

**FACTORS INFLUENCING HEALTH STATUS OF CHILDREN UNDER  
FIVE YEARS IN NJOGUINI, MURANG'A COUNTY, KENYA**

**BY  
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**A Research Project Report Submitted In Partial Fulfillment For The Requirements Of  
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## DECLARATION

This research project report is my original work and has not been presented for any award in any other university.

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## **DEDICATION**

This work is in loving memory of my late grandmother (Grace Naituyu Sinkeet); ‘Koko’, your prayers, inspiration and wisdom are deeply missed and cherished. They say “the greatest soul is the heart”. Rest in peace.

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## ACRONYMS AND ABBREVIATIONS

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>CBS</b>	Central Bureau of Statistics
<b>DHS</b>	Demographic and Health Survey
<b>DRC</b>	Democratic Republic of Congo
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FGD</b>	Focus Group Discussion
<b>FHH</b>	Female Headed Household
<b>HH</b>	Household
<b>HIV</b>	Human Immunodeficiency Virus
<b>IDI</b>	In-depth Interview
<b>IFAD</b>	International Fund for Agricultural Development
<b>IFPRI</b>	International Food Policy Research Institute
<b>IFRC</b>	International Federation of Red Cross and Red Crescent Societies
<b>KDHS</b>	Kenya Demographic and Health Survey
<b>KIHBS</b>	Kenya Integrated Household Budget Survey
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>MDGs</b>	Millennium Development Goals
<b>MHH</b>	Male Headed Household
<b>MOH</b>	Ministry of Health
<b>SSA</b>	Sub-Saharan Africa
<b>TBA</b>	Traditional birth attendant
<b>UNEP</b>	United Nations Environmental Programme
<b>UN</b>	United Nations
<b>UNICEF</b>	United Nations International Children Education Fund
<b>WASH</b>	Water, Sanitation, and Hygiene
<b>WHO</b>	World Health Organization

## **ABSTRACT**

The fourth Millennium Development Goal (MDG 4) aims to improve the health of children, which is a critical measure of a country's level of development, apart from it being a fundamental right. This goal has two important indicators that are used to measure improvement in child health; infant and under-five mortality. While major progress has been made in reducing infant and child mortality rates, one in every 19 babies born in Kenya will die before their first birthday (NCAPD, 2011). The objectives of the study was to examine the influence of the caregiver's socio-demographic characteristics on health status of children under-five years in Njoguini, to assess the influence of household's socio-economic factors on health status of children under-five years in Njoguini, to examine the influence of immunization against childhood diseases on health status of children under-five years in Njoguini and to assess the influence of maternal health care on health status of children under-five years children in Njoguini. The target population was households that have children under-five years; where the caregiver (mother or any other female in the households taking care of the child) was the eligible respondent. The study utilized both qualitative and quantitative research design and randomized sampling. Primary data were collected by structured questionnaire from 248 households, while KIIs and FGDs were conducted by used of a structured guide. The quantitative data were coded, entered and analysed using the Statistical Package for Social Sciences (SPSS) using percentages and mean scores to come up with data models to help in meeting the study objectives. Qualitative data were typed, transcribed, and manually analyzed based on study objectives. Results from the data collected indicated that the health status of children under-five years is indeed influenced by socio-demographic characteristics of households, household's socio-economic factors, immunization against childhood diseases and maternal healthcare. This research therefore recommends: greater efforts need to be put in place by the government to ensure provision of affordable water; nutrition education should be strengthened to improving the breastfeeding practice of mothers; there is need to enhance employment of caregivers by enhancing income generating activities; the government should work towards ensuring there is universal health care; and household should undertake poultry and livestock keeping.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the study

Children are the future of a country and precious resources of sustainable development of the human society. Improving nutrition and health status of children is the basis for realization of the comprehensive development and the transformation of any country. Development during the early childhood, especially from foetus to two-year-old (the first 1,000 days since life starts), is crucial in determining the nutrition and health status in the whole life course. Malnutrition during infancy and toddler stage can lead to irreversible delay in growth and cognitive development that negatively affects intelligence potentials, impairs learning abilities and productivity in the later life, and increases the risks of obesity, hypertension, coronary heart disease, diabetes, and other chronic diseases during adulthood. Child health status is also closely related to changes in mortality rate. According to reports from the World Health Organization (WHO), 35% of global children under-five years' mortality can be attributable to malnutrition (WHO, 2005).

In its report the UN, (2005) noted that child malnutrition and its causes are enormous and a myriad of social development policies have been introduced as a means of reducing its prevalence, however the role of women's social status in the outcome of their children's nutrition health has not received the level of attention it deserves. "People who live in poverty see that their children have little access to suitable health and education services or in many cases to an adequate supply of food" (UN, 2005). According to the UN (2005), political interest in nutrition has been further heightened by concern that the Millennium Development Goals (MDGs) are unlikely to be achieved by the target date of 2015 and growing recognition that adequate nutrition is a crucial input to help get five out of the eight Goals back on track.

It has been estimated by the WHO (2005) that for the year 2004, stunting, severe wasting, and foetal growth restriction, were responsible for 2.2 million deaths of children under-five years. The WHO (2005) further noted that, deficiencies of vitamin A and zinc were estimated to be responsible for 0.6 million and 0.4 million deaths, respectively; and suboptimum breastfeeding for 1.4 million deaths. In an analysis that accounted for co-exposure of these

nutrition-related factors, it was estimated that they were together responsible for about 35% of child deaths and 11% of the total global disease burden (WHO, 2005).

It has been observed by Menon, Ruel, & Morris, (2000) that, in terms of under-fives mortality rates, the most immediate needs are in Afghanistan, Democratic Republic of Congo, Nigeria, Ethiopia, Uganda, Tanzania, Madagascar, Kenya, Yemen, and Burma. According to UNICEF (2007), there is little difference in underweight prevalence between girls and boys but children in rural areas are twice as likely to be underweight as children in urban areas. It has been argued that, while the number underweight is decreasing globally, in areas such as Eastern and Southern Africa and conflict regions of the Middle East and North Africa, the number underweight are rising (Menon, Ruel, & Morris, 2000).

In Kenya, according to CBS et al., (2004) child mortality rates and malnutrition remain high in spite of the government's commitment to create an enabling environment for the provision of quality health care and reduction of mortality and malnutrition levels. Children under-five years' mortality rates remain above 100 per 1,000 live births while infant mortality rates are well above 60. In addition, about 30% of under-five children suffer from chronic malnutrition (stunted), almost 6% are severely malnourished (wasted), while 20% are underweight. The prevalence of these problems is most critical in rural areas, drought stricken areas, and among poor households (CBS et al., 2004).

Efforts to reduce child mortality rates and malnutrition continue to be challenged by the HIV/AIDS scourge that has led to increased number of orphaned children who are at increased risk of malnutrition. Nutrition deficiencies contribute to high rates of disability, illness and death (CBS, MOH and ORC. Macro 2004). They also affect the long term physical growth and development of children, and may lead to high levels of chronic illness and disability in adult life. In addition, high rates of malnutrition jeopardize future economic growth by reducing the intellectual and physical potential of the entire population. In its efforts to ensure health for all Kenyans, the Ministry of Health's strategic plan (1999-2004) aimed among other targets at: reducing malnutrition among under-five year olds by 30%; reducing the proportion of under-fives morbidity and mortality rates attributable to key childhood diseases and malnutrition from 70 to 40 percent and eliminate vitamin A deficiency in children under-five years (CBS, MOH and ORC. Macro, 2004).

Fedorov and Sahn, (2005) argued that the achievement of these targets however, continues to be undermined by lack of progress in key determinants of children malnutrition, morbidity and mortality. There are a wide range of factors that determine the health status of children. These can broadly be classified into child characteristics including age and gender of the child, household characteristics, particularly parental characteristics, and community variables. However, dietary intake and nutrition status are also important determinants of children's health status (Fedorov and Sahn, 2005). These are in turn influenced by underlying determinants such as food security and community infrastructure such as sanitation, access to water and local market conditions. Other factors which have been investigated in the literature include prices of related health inputs, available household resources such as income, time and household public goods (Fedorov and Sahn, 2005).

This research study assessed the factors that influence health status of children under-five years in Njoguini, Murang'a County. This was through the examination of socio-demographic characteristics caregivers, socio-economic factors of households with children under-five years, immunization against childhood diseases and maternal health care.

## **1.2 Statement of the Problem**

Child health status is directly related to the realization of Goal 1 (halve the proportion of people who suffer from hunger and the proportion of underweight children under-five years of age years years) and Goal 4 (reduce under-fives mortality rate) of the UN Millennium Development Goals (MDGs), and closely related to economic and social development. Adopting active preventive measures will produce great economic and social benefits (Chunming, 2009). Nevertheless, Kenya is one of the 42 countries that account for 90% of all under-fives deaths in the world. Findings of the 2009 Kenya Demographic and Health Survey (KDHS) reveal that one in every nine children born dies before age five, mainly of acute respiratory infection, diarrhoea, measles, malaria, and malnutrition (KNBS, 2009).

According to reports from the Central Bureau of Statistics and the National Coordinating Agency for Population and Development (NCAPD) in Kenya, the infant mortality rate increased from about 60 per 1,000 in 1990 to 74 in 1998 and 77 in 2003, while under-fives

mortality continued to increase from about 90 per 1,000 in 1990 to 112 in 1998 and 115 in 2003. This is a reversal in trend after global initiatives to improve child health caused a decline in infant and child mortality in Kenya in the 1970s and 1980s (NCAPD, 2011). However, the major challenge in reduction of child mortality is the continued increase in mortality rates since the 1990s in all regions of the country (KNBS, 2009).

Furthermore, recent rapid increases in prices of staple foods are likely to exacerbate the problem among the most vulnerable in situations governed by woefully inadequate social safety nets (Horton, Alderman, & Rivera, 2008). According to Horton *et al.*, high levels of child malnutrition, stalled progress towards health-related MDGs, the rise of chronic diseases driving households below the poverty line, and the need for prevention to address causes outside the health sector have forced a hard look at the reasons for past failures and stimulated a search for new pathways to health equity and social justice (Horton, Alderman, & Rivera, 2008).

According to the WHO (2008), due to its multi-sectoral nature, nutrition could be an appropriate entry point for these new pathways. This calls for more attention to be paid to addressing the structural causes of malnutrition and ill-health together with the need to take urgent action to stem the rise in child malnutrition have led to questions being raised as to what works and why in relation to nutrition programming. Whilst a consensus has recently been reached on available interventions with proven effectiveness to reduce stunting, micronutrient deficiencies and child deaths in the short term, there is no such consensus on how best to address the deeper causes of malnutrition for which there are no magic technological bullets WHO (2008). These deeper causes govern the amount, control and use of human, economic and organizational resources that are available to households and communities. This study therefore aimed at establishing the factors influencing health status of children under-five years in Njoguini, Murang'a County.

### **1.3 Purpose of the study**

The purpose of the study was to assess the factors influencing health status of children under-five years in Njoguini, Murang'a County.



#### **1.4 Objectives of the study**

The main objective of the study was to assess the factors influencing health status of children under-five years in Njoguini, Murang'a County. Specifically, the study sought:

1. To examine the influence of household's socio-demographic characteristics on health status of children under-five years in Njoguini, Murang'a County;
2. To assess the influence of household's socio-economic factors on health status of children under-five years in Njoguini, Murang'a County;
3. To examine the influence of immunization against childhood diseases on health status of children under-five years in Njoguini, Murang'a County; and
4. To assess the influence of maternal health care on health status of children under-five years in Njoguini, Murang'a County.

#### **1.5 Research questions**

This research sought to answer the following research questions.

1. How does household's socio-demographic characteristic influence health status of children under-five years in Njoguini, Murang'a County?
2. What is the influence of household's socio-economic factors on health status of children under-five years in Njoguini, Murang'a County?
3. How does immunization against childhood diseases influence health status of children under-five years in Njoguini, Murang'a County?
4. How does maternal health care influence health status of children under-five years in Njoguini, Murang'a County?

#### **1.6 Justification of the study**

With only a year remaining to the realization of MDGs of 2015, the study findings will provide important information to policy makers and others stakeholders on what needs to be done to accelerate the achievement of these goals. The findings of this study will also be crucial to the County government structure since it will provide information needed when

structuring and restructuring health-related interventions at the County level. Furthermore, the information accrued from this study can also shape the realization of the Kenya's long term development blueprint, the Kenya Vision 2030, more social pillar whose main objective is investing in people of Kenya in order to improve the quality of life for all.

### **1.7 Delimitation of the study**

This study focused on care givers (women) who had children under-five years in Njoguini, Murang'a County. This study covered the whole of Njoguini where a total of 248 women were randomly selected and interviewed.

The scope of the study was limited to specific variables of the study that influence health status of children under-five years. These variables are: Socio-demographic characteristics, Household's socio-economic factors, Immunization against childhood diseases and Maternal Healthcare factors.

### **1.8 Limitations of the study**

The study relied on the researcher's observations or clinical card, where available, to assess if the child under-five years was underweight, malnourished or suffering from kwashiorkor.

### **1.9 Definition of significance terms**

**Adequate sanitation** : This is defined as reasonable and clean means of human and other household waste disposal.

**Antenatal/prenatal care** : This refers to the regular medical and nursing care recommended for women during pregnancy.

**Caregiver** : This refers to a person that is involved with provision of the child's care. In this study, a caregiver means a mother, or any other female in the household who is responsible in taking care of a child under-five years.

**Health status** : A holistic concept that is determined by more than the presence or absence of any disease. It is often summarised by life expectancy or self-assessed health status, and more broadly

includes measures of functioning, physical illness, and mental wellbeing.

**Household head** : This is the senior most-member of the household who makes key decisions in the household and whose authority is acknowledged by other members.

**Household** : A person or a group of people living in the same compound (fenced or unfenced), answerable to the same household head and sharing a common source of food and/ or income.

**Malnutrition** : An abnormal physiological condition caused by inadequate, excessive or imbalanced intake in macronutrients,- carbohydrates, protein, fats - and micronutrients.

**Maternal health care** : This is care for the health of a pregnant woman provided by a hospital or health centre.

**Neonatal mortality rate** : The probability of a child dying between 0 and 28 days of age.

**Nutrition status** : The physiological state of an individual that results from the relationship between nutrient intake and requirements and from the body's ability to digest, absorb and use these nutrients.

**Respondent** : Any member of the household who provides information to the interviewer.

**Safe water** : Safe water supply includes treated or untreated but uncontaminated water sources such as springs, protected bore holes/wells and piped water.

**Skilled birth attendant** : A medically qualified provider with midwifery skills (midwife, nurse or doctor) who has been trained to proficiency in the skills necessary to manage normal deliveries and diagnose, manage, or refer obstetric complications.

**Under -5 mortality** : Refers to the death of infants and children under the age of five.

**Under-fives** : Children below the age of five years.

**Underweight** : Measured by comparing the weight-for-age of a child with a reference population of well-nourished and healthy children.

### **1.10 Organization of the study**

The study is organized into five chapters. Chapter one consists of the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, scope of the study, limitation of the study and definition of significant terms.

The second chapter reviews related literature on factors influencing health status of children under-five years looking at an overview of health status of children under-five years. Literature on socio-demographic characteristics of caregivers and household's socio-economic factors that influence child health is also covered in this section. Furthermore, immunization against childhood diseases and maternal health care and how they influence child health are also covered in this section. A conceptual framework is presented.

Chapter three details research methodology that was adopted for the study. It outlines research design, target population, sample size and sampling procedures, research instruments, validity and reliability of instruments, data collection procedures and data analysis techniques.

The fourth chapter presents detailed analysis of the research, data presentation, interpretation and discussion of collected data.

The fifth chapter gives a summary of findings, conclusion, recommendations and suggested areas for further research.

## CHAPTER TWO

### LITERATURE REVIEW

#### **2.1 Introduction**

This section contains literature that has been written on health status of children under-five years looking at an overview of health status of children under-five years. Literature on socio-demographic characteristics of household, household's socio-economic factors, immunization against childhood diseases and maternal health care, and how they influence health status of children under-five years will be covered, extensively, here.

#### **2.2 An overview of health status of children under-five years**

According to WHO (2008), the life-course approach to health care recognizes the continuum from birth through childhood, adolescence and adulthood. This approach reflects the principle that care given to children at birth, or even that given to their mothers prior to their birth, will affect their immediate well-being and will have an impact on their health and development in later years. Within the life-course, the period of life before adulthood is divided into three age subgroups, based on epidemiology and health-care needs: (1) the first five years (children under-five years), (2) the next five years (older children), and (3) the second decade of life (adolescents). The WHO (2008), argued that, in order to address the specific health challenges and needs of young children more effectively, the first five years of life are further subdivided into the neonatal period (the first 28 days of life), infancy (the first year of life) and pre-school years (1–5 years).

According to the UN reports of 2012, of the 136 million babies born into the world in 2011, nearly 5 million are estimated to have died before their first birthday and an additional 2 million are expected to die before reaching the age of five. These correspond to an U5MR of 51 per 1000 live births and an IMR of 37 per 1000 live births (UN, 2012). The UN report also argued that deaths among children under-five years present one of the most serious challenges currently faced by the international community. The report further indicated that mortality among infants reflects both the specific problems affecting children under-five years and the structural factors that affect the health of entire populations (UN, 2012).

The UNDP (2011) recognized that at these levels of mortality, one in every 20 children dies before reaching his or her fifth birthday, and one in every 27 children does not survive until his or her first birthday. According to the UN report of 2012, almost 7 million children under-five years are still dying every year in the world; more than 95 per cent are clustered in just two regions of the world: Africa and Asia (UN, 2012). According to the UN (2012), although the African region has about 24 per cent of the world's children under-five years population, it accounts for nearly 50 per cent of global children under-five years deaths; in contrast, less than 1 per cent of children under-five years deaths take place in Europe.

Similarly, Ethiopia-DHS (2012) and Cambodia-DHS (2012) reported that most infant and neonatal deaths occur in these same regions. One in nine children under-five years die every year in Sub-Saharan Africa, more than 16 times the average for developed regions, where one child in 152 dies before the age of five years. Beyond regional and inter-country disparities, further critical inequities are present within countries, where children from the poorest families, living in rural areas and whose mothers are less educated, are those more likely to die. Data from the Demographic and Health Surveys (DHS) indicate a threefold increase in mortality rates among these children in some countries.

According to WHO (2008), intra-country inequities are further exacerbated by additional factors, including exclusion and discrimination based on health status, ethnic or linguistic origin and race. These may result in higher mortality rates among particular groups of children, such as children with disabilities, orphaned children and children belonging to indigenous and ethnic minorities. While global efforts to address this social injustice focus on the poorest regions, it is important to note that under-fives mortality remains an issue even in developed regions, and hence must be given sustained attention by States, in conformity with their legal obligations under relevant international treaties.

The WHO (2008) also posited that under-fives mortality in middle and high-income countries is associated with increasing socioeconomic inequity within their societies. The other factors influencing inequity in these countries are largely similar to those identified in developing countries, including discrimination and social exclusion, and must be systematically addressed by States.

Progress on child-related MDGs in sub-Saharan Africa (SSA), as reported by UNICEF (2008) is limited, with evidence of stagnation or even deterioration in key indicators of child well-being in many countries in recent decades. Under-fives mortality rate (U5MR) in SSA was 160 per 1,000 live births as of 2006, a 14% reduction since 1990, but still the highest of any region in the world. Child deaths occur, mainly in West Africa (42%) and East Africa (30%), followed by Central Africa (18%), Southern Africa (8%) and North Africa (2%). An estimated 43% of children under-five years deaths in Africa occur in just three countries: the Democratic Republic of Congo (DRC), Ethiopia and Nigeria. Out of 46 countries in SSA, 24 are registering no progress, or even increases, in under-fives mortality rates.

UNICEF (2008) argued that only 4 countries (all of them very small) are on track to reach the 4th Millennium Development Goal (MDG-4) of reducing child mortality by two-thirds: Cape Verde, Eritrea, Mauritius and the Seychelles. Neonatal diseases account for 25% of deaths in WHO's Africa Region, led by pneumonia (20%), malaria (18%) and diarrhoeal diseases (17%). Under-nutrition is associated with up to 50% of child deaths (UNICEF 2008). Under-nutrition is most acute in the Sahel and the Horn of Africa, owing to a combination of chronic and acute food insecurity. According to UNICEF (2008) environmental health (water and sanitation) is a major contributor to the challenge. Other causes are AIDS, especially in Southern Africa, and measles. Nearly 90% of global AIDS-related paediatric cases and deaths occur in SSA. HIV and AIDS is the biggest killer of children under-five years in South Africa, where it is responsible for half of these deaths according to UNICEF (2008).

The MoH, (2006), stipulated that one child out of every 19 children in Kenya dies before celebrating their first birthday, while 1 in every 14 die before getting to age five. Sixty percent of the deaths among infants occur within the first month of life. The Kenya Demographic and Health Survey of 2009 indicate that the under-fives mortality rate was at 74 deaths while the infant mortality rate was 52 for every 1,000 live births (KNBS, 2009). According to the MoH, (2006), the major childhood illnesses in Kenya that contribute to the child morbidity and mortality, just like in many sub-Saharan countries, are Acute Respiratory Illnesses (ARI), Diarrhoea, Malaria, Anaemia and Malnutrition.

### **2.3 Socio-demographic characteristics of household**

This section covers literature on the socio-demographic characteristics of household how they influence health status of children under-five years. The section looks at the influence of gender of household's head, marital status of caregivers, education background and occupation of caregiver/mother on health status of children under-five years.

#### **2.3.1 Gender of household's head**

IFAD (1999) argued that in many countries in Africa, as elsewhere, there has been a significant increase in the percentage of female-headed households (FHH) in recent years. The *IFAD poverty assessment in eastern and southern Africa* noted that an estimated 25-60% of rural households in countries in the region were headed by women, if both de jure (single, widowed, divorced or separated women) and de facto categories (wives of male migrants) were included. In Kenya, data from KIHBS 2005/06 showed that at the national level, 34 percent of households are headed by women; however, there are modest differences in female-headed households between urban (29 percent) and rural areas (36 percent).

According to Fentaw et al., (2013) children living in households headed by women, are more likely to be undernourished as such households have limited access to resources and health services. Fentaw *et al.* also noted that, children in single parent households are more vulnerable than children in two parent households (either nuclear or extended). Similarly, the Kenya Welfare Monitoring Survey III found that female-headed households in Kenya to exhibit high levels of poverty (GoK, 2000). Fentaw et al., (2013), further posited that female headed households often face financial and time constraints as a result of absence of a partner either due to death or divorce.

The IFAD report (1999) summarized that a woman heading a household in developing countries often earns little income due to less favourable labour market conditions being affected by her triple roles of production, reproduction, and care. In this regard, longer hours of work on income generating and domestic activities account for much of the disadvantage of children from these households.



### **2.3.2 Marital status of caregiver**

According to Sobolewski and Amato (2007) the nutritional status of children living with both married biological parents is higher compared with those living with single parents. A cross-sectional study conducted in Botswana among children under the age of three years across different regions in the country, found that the marital status of the primary caregiver played a role in determining the nutritional status of children (Mahogoub et al 2006). These findings indicated that children in single-parent households were more likely to be significantly underweight than children brought up by both parents (Mahogoub et al 2006).

Furthermore, studies in South Africa and in Kenya (Adeladza 2009) found that mothers of severely malnourished children were more likely to be unmarried and without a secondary education. However, a study in Uganda found that marital status did not seem to affect the nutritional status of children (Owor et al 2000). Similarly, a study in the DRC found no statistically significant association between stunting and the caregiver's marital status and household size (Kandala et al 2011).

### **2.3.3 Educational background of caregiver**

Child malnutrition has been seen to be associated with a poor educational background of the primary caregiver (Turyashemererwa et al 2009). It has been argued that poorly educated caregivers are likely to have malnourished children, mainly due to poor job opportunities and poor basic knowledge on child nutrition (Van de Poel et al 2007). A study among Serbian children of mothers with a primary education or less were found to be more than twice as likely to suffer from stunting (OR = 2.2, 95% CI = 0.9, 5.3) (Janevic et al 2010). These findings correlate with those of a study in Brazil (Souza de Tera et al 1999) and another in Egypt (Khatab 2010) which showed that poor maternal education and a low household income contributed to the high prevalence of underweight children (Souza de Tera et al 1999).

In South Africa, improved maternal education was associated with a significant decline in the prevalence of stunting, underweight and wasting across all age groups (Labadarios et al 2005). In a case control study in Bangladesh, caregivers of malnourished children were younger and less educated and more likely to be divorced or widowed and to work far from

home than the caregivers of the control group (Nahar et al 2010). These results are contrary to a study by Owor et al (2000) in Kampala, Uganda, which found that formal education and the occupation of the caregiver had no effect on the nutritional status of the children.

However, according to the IFPRI (2000), improved education levels in women were responsible for almost 43% of the total reduction in child malnutrition that took place from 1970 to 1995. Several studies have shown that children of mothers with no formal education or only primary education were more likely to be stunted when compared to their counterparts with mothers who had secondary or college education (Semba et al., 2008). The studies further reported that low prevalence rate of stunting in children of mothers with higher education levels could be attributed to the fact that literate mothers have fewer children, which can enable them to provide better care (Semba et al., 2008).

According to Wamani et al., (2004) educated women have access to health information, leading them to adopt improved behaviour related to maternal and child health care, feeding and eating practices, which ultimately influences the nutrition status of children. In addition, women with no education are more likely to embrace the traditional status quo and less open to changes for better health and family practices, which may influence the way, they feed their children (Wamani et al., 2004).

#### **2.3.4 Occupation of caregiver**

According to Hawkins et al., (2009) children of employed mothers were more likely to have poor dietary habits and spent more time engaging in sedentary activity compared to children of unemployed mothers. A study conducted among Malaysian women aged between 25-35 years found that majority of working mothers had stopped breastfeeding in less than three months. This finding was also being supported in a study by Hawkins et al. (2007) which stated that the longer the length of mother's working hours, the less likely the mothers breastfed their children for at least 4 months. Working mothers were less likely to initiate and continue breastfeeding as they prefer infant formula (Grzywacz et al., 2010).

However, a study in Iran showed no significant correlation between the prevalence of wasting, stunting and underweight on one hand and the sex, occupation of the caregiver, family size and rural or urban residence (Nojomi et al 2004).

## **2.4 Household's socio-economic factors influencing child health**

The socio-economic status is determined by the activities that household members engage in to earn income. Socio-economic is a major determinant of childhood survival at individual, household and community level (Schultz, 1984).

### **2.4.1 Household food security**

According to (FAO et al., 2012), food security exists when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life. It requires meeting four pillars of availability, access, utilisation and stability. Carlsen et al., (2010) argued that food access on the other hand is ensured when all households and individuals have sufficient resources to obtain appropriate foods for a nutritious diet.

The World Disaster Report (2011) stated that, every year about 3 million children die before they reach the age of five as a result of under nutrition, with the majority of deaths the result of long-term chronic hunger rather than famines and sudden food crises. The report said that 178 million children under the age of five have stunted growth as a result of a lack of food. The annual report, which in the year 2011 focused on hunger and malnutrition, reported that nutrition levels before birth and up to the age of two have a major impact on a child's future mental and physical health. "The critical period of growth and development is the 1,000 days from conception to a child's second birthday," the report says. "The problem of stunting has its roots in poor nutrition during this time: undernourishment during the foetal period contributes up to half of a child's failure to grow by the age of two" World Disaster Report (IFRC, 2011).

The GoK (2011) stipulated that about half of Kenya's population is poor and some 7.5 million people live in extreme poverty. High poverty levels affect household access to food as most Kenyans rely on markets for some or all of their food needs. This is especially so with rural communities cut off from food supplies and face high food prices. In recent years,

it is estimated that at any one time about two million people require assistance to access food and the number increases during shocks/ hazards such as droughts, heavy rains/floods The GoK (2011).

#### **2.4.2 Access to healthcare**

According to Kabubo-Mariara et al. (2008), lack of access to basic health services and a healthy environment are the underlying causes of malnutrition in children. Kabubo-Mariara et al. (2008) further argued that access to health services is an important determinant of a child's health status. This argument was also demonstrated in the study done in Morogoro Municipality (Tanzania) by Maseta et al. (2008) that there is an association between access to health services and the nutrition status of children. Maseta et al. (2008) indicated that the prevalence of wasting in children was higher amongst children who were not attending growth-monitoring programmes than in those who were attending such programmes.

Insufficient health services, according to Moore, Lima, & Guerrant (2011), may result due to distance to health service, cost of the accessing the service and the quality of the service provided which inhibit the caretaker to use the healthcare available in the community.

#### **2.4.3 Water and sanitation**

Water is the basis of all life. But for millions of children, the water they drink can also be a source of persistent illness, leading to an early grave. According to UNICEF (2008) a child dies of diarrheal disease every 30 seconds and for every child who dies of diarrheal disease, three more children die of other diseases passed along by unwashed hands, or made more deadly by chronic malnutrition resulting from constant bouts of diarrheal disease and intestinal parasites (WHO, 2002).

According to UNICEF (2011), every 7 seconds, a child in the developing world dies of water, sanitation and hygiene (WASH)-related disease or WASH-related malnutrition. Nearly half of all deaths among children younger than 5 (48.8 percent) occur in sub-Saharan Africa, despite the fact this area accounts for only 11 percent of the global population. Research

reveals that 80 percent of childhood disease is related directly or indirectly to unsafe drinking water, inadequate hygiene, and open defecation (UNICEF, 2011).

The Ministry of Public Health and Sanitation, (2010) stated that, the primary causes of many childhood illnesses in Kenya are water and sanitation-related. Amongst these illnesses, diarrhoea remains one of the most important environmental health problems. Diarrhoeal diseases cause 16 % of deaths among children below five years in Kenya (Millions of dollars are spent on treatment of diarrhoea annually. According to the Ministry of Public Health and Sanitation (2010), in most rural public health facilities diarrhoea is ranked number three of the leading causes of outpatient attendance. The MoH, (2007) observed that, in Kenya about 80% of hospital attendance is due to preventable diseases and 50% of these diseases are water, sanitation and hygiene related.

#### **2.4.4 Crop farming and livestock keeping**

For many of the poor in the developing world, livestock ownership offers a potential pathway out of poverty and malnutrition. Extensive research has been done regarding the impact of animal ownership on various health and nutritional outcomes. A comprehensive three-country study showed that the intake of animal-source products positively affected both physical and developmental outcomes in children, illustrating the potential utility of these foods in the diet (Neumann et al., 2002).

Several studies carried out in East Africa have found a positive association between dairy cow ownership and the nutritional status of children. (Neumann et al., 2002) showed a positive correlation between child height and the ownership of a milk cow, conditional on milk being used for family consumption. Leegwater et al. (1991) provide evidence that the nutritional status of pre-school children in the households participating in the National Dairy Development Project in Kenya was better than that of children from non-participating households.

Vella et al. (1995) show that the ownership of a cow in rural Uganda is a significant predictor of median child height-for-age, while in rural Rwanda an index of dairy animal ownership has a strong positive association with child height-for-age. In contrast, studies examining the

role of non-dairy livestock tend to indicate that ownership of these animals has no strong relationship with child nutritional status (Vella et al., 1995).

## **2.5 Immunization against childhood diseases**

The WHO, UNICEF, World Bank (2009) stipulated that Immunization is one of the most effective, safest and efficient public health interventions as it is estimated to save at least 3 million lives from vaccine preventable diseases, according to. Rutherford *et al.* (2009) alluded that vaccines prevent more than 2.5 million child deaths each year and it has been shown that children who receive all appropriate vaccinations by 9 months of age are less likely to die than those who do not. According to UNICEF and WHO guidelines, a child should receive a BCG vaccination to protect against tuberculosis, three doses of DPT to protect against diphtheria, pertusis, and tetanus, three doses of oral polio vaccine (OPV), and a measles vaccination-all by the age of 12 months.

The Centre for Disease Control (2004), stipulated that in the United States, despite the potential of immunization to protect the health of the society's most vulnerable populations, over one fourth of children do not receive all their recommended immunizations by age two. In Germany, Siedler et al., (2002), found that 50% of measles cases in 1-year old children would be prevented if presently observed vaccine coverage rates in the third year of life could be achieved 12 months earlier.

Logullo et al., (2008) argued that a delay in the administration of one vaccine could not only increase the child's vulnerability to the antigen concerned, but also weakens adherence to subsequent vaccinations and thereby increase the risk that the child will never complete the vaccination course. In Bangladesh, Brieman et al., (2004) showed that children vaccinated with BCG before the age of six months are at considerably lower risk of dying in the first five years of life than children vaccinated later. According to WHO (2009) high coverage of vaccination can reduce deaths among children below five years and reduce the burden of illness and disability caused by preventable diseases. Children living in the rural areas have the least access to routine vaccination thereby subjecting them to diseases (WHO, 2009).

According to WHO (2009), in Sub-Saharan African countries, substantial efforts have been made to reinforce their immunization programmes. Despite significant increase in routine

immunization coverage since the launch of the world-wide Expand Program on Immunization (EPI) in 1974, unacceptable low coverage rates persist in sub-Saharan Africa, where it is estimated that only about 50% of children are immunized during their first years of life.

Additionally, about one-fifth of children who begin the vaccination schedule do not complete it, limiting the effectiveness of doses they have received and of immunization on a larger population scale (WHO, 2009). In Kenya, the function of immunization is a preserve of the Kenyan Expanded Programme on Immunization (KEPI) that was created in 1980 in response to the EPI initiative and was gradually introduced in phases throughout the country between 1980 and 1990.

## **2.6 Maternal health care**

This section looks at the literature on maternal healthcare; antenatal and skilled birth attendant and how they influence on health status of children under-five years.

### **2.6.1 Antenatal care**

Antenatal care is globally accepted and commonly understood to have a beneficial impact on pregnancy outcome, either through the detecting and treatment of complications or by contributing to the reduction of modifiable maternal risk factors. It is a means of identifying mothers at the risk of delivering a preterm or growth retarded infant and to provide an array of available medical, nutritional and educational interventions intended to reduce the risk of low birth weight and other adverse pregnancy outcomes (Magadi et al. 2004).

Early antenatal care initiation has been associated with heavier birth weights (Showstack et al. 1984). It has also been identified as the central link between various socio-demographic factors and birth outcomes (Magadi et al. 2004). Under-nutrition continues to be a public health problem. However, it has been established that women who take antenatal services have progressively higher infant survival rates compared to women who did not (Rathavuth et al., 2007).

According to Taylor et al., (2005) women who do not utilize prenatal care, are six times more likely to have low birth weight infants, five times more likely to have stillborn, and six times more likely to die within the first year. For these facts, antenatal services that a mother receives during pregnancy are important for the wellbeing of the mother and her child. Although the majority of pregnant women in Kenya attend an antenatal clinic at least once, usually starting in the second trimester, the KDHS 2008/9 showed that only 47 percent made the minimum four visits, with only 15 percent doing so in the first trimester as recommended by the World Health Organization.

### **2.6.2 Skilled birth attendant**

Bryce et al., (2008) argued that the high maternal and new-born mortality in sub-Saharan Africa is related to unsafe maternal and new-born health (MNH) practices. Most new-born deaths occur during the first week of life as a result of sepsis, birth asphyxia, birth injuries, complications of prematurity and low birth weight, and birth defects.

According to Bryce et al., (2008) in northern India, the neonatal mortality rate (NMR) fell by 25% in two years [9] after community health workers (CHWs) were trained in essential newborn care, identification and special care of at-risk infants and referral to health facilities when appropriate. In Guatemala, the infant mortality rate declined by 85% when an immediate evidence-based treatment of infants began in the community, with accompanied referral to a nearby hospital Bryce et al., (2008).

Sarune et al (2001) posited that a community-based trial conducted in Tanzania and Kenya demonstrated that, for areas in which maternal immunization against tetanus was not feasible, measures such as TBA training for safe and clean delivery and cord care were effective in decreasing perinatal, neonatal, and infant mortality.

### **2.6.3 Breastfeeding of child**

According to UNICEF (2005), poor infant feeding practices are known to have adverse consequences on the health and nutritional status of children, which in turn have consequences on the development of the child both physically and mentally. The WHO



(2003) posited that, breast feeding is an important determinant of a child's health status that eventually influences his/her growth and development. Exclusive breastfeeding is the most effective global public health intervention for child survival (WHO, 2003). Black et al, (2008) argued that, a large global disease burden is attributed to sub-optimal breastfeeding accounting for 77% and 85% of the under-five deaths and disability adjusted life years (DALYs), respectively. According to Black et al. (2008), sub-optimal breastfeeding especially non-exclusive breastfeeding in the first six months of life, results in 1.4 million deaths and 10% of disease burden.

Kenya is rated among 22 Countries in Africa with poor infant and young child feeding (IYCF) practices with a resultant high burden of under nutrition among the under-fives (UNICEF, 2011). The latest Kenya Demographic and Health Survey (KDHS) report showed that nutritional status of children under-five in Kenya is poor with 35% stunted, 7% wasted and 16% underweight respectively (KDHS 2008-09). Infant feeding practices which according to the UNICEF model (1998) are immediate causes of childhood malnutrition were equally poor. According to the KDHS 2008-09 report, only 32% of infants under-six months of age were exclusively breastfed. Despite the well documented benefits of exclusive breastfeeding on child survival, growth and development, uptake of exclusive breastfeeding for six months as recommended remains low in Kenya (KDHS 2008-09).

## **2.7 Theoretical framework**

### **2.7.1 Ecological systems theory**

Urie Bronfenbrenner (1917-2005) developed the ecological systems theory to explain how everything in a child and the child's environment affects how a child grows and develops. He labelled different aspects or levels of the environment that influence children's development, including the microsystem, the mesosystem, the exosystem, and the macrosystem. The microsystem is the small, immediate environment the child lives in. Children's microsystems will include any immediate relationships or organizations they interact with, such as their immediate family or caregivers and their school or day care. How these groups or organizations interact with the child will have an effect on how the child grows; the more encouraging and nurturing these relationships and places are, the better the child will be able to grow. Furthermore, how a child acts or reacts to these people in the microsystem will affect how they treat her in return. Each child's special genetic and biologically influenced

personality traits, what is known as temperament, end up affecting how others treat them. This idea will be discussed further in a later document about child temperament.

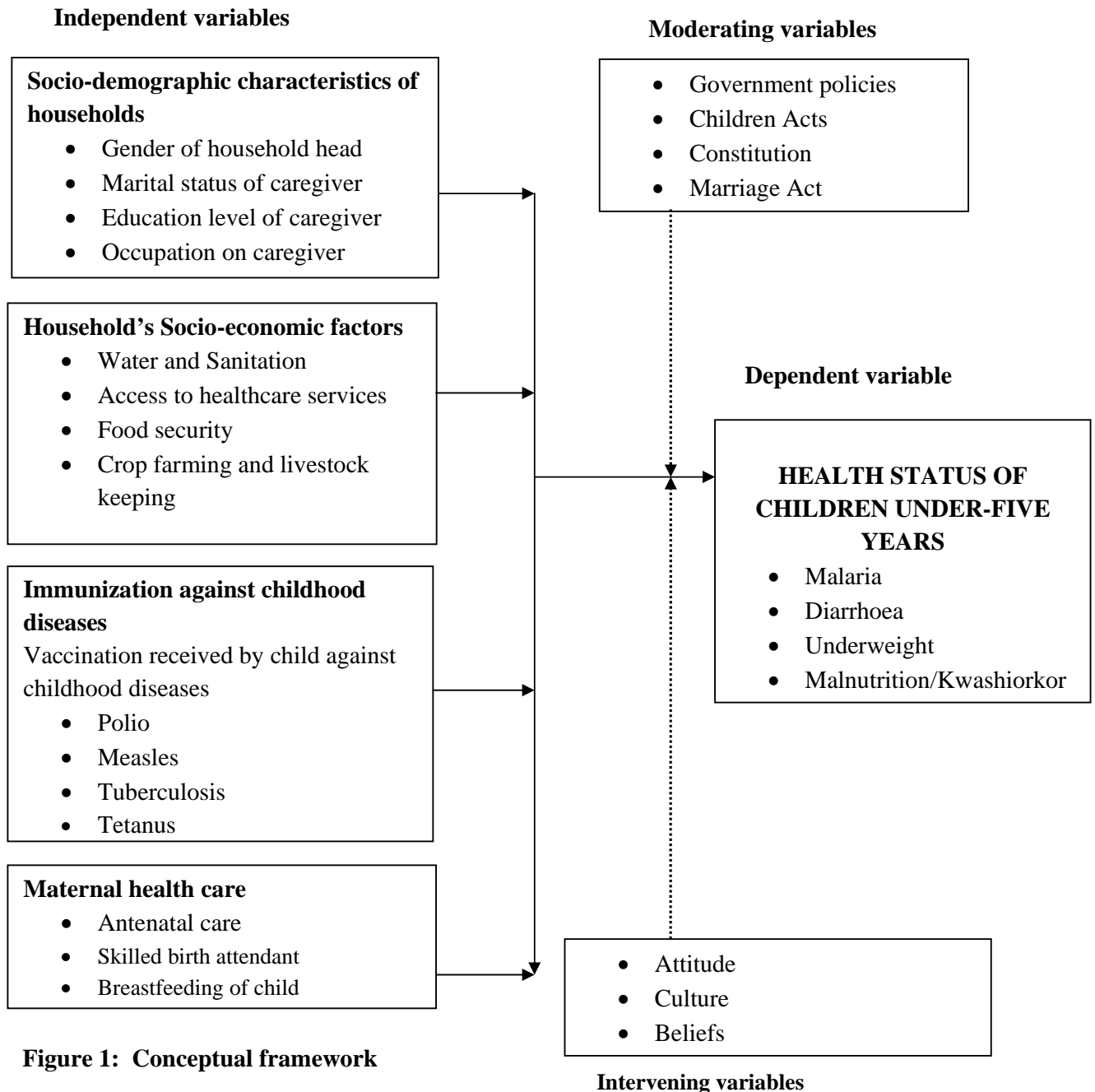
Bronfenbrenner's next level, the mesosystem, describes how the different parts of a child's microsystem work together for the sake of the child. For example, if a child's caregivers take an active role in a child's school, such as going to parent-teacher conferences and watching their child's soccer games, this will help ensure the child's overall growth. In contrast, if the child's two sets of caretakers, mom with step-dad and dad with step-mom, disagree how to best raise the child and give the child conflicting lessons when they see him, this will hinder the child's growth in different channels.

The exosystem level includes the other people and places that the child herself may not interact with often herself but that still have a large effect on her, such as parents' workplaces, extended family members, the neighbourhood, etc. For example, if a child's parent gets laid off from work, that may have negative effects on the child if her parents are unable to pay rent or to buy groceries; however, if her parent receives a promotion and a raise at work, this may have a positive effect on the child because her parents will be better able to give her physical needs.

Bronfenbrenner's final level is the macrosystem, which is the largest and most remote set of people and things to a child but which still has a great influence over the child. The macrosystem includes things such as the relative freedoms permitted by the national government, cultural values, the economy, wars, etc. These things can also affect a child either positively or negatively. This research will focus on this model since it is concerned about the factors influencing child development. Where factors influencing health status of children under-five years serve as the independent variables and the health status of children is the dependent variable.

## 2.8 Conceptual Framework

A conceptual framework is a hypothesized model identifying the concepts under study and their relationships (Mugenda & Mugenda 2003). It presents in a diagrammatic form the way the researcher has conceptualized the relationship between the independent and the dependent and also the confounding variables.



**Figure 1: Conceptual framework**

## **2.9 Chapter Summary**

Literature reviewed on the marital status of caregiver has indicated that the health status of children living with both married biological parents is higher compared with those living with single parents. The reviewed literature has shown that children in single parent households are more vulnerable than children in two parent households.

The literature reviewed has shown that the mother's level of education is strongly linked to child survival. Higher levels of educational attainment are generally associated with lower mortality rates, since education exposes mothers to information about better nutrition, use of contraceptives to space births, and knowledge about childhood illnesses and treatment. Larger differences have been found to exist between the mortality of children of women who have attained secondary education and above and those with primary level of education or less.

It is evident from the literature reviewed that there is a consensus that household's socio-economic and environmental characteristics do have significant effects on child and infant mortality. This is true for studies which employ both direct and indirect techniques to estimate infant and child mortality. As observed in most studies, household's income has significant effect on children survival prospects. Higher mortality rates are experienced in low income households as opposed to their affluent counterparts. The reviewed literature has indicated that household's environmental characteristics, safe source of drinking water supply have negative significant effects on children mortality risk. The same holds true for those with sanitation, which in most cases is taken to be access to a flush toilet or a ventilated improved pit latrine.

Literature reviewed has shown that immunization is one of the most effective, safest and efficient public health interventions as it is estimated to save at least 3 million lives from vaccine preventable diseases (Rutherford *et al.*, 2009). The reviewed literature has demonstrated that a delay in the administration of one vaccine could not only increase the child's vulnerability to the antigen concerned, but also weakens adherence to subsequent vaccinations and thereby increase the risk that the child will never complete the vaccination course.

It is evident from the literature reviewed that antenatal care is a critical intervention for the promotion of maternal and child health. The goal of antenatal care is to maintain and improve the health of the woman and her baby in utero, so that both are brought to labour in a good state of health. Antenatal care aims to diagnose and treat abnormalities of pregnancy soon after their symptoms are apparent; and to screen women for other conditions which may be present, before their symptoms manifest.

Literature reviewed has revealed skilled attendance at delivery is an important variable that influences the birth outcome and the health of the mother and the infant. One of the indicators of skilled attendance is the proportion of births that take place in health facilities. Skilled attendance can also be accessed through domiciliary or community midwifery. Proper medical attention and infection prevention practices during delivery can reduce the risks of obstetric complications that increase the risk of morbidity and mortality for the mother and her baby.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This section consists of Research Design, Target Population, Study Area, Sample Size and Design, Data Collection Instruments, Validity and Reliability of Research Instruments, Methods of Data Analysis, Ethical Considerations, and Operationalization of Variables.

#### **3.2 Research Design**

This research embraced both qualitative and quantitative approaches of research. It took the format of descriptive design. In this study, the researcher tried to describe the existing relationship, between socio-demographic characteristics of caregivers; household's socio-economic factors; maternal healthcare and immunization against childhood disease and health status of children under-five years.

This enhanced the discovery of new insights that might help in explaining factors influencing health status of children under-five years. At all times, the two research designs described above were used either hand in hand or alternatively. Verbal consent was sought and the respondents were assured of the confidentiality of the information they provided and interviews proceeded following their consent. To ensure quality control of data collected, completed questionnaires were cross-checked for consistency continuously.

#### **3.3 Study area**

Njoguini is located in Township ward of Murang'a County. According to the National Census (2009), the sub-location has a population of 7,074 persons, a majority of whom are below 30 years (KNBS, 2010). The most prevalent diseases in Njoguini are malaria, typhoid, colds and HIV/AIDS (Murang'a District Strategic Plan 2005-2010).

#### **3.4 Target population**

A population refers to an entire group of individuals, events or objects having a common observable characteristic (Mugenda and Mugenda, 2003). The population that was targeted for this research were the households with children under-five years in Njoguini, Murang'a County. According to the National Census (2009), Njoguini has a population of 7,074

distributed within 1,915 households; out of these households 681 have children under-five years.

### **3.5 Sample size and sampling procedure**

This section presents the method used to determine the study sample size from which data was collected. It also describes the sampling techniques used in selecting elements to be included as the subjects of the study sample.

#### **3.5.1 Sample size**

A sample size is a sub-set of the total population that is used to give the general views of the target population (Mugenda and Mugenda 2003). The sample size must be a representative of the population on which the researcher would wish to generalize the research findings. According to the Krejcie and Morgan sample size table (1970), the sample size of this study was 248 household with children under-five years based on the target population of 681 elements (Appendix 5). Krejcie and Morgan sample size table is a table that is universally accredited and provides a reasonable sample size depending on the size of the population on the study. The respondents were mothers and caregivers with children below five years in the selected households.

#### **3.5.2 Sampling Technique**

This is the act of selecting a suitable sample or a representative part of a population for the purpose of determining characteristic of the whole population (Frankel & Wallen, 2008). This study applied probabilistic techniques to obtain the study sample from the study population. Probability technique is a sampling process in which each element of the population has an equal chance of inclusion in the sample (Ogula, 1998). A sample of 248 households as per Krejcie and Morgan Sample Size Table were selected from the 681 target population through stratified proportional random sampling in order to ensure that they are evenly spread within all the households in the study site. The study population included caregivers (mothers of children under-five years) or any other female in the household, who is responsible in the care of children under-five years.

Four (4) focus group discussions (FGDs) were conducted with a group of 8-10 discussants, per FGD, who were purposefully selected from the study site. The selection process for the FGD discussants was guided by the local provincial administrative leader/chief of Njoguini.

The first set of FGD was with the middle aged women/men (25- 45 years) while the second set was with elderly men/women (50 – 65 years).

The 8 key informants were obtained through purposive sampling and the informants were selected because they were potentially knowledgeable about the subject matter of; perceptions and beliefs about maternal and child health care, socio-economic factors influencing health status of children under-five years, health seeking behaviour in the community. The key informants included: 1 district medical officer, 1 midwives officers at the antenatal care department of Murang'a Sub-County Hospital, 2 opinion leaders, 1 traditional birth attendants, 1 elderly lady who has ever helped a woman deliver, 1 representative of NGO/CBO/FBO and 1 County officer.

### **3.6 Data collection instruments**

Both primary and secondary data were collected. In order to ensure validity and reliability of the data, primary data was collected using the following instruments:

- i) **Household questionnaire:** An interviewer-based, structured household questionnaire was used for this study. The questionnaire was administered to the principal caregivers (mothers of children under-five years) or any other females in the household who are responsible for family meals as well as the care of children under-five years. Each interview lasted between 35 to 40 minutes.
- ii) **In-depth (IDIs):** The researcher conducted in-depth interviews with the aid of an interview guide to capture data on local socio-economic dynamics, cultural belief and practices, and health-related data on women and children under-five years.
- iii) **Focus Group Discussions (FGDs):** FGDs were carried out with adults and older people in segregated female and male groups. The participants were selected from the study site with the help of the local administrative leader/chief. Efforts were made to gather views of diverse groups of people (including those in urban and rural areas). The FGD data were transcribed, translated and typed.
- iv) **Observations** were also be made on the general health status and conditions of children under-five years. The random walk method was used to select the target households.



### **3.7 Validity of research instruments**

Validity of research instrument refers to the extent to which a test or instrument measures what it was intended or supposed to measure (Mbwesa, 2006). This research study adopted content validity. Here there is agreement that a scale logically appears to reflect accurately what it purports to measure. This ensures that the instrument is covering what it is intended to cover (Mbwesa 2006). To improve validity, the research team translated the interview schedule from English into Kikuyu and/or Kiswahili (the local languages).

### **3.8 Reliability of research instruments**

Reliability of research instruments refers to the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda and Mugenda, 1999). This research study used test-retest method. This method involves administering the same scale or measure to the same group of respondents at two separate times. This is after a certain time interval has elapsed. This means that the group is administered with the same test twice (Mbwesa, 2006). To ensure reliability, 10% of the interview schedules were randomly selected and the caregivers were interviewed again a week after data collection exercise. The caregivers were selected randomly from each village and different research team members were allocated to the caregiver. The quality control interview was conducted on different days from the initial interview. The quality control data were analysed and compared to the other data. The household questionnaires were pilot tested to determine whether the questions were clearly understood by the population.

### **3.9 Methods of Data Analysis**

Data analysis refers to examining what has been collected in a survey or experiment, and making deductions and inferences (Kombo and Tromp, 2006). It also refers to a variety of activities and processes that a researcher administers to a database in order to draw conclusions and make certain decisions regarding the data collected from the field. Activities of analysis involve summarizing large quantities of raw data, categorizing, rearranging and ordering data (Mbwesa, 2006).

The quantitative data obtained from the field in raw form were coded by assigning only one code to each category for clarity and thereafter entered by use of Census and Survey Processing System (CSPro). The researcher analysed the data using tables, mean and

percentage by use of Statistical Package for Social Sciences (SPSS) version 17. Martin and Acuna (2002) observe that SPSS is able to handle large amounts of data; it is time saving and also quite efficient. Qualitative data were systematically organized in meaningful patterns to obtain its importance based study themes. The data were analysed and reported by descriptive narrative (Mugenda & Mugenda, 1999). The results of the data gave the researcher a basis to make conclusions about the study.

### **3.10 Ethical Considerations**

The researcher exercised utmost caution while administering the data collection instruments to the respondents to ensure their rights and privacy is respected. Before the actual administration of the instruments, an explanation on the aim and the purpose of the study was explained to the respondents in the language they understood better.

The researcher sought the consent of the respondents before they are provided with all the requirements of the study. To ensure confidentiality, the questionnaires were given numerical codes instead of names and no respondent was forced into the exercise. The study findings were presented without any manipulation of data in favour of the researcher's expectations.

### 3.11 Operationalization of Variables

The variables and measuring indicators that were used in the research report is as illustrated in Table 3.1.

<b>Table 3.1: Operational Definitions of variables</b>					
<b>Objectives</b>	<b>Variables</b>	<b>Indicators</b>	<b>Measuring levels</b>	<b>Tools of data collections</b>	<b>Tools of Analysis</b>
To assess factors influencing health status of children under-five years in Njoguini, Murang'a County	<b>Dependent Variable:</b> Health status of children under-five years	Malaria	Ordinal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Diarrhoea	Ordinal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Underweight	Ordinal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Malnutrition/ kwashiorkor	Ordinal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
To examine the influence of socio-demographic characteristics of household on health status of children under-five years in Njoguini, Murang'a County	Socio-demographic characteristics	Gender of the HH	Nominal Ordinal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Marital status of caregiver	Nominal Ordinal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Education level of caregiver	Ordinal Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive

		Occupation of caregiver	Ordinal Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
To assess the influence of household's socio-economic factors on health status of children under-five years in Njoguini, Murang'a County	HH's Socio economic factors	Water and Sanitation	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Access to healthcare services	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Food security	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Crop farming and livestock keeping	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
To examine the influence of immunization against childhood diseases on health status of children under-five years in Njoguini, Murang'a County	Immunization against childhood diseases	Vaccination received by child against childhood diseases	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
To assess the influence of maternal health care on health status of children under-five years in Njoguini, Murang'a County	Maternal health care	Antenatal care	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Skilled birth attendant	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive
		Breastfeeding of child	Nominal	Questionnaire Interview	- Means, percentages and correlation of responses - Descriptive

## **CHAPTER FOUR**

### **DATA ANALYSIS, PRESENTATIO, INTERPRETATION AND DISCUSSION**

#### **4.1 Introduction**

This chapter contains data analysis, presentation, interpretation and discussion for this study. It contains data on the factors influencing health status of children under-five years in Njoguini. The findings are presented in frequency distributions tables; percentages and chi-square values.

#### **4.2 Questionnaire return rate**

A total of 248 questionnaires were administered. The completed questionnaires were edited for completeness and consistency. All the 248 questionnaires were returned. This represented a response rate of 100%. This conformed to Mugenda and Mugenda (2003) who recommended that for simplification a response rate of 50% is sufficient for scrutiny and exposure, 60% is good and a response rate of 70% and over is excellent.

#### **4.3 Socio-demographic characteristics of household**

The socio-demographic characteristics of household included: gender of household head, marital status, education level and occupation.

##### **4.3.1 Distribution of Respondents by Gender**

Respondents were asked to state their gender to ascertain whether gender of household's head had any influence on health status of children under-five years. The findings of the study are as presented in Table 4.1.

**Table 4.1: Gender of household head**

Variable	Frequency	Percent
Male	154	62.1
Female	94	37.9
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of the household heads were male at 62.1% compared to 37.9% who were female. This is a clear indication of the value of male headed households as opposed to female headed households in this area.

#### 4.3.2 Distribution of Respondents by Age

The study sought to determine the respondents' age bracket. The findings of the study are as presented in Table 4.2.

**Table 4.2: Age of caregiver**

Variable	Frequency	Percent
Below 26 years	68	27.6
27 – 35 years	108	43.5
36 – 44 years	45	18.1
Above 45 years	25	10.1
Missing	2	0.8
<b>Total</b>	<b>248</b>	<b>100.0</b>

A majority (43.5%) of the caregivers were between 27- 35 years while 10.1% were above 45 years. This indicates that majority of the caregivers were young people.

#### 4.3.3 Level of Education of caregivers

Respondents were asked to state their highest level of education to ascertain the influence of level of education on the health status of children under-five years. The findings of the study are as presented in Table 4.3.

**Table 4.3: Caregivers' level of education**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
None (no schooling)	13	5.5
Primary	60	24.4
Secondary	115	46.4
Tertiary	45	18.1
University	12	4.8
Others	1	0.4
Missing	1	0.4
<b>Total</b>	<b>248</b>	<b>100.0</b>

The highest level of education attained by caregivers was secondary (46.4%); followed by primary level of education (24.2%); tertiary (18.1%) and no schooling at (5.2%). University level of education accounted for a paltry 4.8%. This indicates moderate levels of education for caregivers in this area.

#### **4.3.4 Main occupation of caregivers**

Respondents were asked to state their main occupation to ascertain the influence occupation on the health status of children under-five years. The findings of the study are as presented in Table 4.4.

**Table 4.4: Main occupation of caregivers**

<b>Main occupation</b>	<b>Frequency</b>	<b>Percent</b>
Salaried employment	48	19.4
Business/ Petty trading	59	23.8
Casual labour	31	12.5
Not employed	102	41.1
Others	8	3.2
<b>Total</b>	<b>248</b>	<b>100.0</b>

In terms of main occupation, the study revealed that a majority (41.1%) of caregivers were not employed at the time of the study. Only a small proportion (19.4%) of caregivers reported to be salaried employed. This indicates low employment levels in this area.

#### 4.3.5 Distribution of Respondents by marital status

The study sought to determine the respondents' marital status. The findings of the study are as presented in Table 4.5.

**Table 4.5: Marital status of caregivers**

<b>Marital status</b>	<b>Frequency</b>	<b>Percent</b>
Single	32	12.9
Married	152	61.3
Separated	27	10.9
Divorced	8	3.2
Widowed	29	11.7
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority (61.3%) of the caregivers were married, while (12.9%) were single and (10.9%) were separated. This shows that marriage is highly regarded in this area.

Chi-square test statistic to determine the relationship between household's socio-demographic characteristics on health status of children under-five years was computed.



**Table 4.6: Chi-square results on relationship between socio-demographic characteristics of household on health status of children under-five years**

Socio-demographic characteristics	d.f	Child under-five years suffering from malnutrition	Child under-five years who is underweight	Child under-five years who suffered from malaria	Child under-five years who suffered from diarrhoea
Gender household head	1	10.426, p=0.001	5.962, p= 0.015	0.224, p=0.636	11.966, p=0.001
Level of education	5	14.334, p=0.014	11.067, p=0.050	4.103, p=0.535	4.634, p=0.462
Occupation	4	28.842, p=0.000	17.966, p=0.002	4.864, p=0.302	7.884, p=0.096
Marital status	4	15.634, p=0.004	7.666, p=0.105	2.329, p=0.675	2.516, p=0.642

Table 4.6 showing the Chi square test results of the relationship between household's socio-demographic characteristics of household on health status of children under-five years revealed that for gender at  $p = 0.636$  is above 0.05 so we declare the result as not statistically significant for children who suffered from malaria. However gender of household head had an influence on malnutrition and malaria of children under-five years at  $p = 0.001$  which is below 0.05 level of significance. For level of education  $p = 0.535$  and  $p = 0.462$  are above 0.05 level of significance thus not statistically significant. Marital status revealed that at  $p = 0.105$ ,  $p=0.675$  and  $p=0.642$  are above 0.05 level of significance. This means that for example marital status and children suffering from underweight, malaria and diarrhoea are not related in a larger population within Muranga County.

#### 4.4 Influence of household's socio-economic factors on health status of children under-five years

The study sought to examine how household's socio-economic factors influence health status of children under-five years. The results of the opinion of the respondents are presented in Table 4.7 to Table 4.21.

The respondents were asked to indicate their main source of food for household. The responses are presented in Table 4.7.

**Table 4.7: Main source of food for household**

	Frequency	Percent
Purchase	236	96.7
Farming	4	1.6
Begging	2	0.8
Other	2	0.8
Missing system	4	
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of the respondents 96.7% indicated they purchase household food. This indicates that most households in Njoguini do not produce their own food supply. Only 2% indicated other food sources as farming.

Caregivers were asked to indicate whether they had at least three balanced meals a day in the last one month prior to the study. Their responses are shown in Table 4.8.

**Table 4.8: Availability of three balanced meals a day in the last one month**

	Frequency	Percent
Yes	140	56.5
No	108	43.5
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of the households 56.5% had at least three balanced meals a day in the last one month. This indicates that most households had an adequate supply of food for their members. Furthermore, Caregivers were asked to indicate whether there were times they lacked food in the household. Their responses are shown in Table 4.9.

**Table 4.9: Lack of food in the household**

	<b>Frequency</b>	<b>Percent</b>
Yes	68	27.4
No	180	72.6
<b>Total</b>	<b>248</b>	<b>100.0</b>

As is clear from Table 4.9, majority of the caregivers (72.6%) indicated they did not lack food in the household at times.

Furthermore, caregivers were asked to indicate how many meals children under-five years eat in a day in times of food shortage. Their responses are shown in Table 4.10.

**Table 4.10: Number of meals children under-five years eat daily in times of food shortage**

	<b>Frequency</b>	<b>Percent</b>
1 meal	12	4.8
2 meals	45	18.1
3 meals	14	5.6
No response	177	71.4
<b>Total</b>	<b>248</b>	<b>100.0</b>

A majority of children under-five years eat two meals a day in a day in times of food shortage indicated by 18.1%. This indicates that in times of food shortage, households still have to give a priority to children under-five years at the expense of other household members.

Caregivers were asked to indicate how they survive during food shortage. Their responses are shown in Table 4.11.

**Table 4.11: Methods of survival during food shortage**

	<b>Frequency</b>	<b>Percent</b>
Skip meals	44	17.7
Splitting of family	3	1.2
Begging	1	0.4
Borrowing	10	4.0
Buy food on credit	5	2.0
Reduce portion	6	2.4
Others	5	2.0
<b>Total</b>	<b>74</b>	<b>29.8</b>

From Table 4.11 it is clear that majority of households (17.7%) survive food shortage by skipping meals. Other survival methods include: splitting of family indicated by 1.2%, borrowing (4.0%), buy food on credit (2.0%), reduce portions (2.4%) and begging (0.4%).

Respondents were asked to indicate household source of drinking water. The responses are shown in Table 4.12.

**Table 4.12: Source of drinking water**

	<b>Frequency</b>	<b>Percent</b>
Tap water	100	40.3
Protected dug well	79	31.9
Unprotected dug well	10	4.0
Rain water collection	27	10.9
Tankers/ trucks/ vendors	1	0.4
River/ lake/ pond streams	31	12.5
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of the households (40.3%), rely on tap water as their source of water. This is followed by 31.9% of households that rely on protected dug well. This indicates that the water serving the households was safe.

Respondents were asked to indicate the type of toilet facility for the household. The responses are shown in Table 4.13.

**Table 4.13: Type of toilet facility for households**

	<b>Frequency</b>	<b>Percent</b>
Flush toilet	67	27.0
Pit latrine	181	73.0
<b>Total</b>	<b>248</b>	<b>100.0</b>

A majority of households (73%) indicated they use pit latrine while the rest use the flush toilet. This shows high levels of hygiene observation in this area.

Caregivers were asked to indicate whether a household member has been sick in the last two weeks prior to the study. Their responses are shown in Table 4.14.

**Table 14: Household with sick member**

	<b>Frequency</b>	<b>Percent</b>
Yes	154	62.1
No	94	37.9
<b>Total</b>	<b>248</b>	<b>100.0</b>

A majority of households (62.1%) had a member who had fallen sick two weeks prior to the study. This indicates the high prevalence of disease in Njoguini. This could be attributed to the fact that data collection was conducted during rainy season therefore prevalence of common colds and flu were quite high.

Caregivers were asked to indicate whether a household member had sought health care services upon falling sick. Their responses are shown in Table 4.15.

**Table 4.15: Household member sought healthcare services**

	<b>Frequency</b>	<b>Percent</b>
Yes	103	68.7
No	47	31.3
<b>Total</b>	<b>150</b>	<b>100.0</b>

Of the 150 caregivers who responded to this question, 68.7% indicated that household members who fell sick sought healthcare services. This indicates that members are keen on using health facilities to improve on health status.

Those caregivers who indicated members did not seek healthcare services were asked to indicate their reasons. The responses are shown in Table 4.16.

**Table 4.16: Reasons for household member not seeking medical assistance**

	<b>Frequency</b>	<b>Valid Percent</b>
Could not afford the cost	29	60.4
Thought health problem was not serious enough	18	37.5
Not sick	1	2.1
<b>Total</b>	<b>48</b>	<b>100</b>

A majority of household members (60.4%) did not seek medical assistance because they could not afford the cost. This indicates the high medical costs given the economic conditions of residents of Njoguini.

Caregivers were asked to indicate the health facilities they attended when seeking health care. The responses are shown in Table 4.17.

**Table 4.17: Healthcare facilities attended**

	<b>Frequency</b>	<b>Valid Percent</b>
Public hospital	72	58.5
Dispensaries	11	8.9
Private clinic	18	14.6
Over the counter medicine	22	17.9
<b>Total</b>	<b>123</b>	<b>100</b>

A majority of household members (58.5%) indicated they attended public hospitals when seeking health care compared to 14.6% who attended public clinics. This indicates the affordability of public health facilities. Moreover, respondents were asked to indicate the main source of funds used to access health care. Their responses are shown in Table 4.18.

**Table 4.18: Main source of funds for accessing health care**

	<b>Frequency</b>	<b>Valid percent</b>
Out of pocket	106	86.9
Relatives/ friends	8	6.6
Health insurance	7	5.7
Free	1	0.8
<b>Total</b>	<b>122</b>	<b>100.0</b>

Majority of household members (86.9%) indicated that their main source of funds for health care was out of pocket while a dismal 0.8% and 5.7% accessed health care using free funds and health insurance respectively. This indicates the lack of universal health care for households.

Caregivers were asked to indicate whether their household engaged in crop farming in the last 12 months. Their responses are shown in Table 4.19.

**Table 4.19: Engagement in crop farming in the last 12 months**

	<b>Frequency</b>	<b>Valid Percent</b>
Yes	157	64.6
No	86	35.4
<b>Total</b>	<b>243</b>	<b>100.0</b>

Majority of households (64.6%) engaged in crop farming in the last 12 months. This indicates crop farming as a major economic activity for households. Furthermore, mmajority of households (62.1%) indicated they carry out crop farming on less than 1 acre. This indicates small-scale farming in the area.

Respondents were asked to indicate the ownership status of agricultural land tilled by household. Their responses are shown in Table 4.20.

**Table 4.20: Engagement in livestock and poultry keeping**

	<b>Frequency</b>	<b>Percent</b>
Yes	114	46.0
No	134	54.0
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of households (54%) did not engage in livestock and poultry keeping while the rest agreed that they engage in livestock and poultry keeping. This is a clear indication of small pieces of land in the area.

Chi-square test statistic to determine the relationship between household's socio-economic factors on health status of children under-five years was computed. This is presented in Table 4.21.



**Table 4.21: Chi- square results on relationship between household’s socio-economic factors and health status of children under-five years**

HH socio-economic factors	Child under-five years suffering from malnutrition	Child under-five years who is underweight	Child under-five years child who suffered from malaria	Child under-five years child who suffered from diarrhoea
Did household have 3 balanced meals a day?	10.731, p=0.001	13.664, p=0.000	2.820, p=0.093	5.395, p= 0.020
Are there times you lacked food	19.508, p=0.000	37.492, p=0.000	0.014, p=0.905	5.483, p=0.019
Main source of drinking water	8.281, p=0.141	7.246, p=0.203	5.272, p=0.384	6.177, p=0.289
Type of toilet facility of household	5.492, p=0.019	0.440, p=0.507	0.001, p=0.974	0.005, p=0.946
Did the household member seek for healthcare service	6.036, p=0.014	11.432, p=0.001	1.960, p=0.162	6.299, p=0.012
Has household engaged in crop farming in 12 months?	5.424, p=0.020	3.475, p=0.0602	0.150, p=0.699	0.268, p=0.604

Table 4.21 shows the Chi square test results of the relationship between household’s socio-economic factors and health status of children under-five years revealed that aspects such as food security, water and sanitation, access to health care and crop farming. The results revealed that food security was significant in determining whether children suffer malnutrition, diarrhoea and being underweight as the p values were below 0.05. In addition access to healthcare services was significant as the p values were below 0.05 for children being malnourished, suffer from malaria, diarrhoea and being underweight. It is evident that taking three balanced meals is significant in determining whether children suffer from malnutrition, diarrhoea and being underweight as the p values were less than 0.05.

#### 4.5 Immunization against childhood diseases influence on health status of children under-five years

Respondents were asked to show whether they had their clinic card. The responses are shown in Table 4.22.

**Table 4.22: Presence of clinic card**

	Frequency	Valid Percent
Yes	174	73.7
No	62	26.3
<b>Total</b>	<b>236</b>	<b>100.0</b>

Majority of the respondents (73.7%) showed the researcher their clinic card while the rest did not have a clinic card. This finding indicates that most household caregivers knew the importance of attending clinic checkups and thus it can be argued their children were healthy.

The respondents were asked to indicate whether or not the children under-five years in the household were able to receive immunizations on BCG, DPT, polio, measles and hepatitis B. The responses are shown in Table 4.23.

**Table 4.23: Type of immunization received**

		Frequency	Valid Percent
BCG	Yes	244	100.0
	Missing score	4	
DPT	Yes	244	100.0
	Missing score	4	
Polio	Yes	244	100.0
	Missing score	4	
Measles	Yes	223	93.3
	No	16	6.7
	<b>Total</b>	<b>239</b>	<b>100.0</b>
Hepatitis B	Yes	25	16.7
	No	125	83.3
	<b>Total</b>	<b>150</b>	<b>100.0</b>
	Missing score	98	

All households (100%) agreed that they had immunized their child against BCG, DPT and Polio. This shows that most children under-five years have received the crucial vaccinations for their age. In addition, 93.3% of children under-five years have received measles

vaccination. It is notable that a mere 16.7% of children have received hepatitis B vaccination. This could be attributed to the fact the Hepatitis B vaccination is not part of KEPI and it is not offered in public health facilities.

Chi-square test statistic to determine the relationship between immunizations against childhood diseases on health status of children under-five years was computed.

**Table 4.24: Chi- square results on relationship between immunization against childhood diseases on health status of children under-five years**

	df (degrees of freedom)	Child under- five years suffering from malnutrition	Child under-five years who is underweight	Child under- five years child who suffered from malaria	Child under- five years child who suffered from diarrhoea
Card seen	1	0.072, p=0.788	4.144, p=0.042	0.594, p=0.441	0.313, p=0.576
BCG		Constant	Constant	Constant	Constant
DPT		Constant	Constant	Constant	Constant
Polio		Constant	Constant	Constant	Constant
Measles	1	1.067, p=0.302	1.096, p=0.295	0.113, p=0.736	0.028, p=0.867
Hepatitis B	1	1.469, p=0.226	5.212, p=0.022	0.682, p=0.409	0.144, p=0.705

Table 4.24 showing the Chi square test results of the relationship between immunization against childhood diseases on health status of children under-five years revealed that p is significant only for a card seen for a child who is underweight as it is below 0.05.

#### **4.6 Maternal health care influence on health status of children under-five years**

The study sought to assess the influence of maternal health care on the health status of children under-five years. The results of the opinion of care givers are presented in Table 4.25 to Table 4.28.

The respondents were asked to indicate their baby's place of birth. The responses are shown in Table 4.25.

**Table 4.25: Place of birth for the baby**

	<b>Frequency</b>	<b>Valid Percent</b>
Home	35	14.3
Public hospital	150	61.2
Private hospital	20	8.2
Health centre	40	16.3
Missing score	3	
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of respondents (61.2%) indicated that the babies were born in public hospitals. Others were born at home (14.3%), health centre (16.3%) and private hospital (8.2%). This shows increase in deliveries conducted in health facilities.

The respondents were asked whether during pregnancy the mother received routine antenatal care. The responses are shown in Table 4.26.

**Table 4.26: Attendance of antenatal care**

	<b>Frequency</b>	<b>Valid Percent</b>
Yes	239	96.8
No	8	3.2
Missing score	1	
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of respondents (96.8%) indicated that during pregnancy the mother received routine antenatal care. This indicates that most mothers received care and advice and development of their child.

The respondents were asked to indicate whether after the delivery of the baby, the mother breastfed the child. The responses are shown in Table 4.27.

**Table 4.27: Breastfed the child**

	Frequency	Valid Percent
Yes	168	69.7
No	73	30.3
Missing score	7	
<b>Total</b>	<b>248</b>	<b>100.0</b>

Majority of respondents (69.7%) indicated that they breastfed their child. This indicates that the children received crucial nutrients from the breast milk.

**Table 4.28: Chi- square results on relationship between maternal health care on health status of children under-five years**

	df	Child under-five years suffering from malnutrition	Child under-five years who is underweight	Child under-five years child who suffered from malaria	Child under-five years child who suffered from diarrhoea
Place of birth for the baby	3	6.328, p=0.097	21.542, p=0.000	9.881, p=0.020	6.996, p=0.072
During pregnancy of the recent baby, did the mother receive routine antenatal care	1	0.722, p=0.396	6.151, p=0.013	0.019, p=0.891	2.603, p=0.107
After the delivery of the recent baby, did the mother breastfeed the child?	1	9.868, p=0.002	54.757, p=0.000	0.285, p=0.594	6.859, p=0.009

Table 4.28 showing the Chi square test results of the relationship between maternal health care on health status of children under-five years revealed that home assisted child deliveries and health facility assisted deliveries were not significant as the p values were above 0.05. The p values for whether mothers received antenatal care were significant for children suffering from underweight and diarrhoea. Breastfeeding was significant for malnutrition, underweight and diarrhoea as the p values were below 0.05.

#### **4.7 Focus Groups Discussions Results**

During the FGDs, it emerged that socio-demographic characteristics of caregivers had an impact on health status of children. Participants reported that children whose mothers have post-secondary level of education were more health as compared to the children whose mothers had primary level of education. However, the FGD discussants argued that women who are in career tended to have underweight children since they are forced to leave their children to house girls and yet most of them only breastfeed children for less than the recommended 6 months.

Although a majority of households reported to use tap water, it emerged during the discussions that household women are forced to fetch water from public taps which they are required to pay for. Additionally, most households interviewed used pit latrines. Nevertheless the pit latrines were shared among several households with respondents arguing that the shared latrines were very dirty, in dilapidated conditions and not safe for use.

The FGD pointed out that households participated in the crop farming and livestock keeping. It also emerged that the highest proportion of area of agricultural land was less than an acre showing that most of the study participants practised small-scale farming. Most of the agricultural land cultivated was owned by the households.

Respondents agreed that a household member was sick two weeks prior to the interview and they sought healthcare services. It emerged that a high proportion of household members sought healthcare services from public hospitals. However, usage of out-of-pocket money was high compared to health insurance. Across all focus group discussions, the main reason for not seeking for healthcare services was the cost of health care. During the FGD, it emerged that most women breastfed their babies after delivery. However, this was not done exclusively for six months as most women had to report back to their employment between two to three months after delivery. This in turn affected the health status of the children under-five years.

In terms of health status of children under-five years, it emerged that most children suffered from malaria and diarrhoea. The highest level of malaria reported could be attributed to the fact that data collection took place during rainy season in the area hence water stagnation

leading to cases of malaria. Moreover, some households relied on unprotected wells and rivers/streams/ponds as their main source of drinking water which could have a negative implication to health status such as diarrhoea. FGD discussants reported that the introduction of free maternity care and introduction of free rotavirus in public health facilities will go a long way in ensuring improved health status of children under-five years in Kenya.

#### **4.8 Discussion of findings**

The results are discussed in relation to the existing literature on findings of related studies.

##### **4.8.1 Influence of Socio-demographic characteristics**

Marital status was not significant in influencing health status of children under-five years. This is similar to a study in Uganda which found that marital status did not seem to affect the nutritional status of children (Owor et al 2000). Similarly, a study in the DRC found no statistically significant association between stunting and the caregiver's marital status and household size (Kandala et al 2011). Caregivers were between 27- 35 years with the highest level of education attained being secondary. According to Wamani et al., (2004) educated women have access to health information, leading them to adopt improved behaviour related to maternal and child health care, feeding and eating practices, which ultimately influences the nutrition status of children.

Turyashemererwa et al (2009), argues that child malnutrition has been seen to be associated with a poor educational background of the primary caregiver. A study by Janevic et al (2010) among Serbian children of mothers with a primary education or less were found to be more than twice as likely to suffer from stunting. Similarly, a study in Brazil (Souza de Tera et al 1999) and another in Egypt (Khatab 2010) showed that poor maternal education and a low household income contributed to the high prevalence of underweight children (Souza de Tera et al 1999).

Caregivers were not employed with some engaging in petty trading. According to Hawkins et al., (2009) children of employed mothers were more likely to have poor dietary habits and spent more time engaging in sedentary activity compared to children of unemployed mothers. This study revealed that there was no correlation between occupation of caregivers and health status of children. This is similar to a study in Iran by Nojomi et al (2004) that showed no

significant correlation between the prevalence of wasting, stunting and underweight on one hand and the sex, occupation of the caregiver, family size and rural or urban residence.

#### **4.8.2 Influence of Socio-economic factors**

Caregivers purchase household food and have had at least three balanced meals a day in the last one month. Households did not lack food. However, during food shortage, families survived by skipping meals. Carlsen et al., (2010) argues that food access on the other hand is ensured when all households and individuals have sufficient resources to obtain appropriate foods for a nutritious diet.

Caregivers cited they could not afford the cost of healthcare. Insufficient health services, according to Moore, Lima, & Guerrant (2011), may result due to distance to health service, cost of the accessing the service and the quality of the service provided which inhibit the caretaker to use the healthcare available in the community. The study revealed that household members seeking healthcare services were significant in influencing health status of children. Kabubo-Mariara et al. (2008) argued that access to health services is an important determinant of a child's health status. Additionally, a study done in Morogoro Municipality (Tanzania) by Maseta et al. (2008) that there is an association between access to health services and the nutrition status of children.

Chi square results revealed that the main source of drinking water is not statistically significant. Research reveals that 80 per cent of childhood diseases are related directly or indirectly to unsafe drinking water, inadequate hygiene, and open defecation (UNICEF, 2011). Households engaged in crop farming on less than 1 acre of own land. Few households engaged in livestock and poultry keeping. Neumann et al., (2002) showed a positive correlation between child height and the ownership of a milk cow, conditional on milk being used for family consumption. Leegwater et al. (1991) provided evidence that the nutritional status of pre-school children in the households participating in the National Dairy Development Project in Kenya was better than that of children from non-participating households. Vella et al. (1995) show that the ownership of a cow in rural Uganda is a significant predictor of median child height-for-age, while in rural Rwanda an index of dairy animal ownership has a strong positive association with child height-for-age.



#### **4.8.3 Influence of Immunization against childhood diseases**

Caregivers had clinic card which showed child immunization against Measles, BCG, DPT and Polio. According to UNICEF and WHO guidelines, a child should receive a BCG vaccination to protect against tuberculosis, three doses of DPT to protect against diphtheria, pertussis, and tetanus, three doses of oral polio vaccine (OPV), and a measles vaccination-all by the age of 12 months. The consequences of not vaccinating children cited by respondents include: permanent disability, stunted growth, ill health and death. In Bangladesh, Brieman et al., (2004) showed that children vaccinated with BCG before the age of six months are at considerably lower risk of dying in the first five years of life than children vaccinated later. According to WHO (2009) high coverage of vaccination can reduce deaths among children below five years and reduce the burden of illness and disability caused by preventable diseases. Children living in the rural areas have the least access to routine vaccination thereby subjecting them to diseases (WHO, 2009). Additionally, about one-fifth of children who begin the vaccination schedule do not complete it, limiting the effectiveness of doses they have received and of immunization on a larger population scale (WHO, 2009).

#### **4.8.4 Influence of maternal health care**

During pregnancy, mothers received routine antenatal care. Magadi et al. (2004) argues that antenatal care is a means of identifying mothers at the risk of delivering a preterm or growth retarded infant and to provide an array of available medical, nutritional and educational interventions intended to reduce the risk of low birth weight and other adverse pregnancy outcomes. According to Rathavuth et al. (2007), it has been established that women who take antenatal services have progressively higher infant survival rates compared to women who did not. Study findings reveal that whether mothers received antenatal care was significant for children suffering from underweight and diarrhoea. This is in agreement with Taylor et al., (2005) that antenatal services that a mother receives during pregnancy are important for the wellbeing of the mother and her child.

Most babies were born in public hospitals with assistance from doctors. Bryce et al., (2008) argued that the high maternal and new-born mortality in sub-Saharan Africa is related to unsafe maternal and new-born health (MNH) practices. In Guatemala, the infant mortality rate declined by 85% when an immediate evidence-based treatment of infants began in the community, with accompanied referral to a nearby hospital Bryce et al., (2008).

The study findings indicate mothers breastfed their babies through not entirely exclusively. WHO (2003) posited that, breast feeding is an important determinant of a child's health status that eventually influences his/her growth and development. According to the KDHS 2008-09 report, only 32% of infants under-six months of age were exclusively breastfed. Despite the well documented benefits of exclusive breastfeeding on child survival, growth and development, uptake of exclusive breastfeeding for six months as recommended remains low in Kenya (KDHS 2008-09).

Breastfeeding was shown to be significant for malnutrition, underweight and diarrhoea. Respondents indicated that working mothers did not exclusively breastfeed their child. Similarly, a study conducted by Hawkins et al. (2007) stated that the longer the length of mother's working hours, the less likely the mother is to breastfeed that child for at least 4 months. Furthermore, Grzywacz et al. (2010) posits working mothers were less likely to initiate and continue breastfeeding as they prefer infant formula. According to UNICEF (2005), poor infant feeding practices are known to have adverse consequences on the health and nutritional status of children, which in turn have consequences on the development of the child both physically and mentally.

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents and summarizes the research findings, then offers a conclusion and recommendations, and finally gives suggestions for further research.

#### 5.2 Summary of Findings

The purpose of the study was to establish the factors influencing health status of children under-five years in Njoguini, Muranga County. The research objectives were used to guide the collection of data from respondents.

##### 5.2.1 Influence of Socio-demographic characteristics

Caregivers were between 27- 35 years with the highest level of education attained being secondary. Caregivers were not employed with some engaging in petty trading. Furthermore, the caregivers were married. Chi square test results revealed that gender of household head had an influence on malnutrition of children under-five years at  $p = 0.001$  which is below 0.05 level of significance. For level of education  $p = 0.535$  and  $p = 0.462$  are not statistically significant. Marital status revealed that at  $p = 0.105$ ,  $p=0.675$  and  $p=0.642$  are above 0.05 level of significance.

##### 5.2.2 Influence of Socio-economic factors

Caregivers purchase household food and have had at least three balanced meals a day in the last one month. Households did not lack food. However, during food shortage, families survived by skipping meals. Moreover, the major source of household fuel is charcoal while tap water is the source of water. There was high prevalence of disease and household members sought healthcare services from public hospitals. However, residents cited they could not afford the cost. The main source of funds for health care was out of pocket with many caregivers lacking health insurance. Households engaged in crop farming on less than 1 acre of own land. However, only a small proportion of households did engage in livestock and poultry keeping.

Chi square test results of the relationship between household's socio-economic factors and health status of children under-five years revealed that aspects such as source of household

food, number of meals taken during food shortage, main source of drinking water, where healthcare is sought and ownership of agricultural land are not statistically significant. In addition, aspects such as sickness of household member and whether household member sought healthcare services were all significant. It is evident that taking three balanced meals is significant in determining whether children suffer from being underweight, malnutrition and diarrhoea.

### **5.2.3 Influence of Immunization against childhood diseases**

Caregivers had clinic card which showed child immunization against Measles, BCG, DPT and Polio. However, few children had received hepatitis B vaccination which could be attributed to the fact that the vaccination is not covered under KEPI. The consequence of not vaccinating children include: permanent disability, stunted growth, ill health and death. Chi square test results of the relationship between immunization against childhood diseases on health status of children under-five years revealed that p is significant only for a card seen for a child who is underweight. The p values for measles are above 0.05 thus the results are not statistically significant.

### **5.2.4 Influence of maternal health care**

Most babies were born in public hospitals with assistance from doctors. Others born at home (14.3%), were assisted by neighbour. During pregnancy, mothers received routine antenatal care. Furthermore, mothers breastfed their child. Chi square test results of the relationship between maternal health care on health status of children under-five years revealed that home assisted child deliveries and health facility assisted deliveries were not significant. The p values for whether mothers received antenatal care were significant for children suffering from underweight and diarrhoea. Breastfeeding was significant for malnutrition, underweight and diarrhoea.

## **5.3 Conclusion**

From the findings of the study, it can be concluded that gender of the household head has an influence on the health status of children under-five years. Furthermore, level of education and occupation of the caregiver had an influence on health status of children under-five years. From the study findings, it can be concluded that household's socio-economic factors affect

the health status of children under-five years. Factors such as access to health care, adequate water and sanitation and crop farming influence whether children suffer malaria, diarrhoea or being underweight. Although immunization of children under-five years was good, only a few children were reported to be vaccinated against Hepatitis B. This presents a challenge in ensuring good health status of children under-five years. Therefore, households need to handle these gaps in order to enhance the health of children. The findings of the study revealed that maternal health care and breastfeeding of children have a significant influence on the health status of children below five years.

#### **5.4 Recommendations**

Based on the findings of this study and the conclusion made, the study makes the following recommendations for policy action:

1. Greater efforts need to be put in place by the government to ensure provision of affordable water. Availability of safe sources of drinking water will significantly reduce cases of diarrhoea and therefore investments in this sector will be rewarding.
2. Nutrition education should be strengthened to improving the breastfeeding practice of mothers. This should entail exclusive breastfeeding for six months.
3. There is need to enhance employment of caregivers by enhancing income generating activities. This will increase the income levels of households.
4. The government should work towards ensuring there is universal health care. This should entail including all people above legal aid in a universal medical scheme.
5. Household should undertake poultry and livestock keeping. This should be undertaken within the household residence.

#### **5.5 Suggestions for further study**

The researcher suggests that further studies to be done on the following:

- i) Impact of free rotavirus vaccine on the health status of children under-five years in Kenya.
- ii) The role of Science and Technology on nutrition status of children under-five years in Kenya.
- iii) The influence of community health units on health status of children under-five years in Murang'a County.

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## APPENDICES

### Appendix I: Letter of introduction and informed consent

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Nairobi-Kenya  
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Cell Phone: +254 723 001 880

18<sup>th</sup> June, 2014

Dear Sir/Madam,

Good morning/afternoon

I am a student at the Nairobi University College undertaking a Master Degree of Arts in Project Planning and Management. I am currently undertaking a research on factors influencing health status of Children under-five years in Njoguini, Murang'a County.

In my schedule, I will be visiting and distributing questionnaires to households in Njoguini as well as interview certain groups of people including, opinion leaders, stakeholders, women groups, youth groups, among others.

I will be grateful for any assistance in this regard.

Yours Sincerely,

ALICE SERETI SINKEET

## Appendix II: Household questionnaire

### FACTORS INFLUENCE HEALTH STATUS OF CHILDREN UNDER-FIVE YEARS IN NJOGUINI, MURANG'A COUNTY

This research is being undertaken in partial fulfilment of the award of the degree of Master of Arts (MA) in Project Planning and Management at the School of Continuing and Distant Education, University of Nairobi.

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#### Filling Instructions

Kindly spare a few minutes to complete the questionnaire below.

Please read carefully and systematically and fill in answers to questions as honestly as possible by putting down your answers in the spaces provided or by circling where applicable. Any information you give will be used purely for academic research purposes only

---

#### QUESTIONNAIRE IDENTIFICATION

County \_\_\_\_\_

Constituency \_\_\_\_\_

Village \_\_\_\_\_

Date of interview \_\_\_\_\_

Questionnaire number \_\_\_\_\_

#### A. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLD HEAD/CAREGIVER

Q1. Gender of household head

1. Male
2. Female

Q2. Age of household caregiver (**Complete years**).....

Q3. Household size.....

Q4. Number of children under-fiveyears in her household.....

Q5. Caregiver's level of education (**Circle only one**)

1. None (No schooling)
2. Primary
3. Secondary
4. Tertiary
5. University
96. Other, specify .....

Q6. Caregiver's main occupation (**Circle only one**)

1. Salaried Employment
2. Business/Petty trading
3. Casual Labour
4. Not employed
96. Others (Specify).....

Q7. Marital Status of caregiver

1. Single
2. Married
3. Separated
4. Divorced
5. Widowed

Q8. Household main source of income (**Circle only one**)

1. Salaried employment
2. Casual work/Labour
3. Small Business/Petty trading
96. Others (Specify).....

**B. HOUSEHOLD'S SOCIO-ECONOMIC FACTORS**

Q9. Main source of food for household

1. Purchase
2. Remittance/gifts
3. Begging
96. Others (Specify).....

**In Q 10, interviewer to elaborate the meaning of a balanced meal to the respondent - a meal that has proteins, carbohydrates and vitamins (from vegetables and fruits)**

Q10. Did your household have at least three balanced meals a day in the last one month?

1. Yes

- 2. No

Q11. Are there times you lacked food in your household?

- 1. Yes
- 2. No

Q12. If yes, how often **(If No skip)**

- 1. One to Two days
- 2. Three days to One week
- 3. More than One week
- 96. Others (Specify).....

Q13. In times of food shortage how many meals do children under- five years eat in a day including breakfast? .....

Q14. How does the household survive during shortage of food? **(Circle all that apply)**

- 1. Skip meals
- 2. Splitting of family
- 3. Begging
- 4. 4. Borrowing
- 96. Others (Specify).....

Q15. What is the source of fuel for cooking in your household?

- 1. Firewood
- 2. Charcoal
- 3. Paraffin oil
- 96. Others (Specify).....

Q16. Main source of drinking water **(Circle only one)**

- 1. Tap water
- 2. Protected dug Well
- 3. Unprotected dug wells
- 4. Rain water collection
- 5. Tankers/trucks/vendors
- 6. River/lake/pond/streams
- 96. Other, specify.....

Q17. Type of toilet facility does your household use? **(Circle only one)**

1. Flush toilet
2. Pit latrine
3. Bush
4. River
96. Other, specify .....

Q18 Type of roof of the house

1. Iron sheet
2. Makuti
3. Grass
4. Tiles
96. Other, specify .....

Q19. Type of wall of the house

1. Wood
2. Iron sheet
3. Mud
4. Bricks
5. Blocks
96. Other, specify .....

Q20. Has any other household member been sick in last two weeks **(prior to the study)**?

1. Yes
2. No

Q21. Did the household member seek for healthcare services?

1. Yes
2. No

Q22. *If No*, why did the household member fail to seek for medical assistance? **(If Yes skip)**

**(Circle only one)**

1. Could not afford the cost of healthcare
2. No means of transport
3. Distance to health facility'
4. Could not afford cost of transport
5. Unsatisfactory past experience
6. Thought health problem was not serious enough
7. The facility was closed
96. Other, specify .....



Q23. The last time you or any member of your household needed health care, where was it sought from? **(Circle only one)**

1. Public hospital
2. Dispensaries
3. Private clinic
4. Over the counter medicine
5. Traditional healer
96. Other, specify .....

Q24. The last time you or any member of your household needed health care, what was the main source of funds that was used to access it? **(Circle only one)**

1. Out-of-pocket
2. Relatives/friends
3. Religious groups
4. NGOs
5. Health insurance
96. Other, specify .....

Q26. Has your household engaged in crop farming in the last 12 months?

1. Yes
2. No

Q27. If yes, what is the area of the agricultural land? **(If No skip)**

1. Less than 1 acres
2. 1-3 acres
3. 1- 5 acres
4. More than 5 acres

Q28. What is the ownership status of the agricultural land being tilled by the household? **(Circle only one)**

1. Own
2. Communal
3. Hired
4. Borrowed
96. Other, specify .....

Q29. Has your household engaged in livestock and poultry keeping in the last 12 months?

1. Yes
2. No

Q30. If yes, what number of livestock or poultry has your household raised in the past 12 months? **(If**

**No skip)**

1. Cow .....
2. Goats .....
3. Sheep .....
4. Chicken .....
5. Ducks .....
96. Other, specify .....

**C. IMMUNIZATION AGAINST CHILDHOOD DISEASES**

Q31. Types of immunization received by a child under-five years in the household: **(where there are more than one under-five children, consider the youngest child in the HH)** Interviewer: **ask to see the clinic card**

**Card seen: Yes .....1**  
**No .....2**

- |                |        |       |
|----------------|--------|-------|
| a) BCG         | 1) Yes | 2) No |
| b) DPT         | 1) Yes | 2) No |
| c) Polio       | 1) Yes | 2) No |
| d) Measles     | 1) Yes | 2) No |
| e) Hepatitis B | 1) Yes | 2) No |

Q32. In your view, what are the consequences of not vaccinating children under-five years against childhood diseases? **(Circle only one)**

1. Permanent disability
2. Stunted growth
3. Death
96. Other, specify .....

**D. MATERNAL HEALTH CARE**

Q33. Year of birth of the recent baby.....

Q34. Place of birth for the recent baby

1. Home
2. Public Hospital
3. Private hospital
4. Health centre
96. Other, specify .....

.Q35. If delivery was at home, who assisted it?

1. Traditional birth attendant (TBA)
2. Mother-in-law
3. Friend/relative
4. Neighbour
96. Other, specify .....

Q36. If delivery was at the health facility, who assisted the delivery?

1. Doctor
2. Nurse
3. Midwife
96. Other, specify .....

Q37. During pregnancy of the recent baby, did the mother receive routine antenatal care (minimum 4 times)?

1. Yes
2. No

Q38. After the delivery of the recent baby, did the mother breastfed the child, exclusively, for a minimum of six months?

1. Yes
2. No

#### **E. HEALTH STATUS OF CHILDREN UNDER-FIVE YEARS**

Q39. Is there any child under-five years old who is suffering from disease of malnutrition such as Kwashiorkor or Malnutrition?

1. Yes
2. No

Q40. Is there any child under-five years old who is underweight? (**As assessed by the interviewer or respondent or by using clinic card**)

1. Yes
2. No

Q41. Is there any under-five child who suffered from malaria in the past two weeks prior to the study?

1. Yes
2. No

Q42. Is there any under-five child who suffered from diarrhoea in the past two weeks prior to the study?

1. Yes
2. No

**END OF INTERVIEW: THANK THE RESPONDENT FOR HIS/HER TIME**

**COMMENT ON ANY OBSERVATION:**

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## Appendix III: Focus group discussion (FGD) guide

### Warm up questions

- i) What are the main income generating activities in this area?
- ii) What are the main problems in this area? (**Probe on lack of water, food insecurity, gender based violence, unemployment etc**).

### 1. Socio-demographic characteristics of household head/caregiver

- i) In your view, how do the socio-demographic characteristics of household head/caregiver influence health status of children under-five years in this area? (**Probe on gender, marital status, education level, occupation etc**)
- ii) In your view, is there a noticeable difference between children under-fives in male headed households and female headed household? (**Probe on prevalence of child death, prevalence of malaria, diarrhoea, kwashiorkor and malnutrition etc**).
- iii) What is your view regarding the relationship and interaction between men and women in this community? (**Probe on decision making, employment opportunities, education, ownership of assets, household headship etc**).

### 2. Household's socio-economic factors

#### *Water and sanitation*

- i) What is the main source of drinking water for households in this area? (**Probe on tap water, trucks/vendors, rivers, wells, rain water etc**)
- ii) What is your view regarding the main source of drinking water? (**Probe on safety, reliability etc**)
- iii) In your view, what is the influence of drinking water on health status of children under-five years? (**Probe on water-borne diseases; vomiting, diarrhoea etc**)
- iv) What is your view regarding sanitation in this area? (**Probe on proper waste disposal, condition of sewer systems, use of latrine etc**)
- v) In your opinion, how does sanitation influence on health status of children under-five years? (**Probe on sanitation-related diseases - cholera, malaria, dysentery etc**)

#### *Access to healthcare services*

- i) Where do people in this community access healthcare services? (**Probe on accessibility, affordability, quality etc**)
- ii) In your view, what is the influence of access to healthcare services on health status of under-five children?

### *Food security*

- i) What are the main sources of food for households in this community (Probe on staple food, food production etc).
- ii) Who are mainly involved in food production in this community? (**Probe on the role of women, men, children, elderly etc**)
- iii) What challenges do you face to access food in this community? (**Probe on drought, famine, inflation prices, food shortage, size of cultivated land etc**).
- iv) In your view, what categories of people are more likely to be affected by food shortage? (**Probe on children, women, elderly, people with disability etc**)
- v) What coping mechanisms are adopted by the community to cope with food shortage? (**Probe on the impact of each coping mechanism mentioned**)?
- vi) What is the influence of food shortage on health status of children under-five year? (**Probe on kwashiorkor/malnutrition, underweight, malnutrition etc**)

### *Crop farming and livestock keeping*

- i) In your view, does household that practice crop farming have healthy children as compared to those that do not practice?
- ii) In your view, does household that practice livestock keeping have healthy children as compared to those that do not practice?

### **3. Immunization against childhood diseases**

- i) What is your opinion regarding immunization/vaccination programme in this area? (**Probe on perception of the programme, accessibility, utilization , door to campaigns, cultural beliefs and practices etc**)
- ii) How would you describe the relationship between vaccination received by children under-five years against childhood diseases and health status of children under-five years (**Probe on polio, measles, tuberculosis, tetanus, hepatitis B etc**)
- iii) In your view, what are the consequences of not vaccinating children under-five years against childhood diseases? (**Probe on death, stunted growth, permanent disability etc**)

### **4. Maternal healthcare**

- i) What is your view concerning maternal and child health in this community? (**Probe on ante-natal, post-natal, place of delivery, immunization etc** )
- ii) What is your view regarding antenatal care services in this community? (**Probe on perception of the services, accessibility, utilization etc**)

- iii) What is your opinion regarding influence of antenatal care on health status of children under-five years?
- iv) In your view, what is the most preferred place of delivery in this community? (Probe on men and women, perception about delivery at health facility, skilled delivery attendants, TBAs)
- v) In your opinion, how does skilled delivery influence health status of children under-five years? (**Probe on TBAs, doctors, nurses, midwives, relatives/friends etc**)

#### **5. Health status of children under-five years**

- i) What are the foods that are mainly fed to children under-five years in this area?
- ii) What are the major nutritional challenges affecting children under-five years in this area?
- iii) In your view, how does this community determine if children under-five years are healthy or not?
- iv) What is this community's perceptions regarding breastfeeding of children?

#### **6. Recommendations**

In your suggestion, what policy issues should be addressed in order to improve health status of children under-five years in this community?

*Moderator: Ask for any other comments and thank the participants*

## Appendix IV: In-depth-interview (IDI) guide

Place of interview: \_\_\_\_\_

Date of the interview: \_\_\_\_\_

Name of the interviewer: \_\_\_\_\_

Name of respondent: \_\_\_\_\_

Designation of respondent: \_\_\_\_\_

Name of organization: \_\_\_\_\_

Start time: \_\_\_\_\_ End time: \_\_\_\_\_

### Warm up questions

- What are the main economic activities in this area?

### Key issues

1. What is your general view of health status of children under-five years in this area?
2. In your opinion, how does the socio-demographic characteristics of caregivers influence on the health status of children under-five years?
3. What are food types are readily available to feed young children in this area?
4. What is your view regarding breastfeeding?
5. Is there farming (crop farming and live stocking) done around here? How is it important as a source of food?
6. In your own view, what hinders caregivers from feeding their children with proper balanced meals?
7. What is your view regarding water and sanitation in this area? (**Probe on waste disposal, sources of water, environmental degradation etc**)
8. What is the impact of poor sanitation on the health status of children under-five years?
9. In your view, how does lack of safe drinking water affects health status of children in this area?
10. What are the major maternal health and child care problems of the community? (**Probe on maternal mortality, family planning, access to antenatal and postnatal care, immunization of young children, child morbidity and mortality**)
11. In your view, what are the consequences of not vaccinating children under-five years against childhood diseases? (**Probe on death, stunted growth, permanent disability etc**)
12. How does the community get information about maternal and child health care? (**Probe on immunization, antenatal and prenatal care etc**)
13. In your view, what is the preference of delivery place in this area?
14. In your opinion, who is responsible for making decisions in health seeking in the family in this area?
15. What is the GoK doing to improve the nutritional status of young children?



16. In your opinion, how can other stakeholders assist in improving the health status of children under-five years?

**Thank the respondent for his/her time**

**Appendix V: Krejcie and Morgan Sample Size Table**

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	<u>700</u>	<u>248</u>	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384