

**EVALUATION OF THE IMPLEMENTATION OF ESSENTIAL UNDER-
FIVE HEALTH CARE INTERVENTIONS IN KISUMU EAST SUB-COUNTY,
KENYA**

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**A Thesis Submitted to the School of Health Sciences in Partial Fulfilment of the
Requirements for the Award of Doctor of Philosophy Degree in Public Health of
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DECLARATION AND APPROVAL

Declaration

This thesis is my original work and has not been presented for an award of a diploma or conferment of a degree in any other university or institution.

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DEDICATION

This thesis is dedicated to all care-givers, community health volunteers and health care workers providing care to under-fives in Kenya; your contribution to the care of the under-fives is not in vain. It is also dedicated to my son Gabriel Isaac Onyango who represents the under-fives in Kenya.

ABSTRACT

There has been a global decline in under-five child mortality rates, though the sub-Saharan region still bears the greatest burden. In an effort to reducing under-five mortality the Kenya Ministry of Health (MOH), put in place several preventive and curative interventions. Despite these efforts, in 2011 Kisumu East sub-County had under-five mortality rate of 220 per 1,000 live births which was almost three times the national figure. The main objective of this study was to evaluate the implementation of essential under-five health care interventions in Kisumu East sub-County and determine their access and implementation challenges. To realise the purpose of this study, cross-sectional descriptive study design was adopted and data was collected between 1st March to 30th August 2014 in tier 1 and 2 health care facilities which are the first point of care for a sick under-five child. The study subjects were 230 care-givers of under-fives. Sequential mixed data collection approach was used; 18 health facility assessments were done followed by completion of 230 structured questionnaires by care-givers. Qualitative data was then collected using 21 Key Informant Interviews with health care workers and 5 Focus Group Discussions with Community Health Volunteers (CHVs) which were recorded. The Statistical Package for Social Sciences (SPSS) was used for data processing and analysis. Both descriptive and inferential analysis of data was done. The first stage of processing and analysis involved computation of frequencies and percentages and generation of tables and charts followed by chi-square test which was used to determine association between variables. Thematic approach guided the analysis of qualitative data. The results showed that preventive and curative health interventions for the under-fives were available in tier 1 and 2 of the sub-County as recommended by the MOH guidelines though with disparities. Only 68.2% (n=30) of children below six months were on exclusive breastfeeding while 61.5% (n=80) of the under-fives below 24 months were still breast feeding; majority of the under-fives derived their food sources from carbohydrates. Among the care-givers of under-fives only 38.5% (n=154) indicated use of oral rehydration salts as an intervention for a child who had diarrhoea. In tier 2 out of 18 facilities only 13 were using Integrated Management of Childhood Illnesses (IMCI) approach in provision of health care. Findings also revealed knowledge gap on under-five care among care-givers, CHVs and Health care workers; resources for provision of under-five care were noted not to be uniformly distributed. The main access and implementation challenges of under-five health care interventions in the sub-County included distance from the facility, cost of care, family and community practices and beliefs, health facility challenges such as lack of drugs and commodities, under-staffing, poor referral systems, negative attitude of health care workers and early childhood day-care enrolment. The implications of the findings were critically examined and the findings were found to be of significant importance in constructing and reviewing programmes for under-fives. This study recommends that the Ministry of Health, County government and other stakeholders should build capacity of care-givers, CHVs and health care-workers to improve provision of under-five health care services in the sub-County; they also need to address availability of resources and challenges that impede access and implementation of these services.

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ABBREVIATIONS

ARI	Acute Respiratory Infections
ARV	Anti-Retroviral
BCG	Bacillus Calmette–Guérin
CBHIS	Community Based Health Information System
CBS	Central Bureau of Statistics
CDD	Control of Diarrhoeal Diseases
CHEW	Community Health Extension Worker
CHV	Community Health Volunteer
C-IMCI	Community Integrated Management of Childhood Illness
CRA	Commission for Revenue Allocation
CRC	Canadian Red Cross
CU	Community Unit
DPHN	District Public Health Nurse
FGD	Focus Group Discussion
GHWA	Global Health Workforce Alliance
GOK	Government of Kenya
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IMCI	Integrated Management of Childhood Illness
ITNs	Insecticide Treated Nets
KDHS	Kenya demographic Health Survey
KEPI	Kenya Expanded Program on Immunization
KII	Key Informant Interview
KNBS	Kenya National Bureau and Statistics
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MODP	Ministry of Devolution and Planning
MOH	Ministry of Health
MOPHS	Ministry of Public Health and Sanitation
MUAC	Mid-Upper Arm Circumference
NACC	National AIDS Control Council
NCAPD	National Co-ordinating Agency for Population and development

NCPD	National Council for Population and Development
OBA	Output-Based Aid Voucher
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
PCV	Pneumococcal Conjugate Vaccine
PMNCH	Partnership for Maternal New born and Child Health
RDT	Rapid Diagnostic Test
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNICEF	United Nations Children's Emergency Fund
URTI	Upper Respiratory Tract Infections
WHA	World Health Assembly
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Globally in 2011, 136 million babies were born out of which 5 million died before reaching their first birthday while 2 million are estimated to die before reaching their fifth birthday which corresponds to under-five mortality rate of 51 per 1000 live births. Under-five mortality is the death of a child before reaching his/her fifth birthday and is expressed per every one thousand live births (UN, 2013). The UN (2013) further affirms that death among the under-fives is one of the most serious challenges faced by the international community and that inequalities still exist within and between countries in relation to progress in reducing under-five deaths. Marked improvement has been achieved globally over recent times in reduction of under-five mortality from an estimated 12 million in 1990 to 6.3 million in 2013 which corresponds to a decrease by 52.5 percent though contributes to 17,000 under-five deaths per day (UN, 2013; WHO, 2015a). However there exist inequalities in these achievements with the under-five mortality rate ranging from over 150 per 1000 live births in the poorest countries to 3 per 1000 live births in the highly developed countries. Nearly 95 per cent of the under-five deaths occur in two regions mainly Africa and Asia (UN, 2013). About 50% of under-five deaths occur in five countries, that is, China, Democratic Republic of Congo, India, Nigeria and Pakistan (WHO, 2015b).

Further according to UN (2013), Africa accounts for 24 per cent of the world's under-five population and nearly 50 per cent of under-five death. The risk of a child dying before celebrating their fifth birthday is still high in Africa at 90 per 1000 live births about 7 times higher than European region at 12 per 1000 live births in 2013 (WHO, 2015a). Forty one percent of the under-five deaths occur in sub-Saharan Africa (Rutherford *et al.*, 2010).

The progress in the reduction of under-five mortality was 60 percent for three regions, that is, America, Europe and Western Pacific, sub-Saharan Africa indicated slight improvement from 0.8% per year in 1990-1995 to 4.2% per year in 2000-2013. This

indicates that this region still bears a higher burden of under-five mortality as shown in figure 1 (UNICEF, 2014; WHO, 2015a).

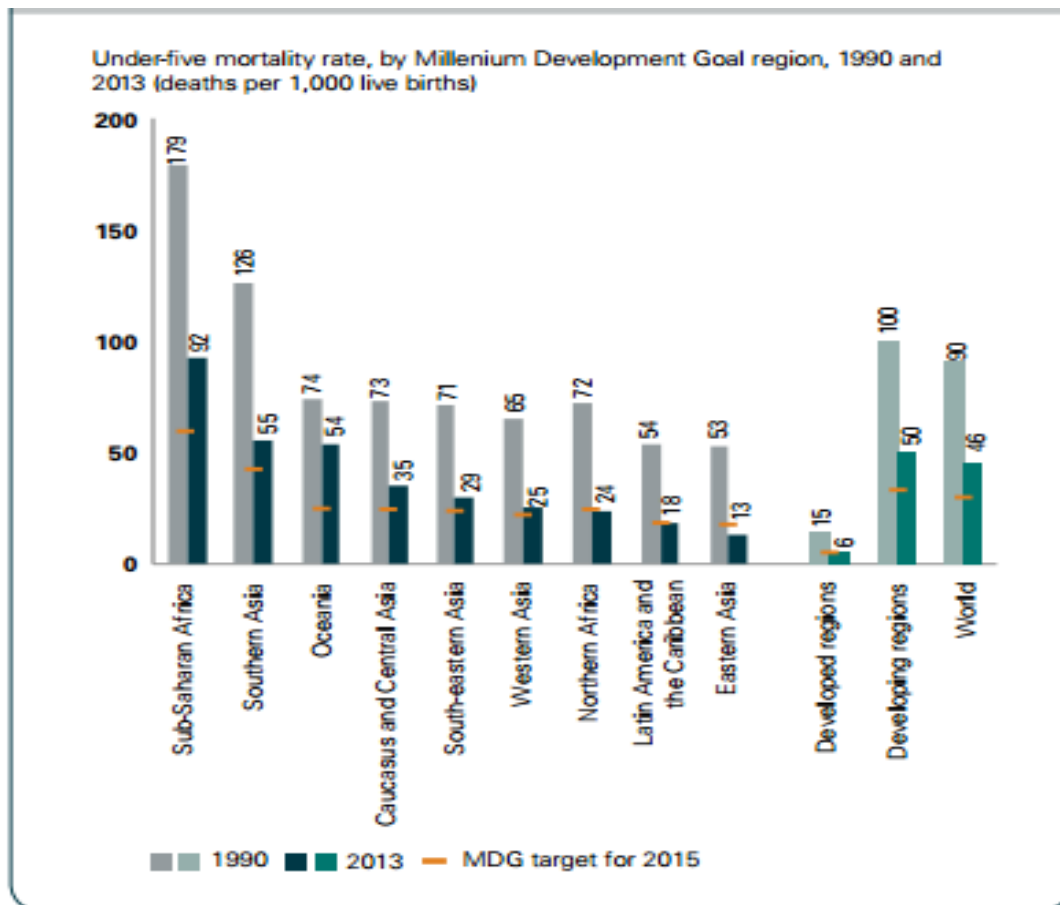


Figure 1: Under-five mortality by region, 1990 and 2013 (UNICEF, 2014)

In 2012 Kenya was ranked 39th position globally in under-five deaths (GOK, 2012b). In addition many of the countries especially from the developing world may not achieve the MDG4 target of reducing under-five mortality by two-thirds by the year 2015 (Murray *et al.*, 2007). Under-five deaths are noted to occur more in children born in rural areas, in poor households or to mothers with no basic education (WHO, 2015b). Many efforts are targeting reducing under-five mortality with a main focus on the main causes of morbidity and mortality among this age group. The five preventable causes of mortality in Kenya among this age group according to the Ministry of Health include acute respiratory infections and pneumonia, diarrhoea, malaria, anaemia and malnutrition (MOPHS, 2008 ; NCPD, 2012). This is supported by a study by Makworo and Laving (2010) which sought

to determine the main medical causes of admissions of under-fives in a teaching and referral hospital in Kenya. The findings revealed that 80% of the admissions among this age group were as a result of acute and preventable causes with pneumonia being the highest followed by malnutrition and gastro-enteritis.

Several causes have been linked to under-five mortality (figure 2). Majority of the under-five deaths are as a result of conditions that can be prevented using affordable, feasible and sustainable interventions that can also be applied even in the poorest settings (Boschi-Pinto, Bah, *et al.*, 2009). These interventions have been categorized into three groups to include: neonatal child interventions (skilled care at birth, early initiation of breastfeeding), preventive child health interventions (exclusive breastfeeding for first six months, complete immunization of children for first 12-23 months) and curative child health interventions (care-seeking for children with acute respiratory infections, provision of oral rehydration therapy for those with diarrhoea (Boschi-Pinto, Bahl, *et al.*, 2009).

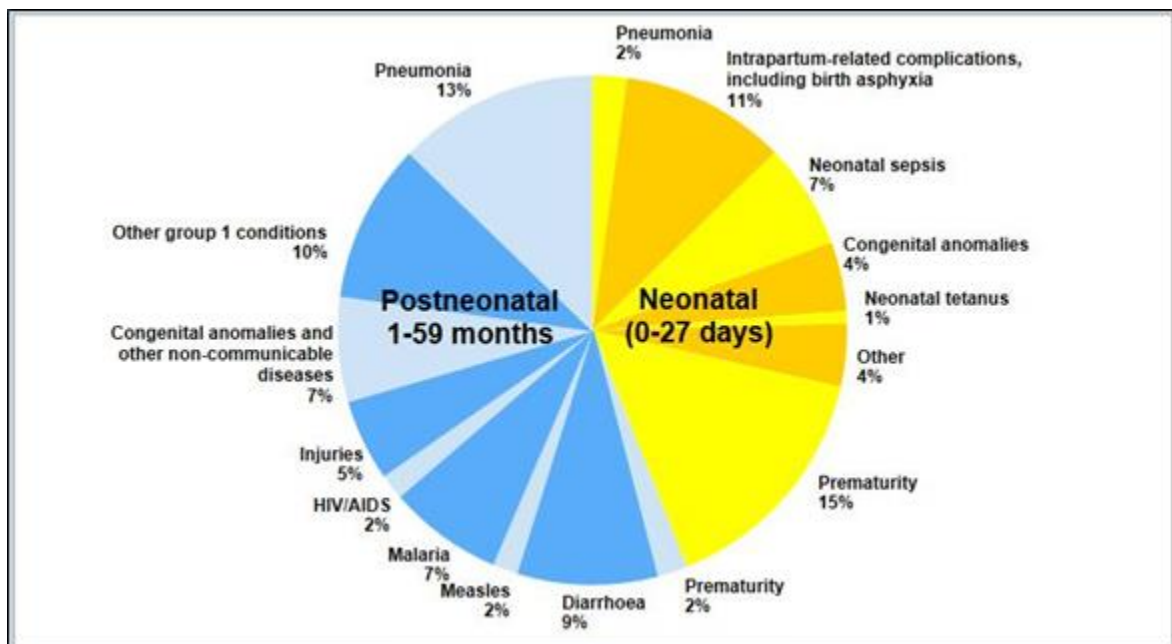


Figure 2: Global causes of under-five mortality (WHO, 2015a)

Over time the Kenya Demographic Health Surveys have also shown a decline in under-five mortality rate in Kenya from 115 per 1,000 live births in the year 2003 to 74 per 1,000 live births in 2008-2009 and 52 per 1,000 live births in 2014 (KNBS & ICFMacro,

2015). The decline in under-five mortality within Kenya also shows disparities among regions. According to the KDHS report for 2008-2009 Central Kenya region had the lowest under-five mortality rate of 51 per 1,000 live births while Western and Nyanza regions posted high rates of 121 and 149 per 1,000 live births respectively (KNBS & ICFMacro, 2010).

Kenya is among United Nations (UN) member countries who committed to achievement of Millennium Development Goals (MDGs) including MDG 4 that aims at reducing the 1990 child mortality rate by two-thirds by the year 2015 (WHO, 2014). In an effort to achieving MDG 4, Kenya through the Ministry of Health (MOH) put in place measures to reduce under-five mortality rates by two-thirds to 32 per 1,000 live births by the year 2015 (NCPD, 2012). The under-five mortality rates in Kenya indicate a decrease though this is still way below the MDG 4 target (KNBS & ICFMacro, 2010).

The Kenya Demographic Health survey done in 2008-2009 further indicated that under-five mortality had declined due to the numerous efforts put in place by the government of Kenya to improve child health. The interventions include free immunization against preventable childhood illnesses, growth monitoring, vitamin supplementation and an integrated approach in management of the sick under-five child. Despite these interventions, the former Nyanza province was indicated to have the highest levels of under-five mortality rates at 149 deaths per 1,000 live births in 2008 though these figures have been on a decline from 206 per 1,000 live births since the 2003 KDHS (KNBS & ICFMacro, 2010). The overall decline in under-five mortality rate both nationally and in Nyanza has been attributed to initiatives such as programmes on malaria, immunization and HIV/AIDS with particular reference to prevention of mother to child transmission (Maoulidi, 2011).

In comparison with the national urban rates, Kisumu East sub-County has high under-five mortality rates. In the year 2008 the under-five mortality rate in Kisumu was 220 per 1,000 live births which is almost three times the national figure. (GOK, 2009; KNBS & ICFMacro, 2010).

Nationally, the main causes of under-five morbidity and mortality have been linked to acute respiratory infections and pneumonia, diarrhoea, malaria, anemia and high levels of malnutrition (MOPHS, 2008 ; NCPD, 2012). According to a report from the Ministry of Public Health and Sanitation (2010a), these illnesses have been attributed to cause morbidity in under-fives as follows: Malaria contributes (33%), diseases of respiratory system (29%), diarrhoea (7%) and pneumonia (5%) (MOPHS, 2010a). Many under five illnesses and deaths in Kisumu County have also been attributed to malaria, diarrhoea, pneumonia, malnutrition and measles which are preventable diseases (Maoulidi, 2011).

Simple, affordable and basic interventions comprise essential health services targeting the under-fives which can greatly contribute to reduction of under-five deaths (WHO, 2015b). The essential interventions for the under-fives include: promotion of exclusive breast-feeding of infants for the first six months of life which reduces the risk of diarrhoea, encouraging use of oral rehydration therapy which has proved to be effective in managing diarrhoea and reducing child deaths; safe water and food, adequate sanitation and hygiene, adequate nutrition, vaccination, recognition of danger signs in a sick child and appropriate referral. Many lives of the under-fives may be saved through strengthening health systems to enhance provision of essential health care services (UN-HABITAT, 2005; WHO, 2015b). Use of insecticide-treated mosquito nets has also been shown to reduce malaria and deaths caused by the disease (Maoulidi, 2011). Studies have further shown that households using mosquito nets in Kisumu have much lower child deaths than households not using mosquito nets (Oindo *et al.*, 2009). High morbidity and mortality related to diarrhoea among children can further be reduced by increasing access to clean water, improving hygiene and proper waste disposal (UN-HABITAT, 2005). The five main causes of death among the under- fives can be managed and thus prevent high mortality among this vulnerable group through use of several affordable child health interventions (NCPD, 2010).

1.2 Statement of the Problem

Africa, particularly sub-Saharan region still bears the highest burden of under-five mortality (WHO, 2015). In 2011 the under-five mortality rate for Kisumu County was 105

(KNBS, 2013). Kisumu East sub-County was noted to have high under-five mortality rate of 220 per 1000 live births for the same period (Maoulidi, 2011). This means that one in every five children less than five years born in the sub-County die before reaching their fifth birthday. The sub-county falls under urban areas and still has high under-five mortality as opposed to findings from the KDHS 2008-2009 which showed that the urban areas in Kenya have low under-five mortality as compared to rural areas. The under-five mortality rate is almost three times the national rate of 74 per 1000 live births (KNBS & ICFMacro, 2010). It is worth noting that the sub-County was not be able to achieve the MDG 4 target of reducing the 1990 under-five mortality rate of 96 to 32 per 1000 live births (KNBS, 2015).

Through the Ministry of Health the Government of Kenya has put in place policies and health care interventions targeting the under-fives in an effort to reducing under-five mortality. These interventions include curative care for the sick child using Integrated Management of Childhood Illnesses (IMCI), immunization, growth monitoring and nutrition programme (NCAPD, 2010). It is recommended that for these interventions to succeed in reducing under-five mortality rate integration of health services for the under-fives must be done at all levels of the health system including the community and the health facility (MOPHS, 2008).

Despite the interventions put in place by the government to provide essential health care services to the under-fives, the mortality rates among this group in Kisumu East sub-County has remained high, almost three times more than the national figure. An assessment is therefore important in the sub-County to determine the available essential health care interventions targeting the under-fives, identification of resources available for provision of these services; assessment of the knowledge, attitude and practice of under-five health care interventions among the care-givers and finally the factors contributing to effective implementation and access of these interventions. The study was done in Tier 1 which provides community based health care services and Tier 2 which includes the dispensaries, clinics, health centers and maternity homes which are usually the first point of contact with the health facility for the under-five.

The study employed a cross-sectional descriptive design which involved assessment of the health facilities, survey of under-five care-givers, community health volunteers and health workers providing care for the under-fives. The findings in this study may be used to address factors contributing to the high under-five mortality in Kisumu East sub-County.

1.3 Study Objectives

1.3.1 Main Objective

To evaluate the implementation of essential under-five health care interventions in Kisumu East sub-County.

1.3.2 Specific Objectives

1. To determine the types of under-five health care interventions in tier 1 and 2 health care facilities of Kisumu East sub-County.
2. To assess the level of knowledge, attitude and practice (KAP) of under-five health care interventions among care providers in the sub-County.
3. To identify the resources available for implementation of under-five health care interventions in the sub-County.
4. To determine the under-five health care access and implementation challenges in tier 1 and 2 of the sub-County.

1.4 Research Questions

1. What are the available health care interventions for under-five children in tier 1 and 2 health care facilities in Kisumu East sub-County?
2. What is the level of knowledge, attitude and practice (KAP) of under-five health care interventions among care providers in tier 1 and 2?
3. What are the available resources for the implementation of under-five health care interventions in tier 1 and 2?

4. What are the challenges in tier 1 and 2 for under-five health care access and implementation?

1.5 Justification of the study

This study considered the adequacy of existing documented information on implementation of under-five health care interventions within the Kenyan context. The literature review conducted provided information on the recommended under-five health care interventions and their availability in the different tiers of service provision in Kenya. Several under-five health care interventions both preventive and curative have been adopted by the Kenya MOH in an effort to reducing under-five deaths in the country. The policy on under-five care in Kenya stipulates that these interventions should be accessed for free from the government manned health care facilities and others such as immunization are also not paid for in the non-government facilities. The adoption of these interventions by MOH is of little use if they are not well implemented. Implementation – understood in this study as the means to fulfil or satisfy the conditions of a policy – is therefore increasingly under scrutiny because of its role in determining outcomes in practice with reference to under-five morbidity and mortality. Evaluation of the implementation of essential under-five health care interventions is therefore vital to create an appropriate understanding of the available services, the process of implementation and the challenges to access and implementation in the various contexts (tier 1 and 2) where the under-five health care interventions are provided in Kenya.

1.6 Significance of the study

Through the MOH and other stakeholders, various health care interventions for under-fives have been rolled out. Despite these interventions, the morbidity and mortality among this age group has still remained high in Nyanza province and in particular Kisumu East sub-County. This study will therefore provide insight on the current status of under-five health care interventions and how they are implemented and thus provide recommendations that will help improve child health in meeting the MDG 4 of reducing

child mortality. The study findings will also be used to inform policy making for implementation of under-five health care interventions.

The findings will also provide information to create a better understanding of challenges faced by care providers in health care provision for the under-fives, and thus inform strategies to be undertaken in addressing the challenges which may lead to improvement of implementation and uptake of the interventions.

1.7 Scope of the study

The study was conducted in Kisumu East sub-County between 1st March to 30th August 2014. The study sample was 230 care-givers of under-fives in the study area. Data was also collected from 18 health care facilities in Tier 2 (public, private and faith based facilities), 21 health care workers and 52 community health volunteers who were providing care directly for under-fives. The study sought to evaluate the implementation of essential under-five health care interventions in Kisumu East sub-County.

1.8 Limitations and delimitations of the study

1.8.1 Limitations

The limitations encountered during this study included limited funding and community apathy. Data collection from care-givers required guidance by the community health volunteers who demanded some incentive at the end of the day and this had not been anticipated and thus had not been budget for.

Community apathy was also encountered during data collection whereby some care-givers expressed openly that there were many studies going on in the study area yet they were not seeing any benefits. Only care-givers who consented voluntarily to participate in the study were interviewed.

1.8.2 Delimitations

The study was limited to tiers 1 and 2 of the health care delivery system. Tiers 3 and 4 (the county referral and national teaching and referral facilities) were not included in the study thus the ability to generalize the findings to the whole health care delivery system is limited. Data was also collected with reference to the youngest child in households that had more than one under-five during the period of the study.

1.9 Assumptions of the study

The study assumptions are that not all essential under-five health care interventions are available in tier 1 and 2 in Kisumu East sub-County; the knowledge, attitude and practice of under-five health care interventions among care providers influence implementation and access of these services; the resources for provision of under-five health care interventions are limited in Kisumu East sub-County and finally challenges in tier 1 and 2 prevent access and implementation of under-five health care interventions.

1.10 Definition of Operational Terms

The following terms have been defined as they were applied to this study:

Care-givers: This is the person who feeds and takes care of the child, gives the child affection, communicates with the child, and responds to the child's needs.

Care providers: This includes care-givers of the under-fives, community health volunteers and health care workers who are involved in provision of health care interventions to the under-fives.

Community health Volunteers (CHVs): These are volunteer members of a community who provide a link between the health care facility and the community and have undergone shorter training than health care professional. The CHVs provide basic health care services to the under-fives in the community and refer them to the health facility.

Community Health Extension Worker (CHEW): This is a health care workers who is employed by the Ministry of Health and is deployed in a health facility in the community

health department. The CHEW is responsible for health activities carried out in the community and oversees the functions of CHVs.

CHV Kit: This is a small container that is carried by CHVs as they work in the community. It contains drugs such as paracetamol, Oral Rehydration Salts (ORS), anti-malarials, antiseptic and commodities such as cotton wool, surgical blade, malaria diagnostic kit and gloves.

Essential under-five health care interventions: These are basic health care services that should be accessed equally by children below five years.

Health care worker: Employee working in a health facility and has undergone basic training in health and is registered and licensed to practice by the relevant professional body. These includes nurses, clinical officers and doctors

Implementation: This is the act of putting the health care intervention into effect.

Millennium Development Goal (MDG) 4: The goal aims at reducing the 1990 under-five mortality rate (UFMR) by two thirds by the year 2015, with reference to Kenya the goal is to reduce UFMR from 96 to 32 per 1000 live births.

Tiers: These are the levels of health care service delivery in Kenya and includes Tier 1 which is the lowest level of care and represents the community, Tier 2 includes dispensaries, health centers, clinics and maternity homes, Tier 3 are the sub-County and County health facilities (formerly sub-district and district facilities) and Tier 4 includes the Teaching and referral hospitals and the former provincial hospitals.

Under-five mortality: This is the risk of a child dying before completing five years of age.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents literature reviewed with reference to under-five health care interventions. According to Polit and Beck (2008) research is based on already existing knowledge, thus to contribute to the evidence base researchers review literature to understand what is already known about a research problem. In addition, a thorough literature search provides a foundation on which to base new evidence and should be done before data collection. The purpose of literature review is to critically examine and discuss the research that has already been done and documented on a particular topic. Previous research and documents was located, analysed, synthesised and interpreted from sources such as periodicals, books, extracts, web pages and comments related to the topic of this study.

This chapter begins by outlining literature on under-five health care interventions and how they are implemented both globally and in Kenya. Knowledge, attitude and practices of under-five health care interventions and the challenges for implementing and accessing these interventions follows. The chapter ends with the conceptual framework that was used to guide the conduct of this study.

2.2 Under-Five Health Care Interventions: Global Perspective

Achieving reduction in under-five mortality requires that the under-fives are able to access basic health care interventions (Boschi-Pinto, Bahl, *et al.*, 2009). The main causes of death among the under- fives can be managed through use of several affordable child health interventions (NCAPD, 2010).

The essential health care interventions targeting the under-fives should be simple, accessible and affordable to be able to contribute to reduction of under-five deaths (WHO, 2015b). These interventions include: promotion of exclusive breast-feeding of infants for the first six months of life which reduces the risk of diarrhoea, encouraging use of oral

rehydration therapy which has proved to be effective in managing diarrhoea and reducing child deaths; safe water and food, adequate sanitation and hygiene, adequate nutrition, vaccination, recognition of danger signs in a sick child and appropriate referral. Many lives of the under-fives may be saved through strengthening health systems to enhance provision of essential health care services (Boschi-Pinto, Bahl, *et al.*, 2009; UN-HABITAT, 2005; WHO, 2015b). Use of insecticide-treated mosquito nets has also been shown to reduce malaria and deaths caused by the disease (Maoulidi, 2011; C. Oindo *et al.*, 2009). High morbidity and mortality related to diarrhoea among children can further be reduced by increasing access to clean water, improving hygiene and proper waste disposal (UN-HABITAT, 2005).

The health care interventions can be provided through linkages (see figure 3) between the households, communities, and health care facilities and through outreach services. This approach has been shown to ensure continuum of care and thus contribute to the reduction of morbidity and mortality among under-fives. This approach can also reduce costs, increase uptake and provide opportunities for promoting related healthcare interventions (PMNCH, 2011).

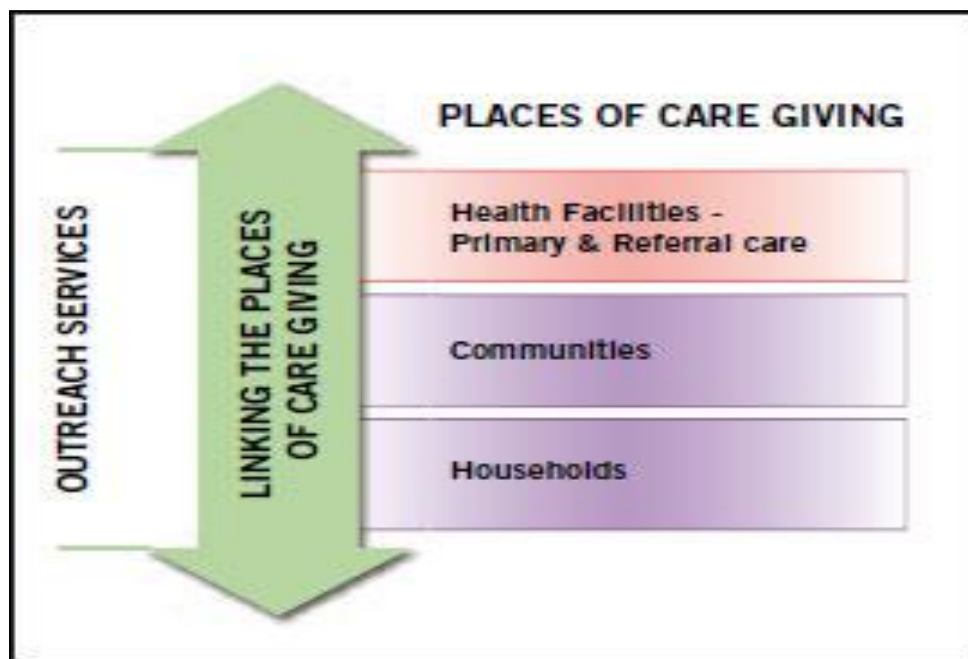


Figure 3: Linking points of care for under-fives (PMNCH, 2011)

Countries such as Ethiopia have used an integrated approach in the management of health and illnesses among under-fives. In 1996 Ethiopia adopted Community Integrated Management of Neonatal and Childhood Illnesses (C-IMCI) that has components of both preventive and curative interventions which aim to improve practices within the entire health system, health facility and at home with the aim of reducing childhood mortality and morbidity and promoting child health and development. The authors further indicate that the strategy adopted by Ethiopia addresses improvements of household and community practices that impact on the under-five health and survival.

Zimbabwe on the other hand adopted Integrated Management of Childhood Illness (IMCI) as an approach for care of the under-fives and before this they had an almost similar strategy known as Control of Diarrhoeal Diseases and Acute Respiratory Infections (CDD & ARI) (Gombe *et al.*, 2010). South Africa has also adopted IMCI in the care of under-fives and this approach has a component of Integrated Nutrition Programme which engages trained volunteers to weigh and monitor growth and development of the under-fives in the community (Faber *et al.*, 2009). In an effort to reduce under-five mortality and thereby work towards achievement of MDG4, the Senegalese government in October 2013 launched a programme that was to provide free health care services for the under-fives (UNICEF, 2013).

2.3 The Health Care Delivery System in Kenya

The under-five health care interventions in Kenya are provided through a structured health care system. The Kenyan health care system is organized around six levels of care, which are organized into four tiers of care, based on the scope and complexity of the services offered. The Kenya health care system is organized in a pyramid form with the community at the base. The community serves as Tier 1 and provides community based health care services. Including the community level into the national health care system provides an opportunity to involve the people in the communities to adopt appropriate behaviour for health promotion and disease prevention as well as appropriate health care-seeking behaviour. The aim of including the community at the base of the national health system was to reduce the disease burden in the communities. This would subsequently reduce the

healthcare demands on health facilities thus giving health facilities a chance to be more efficient and effective in service provision (MOPHS, 2011b).

Tier 1 of the health system is organized in community units (CU) of about 100 households or 5,000 community members. The CU is run by community health Volunteers (CHVs) who are supervised by community health extension workers (CHEWs). The CHEWs are employed by MOH and are deployed in the health facilities serving the communities. The under-five health care interventions in tier 1 includes health education, identification of illnesses at the household level, treatment of minor ailments, antiretroviral (ARV), tuberculosis treatment and immunization defaulter tracing and referrals to higher tiers. CUs are governed by the Community Health Committees (CHC) that comprises community members, CHVs, CHEWs, and health care workers representing the link facility (MOH, 2013b).

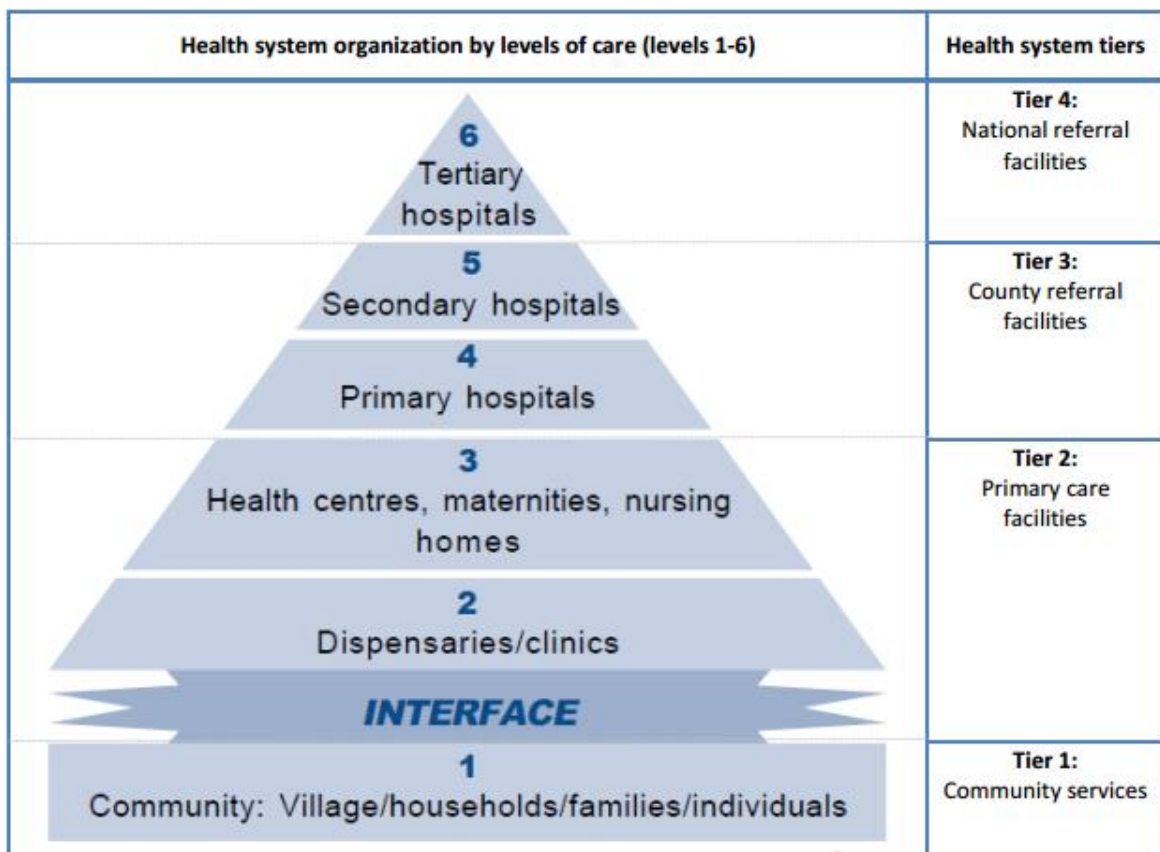


Figure 4: Kenya Health Care Delivery System before and after Devolution of Health Care (MOH, 2013b)

Tier 2 consists of primary care health facilities that have dispensaries (level II), health centers (level III), clinics and maternity homes. Health care services in these facilities are provided by nurses and clinical officers. The under-five health care interventions in tier 2 include general outpatient services, health education, immunization, HIV and TB treatment, nutrition support and emergency care. In addition the health centers provide basic inpatient services. Tier 2 facilities receive patients from the community and refer to Tier 3 and 4 for specialized care (MOH, 2013b).

The county referral facilities, which include the former primary and secondary hospitals, are categorized in Tier 3. These provide both outpatient and inpatient services for the under-fives. Health care workers in Tier 3 include doctors, clinical officers, and nurses. Tier 4 comprises the national teaching and referral health facilities that offer highly specialized care and are also used for training and research(MOH, 2013b; MOPHS, 2011b).

2.4 Implementation of Under-Five Health Care Interventions in Kenya

The Ministry of Health in Kenya in an effort to reduce under-five morbidity and mortality adopted several child survival interventions which includes Immunization through the Kenya Expanded Programme on Immunization (KEPI), IMCI approach for care of the sick child, enhanced nutrition through growth monitoring, and intensified efforts to combat malaria through promotion of insecticide-treated bed nets (NCPD, 2012; Wamae *et al.*, 2009).

2.4.1 Immunization

Immunization is an essential care intervention that contributes greatly in reducing morbidity and mortality among the under-fives. The vaccine preventable childhood diseases covered under the Kenya Expanded Program on immunization (KEPI) includes tuberculosis, polio, pneumonia, diphtheria, whooping cough, hepatitis B, tetanus, diarrhoea caused by rota virus and measles(MOPHS, 2011a). Several factors have been associated with low immunization coverage such as poor health- seeking behaviour among community members, long distance leading to inaccessibility to health facilities, vaccine

shortages, and lack of integration of child health services and facilities not providing vaccinations on a daily basis (MOPHS, 2008). Other factors identified in Ethiopia include inadequate knowledge of care-givers, lack of follow up by a CHV and high number of missed opportunities due to poor screening at the health facility (Mohammed & Atomsa, 2013).

In Kenya children are expected to complete the immunization schedule by the time they celebrate their first birthday as indicated in table 1. The child receives BCG that protects against tuberculosis at birth or at first at first contact with the child; at 6 weeks of age the child receives the first dose of Pentavalent, polio, pneumococcal (PCV₁₀) and Rota virus vaccine. The second and third dose of Pentavalent, PCV₁₀ and Rota virus vaccine are given at 10 and 14 weeks respectively. Pentavalent is composed of 5 vaccines including Diphtheria, whooping cough, Hepatitis B, Haemophilus Influenza type B and Tetanus. Measles is given at 9 months (MOPHS, 2011a).

Table 1: Kenya Immunization Schedule

Vaccine	Ages of administration of immunization
BCG	At Birth
OPV	At Birth, 6 weeks, 10 weeks and 14 weeks
DPT-HepB-Hib	6 weeks, 10 weeks and 14 weeks
PCV10	6 weeks, 10 weeks and 14 weeks
Rota Virus	6 weeks, 10 weeks and 14 weeks
Measles	6 months
Measles	9 months

Source: (MOPHS, 2011a)

In Kenya there was an improvement on completion of immunization among children aged 12-23 months. In 2008 77.4% were fully immunized as compared to 60.1% in the KDHS of 2003 (KNBS & ICFMacro, 2010). The KDHS report further showed that for the same period Nyanza as a region posted low immunization coverage of 64%. Further Polio

immunization had low coverage of 66% and 68.7% in 2008 and 2009 respectively. Nationally the complete immunization coverage in 2012 was 83.0% while Kisumu County for the same period was 70.8%, a small gain from 69.6% in 2011 (MOH, 2013a). Figure 5 shows that Kisumu East sub-County has been among the counties recording higher number of unvaccinated children. In 2011 the county had the highest number of unvaccinated children based on those who had not received measles vaccination (Mokaya, 2012).

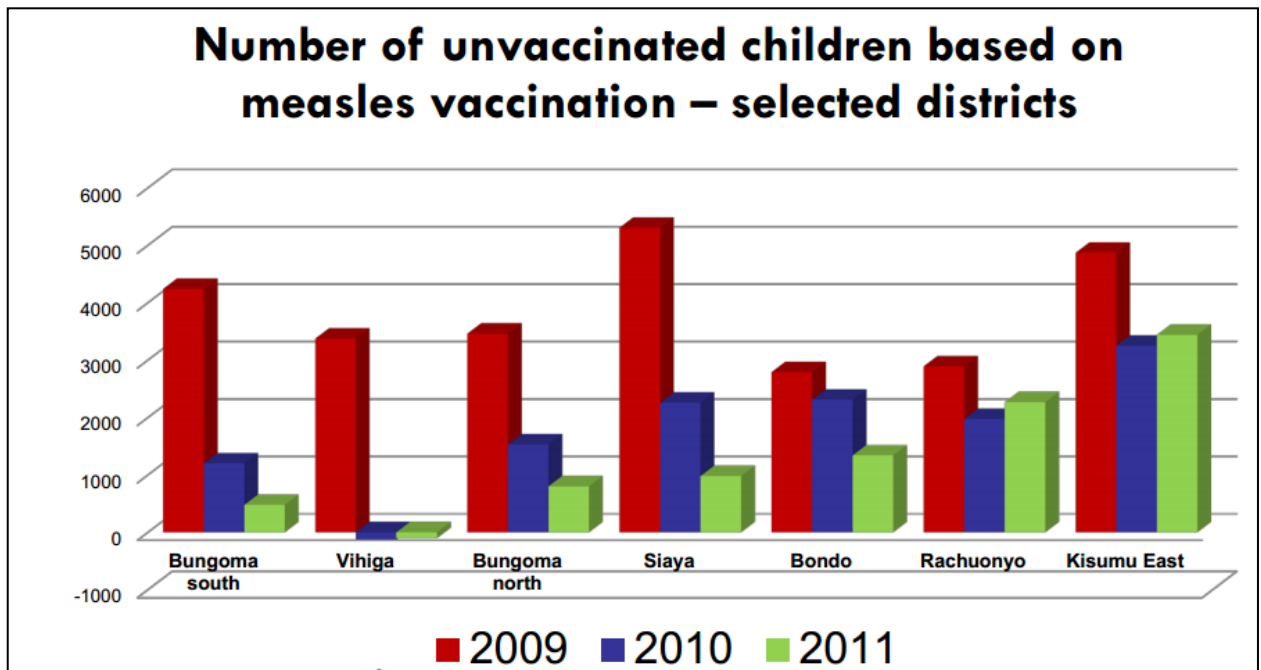


Figure 5: Number of unvaccinated children in western Kenya (Mokaya, 2012)

A study by Maina *et al.* (2013) done in Nakuru, Kenya to determine factors associated with immunization uptake showed that only 87.5% of the children in the study had been fully immunized by the end of one year. Factors associated with the immunization uptake in the study included the level of education of the care-giver, where the child was delivered and the health education information that the care-giver receives on immunization. In a similar study done in Gem, Siaya County, Kenya, findings indicated that children were less likely to complete immunizations if they belonged to mothers of higher parity and with lower education (Calhoun *et al.*, 2014).

2.4.2 Care for the sick under-five child

The IMCI strategy was developed by World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) in 1992 to address the five major causes of child mortality mainly, acute respiratory infections and pneumonia, diarrhoea, malaria, anemia and malnutrition while focusing on the development of standard treatment guidelines for childhood illnesses, training of health workers and active involvement of family and community members in measures geared towards improving child health (COREGroup, 2009; WHO & UNICEF, 2008). The IMCI approach improves health workers’ skills in management of childhood illnesses and also aims at improving families’ care seeking behaviour through empowering families and community with knowledge and skills on how to identify danger signs in a sick under-five child (Alex-Hart *et al.*, 2014).

The Kenya government adopted IMCI in 1999 as a strategy to reduce infant and under five mortality rates. By the year 2007 two-thirds of the districts in Kenya had adopted the strategy in the care of under-fives (Mullei *et al.*, 2008).

According to (MOPHS, 2010a), “the three main components in the implementation of IMCI involves,

- Skilled health workforce: Training of health workers and provision of standard guidelines on IMCI to improve child illness management
- Improvement of the health system for effective management of childhood illnesses through equipping health facilities with supplies and drugs.
- Improvement in family and community practices in relation to child health

The Kenya IMCI health facility survey report of 2010 indicates that a total of 6,820 (26.8%) of clinical health workers had been trained on IMCI case management, way below the national target of 60% (MOPHS, 2010a). The IMCI strategy further focuses on the ability of the health worker to assess the sick child and identify signs and symptoms and be able to classify the symptoms of illnesses such as malaria, pneumonia, diarrhoea, measles, ear infection and malnutrition. Appropriate treatment is identified as per the

guidelines and counseling of the mother or caregiver on care of the sick child is also incorporated (WHO & UNICEF, 2008). The Kenya Service Provision Assessment Survey (KSPA) for 2010 indicates that health care workers attending to the sick under-five child did not consistently assess many of the IMCI main symptoms and danger signs and antibiotics were prescribed not as per the treatment guidelines (NCAPD, 2010). Inconsistency in assessment could lead to misdiagnosis and wrong treatment.

In addition to providing care for the sick under-five child, the IMCI guidelines also incorporates preventive interventions yet the 2010 KSPA indicates that only 39% of the facilities provide immunization services every single day that sick under-five children are attended to (NCAPD, 2010). This contributes to missed opportunities as a mother with a sick child may not bring back the child for immunization particularly if the facility is far. Implementation of IMCI has been shown to have several challenges including few health care workers trained on IMCI, lack of essential drugs and supplies, lack of mentorship, lack of refresher courses and regular supportive supervision (Kiplagat *et al.*, 2014).

2.4.3 Growth monitoring

Growth monitoring as an intervention among the under-five is used as an indicator on the nutritional status and development of the child. The child's nutritional status also indicates the ability to resist or fight illness. As an intervention, growth monitoring helps in early identification of malnutrition, stunting or wasting of children (Eunson, 1998). Growth monitoring is done through checking of the weight of the child on a regular basis and the weight is charted on a graph for interpretation. The KSPA for 2010 indicates that only 70% of the facilities that provide care to the sick child have a weighing scale for infants and 69% have a scale for older children (NCAPD, 2010). This indicates that a sick child who seeks care in either of the facilities not having a weighing scale will not have his weight checked and any deviation from normal will not be diagnosed.

Kenya in its endeavour, towards achieving the Millennium Development Goal 1 of eradicating extreme poverty and hunger developed a nutrition indicator of reducing the prevalence of underweight among the under-fives by half from 35.5% in 1990 to 16.25 % in 2015 (MOPHS, 2008). Ministry of Health further indicates that achieving this target is

still a challenge as the national prevalence rate of underweight and wasting among the under-five for 1993 were 22.3% and 5.9% while for 2006 were 20.9% and 6.1%. The nutritional status of this group has not improved over time, with 16% being under-weight, 7% are wasted while 35% are stunted (MOPHS, 2013).

Child mortality has also been attributed to high malnutrition rates especially among poor families in Kisumu. In 2008 55% of under-five children in Kisumu East sub-County received Vitamin A supplements and majority had Marasmus which is an indication of poor nutrition (Maoulidi, 2011).

2.4.4 Under-five feeding practices

Exclusive breastfeeding requires that the child is fed on breast milk alone without giving the child anything else including water. Exclusive breastfeeding should be done for the first six months of a child's life and it has several benefits including protecting the child against common illnesses such as diarrhoea and acute respiratory infections. It is further recommended that breastfeeding should continue throughout the child's two years of life coupled with complementary feeding after the first six months (MOPHS, 2008). In Kenya less than three percent of children less than one year old receive exclusive breastfeeding for the first six months of life and this contributes to their increased risk to disease (MOPHS, 2008). A study in Nepal on infant feeding practices found that the prevalence of exclusive breastfeeding among children less than 6 months was low and was influenced by factors such as socio-economic, education and culture (Ulak *et al.*, 2012). The World Health Assembly (WHA) indicated that worldwide 178 million children are underweight and 20 million suffer from the most deadly form of severe acute malnutrition each year; and that nutritional risk factors, including underweight, suboptimal breastfeeding and vitamin and mineral deficiencies, particularly of vitamin A, iron, iodine and zinc, are responsible for 3.9 million deaths (35% of total deaths) and 144 million disability-adjusted life years (33% of total disability-adjusted life years) in children less than five years old (WHA, 2010).

2.5 Knowledge, Attitude and Practice of Under-Five Health Care Interventions among Care-Givers

A care-giver is the person who feeds and watches over the child, gives the child affection, communicates with the child, and responds to the child's needs. If the child is sick, the caregiver is usually the person who brings the child to the health care facility. In most instances the care-giver is the child's mother but also includes grandmother, an aunt, older sister and others such as father, uncle and brother (WHO, 2011).

Families play a major role in contributing towards child's survival, growth and development. The success in reducing under-five mortality largely depends on a strong partnership between the families, health providers and the communities. Focusing on family health care practices has been shown to contribute positively towards child health (COREGroup, 2009). Socio-economic factors and maternal and child demographics such as sex of the child, birth order, preceding birth interval and age of mother at first birth have been shown to influence child mortality. Other factors include place of residence, mother's education and marital status (Bello & Joseph, 2014).

Positive health care practices by the family that contributes to reduction in under-five morbidity and mortality include exclusive breastfeeding of the infant for the first six months of life followed by complementary feeding for up to 24 months of age, encouraging parents to ensure their children complete immunization by their first birthday, children sleeping under insecticide treated mosquito nets, continue feeding and offer more fluids to a sick child, prompt health care-seeking for a sick child, a pregnant mother should seek adequate ante-natal care and compliance to advise, treatment, referral and follow-up care (COREGroup, 2009).

2.5.1 Level of awareness on child health care interventions

Level of awareness on child health interventions such as importance of immunization and growth monitoring does influence health seeking behavior of the care-giver. A care-giver

who views immunization as important will ensure that his/her child is immunized (Mesike & Mojekwu, 2012; I.P. Okafor *et al.*, 2014). In Bangladesh one suggested way of reducing under-five mortality was to improve health seeking behavior among the care-givers (Najnin *et al.*, 2011). A study in Nigeria compared two areas one that had implemented Community-IMCI and the other had not, the findings from this study indicated that care-givers who were in the intervention areas practiced hygienic interventions such as washing the hands with soap after use of the toilet and malaria prevention strategies as opposed to those who were not in intervention areas (Ebuehi, 2010). This confirms that enhancing awareness among care-givers increases chances of accessing care by the under-five. Further, perception of care-givers on the importance of adopting health care interventions targeting the under-fives directs the decision on the health care-seeking behaviour (Tagbo *et al.*, 2012).

2.5.2 Water, hygiene and sanitation practices among care-givers

Environmental factors linked to unsafe water, sanitation and hygiene also contribute directly to under-five mortality. Further, in a study to determine environmental determinants of child mortality, Mesike and Mojekwu (2012), showed that household environmental characteristics such as access to immunization, sanitation facilities, refuse and solid waste disposal, roofing and flooring materials and use of low polluting fuel as main source of cooking lead to lower under-five mortality rates.

Availability of clean water, proper waste disposal and appropriate hygiene practices such as hand washing among care-givers before preparing meals, before feeding children, after visiting the toilet and after changing the baby have further been associated with reduced diarrhoeal infections among the under-fives (COREGroup, 2009). Diarrhoea is caused by infectious micro-organisms, that is, viruses, bacteria, protozoa and worm infestations. These micro-organisms are transmitted from the fecal matter to the mouth through contaminated fluids/water, fingers, work surfaces and food (Bourne *et al.*, 2013). The care givers require knowledge and skills on hand washing and proper waste disposal to be able

to break the micro-organisms transmission cycle to prevent occurrence of diarrhoeal diseases among the under-fives.

Environmental factors linked to unsafe water, sanitation and hygiene also contribute directly to under-five mortality. Environmental determinants of child mortality such as access to immunization, sanitation facilities, refuse and solid waste disposal, roofing and flooring materials and use of low polluting fuel as main source of cooking lead to lower under-five mortality rates (Mesike & Mojekwu, 2012).

2.6 Knowledge, Attitude and Practices of Under-Five Health Care Interventions among Community Health Volunteers

The IMCI strategy includes approaches geared towards strengthening family and community practices that influence the under-five health status positively. Reduction of under-five morbidity and mortality can be achieved through partnership between family, community and the health workers in a strategy known as Community-IMCI (C-IMCI) (Ebuehi, 2010). In recent times there has been an increased recognition of the important role played by CHVs towards achievement of MDG 4 and thus reduction of under-five mortality (GHWA, 2010). Further, improvement of under-five health indicators and reduction in mortality among this group can be achieved through adoption of innovative interventions that enhance use of community based management approaches such as home visits of newborns in their first week of life and case management of childhood illnesses such as pneumonia (Boschi-Pinto, Bahl, *et al.*, 2009).

Studies have shown that knowledge level of CHVs on under-five health care interventions varies. Further if their knowledge level is low their performance in terms home visits was also limited (Agrawal *et al.*, 2012). Training CHVs on care of the under-fives empowers them with knowledge and skills to be able to play an active role in disease prevention and the care of the sick child (WHO, 2011). The important function of CHVs in under-five care includes: identification of signs of common childhood illnesses including fever, dehydration and signs of anemia and malnutrition, referral of a sick child to a health facility, helping the families to provide basic home care and disease prevention strategies

at home. The CHVs also provide health education to families on basic interventions such as how to prepare and give Oral Rehydration Salts (ORS) solution and zinc for diarrhoea, an anti-malarial medicine for children with fever who test positive for malaria, and an antibiotic for sick child with cough and fast breathing. Further families are counseled on good health seeking behaviour such as promptly taking the sick child to the health facility, comply to treatment and keep scheduled follow-up visits (WHO, 2011).

The health care system requires the CHVs for various reasons particularly when health care facilities are far, when care-givers are reluctant to use them, or they are overcrowded. The CHVs have been shown to contribute towards reduction of under-five mortality through their participation in programmes such as immunization, active management of a sick child and nutrition programme (Perry & Rose Zulliger, 2012). Many of the under-fives, who fall sick die despite the existence of well recognized, internationally recommended treatments that are low-cost, highly effective, and easy to use. Inability to access care among the under-fives is attributed to shortage of health care workers, particularly in rural areas (Halwindi *et al.*, 2013). The CHVs have thus been used to bridge the gap in health workforce and with the aim of reducing child deaths. Community Health Volunteers participate in community based management of childhood illnesses for the under-fives who suffer pneumonia, malaria and diarrhoea; this has been shown to be less expensive than clinic based services (Gilroy & Winch, 2006).

2.7 Knowledge, Attitude and Practices of Under-Five Health Care Interventions among Health Care Workers

The KSPA survey done in 2010 recognizes the importance of continuing health education and supportive supervision for health workers providing care for the under-five sick child. The survey further notes that less than 15% of the under-five health care providers interviewed had undergone recent training on under-five health care interventions (NCAPD, 2010). This is further supported by study findings on implementation of IMCI which indicated that low IMCI training coverage was one of the main challenges for implementing under-five health care interventions for the sick child. Continuing training

of health workers on evidenced based child care practices is important for improvement of their case management knowledge and skills (Mullei *et al.*, 2008).

The integrated approach in care of the under-fives (IMCI) advocates training health workers on care of the sick child to be able to recognize signs of illness in a sick child and be able to diagnose, prescribe and advise appropriately. In a study conducted to evaluate the implementation of IMCI in Bulawayo, findings revealed that only 24% of the under-fives were assessed for three danger signs, 53% had antibiotics prescribed to them yet they did not require them and counseling skills were not utilized as required (Gombe *et al.*, 2010). The authors further recommended that the use of the integrated approach in the care of the under-fives should be strengthened with supportive supervision (Gombe *et al.*, 2010).

In a study conducted in Zambia to determine factors perceived by care-givers as barriers to accessing care by under-fives, the quality of care received by the under-fives was noted to be a main factor. Quality of care was related to the way the health workers communicated to the care-giver, their attitude and how efficient they provided the care. The care provided was noted to be poor for the following reasons: less attention given to the sick child, treatment given without any instructions, no room for the care-giver to ask questions and not following the queue but treating those whom they know first or the well to do (Halwindi *et al.*, 2013). In the same study other findings showed that some of the health workers did their work well though they started attending to the under-fives late.

2.8 Resources for Implementation of Under-Five Health Care Interventions

Achievement of MDG 4 targets can be realized through improving implementation and access of under-five health care services. The following are requisites for a health facility in Kenya for provision of quality under-five health services: the health facility should be accessible, it should be equipped with required supplies and medication for treating childhood illnesses and it should have skilled health personnel trained to provide care for the under-five children (NCPD, 2012). The KSPA findings indicate that only two-thirds of facilities that offer care for the sick under-five child had all the three first-line medications

as per the IMCI guidelines, that is, Oral Rehydration Salts, first line anti-malarial and at least one oral antibiotic (NCAPD, 2010). This further indicates that one third of health facilities in Kenya do not have first line drugs that are required for treatment of the sick under-five child.

The government of Kenya has put in place a policy that ensures that all under-fives access free health care services in the public facilities. It has been shown that child health services in the government facilities are available at no cost but there are no drugs and most times care-givers are required to purchase the same which may be out of reach for most of the under-fives because of cost (NCPD, 2012). The success of under-five health care interventions can only be realized through health facility support by ensuring adequate and availability of drugs, vaccines, supplies and continuous supervision of the programmes (Gombe *et al.*, 2010). Lack of drugs and supplies in the health facilities has been associated with big catchment areas served by these facilities and lack of consistency in the supply of the commodities (Halwindi *et al.*, 2013).

2.9 Under-Five Health Care Intervention Challenges

The Government of Kenya has put in place strategies for reducing morbidity and mortality among under-five children. Implementing the interventions has faced a lot of challenges including low training coverage for health workers and frequent drug stock outs. Further, community members have not been able to access under-five health services due to user fees at health facilities and costs associated with referral services (Mullei *et al.*, 2008). The under-five health care intervention challenges are categorized into two; challenges of accessing health services by the under-five child and those experienced by the health worker during implementation of the services.

Challenges of implementing under-five health care interventions are related to health system in totality including deficient knowledge and skills of community health volunteers in case management of under-five illnesses, poor supervisory structures in under-five health programmes. Other challenges include the under-five health and disease knowledge level and health seeking behaviors of primary care-givers (Rabbani *et al.*, 2012).

2.10 Theoretical Framework of the Study

Theory lays the foundation of a study and enables researchers to discover what is known or unknown about a topic of interest in order to conduct research, it also adds to the body of knowledge in a given discipline (Polit & Beck, 2006). This section discusses the Innovation Conceptual Framework and Integrated Management of Childhood Illnesses approach as theories which were used to guide the conduct of this study.

2.10.1 Innovations Conceptual Framework

Innovations Conceptual Framework was developed by Concern Worldwide and UNICEF in 2011 with the aim of providing a framework for overcoming barriers to quality coverage of effective maternal, newborn and child health (MNCH) care interventions. The framework was developed to complement efforts towards achievement of MDG 4 and MDG 5 of reducing under-five mortality and improving maternal health respectively (ConcernWorldwide & UNICEF, 2011). This framework provides a platform for identifying and categorizing factors that support quality coverage of effective MNCH interventions and helps in outlining the challenges and barriers of implementing these programmes (ConcernWorldwide & UNICEF, 2011). The framework has seven main components as shown in figure 6.

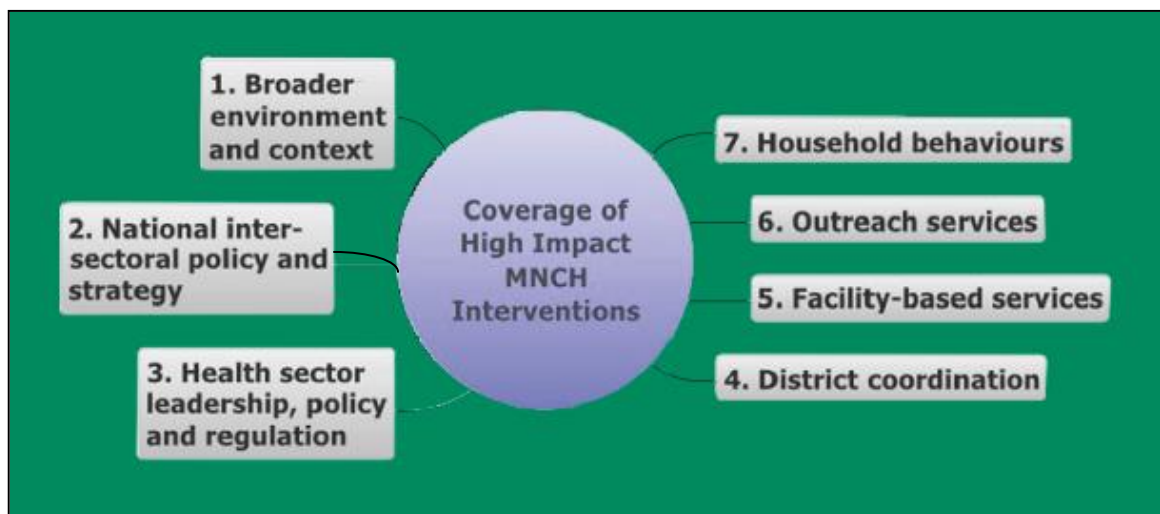


Figure 6: Innovations Conceptual Framework (ConcernWorldwide & UNICEF, 2011)

2.10.1.1 Components of Innovations Conceptual Framework

The seven components of the framework represent the operational levels required to ensure coverage (implementation and access) of MNCH interventions.

The **broader environment and context** represents environmental and contextual elements that affect MNCH and health systems including governance, political stability and accountability, economic growth, demographic trends, disease profile, infrastructure relating to water and sanitation, transportation, communication and information technology (ConcernWorldwide & UNICEF, 2011). **National inter-sectoral policy and strategy** component includes government strategies for economic growth and poverty reduction, linkages with the private sector, disaster preparedness and enabling inter-sectoral environment (ConcernWorldwide & UNICEF, 2011). **Health sector leadership, policy and regulation** represents the role of the ministry of health on policy direction relating to regulation, primary health care, financing, human resources, drugs and supplies (ConcernWorldwide & UNICEF, 2011).

District coordination represents the degree of decentralization, inter-sectoral actions and partnerships between public sector and civil society, incentives/sanctions, and structural capacity (including organizational, information, physical, human and fiscal resources) at the district level. These areas pertain to district health management teams, to non-public sector coordination and planning bodies such as professional guilds and associations, and hierarchies of traditional and religious authorities at the local level. **Facility-based services** relate to health facilities' available range of services, drugs and supplies, physical infrastructure and setting, management practices, health worker performance (quality against standards), and referral systems. It includes clinical services delivered by private and informal providers and by micro-entrepreneurs. **Outreach services** represent a variety of interventions targeting maternal new born and child health programmes relating to health education, family planning, antenatal care, postnatal care, provision of preventive interventions such as immunizations, insecticide-treated bed nets and micronutrient supplementation, and community case management of childhood illnesses such as malaria, diarrhoea and pneumonia. **Household behavioural** level represents the ability of

household members to demand for services, their knowledge and beliefs, acceptability of the service, social capital, and access (ConcernWorldwide & UNICEF, 2011). These factors impact either positively or negatively on under-five health status by influencing access of the interventions.

2.10.2 Application of Innovations Conceptual Framework to the study

The IMCI strategy (figure 7) was developed by WHO and UNICEF in 1992 to address the five major causes of child mortality mainly, acute respiratory infections and pneumonia, diarrhoea, malaria, anaemia and malnutrition while focusing on the development of standard treatment guidelines for childhood illnesses, training of health care workers and active involvement of family and community members in measures geared towards improving child health (COREGroup, 2009; WHO & UNICEF, 2008).

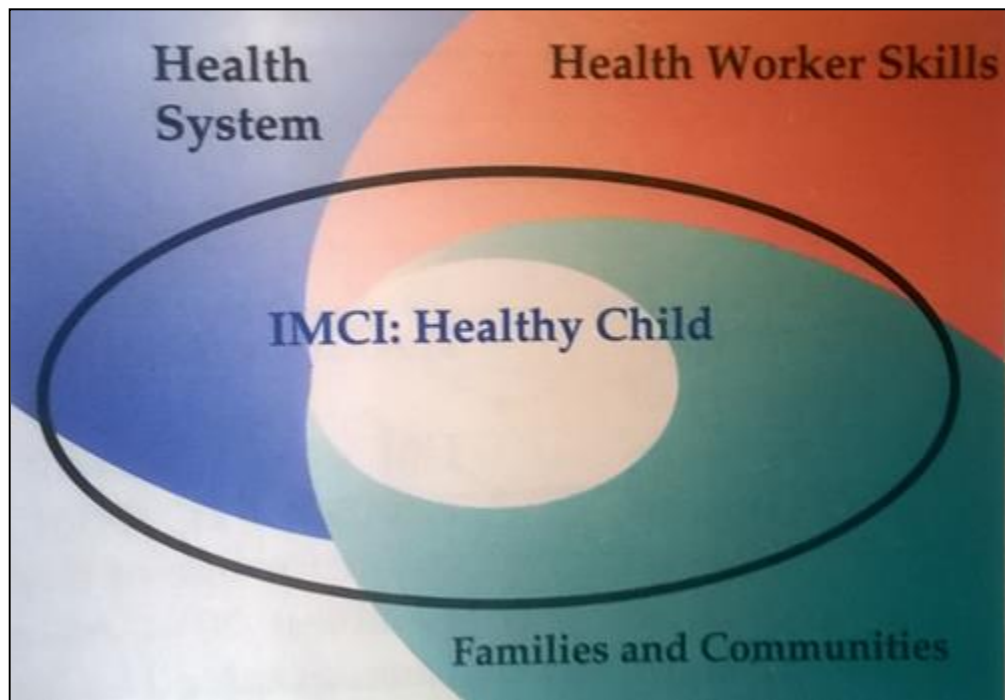


Figure 7: The IMCI Strategy (COREGroup, 2009)

The IMCI strategy focuses on improving the health system which includes all actors, institutions and resources that undertake health actions to improve health of the under-

fives for effective management of childhood illnesses through equipping health facilities with supplies and drugs, improving workers' skills in management of childhood illnesses and also aims at enhancing families' care seeking behaviour through empowering families and communities with knowledge and skills to enhance uptake of under-five health care interventions (Alex-Hart *et al.*, 2014; MOPHS, 2010a). The MOH Kenya adopted IMCI strategy in 1999 as an approach for provision of health care interventions in an effort to standardizing care and reducing morbidity and mortality among the under-fives (MOPHS, 2010a).

2.10.3 The Conceptual Framework of the Study

The Innovation Conceptual Framework was modified for this study through the incorporation of concepts from the IMCI strategy. Innovations Conceptual Framework is a template that should be adapted and tailored within each setting (ConcernWorldwide & UNICEF, 2011).

Modification of the Innovation Conceptual Framework was done by merging four components mainly the broader environment, Household behaviors, Outreach services and Facility based services with the components of the IMCI strategy that is Health system, health worker skills and families and communities factors. These variables were then used to guide the conduct of the study.

The conceptual framework adopted by this study, as seen in figure 8, outlines three input variables that shape the implementation and access of under-five health care interventions. The household and community factors directly affect the care-giver. The two supply-side factors are the broader environment and the health system which encompasses health facility factors, health workers and community health volunteer factors.

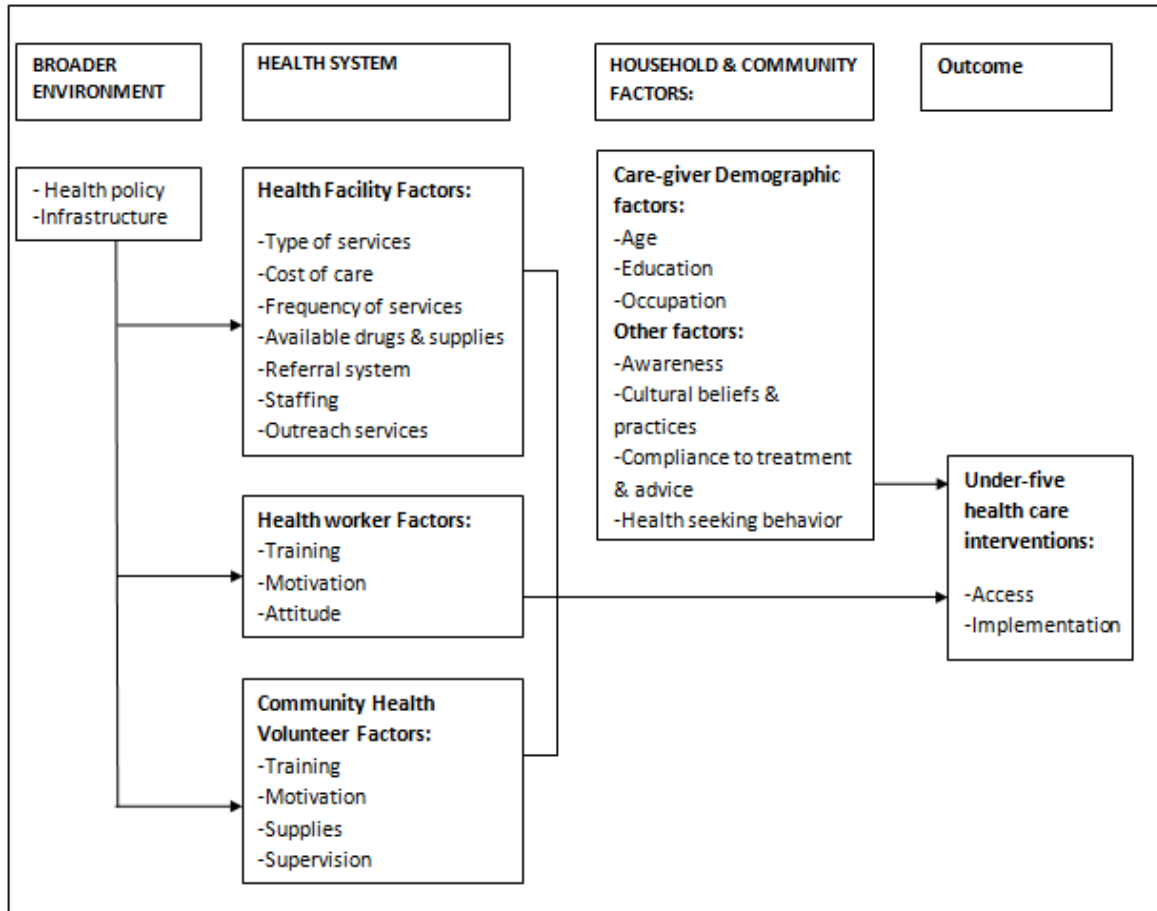


Figure 8: Conceptual Framework of the Study

The conceptual framework was used to guide literature review and development of data collection tools. Further, organization of the study findings was also guided by the conceptual framework.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Study Area

Kisumu East sub-County is one of the six sub-Counties in Kisumu County and covers an area of 430.2 Km². The sub-County is divided into two administrative divisions namely; Winam and Kadibo. The sub-County has 16 locations and 43 sub-locations (MODP, 2013). Five locations were randomly selected for inclusion in the study (figure 9). The sub-County was found suitable for this study due to high under-five mortality despite the programmes and interventions that have been put in place by the government through the ministry of health.

The 2009 population of Kisumu East sub-county was 150,124; the projected population for 2015 was 170,293 (MODP, 2013). The population of the under-fives comprises 16.1% of the total population (CRA, 2013; Maoulidi, 2011). The total population of the under-fives in 2009 in Kisumu East sub-County was 24,170.

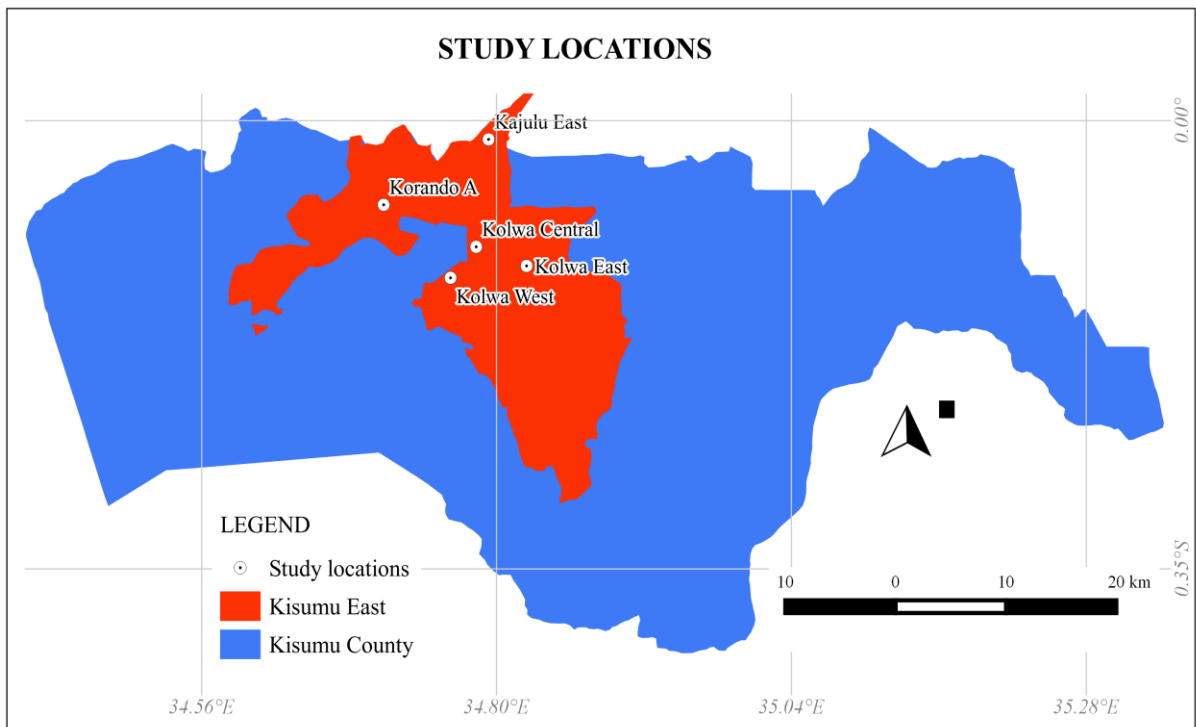


Figure 9: Map showing study locations in Kisumu East sub-County

The study sites included tier 1 (communities) and health care facilities operating in Tier 2 in the selected locations in the sub-County (see appendix C). Tier 1 and 2 of the health care delivery system in Kenya include community based health services and Primary care based health services respectively. The selected tier 1 and 2 health facilities usually serve as the first point of contact with health care delivery system in Kenya for a sick under-five child before appropriate referral is made. A total of 18 health facilities participated in the study.

Health care delivery system in Kisumu is comprised of public facilities and facilities managed by faith-based organizations, non-governmental organizations and private facilities all organized in four tiers. Tier 1 comprises community based health services, primary care health services fall in Tier 2, county referral services are in Tier 3 and comprises sub-County hospitals and County hospitals both public and private hospitals. Tier 4 includes the provincial hospitals and the national teaching and referral hospitals (DPHN, 2013; GOK, 2012a).

Kisumu East sub-County has 71 health facilities. The government manned health facilities includes one Tier 4 hospital; in Tier 3 there is one County referral hospital and two sub-County hospitals; tier 2 has five health centers and 21 dispensaries. The rest comprise either private hospitals and health facilities managed by faith based organizations, non-governmental organizations and private individuals as maternity homes and clinics (DPHN, 2013). Tier 1 comprises communities in the 16 locations in the sub-County. See table 2 for distribution of health facilities according to Tier and the manning agency.

Table 2: Distribution of Health Facilities in Kisumu East sub-County

Tier	Government of Kenya	Private and NGO	Faith-based	Total
4	1	2	-	3
3	3	3	1	7
2	26	32	3	61
Total	30	37	4	71

Source: (MOH, 2011)

According to MODP (2013), the average distance to a health facility is approximated to six kilometers; 67% of the population can access a health facility within a distance of 5 kilometers. The doctor to population ratio is 1:44,634 while the nurse to population ratio is 1:2,383. The most common cause of illness in the sub-County is malaria which was reported at 44.7%, other illnesses are headache at 11.2%, stomach ache at 5.3%, flu at 5.2% and diarrhoea at 2.4% (MODP, 2013)

3.2 Research Design

Cross-sectional descriptive research design was used in this study. According to Polit and Beck (2008), “a cross-sectional study involves the collection of data at one point in time. The phenomenon under study is captured during one period of data collection and these studies are appropriate for describing the status of phenomena or relationships among phenomena at a fixed point in time.” In this study, data was collected from 1st March to 30th August 2014.

Descriptive designs help to identify challenges in current practice with a view to improving the practice outcomes for patients (Burns & Groove, 2005). When a study is not structured formally as an analytical or as an experimental study, implying that the study does not aim specifically to test a hypothesis, such a study is termed descriptive (WHO, 2001). In descriptive studies the researcher’s intention is to portray an accurate picture of reality (Stommel & Wills, 2004). Descriptive research is designed to discover new meaning and to provide new knowledge where there is little known about the phenomenon of interest. Basavanthappa (2007) refers to descriptive research as “a type of research undertaken with the aim of describing characteristics of variables in a situation and the relevant aspects of the phenomena of interest”. According to Polit and Beck (2006), the purpose of descriptive research is to “observe, explore, describe and document aspects of a situation as it naturally occurs”. In this study, the researcher sought to describe the reality on the implementation of under-five health care interventions in Kisumu East sub-County.

Mixed methods approach was employed whereby both quantitative and qualitative data was collected, analyzed and integrated in order to answer the research questions in the study (Hesse-Biber, 2010). The reasons for using mixed methods in this study was to facilitate triangulation whereby the researcher was looking for convergence of the quantitative and qualitative data and secondly was to allow for complementarity between the quantitative and qualitative data. This provided a better understanding of the research findings (Hesse-Biber, 2010).

3.3 Study Population

The study population was care givers of under-fives in Kisumu East sub-County. Other sources of data to support the main unit of analysis included CHVs operating in Tier 1 (community) and Health workers (doctors, nurses and clinical officers) who provide direct care to under-fives in Tier 2 of the health care delivery system in Kisumu East sub-County.

3.4 Sample Size Calculation

To be able to get a representative sample and guided by the study objectives the sample size of care-givers of under-fives was calculated using Fisher's *et al.*, formula (Israel, 1992):

$$n = \frac{(Z\alpha/2)^2 (PQ)}{d^2}$$

n= sample size

$$Z\alpha/2 = 1.96$$

P= Proportion of under-fives (16.1% of total population=0.161)

$$Q = 1 - P = 1.000 - 0.161 = 0.839$$

d= Design effect (0.05)

Therefore:

$$n = \frac{(1.96)^2 (0.161 * 0.839)}{0.05^2} \quad n = 207.6$$

$$(0.05)^2$$

This resulted to **208** care-givers of under-five children. To cater for non-responses, 10% was added to the figure.

$$10\% \text{ of } 208 = 20.8 \text{ rounded up to } 21$$

$$208 + 21 = 229$$

The sample size used in the study was **230** care-givers of under-fives.

3.5 Sampling Procedure

Multi-stage sampling technique was utilized in this study whereby different sampling methods were used in selection of the sample.

3.5.1 Sampling of Locations

The distribution of the locations in Kisumu East sub-County includes 7 in the urban area and 9 in the peri-urban area of the sub-County (DPHN, 2013). Thirty percent of the locations per area were selected leading to 2 locations representing the urban area and 3, the peri-urban; the first step involved random sampling in selecting the 5 locations for inclusion in the study. The locations were clustered into urban and peri-urban then random sampling was done per cluster for selection of the locations. The random selection resulted in West Kolwa and Korando A representing the urban locations and East Kolwa, Kajulu East and Kolwa Central representing the peri-urban locations.

3.5.2 Sampling of Health Facilities

All the facilities functioning at Tier 2 within the selected locations were included in the study. Nineteen facilities all at tier 2 (Dispensary, Health center, clinic or maternity homes), were included in the study. Data collection was done only in 18 health facilities (see appendix C), one facility was left out because it is a clinic operating in Tier 2 located within the Medical Training College and serves the students and no under-five health care

interventions are provided (DPHN, 2013). Eleven health facilities represented the peri-urban locations while seven represented the urban locations.

3.5.3 Sampling of Health Care Workers

Health care workers in the selected health facilities were purposively sampled based on their direct provision of care to the under-fives. All health care workers who were present at the time of data collection and were providing care directly to the under-fives were included in the study. A total of 21 health workers including 3 clinical officers and 18 nurses were included in the study.

3.5.4 Sampling of Care-givers of Under-fives

Communities (Tier1), served by the sampled health facilities were included in the study. Under the community strategy, each location functions as a community unit (CU). The population of the under-fives in each location was obtained from the Community Based Health Information System (CBHIS) chalk board which was available in each facility. This chalk board provided demographic data on the community served by the facility and it was managed by the CHVs supervised by the Community Health Extension Workers (CHEWs) working in the facility (MOPHS, 2011b).

Table 3: Proportion of care-givers of under-fives considered per community unit

Location (Community Unit)	Under-fives	Proportion	Care-givers of under-fives
East Kolwa	2137	22.71	52
Kajulu East	2150	22.85	53
Kolwa Central	1481	15.74	36
West Kolwa	2141	22.75	52
Korando A	1499	15.93	37
Total	9,408		230

The community strategy outlines that each Community Unit should have 50 CHVs and 2 CHEWs. Each CHV is responsible for 20 households or 100 individuals (MOPHS,

2011b). The CHVs provided a list of households with under-fives for each community unit; this list was used in developing the sampling frame for each community unit. Simple random sampling was then used in selecting care-givers of under-fives who participated in the study proportionately as shown in table 3. Care-givers who had more than one under-five children were listed only once in the sampling frame and data was collected from them with reference to the youngest child in that particular household.

3.5.5 Sampling of Community Health Volunteers

All the five community units served by the sampled health facilities were included in the study. Table 4 shows a list with number of active CHVs in each community unit as were provided by the CHEWs. The table also indicates the total number of CHVs who participated in FGDs per community unit. The CHVs were purposively selected for inclusion in the study guided by their attachment to an active community unit and their direct involvement with activities targeting the under-fives. A total of 52 CHVs participated in the FGDs.

Table 4: List of Community Health Volunteers

Community Unit	Number of active CHVs	Number of CHVs who participated in FGDs
East Kolwa	12	12
Kajulu East	22	09
Kolwa Central	15	09
West Kolwa	12	12
Korando A	10	10
Total	71	52

3.6 Inclusion and Exclusion criteria

The inclusion and exclusion criteria used in this study follows:

3.6.1 Inclusion criteria

1. Care-givers of under-fives who had lived in the study area for at least six months before the study and if child was less than 6 months old, they must have been born in the study area.
2. Tier 2 health care facilities in the selected locations that provided under-five care.
3. Health care workers in the sampled health facilities who were providing care directly to the under-fives.
4. Active CHVs attached to the child health programmes in the selected health care facilities and were providing care to the under-fives.
5. Under-five care-givers, health care workers and CHVs who voluntarily consented to participate in the study.

3.6.2 Exclusion criteria

1. Care-givers of under-fives who had not lived in the study area for at least six months before the study and if child was less than 6 months old, they had not been born in the study area.
2. Tiers 3 and 4 health care facilities in the selected locations.
3. Health care workers in the sampled health facilities who were not providing care to the under-fives.
4. CHVs not attached to child health programmes and not providing care to the under-fives.
5. Under-five care-givers, health care workers and CHVs who declined to consent to participate in the study.

3.7 Data Collection Tools

3.7.1 Care-giver Questionnaire

A structured questionnaire was used to collect data from the care-givers of under-fives (see appendix A-III). The questionnaire was divided into four main sections as follows: section 1 targeted demographic data for both care-giver and the under-five child. Section 2 addressed child health indicators. Section 3 and 4 captured child health practices and Environmental health, water and sanitation respectively. The questionnaire was self-administered but six research assistants were trained to help in data collection where the care-giver was not able to do it themselves such as when the care-giver was not able to read and write. All the 230 questionnaires were distributed and administered to the care-givers through the research assistants. The questionnaire was in English and also translated to Kiswahili.

Out of the 230 distributed care-giver questionnaires only 206 were completed correctly and therefore formed data used during data analysis.

3.7.2 Health Facility Check List

A checklist was used for the assessment of the health facilities (see appendix A-II). The checklist was developed guided by the Kenya Service Provision Assessment Survey that was done in 2007 (NCPD, 2012). The checklist had four sections including general section on the facility with regard to under-five care, available equipment and supplies, medications and child health services that targeted the under-fives.

3.7.3 Key Informant Interview Schedule

Key Informant Interview (KII) is a technique designed to elicit a vivid picture of the participant's perspective on the research topic and is usually conducted face-to-face involving one interviewer and one participant (Mack *et al.*, 2005).

A non-structured interview schedule was used to collect data from the health care workers through face to face in-depth interviews (see appendix A-IV). The KII schedule was used to collect data from health care workers who provide care directly to the under-fives. The method was used to explore the types of under-five health care interventions and how they were provided. The Knowledge, attitude and practices of under-five health care interventions and the challenges of implementing these services were also explored. The KIIs were conducted by the researcher to eliminate fluctuations in the data that would result due to differences in when and how the questions were asked (Bordens & Abbott, 2011). A total of 21 Key informant interviews were conducted and recorded.

3.7.4 Focus Group Discussion Guide

Focus Group Discussion (FGD) is a qualitative data collection method which helps researchers to learn the social norms of a community or sub-group, as well as the range of perspectives that exist within that community or sub-group. Focus groups are often used to determine what service or product a particular population wants or would like to have. Findings from FGD indicate group opinion, thus the method is well suited for socio-behavioural research that will be used to develop and measure services that meet the needs of a given population (Mack *et al.*, 2005).

In FGDs one or two researchers and several participants meet as a group to discuss a given research topic and the discussions are led by one researcher (moderator) while a second researcher (the note-taker) takes detailed notes on the discussions. These sessions are usually tape recorded and sometimes videotaped. The number of participants in an FGD is eight to ten people, with a maximum of 12. Eight participants provides an opportunity to generate rich discussions while a group greater than 12 is too large to manage and some participants may be left out (Mack *et al.*, 2005).

In this study the discussants were divided into groups of between 8 to 12 participants drawn from the same location (community unit). A Focus Group Discussion (FGD) guide with predetermined questions was used to conduct the discussions (see appendix A-V). The FGDs were used to explore the knowledge, attitude and practices of under-five health

care interventions and the implementation challenges among the CHVs. The FGDs were conducted by the researcher and a recording of the discussions was also done. The researcher used one of the research assistants who acted as the observer and note taker. A total of 52 CHVs participated in the five FGDs (see table 4 for number of participants per FGD).

3.7.5 Pre-testing

Pre-testing of the research instruments was done in one of the locations (Manyatta 'B') that were not to be included in the main study. During the pre-test data was collected over a period of one week. The researcher analysed the data to determine whether the research tools if used would lead to achievement of the research objectives. The pre-test findings were used to modify the content, question structure and sequencing of the questionnaire. The pre-test findings were not included in the statistics of the main study.

3.8 Reliability and Validity

Reliability is the extent to which a test or procedure will produce similar results under constant conditions (Bell, 2010). In this study reliability was ensured through pre-testing of the research instruments after which review of the tools was done guided by the pre-test findings.

Validity in research is the extent to which the research instrument measures what it is intended to measure, the design selected should be able to provide credible conclusions (Bell, 2010). The research assistants were trained on the data collection tool and how to administer it. The researcher also ensured validity through triangulation of methods whereby both quantitative and qualitative data was collected. Triangulation and complementarity was further used during analysis whereby the quantitative data was compared with findings from the qualitative data either to support or determine points of contradictions (Hesse-Biber, 2010). Content validity was ensured through consultation with the supervisors who provided expert opinion on the data collection tools.

3.9 Data Collection Procedures

Data collection was conducted from 1st March 2014 to 30th August 2014. Six research assistants were trained on data collection procedures. The research assistants were used to collect data using the questionnaires administered to the care-givers. Health facility assessment, KIIs and FGDs were conducted by the researcher herself.

Mixed methods approach was used in data collection, both quantitative and qualitative data was collected, analyzed and integrated to address the research questions (Creswell, 2013). Data collection was done sequentially with quantitative data being collected first followed by qualitative data.

Health facility assessment was done first for all the 18 health facilities that participated in the study. The health care worker who was in charge of the selected facility was interviewed guided by the checklist. The facility assessment included physical identification of the commodities, supplies and equipment and confirmation of their availability and whether they were functioning. Data collection from care-givers of under-fives within the catchment area of the selected health facilities then followed. Next, KIIs with the health care workers followed by FGDs with CHVs were done. A total of 21 KII were done with health care workers at their work stations while 5 FGDs were conducted at an agreed upon site in a selected link health care facility where the CHVs held their monthly meetings. Both the KIIs and FGDs were conducted in English and recorded.

Documentation of the proceedings during the KIIs and FGDs was also done to include any non-verbal communications or any other occurrence that was relevant to the data collection but could not be captured in the recording.

3.10 Data Analysis

3.10.1 Quantitative data analysis

Data cleaning was the first step whereby detailed evaluation of the completed questionnaires was done. Any questionnaire that was incomplete or was completed incorrectly was removed from the rest and not included among the ones that were analysed. From the 230 care-giver questionnaires only 206 were completed correctly and

as such comprised data for analysis. Quantitative data analysis was done using Statistical Package for the Social Sciences (SPSS) version 17.0. Descriptive statistics using frequencies and percentages were used in data analysis. Chi-square test was also used to assess any significant associations between variables. The results are presented in graphs and tables.

3.10.2 Qualitative data analysis

Theoretical thematic analysis approach was used to analyse qualitative data from the Key Informant Interviews and the FGDs. This approach involved identifying, analysing and reporting patterns within data guided by the research objectives and the conceptual framework of the study (Braun & Clarke, 2006). The six phases of thematic analysis of qualitative data as described by Braun and Clarke (2006) were adopted (table 5).

Table 5: Phases of Thematic Data Analysis

	Phase	Description
1.	Familiarization with data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas
2.	Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code
3.	Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme
4.	Reviewing themes (Level 1)	Checking if themes work in relation to coded extracts and the entire data set (level 2), generating a thematic 'map' of the analysis
5.	Defining and naming the themes	Ongoing analysis to refine the specifics of each theme and overall story the analysis tells, generating clear definitions and names for each theme
6.	Producing the report	The final opportunity for analysis: selection of vivid, extract examples, final analysis of selected extracts, relating back the analysis to the research question and literature, producing a scholarly report of the analysis.

Adopted from (Braun & Clarke, 2006)

The analysis began by listening to the tape recorded data which was then converted into transcripts. The researcher then read through the transcripts one by one to familiarize with the data and generate initial codes (see table 6 for extract of a transcript).

The KII transcripts were numbered according to the codes assigned to the key informants. Code KI₁ represented Key Informant one, coding was done subsequently up to KI₂₁ which represented the 21st informant.

Table 6: Extract of Transcript

<p>Health Facility X</p> <p>Informant KI₂</p>
<p>Interviewer: That is good, so explain your experiences with under-five health care interventions, what have you experienced?</p> <p>Interviewee: I'd say it's actually challenging in that most of these cases they come when they are severely ill and the challenges may be originate from the socio-economic status of the region and maybe infrastructure issues. So a mother will waste time going for herbal medication trying to manage the child from over-counter drugs but when it fails now they think of rushing this child to the clinic. It is a challenge or maybe a child with anaemia they will try everything from home then they come when they are very sick or very anaemic. One of the cases is that they present to the clinic when they are very sick or very ill.</p> <p>Then another problem in management especially for the in-patient you find that some of the parents have enrolled with the National Hospital Insurance Fund (NHIF) scheme or other insurance schemes like the Community Based Health Fund (CBHF) but other who can't afford that when you advise them for admission for better management of the child they tell you that they are not ready for admission. So you get a case you were to manage as in patient and you are trying also to manage as out-patient. It is actually a challenge.</p>

Coding then followed where labelling of concepts, activities or opinions that were relevant to the research objectives was then done. Guided by the research questions several codes were then put together to create categories/themes. The categories were then labelled and the most relevant to the study were used in writing the results (see table 7).

Table 7: Extract of Transcript with themes and Codes

Transcript	Themes/Sub-themes	Codes
<p>‘...most of these cases they come when they are severely ill and the challenges may be originate from the socio-economic status of the region and maybe infrastructure issues. So a mother will waste time going for herbal medication or trying to manage the child from over-counter drugs but when it fails now they think of rushing this child to the clinic [KI₂].’</p> <p>‘...within our catchment we have the issue of infrastructure, with the floods,...like if the mother was to bring a child on Friday and it rained on Thursday, she will have to wait until next week and maybe she will assume that “now that I never went last time, if I go there, there is no need”, [KI₂].’</p> <p>‘Sometimes we have had cases whereby the mothers stay long with the kids and they come to hospital with late presentation and they end up losing some of the kids [KI₂].’</p>	<p>UNDER-FIVE HEALTH CARE CHALLENGES:</p> <p>Socio-economic Poor infrastructure Floods</p> <p>Care giver health seeking behaviour:</p> <p>Use of herbal medication Over the counter drugs (self-treatment)</p> <p>Challenge:</p> <p>Lack of awareness to enhance adherence (Ignorance)</p> <p>Challenge: Late presentation to the facility</p>	<p>SE</p> <p>F</p> <p>HSB</p> <p>IG</p> <p>LP</p>

Table 8 shows the codes that were used in the FGDs representing each community unit.

Table 8: FGD Codes

Community Unit	FGD code
East Kolwa	FGD1
Kajulu East	FGD2
Kolwa Central	FGD3
West Kolwa	FGD5
Korando A	FGD5

3.11 Ethical Considerations

Permission to conduct the study was sought and given from the School of Health Sciences and Board of Post Graduate Studies. Ethical approval was granted by Jaramogi Oginga Odinga Teaching and Referral Hospital, Research and Ethical Review Committee. During data collection voluntary informed written consent, was obtained from all the study participants after detailed explanation of the purpose of the study (See appendix A-I for the consent and appendix D for copies of the approval letters).

The participants were not required to write their names in the data collection tool for maintenance of confidentiality. The health facilities and participants in the KIIs and FGDs were identified with codes to ensure anonymity and confidentiality.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter presents the findings of the study guided by the research objectives. Quantitative data analysis included 206 correctly completed questionnaires and 18 checklists that were used for health facility assessments. Qualitative data included 21 KIIs conducted with health care workers and 5 FGDs conducted with CHVs.

Quantitative data analysis was mainly descriptive and is presented in tables and graphs. Qualitative data was analysed thematically, coded (Lyons & Doueck, 2010) and presented guided by the research objectives.

4.2 Baseline Information about the Population

The section outlines demographic information concerning the care-givers, the under-fives as well as health care worker.

4.2.1 Socio-demographic characteristics of care-givers

Table 8 shows that majority, 63% (n=129) of the care-givers' age distribution fell between 19-30 years, 10% (n=21) of the care givers were 18 years and below while 2% (n=5) were 50 years and above.

The findings showed that 85.4% (n=176) of the care-givers were females, 79.6% (n=164) were married, 36.4% (n=75) had completed secondary education and above, 40.8% (n=84) derived their source of income from business while 84.5% (n=174) of the care-givers were mothers to the under-fives.

Table 9: Socio-demographic characteristics of care-givers

Variables		Numbers	Percent (%)	Chi-square	df	p-value
1.	Age in years			6.37	4	.173
	18 years and below	21	10			
	19-30	129	63			
	31-40	39	19			
	41-50	12	6			
	50 and above	5	2			
	Total	206	100			
2.	Gender			.196	1	.658
	Male	30	14.6			
	Female	176	85.4			
	Total	206	100			
3.	Marital status			2.15	4	.708
	Single	32	15.5			
	Married	164	79.6			
	Separated/Divorced	8	2.5			
	Widowed	5	2.4			
	Total	206	100			
4.	Level of Education			6.66	4	.155
	No education					
	Incomplete Primary education	7	3.4			
	Completed Primary education	67	32.5			
	Completed Secondary education and above	57	27.7			
	Total	75	36.4			
	206	100				
5.	Source of income			4.02	4	.404
	None	69	33.5			
	Farming	33	16.0			
	Business	84	40.8			
	Salaried	17	8.2			
	Others	3	1.5			
	Total	206	100			
6.	Relationship to child			6.14	4	1.74
	Sibling	8	3.9			
	Mother	174	84.5			
	Father	14	6.8			
	Grandparent	10	4.8			
	Total	206	100			

Level of significance $p < .05$

Chi-square test was done between care-giver demographics and child illness to determine if there was any significant association among the variables. The results as shown in table 9 indicate a p-value greater than 0.05 which was not statistically significant.

4.2.2 Socio-demographics of under-fives

This section outlines the demographic characteristics of the under-five children.

Table 10: Socio-demographic Characteristics of Under-fives

Variables		Number	Percent (%)
1.	Age in months (Range)		
	0-6	38	18.45
	7-12	34	16.50
	13-24	59	28.64
	25-36	40	19.42
	37-48	24	11.65
	49-60	11	5.34
	Total	206	100
2.	Number of siblings		
	0	71	34.5
	1	68	33.0
	2	41	19.9
	3	19	9.2
	4 and more siblings	7	3.4
Total	206	100	
3.	Number of under-five year old siblings in the family		
	0 sibling	81	39.3
	1 Sibling	85	41.3
	2 Siblings	30	14.5
	3 Siblings	7	3.4
	4 Siblings	3	1.5
	Total	206	100
4.	Child ill in the last six months before the study	151	73.3
	Yes	55	26.7
	No	206	100
	Total		
5.	Immunization Status of those above 1 year old	130	81.25
	Completed	30	18.75
	Incomplete	160	100.0
	Total		

Table 10 shows that 28.64% (n=59) of the under-fives were in the age bracket of 13-24 months and 33% (n=68) had one sibling. Among the under-fives, 41.3% (n=85) had one sibling aged below five years while 1.5% (n=3) had 4 of their siblings in the same age bracket. Among the under-fives who were one year and above 81.25% (n=130) had completed their vaccinations as per Kenya Expanded Program on Immunization (KEPI) schedule.

A multiple response question required the respondents to indicate the type of illness that was suffered by the under-five child within six months before the study. Findings (see table 11), showed that 49.1% (n=109) had suffered from malaria followed by diarrhoea at 36.0% (n=80). As cited below, the KIIs revealed that malaria was one of the common illnesses that under-fives presented with in the health facilities.

“Diarrhoeal diseases, that’s the first one, we have malaria and respiratory tract infections. Those are the most common (KII₃).”

Interpretation: *Common illnesses among the under-fives included diarrhoea, malaria and respiratory tract infections.*

Table 11: Association between illnesses suffered by child and occurrence of fever

Illness	Number	Percent (%)	Chi-square (x ²)	df	P value
Malaria	109	49.1	36.887	1	<.001
Pneumonia	24	10.8	.525	1	.469
Diarrhoea	80	36.0	1.238	1	.266
Others	9	4.1	.910	1	.499

Level of significance p<.05

The results showed that fever did not occur on its own as an ailment but was accompanied by other illnesses. Cross tabulation of fever against other illnesses identified by the care giver was done and chi-square test done at 5% level of significance between fever and the

other illnesses suffered by the under-fives in the last six months before the study. The chi-square test results as shown in table 11 indicate that for malaria the p value was $< .001$ and therefore these results are statistically significant and confirm that there is a significant association between occurrence of fever and malaria among the under-fives who were included in the study. Findings for pneumonia, diarrhoea and other illnesses indicated a p-value greater than 0.05 and were therefore not statistically significant.

4.2.3 Socio-demographic Characteristics of health care workers

Table 12 shows that 21 health care workers participated in this study as key informants and they included 18 nurses and 3 clinical officers who provided care directly to the under-fives. Majority, 33.3% (n=7) were aged between 25-29 years and 42.9% (n=9) had provided care for the under-fives for between 5 to 7 years.

Table 12: Socio-demographic Characteristics of Health Care Workers

Variables		Numbers	Percent (%)
1.	Age		
	25-29 years	7	33.3
	30-34 years	5	23.8
	35-39 years	2	9.5
	40-44 years	5	23.8
	45 years and above	2	9.5
	Total	21	99.9
2.	Qualification		
	Nurse	18	85.7
	Clinical Officer	3	14.3
	Total	21	100
3.	Years worked with under-fives		
	0-1 year	4	19.0
	2-4 years	4	19.0
	5-7 years	9	42.9
	8 years and above	4	19.0
	Total	21	99.9

4.3 Under-Five Health Care Interventions in Tier 1

This section outlines findings in relation to child health practices in tier 1. The study sought to identify availability and practice of MOH recommended under-five health care interventions, mainly, breastfeeding, child feeding, growth monitoring and interventions used when the under-five child had diarrhoea.

4.3.1 Breast Feeding Practices

Findings in this section describes the proportion of children below 6 months old who were on exclusive breastfeeding, children below 24 months who were still breastfeeding and time when breastfeeding was stopped for those who were below 24 months and were not breastfeeding.

4.3.1.1 Exclusive breastfeeding

The care-givers were asked to indicate if the child was on exclusive breast feeding. The findings showed that 68.2% (n=30) were on exclusive breastfeeding and 31.8% (n=14) were not. Note that children aged 0-6 months were only 38 in number yet those below six months and expected to be on exclusive breastfeeding together with those who were not added up to 44. This indicates that there were children above 6 months old who were still on exclusive breastfeeding.

A further finding as cited from FGD3 revealed that breastfeeding among children below six months was not practiced as it should.

‘Mothers are not breastfeeding the children as required. You find a child who is under six months who is already being given food (FGD).’

Interpretation: *Early weaning of children before they reached 6 months was practiced among care-givers in this study.*

The MOH policy on breast feeding requires that the child continues with breastfeeding even after weaning for up to and at least 24 months of age. The study required the respondent to indicate if the child who was below 24 months was still breastfeeding. Findings showed that 61.5% (n=80) of the under-fives below 24 months were still breast feeding, 38.5% (n=50) were not. The care-givers of children below 24 months who were not breastfeeding at the time of the study were asked to indicate at what age the child stopped breastfeeding. The findings revealed that 18.0% (n=9) stopped breastfeeding before six months of age, 38.0% (n=19) stopped between 6-12 months while the majority, that is, 44.0% (n=22) stopped breastfeeding between 12-24 months.

4.3.2 Child Feeding Practices

This section describes findings on what the child was fed on during last 24 hours before the study and what the care-giver would give a child who had diarrhoea.

Twenty-four hour food recall method was used whereby care-givers were asked to indicate what the child fed on in the last 24 hours before the study. The care-givers were to list exactly what the child fed on at breakfast, mid-day, in the evening and in between the meals. The researcher then placed the listed food items into food groups as shown in table 13. The findings revealed that 63.6% (n=131) of the under-fives in the study were fed on a carbohydrate food source in the morning, none (n=0) were fed on a combined food source containing carbohydrate, proteins and vitamins. At mid-day and evening, 28.2% (n=58) and 30.6% (n=63) respectively, derived their food sources from a combination of carbohydrate and proteins. In between the meals, 60.7% (n=125) were fed on carbohydrate only as their food source.

Table 13: 24-Hour Food Recall for the under-fives

Food Group	Morning Feed		Mid-Day feed		Evening Feed		In between meals	
	Number	%	Number	%	Number	%	Number	%
Carbohydrate only	131	63.6	57	27.7	57	27.7	125	60.7
Protein only	8	3.9	5	2.4	5	2.4	16	7.8
Vitamins only	0	0	1	.5	5	2.4	13	6.3
Carbohydrate and protein	38	18.4	58	28.2	63	30.6	10	4.9
Carbohydrate and vitamins	1	0.5	48	23.3	33	16.0	1	0.5
Carbohydrate, protein and vitamins	0	0	3	1.5	10	4.9	19	9.2
Breast milk	28	13.6	34	16.5	33	16.0	22	10.7
Total	206	100	206	100	206	100	206	100

The findings indicated that majority of under-fives in this study were fed on carbohydrate only as their food source. The FGD findings confirmed this and related the feeding practice to lack of food in the study area leading to under-fives being fed on one type of food mainly for the quantity and not the quality as cited below:

‘Malnutrition is very common. They (care-givers) give children one type of food that is the problem (FGDI).’

‘The main problem is lack of food, so what is important is as long as one can get something to fill the stomach even if it is not balanced, that is the main problem (FGDI).’

Interpretation: *Lack of food in the study area is the main cause of poor feeding practice among care-givers of under-fives whereby children are fed on only one food source.*

4.3.3 Interventions in diarrhoea

The study sought to determine what intervention was provided to under-fives when they suffered diarrhoea. This was a multiple response question that required the care-givers to indicate what one would give an under-five child who had diarrhoea. Of the responses, 38.5% (n=154) indicated oral rehydration salts, 18.8% (n=75) water with salt and sugar, 17.5% (n=70) indicated water, 12.5% (n=50) selected breast milk, 7.0% (n=28) tea and 4.5% (n=18) indicated porridge. Further findings showed that 0.5% (n=2) and 0.8% (n=3) indicated that they would give zinc and flagyl respectively to a child who had diarrhoea. The FGDs with the CHVs support these findings as cited below.

'.....the care-givers give ORS in case of diarrhoea but if this was not available then they would give boiled water with salt and sugar (FGD1 and FGD2).'

Interpretation: *ORS was the first option as an intervention for a child with diarrhoea but salt and sugar solution would be given where ORS was not available.*

4.3.3 Growth Monitoring

The care-giver was asked to indicate whether the child's weight had been taken within one month before the study. Findings revealed that of the under-fives, 70.4% (n=145) had been weighed while 29.6% (n=61) had not. These findings are supported by findings from KIIs as cited below.

'...they really relax (mothers); they don't bring their children after nine months for weighing. They disappear, until may be when the child is sick, is when they appear (KI10).'

Interpretation: *There is inconsistency in taking the under-fives to the health facility after nine months (according to KEPI schedule the child will have completed the required vaccines after nine months).*

4.4 Under-Five Health Care Interventions in Tier 2

This section presents findings on the types of under-five health care interventions provided in Tier 2. A health facility check list was used to identify the type of under-five health care services that were provided.

Table 14 shows that all 18 health care facilities that participated in the study provided immunization, care for the sick child and growth monitoring services for the under-fives. Fifteen of the facilities provide nutrition services while 3 did not and had to refer the under-fives to other facilities for nutrition services. Only 2 facilities provided home visits and defaulter tracing for the under-fives.

The findings further showed that all 18 facilities provided immunization services as part of the outreach programme targeting the under-fives. Half of the facilities operated from Monday to Friday and provided services for the under-fives during these days. An under-five seeking services in more than three quarter of these facilities would averagely wait for less than 15 minutes to be attended to.

Findings further showed that only 19.0% (n=4) of health care workers had received training on IMCI which is an integrated approach that was adopted by the MOH in 1999 for provision of care for the under-fives in all health care facilities in the country.

Table 14: Under-five Health Care Services

	Variables	Numbers	Percent (%)
1	Type of under-five interventions		
	Immunization	18	100
	Care of the sick	18	100
	Growth Monitoring	18	100
	Nutrition Services	15	83
	HIV care	9	50
	Home visits	2	11.1
	Defaulter Tracing	2	11.1
2	Outreach services for under-fives		
	Diagnostic	5	27.8
	Treatment	9	50
	Health Education	7	38.9
	Immunization	18	100
	Growth Monitoring	9	50
	Deworming	2	11.1
	Nutrition	4	22.2
3	Health facility operation days		
	Monday to Friday	10	55.5
	Monday to Saturday	2	11.1
	Monday to Sunday	6	33.3
	Total	18	100
4	Under-five health care service provision days		
	Monday to Friday	10	55.6
	Monday to Saturday	4	22.2
	Monday to Sunday	4	22.2
	Total	18	100
5	Immunization Days		
	Monday to Friday	11	61.1
	Other days	7	38.9
	Total	18	100
6	Average Waiting Time		
	Less than 15 minutes	14	77.8
	15-30 minutes	4	22.2
	Total	18	100

4.4.1 Integrated Management of Childhood Illnesses (IMCI) approach

Among the 18 health facilities included in the study 13 had IMCI charts or booklets and were using the IMCI approach in the care of the under-fives. This was supported by Key informant 4 who noted that in their facility they use IMCI protocol for the management of malaria, diarrhoea, growth monitoring, deworming and supplementation for care of the under-fives.

Integrated care for the under-fives requires that the child receives all the required services at one point. As cited by KI₂, implementation of integrated care for the under-fives was a challenge.

‘..we should be doing integration for under-fives services, but due to shortage of staff we are forced to see them in one room with the adults, sometimes leading to long waiting time for those mothers, if she has gone for immunization she will go queue there then come back for treatment, queue again so it is a challenge that needs to be addressed (KI₂).

***Interpretation:** Integration of services for the under-fives was not practiced as was expected due to staff shortage.*

4.4.2 Community Health Volunteer Linked to Child Health Services

Fourteen out of 18 health care facilities had a CHV linked to the child health services. This is important because one of the informants indicated that one way of improving uptake of under-five health care interventions by the community was to involve the CHVs in the care of under-fives. The findings further indicate that some under-fives in the study area are not able to access care due to factors such as long distance from the health facility, cost of care and cultural and religious practices. Linkage of the CHV to the health facility increases chances of reaching the hard to reach under-fives in the community.

Findings further reveal that the CHVs are attached to the Maternal and Child Health (MCH) clinic in the health facilities. The CHVs provide interventions such as health education, weighing the children, checking the clinic book to identify under-fives who have not completed their immunization and assessment for malnutrition as cited below.

'In the health facility we assess the children who could be under-weight and with malnutrition, we check on children who have not completed immunization and we also weigh them (FGD).'

***Interpretation:** Under-five activities performed by CHVs include weighing the children and checking progress on immunization.*

4.5 Knowledge, Attitude and Practice of Under-Five Health Care Interventions among Care-Givers

4.5.1 Care-givers' Knowledge on danger signs in a sick under-five

A multiple response question was used to determine the ability of the care-giver to identify danger signs for serious illness in children less than five years. As shown in table 15, the danger sign that received the highest response of 84.2% (n=170) was high fever/temperature. More than half of the danger signs were not identified by 50% of the care-givers (Table 15) indicating limited knowledge of danger signs of serious illnesses among the care-givers of under-fives.

Table 15: Care-givers' identification of Danger signs of serious illness in a sick under-five

Danger signs in a sick under-five child		Numbers	Percent (%)
1.	Difficult or fast breathing	108	53.5
2.	Repeated vomiting	109	54.0
3.	Not eating/not breastfeeding/not drinking	126	62.4
4.	Repeated watery stool	93	46.0
5.	Blood in stool	66	32.7
6.	High fever/temperature	170	84.2
7.	Getting more sick/very sick	61	30.2
8.	Not getting better	50	24.8
9.	Convulsions	99	49.0
10.	Difficult to wake or unconscious	70	34.7
11.	Severely malnourished	10	5.0
12.	Chest pain	1	0.5

4.5.2 Practice of under-five health care interventions among care-givers

Health practices among the care-giver which have an impact on the health status of the under-fives include ownership and use of mosquito nets, environmental and sanitation practices, hand washing, treatment of water to make it safe to use and finally waste management.

Table 16 shows that 81.6% (n=168) of the respondents owned a mosquito net, 79.1% (n=163) of the under-fives slept under a net while 79.1% (n=133) of the mosquito nets had been treated. Findings on latrine presence and use indicate that 91.3% (n=188) of the respondents had a latrine which was in use.

Further findings indicated that 54.9% (n=113) of the respondents had a functional hand washing facility. This was further confirmed by findings from the FGD as cited below.

'....many homes do not have a leaky tin for hand washing, you find that people share the same water in a basin to wash their hands (FGD4).'

Interpretation: *Some homes did not have a hand washing facility.*

Table 16: Under-five Health Practices among Care-givers'

Care-givers' Health Practices			
1.	Ownership and use of mosquito net	Yes	No
	Own Mosquito net	168 (81.6%)	38 (18.4%)
	Child sleeps under mosquito net	163 (79.1%)	43 (20.9%)
	Mosquito net is treated	133 (79.1%)	35 (20.9%)
	Environment and sanitation practices	Yes	No
	Latrine present and in use	188 (91.3%)	18 (8.7%)
	Functional Hand washing facility	113 (54.9%)	93 (45.1%)
2.	Solid waste disposal methods	Numbers	Percent (%)
	Burning	66	32.0
	Use of latrine	62	30.1
	Rubbish pit	49	23.8
	Bury	29	14.1
	Total	206	100
3.	Child's stool disposal methods	Numbers	Percent (%)
	Throw in latrine	183	88.8
	Throw in the bush	12	5.8
	Bury	11	5.3
	Total	206	99.9
4.	Hand washing	Numbers	Percent (%)
	After meals	177	87.6
	Before meals	193	95.5
	After changing baby's nappy	168	83.2
	Before preparing food	178	88.1
	Before feeding baby	173	85.6
	After toilet use	190	94.1
5.	Main water source	Numbers	Percent (%)
	Tap	89	43.2
	Protected well/borehole	55	26.7
	Roof	20	9.7
	River	20	9.7
	Protected spring	12	5.8
	Vendors	10	4.9
	Total	206	100
6.	Making Drinking water safe	Numbers	Percent (%)
	Use of chlorine based chemicals	111	53.88
	Boiling	57	27.67
	Filtration	3	1.46
	Nothing	35	16.99
	Total	206	100

Waste disposal is important in prevention of diarrhoeal diseases. The study sought to determine how the respondents disposed both solid waste and child's stool. On disposal of solid waste, burning and use of latrine were selected at 32.0% (n=66) and 30.1% (n=62) respectively. Rubbish pit was used by 23.8% (n=49) of the respondents. Among the respondents 14.1% (n=29) indicated that they buried their solid waste. Among the methods used by the respondents to dispose the child's stool included throwing in the latrine at 88.8% (n=183), throwing in the bush at 5.8% (n=12) and burying 5.3% (n=11).

In relation to hand washing a multiple response question was used to determine in which instances the care-givers washed their hands. Table 15 shows that hand washing before meals received most of the responses at 95.5% (n=193). Findings further revealed that 43.20% (n=89) of the respondents had the tap as their main source of water and 53.88% (n=111) used chlorine based chemicals to make their water safe for drinking. Of the respondents, 16.99% (n=35) of used their drinking water without any treatment.

4.6 Knowledge, attitude and practices of under-five health care interventions among Community Health Volunteers'

4.6.1 Knowledge on Under-five health care interventions

This section sought to determine the ability of CHVs to identify danger signs in a sick under-five child and also provide appropriate health education on under-five health care interventions. Danger signs in a sick under-five child were indicated as cited below.

'..danger signs in a sick under-five include a weak child, the child is always sleepy with no appetite and cries a lot; wheezing sound when breathing, the child has sunken eyes and very high fever and at times the child fits (FGD4).'

Interpretation: *The CHVs were able to correctly identify danger signs in a sick under-five child.*

The study also sought to determine the advice that was given to care-givers by CHVs on under-five health care interventions.

‘We advise the mothers to breastfeed the child exclusively without adding even water for the first six months and also what the child should eat after six months (FGD1).’

‘In case of the child has diarrhoea we advise the care-giver to use ORS or boiled water with salt and sugar where ORS is not available. We encourage the mother to continue with breastfeeding for a child who has diarrhoea and is still on breast milk (FGD2).’

Interpretation: *Appropriate advice was provided to under-five care-givers on breastfeeding and on interventions to use in case the child had diarrhoea.*

4.6.2 Attitude towards under-five health care interventions

The study findings indicate that most CHVs have a positive attitude towards provision of under-five health care services and they do this with a lot of joy as cited by discussants in FGD1. The positive attitude is also cited by FGD3 indicating that even after giving a referral letter to the under-five they ensure that the child is taken to the facility and receives care.

‘You find that you as a community health worker may conduct health education today and then tomorrow when you go to the same place you find that the community members are practicing what you had taught them. This is giving us a lot of joy (FGD1).’

‘...we give them referral letters so that they can be able to go to a health facility. After giving the referral letter we make sure that they come to the facility and get health care (FGD3).’

***Interpretation:** Most CHVs have a positive attitude towards under-five health care interventions*

Findings also revealed that some care-givers did not support the CHVs giving the reason that a lot of data is collected but they do not see the benefits. This lack of support has not discouraged the CHVs from continuing with their work of following up the under-fives, active case management and providing health education to the care-givers.

‘They say that we write their children’s names every time whenever a project comes up, ‘where do you take them’, you are not helping us with this work, but we try to explain to them that the government and us care for their children and that is why we are doing the follow-up (FGD3).’

***Interpretation:** Even with minimal support from care-givers the CHVs still continue with follow-up of under-fives in the community.*

4.6.3 Practices of under-five health care interventions

Table 17 shows that half of under-fives were visited by a CHV during the last one week before the study although 7.3% (n=15) had never been visited at all. A multiple response question sought to find out the type of health care interventions provided by the CHVs to the under-fives during the last visit. The health care interventions provided by the CHV included health education (64.5%, n=133), assessment of the child (34.4%, n=71), collection of health information (15.0%, n=31), Registration for nets (13.6%, n=28) and provision of treatment (10.2%, n=21). The above findings were confirmed during the FGDs where the CHVs noted that they are mainly involved in providing health education and creation of awareness in the community in relation to under-five health care interventions.

Table 17: Under-five health care intervention practices among Community Health Volunteers

1.	Under-five last visit by a CHV	Numbers	Percent (%)
	One week before the study	103	50.0
	Two weeks before the study	56	27.2
	One month before the study	32	15.5
	Never been visited	15	7.3
	Total	206	100
2.	Under-five health care interventions Provided by CHV during last visit	Responses	Percent (%)
	Health education	133	64.5
	Assessment of the child	71	34.4
	Collection of health information	31	15.0
	Net registration	28	13.6
	Treatment	21	10.2

During the FGDs the CHVs were asked to explain what their work entailed with particular reference to under-fives. Findings indicate that CHVs were involved in provision of under-five health care services in two levels, that is, in the community and secondly within health care facilities.

4.6.3.1 Under-five health care services in the community

In the community, the under-five health care interventions provided by CHVs included health education, follow-up of HIV exposed under-fives, defaulter tracing, treatment and assessment for malnutrition.

Discussants with FGD1 indicated that in the community the CHVs are mainly involved in health education to create awareness on importance of immunization, education on feeding practices that address malnutrition and also hygiene and sanitation. The CHVs also create awareness on preventive interventions such as ensuring that the under-fives sleep under a treated mosquito net.

‘...we teach these mothers on the importance of taking the children for immunization and how to address issues of malnutrition among these children (FGD1).’

Interpretation: CHVs work mainly entail health education on immunization, malnutrition and importance of sleeping under a treated mosquito net.

The CHVs play an important role in follow up of under-fives born to HIV positive parents.

‘...there are those who were born unwell, they are HIV positive, this is the group that we deal with a lot. We take the responsibility of following up these children and ensure that they turn HIV negative, they are not positive like the parents (FGD1).’

Interpretation: CHVs’ work entails follow-up of HIV exposed children.

Findings further indicated that the CHVs also identified immunization and ARV defaulters and referred them to the health facility.

‘...we check on defaulters, those who are not moving well with immunization we also refer, we also bring ARV defaulters to the hospital that is our work as CHVs (FGD2).’

Interpretation: CHVs also function in tracing immunization and ARV defaulters and refer them back to the health facility.

It is also important to note that CHVs reported that sometime back the health facilities used to provide them with drugs to dispense in the community as cited by the discussants during the FGDs. The CHVs noted that they were able to provide treatment for the under-fives before referring them to the hospital.

‘Sometime back they used to give us drugs which we used to go with to the community. Such as the painkillers, ORS.....and some drug for stomach ache (FGD3).’ Before referring to the hospital we can use painkillers to reduce the fever (FGD1).’

Interpretation: *CHVs provide first aid or treatment of minor ailments at the household level before referring the child to the health facility.*

Further the CHVs were asked to explain what interventions they would provide for an under-five who had an ear infection and cough, discussants responded as cited below.

‘...advise the mother to get the panadol and the septrin if it’s there (FGD5).’

‘...with cough septrin is the best; because you might find the child is in danger at night you can advise the mother on septrin or panadol but normally septrin or amoxyl will help the child (FGD5).’

Interpretation: *The CHVs would advise care-givers to administer antibiotics to the under-five who had cough or ear infection and this is not within their mandate.*

Study findings showed that the CHVs had been empowered with knowledge and skills on under-five health care interventions through the different trainings they had attended.

‘The workshops we have attended include training on nutritional care for under-fives where we were taught how to assess a child for malnutrition and we were given MUAC tapes (FGD4 and FGD5).’

Interpretation: *The CHVs have been trained on nutritional assessment among the under-fives.*

4.7 Health Care Workers’ Knowledge, attitude and practices of Under-Five Health Care Interventions

4.7.1 Knowledge on under-five health care interventions

As shown in table 18, findings indicate that four facilities had none of the health care workers trained on under-five health care interventions while five facilities had four and more health workers trained on under-five health care interventions. Among the health

care workers included in the study only 19.0% (n=4) had been trained on IMCI, an approach that was adopted by the MOH in 1996 for care of the under-fives. Majority of the respondents 38.1% (n=8) had received training on infant and young children feeding; only 1 health worker had been trained on emergency care and interventions on dehydration for the under-fives. When asked whether they had received any specific training on the care of under-fives informant KI₇ noted that she had not gone for any training.

'I have worked here for three years and I have not gone for any training (KI₇).'

Interpretation: *The health care worker provides care for under-fives with no specific training.*

Table 18: Health care workers trained on under-five health care interventions

1.	Number of trained Health care workers	Number of health facilities	Percent (%)
	0	4	22.2
	1	4	22.2
	2	1	5.6
	3	4	22.2
	4 and more	5	27.8
	Total	18	100
2.	Type of Training undertaken	Number of health care workers	Percent
	Integrated Management of Childhood Illnesses (IMCI)	4	19.0
	Care of HIV exposed under-fives	5	23.8
	Infant and young child feeding	8	38.1
	Expanded Programme on Immunization	2	9.5
	Interventions on Dehydration	1	4.8
	Emergency care of under-fives	1	4.8
	Total	21	100

4.7.2 Attitude towards under-five health care interventions

Findings from the KIIs revealed that the attitude of the health care workers at times contributed towards low uptake of under-five interventions. Lack of good inter-personal

skills kept away some care-givers due to the mistreatment that they at times received from some health workers as cited by KI₄ and KI₉.

'...they fear going after the date has passed because they say they will be thrown for the books, they will be turned away, they will be quarrelled (KI₄).'

'....we should change our attitude towards our patient (KI₉).'

Interpretation: *Negative attitude of health care workers prevents care-givers from taking the under-fives to the health facility.*

4.7.3 Practices of under-five health care interventions

Findings showed that IMCI approach was used by the health care workers in providing care for the under-fives as cited by KI₄.

'In our facility we use IMCI protocol for the management of malaria, diarrhoea, growth monitoring, deworming and supplementation for care of the under-fives (KI₄).'

Interpretation: *IMCI approach is used in some facilities for provision of care for the under-fives.*

Health facility assessments showed that 13 out of 18 facilities had IMCI charts and booklets; 80.9% (n=17) of health care workers had not been trained on IMCI and therefore were not able to practice it.

4.8 Resources for Implementation of Under-Five Health Care Interventions in Tier 1 and 2

Health facility assessment check list was used to identify resources that were available for the provision of care for under-fives at the time of the study. The resources were grouped into three categories, that is, commodities, vaccines and medication as indicated in table 19.

Table 19: Resources for provision of under-five services

RESOURCES	AVAILABLE	
	YES	NO
1. Commodities		
1. Working weighing scale	18	0
2. Supplies to mix ORS	18	0
3. Clean source of water	18	0
4. Child vaccination cards	18	0
5. Syringes and needles for vaccination	16	2
6. IMCI chart or booklet	13	5
7. Policies on under-five interventions	18	0
8. Functioning sterilizer	14	4
9. Functioning fridge	18	0
10. Ice packs and cold boxes	18	0
2. Vaccines		
1. BCG	18	0
2. Polio	18	0
3. Pentavalent	18	0
4. PCV10	18	0
5. Rota Virus vaccine	0	18
3. Medications		
1. Antibiotics for under-fives	18	0
2. Anti-malarial for under-fives	14	4

The findings showed that 2 health facilities did not have syringes and needles for immunization, 5 lacked IMCI charts or booklets and 4 lacked a functioning sterilizer. All 18 health facilities had the following vaccines: BCG, Polio, Pentavalent and PCV10. None of the facilities had Rota virus vaccine at the time of the study. Among essential medications for under-fives, all 18 facilities had required antibiotics while 4 did not have any anti-malarial for use among under-fives.

The above findings were confirmed during the interviews and FGDs and were cited to be a barrier to the provision of under-five health care interventions both in the community and health care facilities. It further affects effective implementation of some programmes targeting the under-fives as cited below.

‘...nutrition programme is the most affected in relation to stock outs and the under-fives enrolled in this programme have to face a lot of interruptions (KI₁₃).’

‘Sometime back they used to give us drugs such as painkillers, ORS and doxy for stomach ache which we used to go with to the community. So now we do not have these drugs and the community also is not very welcoming, it’s like they are expecting something from us which we have declined to give, they do not see what we can help them with (FGD2).’

Interpretation: *Lack of drugs and supplies is a barrier to the implementation of under-five health care interventions both in the community and in the health facilities.*

4.9 Under-Five Health Care Challenges in Tier 1 And 2

This section presents in detail findings addressing specific objective 4 that sought to identify under-five health care access and implementation challenges in tier 1 and 2 in Kisumu East sub-County. The KIIs and the FGDs revealed that implementation and access of under-five health care interventions both in tier 1 and tier 2 faced numerous challenges. The researcher thematically grouped these challenges under 3 main categories guided by the conceptual framework of this study, that is, the broader environment, household & community practices and health facility challenges.

4.9.1 Under-five Health Care Access Challenges

Findings revealed that the under-fives were not able to access essential health care interventions due to challenges such as cost, infrastructure, household and community practices and health facility challenges.

4.9.1.1 Challenges in the Broader Environment

4.9.1.1.1 Cost of care

This section addressed the ability of the under-five to access health care due to cost. The care-giver was asked to indicate how much the cost of treatment of the under-five was when the child was last sick within 6 months before the study.

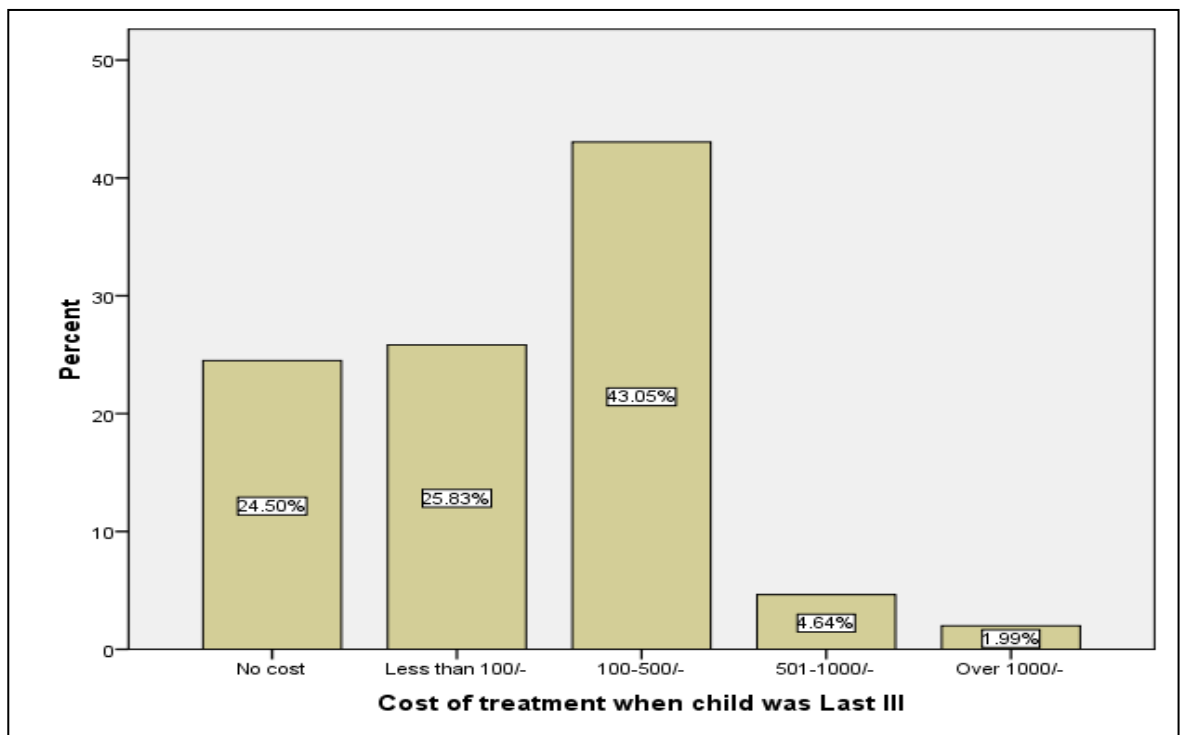


Figure 10: Cost of Treatment when child was last ill

Findings as shown in figure 9 indicated that care-givers who did not spend any money were 24.5% (n=37), those who spent less than Kenya Shillings 100 were 25.8% (n=39), 43.0% (n=65) spent between 100-500 shillings, 4.6% (n=7) spent between 501-1000 shillings and 2.0% (n=3) spent more than 1000 shillings.

It is important to note that the government policy provides for free health care for the under-fives in all public health care facilities while some services such as immunization are also provided without pay by the private and faith based facilities. Figure 10 shows that only 24.5% of the under-fives received free care within six months before the study while majority, that is, 43.05% spent between 100 and 500 Kenya shillings.

The KIIs and FGDs revealed that some under-fives were not able to access care due to cost and they related this to the poor socio-economic status of the region. The findings further showed that inability to afford health care also dictated whether the under-five child would be admitted for care or not as cited below.

‘...when you tell a mother to pay 50 shillings for amoxyl they feel that it’s too high (KI₁₁).’

‘...others who can’t afford health care when you advise them for admission for better management of the child they tell you that they are not ready for admission (KI₁₆).’

Interpretation: *Some under-fives were not able to access care because their care-givers were not able to afford.*

Further findings showed that diversification of financial payment options of health care services offered by the neighbouring facilities influenced the access of care by under-fives. As cited by KI₃, Output Based Approach (OBA) scheme targeting pregnant mothers and post natal period offered in a neighbouring facility had led to low uptake of immunization services in their facility while more clients sought the under-five services in the other facilities

‘...immunization the uptake in our facility it is low but mostly because there is this OBA scheme and it is used in health facility X, so once these women take that card they go there they deliver then they are told to use that card for six weeks so

most of them just continue with the immunizations there, so in our facility the uptake is low.. (KI₃).’

Interpretation: *Addressing financial costs of care through use of different schemes such as OBA helps to increase uptake of health care interventions by the under-fives.*

4.9.1.1.2 Infrastructure

The ability of the under-five to access the health facility is determined by the distance from the facility and the infrastructure of the area as shown by findings from this study. The respondents were asked to indicate how long it took them to walk to the nearest health facility. Slightly more than half of the respondents, (54.4%, n=112) indicated that it took less than 30 minutes, (37.9%, n=78) took 30 minutes to 1 hour while 7.8% (n=16) took more than 1 hour to walk to the nearest health facility. The findings also revealed that one facility in the study was in an area that was prone to floods which was cited as an impediment to taking under-fives to the health facility during the rainy season.

The discussants revealed that facilities and community units that had big catchment areas could not be reached easily by the community members and therefore under-fives in such areas could only be reached during active case finding by the CHVs. Because of the distance the care-givers would take the child to the health facility once identified by the CHVs and not return for follow up. Inaccessibility to care due to the infrastructure and distance was even more difficult because none of the health care facilities had an ambulance for use during an emergency.

‘...this facility has a big catchment area so there are some areas we only reach after active case finding. So the mother comes and then disappears. When we go back on the ground and you find the mother when you ask, the reason they give is the distance to the health facility (FGD4).’

‘Currently we have no ambulance for referral in case of referral to the extent that the mother will have to carry the child up to the main road. It is far, so if an ambulance was in place it would be better we would not have deaths (KI₁₀).’

Interpretation: *Distance influences accessibility of health care services by the under-fives, the further the health facility the more difficult it is for the child to access the services. Lack of ambulance also is a challenge when under-fives have been referred to care in another health facility.*

4.9.1.1.3 Institutional policies and protocols

The findings revealed that some health care facilities did not provide some services as it went against their values. These services may be a major component of achieving effective implementation of under-five health care programmes as cited by KI₂.

‘We do not provide family planning but just the health education then we refer the clients to other facilities for the services; we are not sure if they go where we refer them. FP helps under-fives to access services as a mother who has not planned her family and has more children will not be able to bring them to the health facility (KI₁₀).’

Interpretation: *There is no follow up by facilities to ensure that referred clients actually access the services that they do not provide. Lack of family planning makes it difficult for the mother to take the children to the health care facility.*

4.9.2 Household and Community Challenges

4.9.2.1 Level of Awareness

The study findings showed that lack of awareness or low level of awareness on the need to take the child to the health facility and the type of health services available was a challenge in the implementation of under-five health care services in the study area. As

cited by KI₁₇, some care-givers did not understand when the child was referred to a higher tier. This was supported by discussants in FGD1.

‘...if we refer very sick children sometimes the mothers do not understand why we do so. They just want to be attended to here and then go back home and there are some cases that we cannot handle at our level we therefore have to refer... (KI₁₇).’

‘.....the main problem in the community with regard to uptake of under-five care is lack of awareness among care-givers (FGD1).’

Interpretation: *The main challenge of access to care by the under-fives is lack of awareness on available health care services among care-givers.*

4.9.2.2 Beliefs and Cultural Practices

Some beliefs and cultural practices among care-givers of under-fives led to delay in accessing health care and in some instances not accessing health facility at all this was further complicated by myths and misconceptions related to under-five health care interventions as cited below.

‘...the community regard malnutrition as “chira” which is a curse.some of them (care-givers), believe that the children are bewitched when they fall sick and they do not take them to the hospital (FGD1).’

‘Some mothers believe that food given to the children in the hospital is for people who are HIV positive (FGD2).’

‘....there are some churches that do not allow their followers to go to hospital. They don’t even allow them to be immunized (FGD4).’

‘...there are some who go to churches that believe that children should not be immunized; taboos such as when the child is suffering from measles they should

not cross the road coming to the hospital. The children should not be bathed; they give local medicine and keep them in the houses (KI₉).'

Interpretation: *The care-givers' cultural and religious beliefs and practices prevent some under-fives from accessing care.*

Discussants in FGD2 noted that another challenge related to under-five care was that some parents who had malnourished children would hide them.

'You may go to the field and find very malnourished children and the parents hide them and if you are not very keen you may not know that there is a child who needs care who has been hidden in the house. The mother insists on talking to you at the door, yet the child is hidden in the bedroom (FGD2).'

Interpretation: *Increasing access to care by under-fives requires door to door case finding as some are hidden in the house by the care-givers.*

4.9.2.3 Health seeking behaviour

Care-givers were asked to indicate where treatment for the under-five was sought when the child was last ill. Findings indicate that 3.95% (n=6) of the care-givers did not seek any treatment the last time the child was sick, 82.9% (n=126), sought care from the health facility, 2.0% (n=3) sought treatment from a CHV. One point three percent of the under-fives were attended to by a traditional healer, 9.2% (n=14) were self-medicated while 0.7% sought faith healing.

The results showed that some care-givers took the sick under-fives to the health facility when it was late leading to death of some children.

'....cases have been brought in may be after fever of two or three days when we do malaria test it turns out to be three pluses of malaria. We have lost some children because they were brought in late (KI₁₀).'

Interpretation: *Poor health seeking behaviour among the care-givers led to late presentation in the facilities and sometimes death of the under-fives.*

Other poor health seeking behaviour among care-givers included use of herbs and over the counter drugs.

‘Some (care-givers) use herbs and others buy drugs from the chemist. When the herbs and drugs fail is when they take the children to the hospital, usually when it is very late.’

Interpretation: *Use of herbal treatment and over the counter drugs delayed seeking appropriate care for the under-fives.*

4.9.3 Challenges in implementation of under-five health care interventions

These are findings related to challenges experienced by health care workers and CHVs while providing under-five health care interventions both in the health facility and in the community. The challenges of implementing under-five health care interventions under this category include lack of drugs and supplies, referral system challenges and understaffing.

4.9.3.1 Lack of drugs and medical supplies

The study findings showed that lack of drugs and medical supplies is a barrier to the provision of the under-five health care interventions. Frequent stock outs were noted to pose as a challenge in provision of care for under-fives. As noted by key informant 2, the care-givers brought the children to the health facility but since there were no drugs, when they were given the prescriptions they would not be able to buy the drugs. This was also confirmed by discussants in FGD4.

‘...like now that we don’t have enough drugs when you prescribe, you send them to buy they don’t buy. So they do come to the hospital but they are not buying the drugs (KI₆).’

‘.....yes care-givers take the child to the facility and the child is treated for free but that facility may not have drugs so they still need to buy the drugs yet they do not have money (FGD4).’

Interpretation: *Under-fives are taken to the health facilities but when there are no drugs they cannot access treatment as their care-givers are not able to afford.*

Lack of drugs and supplies were noted to affect the implementation of some health care programmes for the under-fives as cited below.

'Children in the nutrition programme are the most affected by stock outs and the under-fives enrolled in this programme have to face a lot of interruptions (KI₂).'

'...as a facility we do not have Isoniazid to give the child if the mother is TB positive..... (KI₂).'

'Diagnostic services such as for malaria are also affected, our facilities not have laboratories and we use Rapid Diagnostic Test (RDT) kits and they are not always there (KI₆).'

Interpretation: *Lack of drugs and supplies affected implementation of some under-five health care interventions mostly the nutrition, TB and malaria programmes.*

Stock outs not only affected drugs and health commodities but some facilities also reported lack of vaccines. The health facility assessments showed that none of the health facilities had rota-virus vaccine in stock at the time of the study.

4.9.3.2 Poor Referral system

Tier two health facilities in Kenya include dispensaries, health centres, maternity homes and clinics. The infrastructure in these facilities is limited and therefore they do not have capacity to handle emergencies. In case of emergencies the child is just stabilised and then referred to a higher tier for specialised care. This was confirmed by key informants 3 and 10. Lack of or poor referral systems in the health facilities coupled with unavailability of

transport were cited as challenges in the implementation of essential under-five health care interventions.

‘The problem comes in when we receive a critically ill child...because the referral system is not good (KI₃).’

‘Currently we have no ambulance in case of referral the mother will have to carry the child up to the main road and it is far,....(KI₁₀).’

Interpretation: *Implementation of under-five health care interventions in the health care facilities faces challenges of poor referral systems and lack of transport.*

4.9.3.3 Under Staffing

Findings revealed that under-staffing was a major challenge that resulted to provision of disintegrated care for the under-fives in some facilities. The care-givers as a result were forced to queue for long and at different points while seeking services for the under-fives. Further, provision of disintegrated care demotivated care-givers from accessing care for under-fives due to long queuing. The under staffing in the health facilities contributed to health workers not going to the communities to give health talks; health education was therefore provided when the clients were waiting to be served in the health facilities. This meant that those who did not go to health facilities did not benefit from the health talks.

‘We give guiding information through health talks. But not always, we do have challenges of staffing, we don’t have stand-by staff to go to the community to give health talks..... (KI₂).’

Interpretation: *Health talks are provided in the facilities and in the communities but not always due to under-staffing.*

4.9.3.4. Negative Attitude of Health Care Workers

Attitude of health workers was cited as one of the reasons why some care-givers would not take their children to the health care facilities.

'...some are also citing that when they do not manage to keep the return appointment date given to them, they fear going back to the health facility, because they will be turned away, they will be quarrelled and in some instances the clinic books are thrown at them (KI₄).'

***Interpretation:** Negative attitude of health care workers instils fear in the care-givers especially when they do not keep the appointment date.*

4.9.3.5 Non-compliance to treatment and advice

Another major challenge in provision of under-five health care interventions occurs when dealing with HIV positive clients. Compliance to treatment and feeding advice has faced a major challenge as noted by KI₆. This is even worsened by issues of stigma in HIV whereby the mother does not share her HIV status with the husband and therefore is not able to give the child the treatment as required in the presence of the husband.

'...when we give the Niverapine at times they don't give because we normally tell them to bring whatever is remains in the next clinic visit. But when she comes she will tell you, I still have some, that she has not carried the remaining so you doubt whether she is giving it well (KI₆).'

***Interpretation:** Non-compliance to treatment regimen for HIV exposed children is a challenge.*

4.9.3.6 Community Apathy

The FGDs revealed that community apathy was being witnessed among some community members.

‘Some community members feel that there were many studies collecting household details particularly of under-fives and they are not receiving any assistance in return. They are wondering where all that information is being taken and what it was being used for (FGD5).’

Interpretation: *Some community members expect compensation from studies targeting the under-fives.*

4.9.3.7 Early Childhood Day Care Enrolment

As noted below some parents took their children at a young age to day care centers even before attaining three years.

‘Children as young as six months old are already in day-cares. It’s a big challenge because the care-givers do not take these children to the health facilities when they are supposed to and there are no health programmes targeting the child in these centers (KI7).’

Interpretation: *Early childhood day care enrolment is a challenge to implementation of under-five health care interventions.*

CHAPTER FIVE: DISCUSSION

5.0 Introduction

This chapter discusses in detail the study findings. The discussion begins with a brief outline of the findings; interpretation of the findings with support from existing and related studies then follows. The chapter begins by an outline of care-giver and child demographics. Secondly knowledge, attitude and practice of under-five health care interventions among care providers. The chapter ends with the discussion of under-five health care interventions access and implementation challenges.

5.1 Socio-demographics of care-givers

Findings revealed that majority 85.4% (n=176) of the care-givers were mothers of under-fives and 63% (n=129) had their age between 19-30 years. Further the socio-demographic characteristics of care-givers in this study were not shown to influence occurrence of illness among under-fives.

These findings are consistent with findings from a study conducted by Makworo and Laving (2010) that showed that most of the care-takers in their study were their mothers at 89.8% while the fathers were 2.3%. In a similar study by Okafor & Odeyemi (2012), 71.2% of the respondents were their mothers while 11.8% were their fathers. Living with non-biological parents has been shown to be one of the factors that leads to delay in care-seeking among the under-fives (Kassile *et al.*, 2014). Similar studies also show that age of mother at first birth influence child morbidity and mortality. The age of the mother influences under-five mortality, the more mature the woman the lower the child mortality (Bello & Joseph, 2014).

Findings on the level of education of the care-givers showed that, 36.4% (n=75) had completed secondary education and above. Related study findings indicate that the more the educated the mother, the lower the risk for under-five mortality (Goro, 2007; Kwabena, 2011; Masuku-Maseko & Owaga, 2012). These findings are consistent with a similar study conducted in Nepal which indicated that 66% of the mothers of under-fives who had participated in the study had either lower secondary or secondary level education

(Acharya *et al.*, 2014). A similar study conducted in Ethiopia by Kumar and File (2010) in Ethiopia revealed that mother's education had substantial impact on child mortality. The study concluded that an increase in mothers' education is significant in reducing child mortality. This is supported by (Negera *et al.*, 2013) who affirms that more education for the mother is associated with lower risk of child death. Further findings from a study conducted by Goro (2007) in Ghana showed that children born to mothers with higher educational level were associated with lower risk of infant and child mortality as compared to children born to non-educated or mothers with primary education level. A study by Kwabena (2011) in South Africa that sought to investigate the socio-economic factors affecting under-five mortality showed that women's education after nine-successful years of schooling is a necessary and essential factor in reducing child mortality.

The study findings showed that 40% (n=84) of the care-givers derived their source of income from business and 33.50% (n=69) had no source of income. A similar study conducted in Nepal indicated that majority of the under-five care-givers derived their source of income from agriculture (Acharya *et al.*, 2014). Household income is one of the crucial determinants of child health as it influences the ability of the care-giver to access some of the health care services targeting the under-fives (Charmarbagwala *et al.*, 2005; Kwabena, 2011). According to Kwabena (2011), the work status of the mother of the under-five is important especially if the work is outside the home this is because this may have effects on the child with reference to lack of proper feeding and particularly to lack of breastfeeding in early stages of life.

The findings further showed that 79.6% (n=164) of the care-givers were married. Similarly, marital status of the mother has been shown to influence under-five mortality (Negera *et al.*, 2013). Negera *et al.* (2013) in their study in Ethiopia to determine the proximate determinants of infant and under-five mortality noted that under-fives from mothers who were not married were more at risk of dying and that infant and under-five mortality was slightly higher among children born to mothers who were not married.

5.2 Socio-demographics of under-fives

The study findings showed that 34.95% (n=72) of the under-fives enrolled in the study were below 12 months old, those between 13-36 months accounted for 48.06% (n=99). These are consistent with findings from a study conducted in Nigeria that indicated that majority of the under-fives (55.9%) fell in the age bracket of 1-3 years (Egbewale *et al.*, 2009). On the contrary a study done in Kenya to determine the acute medical conditions among under-fives showed that majority of the under-fives were one year and below (Makworo & Laving, 2010).

Findings on the number of siblings showed that 3.4% (n=7) of the under-fives had four and more siblings and 18.4% (n=40) had more than two siblings within the same age bracket. In a study done in Ethiopia findings showed that high risk of under-five mortality was highly associated with shorter birth orders less than 2 years (Seyoum & Wencheke, 2013). The study findings are consistent with findings from a study conducted in Nigeria which showed that 2.4% of the mothers who participated in the study had 4 children whose age was less than 5 years (Tagbo *et al.*, 2012). The number of under-fives in a household influences the risk of experiencing under-five mortality; households with 3 or more under-five children are at risk of under-five mortality than households with less than 3 under-fives (Izugbara, 2014). Similarly, these households delay in seeking health care for the under-fives (Kassile *et al.*, 2014). Children of less birth interval, that is, less than two years have a higher risk of dying (Negera *et al.*, 2013)

The above findings were supported from the KIIs that showed that care-givers who had more than one child in the age bracket below 5 years were not able to take the children to the health facility consistently because it is difficult to carry all the children at the same time also the mother may be tired because she could be expecting another child. These findings are consistent with a study conducted in Zambia that showed that lack of family planning resulted to a mother having more than 2 children who are under-fives at the same time making it difficult for her to take the children to the health facility at the same time (Halwindi *et al.*, 2013).

The study findings on the illness of the child in the last six months before the study showed that 73.3% (n=151) of under-fives had been ill. Majority of the responses indicated that the child had suffered malaria at 49.1% (n=109) followed by diarrhoea at 36.0% (n=80). The interviews with the health workers indicated that Malaria, Pneumonia, upper respiratory tract infections, diarrhoea, malnutrition and skin conditions were common. Kisumu East sub-County where the study was carried out is in malaria endemic zone. Malaria, Pneumonia, upper respiratory tract infections, diarrhoea and malnutrition are the main causes of morbidity among the under-fives in the sub-County (Maoulidi, 2011). A study to determine the acute medical conditions that under-fives were admitted with in a health facility in Kenya revealed that 31.6% of the under-fives had pneumonia followed by malnutrition, marasmus, rickets, anemia and gastro-enteritis (Makworo & Laving, 2010). Malaria was not among the conditions the under-fives presented with and this could be related to the location of the facility where the study was carried out which is not a malaria endemic area. These findings are consistent with a study in Nigeria that showed that among the under-fives malaria, diarrhoea and upper-respiratory infections were the common causes of morbidity in that order (Egbewale *et al.*, 2009). Similarly, Malaria, respiratory tract infections and gastroenteritis were the main causes of admissions among children in Benin (Abhulimhen-Iyoha & Okolo, 2012).

Further results indicate that there is a significant association between occurrence of fever and malaria among the under-fives who were included in the study. Similarly the KDHS report for 2014 showed that children with fever in Western and Nyanza were more likely to be treated for malaria (KNBS & ICFMacro, 2015). This is contrary to findings in a study done in Tanzania that showed that presence of fever or history of fever does not predict malaria among the under-fives (Mazigo *et al.*, 2011).

Findings on completion of immunization indicate an improved coverage of 81.25% (n=130) compared to the 2012 statistics for Kisumu County that was 70.8% and this was slightly lower than the national immunization coverage of 87% (KNBS & ICFMacro, 2015; MOH, 2013a). These findings showed that more children in the sub-County had been able to complete their vaccines and thus more children were protected from childhood immunizable diseases such as pneumonia. A child is considered to have

completed immunization if he/she has received the following vaccinations: BCG against tuberculosis, three doses of DPT vaccine to prevent diphtheria, pertussis, and tetanus or three doses of Pentavalent which has additional hepatitis B and Haemophilus influenza type B vaccine, at least three doses of polio and one dose of measles and these vaccines should have been received during the first year of life (MOH & UNICEF, 2010). Related studies showed that immunization and completion of immunization directly influenced morbidity and mortality among the under-fives (Worku, 2011).

5.3 Under-Five Health Care Interventions in Tier 1

5.3.1 Breast Feeding Practices

The findings revealed that 68.2% (n=30) were on exclusive breastfeeding and 61.5% of the under-fives below 24 months were still breast feeding. The study findings are contrary to a study in Nigeria that showed that 81% of the under-fives were exclusively breastfed for their first 6 months of life (Ajao *et al.*, 2010). The findings on the other hand are consistent with a similar study done in Ghana that showed that 11% of the children between 6 and 9 months were still on exclusive breastfeeding (Aryeetey & Goh, 2013). Further findings showed that 61.5% (n=80) of the under-fives below 24 months were still breast feeding. These findings are higher than the national statistics that indicate that only 32% of children below 6 months were on exclusive breastfeeding while the median age for breastfeeding was 21 months (KNBS & ICFMacro, 2010).

Similar studies indicate that under-five morbidity and mortality are influenced by breast feeding practices. Death among this age group is significantly associated with failure to breast feed the child for six months or more (Worku, 2011). Exclusive breast feeding does not require addition of any other feeds for the first 6 months of the child's life; no nutritional benefits are derived from giving solid foods to children below 6 months of age (DuPlessis *et al.*, 2013). It is recommendation that exclusive breastfeeding should be practiced for the first 6 months of life and complementary feeding be done between 6 to 24 months and beyond. Early introduction of other foods has been linked to risk of infection to the under-five (KNBS & ICFMacro, 2010). Further exclusive breastfeeding

for the first 6 months of life is an important determinant of child health and its practice has been shown to reduce child mortality by about 55% (Bello & Joseph, 2014). According to Kwabena (2011) exclusive breastfeeding for the first six months of life and continued breastfeeding after weaning should be encouraged because longer duration of breastfeeding reduces the risk of child mortality by over 33 percent. In a study in Kenya to identify determinants of under-five mortality, findings showed that duration of breastfeeding was a significant risk factor for under-five mortality. Children who were breastfed for less than 6 months were noted to be at greater risk of death compared with those who breastfed for longer periods (Ettarh & Kimani, 2012)

5.3.2 Child Feeding Practices

The findings from this study indicate that majority of the under-fives were fed on carbohydrate only as their food source with 63.7% and 60.7% deriving their food sources from carbohydrates in the morning and in between meals respectively (table 11). These findings were confirmed from the FGDs conducted with CHVs that further indicated that the main cause of malnutrition among this age group was due to lack of food and thus the under-fives were fed on one type of food mainly for the quantity and not the quality. Feeding on one type of food could lead to malnutrition which results due to deficiency or excess of one or more essential nutrients (Ozor *et al.*, 2014). Findings from a similar study showed that majority (45.2%) of the under-fives were mainly fed on carbohydrate food sources such as rice, yam flour and corn products, protective food sources were least offered at 8.2% and this was attributed to household food insecurity (Ajao *et al.*, 2010). This is further supported by findings from a study done in Rwanda that showed that the incidences of children fed on carbohydrate-rich foods were more than those who were fed on foods that are rich in other nutrients (MOH & UNICEF, 2014). These findings are supported by related studies that indicate that inadequate access to food due to food unavailability or high cost of the food items is a major contributor to malnutrition among the under-fives (Masuku-Maseko & Owaga, 2012).

5.3.3 Home Based Interventions for a Child with Diarrhoea

Majority (38.5%) of the respondents indicated that they would give oral rehydration salts (ORS) in case the child had diarrhoea, water with salt and sugar was the second choice at 18.8%. Findings from the FGDs also indicated that in case an under-five child had diarrhoea then ORS would be the first choice and in its absence then they would give boiled water with salt and sugar. Similar studies have shown that ORS is the first choice of fluid treatment for children with diarrhoea followed by homemade solution of sugar, salt and water (Ugwueje, 2012).

The findings show that more than 60% of the care-givers were not able to select ORS as the home remedy for diarrhoea in under-fives therefore increasing the risk of death that may result from dehydration. These findings are consistent with related studies that show that inability of the mother to prepare ORS at home does contribute to mortality among this age group (Worku, 2011). Despite the documented benefits of ORS in diarrhoea among the under-fives that include prevention of dehydration and death, the number of under-fives receiving ORS in treatment of diarrhoea in developing countries has remained below 40% (Zwisler *et al.*, 2013).

It is important to note that 0.8% of the respondents indicated that they would give Zinc for the under-five who had diarrhoea. The current practice in the management of diarrhoea in under-fives follows guidelines from WHO and UNICEF that recommend a combination of Zinc and ORS to reduce the severity of diarrhoea (Thawani & Bajait, 2011). Use of zinc among this age group has also been shown to reduce the effect and mortality caused by diarrhoea (Bourne *et al.*, 2013).

5.3.4 Growth Monitoring

Weight monitoring and comparison with weight for age is one of the methods used to assess the nutritional status of the child (Ajao *et al.*, 2010). Findings on growth monitoring among the under-fives showed that 70.4% had their weight taken in the month preceding the study. The KIIs and FGDs revealed that majority of the under-fives who had completed their immunization were not taken to the health facility for growth monitoring.

Growth monitoring is important among the under-fives and can be done through the use of growth charts (I.P. Okafor *et al.*, 2014). The findings on growth monitoring are consistent with a similar study conducted in Zambia that showed that once the child attained 2 years then there was no consistency in taking the child for growth monitoring. Reasons cited included completion of immunization and therefore the child would only receive anti-helminthes, Vitamin A and have their weight taken; another reason was that this child was now heavy to carry to the health facility (Halwindi *et al.*, 2013).

5.4 Under-Five Health Care Interventions in Tier 2

5.4.1 Types of under-five health care interventions

The study findings indicate that all the health facilities that participated in the study provided immunization services, care for the sick child and growth monitoring for the under-fives. Three of the facilities have to refer the under-fives to other facilities for nutrition services. Only 2 facilities provided home visits and defaulter tracing for the under-fives. Further all 18 facilities provided immunization services as part of the outreach programmes targeting the under-fives. In South Africa the under-five health care interventions provided in the facilities included Curative care (88%) and immunization (88%) (Thandrayen & Sallojee, 2010).

Half of the facilities operate from Monday to Friday and provided services for the under-fives during these days. An under-five seeking services in more than three quarter of these facilities would averagely wait for less than 15 minutes to be attended to. Among the 18 health facilities included in the study 13 had IMCI charts or booklets and were using the IMCI approach in the care of the under-fives. This means that five facilities were not able to provide care for the under-fives using IMCI approach due to lack of charts. Lack of integrated care leads to long waiting and loss of clients as they give up queuing from one point of service to another.

Immunization services were provided on Monday to Friday in 11 facilities while four provided BCG on specific days depending on the number of clients so as to avoid vaccine wastage. A similar study conducted in South Africa revealed that 75% of the facilities

operated from Monday to Friday, 1 functioned only 2 days a week and 3 also opened on Saturday (Thandrayen & Salloojee, 2010).

5.4.2 Approaches for implementing under-five health care interventions in Tier Two

The study findings revealed that there are different programmes targeting the under-fives in the sampled health facilities. Majority of the facilities used a similar approach in the implementation of these programmes but there also existed some variations in some interventions.

5.4.2.1 Care for the HIV exposed infants

Kenya is among the highly burdened countries with the effect of HIV and AIDS. A total of 1.6 million people were living with HIV infection in 2011. The prevalence of HIV among women in Kenya is 8 per cent and 4.3 per cent for men. The high burden of HIV and AIDS in Kenya accounts for an estimated 29 per cent of annual adult deaths, 20 per cent of maternal mortality, and 15 per cent of deaths among the under-fives (NACC, 2012). Interventions targeting HIV exposed under-fives were implemented in all the facilities in the study but there were some discrepancies on the length of time the child was enrolled in the programmes. For instance in the care for the HIV exposed infants some facilities enrolled the child in the programmes and followed up the child up to 18 months while in other facilities the follow-up was up-to 24 months. Through the MOH, guidelines of care have been put in place for identifying and following up of HIV exposed children to improve delivery of services and infant outcomes. This contributes towards early identification of HIV in the under-fives and also prevents post-delivery HIV acquisition, reduces risk of mortality from other infections among these children and offer counseling on appropriate feeding options (Ong'ech *et al.*, 2012). Guidelines and close support supervision of health facilities will ensure streamlining of care for the under-fives and reduce disparities in health care provision targeting this age group.

5.4.2.2 Integrated Management of Childhood illnesses approach

Integration of health services is defined as “the organization and management of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money (WHO, 2008).

Five facilities in the study did not have IMCI charts or booklets for use of IMCI approach in the care of the under-fives. The IMCI approach enhances the management of childhood illnesses as standards and protocols of care are used to guide the health worker on how to manage the child depending on the signs and symptoms that the child presents with (COREGroup, 2009). Lack of the IMCI charts in the five facilities would result to misdiagnosis and mismanagement of the sick under-five.

The KIIs showed that integrated care for the under-fives requires that child receives all the services at one point in time but the approach they used was disintegrated due to staffing challenges. Integration of HIV services for the under-fives with other MCH services targeting the same group has been shown to lead to increased uptake of the services as the child is attended to by the same service provider thus reducing stigma (Ong'ech *et al.*, 2012). Similarly a study in South Africa revealed lack of integration of under-five health care services with either the facilities offering curative services only or preventive services for the well child only (Thandrayen & Sallojee, 2010). Findings in a study in Kenya showed that only 14.6% of health workers attending to under-fives had received training on IMCI in the past one year and this contributed to difficulty in the implementation of IMCI approach when caring for the under-fives (Wamae *et al.*, 2009).

5.4.2.3 Waiting Time

The time taken for the under-five to be attended to was indicated as one of the factors that influenced the uptake of services targeting this group. Findings indicated that the under-fives would be served within fifteen minutes in 77.8% (n=14) of health facilities. Shorter waiting time encourages the care-givers to seek health services for the under-fives from the health facilities. Findings in a study in Ghana showed that the care-givers preferred to go to the chemist to get drugs for fever for the under-five as there was no queuing as opposed to the health facility where one would queue several times to get the clinic book,

see the doctor and for laboratory investigations before one could get medication (Adjei *et al.*, 2008). In a similar study it was shown that though the private facilities were expensive, they were preferred by some respondents because of short waiting time (I.P. Okafor *et al.*, 2014). Long waiting time to receive health care services have been shown to discourage care-givers from seeking care for the under-fives (Soai, 2015).

5.4.2.4 Community Health Volunteer Linked to Child Health Services

The study findings indicated that 14 health facilities had a CHV linked to the child health services. This is important because one of the respondents from the KIIs noted that one way of improving uptake of under-five health care interventions by the community was to involve the CHVs in the care of under-fives. The findings showed that due to distance and other factors such as lack of awareness and affordability, some under-fives are not being brought to the health care facility. The facilities can use the CHVs attached to actively trace the under-fives in the community and link them to the health facilities. This may enhance the identification of children with malnutrition, immunization and ART defaulters and the under-fives who have not been going for growth monitoring. Active case finding through use of CHVs has been linked to improved access to treatment and increased care-giver demand for under-five health care interventions (Okafor, Dolapo, Onigbogi, & Iloabuchi, 2014). Use of CHVs has further been shown to improve survival of newborns through increasing awareness on newborn care among care givers (Adam *et al.*, 2014).

5.5 Knowledge, Attitude and Practices of Under-Five Health Care Interventions among Care-Givers

5.5.1 Care-givers' Knowledge on danger signs in a sick under-five

It is important to note that more than half of the danger signs were not identified by 50% of the care-givers. Lack of awareness on danger signs delays health seeking behavior among the care-givers and this may result to complications and death of the child. In a similar study by Alex-Hart *et al.* (2014) poor awareness on danger signs was also reported where less than 50% of the respondents were able to identify the danger signs of severe illness among the under-fives.

Further high fever/temperature was selected by 84.2% of care-givers as a danger sign in a sick under-five. The findings from this study are supported by similar studies which have shown that mothers are able to touch and feel for fever in a sick under-five and ability to touch and feel for fever is not dependent on the level of education of the care-giver (Wammanda & Onazi, 2009). The findings further indicate that majority of the respondents were able to identify high fever as one of danger sign in a sick child; this finding is supported by findings from a study in Nepal that sought to determine the knowledge of the care-givers with regard to identification of danger signs in a child with pneumonia where 78% of the participants indicated fever as a danger sign. On the contrary the findings further indicated that 78% and 39% of the respondents identified fast breathing and refusal to feed/drink/eat respectively as danger sign in a child with pneumonia (Acharya *et al.*, 2014).

The ability of the care-givers to identify fever is important to initiate health seeking interventions for the under-fives. Fever represents high body temperature; in clinical practice fever is a sign of current illness and is usually the first signal of illness in under-fives (Abdulkadir & Johnson, 2013).

5.5.2 Care-givers' attitude towards under-five health care interventions

The findings indicate that some care-givers did not support under-fives health care interventions and also did not perceive the preventive interventions such as immunization as important. This leads to under-fives not being able to access important preventive interventions such as immunizations and also influences the health seeking behavior of the care giver when the child is unwell. Contrary, a study in Nigeria showed that majority (94%) of the care-givers had a positive attitude towards immunization and they considered it to be important. Among the care-givers, 99% wanted the continuation of routine immunization though they cited several problems which they had experienced including long waiting time, fever and crying after immunization (Tagbo *et al.*, 2012). Similarly, findings show that negative perception of care givers towards lower level facilities resulted to care-seeking in higher level facilities leading to waste of time when queuing

even for illnesses such as malaria that can be taken care of in the health centers and dispensaries (Alenoghena *et al.*, 2014).

5.5.3 Care-givers' practices of under-five health care interventions

Consistent and correct use of insecticide treated nets (ITNs) has been shown to reduce morbidity and mortality among the under-fives (Abdullah *et al.*, 2013; I.P Okafor & Odeyemi, 2012). Malaria affects all ages but the under-fives are among the most vulnerable. Use of ITNs is one of the strategies adopted by the MOH in Kenya to achieve malaria control targets. The county wide distribution of ITNs and increased creation of awareness has increased the number of households owning and using ITNs (KNBS & ICFMacro, 2010). Majority (64.6%) of the under-fives in the study used a treated mosquito net. The study findings were higher than the 2014 KDHS report that indicated 54% of children below 5 years in Kenya slept under a treated net (KNBS & ICFMacro, 2015). The findings are consistent with similar study which indicated that 61.8% of under-fives slept under ITN (Okafor & Odeyemi, 2012). More under-fives are now sleeping under-treated mosquito nets and this will reduce the number of malaria cases among this age group. The households that use ITNs have been shown to experience fewer under-five mortality as opposed to those who do not use them (Oindo, Otieno, Okeyo, Olayo, Muga, & Kaseje, 2009).

Among the 8.7% and 45.1% of respondents did not have access to a latrine and hand washing facility respectively. The respondents practiced different methods of waste and solid disposal which included burning and use of latrine, rubbish pit and burying. Among the respondents, 88.8% disposed the child's stool by throwing in the latrine. It is important to note that diarrhea which is among the top five leading causes of morbidity and mortality among the under-fives is linked to unsafe water supply and poor sanitation (Masuku-Maseko & Owaga, 2012). Further, environmental factors linked to unsafe water, sanitation, hygiene, refuse and solid waste disposal also contribute directly to under-five mortality (Mesike & Mojekwu, 2012).

Hand washing practices among the care-givers was high. Hand washing practices help in reduction of transmission of micro-organisms that cause diarrhoea among the under-fives. Similarly, the reported hand washing practice in Tanzania indicated that 82.3% of the respondents washed their hands after visiting the toilet while 91.5% before eating (Mashoto *et al.*, 2014). In a similar study conducted in South-western Nigeria findings indicated that majority of the respondents (87.2%) washed their hands after toilet use, which is consistent with the above findings, on the contrary 42.6% washed their hands after changing the baby's nappy, 17.4% before preparing food, 27.7% before feeding the child, 16.5% before eating and 64.1% after eating (Ebuehi, 2010).

Findings on the main source of water revealed that majority 43.2% of the respondents had tap as their main water source; other water sources included protected well/borehole, spring, roof catchment, river and water vendors distributed. More than half of the respondents used chlorine based chemical to make their water safe for drinking. Access to improved drinking water sources has been shown to help in reducing diarrhoeal diseases among the under-fives (Masuku-Maseko & Owaga, 2012).

5.6 Community Health Volunteers' Knowledge, Attitude and Practice of Under-Five Health Care Interventions

Findings from this study indicate that the CHVs were able to identify danger signs in a sick under-five and provide appropriate advice (health education) for the different under-five health problems that the children commonly presented with. Danger signs identified included a weak child, the child is always sleepy and with no appetite and cries a lot. Appropriate advice on interventions such as exclusive breastfeeding for the first six months and use of ORS or salt and sugar solution for diarrhoea was also given. Advice on interventions for fever by the CHVs included use of paracetamol, exposure of the child and sponging using warm water. These findings are similar to interventions used by care-givers in a study in Nigeria (Abdulkadir & Johnson, 2013). It is important to note that the findings also showed that the CHVs would advise under-fives with a cough and ear infection to be given amoxyl and seprine respectively. These findings are worrying as

they show that the CHVs would give inappropriate advice rather than to refer. In a similar study by Abdu *et al.* (2013), findings indicated that there was an urgent need to retrain CHVs through refresher courses and frequent updates to ensure that appropriate advice is provided in relation to the care of the under-fives

Even without support from some communities the findings have shown that the CHVs have a positive attitude towards provision of under-five health care services, this they do with a lot of joy. Apart from providing referral letters to the sick under-fives and even take it upon themselves to ensure that the child is taken to the health facility and receives care though they are not on salary. Further the CHVs have continued to participate in health care interventions in the community even with lack of CHV kits and incentives which is a challenge in the effective performance of their work (MOH & UNICEF, 2010). Though CHVs are not on salary, different forms of incentives can be used to motivate them to enhance effectiveness in their work. The incentives could be individual, family, community and organizational (Greenspan *et al.*, 2013).

In relation to practice, findings show that only 50% of the under-fives were visited one month before the study and 7.3% had never been visited by a community health worker. During that last visit more than half (64.9%) of the households received health education as an intervention provided by the CHVs. Evaluation of CHV work done by UNICEF and MOH in Kenya showed that services offered by CHVs through the community strategy include health education to enhance behavior change, disease prevention and access to safe water and basic care (MOH & UNICEF, 2010). The findings further show that 84.2% of the children who were 12 months and above where CHVs were attached had completed immunization while in the non-intervention sites only 80.1% had received full immunization (MOH & UNICEF, 2010). Further, a study conducted in Malindi and Lamu Kenya indicated that CHVs were involved in treatment of fever and administration of artemether-lumafantrine (AL) provided through the facilities and MOH channels for the treatment of malaria. This assisted the children in far-to reach households to access treatment for malaria promptly and without paying (Kisia, *et al.*, 2012).

The responsibilities of CHVs in a study in Uganda included home visits, health education, identification and referral of sick under-fives, reporting of births, deaths and outbreaks among the under-fives and this was shown to contribute to reduction of morbidity and mortality among this age group (Brenner *et al.*, 2011). The CHVs have been trained to assess, treat minor illnesses and refer the under-fives to the facilities and also to ensure community access to basic health services (Rabazanahary, 2014). Similar studies show that the CHVs play a major role in the improvement of management of childhood illnesses in the community through the provision of appropriate information and identification and referral of the sick under-fives in the community (Perez *et al.*, 2009). The health facilities should be encouraged to continue using CHVs in the under-five health care programmes and activities as this has been shown to influence behavior change among the care-givers and thus improve health indicators among the under-fives.

5.7 Health Care Workers' Knowledge, Attitude and Practices of Under-Five Health Care Interventions

Four facilities included in the study had none of the health care workers trained on under-five health care interventions yet they were providing care for under-fives. Training on under-fives undertaken by the health care workers included IMCI (19.0%), infant and young children feeding (38.1%). It is important to note that only one health worker received training for both interventions in dehydration and emergency care for under-fives thus most of the health facilities are not prepared to deal with emergency cases among the under-fives.

According to WHO (2011), to achieve a significant impact on under-five health indicators, 60% of health workers must be trained on IMCI. In 2007 only 16% of health workers in Kenya had been trained on IMCI. This was due to high cost of training (IMCI training costs over 1000 USD per trainee), lack of funding for IMCI and inadequate pre-service training on IMCI and under-five health care interventions (Mullei *et al.*, 2008). Poor staffing was cited to be an impediment to the provision of care using the IMCI approach thus care was at times disintegrated. The IMCI approach has been shown to increase uptake of the services as the child is attended to by the same service provider (Ong'ech, et

al., 2012). To enhance use of IMCI in the care of under-fives would require scaling up training and improving staffing of health care workers providing services for the under-fives.

Further findings from this study indicate that the attitude of health workers could act as an impediment to accessing care by the care-givers of under-fives. Lack of good interpersonal skills keeps away some care-givers due to the mal-treatment that they at times receive from some health care workers. Similar findings were noted in a study that sought to determine the barriers to under-five care in Zambia where it was noted that the care-takers who had lost under-five cards were reluctant to go to the health facility for fear of being scolded by the health workers (Halwindi *et al.*, 2013). Negative attitude of health workers was identified as one of the barriers to accessing care by the under-fives in Nigeria (Ekure *et al.*, 2013). A study in South Africa showed that some care-givers reported that the nurses were rude, angry and unapproachable and this prevented care-givers from seeking care at the health facility (Railton & Mash, 2012).

5.8 Resources for Implementation of Under-Five Health Care Interventions

The study findings showed that resources for provision of under-five health care services were not uniformly distributed both in tier 1 and 2 of the sub-County. The results indicate that not all the health facilities had essential resources for the provision of under-five health care services; lack of essential items such as syringes and needles would lead to inability to provide essential immunization services in these facilities. Lack of drugs and medical supplies was noted to be a barrier to the provision of under-five health care interventions. This also affected the effective running of some programmes targeting the under-fives such as nutrition programme which was cited to be the most affected by stock outs.

Findings from a similar study in South Africa indicated that essential under-five equipment were not uniformly available at the facilities; 44% of the facilities had containers and cups for mixing ORT, one facility did not have a working refrigerator and vaccines were appropriately stored in 79% of the facilities. Of the facilities 63% had IMCI

charts for care of the under-fives, only 13% had guidelines on ART and growth monitoring (Thandrayen & Salloojee, 2010).

5.9 Challenges in accessing Under-Five Health Care Interventions

5.9.1 Affordability

The policy on under-five care provision by the government of Kenya does not require under-fives to pay for services sought from the government health facilities. Findings from this study indicate that only 24.5% of the under-fives received free care in the past six months before the study while majority, that is, 43.05% spent between 100 and 500 shillings. Both the health workers and the CHVs cited that the region is poor and some of the care-givers are not able to access care due to cost. The findings further revealed that inability to afford health care does dictate whether the under-five child will be admitted for care or not.

Ability to afford health care services for under-fives does influence the health seeking behaviour. Financial factors included issues related to user fees, penalty fees and high cost of prescription and these act as barriers to accessing care by the under-fives (Halwindi *et al.*, 2013). Further, family income and socio-economic status of the household directly influence the health seeking behaviour of the under-five care-giver and will determine the decision on where to seek the service (Rehma *et al.*, 2014; Rehman *et al.*, 2014).

Diversification of financial options for the care-givers through the provision of OBA scheme targeting pregnant mothers and post natal period offered in one of the health facilities was shown to increase uptake of immunization services among the under-fives. Use of financial options that reduce the cost of care among the under-fives would increase accessibility of essential care among this group.

5.9.2 Accessibility to Health Facility

The ability of the under-five to access the health facility is also determined by the distance from the facility and the infrastructure of the area. The findings revealed that 7.8% of the respondents would take more than 1 hour to walk to the nearest health facility. The

interviews also revealed that one of the facilities involved in the study was in an area prone to floods and this was cited to be an impediment to bringing the child to the health facility when it rained and flooded. Infrastructure, rains and floods were also cited in study done in Zambia that showed that these factors would lead to inaccessibility of health facilities by families due to over-flow of some streams and impassable roads (Halwindi *et al.*, 2013). Distance traveled to health facility influences the rate of utilization of child health services, the more the distance the lower the utilization of the services (E. D. Adinma *et al.*, 2011).

Facilities and community units having big catchment areas cannot be reached easily by the community members. The findings revealed that under-fives in such areas can only be reached during active case finding and in most cases the care-givers would take the child to the facility once identified and not go back due to the long distance. Inaccessibility to care due to the infrastructure and distance is even made worse by finding that none of the health facilities had an ambulance which could be used during an emergency. This is consistent to findings from related studies that indicate that distance prevents care-takers from accessing health care services for under-fives (Halwindi *et al.*, 2013). Findings showed that distance from the health facility, poor infrastructure, floods and lack of ambulance services influenced accessibility to care by under-fives.

5.9.3 Institutional Policies

Some health facilities in the study had policies and protocols that did not allow provision of some health interventions which acted as barriers to accessing health care by under-fives. Findings revealed that some of faith based facilities did not provide family planning services but instead provided health education after which the clients were referred to other health facilities for the intervention. Findings showed that due to lack of follow up after referral, there were possibilities that some clients would not go to seek the service where they had been referred and would end up with unplanned families. Lack of family planning resulting to children born within very short breaks has been attributed to increased under-five morbidity and mortality (Halwindi *et al.*, 2013).

5.9.4 Household and Community Challenges

5.9.4.1 Level of Awareness

Lack of awareness on the need to take the child to the health facility and the type of available health services was shown to be a challenge in accessing under-five health care services in the sub-County. This led to lack of co-operation of care-givers when the child was referred to a different health facility to seek services that were not available in the facility of their choice. Similar studies indicate that lack of awareness on the importance of essential under-five health care interventions is one of the barriers to accessing these services (Halwindi *et al.*, 2013). Health education is one of the strategies that can be used to increase the level of awareness among care-givers and thus improve practice of household and community interventions targeted at reducing morbidity and mortality among the under-fives (Ashikeni *et al.*, 2013).

5.9.4.2 Cultural beliefs and practices

Cultural beliefs and traditional practices were cited to delay and prevent the under-fives from accessing health care interventions. In related studies majority of the participants perceived that childhood illnesses were caused by witchcraft, ancestral spirits and breach of taboos and not infection while other participants related child illness to normal part of growth and development (Ugwueje, 2012). Similarly a study by Ekure *et al.* (2013) revealed that care-givers used some traditional ways that could heal childhood illnesses.

5.9.4.3 Care-giver Health Seeking Behavior

Findings on health seeking behavior when the child was last sick, indicated that 82.9% of the care-givers sought care from the health facility though the KIIs and FGDs revealed that the care-givers took up to 2-3 days before taking the sick child to the health facility due to use of herbal medications and over the counter drugs. This delay in seeking health care for the under-fives would result to complications and even death. Findings from a study by Kassile (2012) in Tanzania indicated that sick under-five children would not be taken to the health facility immediately but the care-givers would first try traditional care

or self-treatment and only take the child to the health facility when there was no improvement. A study in Bangladesh showed that 80% of care-givers sought care for the sick under-five outside the home within 2 days but 47% of them took the children to untrained service providers. Prompt health seeking behaviour for under-fives should be coupled by right choice of where to seek care to be able to achieve reduction in mortality (Najnin *et al.*, 2011).

5.9.4.4 Feeding Practices

Malnutrition was identified as one of the common health problems affecting the under-fives in the sub-County. The findings revealed that poverty is a problem in the study area and was attributed to be one of the contributors to lack of food. The children were fed on one type of food source mainly carbohydrates. In relation to this finding it was noted that the malnourished children were hidden by the parents and could easily be missed out during active case finding. Ozor *et al.* (2014) links malnutrition to deficiency or excess of one or more essential nutrients. In their study, Ajao *et al.* (2010) showed that majority (45.2%) of the under-fives were mainly fed on carbohydrate food sources such as rice, yam flour and corn products; protective food sources were least offered at 8.2% and this was attributed to household food insecurity, resulting to increased cases of malnutrition among under-fives.

5.9.5 Health Facility Challenges

5.9.5.1 Negative attitude of Health Care Workers

The findings from this study indicated that the attitude of health workers could act as an impediment to seeking care by the care-givers of under-fives. Similar findings were noted in a study that sought to determine the barriers to under-five care in Zambia where it was noted that the care-takers who had lost under-five cards were reluctant to go to the health facility for fear of being scolded by the health workers (Halwindi *et al.*, 2013). Negative attitude of health workers was identified as one of the barriers to accessing care by the under-fives in Nigeria (Ekure *et al.*, 2013). A study in South Africa showed that some

care-givers reported that the nurses were rude, angry and unapproachable and this prevented care-givers from seeking care at the health facility (Railton & Mash, 2012).

5.10 Challenges in Implementing Under-five Health Care Interventions

5.10.1 Lack of drugs and supplies

Lack of drugs and medical supplies was noted to be a barrier to the provision of under-five health care interventions. Issues of stock outs that occurred on and off also posed as a challenge and affected access to care by the under-fives. The care-givers took the children to the health facility but since there were no drugs, when they were given prescriptions they did not buy the drugs. Nutrition programme was noted to be most affected by stock outs leading to a lot of interruptions in the provision of care for the under-fives enrolled in this programme.

Stock outs and lack of drugs and supplies also resulted to some facilities not being able to implement programmes as they were expected to. The affected programmes included provision of Isoniazid to the under-fives where the mother had Tuberculosis. Diagnostic services for malaria and vaccination services were also reported to be affected by stock outs in some facilities. Stock outs and lack of drugs and supplies is a challenge to implementing services targeting under-fives. Similarly a study in Zambia revealed that non-availability of medications at the health centre was one of the barriers to accessing health care among the under-fives. Similarly lack of the medications was voiced by both the health workers and the care-givers, the drugs were sometimes supplied erratically resulting in inconsistent health care provision to the patients (Halwindi *et al.*, 2013).

5.10.2 Poor referral system

The infrastructure in Tier two health facilities is limited and therefore they do not have capacity to handle emergencies. It was noted that in case of emergencies the child is just stabilised and then referred to tier 3 or 4 for specialised care. Poor referral system in the health facilities and lack of ambulance were cited as a challenge in the implementation of under-five health care interventions. Referrals from community to health facilities by

CHVs through case finding is also important and was noted to be facing challenges especially when care-giver could not afford to pay for transport. Other related studies showed that referral is an important component in improving implementation of under-five health care services, further there is increase in complying with referral advice when dealing with children who are severely ill and when clear referral instructions are provided to the care-giver (Paintain *et al.*, 2012).

5.10.3 Under-staffing

Under-staffing resulted to provision of disintegrated care for the under-fives in some of the facilities and this forced care-givers to queue for long and at different points for services. Findings from related studies confirm that under-five health care interventions were fragmented in some facilities and addressing under-five mortality requires multiple integrated interventions and approaches (Oindo *et al.*, 2009).

Further findings indicate that under-staffing in the health care facilities prevented the health care workers from going to the community to give health talks; majority of the facilities therefore gave health talks when the clients were waiting to be served. This therefore means that those who did not go to health facilities did not benefit from the health talks. According to Halwindi *et al.* (2013), ‘understaffing contributes to poor performance of health facilities jeopardizing the quality of care provided for under-fives. Further, lack of outreaches reduces the number of under-fives brought to health facilities due to lack of flow of information between the facilities and the communities.’

5.10.4 Early Childhood Day Care Enrolment

The findings showed that some under-fives were enrolled early in schools and day care centers which prevented them from accessing essential immunization, health assessment and growth monitoring services. Lack of access to care is a major factor associated with under-five deaths (Rutherford *et al.*, 2010).

5.10.5 Non-compliance to Treatment and Feeding advice

Compliance to treatment and feeding advice among care-givers of HIV exposed infants faces a major challenge. The KIIs revealed that when given the Niverapine the care-givers do not give the child or at times they give but not consistently especially when the partner is not aware of their HIV status. Stigma in the community also prevents the HIV positive mother from exclusive breastfeeding and they start on complementary feeding as early as 3-4 months. Similar studies show that fear and stigma delays access to diagnostic services for HIV exposed under-fives and thus delays commencement of care (Railton & Mash, 2012). Adherence to advice and treatment has been shown to contribute tremendously towards the well-being of the under-fives. In Tanzania adherence to treatment was found to be dependent on the health status of the child such that care-givers whose children did not improve were more likely to adhere to treatment than those whose children showed improvement (Kassile, 2012). Lack of adherence or loss of follow-up to treatment among HIV exposed under-fives has been attributed to poor socio-economic conditions, lack of transport, distance from the health facility, competing health needs, fear of results, poor record keeping and unreported deaths (Ong'ech *et al.*, 2012).

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 Types of under-five health care interventions in tier 1 and 2 of the sub-County

The study concludes that essential preventive and curative under-five health care interventions are available in tier 1 and 2 of the sub-County but they exist with disparities. The care-givers practiced both preventive and curative interventions. Preventive interventions included use of treated mosquito nets, hand washing before and after activities such as visiting the toilet. Though more than 80% of the under-fives had completed their immunization as per KEPI schedule, it was a concern of both health workers and CHVs that once the child received measles vaccination then they would not continue with clinic visits for growth monitoring. Curative interventions practiced by care-givers included use of paracetamol for a child who had fever and ORS or homemade water, salt and sugar solution in case of diarrhoea.

Findings on feeding practices revealed that more than half of children below six months were on exclusive breastfeeding and majority of the children were fed on a carbohydrate rich diet which could be a contributing factor to malnutrition. Majority of care-givers of the sick under five would seek care from health facilities though poor health seeking behavior from herbalists, religious leaders and use over the counter drugs was also noted.

Under-five health care interventions in the community practiced by CHVs mainly focused on health education, treatment of minor ailments, assessment for malnutrition and follow up and defaulter tracing of HIV exposed infants and those who defaulted immunization. Health care workers in tier 2 facilities provide both preventive and curative interventions which included immunization, growth monitoring, care for the sick under-five, care for HIV exposed child and nutrition services. Under-five health care provision in health facilities is disintegrated due to under-staffing and lack of supplies and at times the under-fives are attended to together with the adults.

6.1.2 Knowledge, attitude and practices of under-five health care interventions among care providers

The study concludes that there was limited knowledge on under-five care interventions among care-givers, CHVs and health care workers. The care-givers were not able to adequately identify dangers signs in a sick under-five child and this may lead to delay in decision to seek care resulting to complications and even death. The care-givers also required more information on the importance of essential under-five interventions such as immunization and continued growth monitoring until the child attained five years.

The CHVs had information on essential interventions for under-fives though they required close supervision as they did their work to ensure that appropriate advice and intervention is provided to care-givers of under-fives. Lack of close monitoring of CHVs' work was linked to poor staffing at the health facilities. The CHVs are able to reach the under-fives who are very far from the facility and the information they share with the care-giver will determine the course of action that will be taken for the under-five.

Limited knowledge and skills was a barrier to implementation of under-five care interventions among health care workers. Apart from basic training, majority of the health care workers who participated in the study had not received specific training on under-five care; findings showed that only 19.0% of health care workers had received training on IMCI which is the adopted approach on care for under-fives in Kenya. Negative attitude of health care workers was cited as one of the reasons for defaulting immunization and poor uptake of under-five health care interventions.

6.1.3 Available resources for implementation of under-five health care interventions

Essential resources for provision of under-five health care interventions were not uniformly distributed in the health facilities and frequent stock outs adversely affected implementation of some under-five programmes. Findings showed that essential supplies such as syringes and needles were not available in some health facilities. Lack of Rota virus vaccine in all the eighteen health care facilities indicated that the under-fives are not able to access vaccination against the virus which is the main cause of diarrhoea.

6.1.4 Access and implementation challenges of under-five health care interventions

The main challenges that were shown to impede access and implementation of under-five health care interventions in the sub-County were categorized into three groups mainly, challenges in the broader environment, household and community challenges and health facility challenges. Challenges in the broader environment included poor socio-economic status of the region which leads to inability to afford care; the distance from the facility and the poor terrain of the area coupled with floods. Household and community challenges included lack of awareness on the importance of seeking interventions for the under-fives; cultural practices and beliefs; poor health seeking behaviour among care-givers and finally lack of compliance to treatment and feeding advice. The health facility challenges that emerged from this study included negative attitude of health care workers. Challenges to implementation of under-five health care interventions in the study area included; lack of drugs and supplies, poor referral system, under-staffing and early childhood day-care enrolment.

6.2 Recommendations

The implications of the study findings were critically examined and were found to be of significant importance in constructing and reviewing programmes for under-fives. Guided by the study findings the researcher therefore makes the following recommendations:

1. Health facilities should increase health education among care-givers on under-five interventions; this should include information on available health care interventions for under-fives and the role of care-givers in enhancing access of care by under-fives.
2. Health facilities should attach a CHV to the child health services. The CHV has direct contact with the households and would therefore trace children who have defaulted immunization while creating awareness among the care-givers on available interventions and the importance of taking the child to the health facility for preventive and curative care.

3. The County government of Kisumu and other stakeholders should address factors contributing to disintegrated care for under-fives.
4. Health facilities and other partners should urgently build capacity of CHVs on under-five care through regular trainings, updates and close support supervision to ensure that they provide appropriate advice and services for under-fives.
5. The MOH and County government of Kisumu should build capacity of health care workers on under-five care through on job training, continuing professional development and regular updates to improve the implementation of these services.
6. The County government of Kisumu together with other stakeholders should partner and find solutions to regular stock outs of commodities, vaccines and supplies so as to enhance access to quality health care by the under-fives.
7. Health facilities should use outreach services for under-fives enrolled in schools and day-care centers
8. MOH and County government of Kisumu should streamline the referral system for the under-fives

6.3 Suggestions for further research

The identified challenges to access and implementation of under-five health care interventions should be addressed while designing programmes for under-fives in tier 1 and 2. Improved response in the health facilities can be achieved through further training of health care workers on specific under-five health care interventions and addressing the issue of understaffing and stock outs to ensure that integrated care can be practiced. Change of attitude by health care workers towards their clients and involvement of all stakeholders in formulation of policies targeting this age group is also one of the strategies for improving access and implementation of care. The role played by CHVs can be strengthened by ensuring further and continued training on under-five interventions and close supervision of their work. Guided by the identified challenges, the researcher recommends that further research should be done on the possibility of developing a model of care for improving access and implementation of under-five health care interventions.

This study mainly targeted under-five health care interventions in tier 1 and 2. The referral of under-fives runs across all the tiers which including tier 3 and 4. Further research is therefore suggested to determine how under-five health care interventions are implemented in tier 3 and 4 and whether health care access and implementation of services for this target group face similar challenges as those identified in tier 1 and 2.

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APPENDIX A: CONSENT AND DATA COLLECTION TOOLS

A-I CONSENT

Evaluation of the implementation of Essential Under-five health care interventions in Kisumu East sub-County, Kenya

Onyango Damaris Auma Ochanda

School of Health Sciences

Jaramogi Oginga Odinga University of Science and Technology

My name is Onyango Damaris Auma Ochanda. I am a student at Jaramogi Oginga Odinga University of Science and Technology, School of Health Sciences. As part of my doctoral studies, I am conducting research under supervision of Prof. Benson Estambale and Prof. Yaw Afrane. I am inviting you to participate in my study whose purpose is to assess the available under-five health care interventions and determine challenges that influence access and implementation of these services.

You will be asked questions of which you are to respond to, recording of the interview session will also be done. The interview will take approximately one hour. There are no potential risks for participating in this study. The benefits for your participation will be indirect because findings from the study may be used to improve the services targeting the under-fives. Your participation is voluntary and you may withdraw from the study at any time without penalty. All information obtained in this study will be kept strictly confidential and anonymous; you are not required to write your name anywhere in the form. The results of this study will be presented as a group and no individual participants will be identified without their permission.

By signing this consent form you are indicating that you fully understand the above information and agree to participate in this study voluntarily.

Participant's signature: **Date:**

A-II HEATH FACILITY CHECKLIST

EVALUATION OF THE IMPLEMENTATION OF ESSENTIAL UNDER-FIVE HEALTH CARE INTERVENTIONS IN KISUMU EAST SUB-COUNTY, KENYA

Date: _____ **Urban/Peri-urban:** _____

LOCATION CODE: _____ **Health Facility Tier:** _____

A. GENERAL INFORMATION ON HEALTH FACILITY

1. Under-five health care services provided
 1. Yes
 2. No
2. If yes, which ones? (tick all applicable options)
 1. Immunization
 2. Care of the sick child
 3. Growth Monitoring
 4. Nutrition
 5. Others, Specify, _____
3. Availability of policies on under-five health interventions
 1. Yes
 2. No
4. Health workers responsible for the under-fives (Tick as appropriate)
 1. Doctor
 2. Clinical officer
 3. Nurse
5. Number of health workers trained on under-five health care interventions _____
6. Specify type of training covered by the health workers.

7. Outreach services available
 1. Once per week
 2. Twice per month
 3. Once every quarter
 4. Not provided
8. If yes, specify the type of services offered

9. Have a community health worker linked to the child health programme
1. Yes
 2. No

B. EQUIPMENT AND SUPPLIES

1. The facility has the following equipment and supplies (Tick as appropriate)

ITEM	1. Yes	2. No	Remarks
1.1 Working weighing scale			
1.2 Supplies to mix ORS (cups, jug and spoons)			
1.3 Source of clean water			
1.4 Child vaccination cards			
1.5 Syringe and needles for vaccination			
1.6 IMCI chart booklet			
1.7 Functioning sterilizer			
1.8 Functioning fridge			
1.9 Ice packs and cold boxes			
1.10 Vaccines in stock			
a. BCG vaccine			
b. OPV vaccine			
c. Penta valent vaccine			
d. PCV10 vaccine			
e. Measles vaccine			
f. Tetanus Toxoid (TT) vaccine			
g. Rota Virus vaccine			

C. MEDICATIONS (for under-fives)

1. The facility has antibiotics in stock
1. Yes (Specify)_____
 2. No
2. The facility has drugs for malaria in stock
1. Yes (Specify)_____
 2. No

D. CHILD HEALTH SERVICES

1. How many days per week is the facility open?
(specify)_____
2. How many days per week are under-five health services provided? (specify the exact days)

3. How many days per week are immunization services provided? (specify the exact days)

4. Where do you refer the severely-ill child? (specify)

5. What is the average waiting time for a child to be seen by a health worker
 1. Less than 15 minutes
 2. 15-30 minutes
 3. 30-45 minutes
 4. 45-60 minutes
 5. More than 1 hour

A-III CARE-GIVER QUESTIONNAIRE

QUESTIONNAIRE NUMBER:

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1. DEMOGRAPHIC INFORMATION

(Circle the responses as appropriate)

(Weka dwara kwenye majibu)

a) Respondent (care-giver)

Anayejibu maswali (mwenye kumuangalia mtoto)

1. Age (*Umri*)

1. Below 18 years

2. 19-30 years

1. Chini ya miaka 18

2. Miaka 19 hadi 30

3. 31-40 years

4. 41-50 years

5. 50 years and above

3. Miaka 31 hadi 40

4. Maika 41 hadi 50

5. Miaka 50 na juu

2. Relationship to child (*Uhusiano na mtoto*)

1. Brother/sister

2. Mother

1. Ndugu au dada

2. Mama

3. Father

4. Grandmother

5. Others (specify) _____ -

3. Baba

4. Nyanya

5. Uhusiano nyingine

(eleza) _____

3. Gender

1. Male

2. Female

1. Mwanamume

2. Mwanamke

4. Marital status

1. Married

2. Single

1. Nimeoa au Nimeolewa

2. Sijaoa au sijaolewa

3. Separated

4. Divorced

3. Nimewachana na mume/mke wangu

4. Nilipewa Talaka

5. Others (specify) _____

5. Nyingine (Eleza) _____

5. Level of education (*Umesoma hadi wapi?*)

1. None

2. Primary incomplete

1. Sijasoma

2. Sikumaliza masomo ya msingi

3. Primary completed

4. Secondary completed

5. Tertiary

3. Nilimaliza masomo ya msingi

4. Nilimaliza masomo ya upili

5. Nilienda chuo

kikuu

6. Income (*Mapato*)

- | | | |
|---------------------------|--------------------|---------------------------------|
| 1. None | 2. Farming | |
| 1. <i>Hakuna</i> | 2. <i>Mkulima</i> | |
| 3. Business | 4. Salaried | 5. Others (specify) _____ |
| 3. <i>Mfanyi biashara</i> | 4. <i>Mshahara</i> | 5. <i>Mengine (Eleza)</i> _____ |

7. Religion (Dini)

- | | |
|-------------------|--------------------------------|
| 1. Christian | 2. Muslim |
| 1. <i>Mkristu</i> | 2. <i>Muslimu</i> |
| 3. Hindu | 4. Others (specify)_____ |
| 3. <i>Mhindi</i> | 4. <i>Mengine(Eleza)</i> _____ |

b) Child demographics (*Kuhusu mtoto*)

- Age (specify) *Umri (Eleza)*_____
- Is the child’s immunization up to date? (check on the clinic card)
Je, chanjo ya mtoto inaendelea kama inavyo takikana? (Angalia kadi ya Kliniki)
 - Yes
 - No
 - Ndio*
 - La*
- If child is above one year, has he/she completed immunization (check on clinic card)
Ikiwa mtoto ako na umri juu ya mwaka moja, je amemaliza chanjo? (Angalia kwenye kadi ya kliniki)
 - Yes
 - No
 - Ndio*
 - La*
- Number of siblings (specify) *Mtoto ana ndugu wangapi (Eleza)* _____

2. CHILD HEALTH INDICATORS (*HALI YA AFYA YA MTOTO*)

2.1 Has the child been ill during the past six months?

- Je, mtoto amegonjeka kwa miezi sita iliyopita?*
- Yes
 - No
 - Ndio*
 - La*

If yes complete the table below: (*Ikiwa amegonjeka, jaza hapo chini*)

2.2	2.3	2.4	2.5	2.6	2.7
Type of illness (<i>Ogonjwa</i>)	Duration of illness (<i>Muda aliyogonjeka</i>) 1. Less than 1 week 1. <i>Chini ya wiki moja</i>	Where was treatment sought <i>Mtoto alipata matibabu wapi?</i> 1. No treatment	What was the outcome <i>Matokea yalikuwa yapi?</i> 1. Recovery <i>1. Alipona</i> 2. Still sick on treatment	How much was paid for treatment <i>Matibabu ulikuwa pesa ngapi?</i> 1. No cost 2. <i>Bure</i>	Time taken to walk to nearest facility <i>Muda unachukua kufika kwa hospitali iliyo karibu</i>

	<p>2. More than 1 week</p> <p>2. <i>Juu ya wiki moja</i></p>	<p>1. <i>Hakutibiwa</i></p> <p>2. Health facility</p> <p>2. <i>Hospitalini</i></p> <p>3. CHW</p> <p>3. <i>Mtawishaji wa jamii</i></p> <p>4. Self medication</p> <p>4. <i>nilimpatia dawa mwenyewe</i></p> <p>5. Traditional healer</p> <p>5. <i>Mganga</i></p> <p>6. Faith healing</p> <p>6. <i>Muumini</i></p> <p>7. Others specify</p> <p>7. <i>Mengine (eleza)_____</i></p>	<p>2. <i>Anaendelea na matibabu</i></p> <p>3. Still sick not on treatment</p> <p>3. <i>Bado anagonjeka bila matibabu</i></p> <p>4. Others specify</p> <p>4. <i>Mengine (Eleza)_____</i></p>	<p>2. Less 100/=</p> <p>2. <i>Chini ya mia moja</i></p> <p>3. 100-500/=</p> <p>3. <i>Kati ya 100 na 500</i></p> <p>4. 501-1000/=</p> <p>4. <i>Kati ya 501 na 1000/=</i></p> <p>5. Over 1000/=</p> <p>5. <i>Juu ya 1000/=</i></p> <p>6. Don't know</p> <p>6. <i>Sifahamu</i></p> <p>7. Others specify</p> <p>7. <i>Mengine (eleza)_____</i></p>	<p>1. Less than 30min</p> <p>1. <i>Chini ya saa moja na nusu</i></p> <p>2. 30min – 1hr</p> <p>2. <i>Kati ya nusu saa na saa moja</i></p> <p>3. More than one hour</p> <p>3. <i>Juu ya saa moja</i></p>
1.Fever					
1.Joto mwilini					
2.Malaria					
3.Pneumonia					
4.Diarrhoea					
4.Kuhara					
5.AIDS related					
5.Ukimwi					
6.Don't know					
6.Sifahamu					
7.Others (Specify)					
7.Mengine (Eleza)_____					

3. CHILD HEALTH PRACTICES

3.1 Do you own a mosquito net in this house?

Je unayo neti ya kujikinga na mbu kwa hii nyumba?

1. Yes 2. No

1. Ndio 2. La

3.2 Does the child sleep under a mosquito net?

Je mtoto huyu hulala ndani ya neti?

1. Yes 2. No

2. 1. Ndio 2. La

3.3 If yes, is the net treated?

Kama ndio, neti hiyo imewekwa dawa?

1- Yes

1. Ndio

2- No

2. La

3- Don't know

3. Sijui

4- NA

3.4 What did this child feed on yesterday? Specify in the line provided

Mtoto huyu alikula nini jana? Eleza kwenye mstari ifuatayo

1. Morning (*Asubuhi*)

2. Mid-day (*Mchana*)

3. Evening (*Jioni*)

–

4. In between (*Katikati ya asubuhi, mchana na jioni*)

3.5 If child is below 6 months of age, indicate if on exclusive breastfeeding

Kama mtoto ako chini ya miezi sita eleza kama ananyonya peke yake bila chakula yoyote

1. Yes 2. No

1. Ndiyo 2. La

3.6 If below 24 months indicate if the child is still breastfeeding

Kama mtoto ana umri chini ya miezi ishirini na mine, eleza kama bado ananyonya

1. Yes 2. No

1. Ndiyo 2. La

3.7 If No above, at what age did the child stop breastfeeding?

(Specify) _____

Kama jibu ni la, je aliwacha kunyonya akiwa na umri gani?(Specify) _____

3.8 Observe growth monitoring card: was the child weighed last month?

Angalia kadi ya kliniki ya kuafuatilia kilo ya mtoto: Je mtoto alipimwa uzito mwezi uliopita?

1. Yes 2. No

1. Ndiyo 2. La

3.9 If yes, what was the trend of the curve?

Kama ndiyo, uzito wa mwili wa mtoto unatafsiriwa aje?

1. Upwards

Inaongezeka

2. Level

Haijaongezeka

3. Downwards

Inapunguka

3.10 During illness what do you give to the child with regard to fluids? (including breast milk)

Wakati mtoto anagonjeka kawaida unampatia nini upande wa vinywaji? (Hata maziwa ya mama)

1. Same as usual

Kama kawaida

2. Less than usual

Kidogo kushinda kawaida

3. More than usual

Mingi kushinda kawaida

4. None at all

Simpi hata kidogo

3.11 During illness what do you give to the child with regard to food?

Wakati wa ugonjwa unampa mtoto nini kulingana na chakula

1. Same as usual

Kama kawaida

2. Less than usual

Kidogo kushinda kawaida

3. More than usual

Mingi kushinda kawaida

4. None at all

Simpi hata kidogo

3.12 What should be given to a child less than five years with diarrhea(do not read the alternatives, tick all mentioned options)

Nini inapaswa kupatia mtoto chini ya umri ya miaka mitano ambaye anahara?

1. Nothing
Hakuna
2. Breast milk
Maziwa ya mama
3. Oral rehydration salts
Maji ya kuongeza mwili nguvu
4. Tea
Chai
5. Water
Maji
6. Water with Salt/sugar
Maji iliyo na chumvi au sukari
7. Others specify _____
Mengine (eleza)_____

3.13 What do you consider as danger signs for serious illness in children less than 5 years of age?(Do not read the alternatives probe for other options? Tick appropriately)

Ni nini unaelewa kama ishara kuwa mtoto chini ya umri wa miaka tano ana ugonjwa katika hali maututi?

Option	Danger sign (Ishara)
1.	Difficult/fast breathing <i>Shida na kupumua au kupumua kwa kasi</i>
2.	Repeated vomiting <i>Kutapika mara nyingi</i>
3.	Not eating/not breastfeeding/not drinking well <i>Kutokula/kutonyonya/kuto weza kukunywa vyema</i>
4.	Repeated watery stools <i>Kuhara maji maji mara mingi</i>
5.	Blood in stools <i>Damu kwenye choo</i>
6.	High fever/temperature <i>Joto ya juu mwilini</i>
7.	Getting more sick or very sick <i>Kugonjeka sana</i>
8.	Not getting better <i>Kuto pata nafuu</i>

9.	Convulsions
10.	Difficult to wake or unconscious <i>Shida kuamka au</i>
11.	Others specify, _____ <i>Mengine, eleza</i> _____

3.14 When was your household visited last by a CHW

Je, ni lini ambapo ulitembelewa nyumbani na mstawishaji wa jamii?

1. Less than 1 week ago

Chini ya wiki moja uliopita

2. 2 weeks ago

Wiki mbili iliyopita

3. 1 month ago

Mwezi moja uliyopita

4. Never visited

Sijawahi tembelewa

3.15 If visited, what did the CHW do to the child?

Kama ulitembelewa. mstawishaji wa jamii alifanyia nini mtoto?

1. Assessed the child

Alimpima mtoto

2. Provided treatment

Alipeana matibabu

3. Provided health education

Alipeana masomo kuhusu afya

4. Collected health information

Alichukuwa maelezo juu ya afya

5. Others specify, _____

Mengine, eleza _____

4. ENVIRONMENTAL HEALTH- WATER AND SANITATION

4.1 Presence and use of latrine

Kuwa na choo na matumizi yake

1. Present in use

2. Present not in use

3. Absent

1. Choo iko na inatumika

2. Choo iko na haitumiki

3. Hakuna choo

4.2 Observe for functional hand washing facility/leaky tin

Tazama kama kuma namna ya kuosha mkon/mkebe iliyo na mashimo

1. Present

2. Absent

1. Iko

2. Hakuna

4.3 When do you wash your hands? (enter all options mentioned)

Wakati gani ambapo wewe huosha mikono?

1. After meals
Baada ya kula
2. Before meals
Kabla ya kula
3. After changing baby's nappy
Baada ya kubadilisha mtoto napi
4. Before preparing food
Kabla yo kutengeneza chakula
5. Before feeding baby
Kabla ya kumpa mtoto chakula
6. After toilet use
Baada ya kutumia choo
7. Don't wash
Mimi huwa siohi
8. Others specify _____
Mengine, eleza _____

4.4 What is your main water source?

Maji huwa unatoa wapi?

1. Roof catchments
Kwenye mabati
2. Protected spring
Kisima iliyo funikwa
3. Protected well
borehole
4. Water vendors
Na nunua kwa wauzaji
5. Tap
5. Mfereji
6. Others specify _____
6. Mengine, eleza _____

4.5 What do you do to make your drinking water safe?

Unafanya aje maji yako iwe safi ya kutumia?

1. Boil (*Nachemsha*)
2. Add chemical (Specify) _____
3. Nothing (*Sifanyi chochote*)
4. Others specify _____
Naongeza daw(elezaa) _____ Mengine, eleza _____

4.6 How do you dispose off your solid waste?

Una tupa aje taka taka?

1. Burn (*Ninachoma*)
2. Rubbish pit (*Shimo ya takataka*)
3. Compost pit (*shimo ya manyua*)
4. Others specify _____
Mengine, eleza _____

4.7 How do you dispose off your child's stool?

Unatupa aje choo ya mtoto?

1. Bury (*Ninazika*)
kwenye kichaka
2. Throw in the bush (*Natupa*)

3. Throw in the latrine (*Natupa kwa choo*) 4. Others specify

Mengine,eleza _____

4.8 Record type of settlement

1. Formal 2. Informal

4.9 Observe and record type of housing

1. Temporary 2. Semi Permanent 3. Permanent

A-IV KEY INFORMANT INTERVIEW SCHEDULE

EVALUATION OF THE IMPLEMENTATION OF ESSENTIAL UNDER-FIVE HEALTH CARE INTERVENTIONS IN KISUMU EAST SUB-COUNTY, KENYA

DATE: _____ **LOCATION CODE:** _____

HEALTH FACILITY TIER: _____

Introduction and Consent:

Onyango Damaris Auma Ochanda is a student at Jaramogi Oginga Odinga University of Science and Technology, School of Health Sciences pursuing Doctor of Philosophy in Public Health. The focus of the interview is to better understand the implementation of under-five health services in Kisumu East sub-County. Findings from this study will be shared with caregivers, health workers, policy makers and other stakeholders to facilitate designing, implementing and strengthening of programmes that will aim at reducing the morbidity and mortality among this age group. Your participation in this discussion is voluntary and any responses given to the questions will be treated with confidentiality.

Thank you for taking the time to participate in this study.

By signing this form, I understand the conditions and willingly participate in the research as indicated above.

Signature: **Date:**

Age of respondent: _____ **Gender:** _____

Questions:

1. Tell me about yourself.
 - Profession _____
 - Qualification/level of training _____
 - Years of experience _____
 - How many years you have worked with under-fives _____
2. What are the main problems that the under-fives present with in this facility?

3. Which under-five health care interventions does the facility provide?

4. Explain your experiences with under-five health care interventions.
 - Immunization _____
 - Care for the malnourished _____
 - Care for HIV exposed under-fives _____
 - Growth monitoring _____
 - Care for the
sick _____
 - Emergency care _____
5. What could be the challenges to access of under-five health care interventions within the community served by this facility?

6. Suggest strategies for improving access of under-five health interventions

7. Suggest ways of improving the implementation of under-five health care interventions

8. What resources are available for implementation of under-five health care interventions?

9. What are the challenges for the implementation of under-five health care?

10. Do you have any additional comments on under-five health care interventions that we have not discussed?

A-V FGD GUIDE FOR COMMUNITY HEALTH VOLUNTERS

EVALUATION OF THE IMPLEMENTATION OF ESSENTIAL UNDER-FIVE HEALTH CARE INTERVENTIONS IN KISUMU EASTSUB-COUNTY, KENYA

DATE: _____

LOCATION CODE: _____

Name of Community Unit: _____

Onyango Damaris Auma Ochanda is a student at Jaramogi Oginga Odinga University of Science and Technology, School of Health Sciences pursuing Doctor of Philosophy in Public Health. The focus of the FGD is to better understand the operations of under-five health services and the involvement of community health volunteers in the care of under-fives in Kisumu East sub-County. Findings from this study will be shared with caregivers, health workers, policy makers and other stakeholders to facilitate designing, implementing and strengthening of programmes that will aim at reducing the morbidity and mortality among this age group. Your participation in this discussion is voluntary and any responses given to the questions will be treated with confidentiality.

Thank you for taking the time to participate in this Focus Group Discussion.

Questions:

1. Tell me about your work.

2. Explain what is involved in your daily activities with under-five children.

3. What are the main problems that the under-fives present with in this community?

4. Have you been trained on Community Integrated Management of Childhood illnesses (C-IMCI)?_____
5. What other training have you gone through with regard to care of under-fives?

6. Explain your experiences with sick under-fives in this community.

7. What are the danger signs and symptoms to look for in a sick under-five child?

8. Explain the interventions you would carry out for a sick under five who presents with:
 - a) Fever_____
 - b) Diarrhoea and vomiting_____
 - c) Ear infection_____
 - d) Cough_____
 - e) Convulsions_____
 - f) Malnutrition_____
9. Where do you refer sick under-fives?

10. Which are the resources that you have for care of under-fives?

11. What are the challenges you face when providing care for the under-fives?

12. Do you have any additional comments on under-five health care interventions in this community?_____

APPENDIX B: OUTLINE OF RESEARCH ACTIVITIES

Task	2013				2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Selection of Research topic	■											
Approval of research topic	■											
Concept writing	■											
Concept approval	■											
Proposal writing	■	■										
Proposal Defence			■	■								
Correction of proposal				■								
Recruitment and training of research assistants				■								
Pretesting of tools (Piloting)				■								
Tool review				■								
Data collection					■	■						
Data analysis and interpretation						■	■	■				
Report writing									■			
Submission of first draft for review by supervisor										■		
Professional language control and editing										■		
Dissemination of research findings and publications										■	■	

Final proof reading													
Submission of final thesis													
Thesis Defense													

APPENDIX C: TIER 2 HEALTH FACILITIES INCLUDED IN THE STUDY

AREA	LOCATION	HEALTH FACILITY
1. Urban	West Kolwa	<ol style="list-style-type: none"> 1. Nyalenda Health Center 2. Pandpieri Community Health Center 3. Kowino dispensary 4. God's Will Clinic 5. Abudant Life Clinic
	Korando A	<ol style="list-style-type: none"> 1. St. Mark's Lela dispensary 2. Kodiaga Health Center
2. Peri-urban	East Kolwa	<ol style="list-style-type: none"> 1. Chiga dispensary 2. St. Elizabeth's Chiga Dispensary
	Kajulu East	<ol style="list-style-type: none"> 1. Got Nyabondo dispensary 2. Kajulu Gita dispensary 3. Simba Opepo dispensary 4. Disciples of Mercy clinic 5. St. Consolata clinic 6. Mamboleo Medical clinic 7. Careplus Medical Services
	Kolwa Central	<ol style="list-style-type: none"> 1. Nyalunya Dispensary 2. Orongo dispensary

APPENDIX D: PERMISSION TO CONDUCT STUDY DOCUMENTS