonial and immediate postcolonial periods, during which little or no indigenous capacity was available to initiate and sustain malaria eradication. Recently, the disease has reappeared in formerly malaria-free areas as a result of the decline in public health systems, malaria epidemics, and imported cases. In Denmark, the number of malaria cases imported to the country has increased due to travelers visiting areas without taking the necessary protective measures (Molle et al, 2000).

2.3 New techniques against an old scourge

2.3.1 Multilateral Initiative on Malaria (MIM)

MIM is a global alliance of organizations and individuals, funding partners, whose mission is to maximize the impact of scientific research on malaria in Africa, through research capacity building and global collaboration, and coordination (Kitron, 1989).

2.4 The Negative Economic Importance of Malaria on household.

2.4.1 The Household Reduced Income

Malaria is commonly referred to as a disease of poverty. At the micro-level, malaria may cause poverty through spending on health care, income losses and premature deaths. Poor people are considered to be at particular risk of being infected because they are less likely to purchase preventive measures and to seek prompt effective treatment (World Health Organization, Geneva, 1998).

2.4.2 Loss of Human Labour

This is the impact of malaria on economic growth rates through the mechanism of depressing the rate of human capital accumulation. Although there have been some estimations of the loss of educational investment expenditures as a result of lost school days the overall impact of malaria on human capital development in children remains largely unexplored and unquantified (Kere, 1993).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study area

The research was conducted in Morogoro Rural and peri urban areas which are found in Morogoro region. Morogoro Rural District is one of the six districts of Morogoro region of Tanzania. It is bordered to the east by the Coast region, to the south by the Morogoro urban district and to the west by the Mvomero district. According to the Tanzania National Census (2002), the population of the district was 263 920 total population, where by 129 285 were males and 134 635 females. The study also contained two peri urban areas for comparison purposes; these areas were located nearby the villages considered to be rural.

According to Tanzania National Census 2002, the Morogoro district has six administrative divisions, which are divided into 25 wards. The district was chosen because of its general economic situation, Morogoro rural is among the 50% most deprived regions in Tanzania, according to the poverty and welfare indicators for 1999 of the Vice President's Office as cited by Mswia *et al.* (2005).

3.2 Research Design

A cross-sectional research design was used in the study so as to simplify the collection of data from different groups of respondents, that is rural and peri urban respondents at a relatively same time. This approach was cost effective in terms of time and resources.

3.3 Sampling Procedure

3.3.1 Population and Sample size of the Study

A simple random sampling procedure was applied to select wards, divisions and villages; consequently the respondents. Out of 25 wards found in Morogoro Rural District, only two wards were selected within which five villages were obtained. Two wards from peri urban areas were selected under which four villages in each ward were selected. The sample consisted of 60 respondents from the rural areas, and 40 respondents from per urban areas.

3.3.2 Method of Data Collection

The primary data were collected through the administration of the questions; interview schedule was the main method of data collection. In the questions closed ended questions were administered.

Secondary data were obtained from existing information/literature, published and unpublished reports. These included different reports from Morogoro regional health office, REPOA, research reports from various institutions, such as Sokoine National Agricultural Library (SNAL) and non-governmental organizations dealing with health but more particularly malaria.

3.4 Data Processing and Analysis

The SPSS version 11.5 computer software was used in the data analysis. Descriptive statistics that is frequencies and percentages were also used to analyze data from the field in accordance with the research objectives.

3.5 Expected Output

After the study, it was expected that the awareness on the negative economic importance of malaria would be enhanced. The study also aimed at providing inputs for policy makers to increase the struggle in the fight against malaria.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Overview

This chapter presents results and discussion of the research findings in accordance with the research objectives and questions aiming at giving out detailed information on the negative economic importance of malaria on households in Morogoro rural and peri urban areas.

The Chapter is subdivided into three main parts namely: demographic information of the respondents, the extent to which malaria affects production at the household level, factors which contribute to reduced household income and assessment of the manpower lost due to deaths of adult household members hence affecting the economy.

4.2 Economic status of Households

According to the above findings, it was then our task to measure the economic status of each surveyed household which was measured by using assets possession as indicator. The study explicitly showed that malaria inflicts in the household treatment expenses that might alter the income of the family thereby marginalising its livelihood. It is from this juncture a household that is frequently attacked by diseases is infringed from livelihood improvement and thus remain poor. It is from this scenario the study attempted to study the poverty level of the respondents.

In measuring the household status hence poverty, the study discovered that 50%of the rural respondents owned the houses this was due to fact that most of the rural heads of household live the permanent life where some of them build their own houses while others just inherit from their parents, and the other fact found by the study was that most of rural dwellers are not employees who sometimes need to rent houses as it was in the surveyed peri urban areas. However, the study could not keep silent on the other remaining 50% which occupied by the heads of household whose marital status was ‘separated’, others were employees who some of them were not born in that particular place, lastly, those who just decided to shift from their mother households and live their independent life by renting houses/ rooms. For instance, it was found that 18%of the rural respondents, were found that their marital status were ‘separated’ hence up on combining with the other mentioned type of respondents it is obvious that the total could bring 50%.

As far as the peri urban is concerned, 44.7% of the respondents were discovered to own the houses. The difference in percentage is between the two places is insignificant, that is the Chi-square is 0. 086. Some of the reasons that contributed to this difference is that peri urban is not urban per se, consequently there were some characteristics of the rural areas which were found in the peri urban as there were some characteristics of the peri urban areas which were found in the rural areas particularly house possession. This little difference was brought by different kinds of life style like non permanent settlement, kinds of employment, economic activities and the alike. For example, it was found that there were a large number of employed respondents in peri urban areas compared to the rural areas, this has a direct impact on house possession because most of employees in the peri urban areas were found not to own houses.

Table 1: Own a house

	Location of respondent		$\chi 2$
	Rural	**Peri-Urban**	
Yes	50.0	44.7	
No	50.0	55.3	
	100.0	**100.0**	**0.086**

Source: Survey results (2007)

There was a significant difference of the quality of houses both in rural and peri urban area, that is 66.1% houses' floor of the rural respondents were made up of earth while in the peri urban areas was 23.7%. Further more it was found that 33.9% houses' floor were made up of cement where as in the peri urban areas was found to be 68.4%. None of the respondent from the rural area whose house's floor was made up of tiles where as 7.9% was found in peri urban areas. The quality of the roofs was 70.0% rural area houses were made up of galvanized iron while 86.8% for peri urban areas, in addition to that, 30% houses were roofed by bamboo/ wood in the rural areas where by 13.2% was for peri urban areas.

Table 2: House Quality

House roof	Location of respondent		χ2
	Rural	**Per-Urban**	
Galvanized iron sheets	70.0	86.8	
Bamboo/wood	30.0	13.2	
	100.0	**100.0**	**0.055**
House floor			
Earth	66.1	23.7	
Tiles	.0	7.9	
Cement	33.9	68.4	
	100.0	**100.0**	**0.000**

Source: Survey results (2007)

The study, also used the working land as the measure of poverty in each surveyed household whereby in the rural areas there was an average of possessing three hector working land whereas in peri - urban areas each household owned at least one hector as it is shown in the table below.

Table 3: Working land owned in the household per hectors

Piece of Land in hectors	Location of respondent		χ2
	Rural	**Peri-Urban**	

1.00	22.9	31.3	
1.50	2.9	.0	
2.00	25.7	25.0	
3.00	22.9	12.5	
4.00	11.4	12.5	
5.00	2.9	18.8	
6.00	5.7	.0	
7.00	5.7	.0	
	100.0	**100.0**	**0.457**

Source: Survey results (2007)

Up on considering the assets in each household, the wooden bed was taken as one of assets to measure the economic status. The study showed that most (62.3%) respondents in the rural areas seemed to own one wooden bed, a case which was different from peri urban areas where by 47.4% of the respondents owned one bed. It was further found that 28.9% of the peri urban respondents owned two wooden beds but in the rural areas 24.5%of the respondents owned two wooden beds. That difference in number of beds between the rural and peri urban areas, show clearly the household economic status and hence livelihood. Even the disease like malaria will attack more that household having only one bed compared to the one having two to three beds. So, according to this study, it is shown in the table below that the number of beds increases as we move from the rural to peri urban areas.

Table 4: Total number of wooden bed (s) in the household

Number of Beds	**Location of respondent**		**χ2**
	Rural	**Peri-Urban**	
1	62.3	47.4	
2	24.5	28.9	
3	11.3	18.4	
4	1.9	5.3	
	100.0	**100.0**	**0.460**

Source: Survey results (2007)

Another asset which was used to measure the household economic status was possession of radio. It was revealed that 100% of the rural interviewed households showed that they owned at least one radio, however no one in the sane place owned more than one radio. On the other hand it was observed that 90% of the peri urban population under the same interview revealed that they owned a radio. Different from the rural areas, there was 10% of the peri urban population under the same study owned two radios. The reason why do rural area households owned at least one radio which was not the case to the peri urban areas could be that in rural areas the radio is the major source of information, there is limited accessibility to newspapers, internet, etc, hence every household should at least have one radio. Also, in the peri urban areas the study found that the number of respondents owning more than one radio was higher due to quick changing of technology, one radio is bought today but other day the same radio is outdated.

Table 5: Total number of radio in the household

Number of radio	Location of respondent		χ2
	Rural	Peri-Urban	
1	100.0	90.0	
2	.0	10.0	
	100.0	**100.0**	**0.077**

Source: Survey results (2007)

The prominent asset measured in this study was a mosquito net; it is prominent in the sense that it had a direct relationship to the study which is about malaria. As the similar trend in other assets, it was shown that the number of households with at least one mosquito net was big (64.7%) compared to peri urban areas which was 42.9%. But the number of households owning more than one mosquito net is bigger in peri urban areas than in the rural areas. For instance, the case of owning two mosquito nets, was found that there was 27.5% in rural areas where as 34.3% in peri urban areas, the situation was the same in owning three mosquito nets where by in rural areas, it was found that 3.9% of the surveyed rural household owned three mosquito nets which was different from peri urban areas which had 20%households which owned three mosquito nets. This difference has a very big implication on study. The fact of having many respondents in rural areas who owned only one mosquito net is a danger to the rural people. Through interviewing it was found that even the only one mosquito net sometimes belong to the parents (husband and wife), it is from this fact that the other remaining group of household members remain in the vulnerable situation. This group includes the children under five years of age who are internationally agreed to be in high risk.

Table 6: Total number of mosquito nets in the household

Number of mosquito nets	Location of respondent		χ2
	Rural	**Peri-Urban**	
1	64.7	42.9	
2	27.5	34.3	
3	3.9	20.0	
4	2.0	2.9	
5	2.0	.0	
	100.0	**100.0**	**0.092**

Source: Survey results (2007)

4.3 Demographic Characteristics

This part identifies the characteristics of the sampled respondents in Morogoro rural and peri urban areas. These demographic parameters include age, sex, marital status, education level as well as occupation.

4.3.1 Sex of Respondents

The first demographic factor to be explicated is the sex of the respondent where by 60.6% of the respondents in the rural areas were found to be females as heads of households, and the male heads of households were observed to 59.7%. This small difference in sex of respondent could be contributed by cultural factors of the place, that is, Morogoro rural as a matrilineal society which gives more chance and power of decision making to women. The other reason which could contribute to that difference is the population dynamic, which is a shift from the rural areas to peri urban and urban areas. Men tend to move to the urban and peri urban areas in order to find employments, and there at home they leave their wives as heads of households, they only come back at the special occasions, consequently, the number of females as heads of household increases.

In the peri urban areas, the case is different; the number of male respondents was 40.3% while 39.4% of the respondents were found to be females. The reason for that difference has already been discussed as a population dynamic, which is the shift of population from the rural areas to peri and urban areas, and most of them being males. Under the same of same line of thought, the level of matrilineal intensity decreases as we move from the rural to urban and peri urban areas. Hence, the female heads of households decreases as we move from the rural to peri urban and urban areas.

Table 7: Sex of respondents

	Location of respondent	
	Rural	**Peri-Urban**
Male	59.7	40.3
Female	60.6	39.4
Total	**60.0**	**40.0**

Source: Survey results (2007)

4.3.2 Marital Status

The marital status distribution of the respondents in rural and peri-urban area shows a significant difference. 68.8% of the respondents in the rural study area were married whereas only 42.2% of them in the peri urban were married. This can be due the social economic differences in the two areas whereby in rural areas the social ties of extended family are close such that everyone is obliged to observe community norms, marriage being one of the significant norms to observe. The higher percentage of singles (53.3%) in peri urban relative to smaller percentage in rural areas (46.7%) is as well the result of this phenomenon as shown in table 1.

Table 8: Marital status of the respondents

	Marital status of respondents in percentage		**Total**	**χ2**
	Rural	**Peri-Urban**		
Single	46.7	53.3	100	
Married	68.8	42.2	100	
Live together	63.6	36.4	100	
Separated	57.8	31.3	100	
Other	69.2	30.8	100	

Total	**60**	**40**	**100**	**0.692**

Source: Survey results (2007)

4.3.3 Education Level

Individual’s educational level is significant in addressing maters that pertains their health. The more an individual is educated the more it is expected of them to take measures that favour their health status. Majority (35%) of the interviewed male household heads in rural area and 33.3% in the peri – urban had primary education as their highest education. This difference in the two areas is insignificant (0.955 chi square). These findings imply that, supplementary sensitization on malaria ought to be undertaken due to the fact that, people have thee only basic education which does not necessarily imply sufficient knowledge on the malaria and environments that harbour the disease. With female household heads, majority of them (75%) in rural area are primary education holders whereas in the peri - urban majority are secondary education holders. This difference might be due to the fact that, many women in the peri- urban areas are employees in sectors such as education and health sectors.

Table 9: Education level

Male household heads education level	Rural	Peri-Urban	$\chi 2$
None	12.5	7.4	
Adult education	10.0	7.4	
Primary education	35.0	33.3	
Secondary education	25.0	25.9	
Tertiary education	10.0	14.8	
Other	7.5	11.1	

Total	**100.0**	**100.0**	**0.955**
Female household heads education level			
None	10.0	15.4	
Primary education	75.0	30.8	
Secondary education	10.0	38.5	
Tertiary education	5.0	15.4	
Total	**100.0**	**100.0**	
			0.078

Source: Survey results (2007)

4.3.4 Respondents' Occupation

Ones income which is determined by the occupation they have is one among important factors in addressing daily problems notably diseases. The more paying occupation enhances high incomes which in turn help in the prevention and cure of diseases, malaria being the threatening fatal disease.

Household heads in both rural and peri-urban areas were requested to state their occupation. Majority of the male heads were peasants in both areas. Whereas 43.6% of respondents in Morogoro rural were peasants, in the peri-urban it was 26.9 %. For the female household heads, majority of them (33.3 %) were as well peasants in the Morogoro rural were as in the peri -urban 57.1 % of female household heads were doing other duties other than peasantry.

This implies that, majority of them rely on farm products for their survival hence any fluctuation in the harvests implies the same in their income.

Table 10: Distribution of household heads' occupation

	Occupation in percentage		χ2
	Rural	**Peri-Urban**	
Male household heads occupation			
Farmer employee	7.7	7.4	
Livestock employee	2.6	.0	
Peasant	43.6	26.9	
Non farm occupation	23.1	18.5	
Employed	20.5	25.9	
Other	2.6	21.2	
Total	**100.0**	**100.0**	**0.144**
Female household heads Occupation			
Farmer	33.3	.0	
Non-Farm occupation	28.6	7.1	
Employed	14.3	35.7	
Other	23.8	57.1	
Total	**100.0**	**100.0**	**0.013**

Source: Survey results (2007)

4.4 Awareness on Malaria

In conducting this study, it was important to first measure the awareness of the diseases so that assurance of whether the respondent was aware of what he or she was asked could be known. It was detected that, 98.3% of the respondents in the rural areas had ever encountered the disease called malaria in their life time, while 97.5% of the respondents from the peri urban areas gave the same response. A very small number of respondents (1.7%) of the whole interviewed population reported not to be aware of the disease in the rural areas while 2.5% of peri urban interviewed population gave the same answer. Upon looking the difference between the population which was aware of malaria and that which was not aware, it was found that, the difference was very big to the extent that the percentages of those who were not aware of the disease is mathematically negligible. It can therefore be concluded that, both in peri urban and rural areas, the awareness of malaria as a fatal disease is very high. It was this reason therefore which enabled the researcher to continue with the study because the population to be studied was known. The phenomenon was even known at the early time of pre-testing.

Table 11: Malaria awareness

	Location of respondent		**χ2**
Response	**Rural**	**Peri-Urban**	
Yes	98.3	97.5	
No	1.7	2.5	
	100.0	**100.0**	**0.338**

Source: Survey results (2007)

4.4.1 If Maintained Income in the following years after Malaria Experience

The malaria endemic was found to bring a negative economic impact on household production. This was clearly proved by the this study as 64.4% of the population in the rural interviewed heads of household responded negatively when they were asked whether they could maintain the sane production after malaria endemic, the same question was also responded negatively in the peri urban areas which was 69.4%. Its implication is that malaria brings a negative economic impacts to every household it strikes.

Table 12: If maintained income in the following years after malaria experience

	Location of respondents		χ2
	Rural	**Peri-Urban**	
Yes	35.6	30.6	
No	64.4	69.4	
	100.0	**100.0**	**0.614**

Source: Survey results (2007)

4.4.2 Steps taken in order to maintain Income Generating

After being observed that malaria brought a number of negative economic impacts on household level by affecting production, every household was asked how did it cope with the above observed situation the table 6, under the same measure, it was found that 25% of the whole interviewed population in the rural areas used selling crops(25%) and petty business(25%) as their main coping strategies followed by salary/ wages (13.2%) but the situation was different in the peri urban areas where by petty business (34.2%) and salary (23.3%) took the higher rank in the peri urban areas. The reason why the main coping strategies in the rural areas are selling crops and petty business is because most of the populations in the rural areas are the farmers, hence, crops selling should be the first strategy for them in relation to coping strategy. It is further observed that in the peri urban areas the main coping strategy was petty business as well as salary because most of the urban and peri urban population depend on salaries as well as small commercial business.

Table 13: Steps taken in order to maintain income generating

	Location of respondent		**χ2**
Coping strategies	**Rural**	**Peri-Urban**	
Crop sales	25.0	10.5	
Remittance	10.5	16.7	
Salary	13.2	23.3	
Milk sales	1.7	5.3	
Petty business	25.0	34.2	
Other	8.3	26.3	
	100.0	**100.0**	**0.052**

Source: Survey results (2007)

4.5 The extent to which Malaria affects production at the Household Level

Malaria is commonly referred to as a disease of poverty due to the fact that, when one becomes sick they cannot engage in the production and as well the community ought to take care of him. Respondents were requested to say as to whether taking care of patients affected income-generating activities basing on strongly agree, agree, and not sure and strongly disagree.

Majority of respondents (69.5%) in the rural area strongly agreed that taking care of the sick affected income generating activities where as in the peri urban it was 42.5% who strongly agreed to this assertion. On the other hand it was only 1.7% in rural area and 2.5% in the peri-urban that strongly disagreed to this proposition. This implies that, in so far as patients are to be taken care of by the surrounding community, production resources ought to be channeled into taking care of the patients the result of which is low production.

Table 14: Effect on income generating activities

	Location of respondent		**χ2**
	Rural	**Peri-Urban**	
Strongly agree	69.5	42.5	
Agree	23.7	40.0	
Not sure	3.4	2.5	
Disagree	1.7	12.5	
Strongly disagree	1.7	2.5	
	100	**100**	**0.044**

Source: Survey results (2007)

The study findings in the two areas namely: rural and peri-urban areas, show a significant gap as the asymptote significance is <0.04. This significant difference may be resulting from the fact that peri-urban population mostly rely on employments other than peasantry such that, if someone who is employed falls sick, the salary remains the same hence no much effect on their income relative to rural population that need to actively produce in farms so as to earn.

In so far as agriculture is the main economic activity among many people, and as peasantry accounts for the economic activity that is undertaken by many in the study area, the extent at which malaria affected farm performance was examined basing on whether the respondents strongly agree, agree, not sure or strongly disagree with this assertion.

It was also found out that, 55.0% of the rural respondents and 32.5% of peri-urban respondents strongly agreed that malaria affect farm performance. These findings between rural and peri-urban show a significant difference, implying that the rural population is more affected than that in the peri-urban due to the reason that rural populations depend much on farm activities and as well are more vulnerable to the malaria disease the problem that is intensified by lack of or insufficient provision of health facilities to curb the disease. The significance is shown in table xxx below that indicates that the Pearson chi - square is 0.008 respectively.

Table 15: Effect on farm performance

	Location of respondent		**χ2**
	Rural	**Peri-Urban**	
Strongly agree	55.0	32.5	
Agree	43.3	50.0	

Not sure	1.7	2.5	
Disagree	.0	15.0	
	100	**100**	**0.008**

Source: Survey results (2007)

4.5.1 Malaria deaths effects on Family Labour

Malaria remains a major public health problem in Sub-Saharan Africa with approximately 1 million deaths annually and more than 400 cases a year (Rowe et al., 2006). These deaths mean loss of labour force in the production notably in the households. Majority of the respondents (51.7% in the rural area and 48.5% in the peri – urban area) strongly agreed that deaths from malaria affected their family labour. This is due to the fact that, productive members of he family die hence loss of labour force and at the same time too much spending of time and money in treatments and funerals, facts that infringe the proper provision of labour in the respective families low production. The extent of the response by respondents in Morogoro rural and peri - urban area revealed no significant difference as the chi-square amounted to 0.957 which is less significant. This implies that the after math that is accompanied by death in both areas is similar regardless of the habitation of an individual.

Table 16: Malaria deaths effects on family labour

	Location of respondent		**χ2**
	Rural	**Peri-Urban**	
Strongly agree	51.7	48.5	
Agree	43.3	46.5	
Not sure	3.3	2.5	
Disagree	1.7	2.5	
	100	**100**	**0.957**

Source: Survey results (2007)

4.5.2 Expenses in Malaria cure and their effect on Family Income

Malaria like any other disease, need to be taken care of through diagnoses as well as medications all of which are sufficiently done depending on ones income. This is due to the fact that health services are commercialized and the cost shared.

Respondents were requested to show as to what extent expenses in the cure affect family incomes. 60% of the rural respondents and 40% of the peri – urban respondents strongly agreed that malaria cure expenses affect their family income with only 1.7% of rural respondents and no peri - urban respondent who strongly disagreed.

The Pearson Chi-Square that is 0.05 shows that there is a slight significant difference in the two areas, meaning that, regardless of habitation, expenses to treatment particularly in malaria affect the family income.

Table 17: Expenses in malaria cure and their effect on family income

	Location of respondent		**χ2**
	Rural	**Peri-Urban**	
Strongly agree	60.0	40.0	
Agree	36.7	52.5	
Not sure	1.7	.0	
Disagree	.0	7.5	
Strongly disagree	1.7	.0	
			0.059

Source: Survey results (2007)

Diseases particularly malaria is not the only factor that affects household income as there are other factors. Respondents were on that basis requested to say as to what intensity other factors affected their income basing on strongly agree, agree, not sure or strongly disagree.

4.5.3 Expenditure on Malaria drugs and Household Income

Malaria treatment needs one's financial ability to undergo diagnosis as well as medication. Respondents were requested to show as to how much expenditure on malaria drugs affected their households' income. 66.7% of the rural respondents agreed that purchase of malaria drugs affect their household income relative to the 45% of peri – urban respondents who showed indifference in this and 40.0% of them agreeing. These results show that both the respondents had purchase of drugs as a factor that affects their household income. This implies that, malaria consumes much of their incomes at times they don't expect as the disease attacks at times individuals are not prepared. This amount of percentage (67.7% in rural area and 40.0% in urban) shows that malaria ranks high in the factors that affect household incomes.

Table 18: Expenditure on malaria drugs and household income

	Location of respondent		**χ2**
	Rural	**Peri-Urban**	
Strongly agree	15.8	.0	
Agree	66.7	40.0	
Not sure	8.8	45.0	
Disagree	7.0	10.0	
Strongly disagree	1.8	5.0	
	100.0	**100.0**	**0.000**

Source: Survey results (2007)

4.5.4 Expenditure on Food and its effect on Households Income

Food is the basic human need such that, it is as well a function of someone's income. On that account, respondents were required to show as to how buying food affected their household income. Majority of them (59.3%) from Morogoro rural disagreed that buying food affected their household income. With the peri – urban respondents, 35.0% of them agreed that buying food affected their household income. The significant difference between these two areas is caused by the fact that, most of the food that is consumed by rural populations is cultivated in households' plots different from per – urban populations that are obliged to buy most of their foods. However, the finding shows that, food consumption doe not affect household incomes as compared to the costs that are incurred when malaria and its aftermath strikes a family where 69.5% of rural respondents and 42.5% of peri – urban population strongly agreed that it affects income generating activities and thus effect on the income.

Table 19: Does buying food effect households income?

	Location of respondent		**χ2**
	Rural	**Per-Urban**	
Strongly agree	3.4	27.5	
Agree	13.6	35.0	
Not sure	8.5	15.0	
Disagree	15.3	17.5	
Strongly disagree	59.3	5.0	
	100	**100**	**0.000**

Source: Survey results (2007).

4.5.5 Leisure and Household Income

Leisure like any other needs, require money for their achievement depending on how much an individual needs it. Respondents were requested to state whether and to what extent leisure affects their household income. Majority of the rural respondents (52.5%) strongly disagreed that leisure affects their household income, whereby 22.5% of the peri – urban respondents agreed that leisure affects their household income while 42.5% of them were not sure. The relative higher percentage of peri – urban respondents that agreed that leisure affects their income might be caused by the fact that, they are situated close to the town where leisure is relatively expensive whereby in the rural setup does not favour much leisure for everybody. The findings show that, there is a significant difference of the results in rural and peri-urban as the chi-square is 0.001.

Table 20: Leisure and household income

	Location of respondent		**χ2**
	Rural	**Peri-Urban**	
Strongly agree	1.7	.0	
Agree	5.1	22.5	
Not sure	25.4	42.5	
Disagree	15.3	22.5	
Strongly disagree	52.5	12.5	
	100	**100**	**0.001**

Source: Survey results (2007).

4.5.6 Purchase of farm inputs and implements effects on Household Income

Farm inputs are necessary in the production process for agriculturalists, without which agriculture is impossible. Farmers ought to purchase farm inputs so as to boost efficient agriculture that will yield reasonable output. On whether purchase of farm inputs affected household income, respondents were requested to say as to what extent it affected their household income. 33.9% of rural respondents agreed that farming inputs affect household income whereas it was only 12.5% of peri-urban respondents that agreed whereby majority of them (37.5%) strongly disagreed hence a significant difference among the two areas as the chi-square was less than 0.05, that is 0.002. Their difference is caused notably by the different income generating activities that the two areas undertake. Whereas majority of the rural population depend entirely in agriculture, peri – urban population is mixed with different people undertaking different income generating activities.

This finding however, shows that taking care of malaria patients affects more the household income which was strongly supported by 60% of rural respondents and 40% peri- urban respondents. This is due to the fact that farm inputs are purchased in known specific time ones for all the season whereby diseases erupt at any time.

Table 21: Purchase of farm inputs and implements effects on household income

	Location of respondent		**$\chi 2$**
	Rural	Peri-Urban	
Strongly agree	20.3	2.5	
Agree	33.9	12.5	
Not sure	13.6	17.5	
Disagree	15.3	30.0	
Strongly disagree	16.9	37.5	
	100.0	100.0	**0.002**

Source: Survey results (2007)

4.6 Different factors that contribute to reduced Household Income

Inspite of the fact that malaria affects households' income, the daily life of people is the function on various expenditures that in different degrees affect ones household income depending on the extent of the need.

In the study different factors which were thought to contribute to reduced household income were ranked, in these factors, malaria sickness was among factors which was mixed in other factors so as to measure its contribution to reduced household income. After the interview, there was a big difference between malaria sickness and the other factors like heavy rain fall, school fees, preventive measures etc. This difference was not the same in both rural and peri urban areas. It was found that 35.6%of the rural respondents used most of their income to deal with malaria sickness while in the peri urban areas was found to be 25.8%.This difference between the rural and peri urban areas is caused by many reasons some of them being the level of economy in the household, the social infrastructures like hospital, distance to hospitals, etc, made the rural people spend much money for this fatal disease compared to the peri urban areas.

The second factor which was seen to contribute more in the reduced household income was drought, which was 17.8% of the surveyed households in the rural and 6.5%households in the peri urban areas. The difference is again so big because when we talk of the rural people we have no way we can escape from talking on agriculture as a main income generating activities, it was there fore a second factor in intensity of reducing household income in the rural areas after malaria sickness. This case was different in the peri urban areas were by drought was not even ranked the third, the reason is that drought is not affecting much the urban nor peri urban areas since agriculture is not their main income generating activity, on contrary, it was observed that loosing the employment was the second factor in the peri urban areas which contributed to reduced household income. The results showed that 12.9% of the respondents from the peri urban areas agreed to reduce their household income due to loosing their employment, this was not the case in rural areas were by only 2.2% of the all interviewed heads of household found to reduce their household income due to lost employment. This particular factor is ranked the seventh in the rural areas while ranked the second in the peri urban areas.

Table 22: Factors that contribute to reduced household income

Parameter	**Location of respondent**		**χ2**
	Rural	**Peri-Urban**	
Drought	17.8	6.5	
Fire	4.4	.0	
Sickness	35.6	25.8	
Heavy rainfall	11.1	3.2	
National economy	8.9	6.5	
Conflicts	6.7	.0	
Pest	2.2	.0	
Poor salary	4.4	6.5	
Lost employment	2.2	12.9	
School fees	.0	6.5	
Marriage problems	2.2	6.5	
Other project	2.2	.0	
Poor technology	2.2	.0	
Studies	.0	6.5	
Transport costs	.0	3.2	
Theft	.0	6.5	
Dowry and Marriage	.0	3.2	
Accident	.0	3.2	
Partner death	.0	3.2	
	100.0	**100.0**	**0.060**

Source: Survey results (2007)

4.6.1 Manpower lost due to Deaths of Adult Household members hence affecting the economy

Malaria remains a major public health problem in Sub- Saharan Africa and in particular Tanzania. It is estimated that 25% of Tanzanian population live within endemic prone areas with little immunity thus vulnerability the disease the result of which is deaths (Mboera, 2004).

According to this study, respondents in both Morogoro rural and peri – urban were requested to state the number of adult deaths that occurred in their households that were associated with malaria. In all the households that were studied, there were 1-3 reported cases of an adult death that was associated to malaria. In Morogoro urban 57.9% of respondents reported an adult death case in their households, whereby 70% of them reported one death. Likewise, in the peri – urban area, 42.1% of the respondents reported to have lost an adult in their household due to malaria. The finding of the two areas show a close trend of deaths as their difference is not significant.

These findings portray that, malaria is a serious fatal disease that kills majority of people in the study area. This finding goes in line with what the Tanzania Ministry of Health says; that over 95% of Tanzanians are at risk of infection (MoH, 2006). With this intensity of the problem and the effects that are posed by the disease it remains very hard for most of people in the area to improve the quality of their livelihood.

Table 23: Deaths caused by malaria

	Death caused by malaria			**Total**	χ^2
Frequency of deaths	1.00	2.00	3.00		
Rural (in percentage)	70.0	53.1	.0	57.9	
Peri – urban (in percentage)	30.0	46.9	100.0	42.1	
	100.0	**100.0**	**100.0**	**100.0**	**0.151**

Source: Survey results (2007)

4.7 Summary

This chapter has explicated the outcomes of the study on the negative economic importance of malaria on household in Morogoro rural and peri urban areas by showing the extent to which malaria affects production at the household level, factors which contribute to reduced household income and assessing the manpower lost due to deaths of adult household members hence affecting the economy.

The study findings portray that, malaria has inflicted serious impacts on the lives of the populations in the study area thereby imposing infringement to their development. This fatal disease has been ranked the first when ranking factors that contribute to reduced household income followed by other factors. These findings call for the need for immediate intervention by all stakeholders so as to make malaria an historical phenomenon hence a conducive income generating environment for the rural and Peri – urban populations. The study has further observed that, there is a close similarity in the Rural and Peri – Urban areas in terms of infection, economic status as well as malaria effects.

CHAPTER FIVE

5.0 CONCLUSONS AND RECOMMENDATIONS

5.1 Overview

This study aimed at finding the negative economic importance of malaria at household level. In doing that it carefully measured the extent to which malaria affects production, how the loss of household member in the household affects the economy of the household. It also ranked different factor which contributes to reduced household income. This was to scrutinize how malaria as one of the factors contributes to the reduced household income. In measuring the household economic status, the number of indicators were developed particularly the household asset so as to observe the relationship existing between the less income generating households, higher income generating and malaria endemic.

5.2 CONCLUSIONS

Under this study all the objectives were technically attained, through the structured interview schedules, the study discovered that:

1. After the household has encountered the disease, the level of production is reduced as well, it was from that point when the coping strategies became crucial both in rural and peri urban areas. In finding these coping strategies some households found themselves entering in the other problem namely poverty.

2. There was no significant difference between rural and peri urban areas, but the study discovered that despite the fact that people were aware of the problem still the mortality rate due to malaria was still high. This can be explained by the study that people still need more sensitization not whether a disease exist but more about the preventive and curative measures. For instance, it was clearly shown that in the rural areas the number of people who own more than one mosquito net are very few.

3. In ranking different factors which contribute to reduced household income, still malaria seemed to be at the highest rank relative to other factors, though the situation is different in peri urban and rural areas.

4. When measuring the extent to which malaria affects households in relation to economic status both in rural and peri urban areas, the findings showed that, the rural population, who were found to be less capable economically were observed to be more vulnerable to malaria compared to the peri urban population which were well equipped economically and hence less vulnerable to the endemic.

5. Finally, the study intended to assess the deaths of adult household members due to malaria, the findings showed that malaria still kills many adult members in the rural areas in comparison to peri urban areas, and hence, this affects much production, household economy, and consequently, the creation of poverty.

5.3 RECOMMENDATIONS

1. The community should be sensitized not only the existence of the disease but also the preventive and curative measures should be given preference. The Insecticide Treated Nets should be more encouraged especially in the rural areas where most are vulnerable, and the knowledge about how to prevent the disease is still minimal.

2. Malaria control programs should also consider the family practices and the economy of the respective communities. Findings from this study indicate the need to design interventions that fit specific local context. Regarding the rural areas that have been seen as more victimized which portray the same reality in poor countries like Tanzania, it is therefore important that malaria control programs and agricultural development projects are planned and managed in a multicultural way so as to combat the problem.

3. The use of less effective antimalarial drugs, delayed medical consultation, and reliance on clinical judgments without laboratory confirmation in rural and peri urban areas should be avoided.

4. There is a need to increase the efforts of fighting against the disease by policy makers and the antimalarial activists as well as the government as whole.

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APPENDICES

Appendix 1: The interview schedule for Morogoro rural and peri urban households.

The theme of the research: the negative economic importance of malaria on households.

Sehemu A: Background información

A1. The number of interview Schedule…………………………..

A2. Name of respondent…………………………………………

A3. The date o fan interview…………………………………….

A4. Name of ward………………………………………………..

A5. Name of the village/street……………………………………

A6. Sex of respondent

1) Male ( )

2) Female

A7. Marital Status

(1) Single

(2) Married

(3) Living together ( )

(4) Divorced

(5)Others (Explain)

A8. What is your age in years

A9. The occupation of the head of Household.

	1= besiness man	2=Livestock keeper	3=farmer	4=Non farming activities works e.g. shop	5=Employee (explain)	6=Others(explain)
Father						
Mother						

A10. Education Level(put 'v' where appropriate)

	1=None	2=Adult education	3=Primary education	4=Secondary education	5=Tertiary education	6=Other(specify)
Father						
Mother						

Section B: To recognize the presence/ existence of malaria/ awareness

B11. Have you ever recognized a disease called malaria?

1 = Yes ( )

2 = No

B13 When did you recognise that disease for the first time (the year)?................................

Section C: The negative economic importante on household income.

C12. In what year did your householicome got reduced? …………………………..............

C13.Because of malaria outbreak, did you maintain the same production in the following years

1 = Yes ( )

2 = No

C14. What did you do in order to cope with the above problem?

1 = To sell the cash crops

2 = asístanse from the relatives

3 = Salary

4 = selling milk ( )

5 = petty trade

6 = others (explain)……………………………………………

Section D: To assess the extent to which malaria affects household production

D15.Please cose the number from the table to show what extent do you agree or disagree according to the given sentences...1=I strongly agree, 2=agree, 3=I am not sure/i dont know, 4=I don't agree, 5=I strongly disagree.

Number	**Sentence**	**Tick**
1.	To use much time caring the malaria patients.	
2.	Malaria causes absenteeism, so the poor academic performance in class, this affects his or her future employment.	
3.	Because of malaria sick people man power is reduced for working in the farms.	
4.	Because of deaths due to malaria the man power is lost.	
5.	Due to expenses caused by caring the malaria sick, the household income is reduced.	

Section E: To rank different factors which contribute to reduced household income.

E16. Please rank the most contributing factor to reduced household income. Use 1=for the factor most contributing to reduced household income number 2 for the next, 3 and so forth.

	Factors	**1**	**2**	**3**	**4**	**5**

1.	To buy food					
2.	entatainment					
3.	To buy farm imputs					
4.	Expense for children education					
5.	House renovation					
6.	Clothes buying					
7.	Payment for farm keeper					
8.	Capital for farm activities					
9.	Caring the malaria sick.					
10.	Buying medicine for malaria sick					
11.	To buy mosquito nets so as to prevent malaria					

Sehemu F: To measure the man power lost due to deaths of the adult household members

F17. How many are you in this household?...

F18. How many were they born in your household?...

F19. Is ther any death which you think to be the results of malaria?............................

1) Yes
2) No ( )

F20.What was the effects of that death in your household?...
....
....

F21.Is there any other negative economic impact which are caused by malaria?...
....
....

Measuring the economic status of each household

G: ASSETS.

G 22. Please can you tell me the assets you have bought in this household?

ASSETS	Ownership 1=Yes 2=No	Number of assets	No.of assets working	No.of assets not working
Bicycle				
Car				
Motorbike				
Radio				
Refrigerator				
Television				
Clock/ watch				
Own land				

Sofa				
Wooden bed				
Electric iron				
Mattress				
Own house				
Radio cassette				
Water pump				
Livestock				
Sewing machine				
Poultry				
Mosquito net				
Fan				

H: HOUSING CONDITIONS

H23. Do you own this house? ( )

Own…………………………………1

Rent………………………………….2

H24. What are the floors of this house made up of? ( )

1= Earth, 2=Wood, 3=Tiles, 4=Cement, 5=Others

H25. What are the walls of this house made up of? ( )

1=Stones, Coral block, cement block, burnt bricks, 2=Mud bricks (unplustered), wood, 3= Galvanized, mud & sticks, 4=grass, cardboard 5=others.

H26. What is the roof of this house made up of? ( )

1=tiles, concrete, cement.2=Galvanized iron 3=Bamboo, wood, mud, grass 4=others.

I: SOME HOUSEHOLD FACILITIES

I 27.What is the main source of energy for cooking in this household? ( )

1=Electricity, propane, or solar 2=Biogas, kerosene or charcoal 3=firewood 4=crop residue, coconut husks, sawdust, animal dung, chaff grass, 5=others

I 28.What is the main source of drinking water in this household? ( )

1=Piped into residence 2=Rain water harvesting 3=Public tap, 4=Vendor, 5=River, canal, spring 6=others.

I29. What is the time in minutes to the main water source…………………………

I30. What is the main toilet facility for this household? ( )

1=Private flush 2=Shared flush 3=VIP or pit 4=Neighbour or bush 5=others.

THANK FOR YOUR COOPERATION