IMPACT OF KNOWLEDGE AND PERCEPTION OF CAREGIVERS ON MANAGEMENT PRACTICES OF DIARRHOEA AMONG CHILDREN UNDER-FIVE YEARS OF AGE IN WEST SEME LOCATION, KISUMU COUNTY, KENYA.

BY

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DECLARATION

This is my original work and it has never been submitted by any other person to any University for examination or an award of any degree.

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DEDICATION

I dedicate this work to all who made this thesis a success, especially to all my interviewees, my dear children, relatives and friends.

ABSTRACT

Diarrhoea remains a major cause of morbidity and mortality among children aged under-five (< 5) years old worldwide. Of the five million annual deaths among this age group, one fifth is due to diarrhoea. Management of diarrhoea at home is one of the key household practices targeted for enhancement of community management of childhood diarrhoea that may result in substantial reduction in child mortality. Appropriate home management is critical in management of diarrhoea. In Seme Sub-County diarrhoea is the 4th leading cause of death among children < 5years old and the factors that influence this sad state is not known. Most studies in this Sub-County have focused on prevalence of diarrhoea rather than the possible causes of this high prevalence and mortality. The aim of this study therefore was to determine the impact of knowledge, perception and practice of caregivers on management of diarrhoea at home among children less than five years old. The specific objectives were; To determine knowledge of caregivers on causes of diarrhoea and signs of dehydration, to determine perception of caregivers on severity of diarrhoea, to determine home management practices of caregivers during diarrhoea and to determine association between knowledge and perception and home management practices. Data was collected from 394 caregivers with children under-five years of age. A cross-sectional design was employed. The respondents were sampled using systematic random sampling from villages in the study area. The caregivers were interviewed using structured questionnaire at the households. Four focus group discussions were held at Arito Health Centre to enhance the findings from the interviews. The data was analyzed using logistic regression and Chi square test to examine predictors of appropriate management of diarrhoea at home among children < 5 years. The strength of association is expressed as Odds ratio (OR) and 95% confidence interval (CI) with statistical significance set at p< 0.05. Out of the 394 caregivers, 79.9% knew the causes of diarrhoea while 89% had no knowledge on the danger signs of dehydration. On home management practices during diarrhoea, 240 (60.8%) had poor knowledge and 154 (39.2%) had good knowledge. Caregivers' knowledge that diarrhoea is caused by germs was significantly associated with management of diarrhoea at home by giving water, OR=3.7 (95% CI= (1.283-11.100) p =0.042 or continued feeding OR=1.4 (95% CI= (1.264-1.297) p =0.04. The caregivers who reported that diarrhoea was caused by teething were 3.5 times more likely to continue feeding the child than those who thought that diarrhoea is caused by taboo. The caregivers' knowledge on the signs of dehydration had influence on management of diarrhoea at home. Those who knew the signs of dehydration and gave ORS were; (68.2%; x =7.923, p value= 0.022), water, (65.1%; x= 10.672, p value=0.001), and continued feeding (73.3%; x=6.631, p value=0.038). Perception of caregivers about severity of diarrhoea was significantly associated with appropriate home management of diarrhoea. Those caregivers who perceived diarrhoea to be severe were 2.1 times more likely to manage the child using ORS (p =0.008) and 4.2 times more likely to manage diarrhoea by giving water (p =0.048). From the FGDs majority of caregivers expressed their feelings that the major cause of death among children < 5 years of age was diarrhoea and that diarrhoea management was dependent on the type and its perceived severity. The study concluded that most caregivers in West Seme have the right knowledge on causes of diarrhoea (79.9%). However, majority cannot recognize danger signs of dehydration (89.9%). The study found that right knowledge on the causes of diarrhoea and danger signs of dehydration, determine appropriate home management practices and caregivers whose perception on severity of diarrhoea is correct are more likely to manage diarrhoea at home appropriately. The significance of this result is that it can be used for planning and decision making at the ministry and at the local level to educate caregivers on appropriate management of diarrhoea at home in order to alleviate the consequences and mortality due to diarrhoea in the location. The study therefore recommends that; healthcare providers should educate caregivers on the risk factors of appropriate home management practices. Community based meetings with the local residents can be used to create awareness on the causes of diarrhoea and danger signs of dehydration. A further study is needed to determine the number of children < 5 years with dehydration who can be saved by practicing appropriate home management.

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ABBREVIATIONS

AIDS	-Acquired Immune Deficiency Syndrome
AMREF	-African Medical Research Foundation
AOR	-Adjusted Odds Ratio
CDD	-Control of Diarrhoeal Diseases.
CIMCI	-Community Integrated Management of Childhood Illness.
EPI	-Expanded Programme on Immunization
ESPGHAN	-European Society for Pediatric Gastroenterology Hepatology and Nutrition
IMCI	-Integrated Management of Childhood Illness
IOWH	-Institute of One World Health.
KDHS	-Kenya Demographic Health Survey.
KNBS	-Kenya National Bureau of Statistics.
MOH	-Ministry of Health.
OR	-Odds Ratio
ORS	-Oral Rehydration Solution.
ORT	-Oral Rehydration Therapy.
PPS	-Population Proportion to Size
UNICEF	-United Nations International Emergency Children's Fund.
USAID	-United States Agency for International Development.
WHO	-World Health Organization.

OPERATIONAL DEFINITION OF TERMS

AOR	Is a measure of association that adjusts the outcome for other exposure variables in order to control for confounding.
Appropriate home management	Simple and effective response to a child's diarrhoea and dehydration by giving ORS, water and continued feeding.
Beliefs	Is an acceptance that something exists or is true, especially one without proof
Caregiver	Is an individual who attends to the needs of a child less than five years old at home.
Diarrhoea	A condition in which waste matter is emptied from the bowels at least three to four times in liquid form within 24-hour period.
Management of diarrhoea at home	The act of controlling and dealing with children's cases of diarrhoea at home.
Knowledge	Caregivers awareness on the causes of diarrhoea and signs of dehydration.
Minor	A caregiver who is below 18 years of age.
OR	Is a measure of association between an exposure and an outcome. The OR represents the odds (likelihood) that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure.
Perception	Caregivers understanding on severity of diarrhoea.
Practice	Action taken by a caregiver in response to child's diarrhoea and dehydration.

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CHAPTER ONE: INTRODUCTION

1.1 Background Information

Diarrhoea is defined as the passage of unusually loose or watery stool at least three times in a 24-hour period (WHO/UNICEF Report, 2009). Diarrhoea is not a disease, but a sign of an underlying disorder like ulcerative colitis (WHO//IMCI, 2005). Causes of diarrhoea in infants and children include reaction to certain foods, unsterilized daily feeding utensils, poor sanitation, infections, or emotional problems especially during weaning.

Despite the decline of diarrhea-related mortality in the last 2 decades, diarrhoeal diseases remain a leading cause of pediatric morbidity and mortality worldwide (Kudlova *et al.,* 2008). Globally, deaths in children aged under-five years in the year 2010 were estimated at 7.7 million (Kudlova *et al., 2*010). Diarrhoea accounts for 1.6 to 2.5 million childhood deaths annually, and each child in the developing world experiences an average of 3 episodes of diarrhoea per year (Kosek *et al.,* 2003). About 19% of these childhood deaths due to diarrhoea occur in Africa (Ellis *et al.,* 2007). In Eastern Ethiopia, diarrhoea morbidity was found to be relatively high- 22.5% among children under five years of age (Mengiste *et al.,* 2013).

In Kenya, the national survey by the Ministry of Public Health and Sanitation revealed that diarrhoea is the fourth most common illness seen in health facilities in Kenya and accounts for one in five of all admissions in the hospitals. The Kenya Demographic Health Survey of 2008-09 showed a 30% increase in children under- five years' mortality in Kenya compared to the period 1989-2003, with diarrhoea ranking as the third risk factor affecting 8% of children under five years old (KNBS, ICF Macro 2010). In Nyanza Province the prevalence of diarrhoea of children

under- five years old was 16.2 % (KNBS, ICF Macro 2010). A study done in the former Nyando district in 2004 revealed that diarrhoea prevalence among children under five years old was 48% (Othero *et al.,* 2008). In former Kisumu West District diarrhoea prevalence in children under-five years old in 2009 was 7.3% (KNBS, ICF Macro 2010). The most recent study that was done in Seme sub-County in East Seme location in 2013 showed a high prevalence rate of diarrhoea among children under five years old of 17% (Broesern *et al.,* 2013). This shows that there is still need to investigate more about the cause of this high rate in the sub - County.

Management of diarrhoea at home as defined in this study is the action taken by caregivers when their children under five years old have diarrhoea. It is one of the key household practices that has been targeted and could result in substantial reduction of under five-year-old deaths (IMCI/WHO, 2005). Appropriate home management is key to controlling diarrhoeal conditions and is achievable if caregivers have strategies for diarrhoeal therapy (Uchendu *et al.,* 2007). The recommended appropriate management of diarrhoea at home is the restoration and maintenance of adequate rehydration electrolyte balance by use of ORT and maintenance of adequate nutritional requirements. (WHO Geneva, 2005). It is directed at preventing or treating dehydration that is a serious consequence of diarrhoea.

In African settings, diarrhoeal management is grossly inadequate, especially the method of preparation and administration of rehydration fluids (Uchendu *et al.,* 2007). A study by Bhutta in West Africa, revealed that caregivers had inadequate knowledge on how to manage diarrhoea at home and did not use ORS during diarrhoeal episode (Bhutta *et al*., 2000). Caregivers' practices during diarrhoea are significant components of home management and WHO's CDD programme

has given priority to prevention of diarrhoeal deaths rather than treatment of the cases by use of ORT (Victoria *et al.,* 2000).

Despite much effort and success in the management of diarrhoea at home, the condition has remained among the top five causes of mortality and morbidity in Kenya particularly among infants and children below five years of age with a case fatality of 21% (Integrated Health Facility Survey/Division of Child and Adolescent Health Ministry of Public Health and Sanitation Kenya 2006). According to the Kenyan policy guidelines on diarrhoea, parents and other caregivers of children under five years of age are supposed to be empowered to initiate early treatment at home to the children with diarrhoea and to recognize danger symptoms and signs of dehydration that will enable caregivers to seek further treatment (Ministry of Public Health and Sanitation in Kenya, March 2010)

Studies on caregivers' knowledge on the causes of diarrhoea in Pakistan found that 47% of the caregivers did not know the causes of diarrhoea (Yasmin *et al.,* 2011). However, in many developing countries, the perceived cause of diarrhoea is associated with cultural and spiritual reasons. In South Western Ethiopia, diarrhoea is associated with teething and evil eyes (Kaba *et al.,* 2000)

In East Africa (Tanzania specifically) diarrhoea episodes are associated with normal growth stage caused by several illnesses (Mwambete *et al.,* 2010). In Kenya, a cross-sectional study in the former Nyando District revealed that caregivers had varied knowledge on the causes of diarrhea-some of which could be harmful if not addressed in time.

A descriptive study done in Karachi in 2011 in a pediatric ward indicated that 17% of the caregivers knew that diarrhoea is caused by contaminated water and food, while the rest did not know the cause. This study was done in a hospital setting. My study concentrated on the community rural set up where home management is majorly practiced.

A similar study has not been done in Seme sub-County and the study done in East Seme was only about prevalence of diarrhoea among children under five years old (Broersen *et al.,* 2013). This study therefore sought to find out knowledge on the causes of diarrhoea.

Diarrhoea is caused by microbial agents that are usually transmitted through food and water that is contaminated (WHO, 2009). However, in many developing countries the perceived causes of diarrhoea by caregivers is associated with cultural and spiritual reasons. For instance, childhood diarrhoea is associated with teething and evil eyes in South Western part of Ethiopia (Kaba *et al.,* 2000). In developing countries, for instance Tanzania diarrhoeal episodes were perceived wrongly as normal growth stage and that were caused by several illnesses which are treated using traditional remedies (Mwambete *et al.,* 2010). In Kenya a cross-sectional study done in Nyando district revealed that caregivers had wide perceptions on causes and treatment of diarrhoea some of which could be harmful to health (Othero *et al.,* 2008).

Diarrhoea is lethal but it is also preventable and treatable if managed properly. Dehydration caused by severe diarrhoea is a major cause of morbidity and mortality among young children in Kenya (KNBS, ICF Macro 2010). Knowledge on the signs of dehydration by care-givers is important because the signs are indicative of severe illness. Improper knowledge of the caregiver

and their misdirected approach towards its management may lead to gross mismanagement resulting in severe dehydration and death.

A study carried out in Nepal showed that knowledge about signs of dehydration and the management approaches of diarrhoea at home was poor (Mukhtar *et al.,* 2011). In Nakuru municipality in 2007, a study revealed that majority of the caregivers had inadequate knowledge on signs of dehydration and complications of diarrhoea and most of them used inappropriate treatment methods to manage diarrhoea (Mugo *et al.,* 2007). This led to high mortality rate of 61 deaths per 1000 admissions in Nakuru Provincial Hospital. Therefore, this is a barrier to achievement of Kenya's Vision 2030 of economic growth. About 76.4% of caregivers in Nyando district were not able to recognize danger signs of dehydration and the signs of dehydration due to diarrhoea (Othero *et al.,* 2008).

To achieve a significant reduction in morbidity and mortality, due to diarrhoea, requires an improvement in diarrhoea case management at home within the community. The few studies that have been done in management of diarrhoea at home in Kenya have shown unsatisfactory levels of knowledge and poor methods of home management of diarrhoea. There is however no current study on the subject in Kisumu County. This study therefore seeks to determine the current caregiver's knowledge on management of diarrhoea at home and the factors that influence it. The study will form the basis of extensive education on diarrhoea management within the community.

A study in Philadelphia (Yoder and Mommick *et al.,* 1997), showed that most care-givers of children with diarrhoea gave some form of treatment at home, but were influenced by severity of

the episode suggesting that the perception of care-givers on the severity of an episode of diarrhoea is an important factor in the choice of treatment. In another study, maternal education and perceived severity were significantly associated with seeking traditional treatment. Illiterate caregivers were two and half times more likely to seek traditional treatment than those caregivers with formal education, showing that perception of the caregiver influences action taken during diarrhoea (Tizito, 2014).

A study done in Tanzania in 2010 demonstrated high frequency of diarrhoea which was manifested by the fact that almost all the respondents had experienced diarrhoea which they perceived as normal growth condition depicting the existence of substantial knowledge–gaps regarding diarrhoeal predisposing factors (Mwambete *et al.,* 2010).

There are certain fluids which are beneficial to give during diarrhoea but most of the caregivers in, a rural community in Kenya were unaware of most of these fluids (Othero *et al.,* 2008). The optimum practice for childhood diarrhoea is to continue feeding and provide ORT or increased fluids or both (WHO, 2009). In Kenya, only 43% of children with diarrhoea are given continued feeding, as well as ORT or increased fluids (KNBS, ICF Macro 2010). The feeding pattern has not changed much in children with diarrhoea from 2003 to 2008 in Kenya, showing that there is still a gap in knowledge on appropriate management of diarrhoea among some caregivers regarding nutritional requirements of children during diarrhoea episodes (KNBS, ICF Macro 2010). Dehydration due to diarrhoea in this sub-County was found to be a major cause of morbidity and mortality among young children (KNBS, ICF Macro 2010).

Appropriate management of diarrhoea at home can alleviate the consequences of diarrhoea including malnutrition, impaired development, growth faltering, and mortality. The recommended appropriate management of diarrhoea is the restoration and maintenance of adequate rehydration, electrolyte balance by use of ORT and maintenance of adequate nutritional requirements (WHO Geneva, 2005). The safe and effective management of the household health environment is critical in addressing the problem of childhood diarrhoea.

Management of diarrhoea at home is directed at preventing or treating dehydration that is a serious consequence of the condition. No studies have been conducted on management of diarrhoea at home in this sub-county where diarrhoea prevalence is high. This study will therefore focus on caregiver's knowledge, perception, and practices in reducing diarrhoeal morbidity and mortality rates among children under-five years in Seme West Location. The outcome of the study will form part of the development and implementation strategy for management of diarrhoea among children under-five years in this sub-County and in Kenya as a whole.

1.2 Problem Statement

Although overall mortality of children aged less than five years has been declining over the past two decades (because of socio-economic development and implementation of child survival interventions) there is still high child mortality of 7-8 million every year worldwide

In Kenya, diarrhoea is also a leading cause of childhood morbidity and mortality (KNBS, ICF Macro 2010) and the country loses about 5000 children every year due to diarrhoea. In the former Nyanza Province, the prevalence of diarrhoea among children under five years old was 16.2%. In the former Nyando district, the prevalence of diarrhoea among children under five years was 48%. In Seme sub-county diarrhoea prevalence was found to be 7.3%. In East Seme the prevalence was 17%, hence, appropriate diarrhoea management is an urgent need for concern by parents who risk losing their children and the whole country.

In Seme sub-County, the causes of this high prevalence are not yet known and the state of management of diarrhoea at home is not known in this location. Some of the practices may not be adequate in-home management of diarrhoea. The question of concern is whether caregivers in West Seme location adequate knowledge have, correct perceptions, and engage in correct practices. This is because some of the promoting factors of appropriate home management are knowledge and perception of the caregivers on the causes, severity of diarrhoea and signs of dehydration. For this reason, the study sought to find out the knowledge, perception and practices by caregivers on diarrhoeal home management with a view or reducing child mortality in West Seme location.

The main key household practices targeted for reducing diarrhoeal related deaths is home management by caregivers which can strongly be influenced by knowledge, perception, and practices. Appropriate management of diarrhoea at home can alleviate many of the consequences of diarrhoea e.g. impaired development, growth faltering, dehydration and child mortality. Inappropriate management can lead to misdirected approach and this can compromise the health status of the child hence severe dehydration leading to death.

1.3. General Objective

To determine whether caregivers' knowledge and perception, influence their practices during management of diarrhoea at home among children under five years in West Seme location.

1.4 Specific Objectives

1. To determine knowledge of caregivers on causes of diarrhoea and danger signs of dehydration.
2. To determine perception of caregivers on severity of diarrhoea.
3. To determine practices by caregivers on home management of diarrhoea.
4. To determine the impact of knowledge and perception of the caregivers on practices of managing diarrhoea.

1.5 Research Questions

1. What is the knowledge of the caregivers on the causes of diarrhoea and signs of dehydration?
2. What are the perceptions of caregivers on severity of diarrhoea?
3. What are the practices of caregivers on management of diarrhoea at home?

4. What is the effect of caregivers' knowledge and perception, on practices related to managing diarrhoea?

1.6. Justification of the Study

Due to poor diarrhoeal management and oral rehydration related knowledge, in the rural communities, diarrhoea remains a major public problem and West Seme is not an exception. Child care cannot be adequate if caregivers have no knowledge, have wrong perceptions and perform inappropriate practices with regard to diarrhoeal management. Diarrhoeal conditions are a major cause of childhood hospitalization due to dehydration in rural setups, including West Seme.

It is therefore an economic burden since caregivers loose working hours in the hospital and even lose their children to diarrhoea. There was need to explore caregivers' knowledge, perception and practices on the management of diarrhoea at home to improve its outcome and consequently reduce mortality rate.

To effectively prevent and manage diarrhoea at home, it is important that the risk factors associated with diarrhoea management be investigated in the communities. However, local epidemiology and determinants of diarrhoeal management in the rural communities of Seme sub-County has not been researched. Most studies in Seme sub-County have focused on the prevalence and prevention of diarrhoea rather than its home management. With a prevailing high mortality rate of children less than five years old due to diarrhea, as was found in East Seme, this study would help local health care providers to reduce morbidity and mortality due to diarrhoea among young children in this area.

1.7 Significance of the Study

The findings of this study will be useful for planning and decision making at the Ministry, in educating the caregivers on management of diarrhoea at home in the sub-County. Knowing the perceptions of caregivers and the extent of their awareness in the management of diarrhoeal conditions will help scale up interventions to reduce morbidity and mortality due to diarrhoea among young children under five years old in the location. Appropriate management of diarrhoea at home can alleviate many of the consequences of diarrhoea which includes malnutrition, impaired development, growth faltering and mortality (Mwambete *et al.,* 2010). Adequate knowledge on management of diarrhoea will reduce the number of children becoming dehydrated or malnourished from diarrhoea.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a critical summary of the literature on determinants of management of diarrhoea at home among under-five year old children by care-givers. Relevant studies in both developing and developed countries are reviewed. Specifically, this chapter describes: - the importance of knowledge, perception, and practice of care-givers of children under-fives on home management of diarrhoea. It also describes care-givers characteristics such as age, education, occupation, income, marital status and diarrhoea management. Knowledge factors are also examined. This chapter also presents an operational framework adopted for this study showing independent and the outcome (dependent) variable.

The early years of a child are very key in their growth and development and therefore any negative influences affecting the child during this time such as malnutrition, and infection may have great limitations to a child's growth and development (Black *et al.,* 2003). Home management is applied as a control measure for diarrhoeal conditions. Knowledge, practice and perception of caregivers of children are important determinants of the occurrence or outcome of diarrhoeal conditions (Ketsela *et al.,* 1991). Integrated Management of Childhood Illness (IMCI) guidelines advise the use of ORT along with continued feeding and zinc supplementation for appropriate diarrhoea case management (WHO Handbook, IMCI Geneva, 2005).

2.2 Epidemiology of Diarrhoea

Diarrhoea is the second leading cause of death among children under five years globally. Nearly 1.5 million deaths in children each year is due to related dehydration. It kills more young children than AIDS, malaria, and measles combined (WHO, 2010). Diarrhoea is the passage of

unusually loose or watery stools, usually at least three times in a 24-hour period (WHO/IMCI, 2005). The duration an episode lasts puts diarrhoea into different categories. However, it is the consistency of the stools rather than the number that is most important. Caregivers need to know when their children have diarrhoea and may provide useful working definitions in local situations for its proper management.

2.3 Types of Diarrhoea

Diarrhoea may be classified into four general types based on the mechanism of presentation, including osmotic diarrhoea, secretory diarrhoea, exudative diarrhoea, and motility disorder diarrhoea. Diarrhoea can still be classified into four types, each reflecting a different pathogenesis, including acute diarrhoea, dysentery, persistent or prolonged diarrhoea, and chronic diarrhoea.

2.3.1 Acute Watery Diarrhoea

This term refers to diarrhoea characterized by abrupt onset of frequent, watery, loose stools without visible blood lasting less than two weeks and may be accompanied by flatulence, malaise, and abdominal pain. The death of a child with acute diarrhoea is usually due to dehydration that occurs when there is excessive loss of fluids and mineral salts (WHO/UNICEF, 2009). The common causes of acute watery diarrhoea are viral, bacterial, and parasitic infections. Global median value due to acute diarrhoea among children under five years old ranged from 6 to 19.6 per/1000 in developing countries (UNICEF, 2008). Dehydration is dangerous especially in infants and young children due to rapid body turnover, high body water content and relatively larger body surface (Vesikari *et al.*, 1994).

2.3.2 Dysentery

Is defined as diarrhoea containing blood and mucus in the feaces accompanied by abdominal cramps, fever and rectal pain. Evidence shows that around 10% of diarrhoeal episodes in children under-five years of age have visible blood in their stool and out of this 15% cause death in this age group (WHO/UNICEF, 1999).

2.3.3 Persistent Diarrhoea

Is defined as diarrhoeal episodes of presumed infectious etiology that lasts for at least 14 days (Molbak, 2000). About 10% of diarrhoea in children from developing countries becomes persistent especially among those less than three years but commonly, among infants (Molbak, 2000). This kind of diarrhoea causes substantial weight loss since it is a major cause of malnutrition in developing countries hence it contributes to the overall high mortality rates in these countries.

2.3.4 Chronic Diarrhoea

Refers to diarrhoea which is recurrent or long lasting due to non- infectious causes. It could be caused by gastro-intestinal disease (Molbak, 2000).

2.4 Impact of Diarrhoeal Complications on Children

Diarrhoea is a global public health problem but is especially prevalent in developing countries due to poor sanitation, inadequate water supplies, poverty and limited education (IOWH, 2000). In addition, diarrhoea has long-term, lasting effects on nutritional status, growth, fitness, cognition, and school performance (IOWH, 2000). It is believed that diarrhoea has a significant

impact on growth due to reduction in appetite, altered feeding practices and decreased absorption of nutrients (IOWH, 2000). Each day of illness due to diarrhoea produces a weight deficit of 20-40 grams (Molbak, 2000). In addition, the adverse effects of diarrhoea on height varies by age. During the first 6 months of life diarrhea results in long-term height deficits (stunting) that is likely to be permanent. By contrast, diarrhoea after 6 months of age showed transient effects on growth due to catch-up growth (Molbak, 2000).

According to Gracey, the greatest impact of diarrhoea on children's growth occurred in the first 3 years of life, especially, during the second half of infancy (6-12months) and in the second year of life (Gracey, 1996).

2.5 Knowledge on the Causes of Diarrhoea

Regardless of where they live or under what circumstances, parents throughout the world seem to have a compelling desire to provide the best possible health care for their children (Kirk *et al.,* 1990). Caregivers should have adequate knowledge on the causes and treatment of diarrhoea including appropriate remedies to reduce morbidity and mortality of children under five years of age attributable to diarrhoea (UNICEF & WHO, 1999). A descriptive study done in Karachi in 2011 in a pediatric ward indicated that 47% of the caregivers said diarrhoea was caused by evil eyes and only 17% of them said diarrhoea was caused by contaminated water and the study concluded that the caregivers lacked adequate knowledge on the causes of diarrhoea (Yasmin *et al.,* 2011). Since the study was done in a hospital setting, where information may have been provided during health education, there was need therefore to find out the level of awareness of diarrhoea in the community and to make comparison. A survey done in Khartoum Sudan showed that caregivers could define and describe diarrhoea, however awareness about the etiology and

the importance of the causative pathogens was low (Kirk *et al.,* 1990). Most of the caregivers attributed diarrhoea to teething, milk of pregnant women, food, and salty diet. (Ahmed *et al.,* 1994).

2.6 Knowledge on Danger Signs of Dehydration

Dehydration is defined as presence of two or more of these signs; thirst, sunken eyes, scanty urine (Perez-Cuevas *et al.,* 1996). WHO (2005) recommends that caregivers should be able to identify the signs of dehydration for early referral to hospital. These signs include; excessive thirst, sunken eyes, reduced urine output, drowsiness, and poor skin turgor. In Nepal, a cross-sectional study revealed that 79% of the caregivers were unaware of the signs of dehydration showing a low level of knowledge which is a threat to diarrhoeal management (Mukhtar *et al.,* 2011). In Iran, majority of caregivers had moderate level of knowledge (64.3%) regarding diarrhoea and only 3.7% had good knowledge on danger signs of dehydration and their approach to diarrhoea was inadequate (Manijeh *et al.*, 2013). The major pathogenic mechanism by which diarrhoea causes mortality is through dehydration which is responsible for more than half of diarrhoeal deaths in developing countries (KNBS, ICF Macro 2010). Adequate knowledge of danger signs is important because it may lead to early health seeking behavior by the care-givers. Prompt medical attention for a child with signs of dehydration is crucial in reducing mortality rate among children under-five years (KNBS, ICF Macro 2010). In Nakuru, Kenya, majority of the caregivers of children under-five years of age had inadequate knowledge on signs of dehydration and complications of diarrhoea. They also used inappropriate treatment methods to manage their children with diarrhoea resulting in late admissions to hospital and subsequent high mortality rate (Mugo *et al.,* 2007). In former Nyando district, a cross-sectional study of children

under five years of age, in 2004, found that majority of the caregivers were not able to recognize danger signs of dehydration (Othero *et al.,* 2008). Although several studies have been done about knowledge on the danger signs of dehydration, globally and even nationally, no study evaluated the impact of this knowledge on management of diarrhoea at home and this formed the knowledge gap. Most diarrhoea episodes are treated at home, and mostly mothers are the key caregivers of children under five years old. They are the ones who decide about nutrition and management of diarrhoea in children, therefore their knowledge about this common condition is critically important. This study investigated the knowledge of caregivers to provide more information to health service practitioners in this County.

2.7 Knowledge on Management of Diarrhoeal Complications

The effectiveness of management of diarrhoea at home is achievable only if caregivers have appropriate information on strategies for diarrhoeal therapy (Uchendu *et al.,* 2007). Appropriate home management is therefore necessary as an initial remedy before seeking formal treatment and caregivers need to demonstrate ability to manage children with diarrhoea at home.

A study in Nigeria by Uchendu found that diarrhoeal management in the home was grossly inadequate, in terms of method of preparation and administration of rehydration fluids (Uchendu *et al.,* 2007). In West Africa, Bhutta and others found that caregivers without knowledge on how to manage children with diarrhoea at home did not use Oral Rehydration Solution during diarrhoea episode (Bhutta *et al.,* 2000). This shows, that knowledge could be a determinant to appropriate diarrhoeal management. This study therefore sought to find if knowledge on danger signs of dehydration could have an effect on diarrhoeal home management

In a rural community in Kenya, (Jamison *et al.,* 2008), found that only 27.5 % of those who reported knowing about Oral Rehydration Solution had a packet of Oral Rehydration Solution at home. This means there is a knowledge-practice gap in caregivers' management of diarrhoea by use of Oral Rehydration Solution.

Most deaths due to diarrhoea are caused by dehydration and mismanagement of the condition by the primary caregivers at home. Diarrhoea could be lethal due to improper practice and misdirected approach towards its management. A high degree of mismanagement could result in severe dehydration. As research into diarrhoeal incidences and caregivers home management practices has generally declined, there is at present insufficient published work on maternal related practices in Kisumu County. The study therefore sought to investigate the current knowledge on home management practices of caregivers West Seme regarding management of childhood diarrhoea with a view of providing recommendations that will enhance the quality and content of health information to improve the care of children with diarrhoea in West Seme location and Kenya as a whole.

2.8 Perception of Caregivers on Severity of Diarrhoea

In developing countries caregivers who perceive their children to be very sick are more likely to seek or give treatment than those who do not perceive their children to be very sick.

[(Ibrahim *et al.,* 1994), (Perez-Cuevas *et al.,* 1996] argued that caregivers sought medical assistance when they perceived a worsening clinical condition. Clinical signs that were statistically associated with their decision were: bloody diarrhoea, vomiting, illness lasting longer than three days, weight loss, and fever.

A study carried out in Philadelphia (Yoder and Mommick *et al.,* 1997), showed that most care-givers of children with diarrhoea gave some form of treatment but was influenced by severity of the episode suggesting that the perception of care-givers on the severity of an episode of diarrhoea is a crucial factor in the choice of treatment. Diarrhoea is caused by microbial agents which are usually transmitted through contaminated food and water. In another study, maternal education and perceived severity were significantly associated with seeking traditional treatment. Illiterate caregivers were two and half times more likely to seek traditional treatment than those caregivers with formal education, showing that perception of the caregiver influences action taken during diarrhoea (Tizito, 2014).

A study done in Tanzania in 2010 demonstrated high frequency of diarrhoea which was manifested by the fact that almost all the respondents had experienced diarrhoea which they perceived as normal growth condition depicting the existence of substantial knowledge–gaps regarding diarrhoeal predisposing factors (Mwambete *et al.,* 2010). Many intervention programs that attempt to reduce childhood diarrhoea fail because they are culturally unsuitable and often developed without understanding the problem of the target community. For successful achievement, understanding of caregivers' perception should be a priority. The above studies did not address the influence of knowledge on severity of diarrhoea on home management of diarrhoea. This showed knowledge gap that the study sought to fill. No previous studies have been reported in Seme Sub-county of that nature hence the study intended to fill this gap.

2.9 Practice of Caregivers

Caregivers practices during diarrhoea are significant components of home management. WHO, CDD program, and other organizations like UNICEF have given priority to the prevention of

diarrhoeal deaths rather than prevention of cases and focused on promotion of the use of ORT (Victoria *et al.,* 2000). The key practices include continues feeding, rehydration and drug therapy. A cross-sectional study conducted in a health centre in Zahedan, Iran showed that (56%) of the caregivers had moderate knowledge on practice, and only (23%) had good practice (Manijeh, 2013). Despite of the importance of feeding children adequately, during diarrhoea, caregivers feeding practices still remain an obstacle to its adequate management (Konde Lule *et al.,* 1992). Poor practices by caregivers could have an impact on morbidity and mortality among children aged less than five years in Kenya. (KNBS, ICF Macro 2010). In a study conducted by Karim, the result showed that a high concentration of specific antibodies, cells, and other mediators in breast milk reduces the risk of diarrhoea following colonization with entero-pathogens (Karim *et al.,* 2001). In Kenya about three in ten children with diarrhoea are given the same amount of food as usual and only 5% are given more to eat than usual and a quarter, are given somewhat less food, and 6% are not given food at all (KNBS, ICF Macro 2010). Oral rehydration therapy (ORT) which involves prompt increase in child's fluid intake is a simple and effective remedy in response to diarrhoeal illness (KNBS, ICF Macro 2010).

A study carried out in Nyando in 2004 revealed that some caregivers misconceived that the more fluids a child takes when he or she has diarrhoea the more frequent the loose stools and more so milk (Othero *et al.,* 2008). This misconception could cause dehydration and increase child mortality. The studies above did not look at the caregivers who carried out correct home management practices and those who did not showing the knowledge gap the study tried to fill.

2.10 Socio-Demographic Factors and Effect on Practices by Care-Givers

A cross-sectional study done by Abram on prevalence of diarrhoea established that it is higher in younger children (Abram, 2001). The prevalence is highest in children 6 – 11 months of age, (Molbak, 2000). Some studies have shown that there is a statistically significant association between socio-economic factors such as poor housing, crowded conditions, low income, education and occupation and higher mortality rate due to diarrhoea in children (Teklemarian *et al.,* 2000). Demographic factors that include age, gender, education, marital status and socio-economic status of caregivers are perceived to determine effective home management of childhood diarrhoea at home in Kenya (KNBS, ICF Macro 2010). The study therefore investigated the education, income and age as some of the socio-demographic characteristics of the caregivers in the location to see whether this could have possible effects on diarrhoeal management.

Higher maternal educational level is well recognized as a protective factor for childhood survival and confers the advantage of being able to understand and comply with life–saving health practices (Uchendu *et al.,* 2007). A study carried out Nyando district (Othero *et al.,* 2008) showed that age, gender, and marital status, were not significant in-management of diarrhoea at home among children under- five years. The study therefore also sought to know the caregivers' education, income, and age to see if they could have influence on home management of diarrhoea.

Sanitation: Sanitation obviously plays a key role in reducing diarrhoea morbidity. Indiscriminate or improper disposal of children's stool and household garbage, non-existence of

latrines, sharing latrine or house without sewage system, increased the risk for diarrhoea in children (Etiler *et al.*, 2004).

2.11 Conceptual Framework

Treatment of infectious diseases will enhance control of their morbidity. Proper and quick management of diarrhoea can be applied as a control measure of its morbidity. Effective treatment of diarrhoea depends on the perceived causes of diarrhoea, knowledge, and practice on home management of diarrhoea. Prevention of contracting diarrhoea involves interrupting the root cause of transmission and protecting the susceptible victim (AMREF, 1999).

The Conceptual Framework in Figure1below was a modified form derived from Mosley and Chen (1984) for child health and mortality. According to this framework child mortality and morbidity are influenced by underlying factors both socio-economic and biological that operate through proximate determinants. Among the proximate factors identified in the framework include; caregivers' knowledge, perception, and practice. Some of the underlying factors are socio- economic factors like education, wealth/income, occupation and age. Most of these factors apply in the study.

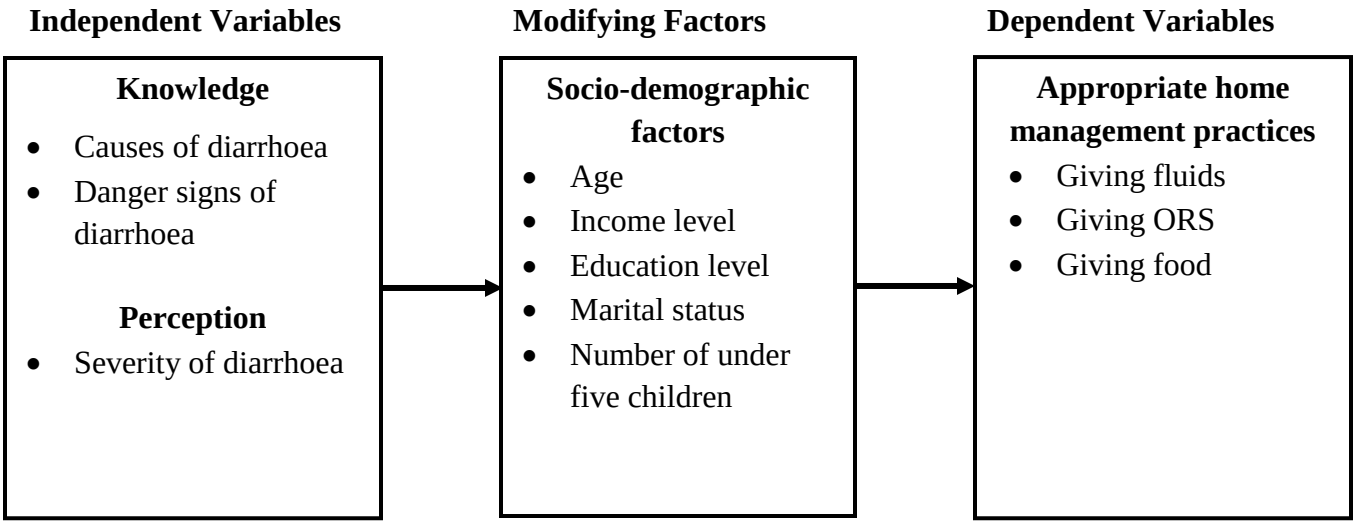

Figure 2.1: Operational framework on knowledge and perception on diarrhoeal management at home.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter is a description of the study design, study site, and study population. It also includes a description of the sampling procedure, data collection tools, data management and data analysis methods used in this research. The chapter also shows how the dependent and independent variables were defined and measured in relation to care-givers/ and their children less than five years.

3.2 Study Site

The study was done in West Seme location, Seme Sub-County in Kisumu County. (Appendix 6). Seme Sub- County has a population of 98,805 with 13,025 people residing in West Seme location (KNBS, ICF Macro 2010). Seme Sub-County has high mortality rate of 80 per 1000 births (KNBS, ICF Macro 2003). Seme Sub-County is the largest in size compared to the others in Kisumu County with relatively sparse population having a density of 313 persons per square km.

Problems in the community included; poverty, high rates of unemployment, poor sanitation, and resource constrained health facilities acting as a drawback to control of diarrhoea. The Sub-County has 22 health facilities, 1 district hospital, 4 Sub- district-hospitals, 3 health-centers, and 14 dispensaries. In the Sub-County diarrhoea was found to be the 4^{th} leading cause of morbidity after malaria, acute respiratory tract infections, and malnutrition (KNBS, ICF Macro 2010). Lack of access to clean drinking water was a major cause of diarrhoeal diseases. Generally, utilization of the health facilities by the community is affected by poor infrastructure, long distance, and inadequate distribution. About 80% of households have access to health services delivery which

clearly shows that about 20% of the households are so disadvantaged in terms of access to health services.

3.3 Study Design

A cross-sectional study design was used. This design is a type of descriptive observational investigation, in which exposure and disease statuses are assessed simultaneously among individuals in a well- defined population. It provides information on the prevalence and characteristics of a disease or any other health outcome of the population at a given time. Such data can be of value to public health administrators in assessing the health status and health care needs of the population. The major advantage of this design is that it is based on a sample of a population and does not rely on individuals that present themselves in for medical treatment. (Hennekens *et, al.*1987). The study employed a descriptive cross-sectional design that was carried out on 394 caregivers who had children under five years old. This was drawn by multistage sampling from Kisumu County to Seme Sub- County then to West Seme location. (*Figure 3.1*) to collect information on their knowledge, perception, and practice on management of diarrhoea at home by use of semi- structured questionnaire. The study design was adopted to enable the collection of information from a large population over a short period of time. It also allowed the study to be carried out in a natural real-life setting using samples, thus increased external validity of the study, hence easy generalizability.

3.4 Study Population

The study populations were caregivers of children under- five years' old who were residents of West Seme location and their children had suffered diarrhoea in the last two weeks.

3.4.1 Inclusion Criteria

Caregiver of a child under five years' old who had stayed in the study area for the last three months, the child had had diarrhoea in the last two weeks and the caregiver gave consent to participate in the study

3.4.2 Exclusion Criteria

Caregivers who were mentally ill, seriously ill, or had hearing and speaking difficulty.

3.5 Sample Size Determination and Sampling Procedures

3.5.1 Sample Size Determination

The population of Seme Sub-county is 98,805 with population of West Seme location at 13,025 (KNBS, ICF Macro 2010). Fishers' formula was used in calculating sample size n= $Z^2pq//d^2$ (Fisher *et al.*, 2000) where n= estimated number of respondents to be seen, Z=95% confidence interval (1.96) is the score for a normal distribution table, p= estimated proportion of caregivers or of children < 5 years who are practicing correct management of diarrhoea at home d= Precision, q= 1-p, p= the proportion in the target population was assumed to be 50 %. Therefore, p=50/100=0.5, q= (1-p) =1-0.5=0.5, d= 0.05(the level of statistical significance).

n= $1.96^2(0.5)\ (0.5)/0.05^2$ = 384.16=384.

To take care of possible lost follow-ups, the sampling size was increased by 3% giving a total of 396 samples; households were used to identify the respondents. They were selected from four sub-locations based on their population size as shown in Table 3.1.

Table 3.1: Distribution of Sample by Sub-Location

SUBLOCATION	No. of H/Hs	Calculating No of Villages per Sub-location	No of Villages	Sample size per sub-location
East Reru	1155	1155/2971x 30	12	1155/2971×396=155
West Reru	1036	1036/2971x 30	11	1036/2971×396=138
Ngere West	339	339/2971x 30	3	339/2971×396=45
Ngere East	441	441/2971x 30	4	441/2971×396=58
Total	**2971**		**30**	**396**

The study covered 394 households from the 30 villages since the remaining two did not have children that had diarrhoea in the past two weeks the above calculation was done in line with population proportion to size (PPS) consistent with standard WHO EPI protocol (WHO/UNICEF, 2007). The sample size above shows the number of households that were to be visited per sub-location

3.5.2 Sampling Procedures

A total of all the 30 villages in the location were used for the study. The number of households per sub-location was determined by using proportion to size method. The Sub-locations were identified after which their proportions calculated as shown in Table 3.1. From the proportions, selection was done to form the sample using systematic sampling. At each sub-location the researcher would spin a bottle randomly and the direction the bottle top faced would be taken by the researcher. Selection of the household was done by selecting the nth household of the number of households in each sub-location and this varied from one sub-location to another where ***n*** was the sampling interval.

The sampling interval for each sub location was determined based on the sample size and the total number of households in each sub location. For example, in Ngere West the sample size was 45, the number of households was 339, therefore the sampling interval was =339/45=7. Consenting caregivers were then interviewed using semi-structured questionnaire.

The sampling unit was the households and the unit of analysis was caregivers of children under five years of age who had diarrhoea in the last two weeks.

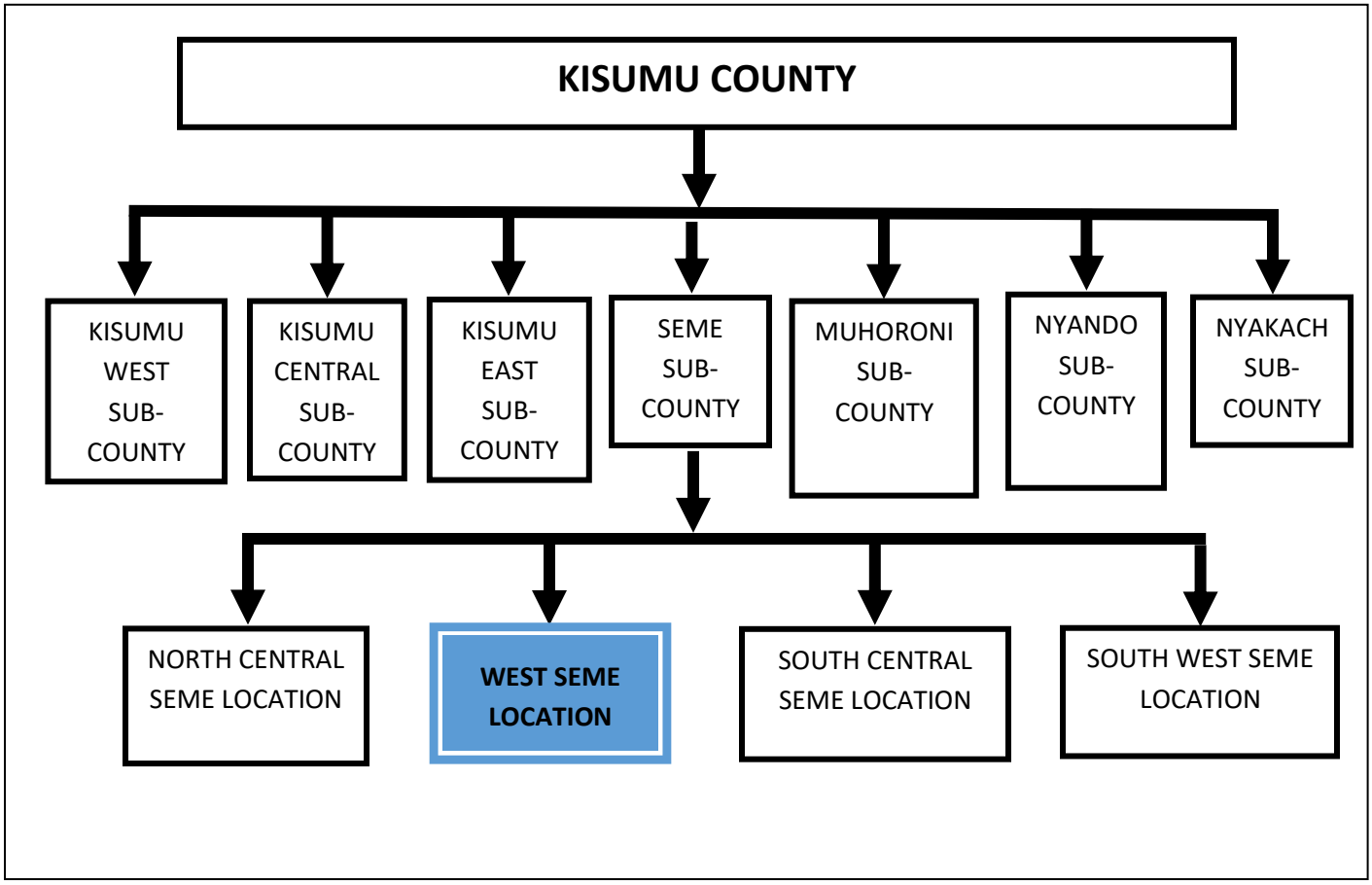

Figure 3.1: Multi-stage sampling

3.6. Data Collection Tools

The study used questionnaires and interviews as the main tools for collecting data. Questionnaire was used since the study was concerned with variables that could not be directly observed such as perceptions, knowledge and practice of respondents. Sample size was also large and had to be within a short time frame and questionnaire was the most appropriate.

3.6.1 Questionnaire

A questionnaire (Appendix 3) with clear and simple questions was designed with closed and open-ended questions that were administered to the respondents by the researcher. The questionnaire had three sections; a section on caregivers' socio- demographic characteristics; a section on perception and knowledge of caregivers on diarrhoea; a section on caregiver's practices/management of diarrhoea at home. The fact that the research assistants administered the questionnaire themselves enabled them to avoid any possibility of misinterpretation and this increased the reliability of the tool.

3.6.2 Focus Group Discussions

To explore more on knowledge and perception of and caregivers on management of diarrhoea, predesigned focus group guide was used to collect data (Appendix 4). The participants included caregivers whose children had had diarrhoea in the last two weeks prior to the study. Four focus group discussions were held at Arito health centre since this was a central place in the location and during the home visits, caregivers had been requested to converge here on specific days to enable carry out oral discussions. Each group had about ten caregivers. After reaching the saturation point, the discussions were concluded at the fourth focus group. (Appendix 4).

3.7 Data Collection Procedures

The researcher started with the first household at the boundary where the eligible caregiver was served with the questionnaire after getting the consent. If a caregiver had more than one child that had diarrhoea, then only one was considered for the interview. The next household was identified by spinning a bottle and the direction it pointed would be used as a guide after which the nth household would be visited according to the sampling interval for every caregiver selected the researcher administered the questionnaire. This enabled the respondents to read and understand the questions before answering them. This raised success in the reliability in the number of questionnaires answered and filled.

There was training of four research assistants before the research process began who were students of Masters Degree in Public Health. The questions and their meanings were thoroughly explained to the assistants. They were then instructed on how to ask questions and exactly to report what the respondents answered. They then practiced together to ensure standardized way of collecting information. During data collection process, the coordinator of the research and the assistants checked the quality of the data after each field day. Corrections were then made where necessary. This way the reliability of data was ensured.

3.7.1 Questionnaire

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practices/management of diarrhoea at home. The questionnaire was developed in English language and translated in Dholuo during data collection the main language of communication in the Sub-county. Face to face interviews based on the questionnaire was done on caregivers who could not read or write the fact that the research assistants administered the questionnaire themselves enabled them to avoid any possibility of misinterpretation and this increased the reliability of the tool.

3.7.2 Focus Group Discussions

The participants included caregivers whose children had had diarrhoea in the last two weeks prior to the study. Four focus group discussions were held at Arito health centre since this was a central place in the location and during the home visits, caregivers had been requested to converge here on specific days to enable carry out oral discussions. Each group had about ten caregivers. After reaching the saturation point, the discussions were concluded at the fourth focus group. (Appendix 4).

3.8 Pre-testing of Questionnaires

The questionnaire was pretested before the actual data collection in about twenty households in West Reru sub-location that were randomly selected. This was done to ensure validity of the procedure. West Reru was selected though in the study area since it had the same type of respondents as the ones that were going to be interviewed to minimize variation. The pre-testing was stopped at the twentieth household when the researcher realized the consistency of the results after repeated trials. This ensured validity of the research procedure after the interviewers

confirmed that there were no more or minimal problems in the understanding and answering of questions.

The households that were used for pretesting were not revisited again during the process of data collection. Pretesting was done to check if they fetched relevant answers to the questions to a void distortion of information.

3.9 Reliability and Validity

3.9.1 Reliability

Pretest was done on 20 households of the non-sampled households. The necessary correction was done on the clarity of language, sequencing and the workability of the questionnaire. Questionnaires were modified and orientation was done to the data collectors. Gridlines were given to the data collectors. The researcher monitored the data collection process. Each completed questionnaire was coded on pre-arranged coding sheet to minimize errors. The data was checked again for its completeness before the final data entry. The outcome was the analyzed to ensure it reflects the actual state of Diarrhoeal home management

3.9.2 Validity

To ensure internal validity of this study the data collection process was closely monitored by the researcher and data collection instrument was tested before application. External validity was achieved by ensuring that the samples were randomly selected and is representative of the study population to which study findings could be generalized.

3.10 Measurement of Variables

3.10.1 Independent Variables

3.10.1.1 Knowledge of Caregivers on Causes of Diarrhoea

Knowledge in this study was defined as the caregiver's awareness on the causes of diarrhoea and had in mind the correct cause of diarrhoea as pathogens/germs such that the correct response would be germs or any factor related to germs and the rest considered to be wrong knowledge

3.10.1.2 Knowledge of Caregivers on Danger Signs of Dehydration

Knowledge on the danger signs of dehydration was defined as knowing at least two or more signs of dehydration and the signs that were considered included. Excessive thirst, sunken eye reduced urine output, excessive drowsiness, and poor skin turgor as recommended also by World Health Organization in 2008. If the caregivers knew at least two danger signs, then the caregivers are considered as having knowledge but if the caregiver knew none or only one was considered as having no knowledge. Generally, from the two, the caregivers are said to be knowledgeable if she/he had knowledge on the cause of diarrhoea and signs of dehydration.

3.10.1.3 Perception of Caregivers

The study measured perception of caregivers by investigating perception on the severity of the diarrhoea. Perception of caregivers on the severity of the diarrhoea was measured by taking frequent diarrhoea as the most severe and the rest as moderate. How many times in a day? The diarrhoea types were categorized as watery frequent, mucus, bloody painful. Correct perception of the caregivers would then be determined from both the causes and severity. A caregiver with good perception on causes and good perception severity would be considered to have to have

correct perception and the caregivers whose responses would both be negative to have wrong negative perception.

3.10.2 Dependent Variables

3.10.2.1 Practice by Caregivers

Practice in this study was defined as the action taken by the caregivers or caregiver during diarrhoea. Dietary pattern adopted by caregivers during child hood diarrhoea reflects management goals. Good practice by caregivers according to this study is to continue feeding, provide ORS or increased fluids, or both and poor practice would be to administer anti-diarrhoeal drug and withholding food.

Caregivers whose responses included giving ORT/increased fluids and continued feeding were considered having good practice and those that withheld food and administered anti-diarrhoeal drug were considered to have bad practic**e**

3.10.2.2 Management of diarrhoea at home by Caregivers

Dependent variable was home management of diarrhoea. Home management according to this study was the action taken by the caregivers during diarrhoea and during dehydration. The study considered correct home management as appropriate administration of ORS, proper feeding and giving adequate fluid during diarrhoea.

Diarrhoea was defined as the passage of loose watery stool for at least 3 times in 24hours period. For this study the researcher found out from the caregivers if their children had had diarrhoea within the 24-hr. period at least 3 times and determine which type of l they were able to give during that period.

To assess management of diarrhoea by the caregivers, the researcher found out the reaction of the caregivers to the episode in terms of giving fluids, administering drugs and giving food. In this study fluids refer to giving children ORS, water, or homemade fluids.

The respondent who gave at least two of these, that is, ORS and continued feeding or ORS and homemade fluid or water were considered as correct management of diarrhoea at home and if the response was only one of the above or none then that was considered as poor management. The analysis was as follows:

- Only one- poor management
- At least 2- correct/appropriate management

3.10.3 Modifying Factors

3.10.3.1 Age of Caregivers

The study categorized caregivers' ages on age cohort from 10-15, 15-25, 26-35, 36-45 >45 years. The knowledge and practice of caregivers was determined in every cohort to find out which cohort had the highest frequency.

3.10.3.2 Caregivers' Education

The study investigated the caregivers' education and categorized them as follows; No education as those who had not stepped into classroom, primary education completed class 8, secondary education completed form 4, tertiary education went beyond secondary. This was done to find out literacy level of caregivers in this location.

3.10.3.3 Caregivers' Economic Status

The study determined caregivers' economic status in terms of the caregivers' monthly income. This was categorized according to the researcher's design as follows: -

- 1-5000- low economic class
- 5001-20000- middle economic class
- Above 20,000- upper economic class

3.11 Data Analysis

The data was kept in the custody of the researcher to ensure privacy and confidentiality of the information given by respondents. Descriptive data analyses were conducted to obtain summary for categorical variables such as age, education level and income and the continuous variables were summarized using mean, and standard deviation. The results were then presented in narratives, graphs and tabular format. Cross tabulation was done to find the frequencies for knowledge, perception and practice. Inferential analysis was done using Logistic regression and Chi- square test to find out if there was significance between knowledge, perception and home management practices. Statistical significance was assessed at P-value<0.05.

Qualitative data were transcribed manually with the help of research assistants. The information was then coded into major themes and sub-themes according to specific objectives. Data was then analyzed manually using content and thematic analysis techniques. Direct quotations from the respondents were recorded for use when presenting data to supplement quantitative data.

3.12 Ethical Considerations

The study commenced after the approval by Maseno University, the School of Graduate studies, and the School of Public Health and Community Development. Informed consent was sought before data collection from the respondents. Research permit was obtained from School of Graduate Studies. The researcher explained the purpose and benefits of the study to the subjects. The interviewees were assured that their names were not going to be made public despite the information given. Participants were not forced or persuaded to participate in the study. The researcher was also keen on literacy level of the participants so as to give more time and interpret correctly answers given by respondents. This was to ensure validity and reliability of the information given.

3.13 Limitations

It has been known that unhygienic practices regarding sanitation, food hygiene, drinking water, low knowledge, wrong perception and wrong practices are risk factors in home management of diarrhoea, so some interviewers can produce bias information by inflating exposure information.

The collection of information was also cross-sectional running the risk of recall; however, this was controlled by interviewing care-givers who had experienced diarrhoea in their children in the last two weeks.

CHAPTER FOUR: RESULTS

4.1 Introduction

The findings of this study are presented in this Chapter according to the specific objectives. The socio-demographic characteristics of the caregivers are presented first followed by the distribution of children. The results on socio-demographic characteristics and specific objectives are then presented.

4.2 Socio-Demographic Characteristics

4.2.1 Caregivers and Characteristics

Three hundred and ninety-four respondents met the inclusion criteria and were interviewed. The respondents were caregivers whose children were under–five years of age and had diarrhoea in the last 2 weeks prior to the study. Some of respondents' characteristics investigated included; age, income level, education, marital status and number of children under five years of age. This was done to show age distribution of the caregivers, what income majority of the caregivers were getting, and finally the level of literacy amongst the caregivers.

The age cohorts included 15-25 years, 36-45 years and above 45 years. The income levels ranged from Kshs. 1-5000, Kshs. 5001-10000, Kshs. 10001-15000, Kshs. 15001-20000 and above Kshs. 20000. The level of education ranged from none (no education at all), to primary level, then secondary level and finally the tertiary level. The results are summarized in Table 4.1 below.

Table 4.1: The socio-demographic characteristics of the caregivers

Age Distribution	**n=394**	**%**
15-25 yrs	119	30.2
26-35 yrs	185	47.0
36-45 yrs	56	14.2
>45 yrs	34	8.6
Total	**394**	**100**
Mean age = 29.8 SD = 9.88 Min age =16 Max age =67		
Income (Ksh.) – per month		
1-5,000	234	59.4
5,001-10,000	110	27.9
10,001-15,000	19	4.8
15,001-20,000	21	5.3
>20,000	10	2.5
Total	**394**	**100**
Caregivers / Level of Education/ Education.		
Primary	226	57.4
None	127	32
Secondary	37	9.4
Tertiary	4	1.0
Total	**394**	**100**

The respondent's age ranged from 16years to 67years with a mean age of 29.8 ± 9.88. Majority, 185 (47%) were between the age 26-35yrs. For monthly income, Majority of the respondents, 234 (59.4%) earned (1- 5,000) shillings per month, while 110 (27.9%) earned (5,001-10,000) shillings, with a mean income level of sh. 6062 per month and standard deviation of 4976.44.

More than half, 226 (57.4%) of the respondents completed basic primary education, however, only 37(9.4%) completed secondary education, 4(1%) completed tertiary education and 127 (32%) never went to school.

The study also investigated the age groups of the children in this location under-five years old in order to find out which cohort was the majority that can be used in future studies to show the most vulnerable group to diarrhoea. The results are shown in Table 4.2 below.

Table 4.2: The demographic characteristics of children under five years in West Seme Location

Age	Reported Diarrhoea Cases	Percentage (%)
Below 1 year	210	53.3
1-2 years	100	25.4
3-4 years	60	15.2
Above 4 years	24	6.1
Total	**394**	**100**

A total of 394 children who were under-five had had diarrhoea in the last 2 weeks prior to survey. Slightly over half, 210 (53.35%) of the children were aged below 1 year, and 100 (25.4%) were between 1-2 years of age. From these, it is evident that majority of the cases of diarrhea were reported (53.3%) amongst children below 1 year of age.

4.3 Knowledge

The study investigated the knowledge of the caregivers on causes and danger signs of dehydration with a view to find out the caregivers' awareness since the major pathogenic mechanism of diarrhoea mortality is dehydration and knowledge on the danger signs is important for early health seeking practice.

4.3.1 Knowledge of the Caregivers on the Causes of Diarrhoea

The respondents were asked about their knowledge on the causes of diarrhoea and the results were as shown in Table 4.3 below.

Table 4.3: Knowledge of caregivers on the causes of diarrhoea.

Causes	**n =394**	**(%)**
Contaminated water	183	46.4
Contaminated food	120	30.5
Teething	49	12.4
Taboo	30	7.5
Evil or cursing eyes	10	2.5
Witchcraft	2	0.6
Total	**394**	**100**

Table 4.3 shows 303 (77%) of the caregiver had good knowledge on the causes of diarrhoea. However, the findings from FGD showed that some caregivers still thought that diarrhoea was caused by teething, hence they were treating their children by rubbing local herbs around the gum and others believed it would stop on its own if their teeth came out. One of the caregivers stated that; "*When my child got diarrhoea due to teething, I did not give her any treatment, diarrhoea stopped by itself when the tooth came out of the gum." (FGD)*

Table 4.4: Knowledge of caregivers on the signs of Dehydration

	n= 394	**%**
Sunken eyes	178	45.1
Skin punch return slowly	161	40.9
Excessive thirst	42	10.7
Did not know	13	3.3

When asked about signs of dehydration, 178 (45.1%) caregivers mentioned sunken eyes, 161 (40.9%) mentioned skin pinch return slowly, 42 (10.7%) mentioned excessive thirst, while 13(3.3%) did not know. This shows that most caregivers knew about sunken eyes and skin pinch return slowly as danger signs of dehydration (Table 4.4)

"*When the child cannot eat anymore and becomes very weak is when I take my child to hospital".* Quoted by most of the caregivers on action taken during diarrhoea during the Focus Group discussions.

The study also investigated the number of danger signs of dehydration each respondent knew, to find out whether each respondent could mention at least two danger signs which is recommended by WHO.

The caregivers who mentioned at least two signs of dehydration were considered to have knowledge on the danger signs and those who didn't mention any or only one sign were considered not to have knowledge on the danger signs of dehydration. The results were as follows:

4.3.2 Knowledge of Caregivers on Danger Signs of Dehydration

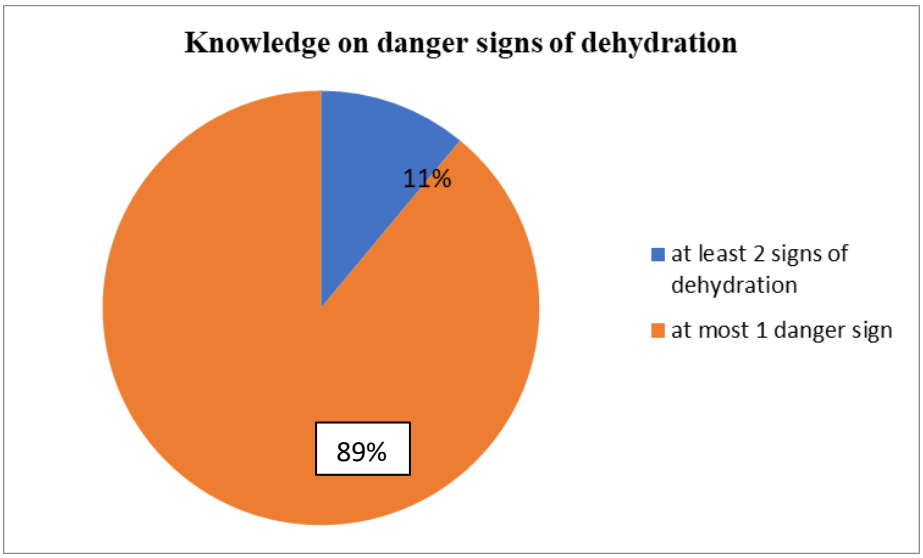

Figure 4.1: Knowledge of caregivers on danger signs of dehydration

The caregivers who knew at least two (2) signs of dehydration were 43 (11%) and the ones who knew only one or none of the signs of dehydration were 351(89%) (Figure 4.1). To investigate the relationship between knowledge on signs of dehydration and diarrhoeal management, the caregivers who had knowledge on the signs of dehydration were asked about their diarrhoeal management practices at home to find out if there was an association between knowledge on the signs of dehydration and home management of diarrhoea.

4.4 Perception

4.4.1 Perception of Caregivers on Diarrhoeal Severity in West Seme Location

Caregivers were interviewed about their perception on severity of diarrhoea so as to find out whether they could detect when a child's condition is worsening during a diarrhoea episode, in

order to act appropriately. The types of diarrhoea included; watery diarrhoea, bloody diarrhoea, frequent diarrhoea, painful diarrhoea and the results were as follows (Table 4.5).

Table 4.5: Perception of caregivers on severity of diarrhoea

Perceived severity	**n= 394**	**(%)**
Frequent	284	72.1
Watery	84	21.2
Bloody	15	3.8
Painful	11	2.9
Total	**394**	**100**

From the results it was evident that most caregivers perceived that frequent diarrhoea (at least 3 to 4 times in 24 hours) was the most severe 284 (72.1%), followed by watery diarrhoea 84 (21.2%) then bloody diarrhoea 15 (3.8%), and 2.9 % thought painful diarrhoea was the most severe.

4.5 Practices/ Management of Diarrhoea by Caregivers at Home

Various management techniques were reported by caregivers including breast feeding, giving anti-diarrhoeal drugs and giving of fluids. Simple home remedies were reported to reduce mortality for example; fluid therapy with ORS and other standard home-made fluids, non-stop feeding during diarrhoea, and continued breastfeeding were the typical responses mentioned as treatment.

Table 4.6: Caregivers practices/management during diarrhoea

	n=394	(%)
Giving fluids	333	84.5
Not giving fluids	61	15.5
Frequency of giving fluids (n=333)		
Less than usual	40	12.0
Usual (a glass after a meal)	169	50.9
More than usual	124	37.1

From the Table 4.6 above, out of the 394 participants 333 (84.5%) said they would give fluids during diarrhoea episodes but the frequency of giving fluids differed from one caregiver to another. The study showed that 40 (12%) would reduce fluid intake, with 169 (50.9%) would give the usual amount, which was described by the discussants as a glass of water after every meal, then 124 (37.1%) gave more water than the usual amount. This means that in this location only 37.1% of the caregivers are following WHO recommendation of increased fluid intake during diarrhoea. The study also demonstrated that 61 (15.5%) did not give fluids at all, where fluid here included; ORS, homemade fluid, and water.

From the FGDs one of the caregivers said; "*If my child fell sick I would give flagyl and the diarrhoea stops."* Another one said; "*When my child got diarrhoea due to teething, I did not give any treatment, and the diarrhoea stopped by itself when the tooth came out of the gum*," *(quoted by some of the caregivers from FGD).*

Few caregivers would manage diarrhoea using ORS as quoted by one caregiver; "*I would not give my child ORS because it would increase the diarrhoea*." Others said ORS was used in the treatment of diarrhoea and would easily run for it from the shops when diarrhoea started.

Table 4.7: Caregivers practices during dehydration

	n= 394	%
Continued feeding	192	48.7
Gave water	132	33.5
Rushed to hospital	38	9.6
Gave ORS	24	6.1
Gave homemade fluid	8	2.0

Regarding the management dehydration, caregivers mentioned varied practices. The use of ORS was still unpopular with only 24 (6.1%) saying they would give ORS to their children during dehydration, 192 (48.7%) will continue feeding, 132 (33.5%) will give water, 38 (9.6%) will rush their children to hospital, and 8 (2%) would give homemade fluids. From the Focus Group discussion, majority of caregivers were ignorant as to appropriate home management practices.

Maternal knowledge on management of diarrhoea at home was determined by allotting scores of (1) to those whose responses included at least two out of the three recommended management practices namely; use of ORS, giving fluids, and continued feeding as having good knowledge on management of diarrhoea at home among children under five years old and giving (0) to those whose responses were at most one of the above. Overall, 240 (60.8 %) were graded as having poor knowledge of home management of childhood diarrhoea while 154 (39.2%) had good knowledge on diarrhoeal management.

4.6 Analysis from Logistic Regression and Chi-square Test of the Factors that Influence Home Management Practices by the Caregivers in West Seme Location

Table 4.8 (a): Odds ratio from logistic regression analysis of influence of socio-demographic characteristics on knowledge on causes of diarrhoea

					OR 95% C.I.	
	N	%	p value	OR	Lower	Upper
Age (years)						
15 – 24	87	71.9		1		
25 – 34	154	83.7	0.014	2.006	1.149	3.501
35 – 44	42	80.8	0.222	1.641	0.741	3.636
≥ 45	28	87.5	0.048	2.736	0.892	8.385
Income level						
Kshs ≤ 5000	58	85.3		1		
Kshs 5001-10000	81	73.0	0.058	0.466	0.211	1.027
Kshs 10001-20000	114	80.3	0.379	0.702	0.319	1.544
Kshs >20000	56	84.8	0.942	0.966	0.373	2.497
No. of under 5 children						
1 child	51	80.1		1		
2 - 4 children	182	78.4	0.666	0.856	0.424	1.729
>4 children	78	83.0	0.745	1.147	0.501	2.624
Relationship with the child						
Non-relatives	6	40.0		1		
Sibling	7	66.7	0.309	3.000	0.361	24.919
Grand parents	26	72.2	0.068	3.900	0.905	16.798
Parents	277	82.2	0.003	6.925	1.896	25.298
Marital status						
Single	48	46.2		1		
Married	252	88.6	0.015	2.275	1.174	4.410

The above table gives the results of unadjusted Odds Ratio, 95% confidence interval and associated p- values for the factors that predict appropriate home management practices of caregivers of under-five children with diarrhoea.

The caregivers between the age of 25-34yrs were 2.006 times more likely to have knowledge on the causes of diarrhoea than the age between 15-24yrs. There was a significant difference on having knowledge on the causes of diarrhoea between caregivers who were parents and compared to non-relatives; parents were 6.9 times more likely to know the causes of diarrhoea than non-relatives OR = 6.925, 95% CI = (1.896-25.298) p value = 0.003. The caregivers who were married were 2.275 times more likely to have knowledge on the causes of diarrhoea than the single ones. OR = 2.275, 95% CI (1.174-4.410).

Table 4.8 (b): Adjusted Odds Ratio from regression analysis of socio-demographic characteristics and the influence on knowledge on the causes of diarrhoea

					AOR 95% C.I.	
	N	**%**	***p* Value**	**AOR**	**Lower**	**Upper**
Age						
15 – 24	87	71.9		1		
25 – 34	154	83.7	0.030	1.420	1.088	3.940
35 – 44	42	80.8	0.253	1.110	0.761	2.425
≥ 45	28	87.5	0.004	2.108	1.024	5.492
No. of under 5 children						
1 child	51	80.1		1		
2 - 4 children	182	78.4	0.666	0.856	0.424	1.729
>4 children	78	83.0	0.745	1.147	0.501	2.624
Relationship with the child						
Non-relatives	6	40.0		1		
Sibling	7	66.7	0.128	1.581	0.361	4.919
Grand parents	26	72.2	0.276	2.662	0.965	7.798
Parents	277	82.2	<0.001	2.925	1.296	5.289
Marital status						
Single	48	46.2		1		
Married	252	88.6	0.001	4.148	1.795	9.584

Regarding the prediction of the correct knowledge on causes of diarrhea: compared to those aged 15-24years, caregivers aged 25-34 yrs were 1.4 times more likely (AOR = 1.42, CI = 1.088 – 3.940, *p* value = 0.03) to have the correct knowledge. Similarly, elderly (≥ 45 years) caregivers were 2.1 times more likely (AOR = 2.108, CI = 1.024 – 5.492, *p* value = 0.004) to have the correct knowledge compared to those aged 15-24years; parents were 2.9 times more likely (AOR = 2.925, CI = 1.296 – 5.289, *p* value < 0.001) to have the correct knowledge compared to non-relatives; and compared to single caregivers those who were married were 4.1 times more likely (AOR = 4.148, CI = 1.795 – 9.584, *p* value = 0.001) to have right knowledge on cause of diarrhoea as shown in Table 4.8 (b).

4.6.1 Caregivers Knowledge on Causes of Diarrhoea and Influence on Diarrhoeal Management at Home

The study sought to know whether the caregivers' knowledge would influence the management of diarrhoea at home. Specifically, we evaluated whether those who had the right knowledge on the causes would manage diarrhoea better at home.

Table 4.9: Odds Ratio from regression analysis of influence of knowledge on causes of diarrhoea on diarrhoeal management at home

	N	%	P value	OR	95% C.I. for OR	
					Lower	Upper
Used ORS (n=24; 6.1%)						
Taboo	14	58.4		1		
Germs	10	41.6	0.33	1.610	0.033	2.626
Giving water (n=132; 33.5%)						
Taboo	45	34.1		1		
Teething	13	9.6	0.791	0.730	0.371	3.449
Germs	74	56.3	0.042	3.771	1.283	11.100
Continued feeding (n=192; 48.7%)						
Taboo	11	5.8		1		
Teething	94	49.0	0.005	3.541	1.455	8.617
Germs	87	45.2	0.04	1.637	1.197	3.964

From Table 4.9 there is no difference between knowing that diarrhoea is caused by germs and using ORS, OR=1.61, 95% CI= (0.033-2.626), p=0.33. Similarly, there is no difference between a caregiver having good knowledge or poor knowledge on the causes of diarrhoea and managing diarrhoea using ORS.

Giving water in the management of diarrhea was significantly associated with knowing that diarrhoea is caused by germs, OR=3.7, (95% CI= (1.283-11.0), p = 0.042 compared to those who said that diarrhoea is caused by taboo. Similarly, there was no difference between those who said that diarrhoea is caused by teething and management of diarrhoea at home by giving water, OR=0.73, 95% CI= (0.371-3.449) p = 0.791. The caregivers who said that diarrhoea is caused by teething are not likely to give water during diarrhea.

However, there was a significant association between those who knew that diarrhoea is caused by germs and management of diarrhoea at home by continued feeding, OR=1.66 95% CI= (1.29-1.26) p = 0.04, compared to those who said diarrhea is caused by taboo. Similarly, those who said that that diarrhoea is caused by teething were 3.5 times more likely to manage children with diarrhoea at home by continued feeding, [OR=3.5, 95%, CI =1.46-8.62) p = 0.005] compared to those who said diarrhea is caused by taboo.

Table 4.10 (a): Odds Ratio between socio-demographic characteristics and knowledge on danger signs of dehydration by caregivers

					OR 95% C.I.	
	N	**%**	***p* Value**	**OR**	**Lower**	**Upper**
Age (years)						
15 – 24	10	12.0		1		
25 – 34	23	31.2	0.359	1.860	0.436	3.698
35 – 44	5	13.7	0.254	0.421	0.095	1.866
≥ 45	5	6.2	0.657	0.627	0.124	3.725
Income level (Kshs.)						
≤ 5000	8	11.1		1		
5001-10000	6	5.1	0.189	0.529	0.204	1.370
10001-20000	19	13.2	0.005	1.216	1.082	1.634
>20000	13	19.1	0.041	1.891	1.297	2.494
No. of under 5 children						
1 child	4	6.3		1		
2-4 children	26	11.2	0.102	1.288	0.332	4.990
>4 children	13	13.0	0.008	3.687	1.408	9.652
Marital status						
Single	14	9.8		1		
Married	29	17.8	0.032	1.988	1.062	3.720
Education level						
None	8	5.8		1		
Primary	24	11.0	0.002	2.000	1.072	4.588
Secondary	12	28.6	<0.001	6.500	2.443	17.297

There was no association between age of caregiver and knowledge of danger signs of dehydration. However, income level, number of under 5 children, marital status and education level were significantly associated with knowledge of danger signs. Specifically, caregivers who earned above Kshs. 4000 [OR = 1.216, p = 0.005]; had more 4 children under 5 years [OR=3.7, 1.4-9.7, p=0.008]; married [OR = 1.99, 1.06- 3.72, p = 0.032]; and those who had completed both primary [OR = 2.00, 1.07-4.59, p=0.002] and secondary education [OR=6.5, 2.44-17.29, p<0.001] were more likely to have right knowledge on danger signs dehydration as shown in Table 4.10 (a).

Table 4.10 (b): Adjusted Odds Ratio of socio-demographic characteristics and knowledge on danger signs of dehydration by caregivers

					AOR 95% C.I.	
	n	**%**	***p* Value**	**AOR**	**Lower**	**Upper**
Income level (Kshs.)						
≤ 5000	8	11.1		1		
5001-10000	6	5.1	0.097	2.697	0.835	8.708
10001-20000	19	13.2	0.516	0.725	0.274	1.915
>20000	13	19.1	0.682	1.276	0.398	4.095
No. of under 5 children						
1 child	4	6.3		1		
2-4 children	26	11.2	0.005	1.402	1.021	2.496
>4 children	13	13.0	0.024	3.486	1.358	8.541
Marital status						
Single	14	9.8		1		
Married	29	17.8	0.002	3.418	1.544	7.563
Education level						
None	8	5.8		1		
Primary	24	11.0	0.387	1.376	0.279	2.641
Secondary	12	28.6	0.001	5.131	1.045	10.387

When OR was adjusted for significant variables in Table 4.10 (b), only caregivers with at least 2 children under 5 years of age, were married or had completed secondary level of education were more likely to know the danger signs of dehydration. Those with 2-4 children under 5 years were 1.4 times more likely [OR=1.40, 1.02-2.49, p=0.005]; more than 4 children [OR=3.48, 1.36-8.54, p=0.024]; married [OR=3.42, 1.54-7.56, p=0.002]; secondary level of education [OR=5.13, 1.04-10.38, P=0.001] to know the danger signs of dehydration as shown in Table 4.10b

Table 4.11: Chi-square test on influence of knowledge of caregivers on danger signs of dehydration on home management of diarrhoea.

		Signs of dehydration		X^2	p value
		Yes n (%)	**No** n (%)		
Give ORS	**Yes**	15 (68)	8 (17.4)	7.923	0.022
	No	7 (32)	38 (82.6)		
Give water	**Yes**	8 (65.1)	4 (0.7)	10.672	0.001
	No	5 (34.9)	51 (99.3)		
Continue feeding	**Yes**	22 (73.3)	121 (57.1)	6.631	0.038
	No	8 (26.7)	101 (42.9)		

From the results above, the caregiver's knowledge on signs of dehydration had an influence on management of diarrhoea at home, majority of those who knew signs of dehydration gave ORS (68.2%; X^2= 7.923, p value = 0.022), water (65.1%; X^2= 10.672, p value = 0.001), and continued feeding (73.3%; X^2= 6.631, p value = 0.038) compared to those who did not know.

From the Focus Group discussions, one caregiver said that "*When my child could not eat any more and became very weak, is when I took him to hospital".* This confirms that majority of caregivers were not aware of danger signs of dehydration.

From the above information those who have knowledge on the signs of dehydration are more likely to manage diarrhoea by use of ORS, continued feeding and by giving water. This shows that having knowledge on the signs of dehydration has influence on the management of diarrhoea at home.

Table 4.12 (a): Association between socio-demographic characteristics and perceived severity of diarrhoea by caregivers

					OR 95% C.I.	
	N	**%**	**p value**	**OR**	**Lower**	**Upper**
Age (years)						
15 -24	82	76.6		1		
25 – 34	130	76.5	0.975	0.991	0.560	1.754
35 – 44	28	56.0	0.010	0.388	0.190	0.794
≥ 45	18	69.2	0.435	0.686	0.266	1.766
Income level (Kshs.)						
≤ 5000	46	92.0		1		
5001-10000	66	62.9	0.001	0.147	0.049	0.440
10001-20000	94	70.1	0.004	0.204	0.069	0.606
>20000	50	80.6	0.097	0.362	0.109	1.203
No. of under 5 children						
1 child	44	83.0		1		
2 - 4 children	168	77.8	0.404	0.716	0.326	1.570
>4 children	46	54.8	0.001	0.248	0.107	0.571
Marital status						
Single	62	68.1		1		
Married	196	74.8	0.217	1.389	0.824	2.341

The adult (35-44yrs) caregivers were less likely to perceive diarrhoea frequency as severe compared to the young caregivers (15-24yrs) [OR = 0.388, 95% CI = (0.190-0.794), p = 0.010]. The caregivers with an income of Kshs. 5001-10000 [OR = 0.147, 95% CI = (0.049-0.440), p value = 0.001] and Kshs. 10001-20000 [OR = 0.204, 95% CI = (0.069-0.606), p = 0.04], were less likely to perceive diarrhoea frequency as severe compared to those with income less than Kshs. 5000. Those with more than 4 children [OR = 0.248, 95% CI = (0.107-0.571), p = 0.001] were less likely to perceive diarrhoea frequency as severe compared to those with one child.

Table 4.12 (b): Adjusted Odds Ratio from logistic regression analysis of factors influencing perceived severity of diarrhoea by caregivers

					AOR 95% C.I.	
	N	**%**	**p value**	**AOR**	**Lower**	**Upper**
Age						
15 -24	82	76.6		1		
25 – 34	130	76.5	0.125	1.714	0.862	3.407
35 – 44	28	56.0	0.814	0.904	0.388	2.105
≥ 45	18	69.2	0.318	1.767	0.579	5.397
Income level (Kshs.)						
≤ 5000	46	92.0		1		
5001-10000	66	62.9	0.001	0.142	0.046	0.438
10001-20000	94	70.1	0.004	0.196	0.064	0.603
>20000	50	80.6	0.068	0.312	0.089	1.089
No. of under 5 children						
1 child	44	83.0		1		
2 - 4 children	168	77.8	0.104	0.458	0.178	1.175
>4 children	46	54.8	<0.001	0.139	0.046	0.418

After adjusting for Age, income level and number of under-five children, only income level and number of under 5 children were significantly associated with perceived severity of diarrhea. Those who earn Kshs. 5000-10000 [AOR = 0.142, 95% CI = (0.046-0.438), p = 0.001]; those who earn Kshs. 10001-20000 [AOR = 0.196, 95% CI = (0.064-0.603), p = 0.04] and those with more than 4 children under 5 years [AOR = 0.139, 95% CI = (0.046-0.418), p <0.001] were all less likely to perceive diarrhea frequency as severe.

Table 4.13: Odds Ratio from logistic regression of influence of perception of caregivers on severity of diarrhoea on home management practices

	N	%	P value	OR	Lower	Upper
Used ORS (n=24; 6.1%)						
Watery	10	41.7		1		
Frequent	14	58.3	0.008	2.143	1.267	4.331
Giving water (n=132; 33.5%)						
Watery	22	16.7		1		
Frequent	110	83.3	0.048	4.200	1.752	13.445
Continued feeding (n=192; 48.7%)						
Watery	52	27.1		1		
Frequent	140	72.9	0.891	0.930	0.328	2.634

From the above result regression analysis was done to see if there is an association between perception of caregivers on severity and management of diarrhoea. The result showed that perception of caregivers was significantly associated with both giving ORS and giving water during a diarrhea episode. Those who perceived that frequent diarrhoea is the most severe were 2.1 times more likely to give ORS, [OR=2.1, 95% CI= (1.267-4.331) p=0.008] than those who perceived watery diarrhoea as the most severe. Caregivers who perceived that frequent diarrhoea is the most severe were 4 times more likely to give water [OR = 4.2, 95%CI = (1.752-13.445) p

=0.048] than those who perceived watery diarrhoea as the most severe. The results show that there is no significant association between the caregivers who perceive frequent diarrhoea to be severe and their practice of continued feeding [OR=0.930, 95% CI = (0.328-2.634) p value = 0.891].

The results show that perception of the caregivers determines use of ORS and giving water during diarrhoea and this implies that caregivers who have the right perception are more likely to manage diarrhoea appropriately at home.

4.7 Results of Qualitative Data

4.7.1 Diarrhoea Management by Caregivers in the Community

With regards to decision marking about child health care, majority of the caregivers said the household head is the one that makes decision on the health of the child.

4.7.2 Health Problems in the Community

Different types of health problems that were commonly mentioned were household sanitation, childhood diarrhoea and malaria. Most caregivers expressed their feelings that the major cause of death was diarrhoea which was common in children under five years old.

4.7.3 Caregivers Way of Addressing the Problem of Diarrhoea

Both the traditional and modern medicine were used as a means of treatment of diarrhoea though this varied according to the caregivers' perception on the type of diarrhoea. Local herbal medicine such as 'akech', 'mauwa' 'mwarobaini', were mentioned as the most commonly used medicine in treating diarrhoea. Giving painkillers and herbal medicine were the most common immediate actions. One of the caregivers indicated that if her child fell sick due to diarrhoea she would give flagyl medicine and the diarrhoea would stop.

4.7.4 Opinions Regarding Management of Diarrhoea

Some of the caregivers said they treated their children by rubbing local herb around the gum and others believed it would stop on its own if the tooth came out. A caregiver stated her experience by saying, "*When my child got diarrhoea due to teething I did not give her any treatment*." According to them, the diarrhoea stopped on its own when the tooth came out of the gum while others said the remedy was extraction of the tooth.

4.7.5 Availability of the Resources for Improvement of the Child Health

The caregivers majorly mentioned that ORS was readily available and was used in the treatment of diarrhoea in the community and hand wash program in schools had been implemented.

4.7.6 Caregivers Practices During Diarrhoea

There were different opinions regarding practices leading to diarrhoea as some caregivers stated that diarrhoea was caused by taboos and others said diarrhoea was due to being "*looked at by bad eyes"* (witchcraft). Other caregivers said it could be due to eating bad food or contaminated milk. Majority believed it was caused by contamination of the food by germs that they perceived is as a result of unhygienic condition.

4.7.7 Management at Home Before Taking the Child to The Hospital

Most of the caregivers said the use of herbal medicine was the most common practice in the management of diarrhoea. Diarrhoea caused by teething was managed by the practices of performing rituals or visiting witchdoctors. The use of ORS and anti-diarrhoeal drugs was mentioned by some of the caregivers for instance drugs like flagyl. Generally, caregivers were ignorant when it came to the most appropriate feeding practices during diarrhoea. Majority had

the belief that food should be withheld or the quantity reduced when a child is suffering from diarrhoea.

4.7.8 Caregivers Knowledge on Diarrhoeal Management

Diarrhoeal management knowledge by the caregivers came out as poor since most of their children were dying due to dehydration. According to most of the respondents, they only sought help from health facilities if home and traditional healers failed. The caregivers' opinions were sought about the time that they decided to refer their sick children to the health facility and majority said they only did so when the child could not eat any more and became very weak physically. Very few caregivers referred their children to a hospital only if the diarrhoea was frequent. On the contrary a few caregivers mentioned they took their children to a health facility without considering traditional treatment.

CHAPTER FIVE: DISCUSSION

It is widely recognized that diarrhoea is a major cause of morbidity and mortality among children in developing countries. In Seme sub-County diarrhoea is the 4th leading cause of death among children less than five years of age (Kaiga, *et al.,* 2010). Low socio-economic status such as limited education, poor environmental conditions, poor sanitation, and low hygienic practices pose a serious threat to children's health. West Seme location was chosen for the study because it had the characteristics of a rural setting where clean water, sanitation and low hygienic conditions remains a problem. So far, no similar research identifying risk factors in management of diarrhoea at home among children under- five years has been conducted in this location but prevalence of diarrhoea was found to be 17% in the neighbouring location of East Seme location.

5.1 Socio-Demographic characteristics

The results show that there is high level of illiteracy in this location with 32% having not attended formal schooling and 57.4% only attained primary. Majority of the caregivers (59.4%) were in the income bracket of 1– 5,000 showing low income levels. This result is important for future studies to find out if this could be a contributing factor to low knowledge on diarrhoeal management.

Although Seme sub-County is sub-urban County, West Seme location remains a poor rural area with a mean income level of sh.6062 per month. A good percentage (57.4%) of the care-givers had only attained basic primary education and this shows that in West Seme location; almost half of the caregivers have not attained post primary education. This could be a contributing factor to poor diarrhoeal management which confirms the findings of a study carried out in Tanzania that affirmed that caregivers' knowledge on predisposing factors of childhood diarrhoea was directly

correlated with educational level (Gascon *et al.,* 2000). More than half 308 (53.3%) of the households had only one child under-five while 240 (41.6%) of the households had two children under-five, and 30 (5.1%) had 3 children under-five years old. The results show that age groups are almost evenly distributed. The overall prevalence of 2 weeks diarrhoea was 68% an indicator that diarrhoea prevalence was high at that time.

A study carried out in Ethiopia (Mengiste *et al.,* 2013), found out that the major factor associated with adequate management of diarrhoea at home is caregivers' knowledge about causes and knowing danger signs of dehydration. In this study it was found that the caregivers who were in the age bracket of 24-35years were more likely to know the causes of diarrhoea and danger signs of dehydration. Meanwhile, the caregivers whose education level was above primary were more likely to know the danger signs of dehydration and the caregivers who were married were 2 times likely to perceive that frequent diarrhoea was the most severe.

5.2 Knowledge on the Causes of Diarrhoea and Signs of Dehydration

In this study majority of the caregivers 303 (77%) knew that diarrhoea was caused by germs and the remaining 49 (12.4%) said that diarrhoea was caused by teething, cursing eyes 10 (2.5 %,) witchcraft 2 (0.6%) or taboo 30 (7.5%). This shows that 23% of the caregivers had inadequate knowledge on the causes of diarrhoea. However, the majority of caregivers in West Seme location were aware of causes of diarrhoea and this could be used in educating them on application of this knowledge in preventing the spread of the condition. This is consistent with a study carried out in Ethiopia which also found that only 26.6% of the caregivers had no knowledge on the causes of diarrhoea (Mengiste *et al.,* 2013).

This study also investigated the association between knowledge on the causes of diarrhoea and its management at home and found that there was no significance between having knowledge on the causes of diarrhoea and appropriate management at home by use of ORS. However, having knowledge on the causes of diarrhoea was significantly associated with appropriate management of diarrhoea by giving water and feeding continuously. This shows that the caregivers who had knowledge on the causes of diarrhoea were more likely to manage diarrhoea appropriately (Table 4.9)

5.3 Knowledge on the signs of Dehydration

Out of the 394 caregivers interviewed, 89% had no knowledge on the signs of dehydration and only 11% had adequate knowledge on signs of dehydration. A similar study done in Iran in 2013(Amir *et al.,* 2013) showed almost a similar result where 73% of the caregivers interviewed knew only one sign of dehydration. According to the community integrated management of childhood illness (C-IMCI) caregivers at home should have knowledge on the danger signs of dehydration for better home management of diarrhoea. In the study carried out in Nyando between 2004-2006 (Othero *et al.,* 2008), most of the caregivers were not able to recognize signs of dehydration. A child is closely observed for any sign of dehydration following which urgent referral can be made. The result of this study showed that there was significant association between having knowledge on the signs of dehydration and appropriate management of diarrhoea at home. Appropriate management of diarrhoea was defined in this study as use of ORS, giving water, and continued feeding. Those who had adequate knowledge on the danger signs of dehydration were 2.5 times more likely to manage diarrhoea appropriately by use of ORS and 2.47 times more likely to manage diarrhoea at home by continued feeding. This means

that having knowledge on the danger signs of dehydration has influence on appropriate diarrhoeal management.

A similar study was done in Nakuru in the Hospital and the results showed that only 11.5% of the respondents knew early signs of dehydration (Mugo, *et al.,* 2013).and complications of diarrhoea. In the former Nyando District a study done by Othero in 2004 showed that only 29% of the caregivers knew all the danger signs of dehydration due diarrhoea (Othero, *et al.,* 2008) This is not in line with WHO recommendation that and caregivers should be able to identify the signs of dehydration including excessive thirst, sunken eyes, reduced urine output, excessive drowsiness, poor skin turgor, and restlessness and should be aware of at least 2 danger signs since sometimes they present in multiples. Knowledge on danger signs of dehydration is very important because it leads to early referral of very sick children to hospital failure to which such children can get more complications and die.

5.4 Perception of the Caregivers

A study carried out in Nigeria (Ene-Obong *et al.,* 2000), revealed that majority of caregivers perceived that diarrhoea was caused by teething and in most of the cases caregivers prescribed their own drugs rather than anti-diarrhoeal. In the current study majority of the care-givers had correct perception, 315 (79.9%) said that diarrhoea was caused by germs. There were 58 (14.7%) of the care-givers who perceived that diarrhoea was caused by taboo. From the Focus group discussions some who believed that diarrhoea was caused by teething or taboo called this diarrhoea “supernatural” and mostly used herbal medicine or performed rituals in treating the condition. This “supernatural diarrhoea” could lead to incorrect recognition of dehydration, avoidance of ORT, inappropriate home-care practices, and delayed health care-seeking behavior.

Easily understood instructions to care-givers regarding appropriate management of diarrhoea at home should incorporate explanation of diarrhoea and its consequences. The educational messages should not contradict traditional beliefs but rather attempt to integrate the cultural concepts and biomedical definitions of diarrhoea.

Majority 284 (72.1%) had the correct perception that frequent diarrhoea was the most severe form, with 15 (3.8%) considering bloody diarrhoea as the most severe and only 11 (2.9%) considering painful diarrhoea as the most severe. This study therefore found that 27.9% of the caregivers had a wrong perception about diarrhoea severity. When the association between caregivers' perception on severity of diarrhoea and its management at home was investigated, we found a significant difference between the caregivers who perceived that frequent diarrhoea was the most severe and management by use of ORS.

Caregivers who perceived that frequent diarrhoea was the most severe were two times more likely to manage diarrhoea at home by use of ORS and were also 4 times more likely to manage diarrhoea by giving water. This means that caregivers' perception on severity of diarrhoea, are likely to influence the administration of appropriate management. Dehydration caused by severe diarrhoea is a major cause of morbidity and mortality among young children (KNBS, ICF Macro 2010). There is therefore need for caregivers to be enlightened about severe diarrhoea in this location.

5.5 Practices by Caregivers

According to the standard WHO case management approach, the use of antibiotics should be limited only for the treatment of bacterial dysentery and suspected cholera (WHO, *2005*). The

improved case management includes four elements; first, prevention of dehydration through early administration of increased amounts of appropriate fluids at home. Secondly, administration of oral rehydration with ORS solution. Thirdly, continued feeding during and after diarrhoea episode and finally administering drugs. Bad feeding practices during diarrhoea episodes in children under five have been shown to be a major cause of malnutrition (Adegboyega *et al.,* 2005).

This study established that a good number of caregivers, 333 (84.5%), continued to give fluids during an episode of diarrhoea to replace the lost fluids during diarrhoea. However, the frequency of giving fluids differed from one respondent to another with 40 (12%) reducing fluid intake from the usual glass of water after every meal, 169 (50%) giving the usual amount, and only 61 (15.5%) not giving any fluid at all. This shows that more than half of the respondents were not following WHO recommendation of increased fluid intake during diarrhoea. It came out from the FGDs that traditional methods of treating diarrhoea was still being used by the caregivers in this location as determined by the perception of the caregivers on the causes of diarrhoea. Despite of the importance of feeding children adequately during the disease, caregivers feeding practices continue to be a major obstacle to its adequate management at home (Bhutta, *et al.,* 2000)

During dehydration, the study demonstrated that the use of ORS was still unpopular with only 24 (6.1%) of the respondents giving ORS. This is consistent with a similar study done in Nakuru, Kenya where only 7.75% gave ORS during dehydration to their children under five years old (Mugo *et al.,* 2007). The study sought to assess the caregivers' practices with regard to

diarrhoeal management and found out that 240 (60.8%) had inappropriate diarrhoeal management and only 154 (39.2%) had appropriate home management of diarrhoea.

Findings from this study suggests that the WHO /UNICEF recommendations concerning ORS administration to replace lost fluids and electrolytes and early reinforcement of normal feeding during diarrhoea episode have not been implemented by most care-givers. (WHO & UNICEF, 2004). This is consistent with a study by Kudlova *et al.,* 2010 in Czech children where ORS use (1.9%) was much lower than the reported willingness (20%) to use. This shows that there are discrepancies between reported behavior and what the care-givers actually practice. According to WHO, ORS administration to people with diarrhoea without signs of dehydration is not essential and the decision whether to recommend it for such cases is a matter of National policy (WHO, 2005).

This study showed that some caregivers used ORS in the treatment of diarrhoea as reported from FGD session. Early treatment of acute diarrhoea at home may prevent dehydration and reduce need for hospitalization (Vesikari *et al.,* 2010). Hence effective home-based management and home practices need further promotion. This would reduce mortality rate of under-five due to diarrhoea in this location. Bryce and Victoria (2000) in their study on breastfeeding and diarrhoea among Brazilian children affirmed that not all conditions needed to be treated by health professionals. (Victoria *et al.,* 2000). Uncomplicated diarrhoea could be managed successfully at home by continuing to feed the child, offering more fluids and administering Oral Rehydration Solution (ORS) correctly. Interventions to improve home treatment of diarrhoea could reduce child death by about 40%. It is imperative that a child's feeds be increased during diarrhoea in order to aid the body in lowering the microorganisms.

Another finding of concern is that caregivers mix the ORS with other fluids mainly juice and porridge and this compromises the rehydration property of the ORS and if the mixed food has sugar then it can cause osmotic diarrhoea. This was investigated during Focus group discussions. Hence effective management of diarrhoea at home by use of ORS needs further promotion.

5.6 Practices and Socio-Demographic Characteristics

The caregivers report suggests that diarrhoea in young children was quite common in the location of study. This was gathered from the FGDs. The major concern was about several aspects of community management of childhood diarrhoeal illness and of particular concern was recognition of signs of dehydration and management practices by care-givers to control dehydration especially dietary restrictions.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Background variables like age, education, marital status and income have influence on the knowledge and the perception of caregivers on diarrhoeal management. The results of the study show that majority of caregivers in West Seme location have adequate knowledge on the causes of diarrhoea. However, most are still not able to recognize signs of dehydration due to lack of knowledge on the danger signs of dehydration and this may determine poor management at home before taking the child to the hospital. The caregivers who had the knowledge on the causes of diarrhoea were more likely to manage diarrhoea at home appropriately.

The caregivers who had knowledge on the signs of dehydration were 2.5 times more likely to manage diarrhoea appropriately by use of ORS and continued feeding and this shows that having knowledge on the danger signs of dehydration influences management of diarrhoea at home among under-fives in West Seme Location. Perception of care-givers on severity of diarrhoea was good since 284 (72.1%) had the perception that frequent diarrhoea was the most severe form. Perception of the caregivers on the causes and their knowledge on the causes are almost the same showing that in this location, caregivers perception influences their knowledge on the causes. The caregivers whose perception was that frequent diarrhoea was the most severe were 2 times more likely to manage diarrhoea at home by use of ORS and 4.2 times more likely to manage diarrhoea by giving water at home. This shows that caregivers who had the right perception were more likely to manage diarrhoea at home appropriately.

On caregivers' practices, most of the caregivers give fluids during diarrhoea however about a half still reduce fluid intake or do not give fluids at all and this is dangerous since it can lead to

severe dehydration. Traditional methods of treating diarrhoea are still being used by some depending on the type of diarrhoea. During dehydration, the use of ORS is still unpopular.

From the results of the study, more than half of the caregivers still use inappropriate means of managing diarrhoea at home and only 39.2 % manage diarrhoea appropriately at home in this location.

There is therefore need to educate caregivers on the correct causes of diarrhoea and how to recognize danger signs of dehydration. The caregivers should be made aware of the appropriate home management practices to reduce consequences of diarrhoea. This can be done through community-based discussions by community health workers

6.2 Recommendations

As a result of the study, it is important that;

- Health education strategies for care-givers at community level be implemented to facilitate positive change in the practices on management of diarrhoea at home among under-fives.

- The study recommends that education programs should be rolled out to enlighten the caregivers at health care centers in identifying signs of dehydration and what action they should take during dehydration

- In addition, caregivers should be enlightened about severity of diarrhoea so that their perception can change to reduce under-five mortality.

- That further study to be carried out in this location to find out how many of the children under- five years old have died due to dehydration.

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APPENDICES

APPENDIX I: LETTER OF PERMISSION

MASENO UNIVERSITY
SCHOOL OF GRADUATE STUDIES

Office of the Director

Our Ref: PG/MPH/027/09

Private Bag, MASENO, KENYA
Tel: (057) 351 622/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke

Date: 21st September 2012

TO WHOM IT MAY CONCERN

RE: PROPOSAL APPROVAL BEATRICE ANYANGO GWITI—PG/MPH/027/09

The above named is registered in the Master of Public Health Programme of the School of Public Health and Community Development,Maseno University. This is to confirm that her research proposal titled "Assessment of the Knowledge, Perception and Practice of Mothers/Caregivers on Home Management of Diarrhoea among Under Fives in West Seme Location, Kombewa Division, Kisumu West District, Kenya" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.

MASENO UNIVERSITY DIRECTOR 20 SEP 2012 SCHOOL OF GRADUATE STUDIES

Dr. Pauline Andang'o
ASSOCIATE DIRECTOR, SCHOOL OF GRADUATE STUDIES

MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED
FOUNTAIN OF EXCELLENCE

APPENDIX II: CONSENT FORM

I, Beatrice Anyango Owiti, from Maseno University School of Public Health am here to conduct a research study on management of diarrhoea at home among children under –five years old in West Seme who have had diarrhoea in the last two weeks.

I would like to interview you on the knowledge, perception and practice about management of diarrhoea at home on your child who is below five years. The interview will be in form of a written questionnaire which you will respond to verbally for an approximate duration of 10 minutes. Questions will be interpreted for you if necessary. All the information you will provide will be confidential and your individual answers will only be known to the interviewer and the coordinator of the study. You will also remain anonymous. The results will be used to improve strategies for management of diarrhoea at home to reduce mortality rate.

Are you willing to participate in the study?

Yes No

Do you have any question?

Thank you.

Date …… 2014

Interviewer's signature …….…….

Interviewee's signature ……

APPENDIX III: QUESTIONNAIRRES AND INTERWIEWS

Diarrhoea management: knowledge, perception, and practice by caregivers in management of diarrhoea at home among children under five in Kombewa division, Kisumu West District-Kenya.

Interviews

The interviewer to: -

1. Introduce him/her and theme of the interview.

2. To inform respondent that the information given is highly confidential.

3. Ask the caregiver or caregiver whether: -

   (i) They are residents of West Seme location.

   (ii) There are child/children under five years of age in their household. If yes, interviewer to start the interview. If no, proceed to the next household.

   (iii) Request respondent to answer all questions accurately and to the best of their knowledge.

4. Interviewer to shade the appropriate answer and fill in the text boxes in capital letters.

Questionnaires

Demographic characteristics

1. What is your age?..... Which year were you born?.....

2. What is the age of the child who is under-five under your care?

1. Below 1yr ☐ 2. 1-2yrs ☐

3. 3-4yrs. ☐ 4. 4-5yrs ☐

3. What level of education did you complete?

1. None ☐ 2. Primary ☐ 3. Secondary ☐

4. Tertiary ☐ 5. No response ☐

4. What is the occupation of the household head?

1. None ☐ 2. Casual employment ☐ 3. Formal employment ☐

4. Business ☐ 5. Don't know ☐

6 Others (specify)……

5. Who is the household head?

1. Caregiver ☐ 2. Father ☐ 3. No response ☐ 4. Others (Specify)…….

6. What is the occupation of the caregiver /caregiver? 1. None ☐ 2. Casual ☐

3. Formal ☐ 4. Business ☐ 5. Others (Specify)…….

7. What is the level of income of the family?

1. Low ☐ 2. Middle ☐ 3. High ☐

8. How many living children do you have?

1. None ☐ 2. (1) ☐ 3. (2) ☐ 4. (3) ☐ 5. (4) ☐

6. Others (Specify)…….

9. Out of the living children, how many are under-five?

1. None 2. (1) ☐ 3. (2) ☐ 4. (3) ☐ 5. (4) ☐

6. Others (Specify) ……

10. What is your relationship with the child/children?

1. Caregiver ☐ 2. Sister ☐ 3. Brother ☐ 4. Father ☐ 5. Caregiver ☐

6. Grandparent ☐ 7. No response. ☐

11. If not caregiver how old are you?

1.6-10 yrs ☐ 2.11-15 yrs ☐ 3.16-20 yrs ☐ 4. Don't know ☐

12. What is your marital status?

1. Single ☐ 2. Married ☐ 3. Divorced ☐ 4. Widowed ☐

13. Which is your denomination?

1. ACK ☐ 2. Catholic ☐ 3. Muslim ☐

4. Others (Specify)……

PERCEPTION

14. What is your perception about the causes of diarrhoea?

1. Teething ☐ 2. Cursing eyes ☐ 3. Witchcraft ☐ 4. Germs ☐

5. Taboo ☐ 6. No response ☐

7. Others (Specify)…….

15. Has any of your children under-five had diarrhoea in the last 2 weeks?

1. Yes ☐ 2. No ☐

16. If yes how many children from your household?

1. None ☐ 2. (1) ☐ 3. (2) ☐ 4. (3) ☐ 5. (4) ☐

6. Others (Specify) …….

17. What was the type of diarrhoea?

1. Bloody ☐ 2. Mucous ☐ 3. Watery ☐ 4. Greenish ☐

5. Frequent ☐

KNOWLEDGE

18. What was the cause of your child's diarrhoea?

1. Teething ☐ 2. Cursing eyes ☐ 3. Witchcraft. ☐ 4. Taboo ☐

5. Germs ☐ 6. No response ☐ 7. Others (Specify)……

19. What was the duration of illness?

☐ ☐ ☐

1. Less than 3days 2.4-7 days 3.8-14 days

4. Others (Specify)…….

20. Are you aware of any signs of dehydration?

1. Yes ☐ 2. No ☐

21. If yes name the signs you are aware of?

1. Excessive thirst ☐ 2. Sunken eyes ☐ 3. Skin pinch returning slowly ☐

4. Unconsciousness ☐

22. When do you consider diarrhoea to be severe?

1. Watery ☐ 2. Bloody ☐ 3. When frequent ☐ 4. When painful. ☐

PRACTICE BY CAREGIVERS

23. Has your child had diarrhoea in past 2 weeks?

1. Yes ☐ 2. No ☐

24. If yes what type of diarrhoea?

1. Bloody ☐ 2. Watery ☐ 3. Mucous ☐ 4. Greenish ☐

25. Did you give fluids of any kind during the last diarrhoea?

1. No fluids ☐ 2. Less fluid ☐ 3. More fluids ☐

26. If yes how frequently did you give the fluids?

1. Usually ☐ 2. More than usually ☐

27. Did you give your child other foods or breastfed your child during the last diarrhoea?

1. Breastfed ☐ 2. Usual food ☐ 3. No food at all ☐

28. Did your child become dehydrated?

1. Yes ☐ 2. No ☐ 3 Don't know ☐

29. If yes what action did you take?

1. Gave ORS ☐ 2. Gave Zinc ☐ 3. Gave water ☐

4. Rushed the baby to hospital ☐ 5. Gave homemade fluid ☐

6. Gave anti- diarrhoea ☐ 7. Withheld food ☐

30. If food was withheld, what were the reasons?

……

31. Was the child fed during convalescence?

1. Yes ☐ 2. No ☐

32. Was the child taken to hospital?

1. Yes ☐ 2. No ☐

33. Did you continue with medication after coming from hospital?

1. Yes ☐ 2. No ☐ 3. No response ☐

34. If no, why did you stop?

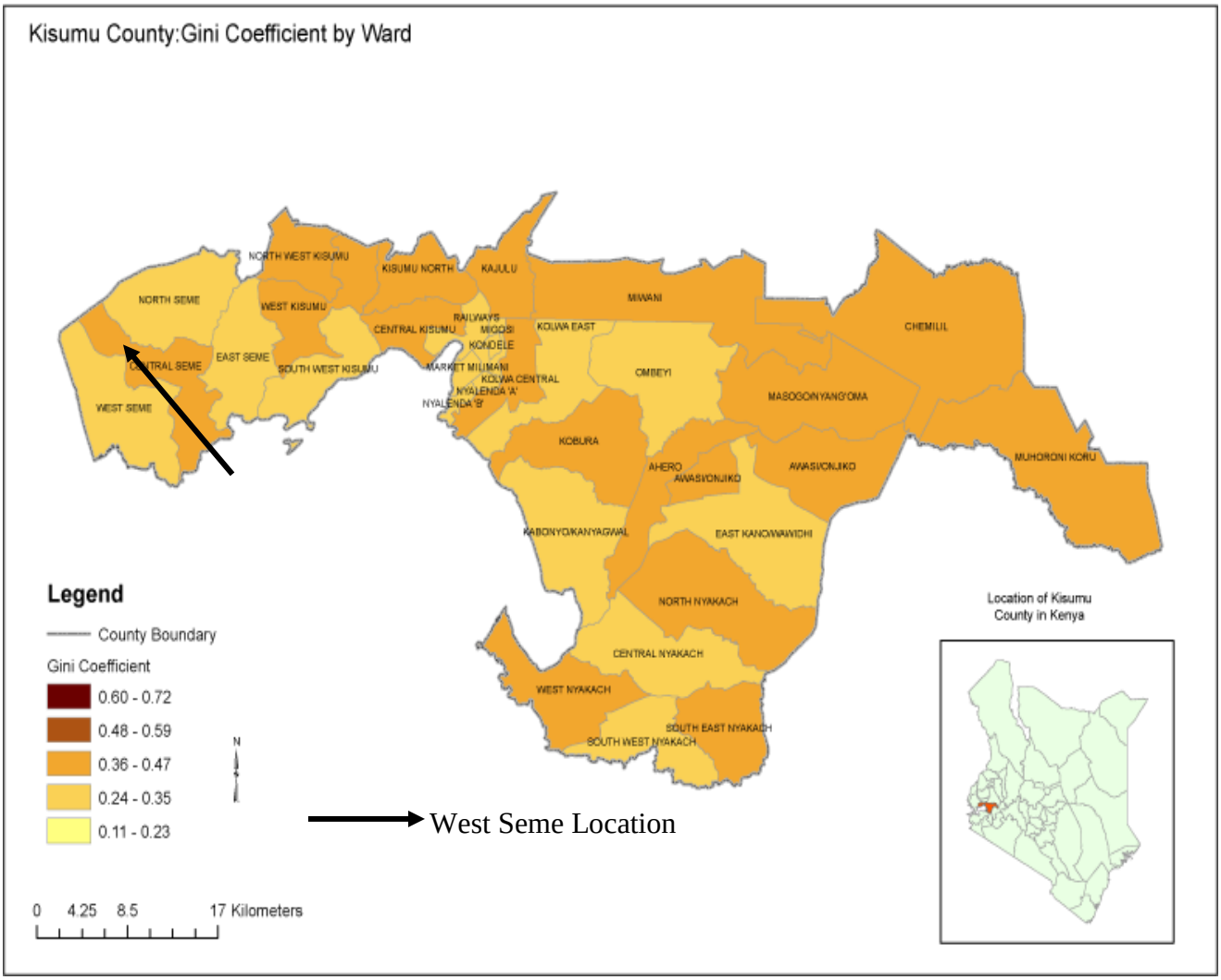
……

THANK YOU

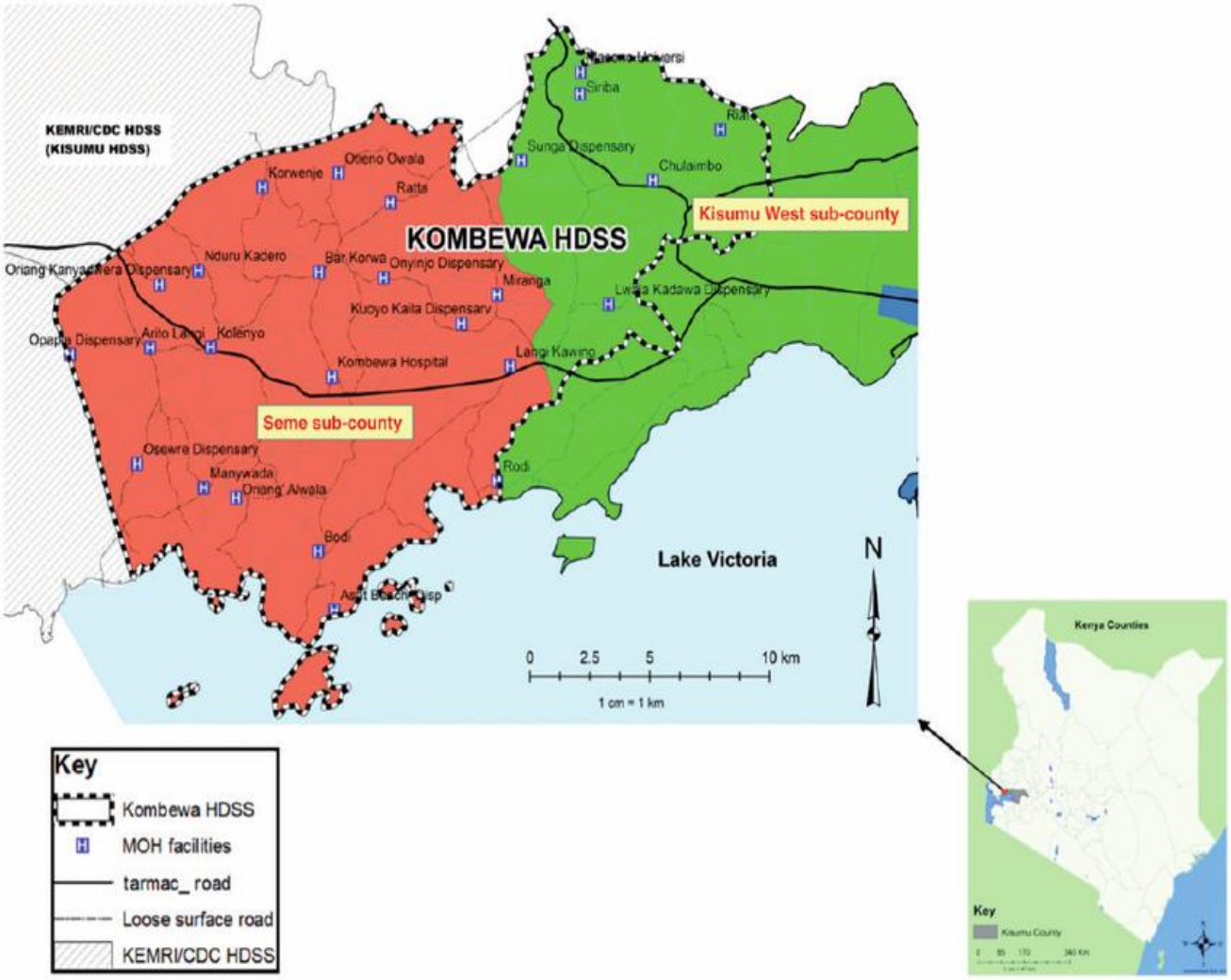
APPENDIX IV: FOCUS GROUP DISCUSSION TOOL

1. In this community who makes decisions regarding the care of children?
2. What are the main child health problems in your village?
3. Diarrhoea is one of the child health problems faced in many communities. What about your community?
4. How do you address these problems?
5. Who in the community are involved in child health and development activities?
6. What resources are available to you for the improvement of the health and development of children especially in management of diarrhoea in children?
7. In your views, what are the practices in the community that contribute to diarrhoeal diseases among children in the community? (*Probe: type of foods available for children, Probe: are there situations when breast feeding is suspended?*)
8. What are your views on how the community manages diarrhoeal diseases before taking children to clinic?
9. How do you prevent diarrhoeal illnesses in this community?
10. How are children suffering diarrhoeal diseases treated at home in this community?
11. At what stage do in this community refer sick children to the health facility?

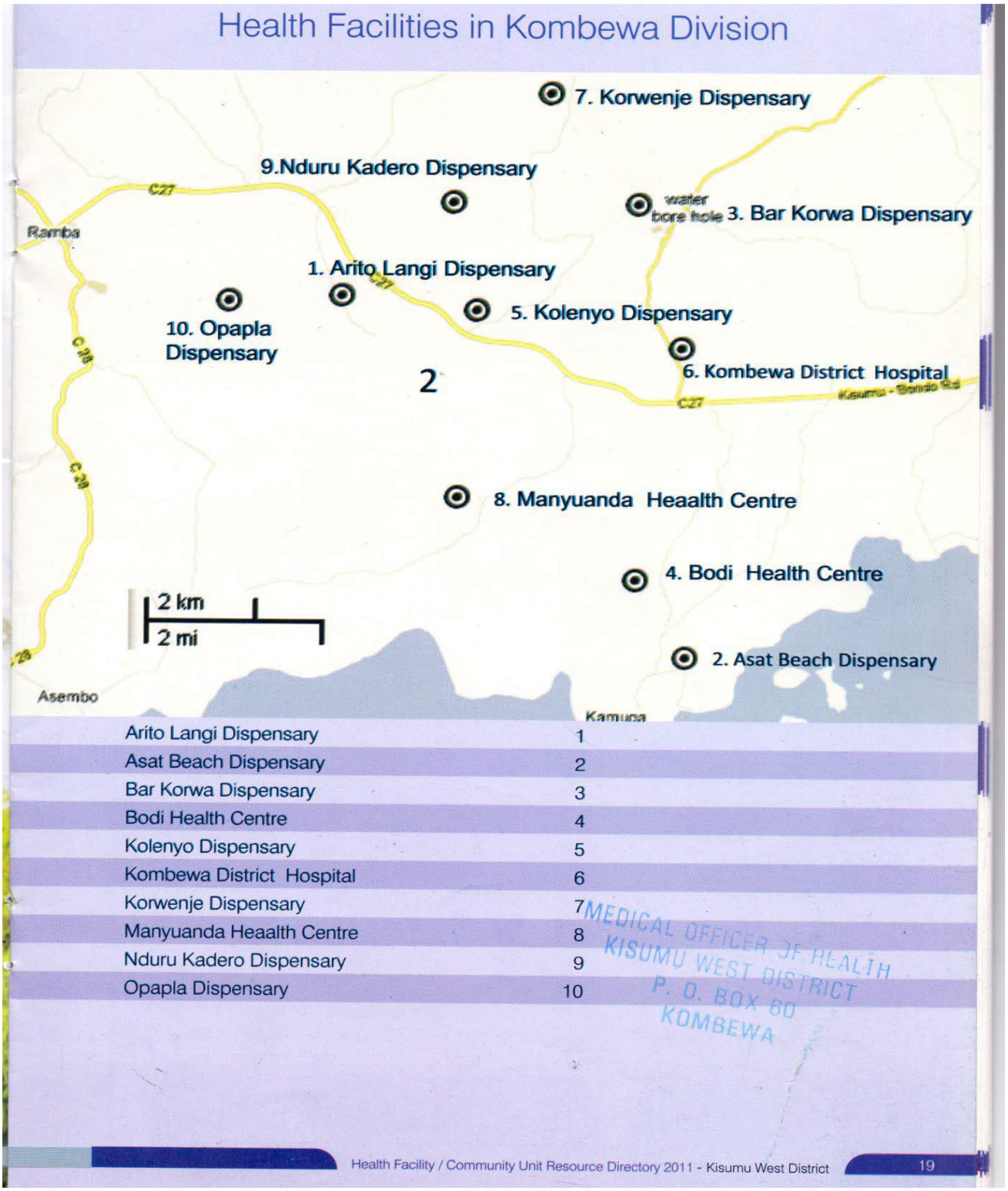
APPENDIX V: MAP OF KISUMU COUNTY



APPENDIX VI: MAP OF SEME SUB-COUNTY



APPENDIX VII: HEALTH FACILITIES IN SEME SUB-COUNTY



Arito Langi Dispensary	1
Asat Beach Dispensary	2
Bar Korwa Dispensary	3
Bodi Health Centre	4
Kolenyo Dispensary	5
Kombewa District Hospital	6
Korwenje Dispensary	7
Manyuanda Heaalth Centre	8
Nduru Kadero Dispensary	9
Opapla Dispensary	10