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THE IMPACT OF ILL HEALTH ON HOUSEHOLD POVERTY IN UGANDA

A CASE OF MALARIA AMONG CHILDREN BELOW FIVE YEARS

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Dedication

This piece of work is dedicated to my beloved mother, Mrs. Alice Agnes NamukuyeKasule, my brothers and sisters whose invaluable support has been fundamental in my academic journey.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CMH	Commission on Macroeconomics and Health
DHS	Demographic and Health Surveys
DALY	Disability Adjusted Life Years
DFID	Department for International Development
EA	Enumeration Areas
GDP	Gross Domestic Product
GFATM	Global Fund on AIDS, TB and Malaria
GoU	Government of Uganda
HIV	Human Immune Deficiency Virus
UMIS	Uganda Malaria Indicator Survey
MDG	Millennium Development Goals
MOH	Ministry of Health
UNDP	Uganda National Development Plan
NCDs	Non-Communicable Diseases
OECD	Organization for Economic Development
PMI	Presidential Malaria Initiative
PPS	Probability Proportional to Size
PSI	Population Service International
SPSS	Statistical Package for Social Sciences
TB	Tuberculosis
UBOS	Uganda Bureau of Statistics
UNHS	Uganda National Household Survey
VHTs	Village Health Teams
WHO	World Health Organization

ABSTRACT

The study investigated the impact of ill-health on household poverty in Uganda with a focus on malaria among children below the age of five years. Its specific objectives were to find out the influence of expenditure on treatment of malaria and expenditure on medicines and transport on household poverty. It also intended to find out the influence of admission due to malaria on poverty, the effect of loss of working days due to malaria, borrowing for healthcare and selling of household assets on household poverty in Uganda, a low income country in East Africa. The study was based on data collected under the 2009 Uganda Malaria Indicator Survey. This survey covered 4,080 children below the age of five and 4,250 households. Women aged 15 – 49 were the primary respondents. Principal component analysis was used to generate a composite poverty index and results were presented in quintiles and later into two groups; the poor and the rich. Bivariate analysis was done using the chi square while multivariate analysis was done with binary logistic regression. Results show that in both rural and urban areas ill-health due to malaria is a major challenge. Results show that in rural areas, 78.9 percent and 39.3 percent among poor and well-off household respectively had a child who suffered from malaria two weeks prior to the survey. In Uganda, the likelihood of a household that had a child with malaria being poor was high. This was as a result of expenditure on; treatment, medicines and transport to seek healthcare. In rural areas, a significant ($p < 0.05$) statistical relationship exists between expenditure on treatment, medicines, transport, borrowing to pay for healthcare plus selling of assets and household poverty level. A rural-based that spent money on treatment or medical consultation, on medicines or transport was twice like to be poor compared to one that did not. In urban areas, 64.8 percent of the poor households and 49.2 percent among the non-poor household had had a child with malaria and expenditure on treatment, on transport and admission of the child is associated with household poverty. Here, a household that spent money on treatment of a child with malaria was 13.3 times likely to be poor compared to one that did not. In the same place of residence, a household that had a child admitted as a result of suffering from malaria was 11.4 times likely to be poor. Control of illness demands more attention and support. Control of malaria especially among children should be a top priority. Patients should access treatment free of charge or at low fees affordable by the majority. Regular availability of free medicines in public health facilities should be guaranteed. Antimalarial medicines in the private sector should be subsidized so as to improve on availability and access to medicines. Health insurance for all should be promoted. Community healthcare through village health teams should be supported. These teams should be facilitated and empowered to promote health in their communities.

CHAPTER ONE:

GENERAL INTRODUCTION

1.1. Introduction

This chapter presents the background of the study, statement of the problem and the objectives that were meant to be achieved. It also presents the hypotheses, the conceptual framework, justification and significance of the study as well as scope and limitations off the study.

1.2. Background of the study

Investing in the promotion of health is essential to human welfare, vital for improving on the quality of life of millions of people, necessary for human capital development and accelerating economic growth. As a step to promote better health for the majority, in 2000, World Health Organization established the Commission on Macroeconomics and Health (CMH) to assess the place of health in global economic development and in the same year, the United Nations Millennium Development Goals (MDG's) Declaration was made. Three of the eight MDGs goals under this declaration are health-related. Goal number four calls for a reduction in child mortality; goal five focuses on improvement in maternal health while goal six aims at combating HIV/AIDS, malaria and other diseases. The eighth goal too is geared towards promoting health. It aims at realizing a global partnership for development and enable developing countries have access to affordable essential drugs. But despite the commitments and technological advancements in the world, Ill-health remains a major challenge in this development endeavor.

In many countries, the burden of disease has persistently remained high. Comparing the prevalence of disease across regions reveals that communicable diseases including malaria,

tuberculosis and HIV/AIDS; maternal, perinatal, and nutritional conditions dominate in developing countries while non-communicable diseases are dominant in developed countries. Mortality rates too have persistently remained high. In 2004, an estimated 58.8 million deaths occurred globally. More than half of all deaths in developed countries involved people 60 years and above, of whom 22 million were people aged 70 years and above, and 10.7 million were people aged 80 years and above while almost one in five deaths was of a child under the age of five years. In Africa, on the other hand, 46% of all deaths were children aged less than 15 years, whereas only 20% were people aged 60 years and above (WHO 2005). Thus in Africa, death takes more of the young; in high-income countries, death takes more of the old. In developing countries, communicable diseases and in particular malaria, are the leading cause of morbidity and mortality.

Malaria is an acute febrile illness caused by plasmodia and transmitted through bites of anopheles mosquitoes. Malaria infections can cause vital organ dysfunction and death. There are five plasmodia species that infect human beings, namely; *P. falciparum*, *P. vivax*, *P. malariae*, *P. ovale* and *P. knowlesi* but *P. falciparum* and *P. vivax* cause the significant majority of malaria infections, severe cases and deaths (WHO 2012).

Despite being a preventable and curable disease, malaria continues to be a major global health and economic challenge in many countries with over 40 percent of the world's population, which are more than 3.3 billion people at risk for malaria to varying degrees in countries with ongoing transmission. In 2007, malaria was ranked as number five among the leading causes of death, accounting for 5.2 percent of all deaths. In 2010, an estimated 3.3 billion people were at

risk of malaria and in the same year, 216 million cases of malaria were reported; 81 percent of these were in the 46 malaria-endemic countries in sub-Saharan Africa (WHO 2012; WHO 2011 and WHO 2007). The GFATM (2009) estimated that each year, about 250 million people contract malaria.

In Africa, it is only the extreme northern and southern parts which are free from malaria. The Democratic Republic of Congo and Nigeria account for almost a half of the burden of malaria in Africa (PMI 2011). In Africa, malaria kills nearly one million people a year and about 80 percent of these deaths occur among children under the age of five years. For instance, in 2010, an estimated 655,000 persons died of malaria but 86% of these victims were children under 5 years of age, and 91% of malaria deaths occurred in Africa (WHO 2011; PMI 2011; GFATM 2009).

In Uganda, health is one of the key priority sectors and it receives a large share of the country's budgetary allocation but the country performs poorly on a number of health indicators and trends show that the country may fail to attain the MDG target for health-related goals by 2015. Demographic and Health Surveys (DHS) plus National Household Surveys (NHS) are periodically carried out to generate information about the health status of the population. Recent surveys show that poor performance on many health indicators. Mortality rates too are inexcusably high.

According to Ministry of Health (2010), in Uganda, maternal and child health conditions contribute a significant proportion to the burden of disease with perinatal and maternal conditions dominant in this category. Non-communicable diseases (NCDs) are an emerging

problem and their treatment is both complicated and costly but communicable diseases are dominant. These account for 54% of the total burden of disease in the country. In this category, tuberculosis (TB), HIV/AIDS and malaria are the leading causes of ill-health. The burden of tuberculosis is high and the country is ranked 16th out of the 22 high TB burdened countries by the WHO global TB report of 2008 and it is facing an emerging resistant TB strain. HIV/AIDS remains a major challenge and Uganda is one of the countries with the highest HIV/AIDS prevalence in Sub Saharan Africa while malaria is leading cause of morbidity and mortality.

Malaria remains the most important disease in terms of morbidity, mortality and economic losses in Uganda (Ministry of Health 2012). Uganda has the third largest malaria burden in Africa and the sixth largest in the world. Clinically diagnosed malaria accounts for approximately 30-50% of outpatient visits at health facilities and 15-20% of all hospital admissions Ministry of Health (2013) In 2009, the annual estimate of malaria was over million cases and 43,000 deaths, of which 91 percent were in children below 5 years of age (Nankabirwa et al.2009). UBOS (2012) reported that malaria was the number one cause of hospital based mortality in 2010/2011 and accounted for 27.16 percent and 16.99 percent admissions among children below five years and persons above five years respectively. UBOS (2010) reported that close to six in every ten children below the age of five years suffered from malaria/fever. The prevalence of malaria parasites in children under five years of age was high ranging from 5 percent in Kampala to 63 percent in mid northern region, with a national average of 45 percent.

In Uganda, all the five human *Plasmodia* species exist, but *P. falciparum* is by far the most common, responsible for 90 to 98% of diagnosed cases and almost all cases of severe malaria.

The disease is endemic in most parts of the country since the humid and warm climatic conditions are favourable for transmissions throughout the year. The climate allows stable, perennial, and high levels of malaria transmission in 90 to 95 percent of the country. Consequently, approximately 95 percent of Uganda's territory is exposed to moderate to very high, perennial transmission levels. In the highland areas of the south and mid-west, and along the Kenyan and Sudanese borders, although transmission is low and unstable, there are potentials for epidemics (DFID 2011). With the majority of the population settled in endemic areas, they are exposed to malaria transmission throughout the year (DFID 2011; Ministry of Health 2005).

Areas with high burden of disease have persistently witnessed high poverty levels, especially in Africa. According to the Population Secretariat (2003), poverty is characterized by a perpetual need for daily necessities of life such as food, clothing, shelter, medical care, water, and sanitation. To the United Nations Economic Commission for Africa (2005), poverty is multidimensional and self-reinforcing unacceptable condition of living. Poor people have low incomes and consumption levels, and many depend for their livelihoods on subsistence agriculture or on the informal sector. The poor are inadequately educated and tend to be less healthy than the rest of the population.

Unlike most regions of the world, poverty in Africa has been on the rise, despite an upward trend in the real growth rate over the last five years. In this part of the world, poverty is pervasive, intensive, chronic, gender-biased and largely a rural phenomenon. Many people are not only below the poverty line, but also poor for long and sustained periods. They are chronically poor, emerging only briefly from poverty. According to the United Nations Economic Commission for

Africa(2005), poverty in Africa is mostly a rural phenomenon not only because the majority of the population live in rural areas but also because of the pattern of distribution of economic activity between rural and urban areas. The rural-urban differentials in the incidence of poverty are large and persistent.

Sub-Saharan Africa has the highest incidence of poverty not only in Africa but in the entire world. Unlike almost all other regions of the world; poverty in Sub-Saharan Africa has been rising over the last decade. The share of people living on less than \$1 a day in Sub-Saharan Africa exceeds that in the next poorest region, South Asia, by about 17 percentage points. In 2003 about 46 per cent of the population in Sub-Saharan Africa lived on less than \$1 a day, slightly more than in 1980 and in 1990(United Nations Economic Commission for Africa 2005).

Uganda has recorded improved economic performance for some years. Over the period 1997/98 to 2000/01, GDP growth averaged 7.2 percent per annum. Between 2000/01 and 2003/04 it averaged 6.8 percent and between 2004/05 and 2007/08, it was 8 percent. This impressive economic performance has however not translated into significant improvement in the welfare of the masses. With an average annual growth rate of 3.2%, Uganda's population is expected to increase to 44 million by 2020 and the number of the absolute poor is projected to increase (UBOS 2006). In Uganda, poverty is more of a rural than an urban phenomenon.

It has been argued that ill-health undermines human capital development and the realization of sustained economic and social development thus curtailing productivity of existing resources, resource accumulation and technical change. It has been held that health status is correlated with the welfare of individuals and poor health leads to poverty. The persistent state of ill health has

been cited as a major factor in causing chronic poverty. It is also held that the burden of disease reduces one's ability to engage in productive work while draining the little resources they have in search for medical care. It also weakens or erodes social safety nets in communities.

1.3. Statement of the Problem

Uganda experiences a high disease burden. Evidence from the 2009/2010 National Household Surveys show that 48 percent of the persons reported an illness or injury in the 30 days preceding the date of the survey. Among the reported illness, malaria remained a major health burden (UBOS, 2011). Approximately 70,000 to 100,000 Ugandans die annually from malaria. Children below 5 years of age are disproportionately affected with nearly half of inpatient deaths among children less than five years of age are attributed to malaria (UBOS 2011; Ministry of Health, 2013).

The high burden of malaria has been accompanied by high levels of poverty. UBOS (2012) reported that 24.5 percent of Ugandans which translates into 7.5 million persons were poor in 2010 and the incidence of poverty remained higher with high incidence of malaria. But few studies about the relationship between ill-health and poverty have been done in Uganda, for instance Lawson (2004) and Ssewanyana (2010). Besides, all studies have focused on adult health and poverty with hardly any focusing on child illness and poverty. Specifically, no study has been done to investigate the impact of malaria among children on household poverty in Uganda. Therefore, the study investigated the impact of malaria among children under five on household poverty.

1.4. Objectives of the Study

1.4.1. Main Objective

The main objective of the study is to examine the impact of ill-health due to malaria on household poverty in rural and urban areas of Uganda. This objective was investigated through seven specific objectives below.

1.4.2. Specific objectives

The specific objectives include;

- i. To assess the influence of a household's healthcare expenditures as a result of illness due to malaria on household poverty in rural and urban areas of Uganda
- ii. To find out the influence of admission due to malaria on household poverty
- iii. To examine the effect of loss of working days due to malaria on household poverty
- iv. To find out the effect of borrowing for health care on household poverty
- v. To assess the effect of selling of household assets to meet healthcare needs on household poverty

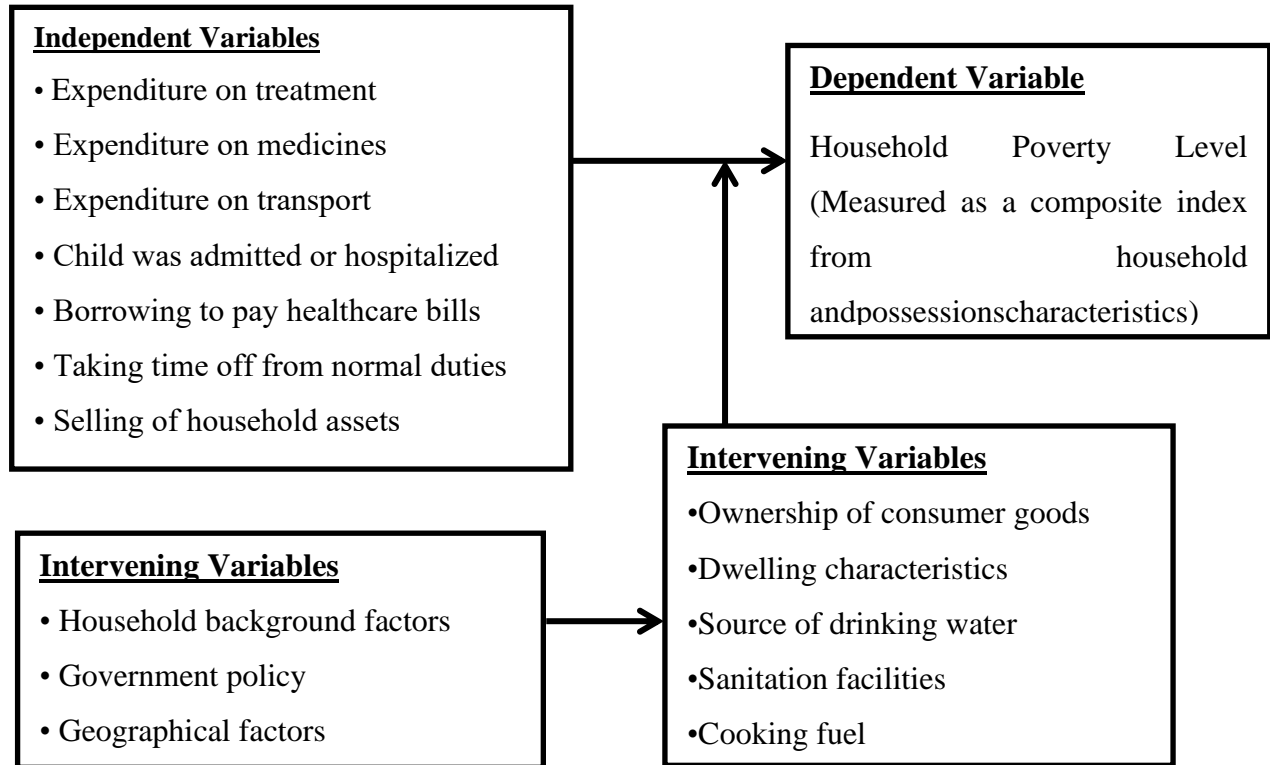
1.5. Hypotheses of the Study

- i. In both rural and urban areas, there is no significant relationship between a household's healthcare expenditures as a result of illness due to malaria and household poverty

- ii. There is no significant relationship between admission due to malaria and household poverty in both rural and urban areas
- iii. In rural and urban areas of Uganda, loss of working days due to malaria is not significantly related with household poverty.
- iv. There is no significant relationship between borrowing for health care and household poverty in both rural and urban areas
- v. There is no significant relationship between selling household assets and household poverty in both rural and urban areas

1.6. Figure 1: The Conceptual Framework

Figure 1: The Effect of Ill-health on Poverty



Source: Author

The conceptual framework of the study hinges on Sen's capability approach to the analysis of welfare. The capability approach focuses on the plural or multidimensional aspects of well-being (Robyens (2007)). The impact of ill-health on poverty is analyzed through; through expenditure on medical consultations and medicines, expenditure on outpatient care, that is to say, the expenditure on transport and inpatient care, that is through losing time during hospitalization or admission of the child, borrowing so as to meet healthcare costs and selling household possessions.

The framework illustrates how the independent variables influence household poverty, the outcome variable through various intervening factors. From the framework, episodes of fever trigger expenditures as affected households seek healthcare for their members. These are expenditures on treatment or medical consultation, anti-malarial medicines and transport to health facilities. A person with malaria may be admitted as it is a requirement in case of severe malaria. Apart from the accompanying expenditures, hospitalization leads to loss of loss of productive time and income. The framework further illustrates that households affected by malaria borrow money or sell off assets so as to pay healthcare fees. All these impoverish a household thus driving it into poverty.

The intervening variables are household factors such as residence, size, headship, and age and sex composition. Government policies influence the availability of healthcare services and their fees charged while geographical factors influence physical access to healthcare delivery points, for instance through distance. Income is lost when caring for the sick. This set of factors deprive households of possessions, drive persons into pitiable dwellings, drinking unsafe water and poor

sanitation, use cooking fuels such as wood which pose health risks thus driving household deprivation and poverty.

1.7. Justification of the Study

Although a vicious cycle between malaria and poverty is acknowledged, there is no detailed evidence around how malaria and poverty relate at the household level (Chuma, Thiede and Molyneux, 2006). The study was justified so as to empirically examine the impact of ill-health on household poverty which is a persistent development challenge in Uganda. This was particularly necessary so as to understand the relationship between ill-health and household poverty. This was pertinent because, it is common for households with high burden of disease to experience high poverty levels. The study investigated the impact of having malaria and the associated expenditures, loss of work and assets due to ill-health on household poverty. It further examined the rural – urban differentials in the influence of malaria on poverty in Uganda. Using asset-based poverty measures and the capability approach offered more insights into the effect of ill-health, especially malaria among children under five years on household poverty.

1.8. Significance of the study

The study investigated the relationship between ill-health and poverty in Uganda. In particular, it focused on child illness and poverty, investigated the impact of malaria among children on household poverty in Uganda. Thus it contributes to the filling of the knowledge gap about the relationship between ill-health and household poverty level. The study generated insights into the correlates of ill-health, particularly malaria among children under five years on household poverty. It explains how healthcare related expenditures contribute to household poverty. This is

invaluable in informing policies that are meant to help the population against impoverishment due to ill-health. The results do not only inform programs interventions that are meant to improve on the health of the populace but as well inform poverty alleviation interventions in Uganda. These poverty alleviation policies can incorporate ill-health related factors that contribute to the economic impoverishment of households. A rural - urban comparison allowsthe designingof appropriate policies that are meant for each place of residence.

1.9. Scope of the Study

The study examined the relationship between poverty and ill-health due to malaria in Uganda.It was based on the 2009 malaria indicator survey data collect by the National Bureau of Statistics and ministry of Health, Uganda. Thiswas a national survey that covered the wholes country. The study investigated the impact of malaria among children under the age of five years on household poverty.

1.10. Limitations of the study

The survey did not collect information about household income which would have allowed the comparison of health expenditures to total income. Study variables which reflect ill-health related expenditures indicated the direct costs while borrowing and days off normal work reflected indirect costs. Therefore, study does not compare household expenditure to its total income which would have portrayed a better picture of economic burden of ill-health to a household.

Secondly, the study was based on secondary data. This data was collected under the Uganda Malaria indicator Survey (UMIS). Missing data was noticed which affects the sample size and inadvertently adversely affect some statistics. In order to minimize the effect of missing data on model estimation, missing data was filtered out.

1.11. Definition of key terms

Caregiver: a person who looked after children when sick. They may be their parents or any other person

Children: young persons below the age of five years

Episode of fever: it is the occurrence of a bout or stint of fever

Household: a group of persons living under the same roof, answerable to the same head and share a common source of food.

Household head: a person who is the primary breadwinner for the household and is responsible for day-to-day decision making within the household.

Ill-health: Being unwell as result of disease.

1.12. Organization of the study

This dissertation constitutes of five chapters. Chapter one is the introduction to the study. It presents the background and problem of the study, its objectives, hypotheses and justification of the study. The chapter further presents the significance of the study and its scope. Chapter two reviews the relevant literature while chapter three presents the methodology adopted by the

study. In four, results of the study are presented and discussed. This is followed by summary conclusions and recommendations which are presented in chapter five.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter presents relevant literature in the area of health and poverty. It reviews literature on methods for measuring poverty, poverty theories, the economic burden of ill-health, expenditures on healthcare, hospitalization and loss of working days as well as borrowing money for healthcare and loss of household assets as people seek healthcare. The chapter is divided into the following sections; section 2.2 presents methods for measuring poverty while section 2.3 revisits poverty theories. Section 2.4 presents literature on malaria and poverty.

2.2. Methods for Measuring Poverty

Individuals are deemed to be poor if they below the generally acceptable conditions of living in society. The socio-economic status measures, according to which poverty level can be measured include; income, consumption or possessions. From any of these, the current status, recent change in the status, poverty flags, multi-period averaged status, relative position for instance in the income distribution and number of spells of poverty can be determined.

Poverty can be absolute, relative or subjective. Poverty is absolute when one has less than the objectively defined minimum, thus unable to access the bundle of goods that is considered sufficient by the society. On the other hand, one is considered to be relatively when they have significantly less than others in their community. The third category is subjective poverty when one feels he does not have enough to get along (Shelley 2003). Poverty measures include;

2.2.1. Income Based Measures and the Headcount ratio

Income is the commonly used proxy of living conditions and inadequate income is a strong predisposing condition for an impoverished life (Sen 1999). There are three income-based poverty measures; the headcount ratio, the poverty gap and the poverty severity index. The three different income measures methods are generally employed to measure different aspects of poverty.

The headcount ratio shows the ratio of people living below the poverty line to the total population. It gives a quick and easy to understand first look at the incidence of poverty. It does not indicate the depth of poverty or the distribution of income below the poverty line. In particular, the headcount ratio remains unchanged even if all the poor get richer without anyone crossing the poverty line.

The poverty gap index measures the magnitude or depth of poverty. Expressed as a percentage of the poverty line, it is calculated as the poverty headcount ratio multiplied by the difference between the poverty line and the average income of the population living under the poverty line. The poverty gap index reflects some of the movements within the group of people living below the poverty line. However, it does not change when income is redistributed from the very poor to the less poor and all the poor stay below the poverty line.

The severity of poverty index is calculated as the poverty headcount ratio multiplied by the squared difference between the income of a poor person and the poverty line, aggregated over all poor people. The severity of poverty index not only measures poverty and depth of poverty but also reflects the distributional effects of the people living below the poverty line.

The headcount ratio and the poverty gap index do not change when income is redistributed from the very poor to the less poor and all the poor stay below the poverty line. However, the severity of poverty index increases indicating that poverty has become more severe for the poorest. The severity of poverty index is more sensitive to the income changes of the poorest and less sensitive to the income changes of those living close to the poverty line. This mitigates the discrete nature of the poverty measures, especially the headcount ratio (UBOS 2010).

The three income measures require an income threshold which is the poverty line that separates the poor from the non-poor. But it should be noted that there is a strong element of judgment and discretion when setting a poverty line. According to UBOS (2004), given the subjectivity of the deriving the poverty line, too much attention should not be given to the numerical value of any single poverty statistic. To Brandolini, Magri and Smeeding (2009), income measures of poverty has two major shortfalls; first is the inability to consider the non-monetary resources that a household may have which too can be relied upon to cope with needs of life and unexpected events. Secondly, income is not an end itself and cannot account for the multi dimensions of human life. The authors further argue that chances for an individual depend on a number of opportunities open to them.

2.2.2. Consumption and Asset Poverty

There is a growing use of consumption expenditure in households to measure poverty because apart from income being considerably more difficult to measure, conceptually, consumption expenditure is a better measure of both current and long-term welfare since consumption is a function of permanent but not only current income. Although income may be transitory, the transitory component of consumption is usually small because households are less likely to change their consumption patterns when they perceive the change in their income as transitory. Therefore, current consumption is a good measure of permanent consumption.

But the choice of consumption rather than income indicators can affect the temporal trends in poverty rates. Because of transitory income fluctuations, income-poor households include those who have suffered temporary reductions in their incomes (Gibson 2004). Asset-poverty captures the exposure to the risk that a minimally acceptable living standard cannot be maintained in case of a fall in income, whereas income-poverty refers to the static condition where income alone is insufficient to maintain this standard.

2.3.0. Theories of poverty

Like other phenomena, various theories have been advanced to explain the causes, pattern and persistence of poverty. Among the commonly relied on theories are; the capability approach, the permanent income and life-cycle hypotheses as well as the human capital theory.

2.3.1. Capability Approach

The conventional poverty measures, especially income measures put emphasis on resources as being the core of the poverty concept. The need for improves on people's conditions of living from a broader perspective thus the birth of the capability approach. According to Hick (2012), neither opulence (income, commodity command) nor utility (happiness, desire fulfillment) constitute oradequately represent human well-being and deprivation. Instead what is required is a more direct approach that focuses on human function(ing)s and the capability to achieve valuable function(ing)s

The capability approach is a normative framework for the evaluation and assessment of individual well-being and the design of policies in society (Robyens 2007). It highlights the difference between means and ends, and between substantive freedoms (capabilities) and outcomes (achieved functionings). These functionings are the various things that persons value and succeed in doing or being, such as participating in the life of society and being healthy (Hick 2012; Sen 2001). A functioning reflects what a person has achieved, what he or she is able to do or to be, and any such functioning reflects, as it were, a part of the state of that person (Clark 2012). Capability on the other hand refers to the alternative combinations of functionings that are feasible for a person to achieve. It is a kind of freedom; the substantive freedom to achieve alternative functioning combination (Sen 2001). Therefore, capability of a person reflects the various combinations of functionings.

The capability approach shifts attention away from means to ends that persons have reasons to pursue and correspondingly, to the freedoms to be able to satisfy these ends (Sen 2001). It emphasizes the normative or ethical dimension of poverty and it stresses the intrinsic importance

of people's capabilities (as ends) as opposed to the instrumental importance of their incomes (as means); Hick (2012) argues for the importance of multidimensional assessment in poverty analysis and adopts a broad perspective of the many kinds of constraints that can limit people's lives. According to him, under the capability approach, the actual opportunities, or capabilities, a person has are intrinsically important and income is merely a means to such opportunities.

Merely enhancing average economic opulence can be inefficient in the pursuit of the really valuable ends. A country can be very rich in terms of the value of commodities produced per capita and still be very poor in the achieved quality of human life. Being relatively income poor in a wealthy society can entail absolute poverty in some important capabilities even when one's absolute income is high in terms of world standards. This is because they may require more resources to achieve (Clark 2012; Sen 2001).

Capability approach goes beyond income and utility. Unlike income and utility approach, under the capability approach, individuals should have the real freedom to achieve the kind of lives that they have reason to value. Individuals should have the 'capability' to achieve combinations intrinsically valuable functionings. Such capabilities include good health and poverty is viewed as the deprivation of certain basic capabilities such as being well nourished, being adequately clothed and sheltered, avoiding preventable morbidity, and so forth. The capability approach questions the central role often afforded to income in poverty measurement. The ability to participate in the life of society, for example, does not derive its importance from of its relationship to resources.

Despite the notion of development as freedom being too general, the capability framework provides a framework for the analysis of poverty. It focuses on means and ends having freedom to lead the lives people have reasons to value.

2.4.0. Other Poverty Theories

The capability approach provides a wide framework for the analysis of the welfare of populations but it does not provide specific measures and metrics for poverty. Alternative poverty theories exist that explain poverty in a more explicit way. Some of these include the permanent income and life-cycle hypotheses and the human capital theory.

The permanent income and life-cycle hypotheses explain the current income, earned and unearned as well as the future. According to Dornbusch and Fischer (1994), the permanent income and life-cycle hypotheses are superior to theories because they incorporate both earned and unearned incomes. According to these theories everybody has a permanent income stream that arises from earnings, both current and future and from assets. This income is however transitory deviations from the permanent stream.

However, the permanent income theory is difficult to adapt to poverty. In addition, the permanent income hypothesis does not allow for an individual's income stream to change if, for example, they become disabled. This is a serious drawback for analyzing poverty transitions where one of the primary aims is to analyze the effect of events that affect one's income, for instance ill-health particularly when one is permanently disabled.

Another poverty theory explains human capital from which it derives its name. Just like the permanent income and life-cycle hypotheses the human capital theory explains the pattern of individuals' lifetime earnings. This was first proposed by Becker in 1975 when he explained the choice of number of children desired and subsequently the fertility decisions of couples. According to Becker, one's desire to invest in education and training are determined by the expected returns from. Investments in education and training entail costs both in the form of direct expenses (e.g., tuition) and foregone earnings during the investment period, so only those individuals who will be compensated by sufficiently higher lifetime earnings will choose to invest. Those who foresee limited labour market opportunities are less likely to invest in human capital. Thus such persons are likely have low or no earnings in their lives and thus vulnerable to poverty. In general, the pattern of individuals' earnings are such that they start out low (when the individual is young) and increase with age Human capital theory is a theory of earnings, one of the major determinants of poverty.

But earnings then increase with age as new skills are acquired and when workers grow older, the pace of human capital investment and thus productivity slows. Subsequently, workers earnings can reduce. At the end of a person's working life, skills may have depreciated, as a result of lack of continuous human capital investment and the aging process. This depreciation contributes to the downturn in average earnings near retirement age (Ehrenberg and Smith 1991). To the extent that poverty follows earnings, we might predict a similar relationship between age and poverty, with poverty more likely for the young and elderly. Consistent with this prediction, Bane and Ellwood (1986) find that a sizable portion of all poverty spells begin when a young man or woman moves out of a parent's home - an event often associated with getting further education

or training - and that these poverty spells are relatively short with an average duration of less than three years.

While much empirical work tends to support the human capital theory, it is a theory of human capital investment and labor market earnings, not poverty since earnings are only one of the main determinants of poverty. Besides, the human capital theory, just like the permanent income and life-cycle hypotheses are all labour market-based.

2.4.1. Health and Poverty

The relationship between malaria and poverty is acknowledged but there is no detailed evidence how the two relate at the household level (Chuma, Thiede and Molyneux 2006). In agreement, CMH (2001) holds that health is widely understood to be both a central goal and an important outcome of development but the importance of investing in health to promote economic development and poverty reduction has been much less appreciated. But extending the coverage of crucial health services, including a relatively small number of specific interventions to the world's poor could save millions of lives each year, reduce poverty and spur economic development. The perception that health goals take care of themselves as a fairly automatic byproduct of economic growth is false for two reasons. First, the disease burden itself can slow the economic growth that is presumed to solve the health problems; second, economic growth is indeed important, but is very far from enough. Health indicators vary widely for the same income level.

Two propositions about poverty and health have been expounded. The absolute income hypothesis suggests that health status improves with the level of personal income, but at a decreasing rate. This is supported by the absolute deprivation hypothesis which suggests that very low standards of living are bad for health (Shelley 2003). Therefore, any deliberate attempts to reduce poverty through improved health care should be planned to ensure that the poor are the primary beneficiaries, otherwise, such efforts may yield sub optimal results, may instead benefit the well-off or even be counterproductive. Gwatkins (2005) for instance argues that since expanded health services typically reach better-off groups before disadvantaged ones, poor people are unlikely to be the principal beneficiaries of efforts to accelerate progress towards the improved health by providing additional resources to the health sector. What is more likely is faster progress among privileged groups and a rise in poor-rich health disparities.

For any individual, health status outcome measures include: subjective health self-reports, mortality, emotional stability, chronic conditions, general life satisfaction and physical functioning. For a person, good health can be perceived as an achievement in itself but it contributes both to higher productivity and to an enhanced ability to convert incomes and resources into good living and therefore the capability. On the other hand, poor health plays a significant role in undermining capability and exacerbating the problem of poverty.

From a capability perspective, among the functionings that persons may value doing or being is being free from disease. Persons who are ill are more disadvantaged in converting their primary goods into capabilities. In agreement, Sen (2001) argues that in order for one to concentrate on the real opportunity to pursue their objectives, then both the primary goods the persons hold and

the relevant characteristics that govern the conversion primary goods into the person's ability, their ends must be considered. According to Hick (2012) and Robyens (2007), from the capability approach, life is seen as a combination of various different functionings. These functionings may vary from such elementary as escaping morbidity and mortality, that is to say, good health.

2.4.2. Malaria among Children Under 5 Years

Individuals born into areas of stable *P. falciparum* transmission frequently move between periods of being infected with the parasite and states where the individual is uninfected. Most individuals will, at some stage in their lives, develop an overt clinical response to an infection often manifesting as a febrile event. These clinical events may progress to severe clinical states that may naturally resolve or the patient survives through medical intervention (Snow et al 2003). In malaria endemic areas therefore, individuals are likely to either have only parasites or be actually sick with malaria.

Age is an important factor in determining levels of acquired immunity to malaria. For about six months following birth, antibodies acquired from the mother during pregnancy protect children born in areas of endemic malaria. This immunity is gradually lost, and children start to develop their own immunity to malaria. In high malaria-endemic areas, children are only thought to have attained a high level of immunity by their fifth birthday (UBOS 2012).

Given this epidemiological situation in Uganda, children under the age of 5 years one of the two most biologically vulnerable groups, the other being pregnant women. Children particularly

contribute the largest part of malaria related mortality of less than 5 deaths in highly endemic areas and country-wide. Up to 22% of low birth weight in newborns is attributable to malaria (Ministry of Health, 2005).

2.5.1. The Economic Burden of Malaria

According to Sachs, (2002), areas where malaria prospers most, human societies have prospered least. The global distribution of per-capita gross domestic product (GDP) when adjusted for purchasing power shows a striking and unmistakable correlation between malaria and poverty. The extent of the correlation suggests that malaria and poverty are intimately related. Estimation of the long-term impacts of malaria on economic growth and development suggest the significance of the economic burden of the disease. Countries in which a high proportion of the population lives in regions of *P. falciparum* malaria transmission, annual economic growth rates are low. Impeded economic growth, increasing personal expenditures to prevention methods such as bednets or insecticides, increased funding for government control are some of the ways through which malaria causes poverty.

Malaria poses a big challenge to populations, especially in areas where it is endemic. Malaria poses significant cost burdens for both the poor and the least poor but the poorest households recorded the highest cost burdens (Chuma 2005). According to Ricci (2012), malaria might cause and perpetuate poverty at the household level in a number of direct and indirect ways.

The total costs of malaria include the direct, indirect and opportunity costs of falling ill and seeking treatment for malaria. These include healthcare-related expenditures, loss of productive

time and associated income when sick or caring for sick household members, borrowing so as to meet healthcare costs and selling household possessions. Households may suffer all or some of these costs when a member is sick with malaria. These costs might be substantial, further impoverishing poor households.

2.5.2.0. Healthcare expenditures and Poverty

Healthcare expenditures usually incurred are normally on; medical consultation, anti-malarial medicines, transport to a health facility, and inpatient related expenses. All or some of these expenditures may be incurred when a household member has an episode of fever.

These expenditures can at times be significant and with potential to impoverish a household. The likelihood is however higher depending on which of these costs money is spent for instance, inpatient treatment has relatively higher potential to impoverish households. In a study by Mondal, et al (2010) in India, it was found out that more than 30 percent of the households that incurred healthcare expenditures spent over 40 percent of their annual non-food expenditure on in-patient care. The proportional spending is much lower for those who had spent only on out-patient care or treatment for chronic illness.

Households are at a risk of impoverishments because these expenditures are met from out-of pocket. Therefore healthcare expenditures can be deemed to be catastrophic. According to Kawabata, Xu and Carrin (2002), catastrophic health expenditure can be catastrophic and this is the case when a household must reduce its basic expenses over a certain period of time in order to cope with the medical bills of one or more of its members and such expenditure should be equal to or greater than 40 percent of the capacity to pay.

Doorslaer, et al, (2006) observe that out-of-pocket payments continue to be the most important means of financing healthcare in most developing countries. So, the large and unpredictable health payments can expose households to substantial financial risk and, at their most extreme, can result in impoverishment. In India, estimates by Garg and Karan (2009) showed that out-of-pocket expenditure was about 5 percent of total household expenditure with a higher proportion recorded in rural areas and affluent states. Purchase of drugs constituted 70 percent of the total out-of-pocket expenditure. In the same country, approximately 32.5 million persons fell below the poverty line in 1999–2000 through out-of-pocket, implying that the overall poverty increase after accounting for out-of-pocket expenditure was 3.2 percent.

Whereas out-of-pocket is the main source of healthcare financing in majority of households in developing countries like Uganda, it has at times been argued that this does not necessarily lead to household poverty. According to Yuanli, Keqin and Hsiao (2003), the different proportions of income spent on healthcare by different income groups reflect redistributive effect but do not indicate whether these payments push households into poverty.

But it is apparent that expenditure on healthcare reduces the income, savings and functionings of individuals and their households. For instance, children under the age five years as it is the case with the majority up to the age seventeen and sometimes beyond are exclusively supported by their caregivers. Even a small healthcare expenditure of households that already had low income, consumption and possession can drive them into poverty and capability deprivation. Besides, whereas the low socioeconomic status groups are more affected, their counterparts in higher

groups are also adversely affected. According to Ke, et al (2003), making the users of health services pay for the services they receive has a potential dual effect at the population level; impoverishing some households that choose to seek services and excluding others from seeking health care. Catastrophic health expenditure is not always synonymous with high health-care costs. A large bill for surgery, for example, might not be catastrophic if a household does not bear the full cost because the service is provided free or at a subsidized price, or is covered by third-party insurance. On the other hand, even small costs for common illnesses can be financially disastrous for poor households with no insurance cover.

An analysis of the income and expenditure surveys for 60 countries by Kawabata, Xu and Carrin (2002) revealed that although lower income groups have a greater proportion of households with catastrophic levels of health spending than do higher income groups, it is also true that the highest proportion of catastrophic health spending does not necessarily occur in the lowest income group.

2.5.2.1. Borrowing and selling household possessions

Provision of health care, especially lifesaving treatment ought to be a must even when an individual has no means to pay as it is often the case with the poor. This is because ill-health among the poor not only erodes away the limited ability to fend for themselves that they have, the poor can lose the few possessions and savings within a short time. This however is not the case in many cases. In Uganda for instance where health insurance is under developed, users have to pay. The limited financial envelope however hinders access to healthcare. For example, World Health Organization (2004), reported that the world over, the total number of people

without access to essential medicines remained between 1.3 and 2.1 billion people. Lack of access was particularly concentrated in Africa and India.

One of the strategies adopted to meet healthcare costs is borrowing but this leaves households in debts and even at higher risk of impoverishment. Even it is held that the poor are not creditworthy and their network members are in a similar and disadvantaged socio-economic situation, it is acknowledged that both the poor and non-poor at times have limited cash to pay for treatment and have to mobilize additional resources through borrowing. In Kenya for example, although poorer households had more limited support, and could only access small amounts of money (below 100 Kenyan Shillings and often much less) as network members were in a similar or worse economic situation, or persons were considered too poor to be trusted with loans, borrowing from friends and neighbours, gifts and credit from shopkeepers and private providers were the main source of support for all households, (Chuma, Thiede and Molyneux (2006).

In the absence of formal health insurance, the strategies households adapt to finance health care have important implications for on consumption and poverty (Flores et al 2008). In Kilifi, a coastal area in Kenya, a number of households reported the main cause of their economic decline to be malaria. They accumulated large debts and often these debts were accrued in their attempts to finance past treatment-seeking, especially hospitalizations and funeral expenses (Chuma, Thiede and Molyneux (2006)

2.5.2.2. Ill-Health and Loss of Working Days and Income

In Uganda, malaria has negative economic effects, reportedly reducing the number of days a patient can work by 7 per episode (DFID 2011). Malaria contributes to the Disability Adjusted Life Years (DALY) through the combined effects of *Plasmodium falciparum* infection as a direct cause of death and the much smaller contributions of short duration, self-limiting or treated surviving mild morbid events, malaria-specific anemia and neurological disability following cerebral malaria (Snow et al 2003).

To OECD (2003), for poor people, health is also a crucially important economic asset. Their livelihoods depend on it. When a poor person becomes ill or injured, the entire household can become trapped in a downward spiral of lost income and high health care costs. The cascading effects may include diverting time from generating an income or from schooling to care for the sick; they may also force the sale of assets required for livelihoods. Poor people are more vulnerable to this downward spiral as they are more prone to disease and have more limited access to health care. According to Yuanli, Keqin and Hsiao (2003), from the point of view of rural population, if the breadwinners suffer from illness (especially during the planting and harvesting seasons) or the families should lose their bread-winners due to illnesses, the economic consequences are dire.

Due to illness, working time is lost as one is sick or caring for a sick household member. The time diverted from productive and, or remunerable work implies lost income, lost chances for consumption and capability enhancement.

According to Sachs (2002) and PMI (2011), foregone income is estimated through the value of lost workdays as a result of malaria and malaria-related illness, based on estimated wages. In the case of mortality, foregone income is estimated by calculating the capitalized value of future lifetime earnings that would have been earned by those who died prematurely as a result of the disease, based on projected incomes for different age groups, basic longevity data and age-specific mortality rates

Workdays lost due to malaria potentially represent the amount by which the overall production of household and the broader the economy could be raised. Therefore, the lost workdays mean that income is lost and a lower level of production is achieved through loss of marginal product of labour, for the lost workday. The high prevalence and incidence rates of malaria suggest that the cost of coping with malaria may be significant. Similarly, at the worker and household level, lost workdays theoretically represent lost income. But in reality the loss depends on the nature of the work and the terms of employment. For example, workers with paid sick leave days do not lose a day's income when they miss work due to malaria. Self-employed workers may not actually lose a day's income during "off seasons," but may during "peak seasons." At the household level, malaria episodes can also represent a greater or lesser cost for malaria treatment or prevention and control measures depending on whether an employer provides health benefits(Leighton and Foster 1993). However, the argument that lost working days may not have a major effect on household income in surplus labour economies which are also characterized by under employment may be applicable at the macro level, at the household level, this may not hold.

2.5.3. Summary of Literature Review

This chapter presents measures and theories of poverty. It also presents the economic burden of malaria. It is held that the relationship between health and poverty and the spiral relationship between malaria and poverty is less understood. There are also arguments that healthcare costs such as medical costs related to personal expenditures on prevention, diagnosis, treatment and care of the disease such as expenditure on bednets, doctor's fees, the cost of anti-malarial drugs, and the cost of transportation to medical facilities and the necessary support provided there can impoverish a household.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the design of the study, area of study, the study population, sampling method and data collection procedures. The chapter further includes measurement of poverty and an analytical framework and data analysis.

3.2 Study Design

The study was adopted a cross sectional design which adopted a quantitative approach. It was based on data collected under the Uganda Malaria Indicator Survey (UMIS) conducted in 2009. The sample was stratified into ten regions. Kampala was an independent region and other regions had between 8 to 10 districts. Districts in the same region shared similar language and cultural characteristics.

3.3. Study Population

The Uganda Malaria Indicator Survey is a population based survey that collected data from households and individuals across the whole country, covering the various social economic, ethnic groups and rural as well as urban dwellers. The primary respondents of the survey were women aged 15 – 49 years. Data was collected about the household itself and all individuals in the household, both usual residents and visitors. Information from a module on malaria among children below five years of age was adopted for this study.

3.4.0. Sample size and selection techniques

3.4.1 Sample Size

The study was based on data collected under the malaria indicator survey. This survey drew 4,080 children below the age of five and 4,250 households. Sampling was based on the prevalence of malaria among children under the age of five years of 20 percent; the cluster design effect of 1.69 and a sampling error of 12 percent.

3.4.2 Sampling Design

The malaria indicator survey on which this study was based used a two-stage stratified sampling design. At the first stage, Enumeration Areas (EAs) were grouped by districts and rural-urban location. The sample was stratified into ten regions. A total of 170 clusters were selected of which, 144 were from rural areas while 26 were drawn from urban areas. At the second stage, households were randomly selected from a cluster. A sampling frame was the list of all households in the clusters and a total of 28 households were selected from every cluster.

3.5. Data Sources and Collection Methods

The study was based on Uganda Malaria Indicator Survey data. The UMIS dataset was obtained from the National Malaria Control Program, Ministry of Health. From the dataset, variables about socioeconomic characteristics of the household, mother and household head, malaria

among children, their treatment and associated expenditures were extracted. The specific variables included; household characteristics and assets, household head and other household members, their education, health, activities, children born, their health status. Others included variables on prevalence of malaria among children in the previous two weeks and household expenditures related healthcare.

3.6 Measuring poverty

The study examines the influence of ill-health on household poverty in rural and urban areas. To measure poverty, a composite wealth index was generated from selected household assets. These include ownership of consumer goods, dwelling characteristics including roof, wall and floor of the house; source of drinking water, sanitation facilities and cooking fuel. Principal Component Analysis (PCA) was used to generate the composite poverty index. The index was estimated from the model below;

$$P_i = R_1 W_1 + R_2 W_2 + \dots + R_i W_i + \dots + R_J W_J \dots \dots \dots 3.1$$

Where;

P_i is the poverty score for household i

R_i is the response for household i on a given asset

W_j is the PCA weight applied to a given asset

Weights (W_i) were the loading on the first principal factor. Every household was assigned a score for every asset and then the total score (P_i) for each household was determined. The resulting

score was standardized with a mean of zero and standard deviation of one. Scores were then divided into quintiles. The 40th percentile was taken as a poverty line. According to Sahn and Stifel(2003),this is quite standard and accords with what is often suggested by the World Bank for poverty analysis.

3.7. Data Analysis

In the analysis of data, the SPSSsoftware was used to generate frequencies and corresponding percentages examine the association between each independent variable with the outcome variable and to estimate coefficients. Therefore, data analysis was done at three levels; univariate, bivariate and multivariate analysis as discussed below;

3.7.1. Univariate Analysis

This was the first stage in data analysis and it involved running frequencies and corresponding percentages for all study variables, both explanatory and outcome variables. Results were presented in tables.

3.7.2. Bivariate Analysis

The Chi-square test specified here below was used in bivariate analysis entailed examining the relationship between outcome variables and each of the independent variables. The strength of the association was determined basing on p-values. A Use of the Chi-squared is justified because both dependent and independent variables are categorical.

The Chi - Square model;

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \dots\dots\dots 3.2$$

Where;

O_{ij} is the observed frequency of the independent variables

E_{ij} are the expected frequency of the independent variables

$i = 1,2,3,\dots,i$

$j = 1,2,3,\dots,j$

r is the number of categories of independent variables.

c is the number of categories of dependent variables. These categories are; poor and non-poor.

3.7.3. Multivariate Analysis

Under multivariate analysis, the joint effect of the independent variables on poverty level was investigated. Only variables that exhibited statistical significance during cross-tabulation were included in multivariate models. Multivariate analysis was done to establish the effect of all independent factors together on poverty level. The Binary Logistic Regression model was used because poverty level, the outcome variable was categorical and dichotomous. Respondents were either poor or not. At 95 percent confidence level, socioeconomic and ill-health related factors were regressed on household poverty level. Goodness of fit of the model was based on the

Hosmer and Lemeshow's statistic. According to PSI (2006), unlike other statistics, the Hosmer and Lemeshow's statistics should not be significant. This is because it tests whether the expected and predicted values in the model are different. The model is specified below;

$$p_i = \ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 ET + \beta_2 EM + \beta_3 EN + \beta_4 CA + \beta_5 TT + \beta_6 BH + \beta_7 SA + e \dots\dots\dots 3.3$$

Where;

p_i is the likelihood of a household being poor

$\left(\frac{p_i}{1-p_i}\right)$ is the odds ratio predicting being poor

β_0 is the model constant term

$\beta_{i,s}$ are the estimated coefficients

ET Expenditure on treatment

EM Expenditure on medicine

EN Expenditure on transport

CA Child admitted or hospitalized

TT Took time off from normal duties while the child was sick

BH Borrow money to pay healthcare associated costs

SA Sold household assets so as to meet healthcare costs

e is the error term

Goodness of fit of the model was determined on the Hosmer and Lemeshow's statistic. A non-significant statistic indicated a good model fit. The Hosmer and Lemeshow's statistics should not be significant because it tests whether the expected and predicted values in the model are different.

3.7.4. Justification of the Variables

The study was based on seven independent variables. The first three variables were; expenditure on treatment, expenditure on medicine and expenditure on transport. These variables were categorical and dichotomous. Respondents were asked whether they spent money on treatment or not, whether they spent money on medicine and if they spent money on transport or not. These were used to measure the direct effects of ill-health due to malaria on household poverty.

The other four variables were used to measure the indirect economic effects of malaria among children on household poverty. They included; admission or hospitalization of the child, taking time off from normal duties while the child was sick, borrow money to pay healthcare associated costs and selling household assets so as to meet healthcare costs.

3.7.5. Model Estimation

Under the model, coefficients were estimated using the maximum likelihood which is a method of point estimation that estimates parameters such that the probability of observing the dependent variable are as high (or maximum) as possible (Gujarati, DN, Porter DC and Gunasekar, S 2004).

In this study, given the independent variables, maximum likelihood estimated the values of the parameters that maximized the likelihood of a household being poor.

3.8.Diagnostic tests

Prior to the analysis of data, data was inspected for multicollinearity. Any variable that exhibited a significant association with two or more other independent variables and with a rho value of 0.8 was dropped. In inspecting for multicollinearity, Spearman's correlation was used since it can handle categorical, ordinal and continuous variables. All study variables were categorical.

CHAPTER FOUR:

PRESENTATION AND DISCUSSION OF FINDINGS

4.1. Introduction

This chapter has three main sub sections. One section presents results of univariate analysis which includes; the household characteristics, background characteristics of the respondents, illness occurrence and its economic effects in both rural and urban areas. The second section presents results from cross tabulation between each independent variable and the dependent variable. The third section presents results from multivariate analysis.

4.2. Univariate Analysis

Under this sub-section, descriptive statistics are presented for all variables. They include frequencies and corresponding percentages. Results are presented in two sub-sections; one sub-section presents background characteristics of households and respondents. The second sub-section of univariate analysis constitutes of descriptive statistics for ill-health related variables.

4.2.1. Background Characteristics of Households and the Respondents

The background characteristics examined are those that were deemed to be vital determinants of the health status of household members. For instance, the household head as a primary provider is responsible for caring for the household members, especially the young and vulnerable. He is also the main decision maker and thus can channel resources in health care. Gender roles and economic status too have implications on child health.

Table 4.1 Socioeconomic characteristics of households and respondents

Variable	Urban Areas		Rural Areas	
	Number	Percentage	Number	Percentage
Wealth Index				
Poorest	8	1.2	852	24.7
Poorer	21	3.1	654	18.9
Middle	29	4.3	691	20.0
Richer	97	14.3	708	20.5
Richest	524	77.2	550	15.9
Total	679	100.0	3,455	100.0
Sex of household head				
Male	405	59.6	2438	70.6
Female	274	40.4	1017	29.4
Total	679	100.0	3,455	100.0
Age of Household Head				
<21	20	2.9	64	1.9
21-30	207	30.5	825	23.9
31-40	202	29.7	1096	31.7
41-50	144	21.2	812	23.5
51+	106	15.6	658	19.0
Total	679	100.0	3455	100.0
Age of the Respondent				
15-19	144	21.2	765	22.1
20-24	192	28.3	706	20.4
25-29	116	17.1	593	17.2
30-34	87	12.8	461	13.3
35-39	73	10.8	399	11.5
40-44	30	4.4	294	8.5
45-49	37	5.4	237	6.9
Total	679	100.0	3455	100.0
Ever attended school				
No	58	8.5	725	21.0
Yes	621	91.5	2730	79.0
Total	679	100.0	3455	100.0
Highest educational level of the respondent				
No education	58	8.5	725	21.0
Primary	216	31.8	2108	61.0
Secondary	305	44.9	559	16.2
Higher	100	14.7	63	1.8
Total	679	100	3455	100.0
Respondent currently working				
No	320	47.2	1497	43.4
Yes	358	52.8	1953	56.6
Total	678	100.0	3450	100.0

Source: Uganda Malaria Indicator Survey Data, 2009

4.2.1.1 Household Economic Status

Results show that there were more respondents in rural than in urban areas and rural households were poorer compared to urban areas. It is observed that 852 (24.7 percent) in rural areas were classified as poorest while 654 (18.9 percent) of the households were classified as poorer. On the other hand, 708 (20.5 percent) were richer and 550 (15.9 percent) households were the richest. It is observed that in rural areas, there were more poor persons compared to the rich. In urban areas, 8 (1.2 percent) of the household were classified as poorest while 21 (3.1 percent) were categorized as poorer. Among the well-off, 97 (14.3 percent) were classified as richer and 524 (77.2 percent) were the richest.

Results show that household poverty is more prevalent in rural than urban areas. It is observed that in rural areas, majority of households (24.7 percent) were in the category of the poorest while in urban areas, majority of the households (77.2 percent) were in the category of the richest. These results are compared to findings from other studies. For instance, the 2010 National Household survey showed that the incidence of poverty is higher in rural than urban areas.

4.2.1.2. Characteristics of the Household Head

As regards headship, in both rural and urban areas, most households were headed by males. It is observed that 59.6 percent and 70.6 percent of the households in urban areas rural areas respectively were headed by males. On the other hand, 40.4 percent of the households in urban areas were headed by females while in rural areas, 29.4 percent of the households were headed by females. Results further show that whereas in both areas majority of household heads were males, slightly more households in urban areas were headed by females.

Further, the study revealed that most of household heads were above 21 years of age. In urban areas, only 2.9 percent of the households were headed by individuals below the age of 21 years while 30.5 percent were headed by those between 21 and 30 years of age. Only 15.6 percent of urban households were headed by individuals above 51 years old. In rural areas, 1.9 percent of the households were headed by persons below the age of 21 years and 23.9 percent of the household heads were aged between 21 and 30 years while 19.0 percent of household heads were above the age of 51 years. From these results, it is observed that compared to urban households, rural households had more households headed by older persons above the age of 51 years and fewer households headed by persons below 21 years.

Apart from households, this sub-section, demographic characteristics of the respondent are presented. Background characteristics of respondents that were captured by the study include education status and attainment and employment status.

4.2.1.2. Age of the respondent

The primary respondents under the survey were women aged between 15 – 49 years. These were women of reproductive age and there was a higher likelihood of these women to have children below the age of 5 years. Results show that in rural areas, majority of the respondents (22.1 percent) were aged 15–19 years while 20.4 percent were in the age bracket 20 – 24 years. With 237 (6.9 percent) of the respondents, age group 45 – 49 years had the least number of respondents. In urban areas, majority of the respondents (28.3 percent) were aged between 20 and 24 years and 5.4 percent of the respondents were aged between 40 and 49 years.

Results further show that rural areas had more respondents aged between 15 - 19 years while urban areas had more respondents aged between 20 - 24 years. The study further shows that in both in both rural and urban areas, majority of the respondents were aged between 15 – 39 years but even in this age bracket, there were more respondents aged 15-29 years.

4.2.1.3. Education Attainment

In both rural and urban areas, majority of the respondents had ever attended school. Within urban areas, 91.5 percent of the respondents had ever attended school and only 8.5 percent had not. On the other hand, in rural areas, 79 percent had ever attended school compared to 21 percent who had never. From the study, it is observed that there were more respondents in urban areas who had ever attended school compared to rural areas.

Among those who had ever attended school, in urban areas, majority (44 percent) attained secondary level of education while rural areas, majority (61 percent) had primary level of education. Similarly, urban areas had more respondents (14.7 percent) had higher level of education compared to only 1.8 percent of the respondents in rural areas. Thus it is also observed that respondents in rural areas were less educated compared to their counterparts in urban areas. Differences in education attainment between rural and urban areas can be probably because there are more education institutions in urban than rural areas.

4.2.1.4. Employment Status

Under the capability approach, employment status has implications for child health and wellbeing. It was assumed that whereas an unemployed mother has more time to care for the children and therefore minimize chances of exposure to the risk of ill-health, her employed counterpart is more likely to have income and thus can afford better health care and improved quality of life for the children. Results show that most of the respondents were employed. A rural - urban comparison shows that there were no major differences in the employment status between the two places or residence.

4.2.2. Ill-health and its Impact on Household Poverty

The effect of ill-health on poverty was investigated through the incidence of malaria among children and the expenditures that households incur when these children are sick. Here, the study investigated the impact of episodes of fever, expenditures incurred to treat fever, remunerable labour forgone, selling household assets in order to raise money to meet healthcare bills among others. Results are presented in Table 4.2 below.

4.2.2.1. Expenditure on Healthcare

Apart from the occurrence of fever, the study investigated the effect of healthcare related expenditures on household poverty. The study examined the effect of expenditures on treatment, medicines and on transport to seek healthcare for a child with malaria. Treatment entailed the medical consultations with a healthcare provide in order to diagnose the illness and determine the appropriate care. In urban areas, 35.6 percent of the caregiver had spent money on treatment

compared to 64.4 percent who did not. On the other hand, in rural areas, 25.5 percent had spent money on treatment as opposed to 74.5 percent who did not.

Table 4.2. The Relationship Between Illness Occurrence and its Economic Effect

Variable	Urban Areas		Rural Areas	
	Number	Percentage	Number	Percentage
Paid for treatment				
No	56	64.4	685	74.5
Yes	31	35.6	234	25.5
Total	87	100.0	919	100.0
Paid for medicine				
No	25	26.3	312	32.9
Yes	70	73.7	636	67.1
Total	95	100.0	948	100.0
Spent any money on transport				
No				
Yes	66	76.7	759	84.8
Don't know	20	23.3	136	15.2
Total	86	100.0	895	100.0
Child admitted or hospitalized				
No	93	88.6	981	90.9
Yes	12	11.4	98	9.1
Total	105	100.0	1079	100.0
Had to take time off from normal duties?				
No	73	69.5	631	58.8
Yes	32	30.5	443	41.2
Total	105	100.0	1074	100.0
Borrow money to pay for healthcare costs				
No	88	86.3	760	79.3
Yes	14	13.7	198	20.7
Total	102	100.0	958	100.0
Sold household assets so as to meet healthcare costs				
No	86	87.8	697	75.1
Yes	12	12.2	231	24.9
Total	98	100.0	928	100.0

Source: Source: Uganda Malaria Indicator Survey Data, 2009

The National Malaria Control Program's position is that all clinically or parasite-based diagnosed malaria cases should receive treatment. The government strives to provide medicines to public and not-for-profit facilities so as to increase access to care free of charge. The study established that in urban areas, only 26.3 percent of the respondents had not paid for medicines compared to 73.7 percent who paid. In rural areas, 67.1 percent spent money on medicines compared to 32.9 who did not. Therefore, in both rural and urban areas of Uganda, majority of caregivers pay for anti-malarial medicines for their children. This implies expenditure on medicines increases household poverty in both rural and urban areas.

Transport fee is another expenditure that households had to incur while caring for their sick children. From Table 4.2, it is observed that in urban areas, 23.3 percent of the households had spent money on transport in order to access healthcare for their children who had fever while 76.7 percent had not. In rural areas, a small proportion of (15.2 percent) rural households had spent money on transport.

The small proportions of respondents who paid for transport should not imply easy access to healthcare; instead it may indicate more challenges given the long distances to the nearest health facility. Evidence from the Uganda national household survey by UBOS (2010) showed that the average distance to the nearest government health facility was 4.6 kilometers, 6.3kilometers to the nearest NGO health facility and 4.8 kilometers to the nearest private clinic while the commonest mode of transport to a health facility for majority (75 percent) of Ugandans was walking.

From the results of the study, it is observed that in Uganda, in the course of treating the affected children, urban households incur more healthcare related expenditures than their rural counterparts. These households spend more money on treatment, medicine and transport. Thus these are the healthcare related expenditures that are likely to impoverish urban areas.

4.2.2.2. Admission of children, loss of income and assets

The study sought to find out how income loss through taking time off remunerable work to care for the sick impacts on household poverty. The sick were either admitted in health facilities or they were at home. The international and national guidelines for management of malaria provide that children with severe malaria should be admitted in order for them to receive closely monitoring and better care. In this study, it was assumed that income is lost through loss of productive and potentially remunerable time and the income it would have generated thus undermining their economic status and capability. Results show that in urban areas, among children who had malaria, 12 (11.4 percent) were admitted and 30.5 percent of the caregivers took time of their normal duties to care for the sick children. In rural areas, 98 (9.1 percent) of the children who had fever had been hospitalized and 41.2 percent of their caregivers took time off normal duties in order to care for the sick children.

Whereas more children with malaria were admitted in urban areas compared to those in rural areas, more rural caregivers took time off their work to care for their sick children. This is probably because in urban areas majority of persons employed work outside their homes and they are not self-employed as opposed to rural dwellers majority of whom are self-employed on family farms. Therefore, the direct economic costs of absence from work are higher in urban

than rural areas and urban households are more likely to be impoverished by ill-health due to malaria.

Another objective of the study was to find out the effect of borrowing money in order to meet healthcare expenses on household poverty. Results show that in urban areas, 13.7 percent of urban – based households that had children with fever borrowed money in order to provide healthcare for their children compared to 20.7 percent in rural areas. From the results, more rural households borrowed more to meet healthcare expenditures thus undermining their economic capability compared to their rural counterparts. This is probably because the rural economy is largely subsistence and any need for money has to be met through alternative means such as borrowing and selling household possessions.

As regards selling household assets to in order to raise money and meet healthcare expenditures, in urban areas, when respondents were asked if they sold household assets, majority (87.8 percent) did not compared to 12.2 percent who borrowed. In rural areas, 75.1 percent did not sell household assets while 24.9 did. Therefore, rural households were more vulnerable to poverty as a result of selling their assets in order to meet healthcare expenditures.

4.3.Results from Bivariate Analysis

The study set out to investigate the impact of ill-health on household poverty. Itintended to assess the effect of each of the independent variables on household poverty. Cross tabulations were done with a chi square test because all variables were categorical. Results of bivariate analysis are presented in Table 4.3 below.

4.3.1. Occurrence of Fever Episodes and household poverty

In both rural urban areas, having fever is significantly associated with household poverty. Results further show that in both rural and urban areas, more children from poor households had fever compared to the less poor. In urban areas, 78.9 percent of the children who had malaria were from poor households compared to 39.3 percent among rich households. In rural areas, 68.4 percent from poor households had fever compared to 49.2 percent among the rich.

From the study, results further show that in both rural and urban areas, a significant ($p = 0.000$) statistical relationship exists between an episode of fever and household poverty. Therefore, with the significant association between malaria and poverty, it can be inferred that in both rural and urban households in Uganda, malaria among children increases the likelihood of a household being poor.

The increase in poverty due to malaria is likely because, malaria as an illness degrades the physiological and therefore the functioning capacity of the body causing general weakness rendering the victim incapable of leading a life they have reason to value.

4.3.2. Expenditure on treatment and household poverty

In urban areas, 8.3 percent of the poor households spent money on treatment of their children compared to 40 percent of the rich. In rural areas on the other hand, 21.4 percent of the poor spent money on treat of children who had malaria compared to 30.6 percent of the rich.

Table 4.3. The Influence of Fever on Household Poverty

Variable	Urban Areas					Rural Areas				
	Poor		Rich		p-value	Poor		Rich		p-value
	No.	%	No.	%		No.	%	No.	%	
Child had fever in last two weeks					0.001					0.000
No	4	21.1	148	60.7		343	35.2	518	50.8	
Yes	15	78.9	96	39.3		631	64.8	501	49.2	
Total	19	100	244	100		974	100	1019	100	
Expenditure on treatment					0.029					0.001
No	11	91.7	45	60.0		401	78.6	284	69.4	
Yes	1	8.3	30	40.0		109	21.4	125	30.6	
Total	12	100	75	100		510	100	409	100	
Expenditure on medicine					0.227					0.000
No	5	38.5	20	24.4		201	37.6	111	26.8	
Yes	8	61.5	62	75.6		333	62.4	303	73.2	
Total	13	100	82	100		534	100	414	100	
Child was admitted					0.053					0.166
No	10	71.4	83	91.2		545	90.1	436	92.0	
Yes	4	28.6	8	8.8		60	9.9	38	8.0	
Total	14	100	91	100		605	100	474	100	
Spent money on admission					0.121					0.068
No	3	100	3	37.5		33	56.9	14	38.9	
Yes	0	0	5	62.5		25	43.1	22	61.1	
Total	3	100	8	100		58	100	36	100	
Spent money on transport					0.023					0.023
No										
Yes	13	100	53	72.6		431	87.1	328	82.0	
Don't know	0	0	20	27.4		64	12.9	72	18.0	
Total	13	100	73	100		495	100	400	100	
Borrow money to pay for healthcare					0.609					0.002
No	12	85.7	76	86.4		409	75.9	351	83.8	
Yes	2	14.3	12	13.6		130	24.1	68	16.2	
Total	14	100	88	100		539	100	419	100	
Sold assets so as to pay for healthcare					0.459					0.000
No	13	92.9	73	86.9		368	69.7	329	82.2	
Yes	1	7.1	11	13.1		160	30.3	71	17.8	
Total	14	100	84	100		528	100	400	100	

Took time off from normal duties to care for the sick					0.326					0.390
No	11	78.6	62	68.1		357	59.2	274	58.2	
Yes	3	21.4	29	31.9		246	40.8	197	41.8	
Total	14	100	91	100		603	100	471	100	

Source: Uganda Malaria Indicator Survey 2009 Data

Results therefore reveal that fewer of the poor Ugandans compared to the rich did not pay for treatment for their children who had malaria compared. Majority of the poor did not pay probably because they did not have the money. Examining results further reveals that among those who paid, more rural poor than their counterparts in urban areas had paid for treatment. Among the rich, there was no major difference in the expenditure patterns between rural and urban areas. It was hypothesized that; in both rural and urban areas, there is no significant relationship between a household's healthcare expenditures as a result of illness due to malaria and household poverty. But given the significant statistical association ($p < 0.05$) expenditure on treatment between in both rural and urban areas; it implies that expenditure on treatment increases a household's likelihood of being poor. The hypothesis is therefore rejected.

4.3.3. Expenditure on medicine and household poverty

As regards expenditures on medicines, in urban and rural areas, 61.5 percent and 62.4 percent respectively of the households spent money on medicines. Among the rich, 75.6 percent in urban areas and 73.2 percent in rural areas spent money on medicines. It is also observed that although more rich households in both rural and urban areas spent money on medicines, there were high proportions of poor households that spent money on medicines and slightly more rural households than those in urban areas spent money on medicines. A significant statistical

association ($p = 0.000$) between expenditure on medicines and poverty in rural areas but not in urban areas ($p = 0.227$). Therefore, the hypothesis that in both rural and urban areas, there is no significant relationship between a household's healthcare expenditures as a result of illness due to malaria and household poverty is further rejected. Results show a significant statistical relationship between expenditure on medicines and household poverty in rural but not urban areas. Results therefore imply that expenditure on medicines increases the chances of a rural household being poor but not one that is urban based.

4.3.4. The effect of Expenditure on transport on household poverty

Transport fee is another expenditure incurred by that households seeking healthcare for their members, particularly in the rural part of the country where health facilities are in a few to tens of kilometers from most households. It was assumed that as households spend on transport, they encroach on their earnings and savings that would have been used for consumption and investment and capability enhancement. They instead compromise their capability to improve on their welfare and lead a life that they have reasons to value.

Results show that in urban areas, none of the poor households spent money on transport while 27.4 percent of the rich spent money on transport. In rural areas, 12.9 percent of the poor households had spent money transport compared to 18 percent of the rich. The study established that in in both rural and urban areas, a significant relationship ($p = 0.023$) exists between expenditure on transport and household poverty level. Therefore, the hypothesis that in both rural and urban areas there is no significant statistical relationship between household's healthcare expenditures as a result of illness due to malaria and household poverty is rejected. Therefore, in

Uganda, households are likely to be poor as they spend funds on transport to access healthcare for their members. As highlighted under results of univariate analysis, the expenditure levels on transport, especially among the rural poor should not imply that there was no need to pay, instead it implies that they did not have money and therefore the capability to pay.

4.3.5. The influence of Hospitalization of a child during an episode of fever on Household Poverty

In Uganda, the malaria treatment guidelines stipulate that patients, especially children below the age of five years who present with signs of severe malaria should be admitted in order to guarantee effective treatment. This however may pose economic challenges to patients' families. Results show that in urban areas, 28.6 percent from poor households with children who had fever and 8.8 percent among the rich were admitted or hospitalized. In rural areas, 9.9 percent of the sick children from poor households and 8 percent among the rich were admitted. A significant statistical relationship exists between hospitalization of the child in urban areas but not rural areas. Therefore, the hypothesis that there is no significant relationship between admission due to malaria and household poverty in both rural and urban areas is rejected. With the p-values of 0.053 and 0.166 for urban and rural areas respectively, it is observed that hospitalization of a child with malaria increases the likelihood of a household being poor within urban but not rural areas.

The increase in poverty level in urban areas as a result of hospitalization of the child is probably because within urban areas, as UBOS (2010) indicated, majority (52%) of households seek healthcare from private clinics. In these facilities, fees are usually high yet out-of-pocket

expenditure is the dominant healthcare financing option for households. This can adversely affect their savings, investment and degrade their capability. To the contrary, in rural areas, majority (30 percent) of the population access healthcare from health centers, often public health facilities where services are generally free. They are therefore not financially constrained as their counterparts in urban areas. Given the p-values, in urban areas, a significant statistical association exists between admission of a child with fever and household poverty. This however is not the case in rural areas. Thus the hypothesis that there is not significant relationship between admission due to malaria and household poverty is rejected in urban but not rural areas.

4.3.7. Borrowing money for healthcare and household poverty

The study reveals that the majority of the household that had sick children, both poor and rich did not borrow any money so as to meet healthcare associated bills. In urban areas, only 14.3 percent of the poor households borrowed money while 85.7 percent did not. Among the rich, 13.6 percent had borrowed money compared to while 86.4 did not. In rural areas, 24.1 percent of the poor households borrowed money while 75.9 did not borrow. Among the rich, 16.2 percent had borrowed while 83.8 percent had not.

Results show that in rural areas, a relationship exists ($p = 0.002$) between borrowing to meet healthcare needs and household poverty. This however was not the case in urban areas ($p = 0.609$). Thus the hypothesis that there is no significant relationship between borrowing for health care and household poverty in both rural and urban areas is rejected. Results imply that a rural household that borrows money to meet healthcare needs is vulnerable to poverty. This can probably be attributed to the fact that the rural economy in Uganda largely agrarian and many

households still depend on subsistence farming. In case of ill-health, they are likely to borrow money in order to meet healthcare related expenditures. This distress financing not only drains the very limited income but it exposes them to the risk of selling household possessions.

4.3.8. Selling household items and household poverty

Apart from borrowing, selling household assets in another indirect way through which ill-health can expose a household to poverty. The study sought to find out the effect of selling household assets so as to raise money to meet healthcare needs on household poverty. Results show that, in urban areas, among poor households, 7.1 percent of them had sold household assets compared to 30.3 percent in rural areas. Among rich households, 13.1 percent in urban areas had sold assets compared to 17.8 percent in rural areas. Furthermore, in rural areas, a significant relationship ($p = 0.000$) exists between selling household assets and household poverty but it is not the case ($p = 0.459$) in urban areas. Therefore, the hypothesis that is no significant relationship between selling household assets and household poverty in both rural and urban areas is rejected. Results show that a rural household that sells household assets to meet healthcare need is likely to be poor compared to one in urban areas. This can be attributed to the fact that majority of rural households have very narrow economic bases, usually in form of a few household possessions such as movable household assets, land or animals. Disposing off any asset undermines its economic security and increases its vulnerability to poverty.

4.3.9. Taking time off from normal duties

One of the objectives of the study was to examine the effect of loss of working days due to malaria on household poverty. It was assumed that since children under the age five cannot care

for themselves, parents especially mothers are diverted away from productive activities to caring for these sick children. According to Shelley (2003), through what is referred to as reverse causation, health selection or endogeneity, there is possibility for ill-health to limit an individual's ability to engage in paid work and hence reduce his or her income, even if he or she comes from an affluent background. For instance, a single mother with a sick child and no other adult supporting her may be unable to engage in gainful employment.

The study shows that among those who had sick children, majority did not take time of their normal work. In both rural and urban areas, there is no significant association ($p > 0.05$) between taking time off work to care for a child with fever and household poverty. Therefore, we fail to reject the hypothesis that there is no significant relationship between selling household assets and household poverty. This is comparable to the views of Shelley (2003) who holds that the reverse causation of ill-health and poverty is not a serious problem.

4.4. Multivariate Analysis

Under this section, results for the binary logistic regression models for rural and urban areas are presented. The non-significant p – values of 0.714 and 0.092 for urban and rural areas respectively indicated that the expected and predicted values in the model were not significantly different thus the models fitted the data well.

Table 4.4: Results of the Hosmer and Lemeshow Tests for Rural and Urban Areas

Type of residence	Chi-square	df	Sig.
Urban Areas	0.673	2	0.714
Rural Areas	10.875	6	0.092

Similarly, the non-significant Nagelkerke R square for both rural and urban areas indicate good model fit and the Cox and Snell R Square statistics indicate that urban areas, the two model variables explain 31.7 percent of household poverty level while the independent variables in the model for rural areas explain 57.7 percent of the poverty level of a rural household.

Table 4.5. Models Summary

Area	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Urban	57.033	0.317	0.247
Rural	896.311	0.577	0.103

4.5.1. The Influence of ill-health on household poverty in urban areas

The final model had two variables; expenditure on treatment and admission of the child. Dropping the variable expenditure on transport improved on the model. Results in Table 4.4 below show that in urban areas, a significant association (0.031) exists between expenditure on treatment and household poverty. Odds ratios reveal that an urban household that spent money

on treatment of a child who had malaria was 13.28 times likely to be poor than one that did not. Similarly, a significant relationship exists between admission of a child and household poverty.

Table 4.6. Ill-health and poverty in urban areas

Variables	B	S.E	Sig	e^B
Expenditure on Treatment				
Yes	2.586	1.197	0.031	13.280
No	0.000	-	-	1.000
Child was Admitted				
Yes	2.434	0.929	0.009	11.401
No	0.000	-	-	1.000

Source: Study Results based on the Uganda Malaria Indicator Survey 2009 Data

The study shows that a household that had a child admitted as result of suffering from malaria was 11.401 times likely to be poor compared to one without a hospitalized child. A study by Nabyonga et al. (2013) on healthcare seeking patterns and determinants of out-of-pocket expenditure for Malaria for the children under-five in Uganda, even though only 2.9 percent of those that seek treatment were hospitalized, admission was the most expensive at an average expenditure of US\$7.6 per child.

According to Somkotra and Lagrada (2009), households, especially in the higher quintiles and in particular the richest are more likely than the poorest to incur very high health expenditures. These expenditures often cross the threshold into catastrophic because they seek care from more costly private providers.

4.5.2. The Influence of ill-health on household poverty in rural areas

A separate model was fitted for rural areas. Here, all variables that were significant at bivariate analysis were included. These were; expenditure on treatment, medicines, transport, borrowing and selling household assets to meet healthcare needs. Just like at bivariate analysis, all these variables were significantly associated with household poverty as in Table 4.7.

Table 4.7. Ill-health and poverty in rural areas

Variables	B	S.E	Sig	e ^B
Spent Money on Treatment				
Yes	0.543	0.185	0.003	1.721
No	0.000	-	-	1.000
Spent Money on medicines				
Yes	0.642	0.191	0.001	1.900
No	0.000	-	-	1.000
Spent money on Transport				
Yes	0.753	0.223	0.001	2.124
No	0.000	-	-	1.000
Borrowed money to meet healthcare costs				
Yes	-0.675	0.216	0.002	0.509
No	0.000	-	-	1.000
Sold assets so as to pay for healthcare				
Yes	-0.868	0.196	0.000	0.420
No	0.000	-	-	1.000

Source: Study Results based on the Uganda Malaria Indicator Survey 2009 Data

Results show a high likelihood ($p = 0.003$) of households that spent money on treatment being poor. These households were almost twice likely to be poor compared to those that had not incurred such expenditure. Similarly, expenditure on medicines posed a significant cost burden and was thus associated ($p = 0.001$) with household poverty. A household that had spent

money on anti – malaria medicines was 1.9 times likely to be poor. The significant association between expenditure on treatment and medicine with household poverty is probably because many Ugandans, first seek care from private provider and only go to health facility if fever persist. Being private for profit health facilities, consultation and treatment fees are often charged which economically constrains the household. According to UBOS (2012), pharmacy was one of the major sources of treatment or advice among children with fever.

Expenditure on transport was significantly (0.001) related to household poverty and it increased the chances of a household being poor by 1.124 times. Borrowing money to meet healthcare need reduced household welfare and therefore its capability. Any household that had borrowed money was 0.509 times likely to be poor compared one that never borrowed. Similarly, selling of household assets reduced household welfare and those households that had sold assets were 0.420 times likely to be poor compared to those that did not. According to Chuma (2005), sometimes, households have limited cash to pay for healthcare and have to mobilize additional resources. But the poor can only access limited amounts of money because they are not creditworthy and/or their network members are in a similar socio-economic situation. Thus they sale household possessions which are likely to leave them impoverished.

According to Yuanli, Keqin and Hsiao (2003), when households have large debts, their investment in agricultural production and subsequent living standards decline, which adversely affects the health status of the household members. This interaction between income and health sets off a vicious cycle of illness that produces poverty, which, in turn, causes more illness.

A rural - urban comparison shows that in urban areas, expenditure on treatment and admission of the child who had malaria were the most important health – related factors that explained household poverty. On the other hand, in rural areas, expenditure on treatment, anti-malarial medicines and transport were the important factors. In addition, expenditure on transport, borrowing and selling household possessions were the other factors. According to Hotchkiss et al (1998), the rural - urban health expenditure differentials could probably be explained by the delay to seek healthcare. In rural households, once one is sick, there is delayed utilization of treatment from modern practitioners, perhaps because traditional practitioners are their preferred choice. If traditional treatment does not cure an individual of an illness, then treatment from modern practitioners may be sought, by which time the severity of the illness might be greater and treatment costs higher. In affirmation, Doorslaer et al (2006) observe that household threatened by poverty sometime forego healthcare because of unaffordable charges. Therefore, the influence of fever on poverty may be higher than what has been observed.

CHAPTER FIVE:

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

Chapter five presents a summary of findings, conclusions and recommendations. It contains a summary of the univariate findings, summary of bivariate results and the multivariate results plus conclusion that are based on the objectives of the study. The recommendations are generated based on the findings.

5.2. Summary of the findings

Malaria was mainly a problem in rural and areas but in both rural and urban areas, more children from poor households had had fever compared to the less poor. In both types of residence, episode of fever is significantly associated with household poverty. The study intended to find out the relationship between healthcare expenditure as a result of ill-health due to malaria and poverty. Results show that although majority of Ugandans do not pay for treatment, a considerable number still pay and expenditure on treatment is significantly associated with household poverty. Both rural and urban households that spend money on treatment of their children are likely to be poor though the likelihood is higher in urban than rural areas.

The study further showed that overall, more urban residents spent money on medicines than those in rural areas. But a closer look at the economic status of households shows that whereas

more rich households, especially in urban areas spent money on medicines, high proportions of poor household, particularly in rural areas spend money on medicines and the expenditure on medicines is likely to impoverish rural-based than urban-based households.

Furthermore, generally, more urban households spend money on transport when accessing healthcare for their children. Among the poor, more rural dwellers spend money on transport than those residing in urban areas. The study shows that expenditure on transport can increase household poverty within both rural and urban areas. These results are comparable to Somkotra and Lagrada (2009) and Nabyonga et al. (2013) who found out that expenditure to meet healthcare associated costs increases the likelihood of a household being poor. Similarly, Ricci (2012) found out healthcare expenditures can perpetuate household poverty.

Most of the children who had malaria were outpatients but among the admitted children, majority of them were from urban areas. These urban households are more likely to be poor as a result of admitting their sick children. These results are comparable findings by Mondal (2010). According to him, in India, households that incur inpatient associated costs were likely to be poor.

The study further shows that in both rural and urban areas, majority of the caregivers with sick children did not take time of their normal work. Among those that did, most of them were rural dwellers. The study also reveals that in both rural and urban areas, taking time off so as to care for children with malaria is not significantly related to household being poor. This is in

agreement with evidence from DFID (2011) which shows that malaria contributes to disability adjusted life years.

In rural and urban areas, majority of the household, both poor and rich that had sick children did not borrow any money so as to meet healthcare associated bills. However, in rural areas, a relationship exists between borrowing to meet healthcare needs and household poverty. Therefore, those households that had borrowed money to meet healthcare were likely to be poor. This agrees with Chuma, Thiede and Molyneux (2006) who found out that in Kenya, households had debts and further sunk in poverty as a result of borrowing, especially to pay for hospitalization and meet funeral expenses.

Results show that more rural household had sold household assets so as to pay healthcare bills compared to those in urban areas. Furthermore, in rural areas, there is a significant relationship between selling household assets and household poverty. This is not the case in urban areas.

5.3. Conclusions of the study

The major objective of the study was to examine the impact of ill-health due to malaria on household poverty in Uganda. From the study, malaria presents a major health challenge in both rural and urban areas of Uganda. Malaria among children increases the likelihood of a household being poor. In Uganda, in both rural and urban areas,

In both rural and urban areas, expenditure on treatment and on transport so to access healthcare for their members increases a household's likelihood of being poor. To the contrary, expenditure on medicines increases the chances of a rural household being poor. This is not the case urban based households. On the other hand, hospitalization of a child with malaria increases the likelihood of a household being poor within urban but not rural areas.

Other objectives of the study were; to find out the effects of borrowing on household poverty; the relationship between selling household assets and poverty in rural and urban areas and whether taking time off work increases the likelihood of a household being poor. The study revealed that a rural household that borrows money to meet healthcare needs is more vulnerable to compared to one in urban areas or one that did not borrow. Similarly, rural households that sold household assets to meet healthcare needs are likely to be poor compared to those in urban areas that borrowed. However, In both rural and urban areas, taking time off so as to care for children with malaria is not increase the likelihood of a household being poor.

5.3. Recommendations

The control of malaria, especially among children under the age of five years is fundamental in the poverty alleviation drive in Uganda. Therefore, malaria strategies control, especially those that target children should be emphasized. Malaria vector control measures such as routine and mass spraying and universal use of insecticide treated bed nets should be implemented on large scale. These preventive measures should in particular target children less than five years of age.

Free treatment for malaria in public health facilities, both in rural and urban areas should be promoted by the government to minimize the cost of treatment of malaria on households. This should go hand-in-hand with improved availability of free quality anti-malaria medicines in the country. Government and development partners should subsidize quality anti-malarial medicines in the private sector. Regular supply of these medicines in sufficient quantities, especially in rural health facilities should be assured. Any related user fees such as laboratory charges should be abolished or at least subsidized. This will save household resources that are diverted into expenditure on treatment and medicines.

Health insurance for all Ugandans, particularly community insurance should be promoted. This will cover households against healthcare related expenditures. Insurance can also indemnify households in case of loss. This will protect households against sliding into poverty as they seek healthcare.

There is dire need to reduce on the distance and therefore on transport fees to health facilities. Bringing healthcare closest to the population should be a key aim of the national health investment and strategic plan. More health facilities should be constructed in underserved areas and the required personnel deployed. Community healthcare, especially through Village Health Teams (VHTs) should be improved upon. Regular supply of anti-malarial medicines and other supplies should be a priority. VHTs and local leaders should be empowered to enforce primary health policies in communities. This will control malaria and reduce the associated economic burden.

Transport sector should be improved upon. The road network, especially in rural areas should be improved upon as this will not only ease movement of the sick to health facility, but it is likely to attract more vehicles in areas and reduce transport fare.

5.4. Areas of further Research

This study investigated the impact of ill-health on household poverty. It was it adopted a composite poverty index from household possessions and characteristics as a measure of poverty. It examined healthcare related expenditures on poverty. it did not investigate the effect of ill-health in relation to healthcare seeking behaviour of the populace. It also did not compare expenditure to total household income. There is need to investigate the effect of healthcare expenditure as a proportion of household income on household poverty. Furthermore, the study shows that among the poor, more rural residents pay for treatment than their urban counterparts. There is need to find out why and if this is the case.

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Correlation Coefficients for Urban Areas

		HPS	CF	ST	SM	CA	PA	EN	BH	SA	TT
HPS	R	1	-.208**	.228*	0.11	-.211*	0.559	.232*	-0.006	0.064	0.077
	Sig.	.	0.001	0.034	0.289	0.03	0.074	0.031	0.948	0.534	0.434
	N	410	263	87	95	105	11	86	102	98	105
CF	R	-.208**	1	.	.	.	.	.	.	.	.
	Sig.	0.001	.	.	.	.	.	.	.	.	.
	N	263	263	86	94	104	11	85	101	97	104
ET	R	.228*	.	1	0.173	0.108	0.35	0.187	.289**	.221*	0.104
	Sig.	0.034	.	.	0.12	0.319	0.356	0.091	0.007	0.046	0.338
	N	87	86	87	82	87	9	83	85	82	87
SM	R	0.11	.	0.173	1	-0.029	0.158	-0.192	0	0.06	0.046
	Sig.	0.289	.	0.12	.	0.783	0.685	0.089	1	0.582	0.658
	N	95	94	82	95	95	9	80	92	88	95
CA	R	-.211*	.	0.108	-0.029	1	.	0.144	.296**	.240*	.282**
	Sig.	0.03	.	0.319	0.783	.	.	0.187	0.002	0.017	0.004
	N	105	104	87	95	105	11	86	102	98	105
PA	R	0.559	.	0.35	0.158	.	1	0.316	0.267	0.449	0.149
	Sig.	0.074	.	0.356	0.685	.	.	0.407	0.428	0.166	0.662
	N	11	11	9	9	11	11	9	11	11	11
EN	R	.232*	.	0.187	-0.192	0.144	0.316	1	0.094	0.138	0.146
	Sig.	0.031	.	0.091	0.089	0.187	0.407	.	0.394	0.215	0.179
	N	86	85	83	80	86	9	86	85	83	86
BH		-0.006	.	.289**	0	.296**	0.267	0.094	1	.470**	.356**
	Sig.	0.948	.	0.007	1	0.002	0.428	0.394	.	0	0
	N	102	101	85	92	102	11	85	102	98	102
SA		0.064	.	.221*	0.06	.240*	0.449	0.138	.470**	1	.482**
	Sig.	0.534	.	0.046	0.582	0.017	0.166	0.215	0	.	0
	N	98	97	82	88	98	11	83	98	98	98

TT	R	0.077	.	0.104	0.046	.282**	0.149	0.146	.356**	.482**	1
	Sig.	0.434	.	0.338	0.658	0.004	0.662	0.179	0	0	.
	N	105	104	87	95	105	11	86	102	98	105

Correlation Coefficients for Rural Areas

		HPS	CF	ST	SM	CA	PA	EN	BH	SA	TT
HPS	r	1	-.158**	0.105**	.114**	-0.033	0.175	.070*	-.097**	-.144**	0.01
	Sig.	.	0	0.001	0	0.281	0.091	0.036	0.003	0	0.734
	N	2690	1993	919	948	1079	94	895	958	928	1074
CF	r	.158**	1	.	.	.	.	.	.	.	.
	Sig.	0	.	.	.	.	.	.	.	.	.
	N	1993	1993	901	928	1059	92	878	941	913	1053
ET	r	.105**	.	1	0.122**	.089**	0.332**	.102**	.145**	.092**	0.03
	Sig.	0.001	.	.	0	0.007	0.002	0.003	0	0.01	0.363
	N	919	901	919	839	914	82	870	820	794	913
SM	r	.114**	.	.122**	1	0.032	.391**	0.044	.127**	.155**	.080*
	Sig.	0	.	0	.	0.33	0	0.21	0	0	0.013
	N	948	928	839	948	946	82	814	848	817	942
CA	r	-0.033	.	.089**	0.032	1	.	.228**	.156**	.122**	.151**
	Sig.	0.281	.	0.007	0.33	.	.	0	0	0	0
	N	1079	1059	914	946	1079	94	891	955	925	1072
PA	r	0.175	.	.332**	.391**	.	1	0.091	0.137	0.104	0.075
	Sig.	0.091	.	0.002	0	.	.	0.419	0.2	0.34	0.473
	N	94	92	82	82	94	94	81	89	86	93
EN	r	.070*	.	.102**	0.044	.228**	0.091	1	.239**	.171**	.187**
	Sig.	0.036	.	0.003	0.21	0	0.419	.	0	0	0
	N	895	878	870	814	891	81	895	804	781	892
BH	r	-.097**	.	.145**	.127**	.156**	0.137	.239**	1	.332**	.225**
	Sig.	0.003	.	0	0	0	0.2	0	.	0	0
	N	958	941	820	848	955	89	804	958	923	954
SA	r	-.144**	.	.092**	.155**	.122**	0.104	.171**	.332**	1	.328**

	Sig.	0	.	0.01	0	0	0.34	0	0	.	0
	N	928	913	794	817	925	86	781	923	928	927
TT	r	0.01	.	0.03	.080*	.151**	0.075	.187**	.225**	.328**	1
	Sig.	0.734	.	0.363	0.013	0	0.473	0	0	0	.
	N	1074	1053	913	942	1072	93	892	954	927	1074

Where;

CF is 'a child had fever in last two weeks'

ET Expenditure on treatment

EM Expenditure on medicine

CA Child admitted or hospitalized

EA Expenditure on admission

EN Expenditure on transport

BH Borrow money to pay healthcare associated costs

SA Sold household assets so as to meet healthcare costs

TT Took time off from normal duties while the child was sick