

**Assessment of caretaker factors associated with disease outcomes in children at  
Kenyatta National Hospital, Nairobi, Kenya**

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**A thesis submitted in partial fulfilment for the Degree of Master of Science in  
Public Health in the Jomo Kenyatta University of Agriculture and Technology**

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## DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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## **DEDICATION**

I dedicate this thesis to my wife Stella and my sons Victor and Edwin, my mother Jane and members of my family for their love, understanding and support during the process of the study. I am greatly indebted to these people for the continuous support and encouragement.

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## **LIST OF ABBREVIATIONS**

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>ARI</b>	Acute Respiratory Infections
<b>CBS</b>	Central Bureau of Statistics
<b>CI</b>	Confidence Interval
<b>CMR</b>	Child Mortality Rate
<b>ETAT</b>	Emergency Triage and Treatment
<b>HIV</b>	Human Immunodeficiency Virus
<b>IMCI</b>	Integrated Management of Childhood Illnesses
<b>IMR</b>	Infant Mortality Rate
<b>ITROMID</b>	Institute of Tropical Medicine and Infectious Diseases
<b>KEMRI</b>	Kenya Medical Research Institute
<b>KNH</b>	Kenyatta National Hospital
<b>MDG</b>	Millennium Development Goals
<b>NBU</b>	New Born Unit
<b>NMR</b>	Neonatal Mortality Rate
<b>OR</b>	Odds Ratio
<b>OTC</b>	Over The Counter
<b>PFC</b>	Paediatric Filter Clinic
<b>PMR</b>	Perinatal Mortality Rate
<b>SD</b>	Standard Deviation

<b>SPSS</b>	Statistical Package for Social Science
<b>UNICEF</b>	United Nations Children's Education Fund
<b>WHO</b>	World Health Organisation

## **ABSTRACT**

Globally, 10.5 million children under five years die annually. Approximately 6 million of Kenya's population are children under five years with a child mortality rate of 74 per 1000 live births. The morbidity pattern of children attending Kenyatta National Hospital (KNH) are mainly gastro enteritis, respiratory diseases, neonatal sepsis and meningitis accounting for 44 % of all the deaths, which occur in the first 48 hours, post admission. The objective of this study was to assess care taker factors associated with disease outcome among children at KNH. A cross sectional study was conducted where questionnaires were administered to the caretakers of the 156 children recruited into the study. Data entry was done in Microsoft Access and analyzed using Statistical Package for Social Science (SPSS). Data from the study revealed that there was a significant association between diseases outcome and length of exclusive breast-feeding ( $P < 0.025$ ), occupation of both fathers and mothers ( $P < 0.026$  and  $P < 0.001$ , respectively) in the priority disease outcomes. There was a statistically significant association between duration of illness and that of seeking treatment before visiting KNH, ( $P < 0.001$ ). A child that was not breast-fed exclusively for more than 4 months had a 3-fold risk of being a priority case. Children who stayed more than 2 months before seeking health care at KNH had a 3-fold risk of becoming priority cases. Using formal education as the reference category for mother occupation, the odds of priority outcome for unemployed compared to formal education was 10.4 and informal education compared to formal education was 7.6. A majority of caretakers delayed in seeking care in the health

facilities as they sought care in the peripheral health facilities. Majority of the children attended other public health facilities prior to admission, private clinics or traditional medical practitioners before attending KNH. Results from this study suggest that occupation of parents was a major determinant in regard to disease outcome. Families and communities need to be empowered to obtain and access basic health care services. More studies need to be done to identify specific caretaker factors associated with childhood illnesses. This will enable to evaluate further the possible interventions in the health care delivery among children.

# CHAPTER 1

## 1.0 INTRODUCTION

### 1.1 Background information

Globally, about 51 million people of all ages die annually. Approximately three-quarters of them are adults, 39 million and 12 million occurs in the developing and developed world, respectively. Almost 4 million of the child deaths in 2000 occurred in the neonatal period. Seven out of ten deaths are attributed to pneumonia, diarrhea, measles, malaria and malnutrition (WHO, 2003).

Tuberculosis, maternal, perinatal and neonatal conditions accounted for about 20 million lives (WHO, 2000). In 2006, among the major communicable diseases, tuberculosis was responsible for more than 5% of the total global deaths. Worldwide in 2006, there were 39.5 million people with HIV. Globally, UNAIDS estimated that more than 1,500 children were infected with HIV per day. The HIV and AIDS have also been shown to be one of the causes of child deaths in the developing countries. In 2007, it was estimated that 2 million children were living with HIV at the end of 2007 (Gwatkin *et al* ., 2000, WHO, 2003; UNICEF, 2004 and UNAIDS, 2006).

Globally, studies have identified diarrhea and Acute Respiratory Infections (ARI) to account for about one third of child deaths. It has been estimated that malaria alone



killed at least one million children annually and resulted in US \$10-12 billion loss in income, cost of health care and reduced productivity of workers (UNAIDS, 2006).

Much of the Middle East, Northern Africa, Latin America, Caribbean, East Asia and the Pacific are on track to reach the Millennium Development Goal 4 (MDG 4). This goal intends to reduce child mortality by two thirds among children under five years by 2015 (WHO, 2002). Through the MDG 4, achieving the goal implied lowering the number of under five deaths from 9.7 million in 2006 to less than 5 million by 2015 (WHO, 2002). This remained one of the greatest challenges of the 21<sup>st</sup> Century despite unprecedented global economic development and technological advancement.

Latin American and Caribbean countries have seen the most substantial reduction in child mortality. In 2004, industrialized countries had an average child mortality rate of 7 deaths per 1,000 live births. South Asia, sub Sahara-Africa, Central and Eastern Europe required dramatic measures to achieve the MDG 4 (UNICEF, 2004). As the world enters into the 21st century, child mortality remains a major public health problem in the developing countries, as researchers attempt to identify caretaker factors associated with disease outcomes.

Annually an estimated 11 million children under 5 years die in the world including 4.6 million in Sub-Sahara Africa (UNAIDS, 2006). Globally, about 30,000 children die every day before they reach their fifth birthday. In 2000, child mortality was a problem

in Sub-Saharan Africa (Gwatkin *et al.*, 2000). Child mortality was considerably rising among children living in low socio-economic households. Child mortality was closely linked to poverty (WHO, 2000).

In Kenya the childhood illnesses accounted for 70 % of outpatient morbidity among children (WHO, 2000). These conditions disproportionately affected mainly the poor in the developing countries (Caulfield and Black, 2002). At the same time in 2000, socioeconomic inequalities in child health appeared to be widening (Wagstaff, 2000). In Kenya, Child Mortality Rate (CMR) was 74 per 1000 live births (UNICEF, 2004). Advancement in infant and child survival have occurred very slowly among people in poor countries and among the poorest people in wealthier countries (UNICEF, 2003).

Children in developing countries continue to die from preventable and treatable diseases. In 2004, the least developed countries had a rate of 158 deaths per 1,000 births (UNICEF, 2004). In 2006, approximately 6 million of the Kenya's populations were children and the CMR was 74 per 1000 live births. Malaria, skin diseases, diarrhea and intestinal worms combined accounted for 70% of outpatient morbidity among children (WHO, 2000). A total of 9,656 children were admitted at KNH in 2007 out of the 57,106 out-patients, taken in dead were 937 and 151 died in the casualty department with a CMR of 13.8 % (KNH, 2007).

In Kenya, access to safe water, sanitation and hygiene created a healthier home environment and reduced children's exposure to infection (UNICEF, 2001). Water and sanitation is a key factor towards improvement of children's health. Unsafe water

supply, lack of hygiene and inadequate sanitation was responsible for 88 % of diarrheal diseases (WHO, 2000). If low cost interventions are scaled up to reach poor children and their families an estimated two thirds of deaths can be prevented. The burden of child illnesses will be reduced significantly. This would result in improved health for children, poverty reduction and economic development in developing countries (WHO, 2000).

The fact that the diseases causing child mortality are preventable and treatable gives rise to questions whether parents/care takers seek prompt and appropriate treatment for their sick children. Most of these deaths could be prevented and treated with inexpensive interventions (UNAIDS, 2006). The government of Kenya has a safe water system, an Integrated Management of Childhood Illnesses (IMCI), malaria initiatives and multi-sectoral partnerships to support improved nutrition interventions. In 2003, developing countries had a slow progress in reducing child deaths despite the availability of low-cost interventions (UNICEF, 2004). Countries that had fallen short on progress since 1990 had a much more daunting task. The average global CMR can drop by one quarter by 2015, far below the goal of two-thirds (UNAIDS, 2006).

According to Mosley and Chen (1984) proximate and underlying determinants of health provide a useful organizing framework for addressing the caretaker factors associated with disease outcomes. The former affect child health directly for instance feeding practices, preventive activities, prenatal and perinatal care, while the latter do so only indirectly through their effect on the proximate determinants, for instance mother's

knowledge, household income and access to health care facilities. Household interventions were used as the first source of healthcare. When the care moved out of the home, private health facilities were used more compared to public health facilities (De Zoysa *et al.*, 1984).

In Zimbabwe, mothers in urban slums were reported to consult modern medical practitioners as their first source of healthcare but when the illness persisted they switched to traditional healers (De Zoysa *et al.*, 1984). Some mothers started self-treatment and never sought treatment or waited for the problem to disappear. In Kenya, guardians of children suffering from malaria tend to move from self-treatment with Over The Counter (OTC) drugs to private or government healthcare facilities if the illnesses advance (Nyamongo, 2002). One problem with self treatment is that, neither the drug vendor nor the consumer is aware of the correct drug dosage.

There are a number of different caretaker factors influencing parents'/caregivers' decisions to seek health care. This study examined education, socioeconomic factors, access to health facilities and demographic variables.

Socio economic determinants operate through variables such as maternal factors, environmental contamination, nutrient deficiency, injury and personal illnesses control. Frequently, a child's death is as a result of many isolated disease episodes.

Mosley and Chen (1984) made a distinction between variables considered to be exogenous or socio economic factors and endogenous or biomedical factors such as hygiene, sanitary measures and nutrition.

### **Disease out come classification**

In this study emergency and priority (outcome variables) were classified according to the WHO Emergency Triage and Treatment (ETAT) guidelines. In ETAT, priority signs included temperature above 38.5° C, more than 2 months old, trauma, severe palmar pallor, pain, poisoning, referral case, restlessness, lethargic, respiratory distress (not severe), visible wasting, edema of both feet and major burns. Identified children are at a higher risk of dying and should be assessed without delay. Contrary, emergency outcomes included patients with obstructed breathing, severe respiratory distress, central cyanosis, signs of shock (capillary refill longer than three seconds, weak/fast pulse), coma, convulsions and signs suggesting severe dehydration in a child with diarrhea.

### **1.2 Statement of the problem**

Annually an estimated 11 million children under 5 years die in the world including 4.6 million in sub-Sahara Africa. Under five years, morbidity and mortality has become a major public health problem in Kenya. In 2002 in Kenya, Child Mortality Rate (CMR) was 74 per 1000 live births (UNICEF, 2004).

Low socioeconomic status contributes to poor access to health care facilities. Many caretakers wait for long from the onset of illness before they seek health care services.

Alot of time is wasted by caretakers as they consult other health care providers before attending to Kenya National Hospital.

At KNH the major treatable illnesses accounted for 81.4 % deaths of all admissions among children. In addition 44 % of all the deaths occurred in the first 48 hours post admission while 20 % of deaths occurred in the first 24 hours. In 2007, a total of 9,656 children were admitted out of the 57,106 out-patients attended in casualty department, 937 patients were brought in dead and 151 died at the casualty department (KNH, 2007).

Childhood infections in many countries are of sufficient magnitude to warrant its recognition as a priority in government health strategies. Various studies have indicated an increase of the morbidity and mortality in Kenya's children. The worsening poverty situation in some communities prevents children from accessing basic healthcare services. At the service level, poor access and use of health services causes the largest proportion of preventable deaths. Generally, household interventions are the first source of healthcare. When this care moves out of the home, private chemists, clinics and health facilities are used more in contrast to public health facilities. A few mothers consult traditional healers for child-hood illnesses. This contributes a lot in complicating the illnesses leading to wastage of resources.

### **1.3 Research Question**

What caretaker factors are associated with disease outcomes among children at Kenyatta National Hospital paediatric medical wards?

## **1.4 Justification**

This study shed more light about disease outcome and suggests practical solutions towards reducing childhood illnesses. This study can contribute to the improvement of the quality of care among children. Various studies from developing countries have reported that delay in seeking health care contribute to poor disease outcome (Amarasiri *et al .*, 2001).

Data about disease outcomes should provide a basis upon which interventions and strategies can be built. This study established important parameters that can be used in planning for health care especially in resource limited settings.

The results from this study can be used as a baseline in future studies to enable health care providers and policy makers to make informed decisions in formulating appropriate health care policies. Child morbidity and mortality in Kenya should be a priority in government health strategies as it is a measure of a government level of development. This study assessed the care taker factors associated with disease outcomes among paediatric patients at KNH.

## **1.5 Hypothesis**

### **1.5.1 Null hypothesis**

There was no relationship between caretaker factors and disease outcomes among paediatric patients in KNH.

### **1.5.2 Alternate hypothesis**

There was a relationship between caretaker factors and disease outcomes among paediatric patients in KNH.

### **1.6 Objectives**

#### **1.6.1 General objective**

To investigate caretaker factors associated with disease outcomes among children at KNH.

#### **1.6.2 Specific objectives**

1. To assess socio economic and demographic factors among the patient's caretakers.
2. To determine disease outcomes classification among children admitted at KNH Paediatric medical wards.
3. To determine the relationship between socio economic, demographic factors and disease outcomes among children admitted at KNH Paediatric medical wards.



## **CHAPTER 2**

### **2.0 LITERATURE REVIEW**

#### **2.1 Factors associated with disease in children**

Child mortality rate is one of the principle indicators of children's wellbeing (UNICEF, 2004). It reflects the main environmental factors affecting the child's health such as nutrition, sanitation, communicable diseases and accidents around the home. It is a sensitive indicator of socio-economic development in a community and may be twenty five times higher in developing countries in contrast to the developed countries (UNICEF, 2004).

Important points to consider in studying care taker factors in relation to disease outcome include, proportion of families seeking care outside home, sources of care sought, appropriateness and promptness of seeking care for different illnesses and the factors affecting the family's decision to seek care, i.e, predisposing factors, enabling factors and health system factors (UNICEF, 2004). The worsening poverty situations in some countries prevent caretakers of children from accessing basic health care services. At the service level, poor access and use of health services and poor quality of care caused the largest proportion of preventable deaths (WHO, 2004).

##### **2.1.1 Access to health care services and care during illness**

Health care services are a financial burden to people of low socio-economic status and that private payment creates financial barriers to accessing health services. Members of

poor households are less likely to seek care in well established health facilities than people from more affluent households. In Philippines, lack of access to health care was a common deterrent to optimal health care seeking in both rural and urban communities (Thind and Cruz, 2003).

Many patients cannot afford to pay for laboratory or diagnostic tests recommended by doctors. Patients in places without doctors consult the nearest pharmacist for prescriptions or OTC drugs. In Nepal, Guinea, the effect of cost of healthcare on decisions about whether to use healthcare services for children was statistically significant and subsidy policies improved the use substantially (Pokhrel and Sauerborn, 2004)

In Zimbabwe, mothers in urban slums were reported to consult modern medical practitioners as their first source of healthcare but when the illness persisted they switched to traditional healers (De Zoysa *et al.*, 1984). In Zimbabwe, healthcare was most often sought from pharmacies instead of qualified medical practitioners. Some caretakers started self-treatment, decided not to seek treatment or decided to wait for the problem to disappear (Chandrashekar and Ravi, 2006).

A study in Kenya also showed that people were selective in their use of different health care providers. Caretakers tended to use self medication at the first attack for malaria treatment, but consulted external sources of care in subsequent attacks (Nyamongo,

2002). Trial and error, perceived effectiveness, expectation of quick results and use of traditional healers without referral from the first single episode of illness was described in Zimbabwe (De Zoysa *et al.*, 1984).

In a study in Kilifi, Kenya, it was found that 47 % of children under five years were attended in private clinics, 33% in other hospitals while 20 % received self treatment. Distance from home to the health facility had a significant impact on the use of health care services and the resulting disease outcomes. Some caretakers may be required to travel for long distances before they access health services (Nyamongo, 2002). In a study conducted in Kenya by Nyamongo (2002), private health facilities were reported to be preferred to public health facilities due to their presumed comprehensiveness. Fewer mothers reported using public health facilities, due to their lack of basic amenities, drugs and qualified health personnel.

Government health services, private practitioners, pharmacies and shops selling OTC medications are concentrated in urban areas. Urban residents use modern services more often and at an earlier stage than rural residents while rural residents turn to traditional therapy (Hobcraft *et al.*, 1985).

### **2.1.2 User fees in health facilities**

User fees were introduced for health care by many African countries in the 1980s' as part of the Structural Adjustment Programmes. In the 1990s', government spending on health care services continued to fall. There were many types of fees, ranging from drug fees, treatment charges, fees set by individual health facilities and unauthorized fees set by providers (Nyamongo, 2002). One of the results of having a range of fees is that it is difficult for patients to assess costs before their treatment.

There is no clear information about fee rates, exemptions are often poorly publicized and many poor people are unaware of their eligibility to free treatment. This has led to fewer poor people using health care services. Knowledge and duration of sickness cost of treatment and patient's judgment of the sickness intensity determined their choice of treatment. Children are more vulnerable as there are no policies safeguarding waiving of fees for children in the health facilities (Nyamongo, 2002).

In Uganda, the effect of user fees was felt most acutely by women. Men in the household who had cash available from crop sales became the main decision-makers in relation to health care. Women were expected to care for the sick children and this meant they had less time available to earn income (Kipp *et al.*, 2001).

Receipt of antibiotics for pneumonia display a socio-economic gradient, as did the correct use of anti malarial treatment. Mothers with insufficient funds never attended hospitals and resorted to the purchase of cheap drugs OTC as they searched for money in

case the situation worsened. The interventions require proper child feeding, vaccines, case management of diarrhea, antibiotics for pneumonia, sepsis and malaria control (WHO, 2000; Alderman *et al.*, 2000).

The use of public health facilities change with the introduction of fees (Hussein and Mujinja, 1997). Mothers do avoid seeking prompt treatment for children with fever at the local health facilities and tend to observe how the child will progress. Once a child was taken to a government health facility, he/she was diagnosed with a more serious condition than ordinary fever, warranting extra costs of treatment. Mothers were maximizing self treatment as a cost saving measure (Kamat, 2006).

In Zambia, people felt user fees had been forced on them even after an apparent consultation process. Some caretakers would be willing to pay for health services if they got value for money, e.g, mission hospitals and traditional healers. As government services had always been free, there was a reluctance to pay and there was lack of confidence about the quality of the services (Housmann, 2000).

In South East Tanzania, people willingness to pay was based on their perception of treatment success. They had a clear understanding that traditional healers were good at treating chronic or mental disorders. Health services were considered better for illnesses such as malaria, schistosomiasis and diarrhea diseases. People were also influenced by the flexibility of the payment system. Health care service providers often demanded money before treatment and wanted payment in cash (Housmann, 2000).

In Kenya 2002, patients tended to start with cost saving measure in the form of self treatment as they evaluated the childrens' condition. Malaria patients moved progressively from self treatment with OTC drugs to the use of private or government health care facilities if the illness extended for a longer period (Nyamongo, 2002). In cases where income had been used specifically to either improve the quality of the service or to buy drugs, people were found to be more willing to pay fees. If there was no visible impact of the fees on services, people were more reluctant to pay. User fee is an unfair mechanism of financing for health services. It represented a barrier to health care access for the poor and the powerless (Gilson and Mills, 1995).

### **2.1.3 Water and sanitation**

Water and sanitation is one of the primary drivers of public health. Environmental factors play a major part in influencing the child morbidity and mortality pattern. WHO (2004) emphasized the importance of addressing environmental factors to reduce the child mortality but question arised as to who has access to sanitation (WHO, 2002). A recent study in 2003 of piped water in India, highlighted how the impact of piped water on child health varied with income and maternal education. Piped water reduced the incidence of diarrhea only among children whose mothers had education above primary level. Access to safe water and sanitation minimize children's exposure to intestinal worms and other infections. Sanitary conditions directly affect household environment and facilitate the incidence of various infectious diseases particularly diarrhea (UNICEF, 2001).

Majority of the pediatric patients attending KNH come from the catchments of low socio-economic status such as slums in Kibera, Kawangware and Mathare. In times of a disaster like the recent post election violence in Kenya in January 2008, the child-hood infections are amplified because of poor access to basic amenities. Once access to clean water and sanitation is secure for all people, irrespective of the difference in their living conditions, a huge battle against all kinds of diseases will be won. In the case of diarrhea, water sanitation and hygiene are important factors in the disease control process (WHO, 2002).

#### **2.1.4 Caretaker factors**

Personal illness factors are critical factors in determining health seeking behaviour. Children by nature cannot seek health care on their own when they are unwell. They are dependent on a care taker and usually the mother does so. Children below two months of age are vulnerable as the severity of their illnesses is underestimated by their caretakers and die before appropriate care is sought (Amarasiri *et al.*, 2001).

Prompt and appropriate health care require a household to recognize promptly when a child is ill and decide early when an illness is to be treated outside home (Hill *et al.*, 2003). Preventive measures need to be assessed by the reported use of preventive services such as immunizations, prophylaxis and antenatal care. For curative measures the providers of care and types of therapy taken for specific conditions were assessed (Mosley and Chen, 1984). However, other preventive factors are parental and dietary care, such as adequate breastfeeding leading to good nutrition. Exclusive breastfeeding

from birth to the first 6 months provide the required nutrients and reduce infant mortality from infectious diseases and malnutrition (Caulfield and Black, 2002).

A study in Coastal Kenya showed that, mothers categorized their children illnesses into serious, mild and mundane. Some illness that presented with symptoms considered 'mundane' such as cough, fever, headache and diarrhea can be life threatening. Perception of the mothers and the decisions of others involved in diagnosing and making decisions for health care determine the promptness with which health care is sought. Delay or lateness in seeking health care or not doing something about a 'mundane' symptom cause serious and fatal consequences (Mwenesi *et al.*, 1995).

Past experiences with similar child hood illnesses motivate a mother to play a waiting game to see if an illness can subside on its own, particularly in situations where the cost of care is a barrier to health care seeking (D' Souza, 2003). In Western Nepal, it was found that medical shops and traditional healers were common sources of medical care (Goldman *et al.*, 2002). Some illnesses are categorized as 'not for-hospital'. Caretakers wait for three days between the onset of illness and visit to a health facility. Mothers gave different reasons for the time lag, though their children were treated promptly within 24 hours of illness onset (Mwenesi *et al.*, 1995).

A few studies have considered maternal perceived severity of illness as a care taker factor associated with disease outcome (Goldman *et al.*, 2002). In 2002, in Kenya, Siaya



District, the median delay in consulting a health provider after onset of symptoms was 2 days. A waiting period of 3.6 days following treatment at home was reported (Nashakira *et al.*, 2002). The mean duration between onset of symptoms and development of severe complications for malaria was 1.8 days and the mean duration between onset of illness and death was 2.8 days (Mwenesi *et al.*, 1995). Most mothers waited up to three days before taking action for malaria, diarrhea, ARI and related conditions. They waited longer for conditions such as tuberculosis, yellow fever and malnutrition (Nyamongo , 2002).

Women are the primary care givers at home and a large proportion of the population (42 %) did not visit modern health facilities and instead sought medical care from traditional healers. Health care seeking behavior is predicted by household size, age and mother's education. Some studies have shown that perceived illness severity, maternal recognition of certain signs and symptoms of childhood illness were critical factors that determined whether the child illness was categorized as a priority or as an emergency (Thind and Cruz, 2003). Women who exerted little control over household financial resources were unlikely to receive sufficient antenatal care during pregnancy (Beegle *et al.*, 2001).

In Kenya, delayed health care seeking contribute to 70 % of child deaths. The decision to take a sick child to a knowledgeable health care provider is associated with socioeconomic status. Poor decision making cause delays as mother in-laws and fathers of the children play a role in the rural areas. Most of the mothers made decisions

regarding the course of action to be taken especially when they notice that the child's health condition deteriorated (De Zoysa *et al.*, 1984).

Mothers are likely to seek appropriate care for their children who had more than one symptom. Parents are less likely to seek medical care for children with one symptom because many of these symptoms resolve on their own. Family members are more likely to seek treatment from a health provider when a child experience fever and gastro intestinal symptoms such as vomiting or diarrhea as compared with respiratory symptoms. This was despite the fact that the symptoms were serious (Goldman *et al.*, 2002).

In reducing child mortality, one of the strategies of IMCI was to educate mothers and/or caregivers on self treatment during children illness, after recovery and on the signs of severe illness (Thind and Cruz, 2003). Maternal education is no longer a significant factor in the control of the mother's childhood endowments but KDHS study revealed a significant association (Behrman and Hoddinot, 2000). The mother's level of education is strongly linked to child survival. Attainment of higher level of education is significantly associated with lower child mortality rates. Education expose mothers to information about better nutrition, use of contraceptives to space births and knowledge about child-hood illnesses and treatment. Mother's education was a more decisive determinant of child survival than husband's occupation and education (KDHS, 2003).

According to Caldwell and Caldwell (2003) educated mothers were likely to be better nourished and willing to ignore harmful food taboos. Lesser education of mothers was associated with lower use of health care services. Educated mothers had higher income and resources for treatment of illnesses so they waited for the illness to subside (Pillai *et al.*, 2003).

Families with a higher economic status seek health care less often, particularly for milder illnesses because the family has the resources needed to obtain care later if illness did not resolve. Children with more than one symptom are more likely to receive prompt care. Although mothers recognized the childhood illness as serious, a large proportion never sought appropriate and prompt care. Children having more than one symptom were more likely to receive prompt care in health facilities (Pillai *et al.*, 2003).

According to Kamat (2006) children of higher birth order are more likely to be born by older mothers and those children may face competition for resources such as food and medical care. The relationship between mothers age at birth and childhood mortality shows children of the youngest and oldest women experience the highest risk of death. The CMR is considerably higher among children born of women who had 40 years and lowest among children whose mothers had 20-29 years at the time of birth. After the neonatal period, first order births showed lower mortality risks than second to sixth births orders (KDHS, 2003). According to KDHS (2003) the length of birth interval had a significant impact on a child's chances of survival, with short birth intervals considerably reducing the chances of survival. Children born less than two years after a

prior sibling suffer substantially higher risks of death than children born after intervals of two or more years.

Mother's income contributes to a decrease in child mortality though what matters is the degree of the woman's control over the use. Women in urban settings exerted little control over household financial resources and received insufficient antenatal care (Beegle *et al.*, 2001). Government centred programmes concentrate much on the mother than other child care takers (KDHS, 2003). Majority of the care takers are unable to access health care services promptly leading to the high child morbidity and mortality. Most of the childhood illnesses are preventable and treatable hence prompt and appropriate care should be an immediate intervention. Caretaker factors determine the disease outcomes hence proper preventive practices and early diagnoses need to be considered. Health care services should be accessible, attainable and affordable to the community.

## **CHAPTER 3**

### **3.0 MATERIALS AND METHODS**

#### **3.1 The Study Area**

The study was carried out at KNH paediatrics medical wards in Nairobi, Kenya. The population in Nairobi was approximately 4 million (CBS, 1999). The KNH is the largest public hospital in Kenya and is located 2 Kilometres from the City Centre. It serves as the main Government funded hospital, main referral and university hospital. The average bed occupancy rate goes to 300 %. At any given day the hospital hosts in its wards between 2,500 and 3,000 patients. On average the hospital caters for over 89,000 in-patients and over 600,000 outpatients annually. The pediatric department handles 57,106 outpatients and 9,656 inpatients annually.

The hospital has a bed capacity of 1,800 with 50 wards, 20 out-patient clinics, 24 theatres (16 specialized) and a casualty department. It is both a referral centre for paediatric cases (defined as up to 12 years of age), as well as a primary health facility for sick children. Mostly it serves the residents of Nairobi and a sizeable number of children from the bordering districts. A few children, mostly referral cases requiring sub specialist care and more intensive management come from far flung districts.

User fees are charged on all patients including children of all ages against the Kenya Government policy on cost sharing. Sick children below 12 years with medical conditions are first seen at the Pediatric Filter Clinic (PFC) before being admitted in pediatric medical wards. A triage system is in place at the registration point upon entry into the clinic. Children with emergency or priority signs are noted and moved to a designated resuscitation area where clinicians trained in ETAT attend to them. Children who are less than 24 hours old and delivered outside the hospital and those delivered at KNH are admitted in the New Born Unit.

### **3.2 Study Design**

A cross-sectional study design was used where data were collected at one point time in the month of September 2008.

### **3.3 Study population**

The study population comprised of children under five years old and their caretakers/guardians at Kenyatta National Hospital paediatric medical wards.

### 3.4 Sampling

#### 3.4.1 Sample size

In 2007 the admitted patients in KNH were 9,656. Using the Fisher's exact test (Fishers *et al.*, 1998), the minimum sample size was determined to be 153.

The formula for sample size determination was  $n = Z^2 p Q / d^2$ , where

$n$  = Required sample size  $Q = 1 - p$

$Z$  = Confidence level at 95 % (standard value of 1.96)

$p$  = Estimated prevalence of under five mortality in Kenya 11.5% (KDHS, 2003)

$d$  = Level of precision at 5% (standard value of 0.05).

$$n = \frac{1.96^2 \times 0.115 \times (1 - 0.115)}{0.05^2} = 156$$

But since the study population is  $\leq 10,000$  finite population correction factor was used with an assumed study population of 9,656. The actual sample size was calculated as follows,

$$n_f = \frac{Nn}{N + (n - 1)}$$

$$N + (n - 1)$$

$$9656 \times 156 / 9656 + (156 - 1) = 153$$

#### 3.4.2 Inclusion criteria

All children under five years old and their guardians/parents on admission at Kenyatta National Hospital paediatric medical wards during the acute phase of illness.

### **3.4.3 Exclusion criteria**

Surgical or sick children with chronic illness.

Refusal to give informed consent.

Unaccompanied and/or abandoned children.

Patients with critical care needs until they were stabilized.

Children from home admitted before twenty four hours post delivery.

### **3.4.4 Sampling method**

Subjects were selected on a systematic random sampling basis. A sampling frame was developed and divided the target population list into twelve months to get 805 which was divided with 30 days to get 26. Every fifth patient was recruited out of the 26 patients per day by randomizing the first one.

Recruited subjects in the study were assessed clinically and questionnaires (Appendix 1) were administered to patient caretakers to attain the 153 subjects. Three trained assistants were recruited from the pediatric medical wards and trained to assist in data collection. A truncated history was sufficient to determine whether a subject met the set inclusion criteria. The emergency care of the children was not interrupted by the interview or other matters relating to the study.

### **3.5 Ethical considerations**

Data collection emphasized on issues of confidentiality by restricted access to the information collected and coding of questionnaires. Approval was sought from KEMRI Scientific Steering Committee and Ethical Review Committee for Scientific and Ethical



issues. Kenyatta National Hospital authorities were notified about the study. Parents/guardians were requested and agreed to participate in the project and subsequently signed the informed consent form (Appendix 2). Very sick patients were referred to the attention of health care workers before questionnaires were administered to the guardians.

### **3.6 Data collection**

Semi-structured questionnaires (SSQ) (Appendix 1) were developed and pre-tested among 25 mothers/guardians to the children admitted in the pediatric medical wards but were not included in the analysis of results. After pre-testing the necessary modifications were made in the questionnaires which were administered after prior consent of subjects. Observation of the existing patient's records was done to corroborate the data recorded on the SSQ. Clinical examination on children was carried out and information documented in a clinical assessment sheet (Appendix 3).

### **3.7 Data cleaning and analysis**

Data from the interviews was recorded in questionnaires and a structured clinical data collection record. Each questionnaire had a unique identifier to allow for validation and the results were expressed as rates and proportions. The association between dichotomous discrete variables was expressed using Pearson's Chi-square and Fishers exact. Categorical variables were compared using Chi square test. Descriptive statistics including mean, standard deviation frequency distribution and proportions were done for different groups i.e. sex, education, age, marital status and level of education.

Multivariate and univariate analysis for comparisons of predictor variables was tested separately and then included those variables that were significant in a multivariate analysis. Variables with  $P < 0.05$  in the logistic regression were considered to have a significant association with the disease outcome. Logistic regression was performed on multiple variables hypothesized to explain ETAT disease outcome classification after a clinical assessment. Independent variables were factored in as hypothesized predictors, namely, mother occupation, father occupation, symptoms, immunization status, age, residence, length of exclusive breast feeding, duration of illness, duration of seeking treatment before attending KNH and gestation period. Backward conditional method was used to establish true predictors. The predictors of disease outcome were estimated by the calculation of Odds Ratios (OR), 95% Confidence Interval (CI) and a  $P$  value  $< 0.05$  was considered as significant.

### **3.8 Codes definition**

Dependent variable: Disease outcome (0 = Emergency, 1 = Priority)

Independent variables:

- Mother occupation (1 = Unemployed, 2 = Informal, 3 = Formal (reference category))
- Length of exclusive breast feeding (0= Less than 4 months, 1= More or equal to 4 months)
- Duration of illness (0 = Less than 2 months, 1= More or equal to 2 months)

### **3.9 Assumptions of Logistic regression**

Absence of multicollinearity.

If outcome is continuous then multiple regression is more powerful.

Using discrete variable requires that there are enough responses in every category.

The dependent variable should be dichotomized with no outliers in the data.

A larger sample is recommended in fitting with the maximum likelihood method (Tabachnick and Fidell, 2001).

## CHAPTER 4

### 4.0 RESULTS

#### 4.1: Socio economic and demographic factors among the patient's caretakers

A total of 156 participants were selected for the study at KNH Pediatric medical wards.

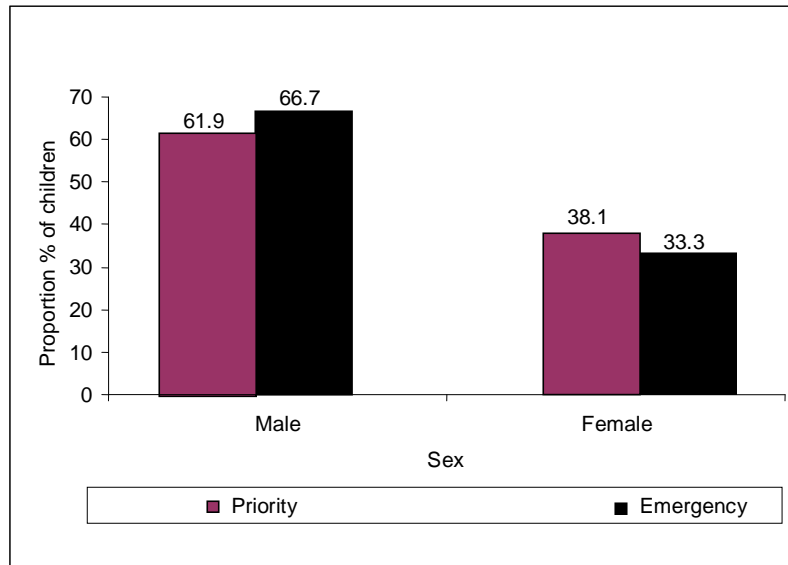
The childrens' mean ages in months for males was 17 while females was 16 in emergency, while in priority females had a mean of 14.3 months and males 12.3 months.

Table 4.1 shows the distribution of the study participants according to age and sex.

**Table 4. 1: Distribution of age and sex by disease outcome of 156 children's admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Disease outcome	Sex	n	Mean age in Months $\pm$ SD	95% C. I. of the mean	
				Lower	Upper
Emergency	Male	48	17 $\pm$ 15.4	12.6	21.4
	Female	24	16 $\pm$ 13.3	10.7	21.3
	Total	72	16.7 $\pm$ 14.7	13.3	20.1
Priority	Male	52	12.3 $\pm$ 11.9	9.1	15.5
	Female	32	14.3 $\pm$ 14.1	9.4	19.2
	Total	84	13.1 $\pm$ 12.8	10.4	15.8

Gender distribution of children was not significantly different between emergency and priority disease outcomes  $P > 0.05$ . The ratio of Male to Female children was 1:1, with a distribution of 56% to 44% respectively. Distribution of children among priority and emergency categories is shown in Figure 4. 1.



**Figure 4. 1: Distribution of sex distribution by children's disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Among 156 children, 9 % breastfed for <1 month, 87.9 % breastfed for between 1-4 months, the rest breastfed for more than 4 months Table 4.2. There was a significant association between length of exclusive breast feeding and disease outcome ( $P < 0.05$ ).

**Table 4.2: Distribution of length of exclusive breastfeeding by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Length of exclusive breast feeding Months	Disease outcome		Total %, n=156
	Emergency %, n=72	Priority %, n =84	
< 1	4.2	13.1	9.0
1 - 2	45.8	46.4	46.2
3 - 4	43.1	40.5	41.7
> 4	6.9	0	3.1
Total	100	100	100

Majority of the children (91%) were either first or second born. Distribution of birth order was comparable in both priority and emergency categories Table 4.3

**Table 4.3: Distribution of birth order by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Birth order	Disease outcome					
	Emergency		Priority		Total	
	n	%	n	%	n	%
1 <sup>st</sup>	31	43.1	37	44.0	68	43.6
2 <sup>nd</sup>	35	48.6	39	46.4	74	47.4
3 <sup>rd</sup>	5	6.9	7	8.3	12	7.7
4 <sup>th</sup>	1	1.4	1	1.2	2	1.3
Total	72	100	84	100	156	100

Majority of the children were introduced to porridge among others. There was no association between food introduced to children and disease categories.

**Table 4.4: Distribution of food introduced by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Introduced food			Introduced food		
food	n	%	food	n	%
None	33	21.2	Beans	1	0.6
Banana	33	21.2	Ugali	2	1.3
Cow's milk	35	22.4	Soup	3	1.9
Porridge	110	70.5	Kales	2	1.3
Pumpkin	44	28.2	Fruits	3	1.9
Potatoes	20	12.8	Water	1	0.6
Pig weed	2	1.3			
Vegetables	22	14.1			
Nan milk	3	1.9			
Pawpaw	13	8.3			
Spinach	11	7.1			
Carrots	2	1.3			

Majority of the caretakers introduced food to children at less than two months both in emergency and priority categories.

**Table 4.5: Distribution of age at introduction of food by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

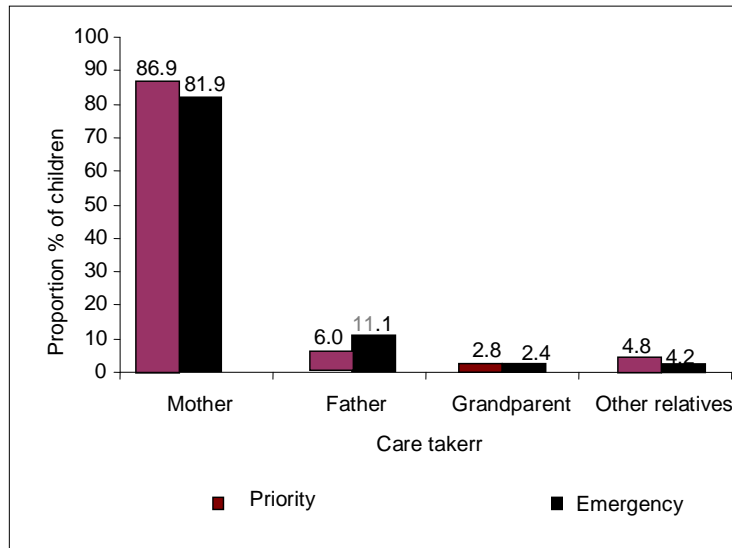
Age at introduction of food	Disease outcome			
	Emergency		Priority	
	n	%	n	%
< 2 Month	42	70.0	33	52.4
2 Month and above	18	30.0	30	47.6
Total	60	100	63	100

Majority of the caretakers had one sibling both in emergency and priority categories.

**Table 4.6: Distribution of number of siblings by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Number of siblings	Disease outcome			
	Emergency		Priority	
	n	%	n	%
1	37	51.4	41	48.8
2	28	38.9	33	39.3
3 and above	7	9.7	10	11.9
Total	72	100	84	100

Majority of the caretakers (84.6%) were mothers while only 15.4% were grandparents and other relatives as shown in Figure 4.2



**Figure 4. 2: Distribution of children’s caretakers by disease outcome of 156 children’s admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Age distribution for mothers and fathers between priority and emergency categories was not significantly different. Majority of the parents aged between 26 – 28.8 years as shown in Table 4.7 below.

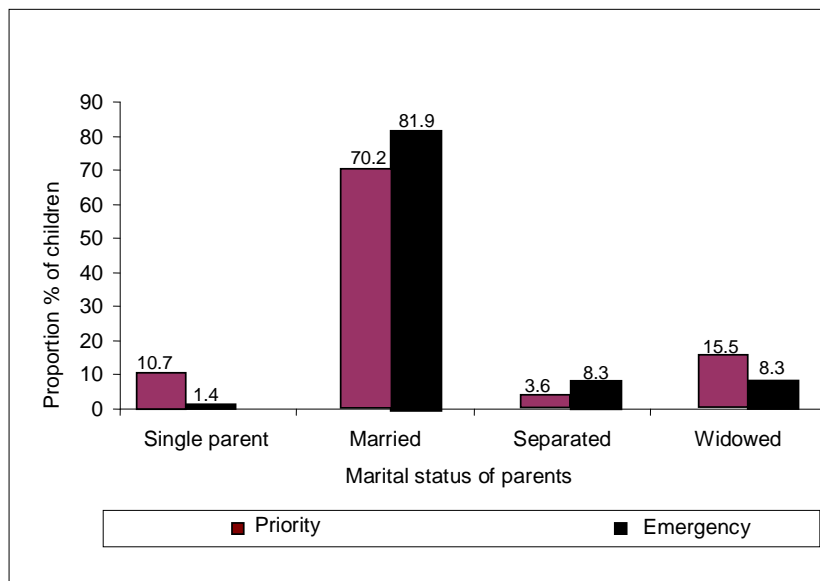


**Table 4.7: Distribution of age of parents by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Disease outcome	Parent	n	Mean age of	95% C.I of mean	
			parent in Yrs $\pm$ SD	Lower	Upper
Emergency	Mother	70	26.2 $\pm$ 7.5	24.4	28.0
	Father	67	27.4 $\pm$ 6.8	25.8	29.0
Priority	Mother	84	26.0 $\pm$ 6.4	24.6	27.4
	Father	61	28.8 $\pm$ 6.8	27.1	30.5

Majority of the guardians were married, the rest constituted of widowed, divorced, single or separated. Married and separated guardians were associated with emergency disease outcomes while single and widowed mothers were associated with priority category.

However, this association was not statistically significant as shown in Figure 4.3.



**Figure 4.3: Distribution of parent's marital status by disease outcome of 156 children's admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

#### 4.2: Duration of illness of children

Mean duration of illness was significantly different between emergency and priority disease categories, 9.8 and 6.2 days respectively ( $P < 0.05$ ) as shown in Table 4.8. The mean difference between males and females in emergency cases was 2.1 while in priority disease outcomes was 0.2. A longer duration of illness was associated with longer time in seeking treatment ( $r=0.80$ ,  $P < 0.05$ ).

**Table 4.8: Distribution of children’s duration of illness and seeking treatment prior to admission by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Duration of illness	Sex	n	Mean in days $\pm$ SD	95% C. I of mean	
				Lower	Upper
Disease outcome					
Emergency	Male	48	9.1 $\pm$ 5.8	5.8	10.6
	Female	24	11.2 $\pm$ 6.1	6.1	15.0
	Total	72	9.8 $\pm$ 7.9	7.9	11.4
Priority	Male	52	6.1 $\pm$ 3.4	3.4	6.8
	Female	32	6.3 $\pm$ 3.8	3.8	7.1
	Total	84	6.2 $\pm$ 3.6	3.6	6.7
Duration for seeking treatment					
Disease outcome					
Emergency	Male	48	6.5 $\pm$ 5.3	5.0	8.0
	Female	24	6.3 $\pm$ 9.5	2.5	10.1
	Total	72	6.4 $\pm$ 6.9	4.8	8.0
Priority	Male	52	4.1 $\pm$ 2.4	3.4	4.8
	Female	32	4.0 $\pm$ 2.3	3.2	4.8
	Total	84	4.1 $\pm$ 2.4	3.6	4.6

### 4.3: Mother's antenatal visits and gestation period

A large proportion of mothers 142 (91.0 %) attended antenatal clinic less than 4 times while the rest 14 (9.0 %) attended more than 4 times in both emergency and priority categories as shown in Table 4.9 below.

**Table 4.9: Distribution of mother's antenatal visits by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Antenatal Visits	Disease outcome					
	Emergency		Priority		Total	
	n	%	n	%	n	%
< 4 times	66	91.7	76	90.5	142	91.0
>= 4 times	6	8.3	8	9.5	14	9.0
Total	72	100	84	100	156	100

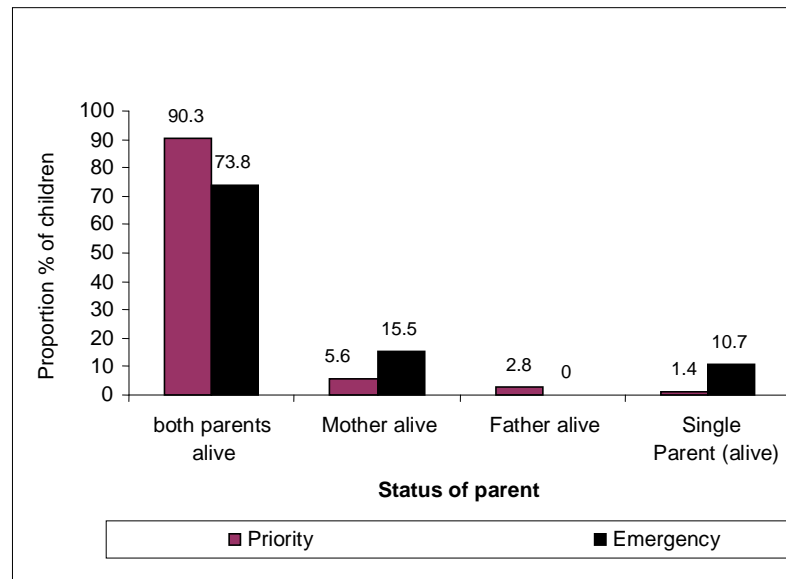
Gestation period for mothers was between 36-40 weeks. Mother's mean duration of delivery in weeks was 37.8 for males and 38.3 for female children in the emergency category, while in priority were 38 weeks both for males and females as shown in Table 4.10.

**Table 4.10: Distribution of mother’s gestation period by disease outcome of 156 children’s admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Disease outcome	Sex	n	Mean	SD	Median	Min	Max
Emergency	Male	48	37.8	0.9	38	36	39
	Female	24	38.3	1.0	38.5	36	40
	<b>Total</b>	<b>72</b>	<b>37.9</b>	<b>1.0</b>	<b>38</b>	<b>36</b>	<b>40</b>
Priority	Male	52	38.0	1.0	38	36	40
	Female	32	38.0	1.1	38	36	40
	<b>Total</b>	<b>84</b>	<b>38.0</b>	<b>1.0</b>	<b>38</b>	<b>36</b>	<b>40</b>

#### **4.4: Status of parents**

Figure 4.4 below clearly depicts that majority of the children had both parents alive 90.3% and 73.8% both in emergency and priority categories, a small proportion had lost their mother. Distribution of status of parents by outcome was comparable. There was no significant difference between emergency and priority category.



**Figure 4.4: Distribution of parent’s status by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

**4.5: Level of education of parents**

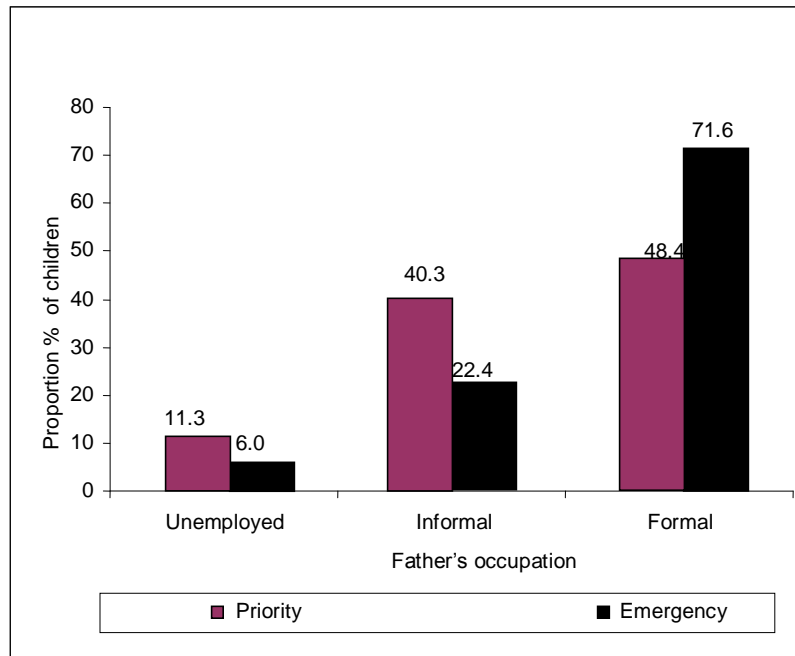
A higher proportion 34.9 % of fathers had completed secondary education both in emergency and priority disease outcomes (Table 4.11.). However, there was no association between father’s education and disease outcomes ( $P>0.05$ ). Majority of the mothers both in emergency and priority category had partial primary education. There was no association between level of education of parent and disease outcome. Only 16.9 % of the mother’s completed secondary education and above while 42.7 % of the fathers attained the same.

**Table 4.11 Distribution of parent’s level of education by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

	Disease outcome					
	Mother’s Level of Education			Father’s Level of Education		
	Emergency %, n =70	Priority %, n = 84	Total %, n = 154	Emergency %, n =67	Priority %, n = 62	Total %, n=129
Non Formal	1.4	4.8	3.2	1.5	1.6	1.6
Part Primary	44.3	31.0	37.0	19.4	11.3	15.5
Completed						
Primary	18.6	22.6	20.8	23.9	24.2	24.0
Part						
Secondary	22.9	21.4	22.1	14.9	17.7	16.3
Completed						
Secondary	12.9	17.9	15.6	32.8	37.1	34.9
Tertiary	0	2.4	1.3	7.5	8.1	7.8
Total	100	100	100	100	100	100

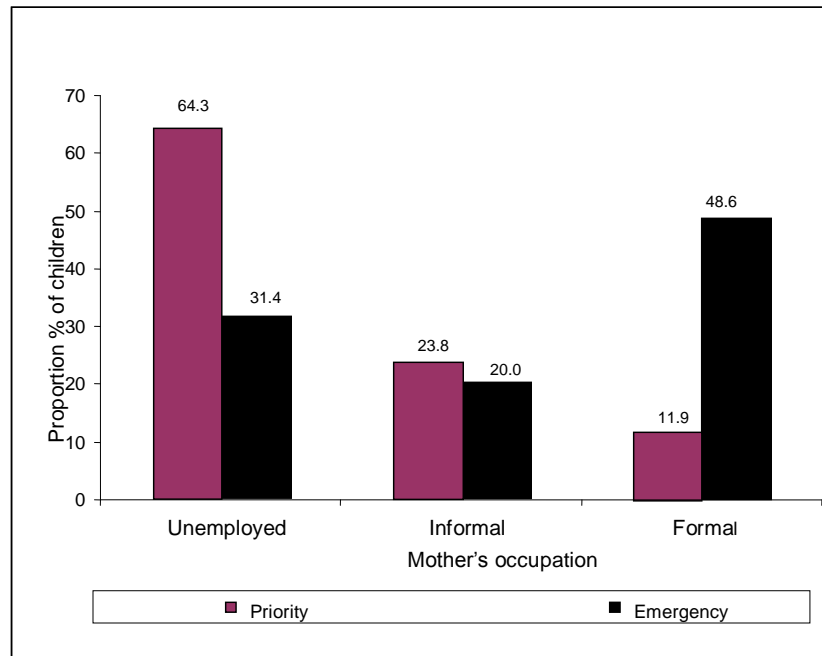
#### **4.6: Occupation of parents**

Majority of the fathers were formally employed with a higher proportion of their children being in emergencies category 71.6 % than priority 48.4 % disease category. There was a significant association between father’s occupation and disease outcome (P< 0.05).



**Figure 4.5: Distribution of father's occupation by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Majority 64.3 % of mothers were unemployed, their children were classified in priority category as compared to 31.4 % in emergency category. The proportion of formally employed was 48.6 % compared to 11.8 % in emergency category. Just like father's occupation, there was a significant association between mother's occupation and disease outcome ( $P < 0.05$ ).



**Figure 4.6: Distribution of mother's occupation by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

**4.7: Prediction of disease outcomes leading to patient's poor prognosis**

The major reported symptoms from the children were diarrhea, vomiting, cough and fever. Children were presented at the clinic with single or multiple complaints. Table 4.12 below shows symptoms that were reported.



**Table 4.12: Distribution of children’s symptoms by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Symptoms	Emergency (n=72)		Priority (n=84)		Total (n=156)	
	n	%	n	%	n	%
Diarrhea	28	38.9	26	31.0	54	34.6
Vomiting	30	41.7	23	27.4	53	34.0
Cough	21	29.2	35	41.7	56	35.9
Difficulty in breath	17	23.6	23	27.4	40	25.6
Pain	14	19.4	12	14.3	26	16.7
Bodily hotness	51	70.8	64	76.2	115	73.7
Chronic disease	4	5.6	4	4.8	8	5.1
Swelling of the feet	8	11.1	6	7.1	14	9.0
Wasting	9	12.5	4	4.8	13	8.3
Convulsion	8	11.1	13	15.5	21	13.5
Refusal to feed	44	61.1	41	48.8	85	54.5
Difficulty arousing	5	6.9	9	10.7	14	9.0
Yellow eyes	0	0.0	2	2.4	2	1.3
Poor weight gain	1	1.4	0	0.0	1	0.6
Poor appetite	1	1.4	0	0.0	1	0.6
Palpitation	0	0.0	1	1.2	1	0.6
Fatigability	0	0.0	1	1.2	1	0.6
Headache	0	0.0	1	1.2	1	0.6
Excessive cry	0	0.0	2	2.4	2	1.3
Difficulty in feeding	0	0.0	1	1.2	1	0.6

#### **4.8 Response of caretakers to children’s illness and disease outcomes**

Prior to admission, it was observed that only 11.5 % of the patients attended KNH directly from home. Majority of the patients attended other public health facilities (39.7%) while 8.4 % children sought medical care from either private clinics or traditional medical practitioners before attending KNH. Table 4.13 shows the pattern of pre-hospitalization in medical care. There was no association between health care

seeking routes and disease outcome.

**Table 4.13: Distribution of caretaker’s health care seeking route by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

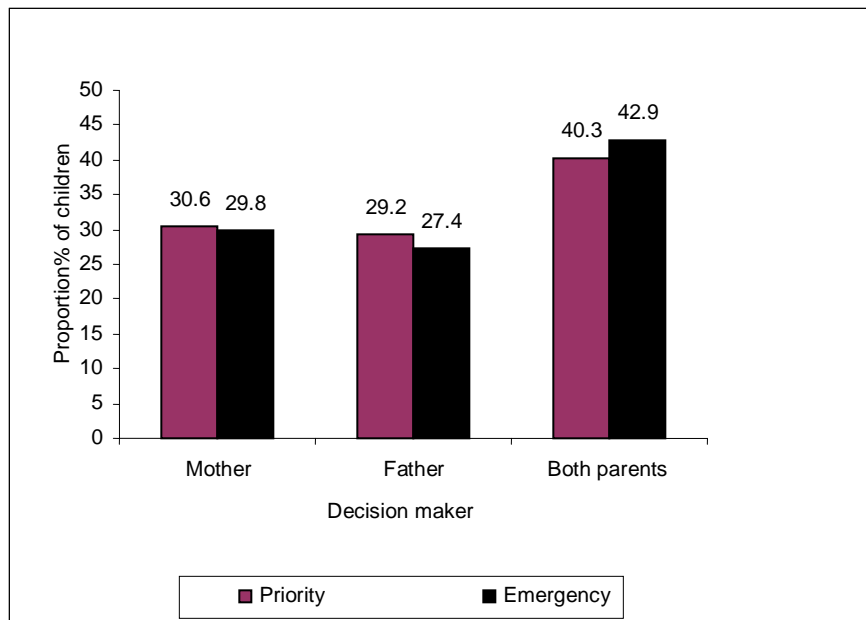
Health care seeking route	Disease outcome		Total %, n= 156
	Emergency %, n=72	Priority %, n= 84	
Home → Shop → KNH	15.3	14.3	14.7
Home → Shop → Pharmacy → KNH	2.8	6.0	4.5
Home → Pharmacy → KNH	25.0	17.9	21.2
Home → Other hospital/health centre KNH	44.4	35.7	39.7
Home → Private clinic → KNH	6.9	7.1	7.1
Home → Traditional medicine → KNH	1.4	1.2	1.3
Home → KNH	4.2	17.9	11.5
Total	100	100	100

The 156 caretakers gave reasons for health care sought in a particular facility. There were predominant reasons, namely, distance from home to health facility (37.3%), cost of treatment (22.9%) and time spent while seeking treatment in the health facility (24.2%). Other reasons mentioned by a few caretakers were included in Table 4.14.

**Table 4.14: Distribution reasons for choice of healthcare sought by disease outcome of 156 children’s admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Reasons for choice of healthcare sought	Disease outcome		
	Emergency % n = 114	Priority % n = 122	Total % n = 236
Distance from home to health facility	40.4	34.4	37.3
Cheap treatment	24.6	21.3	22.9
Free treatment	9.6	13.9	11.9
Quick services to patients	24.6	23.8	24.2
Specialized personnel	0	3.3	1.7
Qualified personnel	0.9	2.5	1.7
Comprehensive services	0	0.8	0.4
Total	48.3	51.7	100

Making of the decision to take the child to hospital was made mostly by both parents in emergency and priority category, while fathers were the least in both categories as shown in Figure 4.7 below.



**Figure 4.7: Distribution of decision maker by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Majority of the caretakers bought medication due to fever 39.7%, malaria 21.8% cough and the least was vomiting comprising of 9.6%.

**Table 4.15: Distribution of illness among caretakers who bought un-prescribed medication by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Illness	n	%
Cough	33	21.2
Diarrhea	27	17.3
Malaria	34	21.8
Vomiting	15	9.6
Fever	62	39.7

There was no significant association between disease outcome and what made caretakers worry on bringing children to KNH for treatment, majority 57.1% were worried due to expensive services at Kenyatta National Hospital.

**Table 4.16: Distribution of worries on attending KNH for treatment by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Worries on bringing children to KNH for treatment	n	%
Long Queues	85	54.5
Indifferent	21	13.5
Expensive	89	57.1
Nothing worries me	16	10.3

There was no significant association between disease outcome and place of residence, sanitation, water access, house material/ occupation and number of occupants ( $P>0.05$ ).

**Table 4.17: Distribution of environmental factors by disease outcome** of 156

children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.

Variable/category	Emergency		Priority		P value
	n	%	n	%	
<b>House material</b>					
Wood	32	54.2	27	45.8	0.402
Iron sheets	22	41.5	31	58.5	
Stones	17	47.2	19	52.8	
<b>House occupation</b>					
Residential	2	33.3	4	66.7	0.683
Rental	68	48.6	72	51.4	
<b>Number of occupants</b>					
0 to 3	47	52.8	42	47.2	0.074
>3	25	37.3	42	62.7	
<b>Access to water</b>					
Running tap water in house	16	39.0	25	61.0	0.114
Running tap water in compound	35	47.3	39	52.7	
Water vendors	18	66.7	9	33.3	
Others	1	25.0	3	75.0	
<b>Sanitation</b>					
Flush toilet in house	15	41.7	21	58.3	0.443
Latrine in compound	55	50.5	54	49.5	
<b>Place of Residence</b>					
Nairobi	67	48.6	71	51.4	0.132
Else where	5	27.8	13	72.2	

There was no significant association between disease outcome and buying of unprescribed medication before taking a child to health care provider, source of medication, frequency of buying medicine, taking the child or sibling to a herbalist before or during the illness, insurance cover, payment of bills, child welfare / immunization card and immunization status ( $P > 0.05$ ).

**Table 4.18: Distribution of health seeking factors by disease outcome** of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.

Variable/category	Emergency		Priority		P value
	n	%	n	%	
Buying of unprescribed medication before taking a child to health care provider					
Yes	36	41.9	50	58.1	0.261
No	36	51.4	34	48.6	
Source of medication before taking a child to healthcare provider					
Pharmacy	21	45.7	25	54.3	0.257
Health centre / Clinic	1	14.3	6	85.7	
Shop	14	45.2	17	54.8	
Herbal medicine	0	0.0	2	100.0	
Frequency of buying medicine					
Sometimes	53	51.0	51	49.0	0.105
Always	1	14.3	6	85.7	
Never	18	40.0	27	60.0	
Ever taken the child or sibling to a herbalist before the illness					
Yes	18	42.9	24	57.1	0.469
No	52	50.0	52	50.0	
Ever taken the child or sibling to a herbalist during the illness					
Yes	18	42.9	24	57.1	0.469
No	52	50.0	52	50.0	
Insurance					
Insured	22	30.6	50	69.4	0.914
Not insurance	25	29.8	59	70.2	
Payment of bills					
Self	38	38.8	60	61.2	0.043
Relative	23	62.2	14	37.8	
Insurance	11		10		
Child welfare / immunization card					
Produced	29	45.3	35	54.7	0.615
Not produced	39	50	39	50	
Immunization status					
Completed	68	47.9	74	52.1	0.261
Uncompleted	74	88.1	10	11.9	

#### 4.9 Predictor of disease outcome

After successful iterations, mother’s occupation, length of exclusive breast-feeding and duration of illness emerged to be the true predictors of disease outcome. The resulting model is tabulated below;

**Table 4.19: Logistic regression predicting mother’s occupation, length of exclusive breast feeding and duration of illness by disease outcome of 156 children admitted at Kenyatta National Hospital Pediatric medical wards, 2008.**

Independent predictors	P value	Odds ratio	95% C.I.for Odds ratio	
			Lower	Upper
Mother’s occupation				
Unemployed	<0.001	10.4	3.9	27.9
Informal	<0.001	7.6	2.4	23.4
Length of exclusive breast feeding (Months)	0.006	3.1	1.4	7.1
Duration of illness (Days)	0.012	3.09	1.34	7.14

Table 4.19 shows odds ratio for each of the predictors. Exclusive breast-feeding emerged to impact significantly on disease outcome. Children that were not breast-fed exclusively for more than 4 months had a 3-fold risk of being a priority case. With regard to duration of illness, children who stayed more than 2 month before seeking health care at KNH had a 3-fold risk of becoming priority cases. The same scenario was seen with respect to employment status. Using formal employment as the reference category for mother occupation, the odds of priority outcome for unemployed compared to formal was 10.4 and for informal employment compared to formal was 7.6.



## **CHAPTER 5**

### **5.0 DISCUSSION**

This study sought to address an issue that was of concern in the pediatric clinical arena at KNH. Majority of the mothers were aged between 20-30 years and sought health care services in other institutions before attending KNH. In Kenya, Magadi *et al.*, (2000) and in Malawi, Kandala *et al.*, (2006) revealed that children born to younger mothers of 20 years were found to have a relatively high risk of morbidity. This was due to the fact that the younger mothers were less likely to attend obstetric and antenatal clinics, where they would be educated on childcare than their older counterparts.

A large proportion of the mothers 75.6 % were married, only 6.4 % were single parents. Majority belonged to low socio economic class, unemployed 49.4 % against 28.6 % in the formal employment. An assessment demonstrated that, the quality of health care provided to children in low-income countries was often poor and had a considerable scope for improvement. Low socio economic status was associated with poor disease outcomes (Nolan *et al.*, 2001; English *et al.*, 2004). Mothers played a waiting game to see if an illness would subside on its own, particularly in situations where the cost of care was a barrier to health care seeking (D' Souza, 2003).

A study in Malawi found no clear and consistent relationship between the age of a mother and the risk of diarrhea, cough and fever in their young children (Kandala *et al.*, 2006).

In this study, mothers and fathers had a mean age of 26-28.8 years, respectively, both in emergency and priority disease outcomes. The CMR is considerably higher among children born of women who are 40 years and lowest among children whose mothers are 20-29 years at the time of birth (KDHS, 2003). The results from this study differ with those of KDHS because subjects from this study were from a unique population of sick children.

Majority of mothers had part primary education both in emergency and priority cases.

There was no significant association between caretaker's level of education and disease outcome. Lesser education of mother was associated with lower use of health care services. Educated mothers had higher income and resources for treatment of illnesses so they waited for the illness to subside (Pillai *et al.*, 2003). Only 16.9 % of the mothers completed secondary education and above while 42.7 % of the fathers attained the same. Mother's education was a more decisive determinant of child survival than other family characteristics such as husband's occupation and education (KDHS, 2003).

Of the caretakers, mothers comprised the majority 132 (84.6 %) and fathers 13 (8.3 %).

This probably reflects the fact that unemployment and homemaking were more prevalent in the mothers compared to fathers. As a result more mothers were available to bring their children to hospital.

In this study the mean ages for male children was 14 months while females had 10 months. There was a significant association between length of exclusive breast feeding and disease outcome. After 8–10 months of life when a child had developed immunity, a child's age had little effect on the risk of morbidity (English *et al.*, 2004). The rapid deterioration seen in the health of children in their first 8 months of life was unexpected and probably reflected the common, rapid replacement of breast milk with poor quality food and water and a general lack of immunity to the pathogens causing the morbidity (Kandala *et al.*, 2006). In a Nigerian study, unlike the findings from a related Kenyan survey, children aged 1–2 years appeared most vulnerable to diarrhea, cough and fever (Magadi *et al.*, 2000).

This study showed that, childhood immunization was not directly a factor associated with disease outcome. Theoretically childhood vaccines do prevent common childhood diseases. This was consistent with a large body of evidence that supported an influence of maternal education on child mortality, increased use of well-baby clinics (Cebu, 1991) and uptake of immunization services (Pebley *et al.*, 1996). Children's age and feeding practices had a significant impact on outcome of diarrhea and respiratory diseases among children in Kenya (WHO, 2002).

In this study there was no significant relationship between type of house, number of occupants, birth order, birth interval, number of siblings, stage at weaning, water sanitation, place of residence, antenatal visit and gestation at delivery in regard to disease outcome. Children's age, birth interval, weaning, household size and

environmental conditions had a significant impact on outcome of diarrheal and respiratory diseases among children in Kenya (WHO, 2002). In Nigeria mother's residential setting, household economic status, partner's education and antenatal visits had a strong link to health seeking behavior (Olaogun *et al.*, 2006). Magadi *et al.*, (2004) antenatal care is identified as a central link between various sociodemographic or reproductive factors and disease outcomes.

In the current study there was no significant association between buying of unprescribed medication or attending to a herbalist and disease outcome. In Zimbabwe mothers in urban slums were reported to consult modern medical practitioners as their first source of healthcare but when the illness persisted they switched to traditional healers (De Zoysa *et al.*, 1984).

Many residents from within and near Nairobi brought their children to KNH, notwithstanding that it is a tertiary and referral institution. There was a significant association between duration of illness and duration of seeking treatment before visiting KNH ( $r = 0.80$ ,  $P < 0.05$ ). The kind of healthcare given to the children hitherto being brought to KNH was in most cases unverified. Many of the children attended in the peripheral health facilities had no referral letters or when available were too brief. In Siaya, a trained health care provider saw only 58 % of children who died in the village. Only 10 % of those who died had been referred for higher level care after being seen in a lower health facility (Renu *et al.*, 2001).

In the current study, majority of caretakers 39.7 % attended other hospital/health centres before attending KNH, 1.3 % resorted to herbal medicine. Nyamongo (2002) cited that hospital costs determined whether caretakers would take their children to another primary level health facility or to a local healer. Meanwhile, lots of time had been wasted on inappropriate treatment on the assumption that the child could be treated. The progressive exhaustion of options seen in this study is a reflection of mushrooming private practice that is on the rise. Private health facilities were reported to be preferred to public health facilities due to their presumed comprehensiveness. Fewer mothers reported using public health facilities due to their lack of drugs and qualified health personnel (Nyamongo, 2002).

In regards to reasons where health care was sought, there were three predominant reasons, namely, distance from home to health facility (37.3 %), cost of treatment (22.9 %) and time spent while seeking treatment in the health facility (24.2 %). Distance from home to the health facility had a significant impact on the use of health care services and the resulting disease outcomes (Nyamongo, 2002). The use of public health facilities change with the introduction of fees (Hussein and Mujinja, 1997).

In this study the mean time duration of seeking treatment before attending KNH was 6 and 4 days for emergency and priority disease outcomes respectively. The mean duration between onset of symptoms and development of severe complications for malaria was 1.8 days and the mean duration between onset of illness and death was 2.8 days

(Mwenesi *et al.*, 1995). Most mothers waited up to three days before taking action for malaria, diarrhea, ARI and related conditions. They waited longer for conditions such as tuberculosis, yellow fever and malnutrition (Nyamongo, 2002). Some caretakers started self-treatment, decided not to seek treatment or waited for the problem to disappear (Chandrashekar and Ravi, 2006).

It is common practice in the treatment of childhood illnesses for caretakers to assume that any febrile illness is malaria. This leads to taking anti malarial drugs for any fever irrespective of the true cause. If the cause is not malaria, this leads to delayed treatment and hence a risk factor for developing more complications. It would therefore be prudent to seek proper consultation at the onset of any illness to prevent poor disease outcome (WHO, 2002).

## **CHAPTER 6**

### **6.0 CONCLUSIONS AND RECOMMENDATIONS**

#### **6.1 CONCLUSIONS**

1. This study revealed the importance of caretakers' socio economic status, mother's breastfeeding practices and health care seeking behavior in predisposing children to illnesses.
2. Findings obtained in the present study showed factors associated with disease outcome as length of exclusive breast feeding, duration of illness and mother's occupation.
3. The mean duration of seeking treatment before attending KNH was 6 and 4 days in emergency and priority disease outcome respectively.
4. Findings from this study showed some weaknesses in the health seeking behavior of the study population. Although mothers generally recognized the symptoms of childhood illness, a large proportion of them did not seek appropriate and prompt care.

## **6.2 RECOMMENDATIONS**

1. There is need to have an effective and functioning referral system in the health care delivery system to ensure children are attended promptly in health facilities at the onset of any illness.
2. Mass communication and vigorous campaign for the population on seeking treatment early in recognized health care institutions. Health education on exclusive breastfeeding practices among mothers to promote children's health.
3. Socio-economic development of the urban community through income generating can reduce poverty levels hence improve healthcare seeking behavior during the childhood illness.
4. Further studies should be carried out to address access and utilization of health care, water sanitation, hygiene, use of herbal remedies and their implications.
5. Scope for further longitudinal study design to address specific management of childhood illness.



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## APPENDICES

### APPENDIX 1: QUESTIONNAIRE /FOMU

Questionnaire serial number/ *Nambari ya questionnaire*    **Ward/Wodi** \_\_\_\_\_

1. Age \_\_\_\_\_ (months) / *Umri* \_\_\_\_\_ (*miezi*)
  
2. Gender/ *Jinsia ya mhojiwa*     1) Male /*Mume*                       2) Female/ *Mke*
  
3. Birth Order/*Je, huyu mtoto amefuatana aje na hao wengine ?*  
 1<sup>st</sup>,  2<sup>nd</sup>,  3<sup>rd</sup>, and  4<sup>th</sup>,  ≥5<sup>th</sup>
  
4. How long was the child exclusively breastfed/*Je mtoto alinyonya kwa mda gani?* \_\_\_\_\_
  
5. What type of foods was the child introduced to/ *Je, mtoto alianza kupewa chakula gani* \_\_\_\_\_?
  
6. At what age was the child introduced to foods including water/*Mtoto alikuwa na umri gani alipoanzishwa chakula/maji?* \_\_\_\_\_
  
7. What is the number of siblings? / *Je, watoto wako ni wangapi?*  
 1) 1<sup>st</sup>  
 2) 2<sup>nd</sup>  
 3) 3<sup>rd</sup>  
 4) 4<sup>th</sup>  
 5) Others (specify) /*Wengine(elezea)* \_\_\_\_\_

8. Relationship of caretaker to the child/ *Uhusiano wa mtoto kwa yule anamshughulikia hospitalini?*

- 1) Mother/*mama*
- 2) Father /*Baba*
- 3) Grandparent/ *Nyanya*
- 4) Other relative (specify)/*Wengine (elezea) \_\_\_\_\_*

9. Status of parents / *Je, wazazi wako hai?*

- 1) Both parents alive/ *Mama na baba wako hai?*
- 2) Father dead/*Baba amekufa*
- 3) Mother dead/*Mama amekufa*
- 4) Single parent (alive) /*Mama/Baba Hajaoa/Hajaolewa*
- 5) Single parent (dead)/ *Mama/baba ametaliki*
- 6) Others specify/ *Nyiginezo(elezea)*

10. Age of mother \_\_\_\_\_yrs  NA

*Umri wa mama \_\_\_\_\_Miaka*  *Haifai*

11. Age of Father \_\_\_\_\_yrs  NA

*Umri wa baba \_\_\_\_\_Miaka*  *Haifai*

12. The house that you stay is made of?/ *Je,nyumba unamoishi imenjengwa na nini ?*

- 1) Wood  2) Iron sheets  3) Stones  4) Others (specify)\_\_\_\_\_
- 1) *Mbao*  2) *Mabati*  3) *Mawe*  4) *Nyiginezo(elezea)*

13. Is the house residential or rental? / *Je, nyumba unamoishi ni yako ama ni ya kukodi?*



14. Number of rooms/ *Je,nyumba unamoishi iko na vyumba vingapi*  1  2  >2.

15. Number of occupants in house/*Je,mnaishi wangapi kwa hiyo nyumba* \_\_\_\_\_

16. Access to water *Je,nyumbani mnapata maji ya matumizi kwa njia gani ?*

1) Running tap water in house/ *Maji ya mfereji kwa nyumba*

2) Running tap water in compound/ *Maji ya mfereji kwa mazingira*

3) Water vendors/ *Kununua kwa wachuuzi*

4) Others e.g. river, etc (specify) *Zinginezo(elezea)* \_\_\_\_\_

17. Sanitation /*Usafi*  1) Flush toilet in house)/ *Choo cha maji kwa nyumba*

2) Latrine in compound/ *Choo cha mazingira*

3) Outside shared facility e.g. Council facility/ *Nje ya nyumba*

4) Others(Specify)/ *Nyinginezo(elezea)*

18. Mother's occupation/ *Hali ya ajira*  1) Unemployed/*Hana kazi*

2) Informal / *Hajasoma*  Farming/*Ukulima*  Business/*Biashara*

Artisan/*msanii*

3) Formal (wage employment) /*Malipo*

<KES 5,000 pm/*Shilingi elfu tano*

KES 5,000-10,000pm/*Shilingi elfu tano-elfu kumi*

KES 11,000- 20,000pm/ *Shilingi elfu kumi na moja-elfu ishirini*

>KES 20,000pm / *Shilingi elfu ishirini*

19. Fathers occupation /*Hali ya ajira*

- 1) Unemployed/*Hana kazi*
- 2) Informal / *Haja soma*     Farming/*Ukulima*     Business/*Biashara*
  - Artisan/*msanii*
- 3) Formal (wage employment) /*Malipo*
  - <KES 5,000 pm/*Chini ya shilingi elfu tano*
  - KES 5,000-10,000 pm/*Shilingi elfu tano-elfu kumi*
  - KES 11,000- 20,000 pm/ *Shilingi elfu kumi na moja-elfu ishirini*
  - >KES 20,000 pm / *Shilingi elfu ishirini*

20. Mothers' level of Education/ *kiwango cha elimu ulichokihitimu*

- 1) None / *Haja soma*
- 2) Part Primary/*Kiasi ya msingi*
- 3) Completed Primary / *Elimu ya msingi*
- 4) Part Secondary/*Kiasi ya upili*
- 5) Completed Secondary / *Shule ya upili*
- 6) Tertiary College/ *Chuo cha kadri*

21. Fathers' level of Education/ *kiwango cha elimu ulichokihitimu*

- 1) None / *Haja soma*
- 2) Part Primary/*Kiasi ya msingi*
- 3) Completed Primary / *Elimu ya msingi*
- 4) Part Secondary/*Kiasi ya upili*
- 5) Completed Secondary / *Shule ya upili*

6) Tertiary College/ Chuo cha kadri

22. Place of Residence/*Mahari unamoishi*

1) Urban(Nairobi) Specify where/*Mjini (Nairobi) Elezea wapi* \_\_\_\_\_

2) Urban (elsewhere)/ *mjini(Pengine)* \_\_\_\_\_

3) Rural/ *Mashabani* \_\_\_\_\_

23. Marital status 1) Single Parent//*Hajaoa*

2) Married/*umeolewa*

3) Separated/ *Ametalaki*

4) Widowed /widower *Amefiwa na bwana/mke*

5) Others ( specify) / *Nyingine elezea*

24. Ante natal visits during pregnancy/ *Je, mama wa huyu mtoto alipokuwa mja mzito,alihudhuria kliniki mara ngapi?*  None/ *Hakuna*  <4  ≥4

25. At what gestation was the child delivered \_\_\_\_\_?

*Mama mtoto alizaa akiwa na mimba ya miezi mingapi* \_\_\_\_\_?

26. Duration of illness *Muda wakuwa na ugonjwa* \_\_\_\_\_ (days) (*Siku*)

27. Symptom(s) 1) Diarrhoea  2) Vomiting 3) Cough

4) Difficulty in breathing  5) Pain  6) Bodily hotness

7) Chronic disease  8) Swelling of the feet

9) Wasting  10) Convulsions 11) Refusal to feed

12) Difficulty arousing  13) Others (specify) \_\_\_\_\_

*Jawabu lilokuleta hospitalini* 1) *Kuhara*  2) *Kutapika* 3) *Kukohoa*

4) *Kushidwa kupumua*  5) *Uchungu*  6) *Joto mwilini*

- 7) *Ugonjwa wa mda mrefu*
- 8) *Kuvimba miguu*
- 9) *Kupungua uzito*
- 10) *Kusimia/kuzilai*
- 11) *Kukataa kukula*
- 12) *Kutojihisi*
- 13) *Nyinginezo(elezea)*

28. Route for health care seeking during current illness.

- 1) Home → KNH
- 2) Home → Shop → Pharmacy → KNH
- 3) Home → Shop → KNH
- 4) Home → Pharmacy → KNH
- 5) Home → Other Hospital/ Health centre → KNH
- 6) Home → Private Clinic → KNH
- 7) Home → Traditional medicine → KNH
- 8) Others (specify) \_\_\_\_\_

*Njia iliyofuatwa kutafuta huduma ya ugonjwa wa huyu mtoto*

- 1) *Nyumbani → Kenyatta*
- 2) *Nyumbani → Duka → Duka la dawa → KNH*
- 3) *Nyumbani → Duka → KNH*
- 4) *Nyumbani → Duka la dawa → KNH*
- 5) *Nyumbani → Hospitali zingine → KNH*
- 6) *Nyumbani → Kliniki ya kibinafsi → KNH*
- 7) *Nyumbani → Matibabu ya kienyenji → KNH*
- 8) *Nyingine (eleza) \_\_\_\_\_*

29. Duration of seeking care in other facilities before attending KNH/ *Je ,ulipeleka mtoto kwa huduma zingine kabla ya kumleta Kenyatta \_\_\_\_\_ (days/Siku)*

30. Who decided to bring the child to hospital?/*Je ninani alitoa idhini ya kuleta mtoto hospitalini?*

1) Mother/ *Mama*

2) Father/ *Baba*

3) Both parents/ *Wazazi wote*

4) Others (specify)/ *Wengine (Elezea) \_\_\_\_\_*

31. What was the first thing you did when your child falls sick?/ *Je ni kitu gani cha kwanza ufanyacho mtoto anapokuwa mgonjwa?*

1) Take child to hospital/clinic the same day/ *Kumpeleka mtoto hospitali siku hio*

2) Wait to see what happens/ *Kungonjea kuona atakapoendelea*

3) Buy medicine from shop pharmacy according to what I suspect/ *Kununua madawa kutoka kwa duka*

4) Others e.g. Pray, (specify)/ *linginelo kama kuomba(elezea) \_\_\_\_\_*

32.Do you buy unprescribed medication before taking your child to a healthcare

provider? *Je, unanua madawa kabla ya kupeleka mtoto kwa mtaalamu wa matibabu?*

1) Yes /*Ndio*

2) No *La*

33. If Yes above, where ?*Kama ndio, wapi?*

34. If Yes above, due to what illness? *Kama ndio kwa ugonjwa gani?*

35. How often do you buy medicine from the local shop as the initial step when your child is unwell?*Je, wewe hununua madawa mara ngapi dukani wakati mtoto amegonjeka?*

1) Sometimes/ *Nyakati zingine*

2) Always/ *Kila mala*

3) Never/ *Bado/La*

36. Have you ever taken this child to a Traditional Doctor before? 1) Yes  2) No

*Je, ushawahi kumpeleka mtoto kwa matibabu ya kienyengi* 1) *Ndio* 2) *La*

37. Had you taken this child to a traditional doctor during this illness? 1) Yes  No

*Je, umeshampeleka huyu mtoto kwa matibabu ya kienyengi* 1) *Ndio* 2) *La*

38. What worries you most when you think of bringing your child to K.N.H? *Je, kunao*

*ushubufu ukileta mtoto hospitalini KNH* 1) Long Queues/ *foleni refu*

2) Indifferent/ Unempathetic staff/ *Wafanyi kazi fedhuli*

3) Expensive (cost)/ *Ghali*

4) Nothing worries me/ *Hakuna kitu hujaliza*

5) Others (Specify)/ *Linginelo(elezea)* \_\_\_\_\_

39. Are you party to any Health Insurance Scheme (Including NHIF) 1) Yes 2) No

*Je, umeshajiunga na chama cha bima* 1) *Ndio* 2) *La*

40. Child Welfare/ immunization card produced 1) Yes  2) No

*Je, una kardi ya kliniki* 1) *Ndio* 2) *La*

41. Immunization status 1) Complete 2) Not complete but up to date

3) Not Completed 4) Don't know

*Je, mtoto alindungwa shindano za kliniki* 1) *Zote* 2) *Hajamaliza lakini*

*anaedelea na matibabu* 3) *Hajamaliza* 4) *Sijui*

## **APPENDIX 2: INFORMED CONSENT**

### **Study title:**

Assessment of caretaker factors associated with disease outcomes in children at KNH,  
Nairobi, Kenya

*Kuangalia sababu zinazoeeneza magonjwa kwenye watoto kutokana na watunzi wa watoto katika Hospitali kuu ya Kenyatta wodi za magonjwa ya kuhusiana na watoto Nairobi-Kenya.*

### **PART A**

#### **Introduction**

You are asked to participate in the study because health professionals have noted children illnesses is a serious problem. Children are brought to hospital when they are very sick and we have to investigate through some questions about the treatment they receive. I want to find the information connected with the diseases related to the parents or guardians and environment in relation to the choice of health facility attended.

#### ***Sehemu ya kwanza***

*Umealikwa kushiriki katika utafiti wa huduma ya afya juu ya magonyjwa ya watoto. Madhumini ya utafiti huu ni kwa sababu watoto huletwa hospitali wakiwa wamegonjeka sana. Ningetaka kujua sababu ambazo zinazababisha kuchelewa kwa watoto kuhudumiwa kwa hospitali kutokana na wahusika ambao wanakaa na hao watoto.*

**Being in the study is your choice**

This consent form gives you information about the study, the risks and benefits, and the process that will be explained to you. Once you understand the study and if you agree to take part, you will be asked to sign your name or make your mark on this form. You will be given a copy to take home. Before you learn about the study, it is important that you know the following:

Your participation in this study is entirely voluntary.

You may decide to withdraw from the study at any time, without facing any consequences.

***Utafiti wa hiari***

*Kushiriki katika utafiti huu ni wa hiari. Uamuzi wako kushiriki au kutoshiriki katika utafiti huu hautaathiri huushiano wako sasa au katika nyakati zijazo na hospitali hii au vitengo vingine vinavyohusika ikiwa utakubali kushiriki, unahaki kuacha kushiriki wakati wowote bila kuhujumu husiano wako.*

**Purpose of the study**

The purpose of the study is to assess factors associated with disease outcomes in children under five years at Kenyatta National Hospital. The study will involve:

Document review of patient's records.

Structured questionnaires with selected key persons.



### ***Kusudi la utafiti***

*Sababu zinazosababisha magonjwa ya watoto Hosipitali kuu ya Kenyatta Wilaya ya-Nairobi, Kenya na itabidi wanao shugulikia watoto kama wa mama kujibu maswali na kuangalia maandishi kwenye karatasi zilizoandikwa na madaktari.*

### **What to expect during the Interview**

I will ask you simple questions regarding your child's illness and factors associated with disease outcomes and a clinical assessment will be conducted to the children.

### **Matarajio**

*Kujibu maswali juu ya ugonjwa wa mtoto na mambo ambayo husababisha ugonjwa na kupima mtoto.*

### **If you choose not to participate or to leave the study**

You have the choice to or not to participate in this research study. If you choose not to participate in this study or to leave the study during the interview process, you may do so freely without consequences against you.

### ***Utafiti***

*Kushiriki katika utafiti huu ni wa hiari. Uamuzi wako kushiriki au kutoshiriki katika utafiti huu hautaathiri huusiano wako.*

### **Risks and/or discomforts**

We do not anticipate any risks or discomforts to you during this study. You will be requested to avail yourself for an interview at a place that you are most comfortable.

You may become worried or anxious about discussing matters of your child's illness. We will make every effort to protect your privacy and confidentiality while you are participating in the study. The interview will take place in private.

***Madhara ya kushiriki kwa utafiti***

*Utafiti huu hauna madhara yanayofahamika utahitajika kuuliza maswali bila mtu mwingine kusikia. Hakuna mtu mwingine yeyote atakayepata ruhusa kuona/kusikia ila wale wanaohusika kwa utafiti huu.*

**Benefits**

Your participation in this study is voluntary and you have the right to refuse to participate or to answer to any question that you feel uncomfortable with. If you change your mind, you have the right to withdraw at any time. If anything is not clear or if you need further information, we shall provide it to you.

However the results will be used to assist in formulating policies that may lead to improvement of quality of care among children. There is no cost to you for participating in this study.

***Manufaa***

*Kwa kushiriki Kwa utafiti huu na kujibu maswali yetu, utatusaidia kufahamu mahitaji ya jamii kuhusu huduma za magonjwa ya watoto. Kusahiriki kwako katika utafiti huu ni kwa hiari na unahaki ya kukataa kushiriki au kujibu swali lolote. Kama utabidili fikira zako,*

*unaweza, unahaki kuacha wakati wowote kama kuna jambo halieleweki au unataka habari zaidi tutakupa.*

### **Your records will be private**

Every effort will be made to keep the information you provide confidential. You will be identified only by a code and personal information from the interview will not be released without your written permission. You will not be personally identified in any publication about this study. However absolute confidentiality cannot be guaranteed. Your records may be reviewed by: Study Investigator or Ethics Committee at KEMRI.

### ***Kubaniwa kwa utafiti***

*Majibu yote ya utafiti huu yatawekwa Siri. Siri itahakikishwa kwa kutumia kifuli na funguo kwa mahali zitawekwa. Vitabu na makala yatakayotokana utafiti huu yatajumuisha habar ambayo itafanya mhojiwa ajulikane. Hata hivyo, nambari yako ya usajili, katika utafiti huu inaweza kuajiliwa na maafisa kutoka Idara ya madawa na magonjwa ya kusambaa(ITROMID, KEMRI) au wale kutoka chuo kikuu cha kilimo na teknolojia cha Jomo Kenyatta. Hata hivyo, maafisa hao watahakikisha kuwa jina lako limebaniwa.*

### **Harm because of participating in this study**

It is unlikely that any form of harm could happen to you as a result of being in this study. If you ever have questions about this study contact: **Principal Investigator**, Dennis Gichobi Magu. Cell phone no: 0722574388 Email:gcidennis@yahoo.com

***Watakao jibu maswali***

*Mtafiti anayefanya utafiti huu ni Dennis Gichobi Magu. Unaweza kuuliza maswali yeyote uliyonayo sasa ama ikiwa utakuwa nayo baadaye, unahimiza umjulisha kwa nambai ya simu: 0722 574 388 barua pepe gcidennis@yahoo.com*

If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher, you are encouraged to contact the following:

*Ikiwa unamaswali yeyote kuhusu utafiti huu na ungependa kuuliza swali kwa mtu mwingine isipokuwa mtafiti, unahimizwa ujulisha.*

The Director, Institute of tropical medicine and infectious diseases (ITROMID),

Jomo Kenyatta University of Agriculture and Technology,

P. O. Box 62000 00200, Nairobi.

Tel. 067 – 52711,

*E-mail: [itromid@nairobi.mimcom.net](mailto:itromid@nairobi.mimcom.net)*

*Mkurugenzi (ITROMID)*

*JOMO KENYATTA, S.L.P 62000-00200, NRB*

*Simu; 067-52711 Barua Pepe: [itromid@nairobi.mimcom.net](mailto:itromid@nairobi.mimcom.net) AU.*

*Mkurugenzi,ITROMID-KEMRI OFFICE, Kenya Medical Research Institute*

*S.L.P 54840-00200 Nairobi.*

*Simu: 020-2722541/4*

*Barua pepe: itramid@nairobi.mimcom.net* OR

The Chairman KEMRI National Ethical Review Committee

P.O BOX 54840 – 00200 NAIROBI, KENYA.

TEL: (254) (020) 2722541, 2713349, 0722-205901, 0733-400003;

E-mail: info@kemri.org

**PART B: CONSENT FORM / FOMU YA KUPEANA HIARI**

Please read the information sheet (PART A) or have the information read to you carefully before completing and signing this consent form. If there are any questions you have about the study, please feel free to ask them to the investigator prior to signing your consent form.

*Tafadhali soma fomu ama hakikisha kwamba umesomewa na kuelewa kabla ya kutia sahihi fomu hii ya kupeana ruhusa. Kama una maswali yeyote kuhusu utafiti huu, tafadhali uliza mtafiti maswali hayo kabla ya kutia sahihi fomu hii ya kupeana ruhusa.*

**Declaration of the volunteer /Arifa ya mhojiwa wa hiari**

I Mr, Miss, Mrs.....hereby give consent to Mr. Dennis Gichobi Magu to include me in the proposed study entitled; Assessment of caretaker factors associated

with disease outcomes in children at KNH, Nairobi, Kenya. I have read the information sheet concerning this study, I understand the aim of the study and what will be required of me if I take part in the study. The risks and benefits if any have been explained to me. Any questions I have concerning the study have been adequately answered. I understand that at any time that I may wish to withdraw from this study I can do so without giving any reason and without affecting my access to normal health care and management. I realize that I will be interviewed once. I consent voluntarily to participate in this study.

*Mimi Bw/Bi.....napeana ruhusa kwa Bw. Dennis Gichobi Magu anijumuishe Sababu zinazoeneza magonjwa kwenye watoto wenye umri wa chini ya miaka mitano katika Hospitali kuu ya Kenyatta wodi za magonjwa ya kuhusiana na magonjwa ya watoto Nairobi-Kenya. Nimesoma habari zote kuhusu utafiti huu, nimeelewa lengo la utafiti huu na yanayohitajika kwangu kama nitashiriki katika utafiti huu. Madhara na manufaa ya utafiti huu yameelezwa kinaga ubaga kwangu. Maswali yote niliokuwa nayo yamejibiwa vilivyo. Nimeelezwa/nimeelewa kwamba wakati wowote naweza kuacha kushiriki na sitabuniwa kutoa sababu yoyote au haitahujumu kupata kwangu kwa matibabu kwa kawaida. Najua kwamba nitahojiwa mara moja. Ninapeana ruhusa kwa hiari nishiriki katika utafiti huu.*

Subject's Name, *Jina la mhujiwa* .....

Signature or left thumb print \_\_\_\_\_ Date \_\_\_\_\_

*Sahihi/alama ya kidole gumba (kushoto)* \_\_\_\_\_ *Tarehe* \_\_\_\_\_

Name of person taking consent.....

*Jina la anayepewa ruhusa*

Signature/*Sahihi* ..... Date /*Tarehe* .....

Name of Investigator /*Jina la mtafiti* .....

• Signature of Investigator / *Sahihi ya mtafiti* \_\_\_\_\_

Date/*Tarehe*

•

### APPENDIX 3: CLINICAL ASSESSMENT SHEET

Clinical assessment sheet										
Weight(kg) _____										
IPNO _____										
HISTORY					EXAMINATION					
Symptoms				Duratn Days	Airway		Clear/ok	Stridor	Needs active support to open	
Fever		Y	N		Breathing		Respiratory rate		/min	
Cough		Y	N				Central Cyanosis	Y	N	
Cough>3/52		Y	N				In drawing	Y	N	
Difficulty breathing		Y	N				Grunting	Y	N	
For babies age <2 months							Acidotic breathing	Y	N	
Abn Movts/ Behaviour		Y	N	NA			Wheeze	Y	N	
High Pitched cry		Y	N	NA			Crackles	Y	N	
Apnoeas		Y	N	NA	Circulation		Pulse	Weak	normal	
Pus+ Cellulitis, Umbilicus		Y	N	NA			Cap refill	X	<2s	
								2-3s	>3s	
							Pallor/anaemia	0	+	
Diarrhoea		Y	N		Dehydration		Sunken eyes		Y	
Diarrhoea>14 days		Y	N				Skin pinch(sec)		0	
Diarrhoea(bloody)		Y	N					1	2	
Convulsions		Y	N		Disability		AVPU		A	
								V	P	
Partial/Focal fits		Y	N					U		
Vomits all		Y	N		General Nutrition		Visible severe wasting		Y	
Difficulty feeding		Y	N						N	
							Oedema of Kwashiorkor	Y	N	
<b>ETAT Classification:</b> <input type="checkbox"/> Emergency <input type="checkbox"/> Priority    Date Admitted _____										
Clinical outcome : <input type="checkbox"/> Alive <input type="checkbox"/> Dead    Date Discharged/passed on _____										
Presumptive Diagnosis _____										
Duration of admission _____(Hrs) _____(Days)										





