BARRIERS TO APPROPRIATE HOME MANAGEMENT OF ACUTE GASTROENTERITIS BY CAREGIVERS OF CHILDREN UNDER FIVE YEARS ATTENDING MBAGATHI DISTRICT HOSPITAL.

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DECLARATION

I, Njuguna Martha Wambui declare that this thesis is my own original work and has never been presented for an academic award in any university or institution of higher learning.

Signed ……Date……

CERTIFICATE OF APPROVAL

This research thesis has been submitted with our approval as university supervisors.

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DEDICATION

This work is dedicated to my husband Peter, our children Leticia and Adriel and to my parents Mr and Mrs Njuguna for their love, support, sacrifice and encouragement throughout the entire study period.

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LIST OF ABBREVIATIONS

C-IMCI Community Integrated Management of Childhood Illnesses

FGD Focused Group Discussion

IMCI Integrated Management of Childhood Illnesses

KDHS Kenya Demographic and Health Survey

KNH Kenyatta National Hospital

MCH Maternal Child Health Clinic

MDG Millennium Developmental Goals

MDH Mbagathi District Hospital

MoPHS Ministry of Public Health and Sanitation

ORT Oral Rehydration Therapy

ORS Oral Rehydration Salts

SPSS Statistical Package for Social Science

UNICEF United Nations Children's Fund

UON University of Nairobi

WHO World Health Organization

OPERATIONAL DEFINITIONS

Acute gastroenteritis: A diarrheal disease of rapid onset, with or without accompanying symptoms and signs such as nausea, vomiting, fever, or abdominal pain (Colletti 2010).

Attitude: An expression of favor or disfavor toward a person, place, thing or event.

Appropriate home care practices: The recommended interventions to be utilized in home management of acute gastroenteritis.

Belief: the psychological state in which an individual holds a proposition to be true.

Caregiver: The person who meets the daily needs of the child and has brought the child to the hospital.

Diarrhoea: Passage of watery stool at least 3 times in a period of 24 hours.

Dehydration: The loss of water and dissolved salts from the body occurring as a result of acute gastroenteritis.

Home care practices: The interventions used to manage a patient with gastroenteritis at home.

Home management: care provided at home.

Knowledge of gastroenteritis: Conveyed understanding of gastroenteritis and its danger signs

Oral rehydration therapy: The administration of fluid by mouth to prevent or correct the dehydration.

Oral rehydration salts: Refers to a balanced glucose–electrolyte mixture.

Rehydration: The correction of dehydration.

ABSTRACT

Diarrhoea is the third leading cause of under five mortality in Kenya. It accounts for 4.7% of all outpatient cases countrywide. Caregivers have been identified to play a vital role in appropriate management of acute gastroenteritis and thus the development of C-IMCI by WHO with clear guidelines on appropriate home treatment of acute gastroenteritis. Despite the presence of the guidelines, research findings still indicate that majority of caregivers do not manage acute gastroenteritis appropriately at home. This study sought to determine the barriers to appropriate home management of acute gastroenteritis by caregivers of children under five years attending Mbagathi district Hospital. A descriptive cross-sectional design utilizing qualitative and quantitative approaches was used to obtain data from caregivers of children under five years presenting at Mbagathi District Hospital (MDH) with acute gastroenteritis. Simple random sampling was used to select 209 caregivers who were interviewed using a structured questionnaire while convenience sampling was used to select 16 caregivers who participated in focus group discussions (FGD).Two FGD's were conducted. The study was carried out over a period of two months. Qualitative data was transcribed and coded in to themes. Quantitative data was analyzed using software Statistical Package for Social Sciences (SPSS) version 21.0 computer package. The significant levels were set at $p<0.05$ for all test. The study found that fluid intake was increased by most caregivers and there was a correlation between fluid intake and caregivers marital status, occupation and child's gender with p-value of <0.0001, 0.004 and 0.049 respectively. Spouse occupation and decision maker were significantly associated with use of ORS at p-value 0.029 and 0.043 respectively. Food withholding was reported by 29.7% (n=55) of the caregivers and 36.4% (n=76) had used other medications. Zinc supplements were administered to 38% (n=79) of children and caregivers. Cultural beliefs, perceived cause of illness, financial capability and prescriber practices were identified to influence caregivers' choice of treatment. Majority of caregivers did not adhere to the recommended guidelines in home management of diarrhoea. Insufficient knowledge, cultural beliefs, prescriber practices and perceived cause of diarrhoea were identified as barriers to appropriate home management.

CHAPTER ONE: INTRODUCTION

1.1 Background information

Gastroenteritis is the second leading cause of death among children under five years worldwide accounting for about 1.5 million deaths each year (UNICEF &WHO, 2009). In 2012 an estimated 6.6 million children below five years died globally with 9% of this deaths being caused by diarrhoeal diseases (UNICEF, 2013).

Being a disease that occurs mainly in areas with poor water supply, hygiene, and sanitation, acute gastroenteritis is a common illness among children in sub-Saharan Africa. Studies have shown that each child under five years in sub-Saharan Africa experience on average five diarrhoeal episodes every year, with children aged 6-23 months having the highest incidence (Boschi-pinto, 2009). During a diarrhoeal episode, there is loss of fluid and electrolytes from the body causing dehydration a life threatening condition if it goes untreated.

Kenya is among the top fifteen countries with the highest number of deaths caused by gastroenteritis (UNICEF, 2013). Though under five mortality rate has reduced by 36% from 115 deaths per 1000 live births in 2003 KDHS to 74 deaths per 1000 live births in 2008 (KDHS, 2008-09), Kenya is among the countries with marked slow reduction of under five mortality. Thirty two deaths per 1000 live births is the targeted number of under five mortality rate that Kenya is expected to have by 2015; thus scaling up of interventions against the leading causes of under five mortality is necessary for Kenya to achieve its target.

Gastroenteritis is the third leading cause of under five mortality in Kenya after neonatal causes and pneumonia accounting for about 9% of under five mortality (KDHS, 2008-09). Every child in Kenya, experiences on average three episodes of diarrhoea (4.7% of all under five outpatient

cases countrywide have gastroenteritis). The prevalence for gastroenteritis in Kenya has increased over the years. The prevalence is 17% indicating a 1% increase from 16% in 2003 (KDHS, 2008-09). In Nairobi the prevalence of gastroenteritis among the under fives is 12% according to KDHS 2008-09. Acute watery diarrhoea accounts for 80% of all childhood diarrhoea and causes 50% of all childhood deaths (WHO, 2005). In a study done in Kenya acute gastroenteritis accounts for about 90% of all under five gastroenteritis cases treated in health facilities (Karambu et al, 2013).

As a way of improving child health, WHO and UNICEF included prevention, early detection and treatment of the main causes of morbidity and mortality in children below five years in IMCI strategy. Based on the fact that parents and other caregivers have the major responsibility for caring for their children, Community Integrated Management of Childhood Illnesses (C-IMCI) is a component in IMCI that aims at improving family and community practices in home management of illnesses in order to reduce childhood morbidity and mortality (WHO, 2005). When well implemented, C-IMCI has been demonstrated to be effective in management of common childhood illnesses at community level (Ebuehi & Adebajo, 2010).

Since the adoption of oral rehydration therapy ORT using oral rehydration salts (ORS) solution as the primary tool to fight dehydration in 1978 by World Health Organization (WHO) and United Nations Children Fund (UNICEF) the mortality rate for children under the age of five years suffering from acute diarrhea has fallen from 4.5 million to 1.8 million deaths annually (WHO & UNICEF, 2006). With the development of an improved formula for ORS solution which shortens duration of diarrhoea and demonstration that zinc supplements given during an episode of acute diarrhoea reduce the duration and severity of the episode and lowers incidence

of diarrhoea in the following 2-3 months, more lives can be saved with appropriate home treatment, (UNICEF&WHO, 2004).

In 2010, the Ministry of Public Health and Sanitation developed a policy guideline on control and management of diarrhoeal disease in children below five years in Kenya. Among the key strategies in the policy guidelines is home based case management whereby the parents and other care givers of children below five years are to be empowered on how to treat gastroenteritis in children below five years at home. The policy guidelines stipulate four basic rules by the policy which are in line with the WHO recommended home care management of gastroenteritis in children below five years. In managing the children at home, the care takers should increase the intake of fluids, continue feeding the child, provide zinc supplements and take the child to a health facility if dehydration persist (MoPHS, 2010).

1.2 Statement of the problem

According to UNICEF (2012), only 39% of children under five years receive appropriate treatment for acute gastroenteritis in developing countries with little progress made since year 2000. In Kenya about 30% of children below five years do not receive any kind of treatment for diarrhoea diseases (KDHS, 2008-09). As a result acute gastroenteritis is the third leading cause of under five mortality in the country and a leading cause of childhood morbidity. It accounts for 4.7% of all outpatient cases countrywide. Diarrhoea prevalence in children below five years has increased over the years and every child under five years experience on average three episodes of diarrhoea each year.

In a study done in Kenya, caregivers recognized dehydration as a serious condition which can kill a child and recommended use of ORT with plenty of homemade fluids and ORS to treat

dehydration (Lauren, 2011). Despite the awareness, the same study found that majority of the caregivers did not administer homemade solutions including ORS to their children who had acute gastroenteritis. According to Mukiira (2012), use of zinc supplements in management of acute gastroenteritis in children under five years is also very low.

Inappropriate home management of acute gastroenteritis in children under five years contribute largely to the number of children being admitted in various health facilities. At Mbagathi District Hospital, the prevalence of diarrhoeal illnesses are the third most common illnesses among children under five years with a prevalence of 20% (Segecha, 2013). Majority of the children under five years are presented to a health facility in severe dehydration. This is a clear indication that the care provided at home prior to hospital presentation is inappropriate as the state of a child with acute gastroenteritis at first presentation to a health facility is highly dependent on the care provided at home.

1.3 Research question

What hinders caregivers of children under five years with acute gastroenteritis from using recommended interventions in home management of acute gastroenteritis?

1.4 Objectives

1.4.1 Broad objective

To determine the barriers to appropriate home management of acute gastroenteritis by caregivers of children under five years attending Mbagathi district Hospital.

1.4.2 Specific objectives

- To determine the practices of caregivers in home management of acute gastroenteritis in children under five years.
- To identify the barriers to appropriate home management of acute gastroenteritis in children under five years.
- To determine caregivers perceptions towards the recommended interventions in home management of acute gastroenteritis in children under five years.

1.5 Justification

Acute gastroenteritis is an infection of the gastrointestinal tract that commonly affects young children. It causes an increase loss of water and electrolytes through vomiting and diarrhoea resulting to dehydration which is the main cause of mortality in children under five years with acute gastroenteritis. With early initiation of ORT with home prepared fluids and ORS if available, dehydration would be prevented resulting in to a reduction of under five mortality.

Caregivers play vital role in appropriate management of acute gastroenteritis in children under five years as they are the ones who decide if a child's episode of gastroenteritis warrants a visit to a health facility or if they can manage the episode at home. Many deaths due to gastroenteritis are preventable if the caregivers are able to correctly identify acute gastroenteritis in their children and promptly administer appropriate care thus preventing their children from developing dehydration. Studies have shown that majority of children with acute gastroenteritis are treated at home (Wilson et al, 2012, KDHS, 2008-09).

With the endorsement of home based treatment of acute gastroenteritis with ORS and Zinc together with continued feeding in 2010, it is expected that under five morbidity and mortality

would have reduced. Current statistics indicate otherwise as acute gastroenteritis is still among the leading causes of under five mortality accounting for 9% of all under five mortality in the country according to world health statistics 2013. Research findings also indicate that majority of the caregivers do not manage acute gastroenteritis appropriately at home. This is therefore a clear indication that there is a need determine the reasons why caregivers do not manage acute gastroenteritis appropriately at home despite the presence of clear guidelines.

1.6 Purpose of the study

The purpose of this study was to determine barriers to appropriate home management of acute gastroenteritis in children under five years by caregivers. This study identified opportunities of interventions in implementation of home based case management as one of the strategy in the policy guidelines.

1.7 Study benefits

It is hoped that findings of this study will be utilized by the Ministry of Health and other related organizations in developing strategies that will tackle the gaps that were identified by the study towards improving family and community child care practices as one of the component of the IMCI strategies aimed at reducing childhood morbidity and mortality.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Gastroenteritis is a term used to refer to infections of the gastrointestinal tract caused by bacteria, viral, or parasitic pathogens (Behrman, 2008). Majority of these infections are food –borne illnesses whose common manifestations are diarrhoea and vomiting which may also be associated with systemic features such as abdominal pain and fever (Behrman, 2008).

Once inside the intestinal mucosa, Enteropathogens either leads to an inflammatory or non inflammatory response. Non inflammatory diarrhoea is elicited through enterotoxin production by some bacteria, destruction of villus (surface) cells by viruses, adherence by parasites, and adherence and / or translocation by bacteria while inflammatory diarrhoea is usually caused by bacteria that directly invade the intestine or produce cytotoxins with consequent fluid, protein, and cells (erythrocytes, leucocytes) that enter the intestinal lumen (Behrman, 2008). Viruses such as rotavirus target the microvillus tips of the enterocytes and can enter the cells by either direct invasion or calcium-dependent endocytosis resulting in villus shortening and loss of enterocytes absorptive surface through cell shortening and loss of microvilli (Behrman, 2008). Rotavirus is associated with 28% of deaths due gastroenteritis (UNICEF, 2013).

Environmental contamination and increased exposure to Enteropathogens are the main risk factors for gastroenteritis. Young age, immune deficiency, measles, malnutrition, and lack of exclusive or predominant breast-feeding are additional risk factors for gastroenteritis (Behrman, 2008). Majority of the diarrhoeal cases resolve within the 1st week of infection with a few cases persisting for more than 2weeks.

During an episode of gastroenteritis there is an increase loss of water and electrolytes through vomiting and diarrhoea. When the lost fluid and electrolytes are not replaced adequately, a deficit of water and electrolytes develops resulting in to dehydration (WHO, 2005). Dehydration is the main cause of deaths due to gastroenteritis and majority of these deaths can be prevented by early initiation of ORT. Other essential elements in the management of acute gastroenteritis in children are continued feeding to all, zinc supplementation and use of antimicrobials only for those with bloody diarrhoea, severe cholera cases or serious non intestinal infections (WHO, 2005).

2.2 Home care practices

Adequate management of acute gastroenteritis is essential to reach the Millennium Development Goals of a reduction in mortality rates of children aged less than five years by two-thirds between 1990 and 2015.

Family and community understanding of diarrhoeal management are important to enable routine practice of recommended guidelines in management of gastroenteritis both at home and at the health care facility. Mothers and other care givers should prevent dehydration through the early administration of increased amounts of appropriate fluids available at home and ORS if available, Continue feeding, recognize the signs of dehydration and take the child to a health care provider for ORS or intravenous electrolyte solution and provide children with 20mg per day of zinc supplementation for 10-14 days (10mg per day for infants under six months). Care givers should have ORS ready to mix packages and zinc (syrup or tablet) readily available for use at home when needed (WHO, 2006).

In Burkina Faso a survey indicated that caregivers fail to recognize nearly half of diarrhoeal episodes occurring in their young children and only half of those who recognize illness seek care outside the home, (Wilson et al, 2012). Among the care givers who seek care from health providers, most of them usually give some sort of ORT during initial home management (Olson et al, 2011). The kind of ORT administered by caregivers to children is of paramount importance as it influences the rehydration status of the child at the time of presentation to a health facility.

Findings from a study in Nigeria illustrate a positive impact of C-IMCI interventions on home management of common childhood illnesses including gastroenteritis (Ebuehi and Adebayo, 2010).

2.3 Oral rehydration therapy

Oral rehydration therapy (ORT) is the oral administration of fluid and electrolytes using the recommended fluids such as ORS and home fluids. It is a well established therapy that has been the foundation of prevention and treatment for life threatening dehydration that result from diarrhoea since 1970, s and can be practiced safely at home by caregivers with some guidance from health care workers. To prevent dehydration in children with acute gastroenteritis, fluid intake should be increased by giving ORS and breastfeeding frequently and for a longer duration for the exclusively breastfed children and for children not on exclusive breastfeeding plenty of recommended fluids should be given and breastfeeding continued during and after diarrhoea (MoPHS, 2010).

Low osmolarity ORS recommended by WHO and UNICEF in 2003 reduces by 33% the need for supplemental intravenous fluid therapy after initial rehydration when compared to the previous

standard WHO ORS solution. It also reduces the incidence of vomiting by 30% and stool volume by 20% (WHO, 2005).

The recommended home fluids to be used for management of acute gastroenteritis are cereal gruel (Uji), fresh and fermented milk, fresh fruit juices; soups prepared from meat, fish and chicken, breast milk and clean safe water (MoPHS, 2010). Salt-sugar solution, bottled/packed commercial soft drinks and juices must not be used for rehydration or maintenance therapy as they have inappropriately high osmolarities and low sodium concentrations (Behrman, 2008). According to study carried out in Ethiopia, health education about ORT and the causes of diarrhoea should be given to caregivers who do not have previous experience of ORT use and visit health facilities less frequently (Mengistie et al, 2012).

2.4 Feeding practices

Frequent episodes of acute diarrhoea can result in nutritional compromise and may predispose children to develop persistent diarrhoea, protein –calorie malnutrition, and secondary infections (Behrman, 2008). This is because apart from Gastroenteritis causing fluid and electrolyte deficit nutritional deficit also occurs resulting to weight loss and failure to thrive. This deficit is usually caused by decreased food intake, decreased nutrient absorption, and increased nutrient requirements (WHO, 2005). Stunting may occur as a complication of repeated diarrhoea episodes in young children and control of diarrhoea in the first months of life reduces stunting prevalence among these children (UNICEF, 2012). Research has shown that ORT contribute to better weight gain when given along with advice on proper feeding practices thus reducing the ill effect of gastroenteritis on nutritional status (WHO, 2006).

Children who are exclusively breastfed for the first six months of life and continue breastfeeding up to when they are two years old develop fewer infections and suffer less severe illness (UNICEF, 2012). Morbidity and mortality due to gastroenteritis is also higher in children who are not exclusively breastfed for the first six months of life. According to a study done at Igembe District Hospital, Kenya, children who are not exclusively breastfed are more than two times likely to get gastroenteritis than children who are exclusively breastfed (Karambu et al, 2013). Apart from reducing severity and frequency of diarrhea, continued breastfeeding is also an effective way of preventing dehydration and malnutrition during adiarrhoea episode.

Care givers should increase feeding including breastfeeding of children with acute gastroenteritis during and after the illness. For the exclusively breastfed children, breastfeeding should be done more frequently and for longer time at each feeding and should be done at least eight times day and night in 24 hours while children not breastfeeding exclusively, breastfeeding should continue and the child should also be fed on small feeds of nutritious easy to digest food frequently (5-6 times per day) (MoPHS, 2010). The extra feeds should be given for at least two weeks after acute gastroenteritis has stopped. Care givers should avoid giving foods with a lot of sugar, high fiber or bulky foods such as coarse fruit and vegetables, fruits and vegetable peels and whole grain cereals to children with acute gastroenteritis (MoPHS, 2010).

2.5 Zinc supplementation

Zinc is one of the important micronutrient necessary for children's overall growth and development. Its deficiency increases the risk of mortality from diarrhoea, pneumonia, and malaria by 13-21% (Behrman, 2008). The deficiency is most common among children in developing countries (WHO, 2006). Zinc is also lost in greater quantities during gastroenteritis

resulting in aggravation of pre existing deficiency (WHO, 2006). Research has shown that Zinc supplements reduces diarrhea episodes duration by 25%, reduces stool volume by 30% and lowers incidence of diarrhoea in the following 2-3 months (WHO, 2013). All patients with diarrhoea should be given zinc supplements as soon as possible after diarrhoea has started as part of first line treatment (MoPHS, 2010). This will replace the zinc being lost through diarrhoea thus helping the child recover from the illness and stay healthy. According to WHO, children with acute gastroenteritis should be given 20mg per day of zinc supplementation for 10-14 days with children under six months being give 10mg per day (WHO, 2006).

Research done in Mali and western Kenya showed that knowledge and use of zinc was high among the caregivers who had recently used it to treat a diarrhoeal episode (Ellis et al, 2007, Otieno et al, 2013). Another study in Bangladesh indicated that caregivers were willing to buy zinc to manage childhood diarrhoea (Akhter and Larson, 2010). With adequate information the Kenyan caregivers of children below five years would portray the same willingness.

2.6 Knowledge and perceptions

Correct knowledge of the causes of common childhood illnesses is vital to appropriate management of these illnesses. With adequate knowledge on recognition and home treatment of acute gastroenteritis, caregivers should be able to recognize symptoms of acute gastroenteritis and offer appropriate remedies recommended by WHO at home to prevent dehydration which is the common reason they present their children with acute gastroenteritis to a health facility. According to a study by Ghasemi et al, (2013) on knowledge of mothers in management of diarrhoea, Knowledge is related to caregiver's age, spouse education, number of children, occupation and the source of knowledge. Caregivers' perceptions of disease etiology and

therapeutic properties of various remedies available for treating acute gastroenteritis, influences caregivers choice of care (Ogunbiyi, 2010).

2.7 Personal factors

2.7.1 Demographic factors

Demographic characteristics are an important factor in child survival in Kenya (KDHS, 2008-09). Location, marital status number of children and socio-economic factors influence the caregiver's choice of care. Large family size increases a caregiver's awareness of appropriate treatment of acute gastroenteritis (Mukhtar et al, 2011). This is mainly from prior experience of caring for a child with acute gastroenteritis. Studies have shown that caregivers with three or more children have better knowledge about gastroenteritis (Ghasemi et al, 2013).

2.7.2 Socio-cultural factors

Home care practices is highly influenced by culture and community practices and is passed through generations though new practices may be adopted depending on experience gained in treating previous episodes of diarrhoea, (Ogunbiyi, 2010). Beliefs about the causes of a disease influence the kind of care sought by the care givers. According to studies carried out in Nigeria and Nepal, varying beliefs about diarrhoea and its management exist among caregivers of different ethnicities (Ebuehi and Adebajo, 2010, Ansari et al, 2012).

2.7.3 Personal psychological factors

The care given to a child at home during a diarrhoea episode depends on Caregiver's definition of health, perceived health status and personal competence. According to Ebuehi and Adebajo (2010), management of common childhood illnesses is highly influenced by caregivers

understanding of their causes and thus correct knowledge of the causes of acute gastroenteritis is vital to its appropriate home management. According to MoPHS (2010), caregivers of children under five years should be empowered to treat acute gastroenteritis early at home. They should be competent enough to prepare and administer ORS solution and homemade fluids as well as administer zinc supplements to a child with acute gastroenteritis at home.

2.7.4 Socio-economic factors

In Kenya under five mortality is higher among children in poor households compared to children in wealthy households (Ettarh & Kimani, 2012). Caregiver's age and level of education also influences their choice in management of acute gastroenteritis. In Kenya under five mortality is higher among children of the very young and older mothers. The level of awareness of child health care is higher among the more educated younger mothers (Ettarh and Kimani, 2012). Acute gastroenteritis is common among children of less educated caregivers compared to children whose caregivers are more educated (KDHS, 2008-09).

2.8 Health system factors

The cost of ORS and zinc supplements may a hinder a caregiver from using them to manage acute gastroenteritis at home. Most caregivers who cannot be able to buy these products opt to use traditional herbs instead (UNICEF, 2012). The distance of a health facility or pharmacy from caregiver's home is vital to appropriate home management of acute gastroenteritis. Caregivers who live far from a health facility may not be able to obtain ORS sachets and zinc supplements. Through outreach programs, community health workers should provide ORS sachets and zinc supplements to these caregivers.

2.9 Interpersonal influences

Interpersonal relationships play vital role in appropriate home management of acute gastroenteritis in children. Health worker is the most common source of information on common childhood illnesses (Ebuehu & Adebajo, 2010). Through health education programs by health workers, caregivers should be taught how to asses and recognize the danger signs of acute gastroenteritis as well as its treatment at home. Through peer interaction the caregivers share knowledge on acute gastroenteritis that contributes either positively or negatively towards use of appropriate home care practices.

2.10 Theoretical Framework

Health Promotion Model (HPM) was utilized in conducting this study. The model was developed by Nola J Pender in 1982 and revised in 1996. The model describes the multidimensional nature of persons as they interact within their environment to pursue health and its central concept is self efficacy, (Pender, 2002). According to the model, health promotion is motivated by the desire to increase well-being and actualize human potential (Pender, 2002). It focuses on three components namely; Individual characteristics and experiences, behavior-specific cognitions and affect and behavioral outcomes.

Individual characteristics and experiences

Each person has unique personal characteristics and experiences that affect subsequent actions (Pender 2002). In this study, these characteristics were; personal factors (socio-cultural and religious factors), and care givers perceptions towards appropriate care practices in management of acute gastroenteritis.

Behavior-specific cognitions and affect

These refer to the primary motivational factors. The variables in this component can be modified through nursing actions and they have important motivational significance towards achieving health promoting behavior. In this study these variables were; knowledge of caregivers on appropriate home management of acute gastroenteritis and actual home care practices. These variables can be modified by demographic characteristics and situational influences of the care giver and the support from the health care workers, families, friends and peer groups.

Behavioral outcomes

Health promoting behavior is the desired behavioral outcome and is the end point in the HPM (Pender, 2002). It should result in improved health, enhanced functional ability and better quality of life at all stages of development (Pender, 2002). In striving to achieve the desired behavioral outcomes, the model recognizes the influence of immediate competing demand and preferences which can derail an intended health promoting actions. In this study the desired behavioral outcome was appropriate home care practices in management of acute gastroenteritis in children below five years.

2.11 Conceptual framework

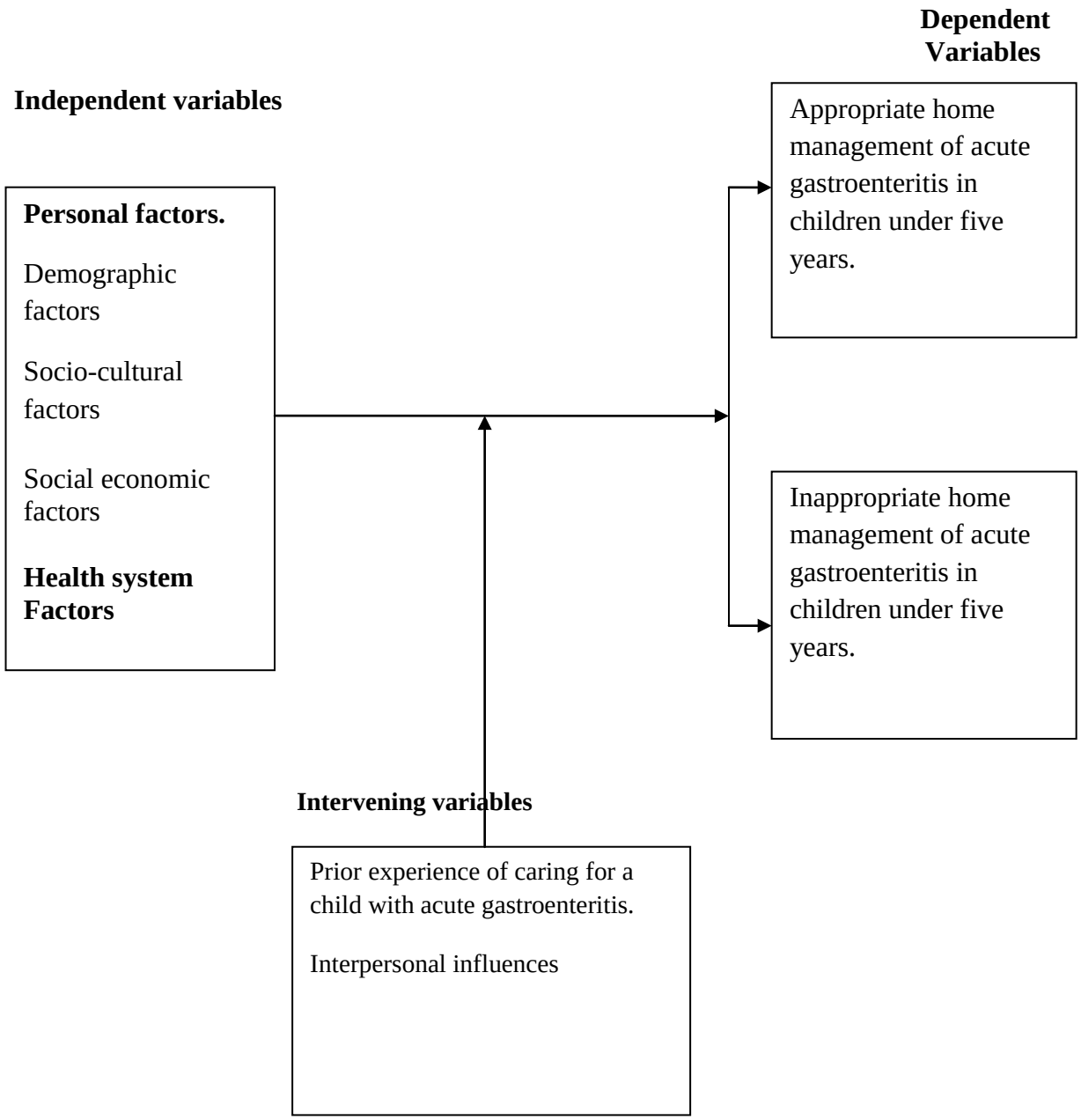

Figure 1: Conceptual framework

2.12 Operational framework

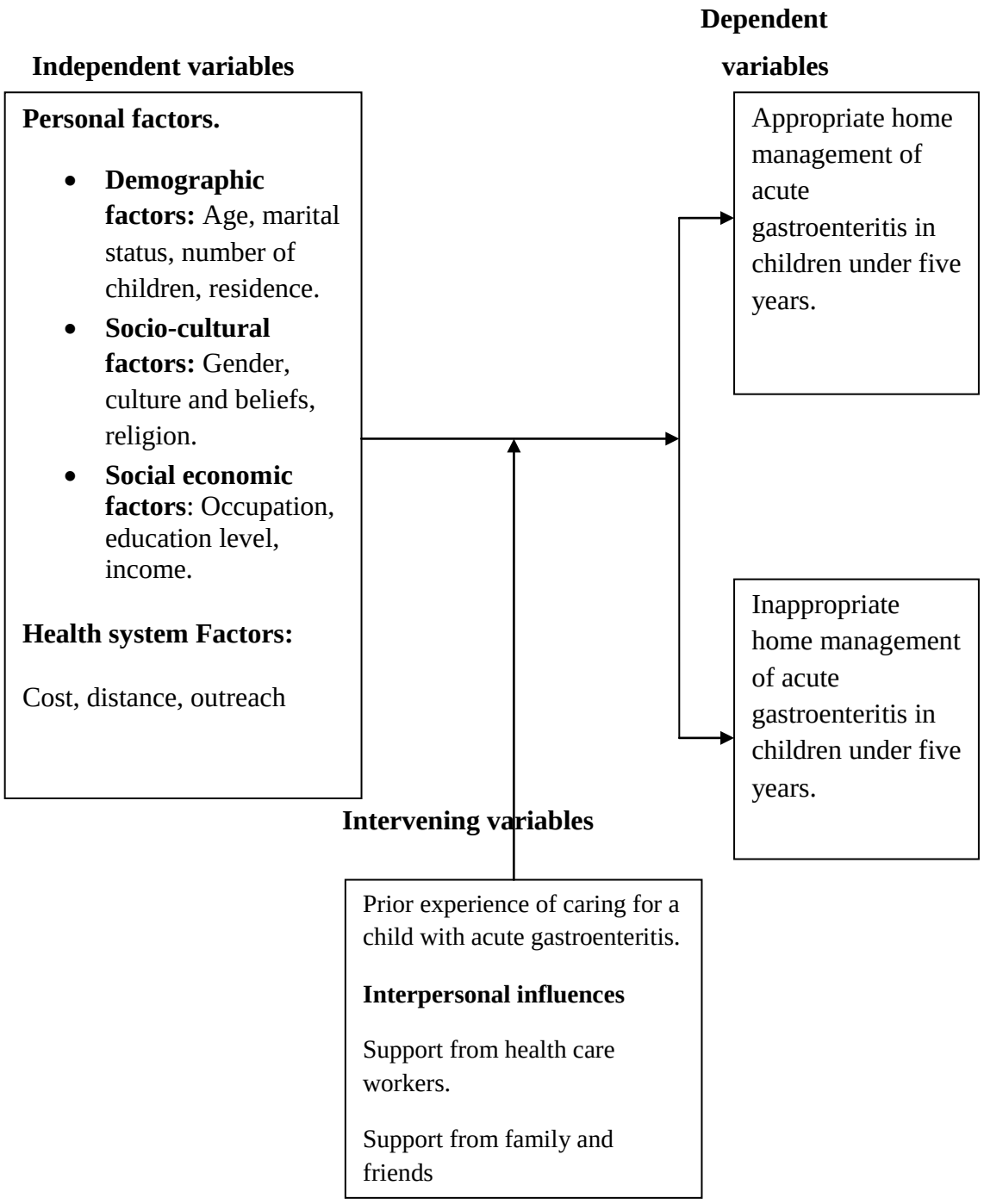

Figure 2: Operational framework

CHAPTER THREE: METHODOLOGY

3.1 Study design

A descriptive cross-sectional design utilizing qualitative and quantitative approaches was used to determine barriers to appropriate home management of acute gastroenteritis by caregivers of children under five years attending Mbagathi District Hospital.

3.2 Study Area

The study was conducted at Mbagathi District Hospital (MDH) a district hospital owned by the ministry of health. The hospital is located in Golf course sub-location, Kibra constituency in Nairobi County. It is bordering Kenyatta National Hospital, Kenyatta city council market, Forces Memorial Hospital, Kenya Research Institute and Kibera slums. Initially it was called Infectious Disease Hospital as its services centered mainly on infectious diseases such as tuberculosis among others. According to information obtained from the hospital administration, MDH is a low cost government public hospital. Most of its clients come from Kibera slum, the largest slum in Kenya.

The hospital is situated 3km away from the main city centre and clients board bus number 40 from the ambassador bus terminus or public transport vehicle number 33 from saint peter's bus station. It has an inpatient bed capacity of 250 and an outpatient department which offers services to clients daily.

The services offered in this hospital are; antenatal, antiretroviral therapy, Basic Emergency Obstetric Care, Curative in-patient services, curative outpatient services, family planning, growth monitoring and promotion, HIV counseling and testing, immunization, IMCI, prevention of

mother to child transmission of HIV, radiology services, rural health training centre/ rural health demonstration, tuberculosis labs for diagnosis and tuberculosis treatment.

The study was done at the pediatric department of MDH. This department provides pediatric care at all levels including routine outpatient services, primary care, specialized care and in patient services.

3.3 Study population

Participants comprised caregivers of children under five years with acute gastroenteritis presenting at the outpatient pediatric clinic and the pediatric wards of Mbagathi District Hospital. The caregivers of these children were chosen because they were likely to have given some care to their children at home before they brought them to the hospital.

3.4 Inclusion criteria

- Care givers of children under five years.
- Care givers of children admitted in medical pediatric ward or attending pediatric outpatient and MCH clinics of MDH.
- Care givers of children with gastroenteritis lasting less than 2 weeks.
- Care givers who consented.

3.5 Exclusion criteria

- Care givers who did not consent.

3.6 Sample size determination

The sample size was determined using Fisher et al formula (Mugenda, 1999):

$$n = \frac{Z^2pq}{d^2}$$

n is the desired sample size.

Z is the standard normal deviate at 95% confidence interval. (Z= 1.96.)

p is the proportion in the target population estimated to have the characteristics being measured. In this study it was the proportion of children under 5 years who receive the recommended interventions in home management of acute gastroenteritis which was 43% in Kenya (KDHS 2008-09).

q is the people in the target population estimated not to have the characteristics being measured. (q=1-P), q=1-0.43, q=0.57

d is the level of precision at 95% confidence interval which was set at (0.05)

$n=1.96^2 \times 0.43 \times 0.57/0.05^2$ $n = 3.84 \times 0.2451/0.0025$

$n=0.94158/0.0025$ $n=376.47$

n=376

Since the target population was less than 10,000 the alternative formula below was used.

nf=n/(1+(n/N) (Mugenda,1999)

Where:

nf is the desired sample size for population less than 10,000

n is the desired sample size for population more than 10,000 which is 376.

N is the estimated population size

Estimation of Population size was done in accordance to the monthly attendance of children under five years with acute gastroenteritis at Mbagathi district Hospital which is approximately 250 children (MDH records department).

Therefore N= 500

Hence the desired sample size (nf) where population is less than 10,000, sample size was adjusted as follows:

nf=n/(1+(n/N)

nf=376/(1+(376/500)

nf = 376/1.8

nf =208.9

nf = 209

3.7 Sampling procedure

3.7.1 Quantitative survey

Simple random sampling was used to select 209 participants for the study. The caregivers who met the inclusion criteria were requested to pick a piece of paper written either Yes or No from a box consisting of 500 papers; 209 written yes and 291 papers written no. All the papers were written on the first day of data collection and once a paper was picked it was never replaced. The caregivers who picked the papers written yes were included in the study after giving consent. Selection of participants was done on a daily basis at the outpatient clinic and in the ward. All the caregivers had an equal chance of participating in the study. There was no proportion allocated for either caregivers at the outpatient clinic or in ward.

3.7.2 Qualitative approach

Convenience sampling was used to select caregivers who participated in focus group discussions. A total of 16 caregivers who consented participated in the discussions.

3.8 Data collection procedure

3.8.1 Quantitative data collection

The data was collected by administration of a structured questionnaire consisting of 47 questions. The procedure was a face to face interview conducted by the researcher or the research assistants. The interview was conducted in a room within the health facility in the presence of only the interviewer and the study participant. A written consent was obtained from the caregivers before the interview began.

3.8.2 Focus group discussions (FGDs)

To examine the caregivers' perceptions towards the recommended interventions in home management of acute gastroenteritis in children under five years as well as elicit more information on barriers to appropriate home management of acute gastroenteritis. The potential participants in the FGD were informed of the purpose of the study and they were given an option of participating in the study once they met the inclusion criteria. Those who accepted to participate were then asked to go to a convenient comfortable room within MDH where they would not be interrupted.

Two focus group discussions (FGD) consisting of a total of 16 participants were held with eligible consenting caregivers. The first FGD consisted of 9 participants and was conducted with caregivers of children under five years admitted in the pediatric ward of MDH with acute gastroenteritis. The second FGD consisted of 7 participants and was conducted with caregivers of children under five years who were treated for acute gastroenteritis at the outpatient department of MDH and were not admitted.

In the discussion room, the participants seating arrangement was semi-circle. The researcher who was the moderator of the session introduced herself and the note taker. She explained the procedures and purpose of the study, read the ground rules and explained to the participants how confidentiality was to be maintained. Once the caregivers understood and agreed to participate, they were asked to sign a written consent to participate in the discussion. Each participant was given a number that was used to identify them as they gave comments to ensure anonymous identification. The individual number was written largely in a paper and placed in front of the participant.

The researcher moderated the session using a guide presented in the appendices (Appendix 4). The guide consisted of open ended questions with probes. Some of the questions included in the guide were; caregivers belief about the recommended interventions such as ORS and zinc supplementations, Reasons why they use or don't use these interventions, what they prefer to use and why, and what they think work best in treatment of children with acute gastroenteritis. The discussions were tape recorded with the permission of the participants and one of the study assistant took written notes. The moderator ensured that the discussions were well balanced in order to have all participants give their opinions. All discussions were conducted in Swahili language. Each session lasted for 60 minutes.

3.9 Variables

3.9.1 Independent variables

Personal factors;

- Demographic factors: Age, marital status, number of children, residence,
- Socio-cultural factors: Gender, culture and beliefs, religion.
- Social economic factors: Occupation, education level, income.

Health system Factors: Cost, distance, outreach

3.9.2 Dependent variables

The dependent variable was home management and it was grouped as either appropriate or inappropriate. Appropriate home management included all caregivers who used the recommended interventions in management of acute gastroenteritis in under fives at home. Inappropriate home management included all other practices.

3.9.3 Intervening Variables

Interpersonal influences such as support from health care workers and family as well as friends and prior experience of caring for a child with acute gastroenteritis.

3.10 Recruitment and training of research assistants

Two research assistants were recruited to assist in conducting this research. The assistants were Bachelor of Science in Nursing (BSc.N) interns based in Nairobi. The selected assistants underwent a three days training on study process, study tool administration, ethical considerations and data entry. During the training period the assistants were subjected to tasks that required them to conduct an interview as well as enter sample data in the relevant software that were used during the study. The training was done prior to pretesting of the research tools.

3.11 Study tools

The study tools consisted of a structured questionnaire (Appendix 3) and a focus group discussion guide (Appendix 4). The questionnaire consisted of questions aimed at obtaining quantitative data with a few open ended questions whose response constituted qualitative data. The questionnaire was subdivided in to five sections capturing data on social demographic and economic characteristics of caregiver, fluid intake, feeding practices use of zinc supplementation and barriers to appropriate management.

FGD guide consisted of open ended questions with probes aimed at determining caregivers perception towards the recommended interventions in home management of acute gastroenteritis in children under five years as well as more data on barriers to appropriate home management.

3.12 Pre-testing of data collection tools

The research tools were pre tested by the researcher and the research assistants at Kenyatta National Hospital (KNH). Their validity and reliability was evaluated and adjustments made where necessary.

3.13 Data management

Quantitative data management

Research materials collected included signed informed consent, completed questionnaires, recorded transcripts and field notes. The data collected was only used for the purpose of the study and confidentiality was maintained at all levels. Anonymity of the study participants was maintained by use of questionnaire numbers during the analysis of quantitative data.

At the end of each day, the questionnaires filled that day were scrutinized and screened carefully for completeness, correctness, consistency, and validity. Meetings were held with the research assistants every two days to discuss the study progress and make adjustments regarding data collection process if necessary. The collected data was entered in Microsoft Excel program and data cleaning done. Missing values, Extreme values and inconsistency were identified and corrected. After cleaning, the data was exported to software for analysis; statistical package for social sciences (SPSS) version 21.0 computer package.

Qualitative data management

Qualitative data from focused group discussions was transcribed, translated into English and typed into Microsoft Excel software. Two spreadsheets were created for the two FGDs conducted. Each spreadsheet had three columns labeled participant anonymous number, the

question being answered and coding. Each response was written in a separate line on the column with the question being responded. The line was labeled with the anonymous number assigned to the participant during the discussion. Within each spreadsheet one sheet was used for each question. Coding was later done and themes were developed.

3.14 Data analysis and presentation

Quantitative data analysis

The quantitative data was analyzed using the statistical package for social sciences (SPSS) version 21.0 computer package. For categorical variables such as gender, level of education, marital status, religion and income generating activity, frequencies and percentages were computed and presented in frequency tables, pie charts and bar charts. For numerical variables such as caregivers' age, child's age and days that the child had diarrhoea, means and standard deviation were calculated for normally distributed data. For skewed data median and inter-quartile range will be calculated and presented in a frequency table.

Pearson's correlation was used to determine significance of association of the independent and the dependent variables. Confidence interval was set at 95% at P-value <0.05.

Qualitative data analysis

Once all the comments from focused group discussion had been entered in Microsoft Excel database, themes were identified across the entries for each question. The best category for organizing the data was identified and a number was assigned for each category. These numbers were written on each entry on the sheet which best fitted the category. The categories were then arranged based on the number of entries starting with the categories with the largest number of

entries to those with the smallest. Heading titles were identified for the categories and the findings for each category written in a narrative form. Verbatim responses were quoted to illustrate the key themes that emerged from the discussions.

3.15 Ethical consideration

Approval to carry out this research was obtained from the University of Nairobi/Kenyatta National Hospital Ethics and Research Committee (UoN / KNH-ERC) and Mbagathi District Hospital.

Written informed consent was obtained from each study participant. Confidentiality and anonymity were assured to all participant and their rights were respected and adhered to by the researcher and the assistants.

3.16 Study limitations

Being an institutional based study that was conducted in just one hospital the barriers to appropriate home management of acute gastroenteritis among caregivers in other hospitals as well as those who do not take their children to the hospital was not identified hence the results of the study might not be generalized to the entire population.

3.17 Minimization of bias

To minimize bias, the research tools were pre-tested to ensure their validity and reliability. Both quantitative and qualitative methods were utilized and the study tool utilized in each method was similar for all participants.

Recall bias was minimized by restricting the target population to care givers of children with acute gastroenteritis (diarrhoea lasting for less than 14 days).

CHAPTER FOUR: STUDY RESULTS

This chapter presents the study findings. A total of 209 caregivers were interviewed using a structured questionnaire and two focus group discussions consisting of 9 and 7 participants were conducted.

4.1 Socio-demographic characteristics

4.1.1 Social demographic characteristics of the caregivers

Most respondents 96.2% (n=201) were females aged between 17-41 years with an average age of 26 years. Out of the 209 respondents, 35.4% (n=74) had completed secondary school education, 27.3% (n=57) had completed primary school education while 2.4% (n=5) of the participants had not acquired any form of education.

Majority of the participants 83.7% (n=175) were married, 12.9% (n=27) were single and a few of them 1.9% (=9) and 1.4% (n=3) were either separated or widowed respectively. Majority of the caregivers had only one child 42.6% (n=89) while 16.8% (n=35) had two children. 58.4% (n=122) of the caregivers were housewives and 22.5% (n=47) were self employed. The average monthly income of most of the caregivers was below 5,000 Kenya shillings 55.5% (n=116) with only 1% (n=2) of the caregivers earning 20,000 Kenya shillings and above. Most of the caregivers 92.8% (n=194) were Christians. Table1.

Table 1: Socio-demographic characteristics of caregivers

Variables	n(%)
Gender	
Male	8(3.8%)
Female	201(96.2%)
Total	209(100%0
Age in years	Mean =26.1 SD =5.13 Min-Max=17-41
Level of education	
None	5(2.4%)
Primary school not completed	17(8.1%)
Primary school completed	57(27.3%)
Secondary school not completed	41(19.6%)
Secondary school completed	74(35.4%)
College/university education	15(7.2%)
Total	209(100%)
Marital status	
Single	27(12.9%)
Married	175(83.7%)
Separated	4(1.9%)
Widowed	3(1.4%)
Total	209(100%0
Number of children	
None	3(1.4%)
One	89(42.6%)
Two	65(31.1%)
Three	35(16.8%)
Four	11(5.3%)
Five	6(2.9%)
Total	209(100%)
Income generating activity	
Housewife	122(58.4%)
Formal employee	19(9.1%)
Self employed	47(22.5%)
Casual labourer	15(7.2%)
Student	6(2.9%)
Total	209(100%)
Monthly income	
Below 5000	116(55.5%)
6000-10000	70(33.5%)
11000-15000	17(8.1%)
16000-20000	4(1.9%)
20000 and above	2(1%)
Total	209(100%)
Religion	
Catholic	42(20.1%)
Protestant	152(72.7%)
Muslim	15(7.18%)
Total	209(100%)

4.1.2 Socio-demographic characteristics of children

Among the children who had acute gastroenteritis, 57.4% (n=120) were males while 42.6% (n=89) were females. Their median age was 14 months with an interquartile range of 8-24 months. Majority of them were first born 47.4% (n=99), 27.8% (n=58) were second born, 17.7% (n=37) were third born, 2.9% (n=6) were fourth born and only 2.9% (n=6) were fifth born and above. Most of the children 94.8% (n=198) had their mothers as the caregivers. Table2.

Table 2: Socio-demographic characteristics of children

Variables	**n(%)**
Gender	
Male	120(57.4%)
Female	89(42.6%)
Total	209(100%)
Age in months	Median=14 Interquartile range =8-24
Birth Order	
First born	99(47.4%)
Second born	58(27.8%)
Third born	37(17.7%)
Fourth born	9(4.3%)
Fifth born and above	6(2.9%)
Total	209(100%)
Caregiver/ child relationship	
Mother	198(94.8%)
Father	6(2.9%)
Aunt	1(0.5%)
Brother	3(1.4%)
Cousin	1(0.5%)
Total	209(100%)

4.1.3 Socio-demographic characteristic of the caregivers' spouse

Among the married caregivers, 53.7% (n=94) of their spouses had completed secondary school education while 17% (n=31) had acquired tertiary education and 15.4% (n=27) had completed primary school education. Fifty seven point seven percent (n=101) were in formal employment, 23.4% (n=41) were self employed while 18.3% (n=32) were casual labourers. Most 31.4% (n=55) of them had an average monthly income of between 11,000-15,000 Kenya shillings while 4% (n=7) had a monthly income of below 5,000 Kenya shillings. This information is illustrated in table 3.

Table 3: Characteristics of the Spouse

Variables	n(%)
Education level	
None	1(0.6%)
Primary school not completed	5(2.9%)
Primary school completed	27(15.4%)
Secondary school not completed	12(6.9%)
Secondary school completed	94(53.7%)
College/university education	31(17.7%)
Don't know	5(2.9%)
Income generating activity	
House wife	1(0.6%)
Formal employee	101(57.7%)
Self employed	41(23.4%)
Casual labourer	32(18.3%)
Total	175(100%)
Monthly Income	
Below 5000	7(4%)
6000-10000	42(24%)
11000-15000	55(31.4%)
16000-20000	49(28%)
20000 and above	22(12.6%)
Total	175(100%)

4.2 Duration of diarrhoea

The median duration of the current diarrhoea episode was 3 days. The minimum duration was one day while the maximum duration was 13 days.

4.3 Care givers practices

4.3.1 Fluid intake

Majority, 64.1% (n=134) of the caregivers increased the amount of fluids they gave to their children, 15 % reduced the amount, 10.1% gave the usual amount of fluids and 10.5% gave no fluid to their child.

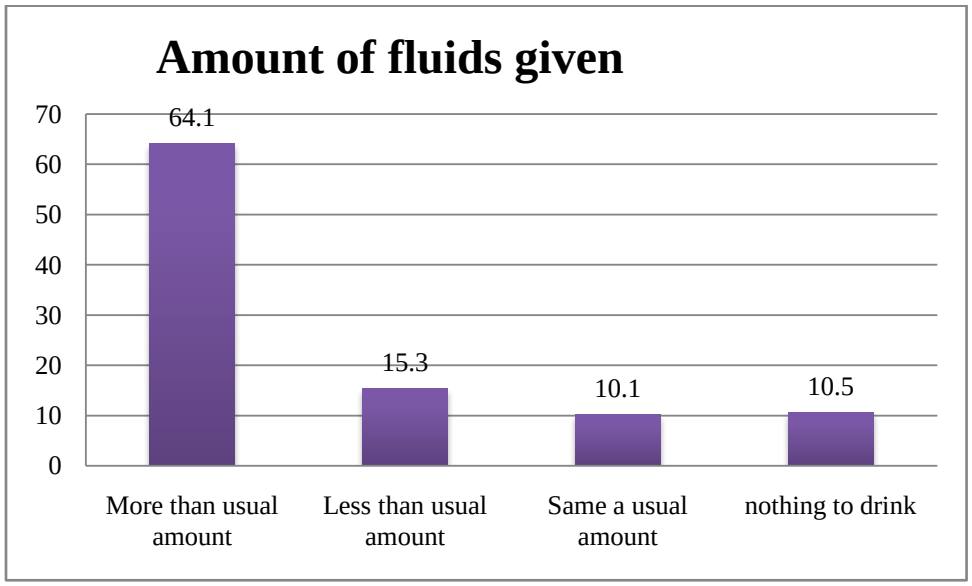

Figure 3: Fluids given

4.3.1.1 Fluids Used

As illustrated in Table 4, most of the caregivers gave fluids at home with majority of them 87.6% (n=183) reporting to have given clean, safe water. 76% (n=159) gave cereal gruel (uji), 71.3% (n=149) gave fresh or fermented milk, 54.1% (n=113) gave fresh fruit juices, 54% (n=114) gave soups prepared from meat fish or chicken and 50.2% (n=104) gave salt/sugar solution.

Table 4: Types of fluids used

Fluid	Used n (%)	Did not use n (%)
Cereal gruel(Uji)	159(76%)	50(23.9%)
Fresh and fermented milk	149(71.3%)	60(28.7%)
Fresh fruit juices	113(54.1%)	96(45.9%)
Soups prepared from meat, fish and chicken	114(54%)	95(45.5%)
Clean, safe water	183(87.6%)	26(12.44%)
Sugar/ salt solution	104(50.2%)	103(49.8%)

4.3.1.2 Socio-demographics characteristic versus fluid administration

There was a significant association between the caregivers occupation and amount of fluid administered (p=0.004). Majority of house wives 64.8% (n=79) and self employed 74.5% (n=35) caregivers increased the amount of fluid administered to the child. In regard to child's gender, more males 69.7% (n=83) were given more fluids than females illustrating a significant association (p=0.049). Married status was also significantly associated with fluid administration (p-value <0.0001). Most of the married caregivers 69.1% (n=121) increased fluid intake.

Table 5: Analysis of caregivers' socio-demographics characteristics and fluid administration

		Amount of fluid given									
		More than usual		Less than usual		Same as usual		Nothing to drink			
		n	%	n	%	n	%	n	%	Chi-square	P value
Gender	Male	4	50.0%	1	12.5%	3	37.5%	0	0.0%	6.887	0.076
	Female	130	64.7%	31	15.4%	19	9.5%	21	10.4%		
Level of education	None	1	20.0%	2	40.0%	0	0.0%	2	40.0%	23.184	0.080
	Primary incomplete	9	52.9%	5	29.4%	3	17.6%	0	0.0%		
	Primary complete	36	63.2%	8	14.0%	8	14.0%	5	8.8%		
	Secondary incomplete	33	80.5%	5	12.2%	1	2.4%	2	4.9%		
	Secondary complete	47	63.5%	9	12.2%	9	12.2%	9	12.2%		
	Tertiary	8	53.3%	3	20.0%	1	6.7%	3	20.0%		
Occupation	Housewife	79	64.8%	27	22.1%	6	4.9%	10	8.2%	29.267	**0.004***
	Formal employment	10	52.6%	2	10.5%	3	15.8%	4	21.1%		
	Self employed	35	74.5%	0	0.0%	9	19.1%	3	6.4%		
	Casual labourer	8	53.3%	2	13.3%	3	20.0%	2	13.3%		
	Others	2	33.3%	1	16.7%	1	16.7%	2	33.3%		
Income	<5000	75	64.7%	21	18.1%	11	9.5%	9	7.8%	15.981	0.192
	6000-10000	45	64.3%	10	14.3%	8	11.4%	7	10.0%		
	11000-15000	12	70.6%	1	5.9%	1	5.9%	3	17.6%		
	16000-20000	1	25.0%	0	0.0%	2	50.0%	1	25.0%		
	>20000	1	50.0%	0	0.0%	0	0.0%	1	50.0%		
Religion	Catholic	24	58.5%	6	14.6%	7	17.1%	4	9.8%	5.095	0.532
	Protestant	102	67.1%	22	14.5%	12	7.9%	16	10.5%		
	Muslim	8	53.3%	3	20.0%	3	20.0%	1	6.7%		
Marital status	Single	13	48.1%	3	11.1%	6	22.2%	5	18.5%	37.799	**<0.0001***
	Married	121	69.1%	26	14.9%	12	6.9%	16	9.1%		
	Separated	0	0.0%	1	25.0%	3	75.0%	0	0.0%		
	Widowed	0	0.0%	2	66.7%	1	33.3%	0	0.0%		
Child's gender	Male	83	69.7%	19	16.0%	7	5.9%	10	8.4%	7.851	**0.049***
	Female	51	56.7%	13	14.4%	15	16.7%	11	12.2%		

***** Significance at p-value <0.05

4.3.2 Use of ORS

4.3.2.1 Caregivers' knowledge of ORS

Most 89% (n=186) of the participants had either heard about or seen ORS sachets with vast majority of them 95.2% (n=177) reporting to have learnt about ORS from a health care provider. Among the 186 caregivers who knew about ORS, 58% (n=108) said that ORS is used to replace the fluid that the body looses during diarrhoea, 41% (n=76) said it is used to stop diarrhoea while 1% (n=2) did not know its use.

4.3.2.2 Knowledge on use of ORS versus ORS administration

There was no statistical association between the caregivers' knowledge on use of ORS and use of ORS. However, majority 73% (n=81) of the caregivers who knew the correct use of ORS used it.

Table 6: Association between caregivers' knowledge on use of ORS and actual use

		Given ORS					
		Yes		No			
		n	%	n	%	Chi-square	P value
Knowledge on use of ORS	Fluid replacement	81	73.0%	30	27.0%	5.419	0.067
	Stop diarrhoea	51	67.1%	25	32.9%		
	Don't know	0	0.0%	2	100.0%		

4.3.2.3 Use of oral rehydration salts (ORS)

A good number 64% (n=134) of caregivers gave their children ORS at home with 56.7% (n=76) reporting to have obtained the ORS sachets from a health center, 39.6% (n=53) from a private pharmacy while 3% (n=4) and 0.8% (n=1) obtained the sachets from a community health worker and friend respectively. However, 36% (n= 75) of the caregivers did not give ORS to their children at home.

4.3.2.4 Duration of keeping prepared ORS

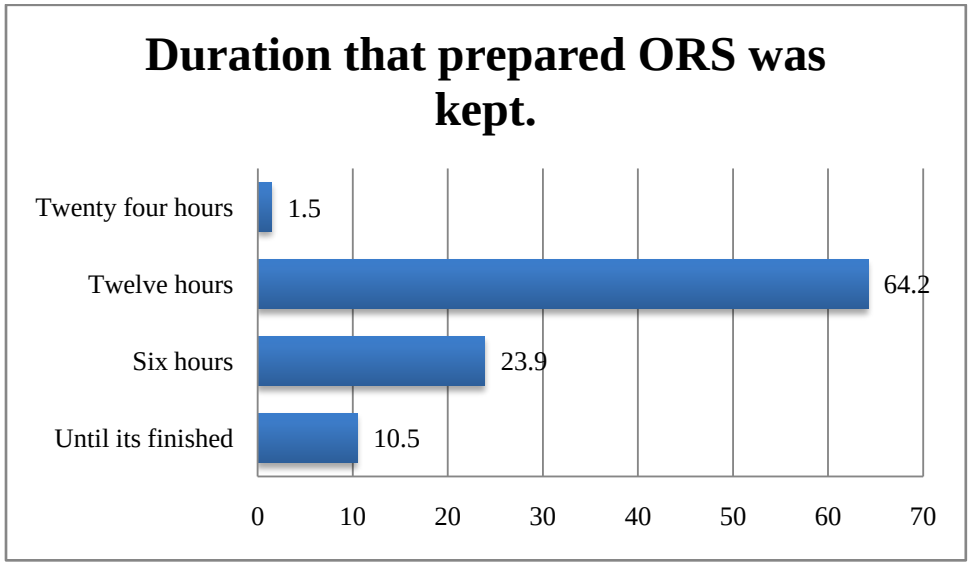

Figure 4: Duration of prepared ORS storage

Figure 4 above illustrates that once prepared, majority of the caregivers 64.2% (n=86) kept the prepared solution for 12 hours, 23.9% (n=32) kept it for 6 hours, 10.5% (n=14) kept it until it gets finished while 1.5% (n=2) kept the solution for 24 hours.

4.3.2.5 Frequency of ORS administration

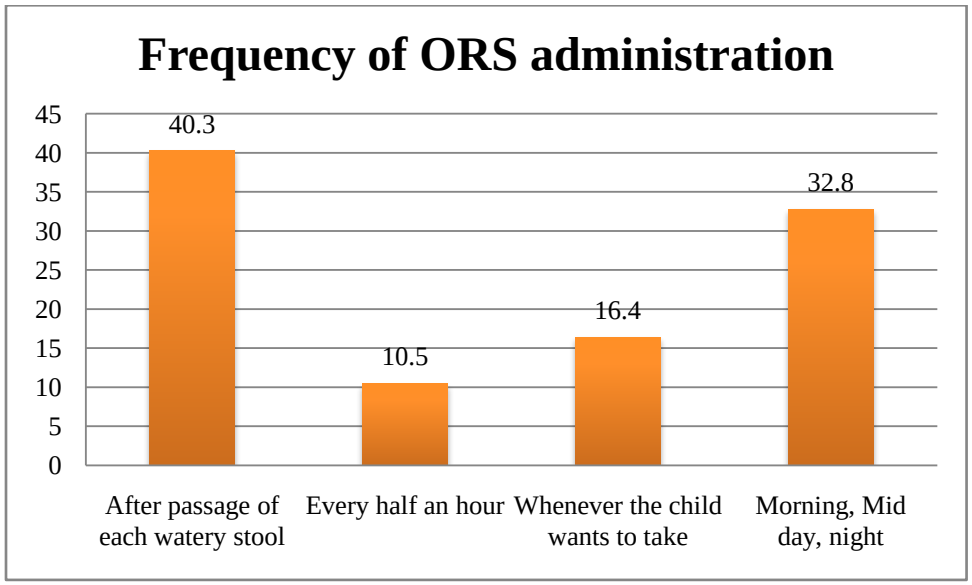

Figure 5: Frequency of ORS administration

Majority of the caregivers 40.3% (n=54) gave ORS to their children after passage of each watery stool, 32.8% (n=44) gave ORS three time a day, 16.4% (n=22) gave it whenever the child wanted to take and 10.5% (n=14) gave ORS every half an hour. These findings are presented in figure 5.

4.3.3 Feeding practices

4.3.3.1 Breastfeeding

60.3% (n=126) of the children were breastfeeding and 16.7% (n=21) of these children were on exclusive breastfeeding. 75.4% (n=95) of the participant reported to have increased the breastfeeding frequency, 13.5% (n=17) reduced the frequency while 11.1% (n=14) breastfed about the same amount. This is illustrated in figure 6 below.

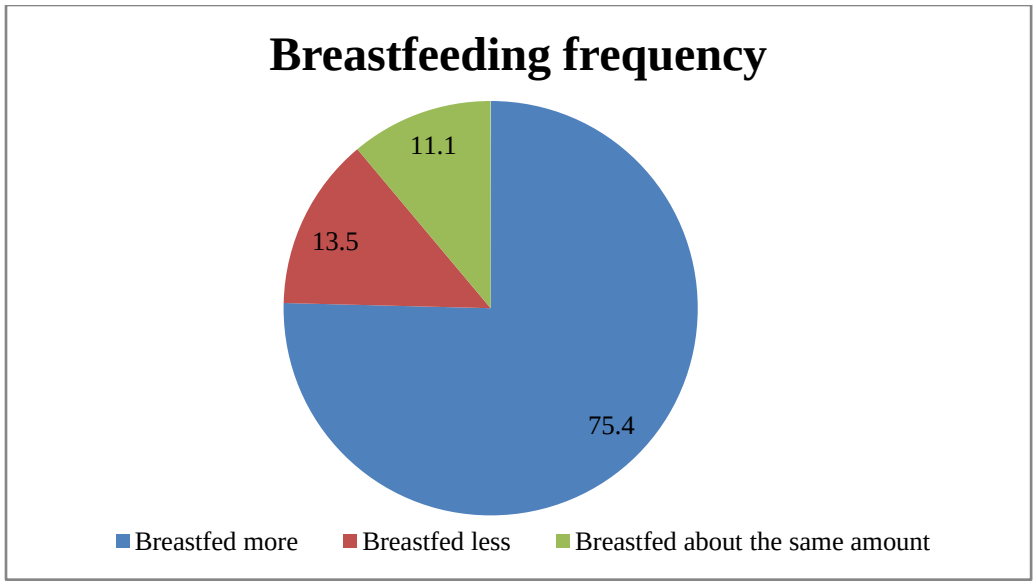

Figure 6: Breastfeeding frequency

4.3.3.2 Food intake

Figure 7 illustrates that among the 188 caregivers whose children were not on exclusive breastfeeding; majority, 45.7% (n=86) of them reduced the amount of food they gave to their children. Thirty five point nine percent (n=67) gave the usual amount of food, 15.4% (n=29) increased the amount of food and 3.2% (n=6) did not give any food to their children during the diarrhoea episode.

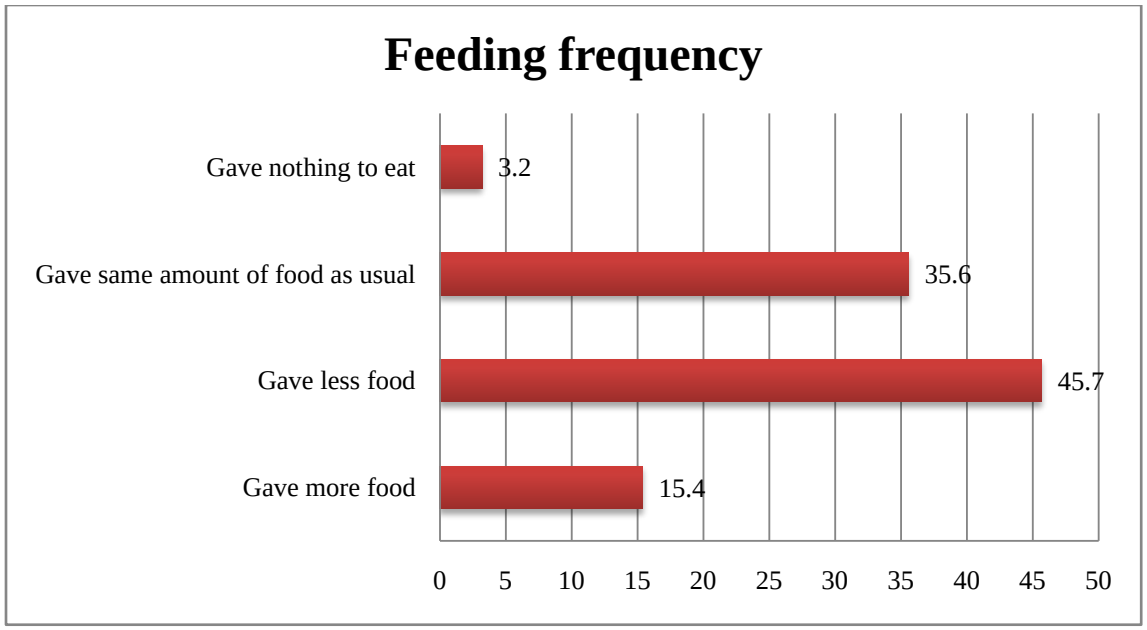

Figure 7: Feeding frequency

4.3.4 Use of zinc supplements

4.3.4.1 Caregivers' knowledge of zinc supplements

66.8% (n=139) of the caregivers knew about zinc supplements while 33.2% (n=69) had not heard about it. Only a few 19.7% (n=27) of the caregivers who had heard or seen zinc supplements knew the recommended duration of administering supplements as shown in figure 8.

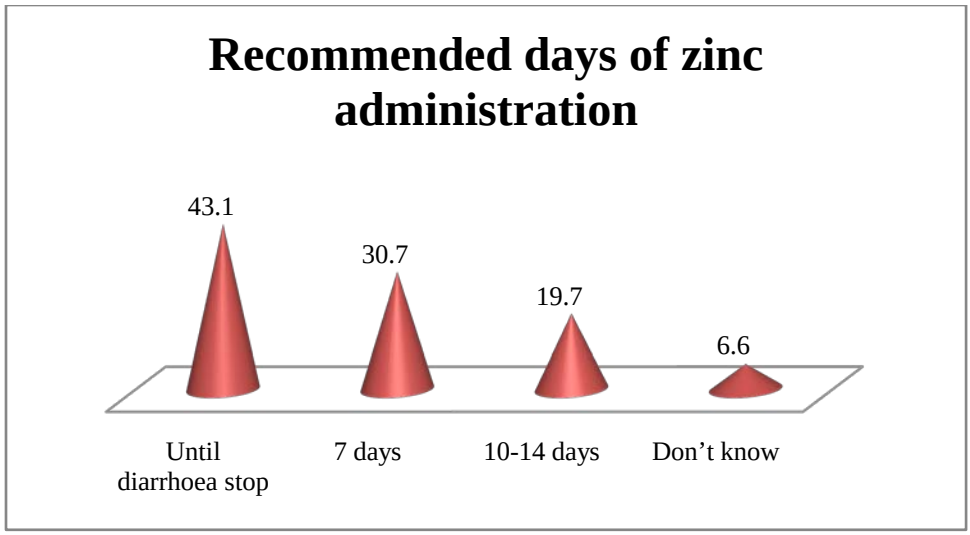

Figure 8: Duration of administration of zinc

4.3.4.2 Relationship between knowledge on recommended days of zinc administration and actual use

There was no significant association between caregivers' knowledge on recommended zinc administration days and actual use as illustrated in table 7.

Table 7: Association between knowledge on recommended days of zinc administration and actual use

		If given Zinc					
		Yes		No			
		n	%	n	%	Chi-square	P value
Recommended zinc admin days	Until diarrhoea stops	39	67.2%	19	32.8%	5.104	0.164
	Seven days	19	45.2%	23	54.8%		
	10-14 days	16	59.3%	11	40.7%		
	Don't know	5	50.0%	5	50.0%		

4.3.4.3 Use of zinc supplements

Most of the children 62% (n=130) were not given zinc supplement at home. Among the caregivers who had given zinc supplements to their children, majority of them 55.7% (n=44) had obtained the supplements from a public health facility, 35.4% (n=28) from a private clinic/pharmacy, 7.6% (n=6) from a community health worker and 1.3% (n=1) from a friend/relative.

4.3.4.4 Socio-demographics characteristics versus use of zinc supplements

Though there was no significant association between the caregivers' socio-demographic characteristics and use of zinc, female caregivers were more likely to use zinc supplement compared to males. This is illustrated in table 8.

Table 8 : Association between socio-demographic characteristics of caregivers and use of zinc supplements

		If given Zinc					
		Yes		No			
		n	%	n	%	Chi-square	P value
Gender	Male	0	0.0%	2	100.0%	2.764	0.096
	Female	79	58.5%	56	41.5%		
Level of education	Primary incomplete	6	50.0%	6	50.0%	2.548	0.636
	Primary complete	23	67.6%	11	32.4%		
	Secondary incomplete	15	60.0%	10	40.0%		
	Secondary complete	29	51.8%	27	48.2%		
	Tertiary	6	60.0%	4	40.0%		
Occupation	Housewife	45	54.9%	37	45.1%	2.819	0.588
	Formal employment	8	53.3%	7	46.7%		
	Self employed	21	65.6%	11	34.4%		

	Casual labourer	3	50.0%	3	50.0%		
	Others	2	100.0%	0	0.0%		
Income	<5000	38	52.1%	35	47.9%	6.467	0.167
	6000-10000	34	70.8%	14	29.2%		
	11000-15000	6	46.2%	7	53.8%		
	16000-20000	0	0.0%	1	100.0%		
	>20000	1	50.0%	1	50.0%		
Religion	Catholic	21	70.0%	9	30.0%	2.778	0.249
	Protestant	54	55.1%	44	44.9%		
	Muslim	4	44.4%	5	55.6%		
Marital status	Single	9	64.3%	5	35.7%	3.029	0.387
	Married	69	58.0%	50	42.0%		
	Separated	0	0.0%	2	100.0%		
	Widowed	1	50.0%	1	50.0%		

4.3.4.5 Decision to seek treatment and use of zinc and ORS

Most of the caregivers 94.9% (n=75) who gave their children zinc supplements reported to have also given ORS and 77.9% (n=61) were still giving zinc supplements at the time of interview.

According to table 9, there was a statistical association between the person who makes a decision to seek treatment and use of ORS (p-value 0.043). In cases where one parent was the decision maker all the children were given ORS while 12.5% (n=4) of children whose both parents were decision maker were not given ORS.

Table 9: Decision maker versus ORS and zinc use

		If given zinc together with ORS					
		Yes		No			
		n	%	n	%	Chi-square	P-value
Who decides to seek treatment	Father	2	100.0%	0	0.0%	6.316	**0.043***
	Mother	46	100.0%	0	0.0%		
	Both	28	87.5%	4	12.5%		

* Significant at p-value <0.05

4.3.4.6 Use of other medications

33% (n=69) of the caregivers had given their children other medications at home with majority 82.6 % (n=57) of them reporting to have given an antibiotic. A few of the caregivers gave both an antibiotic and an anti-diarrhoea medication. This is shown in table 10.

Table 10 : Other drugs given

Drug	n(%)
Herbal medicine	6(8.7%)
Antibiotics	57(82.6%)
Anti-diarrhoea	13(18.8%)

4.4 The caregivers' perceptions

4.4.1 Perceived causes of diarrhoea in children

From FGD discussions, dirt was perceived as the main cause of diarrhoeal disease in children. However teething as well as cultural beliefs were also mentioned as common cause as reflected in the verbatim responses below;

"Children diarrhoea while teething" (FGD1-participant3).

"When the moon is emerging at the corner, a child develops diarrhoea which stops when the moon goes back" (FGD1-participant 9).

"If you have a young child who is breastfeeding and your shadow happens to meet with that of a person whose either spouse or child has died and is still mourning, your child develops diarrhoea" (FGD2-participant 3).

4.4.2 Believe in supernatural causes of diarrhoea versus use of ORS and zinc

A few 37% (n=77) of the caregivers reported that diarrhoea can occur as a result of curse or other supernatural causes. Though over 50% of these caregivers had not used ORS or zinc there was no statistical significance between believe in supernatural causes of diarrhoea and use of ORS and zinc as P- values were 0.918 and 0.300 respectively. Table 11 illustrates these findings.

Table 11: Association between believe in supernatural causes of diarrhoea and use of ORS and zinc

		Given ORS				If given Zinc			
		Yes		No		Yes		No	
		n	%	n	%	n	%	n	%
If caused by curse	Yes	53	74.6%	18	25.4%	32	57.1%	24	42.9%
	No	79	67.5%	38	32.5%	47	58.0%	34	42.0%
	Chi-square	1.073				0.011			
	P value	0.300				0.918			

4.4.3 Management of diarrhoea caused by teething

From the discussions, it could be noted that response to diarrhoea due to teething would most likely be delayed as caregivers observed the turn of events;

"At first I assumed diarrhoea will stop on its own when my child was teething but the child became worse and I had to take the child to the hospital" (FGD1-participant3).

4.4.4 Management of diarrhoea caused by supernatural forces

Figure 9 illustrate that majority, 76.6% (n=59) of the caregivers reported that ORS and zinc supplements should not be used to treat diarrhoea caused by supernatural forces. Among them, 81.4% (n=48) said that herbal medicine should be used as shown in figure 10.

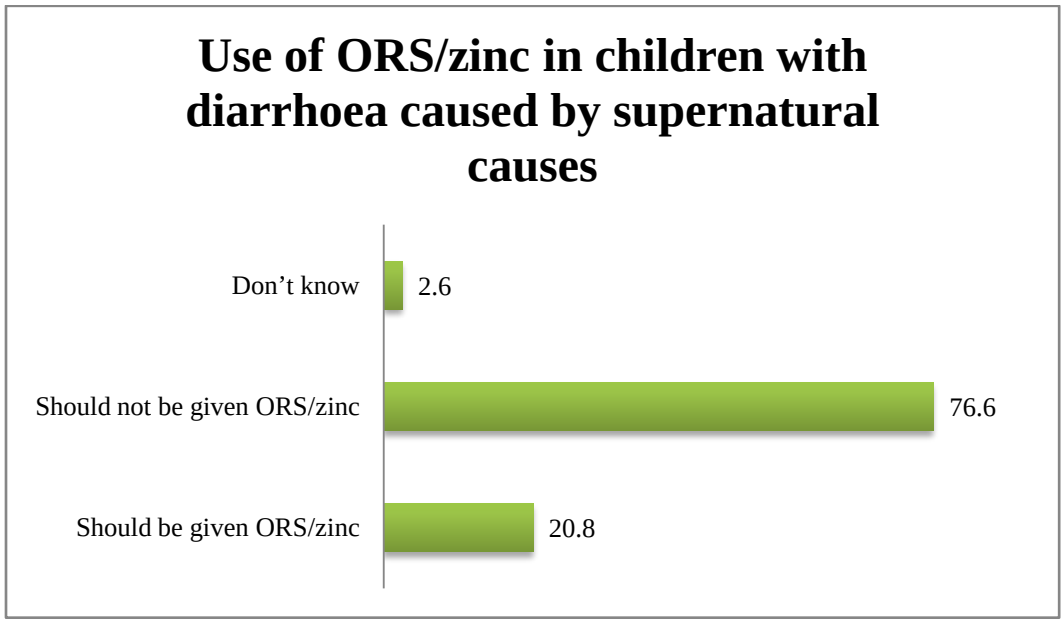

Figure 9: Use of ORS/zinc in diarrhoea caused by supernatural forces

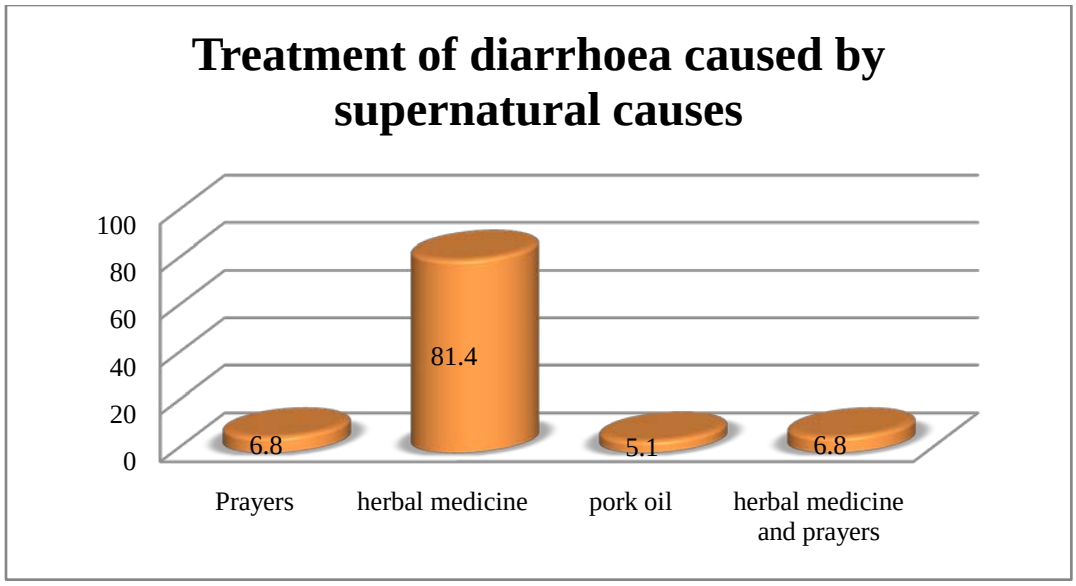

Figure 10: Treatment of diarrhoea caused by supernatural forces

The caregivers who participated in FGD also reported that herbal medicine should be used to treat diarrhoea caused by supernatural forces;

"Traditional medicine is used. The disease is called "chira"(Dholuo word for illnesses caused by witchcraft) and it never responds to conventional medicine. The child should be taken to a traditional healer" (FGD2-participant5).

"If the child happens to be given conventional medicine such as ORS and zinc the traditional healer will refuse to treat the child and therefore conventional medicine should not be given"(FGD 1-participant 4).

The caregivers gave various names of herbs used in their communities. They included *"Mwarubaini"* (Neem), Aloevera, *"Khalulu"* a Luhya name for grass like leaves used for treatment of diarrhoea, *"Nyamnyam"* a luhya name for a tree whose roots are used to treat diarrhoea, *"Akech"* a Dholuo name for a tree whose bark is used to treat many illnesses

"Mavinzo" a Luhya name for a tree with yellow flowers whose leaves are medicinal, *"Maasai mix*" a mixture of different herbs Prepared by the Maasai people, and *"Imbuli yumtakha"* a Luhya name for a tree whose leaves are medicinal.

Though the names of the herbs varied with ethnicity, their preparation and administration was similar among the different communities. The caregivers reported that the herbs should be boiled in water and the child is given 2-3 spoonfuls three times per day for about three days;

"A tree with leaves like grass called Khalulu is boiled in water and the child is given about 2-3 spoons based on child's age"(FGD2-participant4).

"Mavinzo is a tree with green leaves and yellow flowers. The leaves are crushed and boiled and given to a child with diarrhoea"(FGD2-participant 8)

"Mwarubaini washes dirt from stomach and stops diarrhoea. I Boil a few leaves until water turns colour and then I give three spoonful to a child. Given for three days and diarrhoea will stop"(FGD 1-participant5).

"Boil the leaves of aloevera and give 3 spoonfuls three times daily for 3 days, if diarrhoea continues seek conventional treatment"(FGD1-participant4).

Older women in the community are the only ones who are able to diagnose an illness that is caused by supernatural powers which was described to manifest with *"extreme weight loss, skin folds and the child remains strong despite the illness"* (FGD1-participant7).

4.4.5 Signs of diarrhoea disease in children

Stool texture and smell were reported as the main identifier of diarrhoea in children. They also present with hotness of the body, sunken eyes, body weakness and restlessness;

"My child developed hotness of the body which did not subside with administration of paracetamol syrup and after three days the child started passing more watery stool than usual which was foul smelling" (FGD2-participant5).

The caregivers were asked about their greatest concern when their child develops diarrhoea and loss of body fluids was reported as the major concern. Appetite and weight loss also concerned the caregivers as well as if the child became lethargic. They reported that the child should be given more fluids when this signs are noted;

"Child looses energy and appetite. I boil water and I start giving him" (FGD1-participant3).

"The child looses a lot of water and thus more fluids should be give" (FGD2 participant 1)

4.4.6 Feeding perceptions and preferences

The participants reported that children who have diarrhoea should be given energy providing foods. The quantity of meal should be reduced especially if the child is vomiting. The caregivers had a preference in choice of food that they give their children when they have diarrhoea. Cereal gruel (uji) was the main type of food/ drink given to children with diarrhoea and Sorghum was the most preferred cereal. Fermented milk and ripe bananas were also given;

"I usually give my child uji made of millet and sorghum flour whenever he develops diarrhoea because sorghum hardens the stool and stops diarrhoea. It also increases blood level in the body" (FDG1-participant9);

"Mtama (Sorghum) uji stops diarrhoea" (FGD2-participant 1)

Breast milk was reported to be a complete meal with all nutrients. The caregivers reported that breastfeeding should be continued during the diarrhoea episode;

"I continued breastfeeding my child while he had diarrhoea and was not eating other food and the child did not lose weight" (FGD1-participant8).

4.4.7 Food withholding during diarrhoea

Some 29.7% (n=55) of the caregivers withheld certain types of food from their children during the diarrhoea episode. Foods that had been withheld by the caregivers were fresh milk, potatoes, cooked bananas, pumpkin, rice, beans, fatty food and ugali. Majority of the caregivers 87.3% (n=48) who had withheld food reported that these types of food enhances the diarrhoea. 12.7% (n=7) said that food such as beans, ugali and bananas also causes abdominal cramps.

Fresh milk was reported to be the main food/ fluid withheld by many caregivers as a practice that is passed from one generation to the other due to the perception that it enhances diarrhoea;

"I don't give fresh milk to my child when he has diarrhoea because my mother taught me to only give fermented milk to a child who has diarrhoea" (FGD1-participant1) .

4.4.8 Caregivers perceptions of ORS

All the FGD participants were familiar with ORS and they said it adds water and mineral to the body. ORS was reported to be an affordable product that can easily be acquired and administered to a child with diarrhoea without a doctor's prescription. The taste of ORS was however reported to be unpalatable, *"ORS tastes bad and I cannot take it personally. I also give the child in small quantities because of its unpalatable taste"* (FGD1-participant7) . The caregivers observed that ORS sachets have instruction on preparation procedure as well as dosage and thus easy to prepare and administer at home.

4.4.9 Caregivers' perceptions of zinc supplements

Zinc supplement was described as a drug that is used to stop diarrhoea and vomiting. Its duration of administration *"depends on severity of diarrhoea ranging from 3 days to 2 weeks"* (FGD1-participant1). The caregivers observed that the supplement should only be prescribed by a doctor;

"Zinc should only be given in severe cases of diarrhoea because in the hospital not all children are given zinc. It is rarely given to the children admitted in the ward. When you ask for zinc in hospital the doctors say they want to know the cause of diarrhoea first before they give you zinc"(FGD1-participant4).

The caregivers were asked if both ORS and zinc should be administered to a child with diarrhoea. Preference of ORS to zinc supplement was expressed by the caregivers who reported that ORS has no side effects unlike zinc supplement;

"Whenever I give my child zinc he vomits and therefore I only give him ORS when he develops diarrhoea".(FGD2-participant7).

4.4.10 Use of other drugs in treatment of diarrhoea

The caregivers had a perception that metronidazole is a better treatment for diarrhoea than ORS and zinc. Most of the caregivers had given their children flagyl (metronidazole) to treat diarrhoea at home. Septrin (cotrimoxazole) was also reported to be used in treatment of diarrhoea. They reported that they prefer these medications because doctors prescribe these medications to their children when they go to the hospital for treatment of diarrhoea;

"In chemist I am always given flagyl and not ORS whenever my child has diarrhoea" (FGD2-participant5).

"I give my child septrin because it is an antibiotic and the child is usually given the same medication in a hospital or chemist when he has diarrhoea" (FGD1-participant1).

"After the child has passed diarrhoea more than three times, I buy flagyl and give the child. If diarrhoea does not stop I take the child to the hospital" (FGD2-participant1).

4.4.11 Perceptions of herbal versus conventional medicine

Herbal medicine was reported to be good however the caregivers stated that they preferred conventional medicine which they said works better. The choice of medication is influenced by the locality of the caregiver at the time of illness;

"ORS and zinc works better compared to herbal medicine as ORS adds water and zinc adds strength to the body while herbal medicine just stops diarrhoea and does not add water to the body and neither does it give strength to the body. My choice of drug depends on my locality. When am in the rural area I give my child herbal medicine. But while in urban setting I use ORS and Zinc" (FGD1-participant4).

4.5 Barriers to home management

Majority of the caregivers 65% (n=135) reported that it is not easy to treat diarrhoea at home. Lack of knowledge on appropriate home management was reported as the main reason as to why it is not easy to treat diarrhoea at home. Out of the 135 caregivers, 89.6% (n=121) reported that they lacked adequate knowledge thus did not know what a child with diarrhoea should be given at home. A few of them reported to have tried without success. Fear of giving wrong and

unprescribed medication was also reported by the caregivers who preferred taking the child to the hospital. The caregivers also reported that they were not aware of availability of ORS and zinc in other places other than hospitals;

"I have never known that ORS is available in Chemists" (FGD2-participant6).

Poverty and distance of health facilities were also reported as reasons to why the caregivers don't utilize the recommended interventions in home management of diarrhoea. Most caregivers preferred to use herbal medicine which were locally available due to lack of money;

"When the government hospital is far and one has no money to buy medicine from private hospital or chemist people prefer giving herbal medicine which is easily available and its cheap"(FGD2-participant7).

Cultural beliefs and values had an influence on the choice of treatment. The caregivers reported that having been brought up in rural areas where they used to be given herbal medicine whenever they became ill influenced them to use the same herbs to treat their children. In some of the communities diarrhoea is thought to be a way of cleansing the stomach and therefore treatment is supposedly not required;

"People prefer giving herbal medicine other than conventional medicine because many believe in it and have never been to a hospital as they always use herbal medicine" (FGD2-participant 4).

"One is advised on leaves that treat diarrhoea and thus looses faith in conventional medicine which most people seek when the herbal medicine fail to work" (FGD1-participant1).

"In rural areas you are advised to let the child diarrhoea to get rid of the dirt in the stomach. You observe the child for about 2-3 days in the hope that diarrhoea will stop." (FGD1-participant5).

Prescriber practices for instance widespread prescription of metronindazole to children with diarrhoea in hospitals and chemists deterred the caregivers from using ORS and zinc supplements. The caregivers also reported that it took a lot of time to prepare ORS. The taste of ORS also hinders the caregivers from administering ORS to their children;

"Chemists just give flagyl rather than ORS to children with diarrhoea and therefore people know about flagyl only" (FGD2-participant4);

"Some people feel that it takes a lot of time to prepare ORS. They feel its wastage of time and prefer taking the child to the hospital to be given intravenous fluids" (FGD1-participant4).

"Children don't want to take ORS and I therefore give my child flagyl" (FGD2-participant2).

4.6 How to improve home management of diarrhoea

The caregivers reported that health messages on home management of diarrhoea in children should be provided by healthcare providers. They also emphasized the importance of maintaining cleanliness in the environment they live in and provision of ORS in the community. They also stated the importance of seeking advice from other caregivers.

"Health workers should visit house to house teaching people about ORS and zinc" (FGD2-participant4).

*"ORS to be available in all nearest health facilities" (*FGD2-participant1).

"Consult other mothers who have had experience with diarrhoea for information" (FGD1-participant3).

CHAPTER FIVE: DISCUSSION

Community Integrated Management of Childhood Illnesses (C-IMCI) focuses on home management of common childhood illnesses in order to reduce childhood morbidity and mortality (WHO, 2005). Diarrhoea is one of the common childhood illnesses in children and based on the IMCI guidelines, the ministry of public health and sanitation in Kenya developed policy guidelines on control and management of diarrhoeal diseases in children below five years in Kenya. Improved home management as one of the strategies in the policy guidelines focuses on empowering the caregivers of children under five years to give early treatment at home to children with diarrhoea. The caregivers are expected to increase fluid intake continue feeding and administer zinc supplements, (MoPHS, 2010). From the study findings only 14.4% (n=30) of the respondents adhered to the three recommended interventions.

Caregivers are advised to increase fluid intake in order to prevent the child from developing dehydration. This study established that majority of the caregivers 64.1% increased the amount of fluid they gave to their children This finding is higher than the KDHS 2008 finding where only 26% of children with diarrhoea received more fluids than usual. In Western Kenya, a study carried out in year 2007-2010 had majority of the participants reporting to have either given the usual fluid amount or reduced (Omore, 2013). The change of practice observed in this study could be explained by the increased advocacy in diarrhoea management especially in radio stations which broadcast in various native languages.

There was a significant statistical association between caregivers' occupation and fluid administration (p- value 0.004). Housewives or self employed caregivers were more likely to increase amount of fluid administered. This could be so because these caregivers can easily alter

their daily activities to attend to the sick child. In Nigeria, being a manual worker was associated to seeking care from a medical centre while professional class were associated with use of pharmacy and medicine vendors(Aremu et al, 2011). Marital status was also significantly associated with amount of fluid administered (p-value < 0.0001). Most of the participants who were married increased amount of fluid they administered to their children compared to the other participants. Majority of the male children were given fluids compared to female children. This could be attributed to caregivers preference of boy child. However, Fuse (2010), had found that most Kenyans preferred a balanced family and thus this might not be attributed to gender preference.

Majority of the caregivers had utilized more than one type of the home available fluids with cereal gruel (uji) being used by majority of the caregivers. It is however important to note that 50.2% of the caregivers had given their children salt/sugar solution. This finding is similar to findings in a study in India where 48.8% of respondents reported salt sugar solution as a first choice in home treatment of diarrhoea (Shah et al, 2011). According to MoPHS 2010, salt sugar solution must not be used in management of diarrhoea in children. Its continued use by many caregivers could however be explained by the fact that its use had been advocated for many years.

Food intake should be increased during the diarrhoea episode in order to maintain adequate nutritional status of the child. Though majority of caregivers in this study continued feeding the child, they either gave the usual or less amount of food. Similar findings had been reported in KDHS 2008-09 findings where only 5% of children were given more food than usual. Reduction in food consumption was attributed to loss of appetite and vomiting. Blum et al (2011), had also

reported similar findings in a study carried out in Kibera and Asembo. Small feeds of nutritious easy to digest food should be given frequently to a child with diarrhoea (MoPHS, 2010).

Caregivers in this study withheld certain types of food from their children majority of which were believed to enhance diarrhea. Food withholding is a practice that has been identified in several studies. Green bananas were withheld by many caregivers who preferred ripe bananas. Oily food and fresh milk were also withheld. Similar findings had been reported in Nepal where caregivers also preferred ripe bananas and considered spicy and oily food as being harmful during diarrhoea (Ansari et al, 2012).

Frequency and duration of breastfeeding should be increased for exclusively breastfed babies while continued breastfeeding should be practiced among children who are not on exclusive breastfeeding, (MoPHS, 2010). All the children who were breastfeeding continued to be breastfed during the diarrhoea episode. Most 75.4% of the participants increased breastfeeding frequency. These findings concur with the findings of a study in Iran where 64% of the mothers breastfed their children more extensively during the diarrhoea episode, (Khalili et al, 2013). In Burkina Faso, 98.8% of the children continued to breastfeed throughout the entire period they had diarrhoea (Wilson et al, 2012). Though some of the study participants did not adhere to the recommended practice, none of the participant stopped breastfeeding.

Adequate knowledge is of paramount importance to practice as mothers who have used ORS before have been reported to have a 73% higher chances of utilizing recommended practices in comparison to those who have never heard or seen ORS (Njeri &Muriithi 2013). Majority 89% of participants in this study had heard or seen ORS. This finding is similar to KDHS 2008-09 finding illustrating that caregiver's knowledge of ORS have not increased since then. Majority

of the caregivers who knew about ORS portrayed adequate knowledge on use, preparation and administration of ORS, However only 64% of the participants gave ORS to their children at home. This finding clearly indicates that a gap still exist between knowledge and actual practice. In 2008-09, 89% of the caregivers knew about ORS but only 39% had administered it to their children at home during the diarrhoea episode (KDHS, 2008-09).

Use of zinc supplement in management of diarrhoea has not been adopted by many caregivers. 67% of caregivers in this study knew about zinc. Surprisingly only 38% of the caregivers had used zinc at home with vast majority of them not being aware of the recommended duration of administration and thus administering it for a shorter duration. Simpson et al (2013) also reported that the vast majority of caregivers administer zinc for fewer days than the recommended 10-14 days. According to KDHS 2008-09, less than 1% of children were given zinc supplements. In another study by Mukiira (2012), none of the participant reported using zinc. The findings in this study are therefore promising despite the fact that less than half of caregivers use zinc in treatment of diarrhoea.

Research has shown that zinc supplement is very beneficial in diarrhoea as it reduces the diarrhoea duration by 25% and lowers diarrhoea incidence in the next 2-3 months.(WHO, 2013). Use of zinc supplement is one of the rules in home based case management of diarrhoea, (MoPHS, 2010). It's however worrisome that majority of the caregivers are not aware of the supplement and the few who know about it fear giving it at home without a doctor's prescription. This could be due to the fact that prescription of zinc to children with diarrhoea by health workers is low (UNICEF, 2009). Majority of those who have used it do not administer it for the recommended duration. It is therefore important to increase advocacy on use of zinc with

emphasis on adherence to the recommended duration of administration and its benefits in management of diarrhoea in children.

Use of other medications was also reported in this study with the majority 27.3 % (n=57) of the caregivers who had used other medications using antibiotics. Use of antibiotics was also reported by Simpson et al, (2013). Similar findings were reported in a study in Nigeria where majority of the study participants had reported using antibiotics, anti-diarrhoeal and herbs (Adimora et al, 2011). Antibiotics should only be used for suspected or proven dysentery and cholera and their use is only limited to case management at health facility while anti-diarrhoeal and anti-emetic are not to be used as they have no proven value and some are dangerous (MoPHS, 2010).

Prescriber practices influenced caregivers' preference of antibiotics as majority reported to have been given the same medication in a hospital or chemist. A study in India illustrated that government and private medical practitioners were more likely to prescribe an antibiotic and anti-diarrhoea than they did ORS (UNICEF, 2009). In study carried out in rural Uganda, antibiotics had been prescribed by majority of the health care providers in management of diarrhoea (Lofgren et al 2012). In Burkina Faso, a study illustrated that health workers prescribed antibiotics and other medicines as frequently as they recommended ORS (Wilson et al, 2012). Clinicians inconsistency in prescribing ORS create uncertainty among caregivers on when ORS should be given (Blum et al, 2011).

The caregivers who believed in supernatural causes of diarrhoea were also likely to use ORS and zinc in treatment of diarrhoea. However diarrhoea illnesses perceived to be caused by supernatural forces were likely to be treated with herbal medicine. Believe in supernatural causes of diarrhoea had also been reported in a study in South Africa where supernatural forces

were perceived to cause illnesses among the very young and vulnerable infants (Kauchali, 2004). Herbal medicine had been used by some of the caregivers and was reported as the only treatment of diarrhoea perceived to be caused by supernatural forces. Traditional practitioners were more likely to prescribe some form of traditional therapy (Wilson et al, 2012). Use of herbal medicine as the initial treatment of diarrhoea had also been reported in Mozambique, (Nhampossa et al, 2013).

The caregivers' choice of treatment was highly influenced by the locality at the time of illness. Herbal medicine was mainly reported to be used in rural areas. Similar findings had been reported by Blum et al, (2011) in a study that demonstrated preference of herbal medicine by participants living in rural areas compared to those in urban areas. Mixture of conventional medicine and herbal was perceived to cause adverse effects and the caregivers reported using one of them at a time. Respondents in a study carried out in Asembo were also against combination of herbal medicine and other treatments of diarrhoea (Blum et al, 2011). Though herbal medicine appears to be used quite often, data on the potential benefits and risks of some herbs claimed to be medicinal is insufficient and thus such herbs may be more harmful to the child than beneficial (Rodriguez-Fragoso et al, 2008). The dosage of the herbal medicine also differs amongst the various prescribers.

Perceived cause of diarrhoea influenced the caregivers' decision in regard to seeking treatment. Diarrhoea perceived to be caused by "teething" problems was likely not to be treated with the hope that the child would get well without treatment. In Western Kenya caregivers had failed to seek care for their children who had diarrhoea because they did not see the need for care (Omore, 2013).

Financial capabilities influence caregivers' choice of treatment. Omore, (2013) identified cost of treatment as a barrier to seeking health care. Though there was no significant association between caregivers' economic status and use of recommended practices, caregivers reported that financial constraints forced them to utilize inappropriate practices in management of diarrhoea at home.

5.1 Conclusion

The caregivers utilized various home care practices in treatment of diarrhoea. However, only 14.4% (n=30) of the caregivers increased fluid intake and administered both ORS and zinc. The choice of treatment was identified to be highly influenced by the perceived cause of the illness. Though majority of the participants were familiar with ORS quite a number of them did not use it at home. Caregivers' knowledge of zinc supplements is low and only a few of the caregivers who knew about it used it. Use of antibiotic in treatment of diarrhoea is prevalent among the caregivers in home management of diarrhoea and Cultural beliefs still plays an important role in home management of diarrhoea in children. In order to reduce diarrhoeal related childhood morbidity and mortality, there is a dire need to address the barriers which hinder appropriate home management of diarrhoea.

5.2 Recommendations

- Ministry of health and nongovernmental organizations allied to health should establish strategies aimed at enhancing caregivers' awareness on appropriate home management of diarrhoea.
- The ministry of health should establish programs in the community that will ensure that ORS and zinc supplements are easily available and accessible to the caregivers.
- Conduct further research on benefits and risks of the various herbal remedies used by different communities.
- Conduct further research on health workers prescription patterns in management of diarrhoea in children.

REFERENCES

Ansari, M., Ibrahim, M. I. M., Hassali, M. A., Shankar, P. R., Koirala, A., & Thapa, N. J. (2012). Mothers' beliefs and barriers about childhood diarrhea and its management in Morang district, Nepal. *BMC research notes*, *5*(1), 576.

Adimora, G. N., Ikefuna, A. N., & Ilechukwu, G. (2011). Home management of childhood diarrhoea: need to intensify campaign. *Nigerian journal of clinical practice*, *14*(2), 237-241.

Akhter, S., & Larson, C. P. (2010). Willingness to pay for zinc treatment of childhood diarrhoea in a rural population of Bangladesh. *Health policy and planning*, *25*(3), 230-236.

Behrman, R. E., Jenson, H. B., & Stanton, B. F: Nelson Textbook of Pediatrics. 18th ed.(2008) Elsevier: Sri Pratap Udyog, 274, Capt. Gaur Marg, Sriniwaspuri, New Delhi; 1605-1616

Blum, L. S., Oria, P. A., Olson, C. K., Breiman, R. F., & Ram, P. K. (2011). Examining the use of oral rehydration salts and other oral rehydration therapy for childhood diarrhea in Kenya. *The American journal of tropical medicine and hygiene*, *85*(6), 1126-1133.

Boschi-Pinto, C., Lanata, C. F., & Black, R. E. (2009). The global burden of childhood diarrhea. In *Maternal and child health* (pp. 225-243). Springer US.

Colletti, J. E., Brown, K. M., Sharieff, G. Q., Barata, I. A., & Ishimine, P. (2010). The management of children with gastroenteritis and dehydration in the emergency department. *The Journal of emergency medicine*, *38*(5), 686-698.

Ebuehi, O. M., & Adebajo, S. (2010). Improving caregivers' home management of common childhood illnesses through community level interventions. *Journal of Child Health Care*.

Ellis, A. A., Winch, P., Daou, Z., Gilroy, K. E., & Swedberg, E. (2007). Home management of childhood diarrhoea in southern Mali—implications for the introduction of zinc treatment. *Social science & medicine*, *64*(3), 701-712.

Ettarh, R. R., & Kimani, J. (2012). Determinants of under-five mortality in rural and urban Kenya. *Rural Remote Health*, *12*, 1812.

Fuse, K. (2010). Variations in attitudinal gender preferences for children across 50 less-developed countries. *Demographic Research*, *23*(36), 1031-1048.

Ghasemi, A. A., Talebian, A., Alavi, N. M., & Mousavi, G. A. (2013). Knowledge of Mothers in Management of Diarrhea in Under-Five Children, in Kashan, Iran. *Nutrition*, *29*(11-12), 1368.

Kauchali, S., Rollins, N., & Van den Broeck, J. (2004). Local beliefs about childhood diarrhoea:

importance for healthcare and research. *Journal of tropical pediatrics*, *50*(2), 82-89.

Karambu, S., Matiru, V., Kiptoo, M., & Oundo, J. (2014). Characterization and factors associated with diarrhoeal diseases caused by enteric bacterial pathogens among children aged five years and below attending Igembe District Hospital, Kenya. *Pan African Medical Journal*, *16*(1).

Kenya National Bureau of Statistics (Nairobi). (2010). *Kenya Demographic and Health Survey 2008-09*. Kenya National Bureau of Statistics.

Khalili, M., Mirshahi, M., Zarghami, A., Rajabnia, M., Farahmand, F., Mengistie, B., ... & Pluta, R. (2013). Maternal Knowledge and Practice Regarding Childhood Diarrhea and Diet in Zahedan, Iran. *Health Scope*, *2*(1), 19-24.

Löfgren, J., Tao, W., Larsson, E., Kyakulaga, F., & Forsberg, B. C. (2012). Treatment patterns of childhood diarrhoea in rural Uganda: a cross-sectional survey. *BMC international health and human rights*, *12*(1), 19.

Mengistie, B., Berhane, Y., & Worku, A. (2012). Predictors of Oral Rehydration Therapy use among under-five children with diarrhea in Eastern Ethiopia: a community based case control study. *BMC public health*, *12*(1), 1029.

Ministry of Public Health and Sanitation (MoPHS), (2010). Policy Guidelines on Control of Diarrhoeal Diseases in Children Below Five Years in Kenya. Division of Child and Adolescent Health. Afya House, Cathedral Road, Nairobi.

Mugenda, O. M. (1999). *Research methods: Quantitative and qualitative approaches*. African Centre for Technology Studies.

Mukhtar, A., Izham, M. I. M., & Pathiyil, R. S. (2011). A survey of mothers' knowledge about childhood diarrhoea and its management among a marginalised community of Morang, Nepal. *The Australasian medical journal*, *4*(9), 474.

Mukiira, C. K. (2012). *Healthcare-seeking practices of caregivers of under-five children with diarrheal diseases in two informal settlements in Nairobi, Kenya* (Doctoral dissertation, UNIVERSITY OF WITWATERSRAND).

Nhampossa, T., Mandomando, I., Acacio, S., Nhalungo, D., Sacoor, C., Nhacolo, A., ... & Alonso, P. (2013). Health care utilization and attitudes survey in cases of moderate-to-severe diarrhea among children ages 0–59 months in the district of Manhiça, southern Mozambique. *The American journal of tropical medicine and hygiene*, *89*(1 Suppl), 41-48.

Njeri, G. & Murithi, M. (2013). Household Choice of Diarrhoea Treatments for Children under the age of five in Kenya: Evidence from The Kenya Demographic and Health Survey 2008-09. *European Scientific Journal* Feb ed vol.9, pp 1857-7881.

Ogunbiyi, B. O., & Akinyele, I. O. (2010). Knowledge and belief of nursing mothers on nutritional management of acute diarrhoea in infants, Ibadan, Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*, *10*(3).

Olson, C. K., Blum, L. S., Patel, K. N., Oria, P. A., Feikin, D. R., Laserson, K. F., ... & Ram, P. K. (2011). Community case management of childhood diarrhea in a setting with declining use of oral rehydration therapy: findings from cross-sectional studies among primary household caregivers, Kenya, 2007. *The American journal of tropical medicine and hygiene*, *85*(6), 1134-1140.

Omore, R., O'Reilly, C. E., Williamson, J., Moke, F., Were, V., Farag, T. H., ... & Breiman, R. F. (2013). Health Care-Seeking Behavior During Childhood Diarrheal Illness: Results of Health Care Utilization and Attitudes Surveys of Caretakers in Western Kenya, 2007–2010. *The American journal of tropical medicine and hygiene*, *89*(1 Suppl), 29-40.

Otieno GA, Bigogo GM, Nyawanda BO, Aboud F, Breiman RF, Larson CP, Feikin DR, (2013). Caretakers' perception towards using zinc to treat childhood diarrhoea in rural western Kenya. J Health Popul Nutr. Sep;31(3):321-9.

Pender, N. J., Murdaugh, C. L., & Parsons, M. A. (2002). The health promotion model. *Health promotion in nursing practice*, *4*.

Rodriguez-Fragoso, L., Reyes-Esparza, J., Burchiel, S. W., Herrera-Ruiz, D., & Torres, E. (2008). Risks and benefits of commonly used herbal medicines in Mexico. *Toxicology and applied pharmacology*, *227*(1), 125-135.

Segecha, S. (2013). *Etiology of diarrhea in children under 5 yrs in Mbagathi district hospital, Nairobi province* (Doctoral dissertation).

Shah, M. S., Ahmad, A., Khalique, N., Afzal, S., Ansari, M. A., & Khan, Z. (2011). Home-based management of acute diarrhoeal disease in an urban slum of Aligarh, India. *The Journal of Infection in Developing Countries*, *6*(02), 137-142.

Simpson, E., Zwisler, G., & Moodley, M. (2013). Survey of caregivers in Kenya to assess perceptions of zinc as a treatment for diarrhea in young children and adherence to recommended treatment behaviors. *Journal of global health*, *3*(1).

UNICEF. (2013). Committing to Child Survival: A Promise Renewed, Progress Report 2013, UNICEF. *New York*.

UNICEF. (2012). Qualitative study to identify solutions to local barriers to care-seeking and treatment for diarrhoea malaria and pneumonia in select high burden countries. *Report on findings from Kenya, Maternal Newborn and Child Health Paper [Online] Accessed at: http://www. anthrologica. com/kenya. pdf*.

UNICEF. (2012). *Pneumonia and diarrhoea: tackling the deadliest diseases for the world's poorest children*. UNICEF. *New York*

Unicef. (2010). Diarrhoea: why children are still dying and what can be done. *http://www. unicef. org/media/files/Final_Diarrhoea_Report_October_2009_final. pdf*.

UNICEF, (2009). Management Practices for Childhood Diarrhoea in India: Survey of 10 Districts. UNICEF, New York.

UNICEF, WHO. (2004). WHO-UNICEF Joint statement on the clinical management of acute diarrhea. *World Health Assembly. Geneva*.

World Health Organization. (2005). The treatment of diarrhoea: a manual for physicians and other senior health workers.

World Health Organization. (2005). Integrated management of childhood illnesses,(IMCI).

World Health Organization. (2006). *Oral Rehydration Salts: Production of the New ORS*

World Health Organization. (2013). World health statistics 2013: a wealth of information on global public health.

World Health Organization. (2006). Implementing the new recommendations on the clinical management of diarrhoea: guidelines for policy makers and programme managers. *Geneva: World Health Organization*.

Wilson, S. E., Ouédraogo, C. T., Prince, L., Ouédraogo, A., Hess, S. Y., Rouamba, N., & Brown, K. H. (2012). Caregiver recognition of childhood diarrhea, care seeking behaviors and home treatment practices in rural Burkina Faso: a cross-sectional survey. *PloS one*, *7*(3), e33273.

APPENDICES

Appendix 1: Time Frame

Time frame and work plan for the entire study for the year 2013-2014

Duration in Months/Activity	Oct	Nov	Dec	Jan	Feb	Mar	April	May	Jun	July	Aug	Sep	Oct	Nov
Problem Identification	■													
Proposal writing		■	■											
Forwarding proposal to supervisors			■											
Correction of final proposal and forwarding it to UoN/KNH-ERC				■	■									
Recruiting and training of research assistants						■								
Pretesting of study tools							■							
Data collection								■	■					
Data processing and analysis									■	■				
Report writing											■			
Draft report presentation and correction												■		
Compilation and submission of final report												■	■	
Thesis defense														■

Appendix 2: Budget

Component	Activity Description	Item	Unit of measurement	Unit cost	Total
Proposal development phase	Literature search	Transport and sustenance	20 days	@500	10,000
	Internet services utilized when unable to access university internet services	Modem Credit	10 days	@500	5,000
	Stationeries	A4 notebooks	2	@100	200
		Pens	10	@20	200
		Proposal typing	4 drafts	@600	2,400
		Proposal printing	4 drafts	@600	2,400
		Proposal Photocopying	10 drafts	@120	1200
Approvals		KNH ethics committee			2,000
Sub total					21,400
Research process and data analysis phase	Training of research assistants	A4 notebooks	3	@100	300
		Research assistants allowance	3 days	@1,000*2	6,000
		Trainer transport and sustenance	3 days	@2,000	6,000
	Pre testing of study tools	Transport and sustenance	1 day	@2,000*3	6,000
		Printing	20 pages	@ 10	200
		Photocopying	20 copies	@2*20	800

	Data collection	Questionnaire & FGD guide printing	20 pages	@10	200
		Dictaphone	1	10,000	10,000
		FGD refreshments		10000	10,000
		Questionnaire and consent form Photocopying	400 copies	@2*15	12,000
		Transport and sustenance	60days	@1000	60,000
		Research assistants allowance	60 days	@500*2	60,000
		Data processing and analysis			10,000
Sub total					181,500
Report writing Phase	Draft reports	Typing and printing	100 pages	@20	2,000
		Photocopying	5,drafts	@2*100	1,000
	Final reports	Correction and printing	100 pages	@10	1,000
		Photocopying	6 draft copies	@2*100	1,200
		Binding	6 copies	@500	3,000
		Transport and sustenance	20 days	@1,000	20,000
Subtotal					27,200
Total					230,100
Contingency 10%					23,010
Grand total					**253,110**

Appendix 3: Consent explanation form

I am Martha Wambui Njuguna, a Master of Science in nursing student at the School of Nursing Sciences, University of Nairobi. I am conducting a research study on barriers to appropriate home management of acute gastroenteritis by caregivers of children under five years attending Mbagathi District Hospital, Nairobi, Kenya. I am kindly requesting you to participate in this study. The study has been approved by the Department of Nursing, University of Nairobi and The Kenyatta National Hospital Ethics and Research Committee (KNH/UON-ERC). It will involve asking you some questions concerning you and your child

The information you provide will be kept confidential and anonymous therefore your name will not appear on the transcript. At no time will you be identified by name or your opinion be shared with anybody else.

There is no compensation for participating in the study. Information from this study will establish a basis for identifying gaps that needs to be tackled towards improving family and community child care practices. The findings of this study will be available from the author. They will be published in scientific journals.

There are no perceived risks to you or your child from this study. However, if a question makes you uncomfortable, you may decide not to answer it. Participation in this study is voluntary. You are free to decline or withdraw from the study any time. Refusal to take part will not attract any penalty. You retain the right to withdraw from the study without any consequences. Participation or non participation does not come with any financial cost. Equally, there is no compensation for participating in the study.

Your participation will be highly appreciated. In case of questions or clarifications feel free to contact the researcher, Martha Wambui Njuguna (School of Nursing Sciences, University of Nairobi, Mobile No 0726242465). You may also contact the secretary for ERC, KNH/UoN at the following address: University of Nairobi, College of Health Sciences, P.O Box 30197, GPO 00100, Tel no. 2726300 (EXT 44102).

Thank you.

Martha W. Njuguna (Researcher)

Fomu ya maelezo ya ridhaa

Mimi naitwa Martha Wambui Njuguna, mwanafunzi wa masomo ya juu ya sayansi ya uuguzi katika Chuo Kikuu cha Nairobi. Nafanya utafiti juu ya vikwazo kwa matibabu mwafaka ya kuharisha papo hapo nyumbani na walezi wa watoto chini ya miaka mitano wanaohudhuria hospitali ya Wilaya ya Mbagathi. Naomba ushiriki katika utafiti huu ambao umepitishwa na idara ya uuguzi ya Chuo kikuu cha Nairobi na Kamati ya utafiti ya Chuo Kikuu cha Nairobi na Hospitali ya taifa ya Kenyatta (KNH/ UON-ERC). Utafiti wenyewe unahusu kuuliza baadhi ya maswali kuhusu wewe na mtoto wako.

Habari utakayotoa katika utafiti huu itakuwa ni siri na jia lako halitaandikwa katika nakala. Maoni yako hayataambiwa mtu mwingine na jina lako halitatumika au kutanjwa katika huu utafiti. Hakuna malipo yoyote utakayopata kwa kushiriki katika huu utafiti lakini taarifa utakayotoa itasaidia kuanzisha msingi wa kubainisha mapengo ya kukabiliana nayo ili kuboresha njia za familia na huduma ya watoto katika jamii. Matokeo ya utafiti huu yatachapishwa katika majarida ya kisayansi na pi unaweza yapata kutoka kwa mwandishi.

Hakuna hatari au taratibu vamizi zitakazotolewa kwako wewe au kwa mtoto wako katika utafiti huu. Hata hivyo, kama swali Fulani litakufanya uwe na wasiwasi, unaweza kuamua kutojibu hilo swali. Kushiriki kwako katika utafiti huu ni hiari na pia unaweza amua kutoka kwa utafiti huu wakati wowote. Kukataa kushiriki katika utafiti huu hakutavutia adhabu yoyote kwako wewe na pia uko na haki ya kuacha kushiriki katita utafiti huu bila madhara yoyote. Kushiriki au kutoshiriki katika utafiti huu hakuna gharama yoyote ya fedha na pia hakuna fidia kwa ajili ya kushiriki katika utafiti huu.

ushiriki wako utakuwa wenye kukubaliwa n iwapo una maswali au unahitaji ufafanuzi jisikie huru kuwasiliana na mtafiti, Martha Wambui Njuguna (Shule ya sayansi ya uuguzi, Chuo Kikuu cha Nairobi, Nambari ya simu 0726242465). Unaweza pia kuwasiliana na katibu mkuu wa ERC,KNH/UON katika anwani ifuatayo: Chuo Kikuu cha Nairobi, Chuo cha Sayansi ya Afya, PO Box 30197, GPO00100, Nambari ya simu 2726300 (EXT 44,102)..

Asante.

Martha W. Njuguna (Mtafiti).

Appendix 4: Consent form

I …….. Do hereby consent to participate in this study as explained to me by. …….. I have been informed of the nature of the study being undertaken and that there are no risks or invasive procedures involved. I also understand that my participation in the study is voluntary and the decision to participate or not to participate will not affect my child's treatment in any way whatsoever. I may also choose to discontinue my involvement in the study at any stage without any explanation or consequences. I have also been reassured that my personal details and the information that I will give will be kept confidential. I confirm that all my concerns about my participation in the study have been adequately addressed by the investigator.

Participant's Signature (or thumbprint)…… Date……

Investigator Signature…….. Date…….

Fomu ya idhini

Mimi ……. Natoa ridhaa ya kushiriki katika utafiti huu kama nilivyoelezwa na ……. Nimefahamishwa asili ya utafiti unaofanywa na kwamba hakuna hatari au taratibu vamizi katika utafiti huu. Pia naelewa kwamba ushiriki wangu katika utafiti huu ni kwa hiari yangu na uamuzi wa kushiriki au kutoshiriki hakutaathiri matibabu ya mtoto wangu kwa namna yoyote ile. Naelewa kwamba naweza chagua kuacha kujihusisha katika utafiti huu katika hatua yoyote bila maelezo yoyote au madhara. Nimehakikishiwa ya kwamba maelezo yangu biafsi na habari nitakazo toa kwa huu utafiti itakuwa ni siri. Nathibitisha kwamba wasiwasi wangu wote kuhusu ushiriki wangu katika utafiti huu umeshugulikiwa na Mpelelezi.

Sahihi au alama ya kidole ya mshiriki……Tarehe……..

Sahihi ya Mpelelezi……..Tarehe……

Appendix 5: Questionnaire

Questionnaire for the research on barriers to appropriate home management of acute gastroenteritis by caregivers of children under five years attending Mbagathi District Hospital.

Questionnaire number…… Date of interview……

Interviewer……. Interviewee No……...

Interviewee residence……. Interviewee home county……...

Section 1.0: Social demographic and economic characteristics of caregiver

1.1 What is your age? (In years).....

1.2 What is your gender?

a) Male ☐
b) Female ☐

1.3 What highest level of education have you attained?

a) None ☐
b) Primary education not completed ☐
c) Primary education completed ☐
d) Secondary education not completed ☐
e) Secondary education completed ☐
f) College/university education ☐
g) Others (Specify)…….

1.4 What income generating activity do you engage with?

a) House wife ☐
b) Peasant farmer ☐
c) Subsistence farmer ☐
d) Formal employee ☐
e) Self employed ☐

f) Casual labourer ☐

g) Others (Specify)…….

1.5 What is your monthly income (in Kenyan Shillings)?

a) Below 5000 ☐
b) 6000-10000 ☐
c) 11000-15000 ☐
d) 16000-20000 ☐
e) 21000 and above ☐

1.6 What is your religion?

a) Catholic ☐
b) Protestant ☐
c) Traditionalist ☐
d) Muslim ☐
e) Other (Specify)…….

1.7 How many children do you have? .....

1.8 What is your marital status?

a) Single ☐
b) Married (answer Q 1.9-1.11) ☐
c) Divorced ☐
d) Separated ☐
e) Widowed ☐
f) Others (Specify)…….

1.9 What is your spouse's highest level of education?

a. None ☐
b. Primary education not completed ☐
c. Primary education completed ☐
d. Secondary education not completed ☐

e. Secondary education completed ☐
f. College/university education ☐
g. Others (Specify)…….

1.10 What income generating activities does your spouse engage with?

a) House wife ☐
b) Peasant farmer ☐
c) Subsistence farmer ☐
d) Formal employee ☐
e) Self employed ☐
f) Casual labourer ☐
g) Others (Specify)……...

1.11 What is the monthly income of your spouse (in Kenyan Shillings)?

a) Below 5000 ☐
b) 6000-10000 ☐
c) 11000-15000 ☐
d) 16000-20000 ☐
e) 21000 and above ☐

Social demographic characteristics of the child

1.12 What is the child's age? (In Months)

a) 0-6 ☐
b) 7-23 ☐
c) 24-35 ☐
d) 36-47 ☐
e) 48-59 ☐

1.13 What is the gender of the child?

a) Male ☐
b) Female ☐

1.14 What is the birth order of the child?

a) First born ☐
b) Second born ☐
c) Third born ☐
d) Fourth born ☐
e) Fifth born and above ☐

1.15 Where was the child delivered?

- Hospital ☐
- Home ☐
- Others (Specify)……

1.16 What was the weight of the child at birth?.....

1.17 What is your relationship with the child?

a) Mother ☐
b) Father ☐
c) Other (specify)……

Section 2.0: Fluid intake

2.1 How many episodes of diarrhoea has the child had for the last six months……

2.2 How many days has the child had diarrhoea? .....

2.3 How much fluid have you been giving the child since the diarrhoea started?

a) More than usual amount ☐
b) Less than usual amount ☐
c) Same amount as usual ☐

d) Nothing to drink ☐

e) Don't know ☐

2.4 Have you ever heard or seen oral rehydration salts (ORS) packet?

a) Yes ☐

b) No **(go to Q 2.13)** ☐

2.5 If yes where did you see/hear about ORS?

a) Radio/Television ☐

b) Health care provider\ ☐

c) friend ☐

d) Banner/poster ☐

e) Newspaper ☐

f) Other (specify)……..

2.6 What is ORS solution used for?

a) Replacement of fluid lost during diarrhoea ☐

b) Stopping diarrhoea ☐

c) Don't know ☐

d) Other (specify)……...

2.7 Have you given ORS to your child at home since diarrhoea started?

a) Yes ☐

b) No **(go to Q 2.12)** ☐

2.8 If yes, where did you obtain the ORS sachets from?

a) Health center ☐

b) Community health worker ☐

c) Private pharmacy ☐

d) Neighbour/friend/relative ☐

e) Other (specify)……...

2.9 How many times have you been giving ORS to the child?

a) After passage of each watery stool ☐
b) Every half an hour ☐
c) Whenever the child wants to take ☐
d) Morning, mid-day and night ☐
e) Other (specify) ……..

2.10 How much ORS solution have you been giving your child?

a) As much as the child can take ☐
b) One glass ☐
c) Other (specify)……

2.11 How long do you keep the prepared ORS?

a) Until it is finished ☐
b) Six hours ☐
c) Twelve hours ☐
d) Other (specify) ……..

2.13 What type of water do you use to mix ORS solution?

a) Previously boiled and cooled water ☐
b) Any available water ☐
c) Other (specify) ……..

2.14 Why have you not been giving ORS to your child at home? ……....

……

2.15 Have you given the child home prepared salt-sugar solution since diarrhoea started?

a) Yes ☐
b) No ☐

2.16. Have you been giving your child any of the following home-prepared fluids since diarrhoea started?

	Yes	No
a) Cereal gruel (Uji)	☐	☐
b) Fresh and fermented milk	☐	☐
c) Fresh fruit juices	☐	☐
d) Soups prepared from meat, fish and chicken	☐	☐
e) Clean, safe water	☐	☐
f) Rice water	☐	☐

2.17. How many times have you been giving the child home prepared fluids?

a) After passage of each watery stool ☐
b) Every half an hour ☐
c) Whenever the child wants to take ☐
d) Morning, mid-day and night ☐
e) Frequently ☐
f) Other (specify) ……..

Section 3.0: Feeding practices

3.1. Do you breastfeed your child?

a) Yes ☐
b) No **(go to 3.3)** ☐

3.2. If yes, how have you been breastfeeding the child since the time diarrhoea started?

a) Breastfed more ☐
b) Breastfed less ☐
c) Breastfed about the same amount ☐
d) Other (specify) ……

3.3. How much food have you been giving the child since the time diarrhoea started?

a) More food ☐
b) Less amount of food ☐
c) Same amount as usual ☐
d) Nothing to eat ☐

3.4. Have you withheld any type of food or drink from the child since diarrhoea started?

a) Yes ☐
b) No ☐

3.5. If yes which food or drink and why? .....

.....

.....

Section 4.0: Use of zinc supplementation

4.1. Have you ever heard about zinc supplements?

a) Yes ☐
b) No (**go Q 4.11**) ☐

4.2. If yes where did you hear about zinc supplementation?

a) Radio/Television ☐
b) Health care provider\friend ☐
c) Banner/poster ☐
d) Newspaper ☐
e) Other (specify)……..

4.3. How many days should you give zinc to a child with diarrhoea?

a) Until diarrhoea stop ☐
b) 7 days ☐
c) 10-14 days ☐

d) Don't know ☐

e) Other specify……..

4.4. Have you given your child a zinc product since diarrhoea started?

a) Yes ☐

b) No ☐

4.5. If yes where did you obtain the zinc product?

a) Community health worker ☐

b) Health center ☐

c) Private clinic/ pharmacy ☐

d) Friend/ relative ☐

e) Other (specify)……...

4.6. Have you been giving ORS solution along with zinc product?

a) Yes ☐

b) No ☐

4.7. If no why? ……

……

4.8. Are you still giving your child zinc supplements?

a) Yes ☐

b) No ☐

4.9. If no why? ……

……

4.10. Can you tell me or show me what treatment other than ORS, zinc or home prepared fluids you have given your child to treat diarrhoea?

None ☐

a) Herbal medicine ☐
b) Antibiotics ☐
c) Anti-diarrhoea drugs ☐
d) Other (specify)….....

Section 5.0: Barriers to appropriate management

5.1. When your child is sick who decides whether the child should be given treatment?

a) Father ☐
b) Mother ☐
c) Other (specify)……..

5.2. Do some children sometimes get diarrhoea because of curse or other spiritual or super natural curse?

a) Yes ☐
b) No ☐

5.3. Should children who get diarrhea as a result of the above mentioned causes be given ORS, Zinc supplements or homemade fluids to treat the diarrhoea?

a) Yes ☐
b) No ☐

5.4. If no what should they be given……

…….....

5.6 Can diarrhoea be easily treated?

a) Yes ☐
b) No ☐

5.7. If yes by whom?

a) Caregiver ☐

b) Health worker ☐

c) Witch doctor ☐

d) Other (Specify) ……

5.8. Is it easy to get ORS sachets and zinc supplements?

a) Yes ☐

b) No ☐

5.9 If no why? ……..

…….

5.10. Do you find it easy to remember the steps in making ORS solution?

a) Yes ☐

b) No ☐

5.11. If no why? .....

……...

THANK YOU FOR YOUR TIME AND COOPERATION

Appendix 6: Focus group discussion guide

Focus group discussion guide for the research on barriers to appropriate home management of acute gastroenteritis by caregivers of children under five years attending Mbagathi District Hospital.

1. Introduction (1 minute)

Welcome and thank you for taking time to participate in this discussion today. My names are Martha Wambui Njuguna a master's of science in Nursing student at University of Nairobi. I am carrying out a research on barriers to appropriate home management of acute gastroenteritis by mothers of children under five years attending Mbagathi District Hospital. With me is (NOTE TAKER NAME) and he will be assisting in this session.

2. Ground Rules (1 minute)

We are interested in all of your opinions and feelings and therefore do not fear while giving your opinions. We need your ideas, so any criticisms you have will not hurt our feelings. We encourage you to provide frank comments that will improve our study. Some of you may agree or disagree with each other, which is perfectly normal, but please do not comment on others views as wrong or right. Do not wait for the moderator to ask for your opinion. Feel free to speak at any time, however, please try to avoid interrupting others while they are talking. Everyone will have a chance to speak and all ideas, concerns, and opinions are of value to us. The session will last for about 50 minutes.

3. Confidentiality (1 minute)

Everything that is said in this room is confidential and we will not tell anyone that you participated in this discussion. A tape recorder will record the discussion because we do not want

to miss any of your comments. No one outside this room will have access to these tapes and they will be destroyed after the report is written. My assistant will also take some notes that will also help us in report writing.

Does anyone have any questions or clarifications?

Check the appropriate box

Do you agree to participate in this session? Yes ☐ No ☐

Do you agree to be tape recorded? Yes ☐ No ☐

Participant's signature (one person on behalf of all members) (initials)……..Date…….

Interviewer signature (initials)……

Date of discussion: ……. Moderator: ……

Venue: ……. Note-taker: ……

Time started: …….. No. of participants at start: ……

Time Stopped: ……. No of participants at stop: …….

Script code: …….

4.. General illness information in the community (12 minutes)

4.1. What causes diarrhoea?

4.2 Why do some children get diarrhoea and others don't? What type of children get diarrhoea?

4.3. How do you know that a child has diarrhoea?

4.4 What are your concerns when your child has diarrhoea?

5. Perceptions and barriers (40 minutes)

5.1. When a child suffers from diarrhoea what do you give him or her to eat? f***Probe:*** *What food? In what quantity? Frequency? Duration?* **Probe:** *food prohibition and why? breastfeeding pattern*

5.2. Apart from food, what else do you give children with diarrhea at home ? ***Probe:*** *Home-prepared solutions? How are they prepared?* For each food/liquid mentioned ***probe:*** Why do you give this food/liquid?

5.3. What do you know about oral rehydration salts (ORS) **Probe***: when is it given, how it helps children with diarrhoea? disadvantage of giving ORS, availability, cost, reasons for or against use of ORS.*What do you think about the taste of ORS?

5.4. What do you know about zinc? **Probe:** *what is it used for? Advantages and disadvantage. Availability, cost, reasons for or against use of zinc supplements at home*

5.5. What do u think about combination of ORS and zinc to treat diarrhoea at home? **Probe:** *why or why not? Side effects? Financial factors? Accessibility? Cultural factors? Religion?*

5.6. What other medicines do you give children with diarrhoea? **Probe:** *antibiotics? Anti-diarrhoea? herbal medicine? If not mentioned. Why? Financial factors? Accessibility? Cultural factors? Religion?*

5.7. Which medicine do you think work best in children with diarrhoea? Why?

5.8. What message have you heard/seen on treatment of diarrhoea?

5.9. What did you think about these messages? ***Probe:*** *Did it make you want to buy/obtain zinc and/or ORS the next time your child had diarrhea? Do you think you might want to use zinc and ORS when your child has diarrhea? Why or why not?*

5.10. In your opinion what prevent caregivers/ mothers from giving ORS and zinc to their children when they have diarrhoea?

5.11. In your opinion what do you think would make caregivers use ORS and zinc in management of diarrhoea in their children?

Wrap-up (5 minutes)

Before we close, do you have any questions for us?

We have discussed a lot of issues about diarrhea in young children today and we want to thank you for your participation.

Appendix 7: KNH/UON- ERC approval letter

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
(254-020) 2726300 Ext 44355

KNH/UON-ERC
Email: uonknh_erc@uonbi.ac.ke
Website: www.uonbi.ac.ke

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/76 Link:www.uonbi.ac.ke/activities/KNHUoN

28th March 2014

Njuguna Martha Wambui
School of Nursing Sciences
College of Health Sciences
University of Nairobi

Dear Martha

RESEARCH PROPOSAL; BARRIERS TO APPROPRIATE HOME MANAGEMENT OF ACUTE GASTROENTERITIS BY CAREGIVERS OF CHILDREN UNDER FIVE YEARS ATTENDING MBAGATHI DISTRICT HOSPITAL (P56/02/2014)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and approved your above proposal. The approval periods are 28th March 2014 to 27th March 2015.

This approval is subject to compliance with the following requirements:

a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
g) Submission of an *executive summery* report within 90 days upon completion of the study
This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website **www.uonbi.ac.ke/activities/KNHUoN.**

Protect to Discover

Yours sincerely

PROF. M. L. CHINDIA
SECRETARY, KNH/UON-ERC

c.c. The Chairperson, KNH/UoN-ERC
The Deputy Director CS, KNH
The Principal, College of Health Sciences, UoN
The Director,School of Nursing Sciences, UoN
The Assistant Director, Health Information, KNH
Supervisors: Mrs. Eunice Ajode Odhiambo, Dr. James Mwaura

Appendix 8: MDH authorization letter

MINISTRY OF HEALTH

Tel: 2724712, 2725791, 0721 311 808
www.mbagathihospital.org
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mdhnairobi@yahoo.co.uk

Mbagathi District Hospital
P.O. Box 20725- 00202
Nairobi

Our Ref: MS/VOL.1/2013/14

2nd May 2014

Njuguna Martha Wambui
University of Nairobi

Dear Madam,

RE: RESEARCH AUTHORIZATION

This is in reference to your application for authority to carry out a research on ***"Barriers to appropriate home management of acute gastroenteritis by care givers of children under five years attending Mbagathi District Hospital, Nairobi"***

I am pleased to inform you that your request to undertake the research in the hospital has been granted.

On completion of the research you are expected to submit one hard copy and one soft copy of the research report / thesis to this office.

Dr. A. J. Suleh
Medical Superintendent
Mbagathi District Hospital