

**FACTORS AFFECTING UTILIZATION OF INTEGRATED
MANAGEMENT OF ACUTE MALNUTRITION SERVICES FOR
CHILDREN UNDER FIVE YEARS IN EMBAKASI NAIROBI, KENYA**

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DECLARATION

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

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DEDICATION

This thesis is dedicated to my family who has been a great source of motivation and inspiration through my studies.

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DEFINITION OF OPERATIONAL TERMS

1. **Acute Malnutrition** - defined using Mid upper arm circumference of less than 12.5cm and weight for height Z score of less than -2SD
2. **Integrated Management of acute malnutrition**- defined as the outpatient and inpatient management of severe acute malnutrition
3. **Utilization of IMAM services**- defined as a percentage of malnourished children enrolled in the program and it was computed in this study as number enrolled in the program as a percentage of the total children sampled.

LIST OF ABBREVIATION/ACRONYMS

APHIA	AIDS, Population and Health Integrated Assistance
ASAL	Arid and Semi-Arid Lands
AWP	Annual Work Plan
CBO	Community Based Organization
CHA	Community Health Assistant
CHVs	Community Health Volunteers
DHIS	Demographic health Information System
FBO	Faith Based Organisation
GAM	Global Acute Malnutrition
HH	Household
HFA	Height for age
IMAM	Integrated Management of Acute Malnutrition
IYCF	Infant and Young Child Feeding
KDHS	Kenya Demographic Health Survey
MAM	Moderate Acute malnutrition
MOH	Ministry of Health
MUAC	Mid Upper Arm Circumference
NCHSIP	Nairobi County Health Strategy Investment Plan
NGO	Non-Governmental Organisation
OTP	Outpatient Therapeutic Programme
RUTF	Ready to use Therapeutic Food
SAM	Severe Acute Malnutrition

SCHMT	Sub County Health Management Team
SPSS	Social Package of Social Statistics
SLEAC	Simplified Lot Quality Evaluation of Access and Coverage
UNICEF	United Nations Children's Fund
WFA	Weight for Age
WFH	Weight for Height
WHO	World Health Organisation

ABSTRACT

Malnutrition, also defined as bad nutrition, is a serious public-health problem that has been linked to a substantial increase in the risk of mortality and morbidity among the affected populations. A large proportion of malnourished children are not enrolled in the treatment program as expected. The objective was to examine the factors that determine use of the Integrated Management of Acute Malnutrition services for children less than five years by caregivers within Embakasi Sub County-Nairobi, Kenya. A descriptive cross-sectional study design was used in the study. A total of 332 respondents were selected for the study. Purposive sampling was used in the identification of the participants. Quantitative data was collected using structured questionnaires while Secondary data was obtained from the monthly data in facilities implementing the program. The program performance indicators were compared with the sphere standards for management of acute malnutrition. The data was manually checked for clarity and completeness, then coded, entered and transported to Social Package of Social Statistics software version 21. The findings were presented in form of frequency and percentages in figures, tables and mean to describe the study sample in relation to relevant variables. The package was used to summarize the key findings and interpret the information in order to arrive at the conclusions of the research. Approval to conduct the research was sought from Kenyatta University Ethical Review Committee, Graduate School and National Council of Science and Technology. The study was limited by how well the participants in the study represent the population. Also, the study findings were limited by the honesty of the participants/ their nonbiased participation. In conclusion, the study established that majority of the respondents did not know where malnutrition treatment services were offered. Findings indicated that 41.3% had been utilizing integrated management of acute malnutrition services which was slightly higher than the proportion of the population knowledgeable on the availability of services which was 38.3%. About two thirds (75.6%) of the study participants were however aware of malnutrition. Morbidity, health seeking behavior, the level of education and knowledge on causes of malnutrition had a significant effect on the utilization of integrated management of acute malnutrition services. The study recommends the creation of awareness on the treatment of malnutrition and the availability of the services in the area so that the knowledge can be linked to practice. Proper referral networks need to be created to prevent further deterioration from malnutrition.

CHAPTER 1: INTRODUCTION

1.1. Background to the Study

Malnutrition has been shown to have a detrimental impact on health, physical development, brain development, and intellect especially during pregnancy and the first two years of life. According to the WHO, Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers 2 broad groups of conditions. One is 'under nutrition'- which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, obesity.

The consequences of malnutrition are: increased child mortality and morbidity hence burden to the health system is higher and leads to lower cognitive development in the affected individuals. If not addressed this leads to lower returns from investments in education; and lower productivity. As calculated in a recent World Bank report, 'malnutrition accounts for an economic loss of about 3 percent of Gross Domestic Product in developing countries'.

According to the Kenya Demographic Health Survey (KDHS2014) data, the national prevalence of malnutrition in children under the age of five is: stunting at 26% underweight at 11% with the prevalence of severe acute malnutrition at 4%. Malnutrition accounts for 54% of child deaths as an underlying cause ("Kenya: Country profiles" 2017). The high figures of malnutrition prevalence indicate a prolonged tragedy that needs prompt action.

Undernourished children are most likely to suffer from impaired development and are more vulnerable to disease and illness (Prasad, 2017). Scientific evidence has shown that the effects of chronic malnutrition are irreversible beyond the age of 2-3 years. This means that to break the cycle of poverty and malnutrition, children at risk must be identified and treated during their first two years of life.

Children who do not reach their optimum height or consistently experience bouts of weight loss during childhood are affected in the long term in numerous ways, such as, they do not reach their optimum size as adults hence may have less physical capacity for work, their brains are affected resulting in lower Intelligent quotients, and they are at greater risk of infection compared to children who are well nourished. Child malnutrition impacts on education attainment whereby, the degree of cognitive impairments is directly related to the severity of stunting and Iron Deficiency Anaemia (WHO). Studies show that stunted children in the first two years of life have lower cognitive test scores, delayed school enrolment, higher absenteeism and more class repetition compared with non-stunted children. Consequently, Vitamin A deficiency reduces immunity and therefore increases the incidence and severity of infectious diseases resulting in increased school absenteeism.

Child malnutrition also has an impact on economic productivity; for instance, the mental impairment caused by iodine deficiency is permanent and directly linked to loss of productivity in adulthood (“Integrated management of acute malnutrition including urban settings”).

Mothers of young children are encouraged to take their children every month to the local clinic where they will be weighed and have their growth plotted on a chart. This will ensure that correct information and advice is provided to mothers to support the healthy growth of their babies. The WHO growth charts are used to plot weight and height measurements of children under five years. . In primary health-care facilities and hospitals, health-care workers assess the mid-upper arm circumference or the weight-for-height/weight-for-length status of infants and children who are 6–59 months of age and also examine them for bilateral oedema. Infants and children who are 6–59 months of age and have a mid-upper arm circumference <115 mm or a weight-for-height/length <-3 Z-scores of the WHO growth standards (2), or have bilateral oedema, are immediately admitted to a programme for the management of severe acute malnutrition.

‘Wasting’ known as low weight-for-height, whereby a child is thin for his/her height but not necessarily short, also referred to as acute malnutrition carries an immediate increased risk of morbidity and mortality. Wasting is also assessed using MUAC tape where a cut-off of less than 11.5cm is considered severe acute malnutrition. On this note, children who are wasted have 5-20 times higher risk of dying from common diseases like diarrhea or pneumonia than well-nourished children. Acute malnutrition is classified into severe or moderate malnutrition based on anthropometric measurements. Children with acute malnutrition need immediate medical attention to prevent mortality.

Marasmus occurs at times when there is inadequate consumption of energy-giving food causing their bodies to become thin and they experience a feeling of weakness. Children with marasmus look old and wrinkled due to loss of subcutaneous fat.

Their skin is dry, and their faces are thin, with sunken cheeks and large eyes. Their abdomen looks swollen and they have sagging skin on legs and buttocks. Children with marasmus cry a lot, are very irritable and have increased appetite. They are liable to all kinds of disease.

Kwashiorkor on the other hand occurs due to children not getting enough variety of the right kind of foods, for instance when they eat only cereal-based porridge, their bodies especially their stomachs and legs swell due to fluid retention so they may look fat. Children with kwashiorkor present with what is called pitting oedema in both feet and lower limbs which can involve the whole body. Micronutrient deficiency, particularly anti-oxidant nutrients, might be a probable cause. Sores may develop on their skin and at the corner of their mouths. Their skin becomes pale and starts to peel off. Children with kwashiorkor are most likely to lose their appetite and an interest in their surroundings. Therefore, it is important that severely malnourished children are identified promptly and treated.

Current treatment capacity for malnutrition in Kenya is very limited, with only a few hospitals with trained medical staff and equipped facilities. In Nairobi County, the in-patient hospitals for management of acute malnutrition are Mbagathi and Mama Lucy Kibaki only (NCHSIP). The Bed capacity is limited, and in most cases, children are discharged after treatment of the concurrent infections and diseases, / and regaining their appetite, but not necessarily after having gained ideal weight and complete rehabilitation.

Hospital-based care is complemented by a network of Outpatient Therapeutic Program sites which provide treatment using a food-based approach until the child

reaches the ideal weight for height as well as nutrition education to the caretakers. However, health facilities have numerous access barriers, including distance, costs for the stay, sustenance of the caretaker, opportunity costs for the family, and lack of awareness about malnutrition as a condition by the community (Prinja et al., 2014). Therefore, though the treatment facilities do handle around one thousand six hundred cases a year, coverage is very low as compared to needs. Integrated Management of Acute Malnutrition was intended to increase the coverage of Severe Acute Malnutrition case management, as compared to traditional facility-based management. Bringing the treatment capacity for uncomplicated cases to local health centers and dispensaries reduce access barriers to nutrition services. Since treatment does not necessarily involve facility-based in-patient medical care. This includes referral of cases needing stabilization care to the IMAM outpatient therapeutic program after the transition phase thus allows for a shorter stay at an in-patient facility, this will reduce pressure on in-patient care capacity The IMAM program comprises active community case finding for malnutrition. This efforts would go a long way to reducing child mortality due to under nutrition.

1.2. Problem Statement

The importance of child nutritional status as an indicator for tracking the nutrition and health status of the population is well recognized. According to Caulfield LE, de Onis M, and deterioration of health and reduced survival of populations, as well as hindering the potential for countries to reduce poverty and therefore maximize socio-economic development.

According to the Kenya Demographic Health Survey (KDHS, 2014), stunting is at 26%, wasting at 4% while underweight is at 11%. The high rates of child under nutrition together with high mortality continue to deter the efforts of the government to provide quality health care hence the reduction. Management of acute malnutrition service is very crucial as one of the High Impact Nutrition Intervention (HINI) which is proven to be effective for child survival. According to a survey that was conducted by Concern Worldwide in November 2011, the program coverage was 32% against a national target of 75%. The IMAM program has a defaulter rate of 35% from the routine program data which is much higher than the sphere standards recommendation of less than 15%. The other sub-counties in Nairobi had a lower defaulter rate of 18.8% Dagoretti, Kamukunji 19.6%, Ruaraka 17.3%, Makadara 37%, Kasarani 11.8%, Starehe 5.6% and Westland's 33.3% as compared to Embakasi. This is the first time this study is done in Nairobi and it will be looking at the factors that contribute to low utilization of the IMAM services.

1.3 Justification

Integrated Management of acute malnutrition programs exists but the use is still very low. Poverty, non-availability of medicines, equipment and personnel, are often

considered as obstacles to adequate access to health-care services in developing countries. However, in some instances when these constraints are withdrawn, they continue to experience low patronage of available health services (e.g. Immunization, growth monitoring, antenatal care, etc.). This is a disturbing development. What might be contributing to this is unclear and thus underscores the need to identify and assess the impact of innovative experiments targeted at overcoming these access and patronage hurdles. Furthermore, promoting primary health care as the basis for the provision of quality and sustainable health care and making it accessible to the majority of the population is currently the prime concern and focus of the health delivery systems. In line with this, integrated management of acute malnutrition program focused on improving and maintaining child health and nutrition through child survival activities. The aim was to improve the quality, coverage, and utilization of health and nutrition services in Nairobi County. The findings of the study will contribute to the knowledge base about factors that determine use of IMAM services (Silali, 2014). The improved utilization of health and nutrition services is without doubt one area that will be of much interest to health managers in many developing countries. These findings are therefore relevant for policy makers and program implementers.

1.4 Objectives

1.4.1. Broad Objective

To examine the factors that influence utilization of the Integrated Management of Acute Malnutrition services for children under five years by caregivers within Embakasi Sub County- Nairobi.

1.4.2. Specific Objectives

1. To assess the influence of knowledge of integrated management of Acute Malnutrition sites on the utilization of the treatment services.
2. To determine whether Socio-demographic factors influence utilization of Integrated Management of Acute Malnutrition services
3. To assess whether knowledge on identification and management of malnutrition by caregivers of children under five years increases use of Integrated Management of Acute Malnutrition services

1.5. Research Questions

1. Does knowledge of IMAM sites increase the use of the services?
2. How do Socio-demographic factors affect utilization of Integrated Management of Acute Malnutrition services?
3. How does the knowledge on identification and management of malnutrition affect utilization of Integrated Management of Acute Malnutrition services?

1.6. Delimitations and Limitations

The study is limited by how well the participants in the study represent the population. Also, the results of the study are limited by the honesty of the participants, or their nonbiased participation.

This study is delimited to the caregivers of children under five years of age who live near the five IMAM sites, health workers working in those facilities and participants within the catchment population of the IMAM sites.

1.7. Assumptions

The researcher assumed the questionnaires would be completed regarding content and timeliness. Also, all information given by the respondent was considered accurate. Finally, all questionnaires distributed would be collected back.

1.8. Significance of the study

Management of acute malnutrition is a crucial service for prevention of child mortality. It is one of the High Impact nutrition Indicators (HINI) which is proven to be effective for child survival. Child nutrition indicators according to KDHS have remained unchanged for many years hence the need to understand the causes of poor utilization of the available services. Program utilization is an important aspect for managers especially for planning purposes.

1.9. Conceptual Framework

Utilization of IMAM services is dependent on various factors which are: Individual characteristics of the potential beneficiaries for instance: age, gender socio-cultural issues, and educational level. Program factors which would mostly support capacity building and avail logistics are crucial since erratic supplies of logistics would also affect program utilization. Community mobilization on the identification of signs of malnutrition is very crucial for the success of this program. Malnutrition knowledge has an effect on the utilization of the program. Health system factors, for instance, availability of the service and case detection for clients who visit the facility also an important aspect for program utilization.

The relationship between the variables is as illustrated in figure 1.1

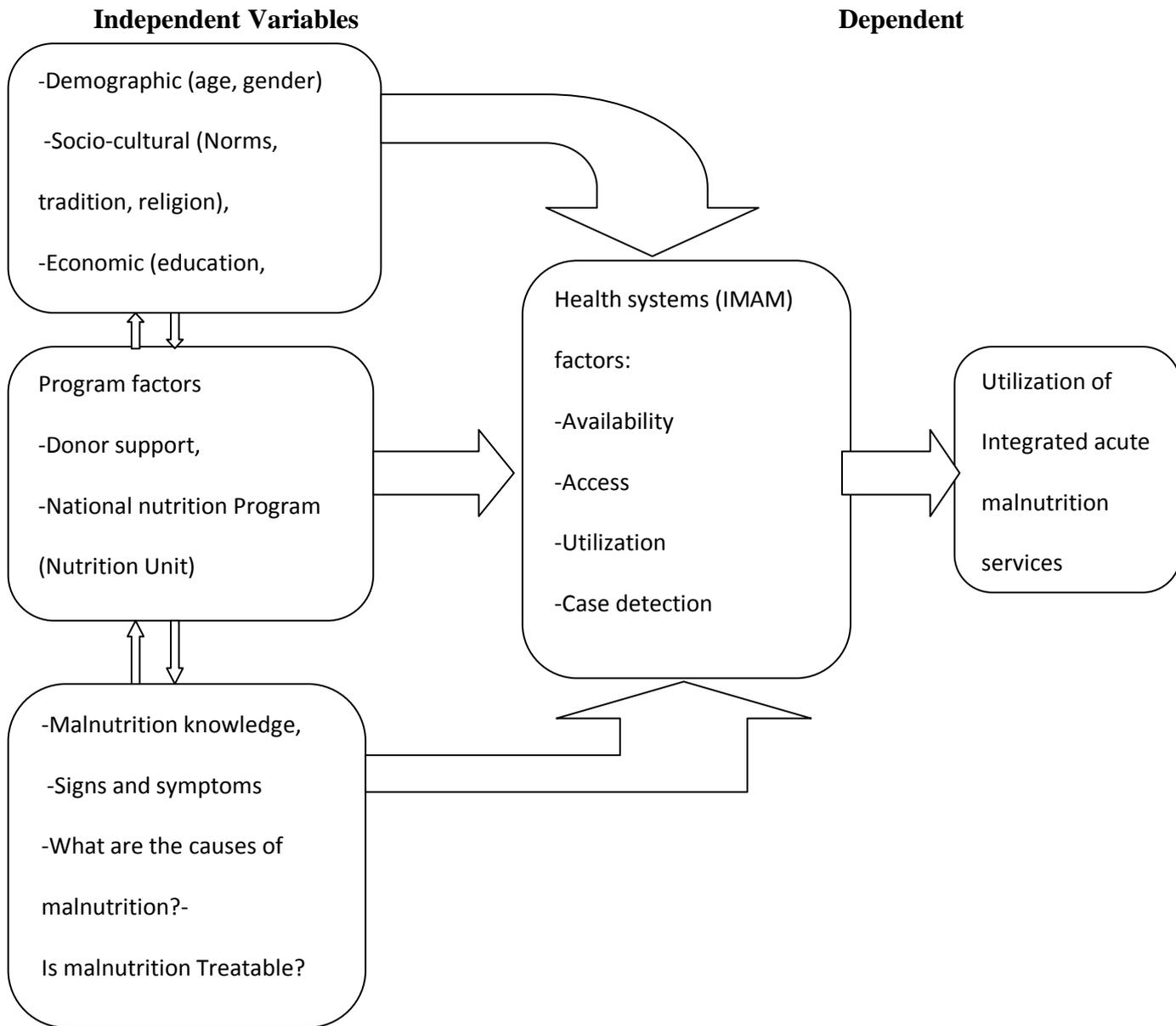


Figure 1.1: Conceptual Framework
Source: Developed from dependent and independent variables

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Malnutrition, mostly defined as bad nutrition is a serious public-health problem within Nairobi that has been associated with a substantial increase in the risk of mortality and morbidity, especially among children. According to KDHS 2014; 4% of children aged less than 5 years have severe acute malnutrition. Women of reproductive age and young children are the most affected with malnutrition. In 2000, ACC/SCN study had found out that In Africa and South Asia, 27–51% of women of reproductive age were underweight, and predicted that about 130 million (21% of all children) would be underweight by 2005 (Smith & Haddad, 2014).

2.2. Definition of malnutrition

Malnutrition is a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein and other nutrients causes measurable adverse effects on tissue / body form (body shape, size and composition) and function and clinical outcome. The term malnutrition does include obesity and micronutrient deficiency. However, mostly it's used to mean just under-nutrition from either inadequate calories or specific dietary components for whatever reasons. Malnutrition can often be very difficult to identify particularly in patients who are overweight or obese to start with. It happens very gradually, making it difficult to spot in the early stages. Some of the symptoms and signs to watch out for include: Loss of appetite, weight loss, tiredness, loss of energy, reduced ability to perform normal tasks, altered moods, poor concentration and poor or retarded growth in children.

Under nutrition encompasses stunting, wasting, and deficiencies of essential vitamins and minerals. The term hunger, which usually describes a feeling of discomfort from not eating, has also been used to describe under-nutrition, especially about food insecurity.

Protein-energy malnutrition (PEM) is often associated with micronutrient deficiency. Two forms of protein-energy malnutrition are kwashiorkor and marasmus, and they commonly co-exist. Kwashiorkor is due to an inadequate protein intake resulting in a low concentration of amino acids known as hypoalbuminemia; the main symptoms are edema, wasting, liver enlargement, steatosis, and possibly depigmentation of skin and hair. According to Chowdhury, M. S. I.; Akhter, N.; Haque, M.; Aziz, R.; Nahar, N. (2009), Kwashiorkor is identified by swelling of the extremities and belly, which masks the actual nutritional status. Marasmus is caused by an inadequate intake of both protein and energy foods. The main symptoms are severe muscle wasting, leaving little or no edema, minimal subcutaneous fat, and non-normal serum albumin levels. According to Katsilambros (2010), Marasmus can result from a sustained diet of low energy and protein, and the metabolism adapts to prolong survival, traditionally seen in famine stricken populations, food restriction, or anorexia conditions which are characterized by extreme wasting of the muscles and an old man's expression. The Integrated management of acute malnutrition program targets children with marasmus and kwashiorkor.

2.3. The Integrated Management of Severe Acute Malnutrition

Internationally, in response to the challenges and limitations of inpatient treatment, a new approach for the management of severe acute malnutrition evolved at the beginning of the year 2000. There was introduction of a decentralized community-based model involving Ready to Use Therapeutic Food (RUTF), a newly developed high energy-dense therapeutic food that can be supplied to caretakers for treatment at home. Previously for therapeutic milk inpatient treatment was indispensable. The therapeutic milk (F100) needed facility-based specialized preparation to ensure accurate dilution, use of clean water and immediate utilization due to rapid bacterial infestation. The approach called Community-based Therapeutic Care (CTC) involved management of severe acute malnutrition within the community following a period of community sensitization and mobilization. A primary aim of decentralization of treatment was to improve the coverage of programs beyond those levels achieved with inpatient programs. The Integrated Management of Acute Malnutrition (IMAM) approach is based on the integration of early screening of children, identification of malnourished cases and treatment into the existing government health system and community structures.

These global advances in the management of severe acute malnutrition provide an opportunity to increase treatment coverage and effectiveness through the community-based approach of the cases that do not show serious concurrent disease or medical complications in non-emergency settings.

Children who are identified as having severe acute malnutrition according to the WHO growth standards are first assessed with a full clinical examination to confirm

whether they have medical complications and whether they have an appetite. Children who have appetite and are clinically well and alert are treated as outpatients. Children who have medical complications, severe oedema or poor appetite present with one or more IMCI danger signs are treated as inpatients.

The IMAM approach has introduced a reclassification of malnutrition, using concurrent and related medical complications rather than solely the degree of wasting as the determinant for appropriate treatment protocol and the need for hospitalization of the malnourished patient. Those cases that are severely malnourished, but do not show further medical complications can be treated through routine, medications to eliminate underlying infections without hospitalization. Nutrition rehabilitation can be started immediately with the use of RUTF and can be managed at home with follow-up from regular health facilities on weekly basis. Malnourished cases with medical complication are admitted at stabilization centers, situated at hospitals or other health facilities with adequate capacity, for the treatment of these complications and recovering to a status where they can start nutrition rehabilitation. This approach reduces the duration of in-patient treatment and in addition reduces hospital costs per patient and opportunity costs for the patient's family.

Early identification of SAM cases through community level screening increases the number of children that can be treated at the health post level with a simple systematic medical protocol, rather than requiring intensive medical stabilization at a hospital or therapeutic feeding center. Generally, cases presented at hospitals and other treatment facilities are in advanced stages of severe malnutrition and show

high rates of concurrent medical complications. Early detection of SAM cases reduces the medical care necessary to recover good nutritional status, and improves the chances of successful rehabilitation.

Traditionally, admission to therapeutic feeding programs was based on Weight for Height, which identifies a different population of malnourished children. However, with the current WHO growth standards, MUAC has been identified as the anthropometric indicator with the best prognostic value for mortality. Unlike weight for height, MUAC has a direct relation to muscle mass and is therefore, a direct measure of nutrient reserves. Thus screening and admission by MUAC targets malnourished children at highest risk of mortality.

2.4. Criteria for transferring children from inpatient to outpatient care

Children with severe acute malnutrition, who are admitted to hospital according to the WHO IMAM guideline, can be transferred to outpatient care when their medical complications including oedema, are resolving and they have good appetite, and are clinically well and alert. The decision to transfer children from inpatient to outpatient care is determined by their clinical condition and not on the basis of specific anthropometric outcomes such as a specific mid-upper arm circumference or weight-for-height/length.

2.5. Criteria for discharging children from treatment

Children with severe acute malnutrition are to be discharged from treatment when their: weight-for-height/length is ≥ -2 Z-score and they have had no oedema for at least 2 weeks, or mid-upper-arm circumference is ≥ 125 mm and they have had no

oedema for at least 2 weeks. The anthropometric indicator that is used to confirm severe acute malnutrition and admission into the IMAM program is also be used to assess whether a child has reached nutritional recovery, Children admitted with only bilateral pitting oedema should be discharged from treatment based on whichever anthropometric indicator, mid-upper arm circumference or weight-for-height is routinely used in programme. Percentage weight gain is not be used as a discharge criterion.

2.6. Follow-up of infants and children after discharge from treatment for severe acute malnutrition

Children with severe acute malnutrition who are discharged from treatment program are periodically monitored to avoid a relapse.

Visible severe wasting is not included as a diagnostic criterion. However, all malnourished children are clinically examined when undressed, as part of routine management. Admission may also be warranted if there are significant mitigating circumstances such as disability or social issues, or there are difficulties with access to care. The proposed IMAM activities were planned for and implemented in close consultation with the Ministry of Health at the County and Sub County level and were in line with the MOH Annual Work Plan (AWP).

2.7: Program utilization factors

Program coverage or the proportion of eligible beneficiaries enrolled for a service is an important indicator of impact in humanitarian and nutrition programming. Prevention or treatment of severe acute malnutrition and moderate acute

malnutrition is one of Kenya's High Impact Interventions in Nutrition. Percentage of children under five years with severe acute malnutrition is an indicator for this intervention. The national target by the Ministry of Health is 80% in the arid and semi-arid lands and 90% among the urban poor. Increased utilization of preventive health services has the potential to improve the health of the population and in the long run reduce health system costs.

Utilization of service as defined by Obiechina & Ekenedo (2013), is the actual coverage and considers the following; ambulatory medical care services (outpatient and home); inpatient services (hospital); and preventive services. To achieve optimal levels of utilization, all the three Categories must enlist the cooperation and initiative of the population as well as those of the health service providers. The assumption was that the Health Ministry and other providers of health services knew the demand on their resources, upon which planning was based, by the number of people that sought services from the public facilities. There is at present increasing evidence, especially in the developing world, that many more who attempt to obtain such services are not getting them for a number of reasons. In Nigeria, particularly in Kwara State, the discrepancy between what the levels of health care utilization are and what they ought to be is easily discernible. This underscores current efforts in relating utilization to resources as well as to past and present planning efforts. It has been said that there is need to review planning efforts and their appropriateness, especially when viewed from the context of utilization of health care services.

Pediatric preventive services are particularly important for promoting health in childhood and into adulthood. Utilization rates of many preventive services remain

lower than recommended across infant, child, and adolescent age groups. Additionally, the use is uneven across racial, ethnic, socioeconomic, and other demographically defined groups. Barriers to preventive care access and utilization have been shown to exist at the individual, health system, and policy levels, impeding the achievement of recommended targets. Information, monitoring, and evaluation are important to monitor steady progress towards set goals and to identify, and address constraints to program implementation.

Ethnic and racial differences in utilization were noted across some preventive services; these differences were attributed to both individual- and family-level factors (e.g., cultural values, patient knowledge) and to structural barriers (e.g., provider recommendation, spatial accessibility). According to Forsberg et al 2014, utilization is uneven across racial, ethnic, socioeconomic, and other demographically defined groups. Barriers to preventive care access and utilization exist at the individual, health system, and policy levels, impeding the achievement of recommended targets. The literature also indicated associations between type of health coverage (public vs. private vs. uninsured) and utilization of services, although this relationship is not static across services. For example, public coverage may be associated with lower uptake of certain preventive services and higher uptake of others, compared to private coverage.

Several studies indicated that infant and child wellness visit rates were sub-optimal, and may be related to socio-demographic factors. Berckelaer, Mitra, & Pati (2011) performed a secondary analysis of a longitudinal prospective cohort of Medicaid-

eligible mothers and their infants in Philadelphia. The study found that well-child visits dropped significantly after six months of age, and multivariate regression analysis indicated that certain socio-demographic characteristics and prior health care utilization patterns were associated with uptake of well-child care. Several studies have investigated relationships between maternal education/literacy and receipt of well-care visits and immunizations. A multivariate analysis of the NIS by Schuller & Probst (2013) found that higher maternal education was a strong predictor of immunization status, and Berckelaer, Mitra, & Pati (2011), multivariate analysis of data from a longitudinal prospective cohort study of Medicaid-eligible mothers in Philadelphia found the same although Pati found no association between maternal health literacy and immunization status. Patients' knowledge and intentions about the services themselves and not just about their eligibility for coverage may present particular barriers to utilization.

2.8. Summary

The shift from the traditional hospital based management of malnutrition to the integrated approach has had its challenges. The target was to improve the uptake of treatment of malnutrition and in the long run reduce malnutrition cases in the community. This is because with the new approach the child is treated as an outpatient as opposed to the traditional approach where all severe acute malnutrition cases were managed as inpatients. There are many factors which can affect program utilization from the literature review. This calls for the need to research on the patient factors that may facilitate or prevent uptake of this treatment services.

CHAPTER 3: MATERIALS AND METHODS

3.1 Introduction

This section contains an evaluation and discussion of the findings of the assessment of factors affecting utilization of Integrated Management of Acute Malnutrition (IMAM) services for children less than five within Embakasi Sub County- Nairobi. The statistical package for social science, program was applied in analyzing the findings. Data was entered into the computer using Microsoft excel. The computer was able to process and generate analyzed data regarding percentages, tables, and transformation of the various variables used in the study, rates, as well as cross-tabulating the variables. In the process of counting, using frequencies, percentages and tabulating the data, the researcher also used the computer to calculate the means and medians. Subsequently, these statistical tools were translated into descriptive data for easier, faster understanding and analysis. The study was designed to answer three questions to which the responses to these and other subsidiary questions as seen in chapter one are the subjects of this chapter.

3.2 Research Design

A descriptive cross-sectional study design employing both qualitative and quantitative approaches was used to get data. A Cross-sectional study design was preferred because it can be used to investigate associations between risk factors and the outcome of interest. In this study, the researcher considered the risk of malnutrition and the outcome of interest as the health seeking behaviour of the community. This design can estimate the prevalence of outcome of interest because

the sample is taken from the whole population; with these design many outcomes and risk factors can be assessed. The findings from cross-sectional studies are useful for public health planning, understanding disease etiology and for the generation of hypotheses. In such studies, there is no loss to follow-up as data collection is at a point in time (Setia, 2016).

Data collection is a one off, and it is relatively inexpensive and takes up a little time to conduct which is appropriate for a thesis.

3.3 Study Variables

Dependent Variable:

The utilization of Integrated Management of Acute Malnutrition (IMAM) program services for children less than five years.

Independent Variables:

The independent variables are, awareness of availability of IMAM services, socio-demographic factors, attitudes and perceptions about IMAM services and public knowledge of malnutrition

3.4. Study Area

The study was carried out within Embakasi, Nairobi County. Embakasi Sub County was selected as it is a Sentinel location with poor health indicators and has various informal settlements including: Mukuru Kwa Njenga, Mukuru Ruben and Kayole Soweto. Further, underweight prevalence was 5% which was higher in this area than the Nairobi Global Acute Malnutrition (GAM) rate of 4.1%. The program coverage in the Sub County was low 26.7% as compared to 30.9% for the County while the

defaulter rate was 35% as compared to the national recommendation of less than 15% (DHIS 2011).

3.5 Target Population

The target population for the study was households with malnourished children less than five years who live within catchment of the five health facilities implementing the program. The total target populations that live within the area are; 259612 (NCHSIP) people. The caregivers of the children were the respondents. The children under five years are estimated to be 32455 (NCHSIP)

3.6 Sampling Techniques and Sample Size Determination

The sample size was determined using the Fisher (Jung, 2013).

$$n = z^2 pq / d^2$$

Where; n = desired sample size

z = the standard normal deviation which is 1.96 at 95% confidence interval.

P = proportion of study subjects estimated to have a particular characteristic in this case 26.7% of malnourished children are enrolled in the program in Embakasi Sub-County (Concern Worldwide Surveillance 2010)

q = 1-p (the proportion of population not at risk)

d = permitted error at 95% confident interval or 0.05

Therefore, sample size will be $1.96^2 \times 0.267 \times 0.733 / 0.0025 = 300.7$ approximately

301

Adjusted by 10% to 331

Sampling frame

Proportion of malnourished children within Embakasi Sub County

$$=5.3/100 * 32455= 1721 \text{ children (GAM rate for Embakasi)}$$

The Sample of health facilities:

$$nf = 61/ (1+61/5)=4.9 \text{ approximately 5 facilities}$$

Through the Community health strategy, households are linked to the nearby health facility for health services by the Community health Assistant (CHA).

3.6.1 Sampling Techniques

The research employed various sampling techniques to sample the respondents. These included; Purposive sampling technique to select the households' respondents for the questionnaires. A list of households with children less than five years was provided by the community health volunteers who cover the area. The researcher chose this sampling technique because malnourished children are a special group.

Non probability sampling technique (purposive sampling) was also used to select the respondents for focus group discussion. They included; caregivers who had children in the integrated management of acute malnutrition (IMAM) program and community health volunteers who serve the area.

The health workers were also purposively selected as they are the ones in charge of the IMAM program in the specific facilities hence would provide information on the program thus capturing the required data for the study topic.

3.6.2. Sample Size per Facility

Table 3.1: Sample size per facility

TYPE	Health facility	Health workers	Catchment population	Number of households	Children under 5 Years as a proportion i.e. 12.5%	Sample size
Faith Based	Mukuru MMM	1	89258	17852	11158	113
Faith Based	Ruben Centre	1	79084	15817	9886	101
Community Based	Soweto Kayole PHC	1	8738	1748	1093	12
Private	Provide International. Kayole	1	3771	754	472	5
Public	Kayole 2 SDH	1	78761	15752	9846.0	101
Total	5	5	259612	51922	32455	332

3.7. Construction of Research Instruments

Structured questionnaires were developed based on the research objectives and the research questions.

Key Questions

Respondents were required to fill in a questionnaire providing the following information.

To determine demographic Characteristics of Study Population the key questions were on; Gender of household head, number of household members, number of under Fives, period of stay by the caregiver, level of education of household head, gender of under-five and number of under-fives in the household

To determine morbidity and health seeking behaviour of the population, the key questions were on whether any of the family members were ill the previous two weeks, type of illness suffered by child, whether they sought treatment, place of treatment, reason for not seeking treatment for those who didn't seek and awareness of a malnutrition treatment site.

To determine the caregiver's knowledge of malnutrition, the key questions were, whether the respondent is aware of malnutrition, whether they know any signs of malnutrition for instance; understand weight loss, hair changes, lack of appetite and big belly are signs of malnutrition.

Caregiver knowledge on causes of malnutrition was also determined by probing to get their responses on the likely causes of malnutrition. For instance, Poor hygiene, Poverty, 3 Illness and Unbalanced diet.

Caregiver knowledge on prevention of malnutrition was also determined by first asking the respondents whether they are aware that it is preventable. After which they were asked to state any prevention they are aware of for instance; dietary

diversification, immunization, prompt treatment on infections and whether taking medications would aid in prevention of malnutrition

These were pretested before printing of the final version which was approved by the Kenyatta University Ethics Committee.

Anthropometric equipment was sourced from neighboring facilities for use in taking weight, height and Mid Upper Arm Circumference.

3.8 Pretest of the Questionnaires

Questionnaire pretest was done at Muthaiga in Kayole division Soweto where six caregivers of children less than five years with acute malnutrition were interviewed using the Structured questionnaire. The population was not sampled for the study but has a population with similar characteristics to the sample. This was done to check on the validity of the research instruments, consistency and the time required for the administration of the structured questionnaires. Trained research assistants were involved in the activity. Feedback from the pretest was included in the final version of the questionnaire.

3.9: Data Collection Techniques

Quantitative data collection was done using research assistant administered structured questionnaires. Qualitative data was collected using a focus group discussions guide which was developed based on the research questions to get information from caregivers of children less than five years and respondents at the community and facility level. Secondary data on the incidence of malnutrition were obtained from the Ministry of health for the preceding year.

3.10. Anthropometric Measurements

Anthropometric measurements were taken for a total of 332 eligible children including weight and heights. Weight was recorded in kilograms (kg) to the nearest 0.1kg. Children were weighed using electronic weighing scales and those who were unable to stand, had their measurements obtained from the difference between weights of mother/caretaker as she/he holds the child and the weight of the mother/caretaker alone.

The screening was based on MUAC < 11.5cm for severe acute malnutrition and <12.5cm for moderate acute malnutrition. Heights/lengths measurements were carried out using measuring boards (stadiometers) and were recorded in centimeters (cm) to the nearest 0.1 cm. Children aged more than 24 months (more or equal to 85cm) heights were measured while standing, while those less than 24 months or less than 85cm, had their lengths measured while lying down. Clinical evaluations of the malnourished children was undertaken to check for the presence of edema. Edema was recorded as present when a shallow imprint persisted on both feet when the pressure was removed and absent when there was no pitting of the dorsum of both feet. The program utilization status of the children was also checked (whether enrolled in the IMAM program or not). Trained research assistants served as data collectors while supervision of the data collection was done by a trained team.

3.11. Qualitative Data Collection

In-depth key informants' interviews (KIIs) were done. The key informants comprised; community-owned resource persons and health workers in charge of

health centers serving the communities. The key informants provided information on causes of malnutrition and utilization of nutrition and health services in the health facilities.

3.12. Data Analysis

Quantitative data collected was coded, processed and cleaned for inconsistencies and outliers. The qualitative data was analyzed through the selection of concepts, categories and themes that involved reading through the data and developing codes with similar connections between categories. Data was analyzed using SPSS version 21 as per the specific research questions using frequencies and percentages. The relationship between the independent variables and the dependent variable was established using Chi-square test of association and multivariate regression analysis since the responses were categorical. Findings were presented in the form of text, charts, graphs, and tables.

3.13. Quality Control

Quality control was a continuous process throughout the study and all data collected at the same point in time to maximize internal and external validity and reliability of the findings. The research assistants were trained for two days on how to take measurements including weights and lengths/heights and MUAC. The questionnaires were translated into Swahili language and translated back into English. The selected research assistants were fluent in both English and Swahili languages. The questionnaires were pre-tested to structure and modify grammar and language used in the research instruments so as to avoid bias, misinterpretations, ambiguity and improve content. The weighing scales and measuring boards

(stadiometers) were standardized to the nearest 0.1kg and 0.1cm respectively. The weighing scale was recalibrated to zero after every child was weighed. Completed questionnaires were checked by the principal investigator daily for accuracy, completeness, and consistency before leaving the study sites.

Pre-test was carried out for consistency, timing, accuracy and reliability. Cronbach's alpha coefficient was used to test reliability where an alpha (α) score of 0.70 or higher would be considered satisfactory. The pre-test was conducted in a different locality and research tools presented to the University Research Ethics Committee for validation by the supervisors and research panelists before data collection.

3.14. Logistical and Ethical Considerations

Permission to conduct the study was sought from the Ministry of Higher Education, National Council of Science and Technology and from Kenyatta University Ethical Review Committee.

The relevant authorities in the health facilities involved in the study were also requested for permission before start of the activity.

Informed Consent that outlined voluntary participation, confidentiality and anonymity were obtained from all the respondents before administration of the questionnaire.

3.15. Inclusion Criteria and Exclusion Criteria

The study only included consenting respondents (caregivers) from households with children less than five years who had acute malnutrition and that had lived within the catchment population of the IMAM sites for more than six months

The study excluded well-nourished children and households who had lived within the catchment population for less than six months

CHAPTER 4: RESULTS

4.1. Introduction

In this section, the results of the study are described and the analyses of the data presented. The results are obtained from a sample size of 332. The results describe the level of use of IMAM services, socio-demographic characteristics of the study group; status of knowledge on the availability of Integrated Management of Acute Malnutrition (IMAM) services and knowledge on identification & management of malnutrition on utilization of Integrated Management of Acute Malnutrition. The analysis provides the relationships between socio-demographic variables, the awareness of IMAM services, and knowledge on identification and management of malnutrition with the utilization of IMAM services.

Table 4.1: Nutritional status assessment

The nutritional status of all the sampled children was assessed before inclusion in the study. The study only included children who had acute malnutrition.

Anthropometric indicator	Frequency	Percentage
WFA z score		
<-2SD	271	81.6
<-3SD	61	18.4
Total	332	100.0
WFH z score		
<-2SD	252	75.9
< -3SD	80	24.1
Total	332	100.0
Oedema		
No	328	98.7
Yes	3	0.8
Total	331	100.0
MUAC		
<11.5 cm (SAM)	75	22.6
11.5-12.5cm (MAM)	257	77.4
Total	332	100.0

Table 4.2: Demographic Characteristics of the Study Population

The demographic indicators considered in the study were gender of the household head, number of under-fives in the household, population of the household, level of education of the household. The findings are as outlined in the table below

Characteristic	Frequency	Percentage
Gender of household head		
Male	322	97.0
Female	10	3.0
Total	332	100.0
Household members		
<3	150	45.2
4-5	153	46.1
>6	29	8.7
Total	332	100.0
Under Fives		
1	244	73.5
>2	88	26.5
Total	332	100.0
Period of stay by the caregiver		
less than one year	56	16.9
1 - 5 years	206	62.0
6 - 10 years	65	19.6
Over ten years	5	1.5
Total	332	100.0
Level of education of household head		
Primary	91	27.4
Secondary	196	59.0
Above secondary	45	13.6
Total	332	100.0
Number of under-fives in the household		
<6months	54	16.3
6-12months	167	50.3
over 12months	111	33.4
Total	332	100.0

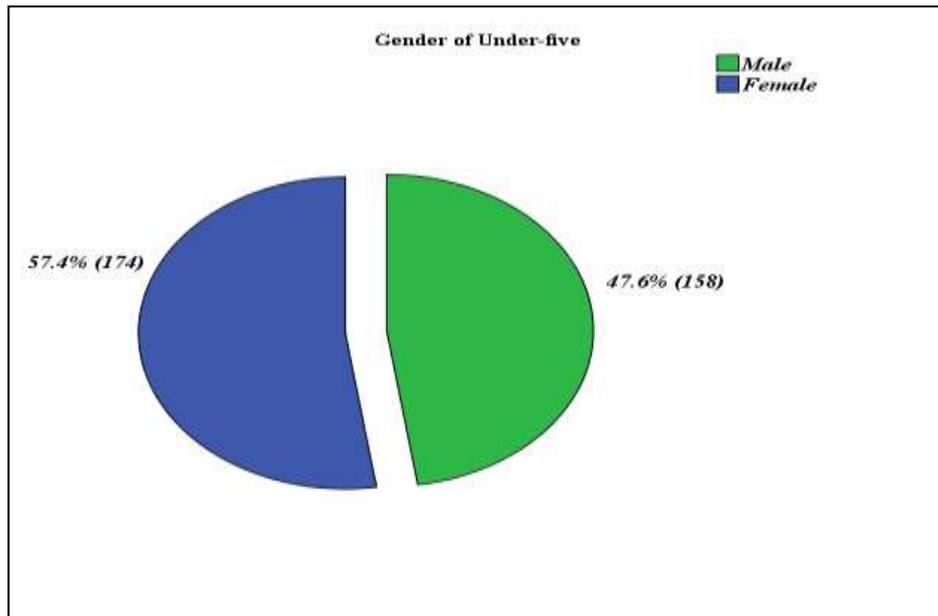


Figure 4.1: Gender of the children sampled

From the results, majority of the under-fives were females as outlined in figure 4.1.

Table 4.3: Analysis of demographic Factors on Utilization of IMAM

The bivariate results for the demographic factors on utilization of IMAM are summarized in the table below.

Population influence	Use of IMAM (n=151)*		Bivariate analysis		
	Yes n (%)	No n (%)	χ^2	df	P-value
Gender of household head					
Female	7 (100)	0 (0.0)	0.750	1	0.386
Male	130 (90.3)	14 (9.7)			
Number of person in household					
Three and below	55 (90.2)	6 (9.8)	0.200	2	0.905
Four - Five	67 (90.5)	7(9.5)			
Six and more	15 (93.8)	1(6.2)			
Number of under five in household					
One	11(10.5)	94 (89.5)	0.646	2	0.596
More than Two	3(6.7)	43 (93.3)			
Period of stay in years					
6months -1 year	3 (10.7)	25 (89.3)	4.880	3	0.685
1-5years	6 (6.5)	87 (93.5)			
<5-10 years	5 (20.0)	20 (80.0)			
>10 years					
Education level of household head					
Primary and below	3 (7.9)	35 (92.1)	0.131	2	0.936
Secondary	9 (9.6)	85 (90.4)			
Tertiary and above	2 (10.5)	17 (89.5)			
Age in months of under five					
<6 months	4 (7.0)	53 (93.0)	6.584	2	0.037
6-12months	8 (10.0)	72 (90.0)			
Over 12 months	2 (14.3)	12 (85.7)			
Gender of under-five					
Female	6 (7.7)	72 (92.3)	0.031	1	0.854
Male	8 (11.1)	65 (90.3)			

*Abbreviations: n, the total number of respondents; χ^2 =chi square; DF=degree of freedom; *row. Fisher exact tests have been where counts are less than five.*

Significant p values in bold.

4.1.1. Social-demographic Factors Influencing Utilization of IMAM Services

The association of social demographic factors with use of Integrated Management of Acute Malnutrition services was explored using variables such Gender of household head, numbers of persons, Number of under-fives, Number of person aged 5-15 years , over 15 years, period of stay in the study area, level of education of household head, age and gender of under-five year's children. The most common period of stay in the study area among the most household 206 (62.0%) was one to five years, majority of the household heads had gone through secondary education 196 (59%).

The period of stay was not statistically significant to utilization of IMAM services ($\chi^2 =4.880$ df=3; P=0.685). A higher proportion 25 (89.3%) of those who had lived less than one year had utilized IMAM services compared to those have lived more than five years 20(80%) and between one to five years 87 (93.5%). Whereas there was no significant difference in multivariate analysis, respondents whose families had stayed for less than a year were twice (4.880; 95% CI 0.532- 14.504; p = 0.685) more likely to utilize IMAM services than those who have stayed for over five years. Similarly, those who had stayed for between one to five years were 87% (0.481; 95% CI 0.103- 2.248; p = 0.353) more likely to utilize IMAM compared those who have lived for more than five years. Age of the under-five was statistically

significant in the utilization of IMAM. The utilization of IMAM services was high among respondents whose child was less than six months and lower with over 13 months. ($\chi^2 = 6.584$; $df=2$; $p=0.037$)

The proportion of households that utilized IMAM services was common among household headed by a male 130 (90.3%) and 7(4.6%) among those headed by a female. There was no significant statistical difference between gender of the household head and the utilization of IMAM services ($\chi^2=0.750$ df 1 $p=$ 0.386). Bivariate results, indicated no statistical association between the number of persons in the household and the utilization of IMAM services ($\chi^2=0.750$; $df=1$ $p=0.386$). The utilization of IMAM services was highest 67 (90.5) in household with 4-5 members, less than three members 55 (90.2%) while households with more than six members the utilization were 15(93.8%). Bivariate analysis indicated no statistical association between the number of household members and utilization ($\chi^2=0.200$; $df=2$ $p=0.905$ similarly, there was no statistical association between the number of under-five in household and utilization of IMAM services ($\chi^2=0.646$; $df=2$; $p=0.724$). Among the under-five; most were female 174 (52.4 %), while 158 (47.6 %) were male. Cross-tabulation indicated that there was no statistical association between head of household' level of education and utilization of IMAM services ($\chi^2 =0.131$; $df=2$; $p=0.936$). Among those whose household head had primary education, 35(92.1%) utilized IMAM Service. There was low utilization among those whose household head had the tertiary level of education. Qualitative data supported some observations; for instance, from the focus group discussion one

participant said, *'sometimes I miss my appointment because I have travelled upcountry, but I fear to tell the nurse*

Morbidity and health seeking behaviour

Respondents were asked several questions which assessed the dynamics of the household members such as health status and knowledge regarding IMAM services.

The results are outlined in the table below.

On further analysis of the common diseases reported by the 26.2% of the survey population who responded to have been sick 2 weeks prior to the survey it was shown that the most prevalent disease in the survey population was diarrhoea at 49% (n=74) which was followed by the prevalence of chest pain and cough which was at 38.4% (n= 58) The other diseases that were reported included malaria and fever 12.6% (n=19),

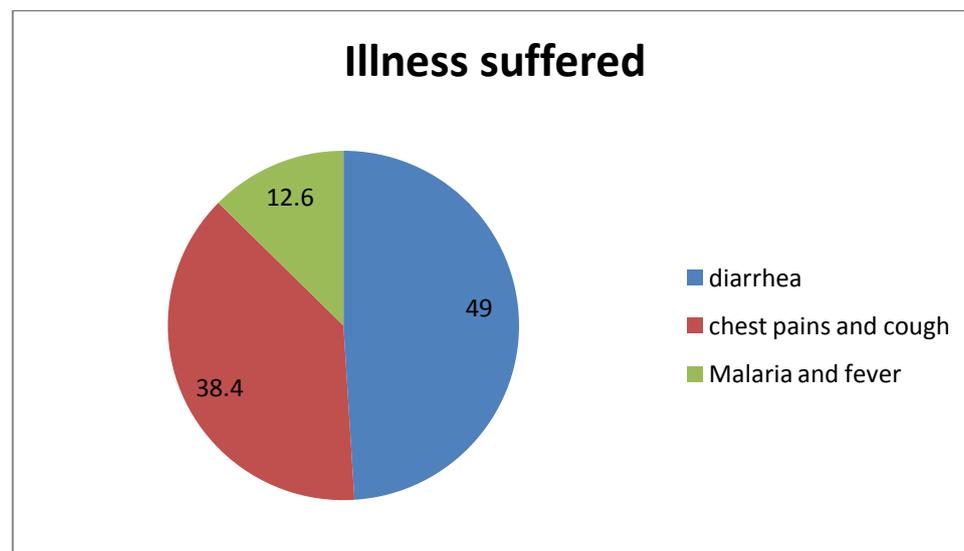


Figure 4:2.Disease prevalence.

Table 4.4: Morbidity and health seeking behaviour

Characteristic	Frequency	Percentage
Morbidity		
No	171	51.5
Yes	161	48.5
Total	332	100.0
Type of illness suffered by child		
diarrhea	74	49.0
chest pains and cough	58	38.4
Malaria and fever	19	12.6
Total	151	100.0
Sought treatment		
No	14	9.3
Yes	137	90.7
Total	151	100.0
Place of treatment		
None	14	9.3
mission hospital	9	6.0
pharmacy	13	8.6
Clinic	16	10.6
private hospital	10	6.6
public hospital	89	58.9
Total	151	100.0
Reason for not seeking treatment		
no money	9	64.3
minor illness	5	35.7
Total	14	100.0
Aware of malnutrition treatment site		
No	240	72.3
Yes	92	27.7
Total	332	100.0

4.1.2. Knowledge of treatment of malnutrition site and utilization

The first question was whether a family member was sick in the last 30 days preceding the study 161 (48.5%) answered affirmatively. The utilization of the IMAM services varied among those who admitted to being unwell. The type of illness strongly associated ($\chi^2 = 7.636$, $df=2$; $p= 0.022$) with the utilization of IMAM services. The analysis revealed that, a higher proportion 70 (94.6%) of sick

with fever and malaria- related illness utilized the IMAM services compared to those who were suffering from upper respiratory (a cough, fever, and breathing) illness as illustrated in Table 4.5. Most of the clients who were unwell visited the public facility. This finding was supported by one of the participants during the FGD who said, *'we prefer to visit the public facilities because we don't pay any money for treatment.'* This was also echoed by another who said, *'The services are good but sometimes we have to wait for a long time to get the services'*. This was also captured by the key informant who said, *'The free treatment offered in public facilities has been of importance to mothers and therefore they can bring their children without fear of being charged.'* It was also mentioned that, *'distance covered to the IMAM sites is short the facilities are easily accessible.'*

From the key informant's interview one of the participants said, *'mothers queue for a long time before being attended to thus get discouraged hence don't return to the facility thus increase the default rates.'* It was also mentioned that, *'some health workers speak harshly to the mothers making them feel embarrassed thus don't return for the services.'*

A big proportion of those who were ill went to the pharmacy to purchase medication 89 (58.9%) as opposed to going to the hospital. This was echoed during the key informant interview, *'some mothers delay taking their children to the facility (go to the traditional healer or buy drugs from chemists instead) this is a major contributor to poor program coverage.'*

Table 4.5: Analysis of the population's Knowledge on Availability of IMAM and Utilization

Population influence	Use of IMAM (n=151)*		Bivariate analysis		
	Yes (%)	No n (%)	χ^2	df	P- value
Place of treatment(n=151)					
None	0	14 (100%)	8.541	3	< 0.001
Public hospital	35 (100)	0			
Private hospital	13 (100)	0			
Pharmacy	89 (100%)	0			
Type of illness for children (n=151)					
Chest pains and cough	48 (82.8%)	10 (17.2%)	7.636	2	0.022
Diarrhoea	70(94.6%)	4 (5.4%)			
Fever and malaria	19 (100)	0 (0%)			
Know where malnutrition service are (n=151)					
Yes	42 (91.3)	4 (8.7)	0.026	1	0.872
No	95 (90.5)	10 (9.5)			

*Abbreviations: n, the total number of respondents; χ^2 =chi square; DF=degree of freedom; *row. Fisher exact tests have been where counts are less than five.*

Significant p values in bold

Table 4.6: Knowledge on causes of malnutrition

Characteristic	Frequency	Percentage
Awareness of malnutrition		
No	81	24.4
Yes	251	75.6
Total	332	100.0
Understand weight loss is a sign of malnutrition		
No	113	45.0
Yes	138	55.0
Total	251	100.0
Understand hair changes is a signs of malnutrition		
No	155	61.8
Yes	96	38.2
Total	251	100.0
Don't know signs of malnutrition		
No	224	89.2
Yes	27	10.8
Total	251	100.0
Awareness that lack of appetite and big belly is a major signs of malnutrition		
No	230	91.6
Yes	21	8.4
Total	251	100.0
Poverty		
No	177	70.5
Yes	74	29.5
Total	251	100.0
Illness		
No	185	73.7
Yes	66	26.3
Total	251	100.0
unbalanced diet		
No	215	85.7
Yes	36	14.3
Total	251	100.0

4.1.3. Caregivers' knowledge of Malnutrition

The Knowledge level on identification and management of malnutrition was at 56.6%. This was computed based on knowledge on major signs (32.4%), major causes (26.0%), knowledge of the possibility of preventing (91.6%) and ways of

prevention (67.1%). Knowledge levels of major signs and causes scored very poor (<50%)

Table 4.7: Knowledge on prevention of malnutrition

The respondents were asked various questions to gauge the knowledge on malnutrition prevention. The responses are as outlined below:

Characteristic	Frequency	Percentage
Aware that malnutrition is preventable		
Yes	279	84.0
No	53	16.0
Total	332	100.0
Aware that Dietary diversification prevents malnutrition		
No	96	42.5
Yes	130	57.5
Total	226	100.0
Aware that Immunization prevents malnutrition		
No	217	96.0
Yes	9	4.0
Total	226	100.0
Aware that prompt treatment of infections prevents malnutrition		
No	174	77.0
Yes	52	23.0
Total	226	100.0
Aware that taking medicine prevents malnutrition		
No	198	87.6
Yes	28	12.4
Total	226	100.0

Table 4.8: Analysis of Identification and Management of Malnutrition on Utilization of IMAM

Variables	Use of IMAM (n)*		Bivariate analysis		
	Yes n (%)	No n (%)	χ^2	df	P-value
Understand what malnutrition is (n=151) Yes No	119 (90.2) 18 (94.7)	13 (9.8) 1 (5.3)	0.415	1	0.519
Know loss of weight as sign of malnutrition (n=132) Yes No	46 (97.9) 73 (85.9)	1 (2.1) 12 (14.1)	3.886	1	0.037
Know hair change is sign of malnutrition (n=132) Yes No	46 (97.9) 73(85.9)	1 (2.1) 12 (14.1)	4.900	1	0.032
Aware that unhygienic condition causes malnutrition (n=132) Yes No	47 (83.9) 72 (94.7)	9 (16.1) 4 (5.3)	4.242	1	0.039
Knows that malnutrition is preventable(n= 151) Yes No	13 (9.5) 124 (90.5)	1 (7.1) 13 (92.9)	0.083	1	0.773
Knows diet diversity prevents malnutrition (n=123) Yes No	65(89) 45(90)	8 (11) 5 (10)	0.29	1	0.865
Understand that Immunization prevent malnutrition(n= 123) Yes No	109 (89.3) 1 (100.0)	13 (10.7) 0 (0.00)	0.119	1	0.730
Understand that prompt treatment prevents malnutrition (123) Yes No	88 (90.7) 22 (86.4)	9 (9.3) 4(15.4)	0.809	1	0.368

Abbreviations: n, the total number of respondents; χ^2 =chi square; DF=degree of

freedom; *row. Fisher exact tests have been where counts are less than five.

Significant p values in bold.

4.1.4. Identification and Management of Malnutrition Knowledge on Utilization of IMAM Services

The third objective of the research was to assess the effect of knowledge on identification and management of malnutrition on the utilization of Integrated Management of Acute Malnutrition services. These factors included understand what malnutrition is all about, Knowledge on signs of malnutrition such as loss of weight and signs of malnutrition, hair change is a sign of malnutrition; knowledge on the cause of malnutrition such as the unbalanced food causes malnutrition, the unhygienic condition causes malnutrition. Understanding that malnutrition is preventable and food diversification prevents malnutrition and finally treatment of malnutrition. All the factors considered in this objective were not significantly associated with utilization of IMAM as shown in Table 4.7.1. Knowledge is power and an important tool in the promotion of nutrition. Against 332 respondents who participated in the study 251 (75.6 %) understood malnutrition but among this informed respondents 138 (55%) know that loss of weight and 96 (28.9%) change of hair is a signs of malnutrition. On bivariate analysis knowledge on malnutrition ($\chi^2=0.415$ df=1 p<0.519) were not significantly associated with the utilization of IMAM as shown in the Table 4.3.3., However weight loss ($\chi^2=3.886$ df=1 p=0.037), hair change ($\chi^2=4.900$ df=1 p=0.032) were associated with the utilization.

Similarly 130 (57.5%) against the 226 respondent who are knowledgeable on malnutrition were conversant with causes. 130 (57.5) and 154(54.6%) are aware that unbalanced diet and unhygienic condition precipitate malnutrition. However, this knowledge, did not translate to significance on bivariate analysis- unbalanced

diet ($\chi^2=0.029$, $df=1$ $p<0.865$), and unhygienic condition ($\chi^2=4.242$ $df=1$ $p<0.039$). Similar results were obtained from respondents' knowledge that malnutrition is preventable. Majority of the respondent 279(84.0%) agreed with the proposition that malnutrition is preventable while, 130 (57.5%) agreed that food diversification prevents malnutrition. On the other hand, 217 (96.0%) disagreed that immunization prevents malnutrition while a 52 (23%) agreed that prompt treatment prevent malnutrition. As with variables in this objective, knowledge that malnutrition is preventable ($\chi^2=0.083$, $df=1$ $p=0.773$), food diversification ($\chi^2=0.029$, $df=1$ $p=0.865$), immunization ($\chi^2=0.119$ $df=1$ $p=0.730$ and prompt treatment ($\chi^2=0.809$, $df=1$ $p=0.368$ were not significantly associated with the utilization of IMAM services. From the key informant interview it was stated that, '*most clients admitted in the program were identified during the early stages of malnutrition.*'

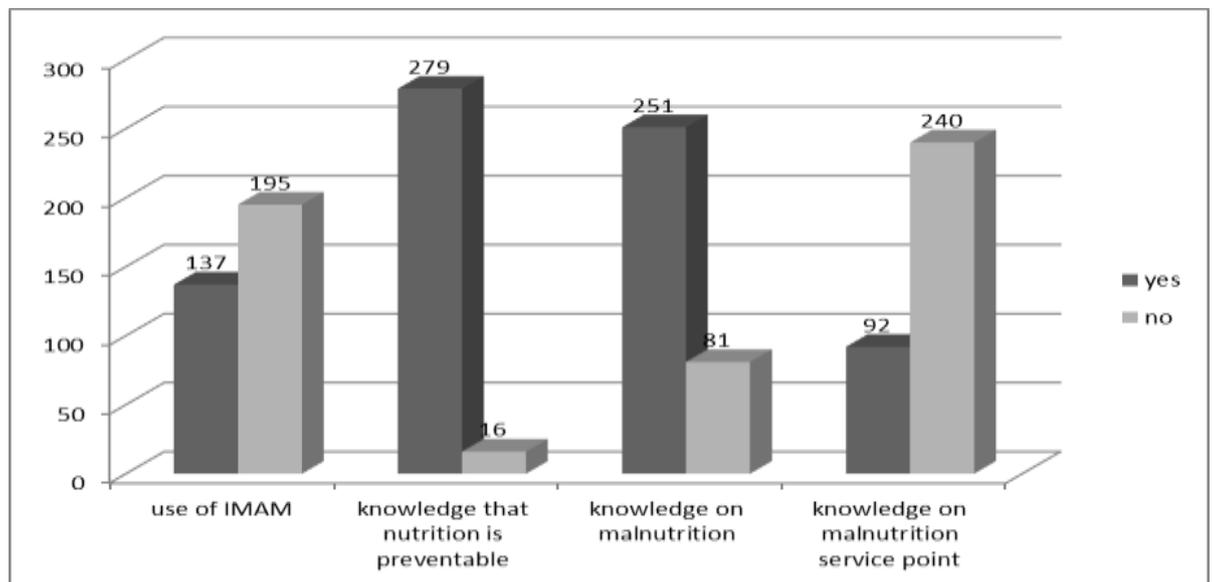


Figure 4.3: Knowledge and Use of IMAM (Frequency)

The graph above summarizes the findings of the study. Only 137 out of 332 utilized the IMAM services which represents 41.3% of the respondents. While only 92 respondents which corresponds to 27.7% were aware of the IMAM sites. A big proportion responded positively that they are aware of malnutrition 251 which is 75.6% of the sampled caregivers.

CHAPTER V: DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.0. Introduction

This chapter presents the findings constructed from the results and relations with similar studies on the topic.

5.1. Discussion

In this study, a child was deemed to have utilized IMAM services if the card indicated some date of services based on less weight. Children are at a higher risk of developing malnutrition challenges when underweight. Notably; this study showed that 137 (41.3 %) of the respondent interviewed sought IMAM services as illustrated in figure 4.2. This denotes that management of acute Malnutrition is still below the recommended coverage of 70% for urban areas which is a major challenge in the area.

This may be due to the fact that majority of the study respondents lack adequate knowledge on signs of malnutrition and means of prevention despite being aware that malnutrition is preventable and can be treated at appropriate facilities. This finding concurs with (Lang'o, 2011) in a study titled social determinants of child under-nutrition in urban informal settlements in Kenya, who reported that 'levels of under-nutrition (underweight, stunting, and wasting) are high in the urban slums of Kenya and that the key intermediate social determinants are poverty, lack of employment, low levels of maternal education, ante-natal care and birth spacing as well as poor child care practices and poor household sanitation and access to safe drinking water.' It also corroborates with Strides Legacy Series, (2011) in a study titled strides legacy: using local solutions to reduce malnutrition in Uganda which

revealed an average prevalence of acute malnutrition at 17.3 % and Hobbs & Bush, (2014) who reported that in countries, worst-affected by malnutrition the national rates are above 10%.

It however negates the preposition that acute malnutrition is generally higher in rural areas, far from the main 'seat of power' capital city than urban areas (Hobbs & Bush, 2014). It can, therefore, be deduced that knowledge is an essential pillar in enhancing the role of the community/family in management of severe acute malnutrition. Knowledge on signs and ways of prevention assist in early detection identification and prevention of malnutrition in family/community.

For this reason, quality engagement of the communities is pivotal regarding awareness of signs and prevention of malnutrition. The nutrition situation in Kenya's refugee camps improved considerably in 2010 with global acute malnutrition rate indicators reaching their lowest rates ever – 5.6% in Hagadera and 7.6% in Kakuma(international rescue committee, 2011). The finding is dissimilar also to a survey by Concern Worldwide and funded by UNICEF in 2009, which said chronic malnutrition (38% stunting) among the urban poor is higher than the current national rate of 26% (United Nations Children's Fund -UNICEF, 2013). This denotes that urban malnutrition is still a challenge especially in the informal settlements.

Use of IMAM services is based on awareness/knowledge, and this study looked at three aspects, which are: awareness on malnutrition, the knowledge that malnutrition is preventable and understanding where to get nutritional services. The study found that 279 (84%) were aware that malnutrition is preventable while 92 (27.7%) know points/place of services however majority are not knowledgeable on malnutrition

signs and prevention. This finding was collaborated by the qualitative perspective that majority of mothers are aware about nutrition and challenges experienced. For example, through the FGD session, one participant said, *‘Most people in the community are knowledgeable on under nutrition which makes it easier to address issues.’* This was echoed by another who said, *‘I take the baby for the six weeks immunization and to have the baby weighed the nam guided on nutritional wellbeing of the child.’* This was also mentioned by the key informant who said, *‘Mothers are able to identify signs of malnutrition in their/ other children and can refer to the facilities.’*

5.1.1. Social-Demographic Factors Influencing Utilization of IMAM Services

The period of stay was not statistically significant in relation to utilization of IMAM services. From the study, the respondents whose families had stayed for less than a year in the area were twice more likely to utilize IMAM services than those who had stayed for more than five years. Similarly, those who had stayed for between one to five years were 48% more likely to utilize IMAM services compared to those who have lived for more than five years. The significance of period of stay may be an indicator of family stability both socially and economically. For example poor water supply was identified as significant risk factors of all three types of childhood under-nutrition (Kavosi et al., 2014). From 1998 to 2009, there was a protective effect against stunting for wealthier families and households with electricity, for both countries.

Finally, better educated mothers were less likely to have stunted children and girls were less likely to be stunted than boys (Hoffman, Cacciola, Barrios, & Simon,

2017). This corroborates well with Hobbs & Bush, (2014) who said that beyond the immediate causes of acute malnutrition, there are numerous ‘underlying’ and ‘basic’ causes of the condition, which include but not limited to quality of family, resources, acquaintance with environment employment, social capital, education and land.

In contrast, Nott (2016) reported that the growth of a proto-capitalist economy which thrived on the exploitation of landless labour meant the rural populations without access to land were often the poorest and most malnourished, in Uganda.

The gender of the household head was not statistically significant however, utilization of IMAM services was common among household headed by a male than that by a female. This was expected since mothers are the primary caregivers at home and are more emotionally attached to children than fathers. On the other hand, men are more apathetic, independent and concerned with bigger personal and family problems. This concurs with Chizoba (2014) who reported that Dietary choices are influenced by parents’ nutritional ignorance, preference for alternative foods and true or perceived food allergies.

This confirms the conclusion by UNICEF, (2009c, p.37) that for malnutrition to improve there should be emphasis on social norms, gender equity and maternal access to education. The bias to female-headed families’, shows that single women are economically sound and stronger. World Food Program suggests that there is a strong link between malnutrition and poor health in children and women and poverty interventions should focus on reducing male-female inequalities in society. Age of the under-five was statistically significant in the utilization of IMAM. The utilization of child health services was high among respondents whose child was less

than six months and lower with over 13 months. This may be because young children are more at risk and vulnerable. Hobbs & Bush, (2014) explained clearly the reason behind the vulnerability of under-five children that at certain times of the year, households may be forced to cut back on their daily food intake, which puts children aged 6-23 months at particular risk of becoming acutely malnourished.

The gender of under-five child was not statistically significant to utilization. This denotes that malnutrition does not discriminate children by gender. This concurs with Musa et al., (2016) in a study in Bangladesh on malnutrition in children six to 60 months old who reported an equal number of males and females. Asfaw, Wonderferash, Taha, & Dube (2015) in a study in South Ethiopia, found that Male children were 2.5 times more likely to be underweight than female children. This differs with Ali, Ambreen, & Shah (2018) who showed that the prevalence of malnutrition was very high in female as compare to male. In males the prevalence was 28%, while in females the prevalence was almost 42%. The difference is further confirmed by Fuchs, Sultana, Ahmed, & Hossain (2014) in Tamil Nadu, India amongst children younger than four years old; poor nutritional status was directly associated with the gender of the child.

However in most studies males are malnourished. Gritly, Albashir, & Ali Ibrahim (2016) found that more boys than girls younger than five years old had malnutrition in Ethiopia and this was related to Bain et al., (2013) who noted to that marasmus represents an adaptation to starvation whereas kwashiorkor represents a days-adaptation to starvation. Demilew, & Abie (2017) also citing a study in Botswana reported that in the age group of children zero to three years old in Botswana;

malnutrition was more prevalent in males than in females. This conflicting finding in this study may be probably, because the current study was done in an urban setting where people are enlightened.

From the study number of persons in household was not statistically significant to utilization. However, utilization was high in the household with more than six members.' The size and composition of the family, gender equity, rules of food distribution within the household, income, availability and access to and the death of the breadwinner Demilew, & Abie (2017) can all contribute to food malnutrition (Hobbs & Bush, 2014). This may be because children compete for food when the family is large while at the same the time attention from the mothers is divided. This concurs with UNICEF data that the causes of primary acute malnutrition are essentially poverty, social exclusion and loss of entitlement. These factors influence the quantity and quality of food available.

Similarly, there was no statistical association between the number of under-five in household and the utilization of IMAM services. However the use of IMAM services was high among households with one under five. This finding agrees with Shetty (2010) who showed no significant association between the nutritional diagnosis and number of births. Setia (2016) in a study in India amongst children five to seven years old found that the high birth order of a child was associated with the child being malnourished.

On the other hand, babies are sometimes weaned too early because of another birth, causing the mother to cease breastfeeding of the first baby and in turn get weaned on less nutritious food causing the older child to become ill when the new baby arrives.

Furthermore, no statistical association was found between the numbers of persons aged 5-15 years, number of person over 15 years in the household about utilization of IMAM services. However, the utilization of IMAM services was high among households with more the three members aged between 5-15 years. This negates the finding by Asfaw, Wonderferash, Taha, & Dube (2015) in a study in Ethiopia amongst mothers 15 to 49 years old and children younger than five years old, who showed the highest rate of stunting in children with a birth order of four or five (54%), and then a birth order of six or more (53%). Jeyaseelan and Lakshman, (1997) older age was more likely to be associated with malnutrition.

It is important to realize that within any given society, marked socio-cultural differences exist, be it between a town and a country, the educated and non-educated or the employed and the peasant farmer. The level of education of the household head was not statistically associated with the utilization of IMAM but utilization was high with primary education. The fact that the study was carried out in an urban setting may explain this phenomenon. This is similar to UNICEF, (2009c, p.36) which reported association between low maternal literacy and poor nutritional status of children three to 23 months. This is, however, different from UNICEF data that the underlying causes of malnutrition include; levels of household food security, inadequate care of children and women, low education levels and information, poor health services and an unhealthy environment (availability of sanitation and safe water. Elsewhere Shetty (2010) reported no significant association between the education level of the mother/caregiver and nutrition status of children. The careers of parents may affect the nourishment of family members. For example, those from

poorest families have a lot of demands on their time and cannot afford to leave home for long periods to stay with their malnourished child during treatment.

5.1.2. Knowledge on Availability of IMAM and Utilization

Ill-health may be a marker or breaker of attachment between child and mother (Maren et al., 2015). Older studies have indeed hypothesized that emotional deprivation and abrupt breaking of the mother infant bond could play a role in the development of malnutrition. It is expected that any sickness among the housemembers decreases, the quality and quantity of attention and special food to under-fives. This study however disagrees and reports that status of family members is not associated with utilization. This may be because the maternal care, emotional stimulation, nutritional and social aspects were not completely disentangled.

The type of illness suffered by family member was strongly associated with the utilization of IMAM services. For example people sick with diarrhoea related illnesses were synonymous with the utilization than those suffering from upper respiratory (cough, fever, and breathing) illness. This is synonymous with the statement that malnutrition is often precipitated by infection. Acute malnutrition is closely associated with infection and illness. In fact, a 'vicious circle' can be said to exist between the two (Hobbs & Bush, 2014). This is because malnutrition weakens a child's defenses against infection; while on the other hand, infection reduces appetite and prevents the body's normal absorption of food, hence worsening the malnutrition (Ibid.).

This finding is in tandem with Talbert et al., (2012) and Shculler & Probst (2013) who simultaneously more diarrhoea in non-oedematous children and similar rates of bacteraemia in the two types of malnutrition. According to Smith, & Haddad (2014) it is uncommon for well-nourished children to die from diarrhoea, therefore maintaining a good nutritional status can help with the improvement of child survival. This is therefore an opportunity to develop an integrated response to treating both acute malnutrition and these associated diseases (Hobbs & Bush, 2014).

The number of sick persons and the age category of the sick person were not significantly associated to the utilization of IMAM services. It seems plausible that a caretaker would seek help for a child with malnutrition regardless of whether there are other sick in the household. In contrast, a parent may not necessarily seek help for a child who is sick from other illness, unless other symptoms related to malnutrition develop. Inadequate access to health care all contribute to malnutrition. Majority of the sick person were treated in public health facilities.

From the qualitative data it came out clearly that they were comfortable with the free services. Household proximity and the free medical services may have played a role in the choice of facility. However, type of facility of was not associated with the utilization of IMAM services. This contrasts with Strides Legacy Series (2011) that the pattern of treatment could be explained by care-seeking behaviour of parents and caregiver. This indicates confidence in health facility changing the notion that health facilities routinely lack supplies and trained staff hence sick people like

malnourished children and their caregivers often trek long distances for assistance in well-equipped facilities.

5.1.3. Knowledge on Identification and Management of Malnutrition and utilization of IMAM Services

The concept of malnutrition and its dynamics such as signs for instance; loss of weight and change of hair are within the realm of respondents. These findings negate the prevailing mass ignorance and apparent lack of impact of health education programs. Probably this was because the study settings are urban.

Knowledge on malnutrition and on signs of malnutrition such as loss of weight and hair change was not significantly related to the utilization of IMAM. However, high proportion of household who knew that loss of weight is a sign of malnutrition were associated with the utilization. Lack of nutritional knowledge can lead to misconceptions about food, traditions, signs and symptom of malnutrition that are passed on from generation to generation. Elsewhere dietary choices are influenced by parent's/caregiver's nutritional ignorance, preference for alternative foods and true or perceived food allergies. The study finding complemented by the two statements validates the importance of community capacity building.

The respondents were conversant with causes of malnutrition and the most mentioned causes of malnutrition were unbalanced diet and unhygienic condition. This is important because according to Setia, (2016) inadequate dietary intake, poor nutritional status and issues related to feeding and hygiene go hand in hand. Similarly Prasad (2017) say that child care practices also include protecting the children's food and drinks from contamination to reduce the risk of infections. For

example Setia (2016) say that caregiver's unwashed hands can cause infections such as diarrhea which can exacerbate malnutrition.

However, knowledge of unbalanced diet and unhygienic condition as causes of malnutrition were not significant in relation to the utilization. This contrast with Setia (2016) who found an association between the nutrition related knowledge and mild malnutrition in children younger than four years old in India. This also contradicts Schuller & Probst (2013) who reported that good household hygiene practices are critical in prevention of malnutrition. Schuller & Probst (2013) further say that child waste inside the house, prolonged storage of cooked food, feeding with unwashed hands and storage of food and water in uncovered containers can cause diarrhoea which may worsen malnourished children. These poor hygiene practices lead to contaminated food and fluids.

Transforming awareness into practice is one of the main challenges of achieving a long-term and sustainable reduction in malnutrition rates. A substantial body of research indicates that children's early mental, motor, and social development is significantly influenced by the early treatment, exposure and nourishment given. Normal growth and development of infants and young children demands care that adequately meets their basic physical needs (nutrition, health, clothing, housing, sanitation, protection from dangers, etc.) as well as their socio-emotional or psychological needs. This is premised on the knowledge and background of the care giver. In this study many of the household care givers know that malnutrition is preventable and food diversification prevents malnutrition while prompt treatment

prevents malnutrition. However, the narrative that immunization prevents malnutrition was not plausible to the respondents.

Knowledge that malnutrition is preventable, food diversification prevents malnutrition, immunization prevents malnutrition and prompt treatment prevents malnutrition was not significantly associated with utilization of IMAM. Other underlying factors such as; the role of cultural practice may have influenced this outcome. For example (international rescue committee, 2011) reports that whereas people receive the information on several occasions and knows what the ideal practice should be; traditional beliefs prevail and lead their behavior practice. Kiplagat, Musto, Mwizamholya, & Morona (2014) suggested that shifting to these best practices and the rejection of some traditional beliefs cannot be instantaneous, particularly with respect to sensitive topics where traditional beliefs are constantly reinforced.

These finding chimes with (international rescue committee, 2011) which said that Nutrition in general is one of the areas in which outcomes are severely affected by multiple factors and areas such as food security, health, infrastructure, education and security. Awareness and education activities should therefore be systematically extended to all opinion leaders in the community if they are to have a comprehensive and lasting effect on actual practices (international rescue committee, 2011).

In regard to food diversification, it may not be statistically significant because the numbers of households are not able to give a variety of foods due to limited resource rather than knowledge. This finding is analogous to UNICEF (2010) which reported

that a more diversified diet is highly correlated with such factors as caloric and protein adequacy, percentage of protein from animal sources (high quality protein), and household income. A similar report was found by (Kageni, 2013).

5.2. Conclusion

From the study findings it can be deduced that: Malnutrition is still prevalent in Embakasi Sub county Nairobi, Kenya. In contrast, utilization of the integrated management of acute malnutrition (IMAM) services for children under five years is low 137 out of 332 (41.2%). Knowledge on malnutrition, prevention status and facilities for treatment are high. Knowledge on signs and means of prevention of malnutrition is low.

From the study objective there are many factors as to why the utilization of the integrated management of acute malnutrition (IMAM) services for children less than five years is low. For instance; the period of stay of the household was not significant to utilization while age in months of the under-five child was a significant social-demographic factor in relation to the utilization of IMAM Services. Gender of the child under-five, number of under-five in household; gender and level of education of household head; number of persons, numbers of persons aged 5-15 years, persons over 15 years and household head were not statistically significant.

However, the utilization of IMAM services was high among households headed by male, among respondents whose child was less than six months, household with more than six members and household which was headed by people with primary

level of education. This concurs with a study in Bangladesh where older age, primary education, and lower economic condition were positively associated with community clinics awareness and visitation (MOH&FW, Bangladesh 2014).

The type of illness suffered by the child was strongly associated with IMAM services utilization while number of sick persons in household and type of facilities for treatment were not. For example sick children with diarrhea related illness were likely to use IMAM services.

Knowledge on malnutrition, prevention, treatment and place of treatment is high. However, knowledge did not translate to action since all the knowledge parameters were insignificant in relation to the utilization of IMAM. For instance Knowledge on malnutrition, signs (loss of weight &, hair change), and causes of (food diversification & prompt treatment) were not significant to utilization of the services.

5.3. Recommendations

5.3.1. Recommendations from the study

From the research findings; the use of integrated management of acute malnutrition at the public health facilities is high compared to visits to the private facilities for the same, therefore there is need for improvement of this services and additional of more resources to this setting to better the services.

Awareness is needed to emphasize the need for food diversification and entrench the cultures of community nutrition in the community. Community activities involving healthcare workers and community leaders could play vital roles in increasing awareness and improving access of healthcare services through Community clinics.

There is need to create awareness on malnutrition and the available treatment services in order to improve uptake of the services as it was came out that most people are not aware of the treatment services. Only 38.3% of the population aware of malnutrition knew about the treatment sites.

5.3.2 Recommendations for Research

From the study findings, the following aspects should be considered for future research: Since the use of use of integrated management of acute malnutrition (IMAM) is lower in private and faith based facilities, there is need for further research to find out the underlying factors. Since knowledge on the IMAM sites doesn't translate to utilization it would be good to find out why by doing an assessment of the health facility factors that would impact utilization. The role of culture in influencing use of integrated management of acute malnutrition (IMAM) is a grey area for future research.

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APPENDICES

Appendix I. Informed Consent

Researchers:

Jessica Mbochi B.Sc. Foods, Nutrition and Dietetics Tel: 0725116031

Institution:

Kenyatta University Department of Community Health

You are being asked to take part in a research study carried out by Jessica Mbochi BSc. This form explains the research study and your part in it if you decide to join the study. Please read the form carefully, taking as much time as you need. Ask the researcher to explain anything you don't understand. You can decide not to join the study. If you join the study, you can change your mind later or quit at any time. There will be no penalty or loss of services or benefits if you decide to take part in the study or quit later. This study has been approved by the Kenyatta University Ethical Committee and National Council of Science and technology.

What is this study about?

The research study is being done to determine the outcomes of the IMAM project in your area. Information from this survey will help write a report on the evaluation of the project. The purpose of this educational study is to help in proper planning for the future.

You cannot take part in this study if you are under 18 years of age.

What will I be asked to do if I am in this study?

If you take part in the study, you will be asked some questions relating to yourself, your family and child who is less than five years.

Measurements of weight and Mid Upper Arm Circumference (MUAC) will be done.

Physical assessment to check for edema on the child will be done.

The whole process takes about 10 – 15minutes

- You will be free not to answer any questions you may find objectionable. All your answers will be confidential. Your name will not be given to anyone and cannot be linked back to you.

Are there any benefits to me if I am in this study?

The potential benefits to you for taking part in this study are:

- Information about the nutritional status of your child.
- A list of resources so you know where to refer children who are malnourished.
- If you take part in this study you may help others in the future who have children with malnutrition.

Are there any risks to me if I 'am in the study?

There are no potential risks from taking part in this study?

Will my information be kept private?

The data for this study will be kept confidential to the extent allowed by federal and state law. No published results will identify you, and your name will not be associated with the findings.

All of your study records will be assigned the same identification number.

All record for the identification numbers will be kept in a secure location, separate from the study records.

Under certain circumstances, information that describes you may be released for internal and external reviews of this project, but this will not have your name on it.

The researcher listed above and Kenyatta University Institutional Review Board will be the only people having access to your records.

The results of this study may be published or presented at professional meetings, but the identities of all research participants will remain anonymous.

Are there any costs or payments for being in this study?

There will be no costs to you for taking part in this study.

Who can I talk to if I have questions?

If you have questions about this study or the information in this form, please contact the researcher Jessica Mbochi [Tel:0725116031](tel:0725116031).

What are my rights as a researcher study volunteer?

Your participation in this research study is completely voluntary. You may choose not to be a part of this study. There will be no penalty to you if you choose not to take part. You may choose not to answer specific questions or to stop participating at any time.

What does my signature on this consent form mean?

Your signature on this form means that:

- You understand the information given to you in this form.
- You have been able to ask the researcher questions and state any concerns.
- The researcher has responded to your questions and concerns.
- You believe you understand the research study and the potential benefits and risks that are involved.

Statement of Consent

I give my voluntary consent to take part in this study. I will be given a copy of this consent document for my records.

Signature of Participant and Date

Printed Name of Participant

Statement of Person Obtaining Informed Consent

I have explained to the person taking part in the study what he or she can expect.

I certify that when this person signs this form, to the best of my knowledge, he or she understands the purpose, procedures, potential benefits, and potential risks of participation.

I also certify that he or she:

- Speaks the language used to explain this research.
- Reads well enough to understand this form or, if not, this person is able to hear and understands when the form is read to him or her.
- Does not have any problems that could make it hard to understand what it means to take part in this research.

Signature of Person Obtaining Consent

Date

Printed Name of Person Obtaining Consent

Role in the Research

Study

Appendix II: Structured Questionnaire

Determinants of Utilization of the Integrated Management of Acute Malnutrition Services for children less than five years in Embakasi Nairobi, Kenya

1. Background Information

1.1.Start time (24 HRS)household No:

1.2.Data Collector:

1.3.Date of interview (DD/MM/YYYY):

1.4.Household head gender Male 1 Female 2

1.5.Informed Consent signed 0= No, 1= YES, 2= Willing but unable to sign, 3= Accepted introduction but refused to sign

SECTION 3: HEALTH AND NUTRITION ASSESSMENTS

Section 3a: Identification and Anthropometrics

Fill in for all children 6- 59 months (Date of birth Verify from clinic card

(If not available assist the mother/ caretaker to estimate the age in months)

Child name	Sex(M/ F)	Age in months	Height (cm)	Weight (kgs)	Z score (WFH)	Z score (HFA)	Bilateral oedema 1= yes 2= No	MUAC(cm)

Section 3b. Coverage of malnutrition

1. For children with MUAC less than 12.5 and oedema

i) Is the child enrolled in the IMAM program?

A. YES

B. NO (If No why?

SECTION 4: HEALTH AND CARE PRACTICES

For those who have been present during the last 30 days

4.1. During the past 2 weeks has any of the household members been ill?

1= YES 2= NO (If NO skip to section 5)

4.2. If yes how many people were ill? -----

4.3. If yes, those who were/ were ill were of what age?

If age is not known, fill the person's age group

If < 5 years= 1, 5-14 years=2, 15+ years= 3

Years Age group

Person 1

Person 2

Person 3

4.4. Those who were/ was ill what were they suffering from? (Tick all that apply to each person)

Person 1 Person 2 Person 3

Diarrhoea

Fever

Cough/ Sore throat

Malaria

Difficulty breathing

Headache

Abdominal pain

Other (Specify)

4.5. Was anyone consulted for the major illness or injury during the past 2 weeks?(Tick as appropriate)

YES NO

Person 1

Person 2

Person 3

(If NO, Skip to Section 4.7)

4.6. Where did you seek assistance (Tick all that apply)

Patient 1 Patient 2 Patient 3

1= Public hospital

2=Public health centre/ Clinic

3=Private hospital/ health centre/ clinic

4= NGO/ Mission Hospital

5 = NGO/ Mission health centre/ clinic

6= Pharmacy/ chemist

7= Traditional healer/ herbalist

8= Other= Specify

4.7. Why did you not seek assistance?

Person 1 Person2 Person 3

1= Illness mild

2= No money available facilities are costly

3=Facility too far

4=No qualified staff present

5=Staff attitude not good

6=Too busy/ Long waiting time

7= Drugs not available

8= Others (Specify)

SECTION 5: Caregivers knowledge on malnutrition

1. Do you know about malnutrition?

- a).Yes b) No

2. Which of the following are major signs of malnutrition in children?

- a).Loss of weight
b).Hair changes
c) Don't know.
d) Others.....

3. What causes malnutrition?

- a). Through unhygienic conditions
b). poverty
c). Illness
d) Others.....

4. Is malnutrition preventable?

- a).Yes (If yes go to 5)
b). No (if no stop)

5. Which of the following ways best prevents malnutrition? Tick as many correct answers as appropriate.

- a). Dietary diversification b).immunization
d). by taking medicine c). Prompt treatment of infections. e). don't know

FOCUS GROUP DISCUSSION GUIDE

Dear Respondent,

We are conducting a survey to determine the outcomes of the IMAM project in your area. Information from this survey will help write a report on the evaluation of the project. The survey usually takes 10 - 15 minutes to complete. Any information that you provide shall be used for statistical analysis only and are not subject to disclosure. Your participation is voluntary. The analysis will support decision makers to make adequate choices for the future. For this we need your genuine responses and hope that you agree to participate since your views are important.

May I begin the interview now?

1. What service have you come for today?
2. How do you find the service?
3. Who referred you for the service?
4. What is malnutrition? (in your own words)

KEY INFORMANT INTERVIEW GUIDE

Dear Respondent,

We are conducting a survey to determine the outcomes of the IMAM project in your area. Information from this survey will help write a report on the evaluation of the project. The survey usually takes 10 - 15 minutes to complete. Any information that you provide shall be used for statistical analysis only and are not subject to disclosure. Your participation is voluntary. The analysis will support decision makers to make adequate choices for the future. For this we need your genuine responses and hope that you agree to participate since your views are important.

May I begin the interview now?

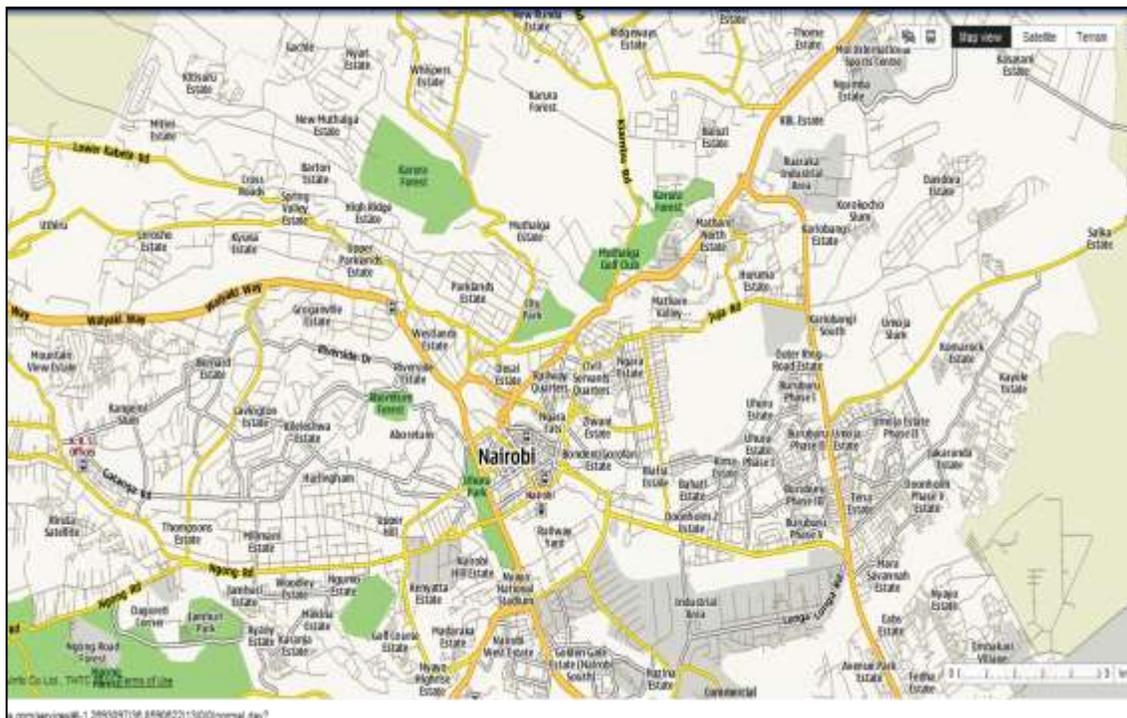
1. Are you aware of the Integrated Management of Acute Malnutrition program?
2. In your opinion why is the utilization of the service very low (High default rate and low coverage)?
3. What can be done to improve the utilization of the integrated management of acute Malnutrition services?

(Thank you for taking time to respond to my questions)

Appendix III: Budget Summary

Activity	Cost (Ksh)
Proposal Writing	6000
Research tools	10,000
Laptop	40,000
Pre-testing	5000
Training of research assistants	5000
Data collection	60,000
Data compilation and analysis	40,000
Report writing	5000
Miscellaneous 10% of total budget	17,100
Total	188,100

Appendix V: Map of Nairobi



**Appendix VI: National Council for Science and Technology Research
Authorization**

REPUBLIC OF KENYA



NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349, 254-020-2673550
 Mobile: 0713 788 287, 0735 404 245
 Fax: 254-020-2213215
 When replying please quote
 secretary@ncst.go.ke

P.O. Box 30623-00100
 NAIROBI-KENYA
 Website: www.ncst.go.ke

Our Ref: **NCST/RCD/14/013/445**

Date: **23rd April, 2013**

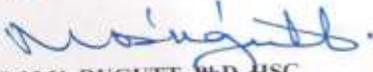
Jessica Mbochi
 Kenyatta University
 P.O.Box 43844-00100
 Nairobi.

RE: RESEARCH AUTHORIZATION

Following your application dated *8th April, 2013* for authority to carry out research on "*Determinants of utilization of the integrated management of acute malnutrition (IMAM) Services for children less than five years in Embakasi District, Nairobi,*" I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending *30th November, 2013.*

You are advised to report to the **County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.



DR M.K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:

The County Commissioner
 The County Director of Education
 Nairobi County.

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development".

Appendix VII: Ethics Review Committee Approval to Conduct Research.



KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
 Email: kuerc.chairman@ku.ac.ke
 kuerc.secretary@ku.ac.ke
 Website: www.ku.ac.ke

P. O. Box 43844
 Nairobi, 00100
 Tel: 8710901/12

Our Ref: KU/R/COMM/51/171 Date: May 15th, 2013

Jessica Mbochi
 School of Public Health
 Kenyatta University
 Nairobi

Dear Ms. Jessica,

APPLICATION NUMBER PKU/094/183 OF 2013 – ‘ASSESSMENT OF FACTORS THAT DETERMINE UTILIZATION OF INTEGRATED MANAGEMENT OF ACUTE MALNUTRITION SERVICES FOR CHILDREN LESS THAN FIVE YEARS IN EMBAKASI DISTRICT NAIROBI – *VERSION 2*’

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic, ‘Assessment of Factors that Determine Utilization of Integrated Management of Acute Malnutrition Services for Children Less than Five Years in Embakasi District Nairobi - version 2’ dated 6th May, 2013.

2. APPLICANT

Jessica Mbochi
 School of Public Health
 Kenyatta University
 Nairobi

3. SITE

Embakasi District, Kenya

4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines, and is of the view that against the following elements of review,

- (i) Scientific design and conduct of study,
- (ii) Recruitment of research participant,
- (iii) Care and protection of research participants,
- (iv) Protection of research participant’s confidentiality,
- (v) Informed consent process,
- (vi) Community considerations.

AND APPROVED that the research may proceed for a period of ONE year from 15th MAY, 2013



KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844
Nairobi, 00100
Tel: 8710901/12

Our Ref: KU/R/COMM/51/171

Date: May 15th, 2013

Jessica Mbochi
School of Public Health
Kenyatta University
Nairobi

Dear Ms. Jessica,

APPLICATION NUMBER PKU/094/I83 OF 2013 – 'ASSESSMENT OF FACTORS THAT DETERMINE UTILIZATION OF INTEGRATED MANAGEMENT OF ACUTE MALNUTRITION SERVICES FOR CHILDREN LESS THAN FIVE YEARS IN EMBAKASI DISTRICT NAIROBI – VERSION 2'

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic, 'Assessment of Factors that Determine Utilization of Integrated Management of Acute Malnutrition Services for Children Less than Five Years in Embakasi District Nairobi - version 2' dated 6th May, 2013.

2. APPLICANT

Jessica Mbochi
School of Public Health
Kenyatta University
Nairobi

3. SITE

Embakasi District, Kenya

4. DECISION

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines, and is of the view that against the following elements of review,

- (i) Scientific design and conduct of study,
- (ii) Recruitment of research participant,
- (iii) Care and protection of research participants,
- (iv) Protection of research participant's confidentiality,
- (v) Informed consent process,
- (vi) Community considerations.

AND APPROVED that the research may proceed for a period of ONE year from 15TH MAY, 2013

5. ADVICE/CONDITIONS

- i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
- ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.
- iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
- iv. Submit an electronic copy of the revised proposal to KU-ERC.

When replying, kindly quote the application number above.

If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.



PROF. NICHOLAS K. GIKONYO
CHAIRMAN: KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE

I JESSICA MBOCHI.....
accept the advice given and will fulfill the conditions therein.

Signature [Signature].....Dated this day 21ST of (month) JUNE.....2013.

cc. Vice-Chancellor
Director: Institute for Research Science and Technology

Appendix VIII: Graduate School Research Authorization



**KENYATTA UNIVERSITY
GRADUATE SCHOOL**

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: P57/20201/2010

DATE: 10th November, 2012

The Permanent Secretary,
Ministry of Higher Education, Science & Technology,
P.O. Box 30040,
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR JESSICA MBOCHI – REG. NO. P57/20201/2010

I write to introduce Ms. Jessica Mbochi who is a Postgraduate Student of this University. She is registered for M.P.H degree programme in the **Department Community Health**.

Ms. Mbochi intends to conduct research for a proposal entitled, **“Determinants of Utilization of the Integrated Management of Acute Malnutrition (IMAM) Services for Children less than Five years in Embakasi District Nairobi”**

Any assistance given will be highly appreciated.

Yours faithfully,

MRS. LUCY N. MBAABU
FOR: DEAN, GRADUATE SCHOOL



DNN/rwm