FOOD CONSUMPTION PATTERNS AND NUTRITIONAL STATUS OF CHILDREN (6-59 MONTHS) IN CAMPS OF INTERNALLY DISPLACED PERSONS IN WADAJIR DISTRICT, MOGADISHU-SOMALIA

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NOVEMBER, 2015
DECLARATION

I, Farhia Abdiaziz Sh. Hussein declare that this thesis is a result of my own research effort and investigation. It has not been submitted to any other institution for any award.

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DEDICATION

This thesis is dedicated to my husband who overpoweringly supported me both morally and financially during my study period and continued to encourage me and my children for their valuable support towards coming up with this part of work. I also dedicate this work to my mother and father, my sisters and brothers for supporting me honorably.
ACKNOWLEDGEMENT

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<td>ACF</td>
<td>Action Against Hunger</td>
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<tr>
<td>CSBs</td>
<td>Corn Soy Blend</td>
</tr>
<tr>
<td>DPT:</td>
<td>Diphtheria, Pertussis, and Tetanus</td>
</tr>
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<td>FEWSNET</td>
<td>Famine Early Warning System Network</td>
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<td>FGDs</td>
<td>Focus Group Discussion</td>
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<td>FSNAU</td>
<td>Food Security and Nutrition Outlook</td>
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<td>GAM</td>
<td>Global Acute Malnutrition</td>
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<tr>
<td>H/A</td>
<td>Height for Age</td>
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<tr>
<td>HH</td>
<td>House Hold</td>
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<tr>
<td>IDPs</td>
<td>Internally Displaced Persons</td>
</tr>
<tr>
<td>IMAM</td>
<td>Integrated Management of Acute Malnutrition</td>
</tr>
<tr>
<td>IYCF</td>
<td>Infant Young Child Feeding</td>
</tr>
<tr>
<td>KII</td>
<td>Key Informant Interview</td>
</tr>
<tr>
<td>MICS</td>
<td>Multiple Indicator Cluster Survey.</td>
</tr>
<tr>
<td>MUAC</td>
<td>Mild Upper Arm Circumference</td>
</tr>
<tr>
<td>OTP</td>
<td>Outpatient Therapeutic Program</td>
</tr>
<tr>
<td>SCC</td>
<td>Somali Community Concern</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical package for Social Science</td>
</tr>
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<td>TFCs</td>
<td>Therapeutic Feeding Centers</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nation Children Fund</td>
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<tr>
<td>UNICEF</td>
<td>United Nation International Children's Education fund</td>
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<td>UNIMIX</td>
<td>UNICEFS's Supplementary Feeding Food</td>
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<td>WA</td>
<td>Weight for Age</td>
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<tr>
<td>W/H</td>
<td>Weight for Height</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<td>WHZ</td>
<td>Weight for Height Z-score</td>
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## OPERATIONAL DEFINITION OF TERMS

<table>
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<th>Term</th>
<th>Definition</th>
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<tr>
<td>Complementary feeding</td>
<td>Is process of introducing foods other than breast milk to a child.</td>
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<tr>
<td>Consumption patterns</td>
<td>Frequency of intake of specified of foods groups in a specific line.</td>
</tr>
<tr>
<td>Fortification</td>
<td>Addition of nutrients to food during processing for example Iodine</td>
</tr>
<tr>
<td>Household</td>
<td>Can be defined being one or more people who live in the same dwelling and also share meals together or share living accommodation.</td>
</tr>
<tr>
<td>Morbidity patterns</td>
<td>Frequency of infection in the last two weeks.</td>
</tr>
<tr>
<td>Nutritional status</td>
<td>The physiological state of an individual that results from the relationship between nutrient intake and requirements and from the body’s ability to digest, absorb and utilize nutrients.</td>
</tr>
<tr>
<td>Poverty</td>
<td>State in which family’s income is too low to be able to buy food, shelter and clothing that are deemed necessary.</td>
</tr>
<tr>
<td>Prevalence</td>
<td>Is the proportion of a population found to have a condition typically a disease or a risk factor.</td>
</tr>
<tr>
<td>Sanitation</td>
<td>Practice of good personal hygiene, proper housing, waste disposal, and vector control and food safety in order to control and prevent disease.</td>
</tr>
<tr>
<td>Stunting</td>
<td>Is low length /height for age, it is length/height below -2 SD of reference population it is a sign of chronic nutritional disorder (WHO 2006).</td>
</tr>
<tr>
<td>Therapeutic Feeding</td>
<td>Provision of food to severely malnourished under-fives who are admitted and proceed to supplementary centers after discharge.</td>
</tr>
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Under weight
Is acute and chronic malnutrition combined (WHO 2006) this is low weight for age, it is a weight below -2 SD of reference population.

Wasting
Low weight for length/height is usually wasted children are below -2 SD of the reference weight for length/height, is acute nutritional disorder (WHO 2006).

Z score
Is the number of standard deviation below or above the reference medium value (WHO 2006).
ABSTRACT

The impact of the civil war, the waves of IDPs, emigration, poverty and the absence of a Central Government in Somalia have led to emergence IDPs camps with a large population. Malnutrition in Somalia is a huge public health problem, negatively affecting growth, development and survival of the population. The determinants of food consumption patterns and the prevalence of nutritional status are not well documented. The main objective of this study was to assess nutritional status of children 6-59 months in IDP camps of Wadajir District. The study adopted a cross-sectional analytical research design. The study covered 185 household with children 6-59 months selected from 12 IDP camps in xalane Sub-district of Wadajir district. Data was collected using questionnaires, key informants interview and focus group discussions. Data was analyzed using SPSS version 20.0. Anthropometric data was analyzed using ENA for SMART computer software. Pearson Product Moment correlation coefficient was used to determine the presence, strength, and direction of the relationship between non-categorical variables like dietary practices and nutritional status. Chi-square was used to assess relationships between categorical variables. Simple regression was used to assess the determinants of food consumption patterns. The qualitative data were transcribed, coded and categorized to come up with the emerging themes. Results show that households had low incomes with 18.4% earning less than 1 USD per day due to lack of employment especially among women which affected the caregiver’s health seeking behavior and food accessibility. Factors like income and education level affected the populations’ dietary and nutritional status. It was noted that the caregivers had low education (68.7%) and most of them unemployed (55.7%). Maternal education is a major factor in nutrition and health of children 6-59 months. It was also evident that most 19.5% of the children had global acute malnutrition. Morbidity levels were also high with 68.1% of the children interviewed having had an illness in the previous two weeks. Education level was significantly related \((p=0.036)\) to nutritional status of children. There was a significant relationship \((p=0.038)\) between caregivers income and nutritional status, Also between caregivers household size and nutritional status \((p=0.042)\) and between sickness and nutritional status \((p=0.041)\). The study concludes that the food consumptions patterns adopted in the camps are poor and are influenced by education level, occupation, income and morbidity patterns. This study recommends implementation of programs to empower mothers and caregivers in education and economically through income generating activities and other micro finance credit facilities to strengthen their resource base. Study results are useful in addressing issues related to the nutritional status and morbidity patterns of children 6-59 months in IDP camps of Wadajir district Mogadishu- Somali.
CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Malnutrition is a global problem in the developing countries, the high mortality rates among children due to infectious disease is reflection of their poor nutritional states (UNICEF, 2009). Malnutrition is a public health problem among children under five years of age in the developing countries with the outcome usually being high in IDPs. Children are one of the major vulnerable groups to malnutrition. Children under five years of age are more vulnerable because they are at stage of rapid growth and development and their immune system not fully developed to fight infection (Robinson et al., 1990). The displaced population, estimated at 230,000 persons and the poor urban residents of Mogadishu remain chronically vulnerable to malnutrition.

Insecurity in Mogadishu has limited the possibility to undertake a nutrition survey among these populations. A past rapid nutritional assessment among children under the age of five in the IDP camps in August 2002 showed unacceptably high malnutrition rates of 39% (MUAC <12.5 cm or oedema). Most of the health facilities in the region continue to record high proportions of malnourished children screened in recent months and the Action against Hunger (ACF) managing therapeutic feeding centers (TFCs) continue to admit almost ninety severely malnourished children each month (FSAU, 2003). Imported and locally produced foods are available in the market but vulnerable population like the IDPs cannot readily access the foods due to low incomes and limited income opportunities. IDPs reside in shanties and abandoned buildings that are crowded and unsanitary, childcare practices are suboptimal within the camps, most of the health
facilities in the area have been reporting high cases of watery diarrhea, measles and TB while insecurity continues to have a direct negative effect on the income available to many households in the IDPs camps.

Food Program (WFP) has implemented a food assistance program in the displaced people’s camps consisting of the regular distribution of both a mixed basket of family rations and blended food. A number of Islamic organizations have also provided food and material assistance. These interventions appear to have contributed significantly to the improvement in the nutritional status of these highly vulnerable groups (FAO, 2011). Somalia as country has had war since 1992. Thus there are many people who have been displaced. Wadajir district is one of the seventeen districts in Banadir region. The population life in Wadajir district is estimated around 300,000. More than 40% of these people are IDPs.

1.2 Statement of the problem

Somalia is reaching a peak in its 20 years of humanitarian crisis, driven mainly by the armed conflict, generalized insecurity, extensive internal displacement and the situation is compounded by drought. Some 3.64 million Somalis are in need of emergency assistance or livelihood support, which is nearly half of the population. Currently, 1 in 5 children under the age of five are acutely malnourished, while 1 in 20 are severely malnourished. Somalia now has one of the highest levels of malnutrition in the world, with up to 240,000 children 6-59 months affected, of which 63,000 are severely malnourished. More than two thirds of these children are located in Wadajir District, Mogadishu Somalia, the
area most affected by the current conflict. Children under 6-59 months of age have rapid growth and development, therefore they need adequate diet. They also experience frequent infection and illness that deplete their nutrient stores in the body and this further predisposes children to malnutrition. The humanitarian crises in Somalia are multifaceted related to the lack of human development and human security services. The crises and its impact have demanded more food aid, health care, shelter construction and water and sanitation activities. Moreover, only 29% of the population has access to improved water sources and 23% to improved sanitation facilities. This situation threatens to push the country into further chaos and could aggravate the deterioration in food security, nutritional status and livelihood of the population. The emergency requires a rapid response in order to arrest the current worsening infant and maternal morbidity and mortality situation caused by malnutrition and diseases. The response would also bring down the high rates of illness and diseases caused by lack of access to clean water, poor sanitation and hygienic practices, especially in IDPs camps.

1.3 Justification of the study
Although malnutrition was not a major concern initially, it has since assumed a crucial and significant role as one of the major causes of morbidity and mortality in the IDP camps of Wadajir District in Mogadishu following the influx of many refugees in 2000-2013. Even though there is evidence of malnutrition in this camp, and ongoing nutritional rehabilitation programme, there has not been a well-documented study that clearly shows the degree of the nutritional problems and their causes as well as assessing the impact of selected intervention activities. Most programmes directed at the alleviation of the
problems have been based on educated guesswork. Despite the nutritional rehabilitation interventions, there are still cases of malnutrition and the current rate is unknown. Many of the implementing partners in the IDPs assistance programme have expressed a wish to be informed on the exact nature and level of the nutritional problem. This study brings information from other refugee camps and literature evidence of nutritional problems encountered in them. The study determined if similar conditions exist in the Mogadishu Refugee camp. The study assessed malnutrition among children in Mogadishu IDPs camp with special emphasis on children between 6 and 59 months, and to establish the possible factors that influences their nutritional status. There is hardly any data in Somalia showing the nutritional status and morbidity patterns of children in IDP camps of Wadajir District. This study therefore provides data that can be used for planning appropriate nutrition programmes for IDP camps.

1.4 Research questions

1. What is the nutritional status of children 6-59 months in IDP camps of Wadajir District?

2. What are the food consumption patterns of children 6-59 months in IDP camps of Wadajir District?

3. What are the determinants of food consumption patterns of children 6-59 months in IDP camps of Wadajir District?

4. What is the morbidity pattern of children 6-59 months in IDP camps of Wadajir District?
1.5 Null hypothesis

$H_0$: Nutritional status and morbidity patterns of children 6-59 months in Wadajir IDP

Camps are not associated with food consumption patterns and their determinants.

1.6 Objectives of the study

1.6.1 General objective

The main objective of the study was to determine nutritional status and morbidity

patterns of children 6-59 Months in IDP Camps of Wadajir district Mogadishu Somalia.

1.6.2 Specific objectives

1. To assess nutritional status of children 6-59 months in IDP camps of Wadajir
district.

2. To determine food consumption patterns of children 6-59 months in IDP camps of

Wadajir district.

3. To establish the determinants of food consumption patterns of children 6-59

months in IDP camps of Wadajir District.

4. To determine the morbidity patterns of children 6-59 months in IDP camps of

Wadajir District.

1.7 Significance of the study

The study findings explain to those in the Ministry of Health sector on the nutritional

status of children 6-59 Months living in Wadajir District, Mogadishu Somalia. Also about
different challenges the management has and how the nutritional status is affected. It is

hoped that the study addressed some of the problems faced and it may come up with
strategies that would assist in reducing or managing the problems. The study would help nutritionist who may wish to find solutions to the problems that they are facing or find ways in which they can manage these problems.

The study is useful to the government to see how the restrictive policies they put forward for the Ministry of Health and the problems hindering the nutritional status of children 6-59 months living in IDP Camps of Wadajir district Mogadishu Somalia with devices of helping them. This study laid a foundation from where other research studies can be carried out by other researchers. The study can be used as a point of reference by other researchers. The study is useful to NGOs to try to find more solutions to the problems which have not yet been addressed. The study would help the residents of IDP camps on how to deal with nutritional issues.

1.8 Limitation of the study
The main limitation of this study was timing of the assessment as this is influenced by three factors: Insecurity in the area which might not provide for a good environment in interviewing the people, the Ramadan period, and the recent famine declaration in Somalia with some major movements of population towards and within Mogadishu.

1.9 Scope of the study
This study focused on nutritional status and morbidity patterns of children 6-59 months living in IDP Camps of Wadajir district Mogadishu Somalia.
1.10 Conceptual framework

**Independent Variable**
- Socio demographic and economic characteristics; -Age, sex, education
- Food consumption patterns - Daily access to food -Level of income
- Determinants of consumption patterns -Sources of food -Family size and nutritional

**Dependent variable**
- Nutritional Status
- Morbidity Patterns

*Figure 1.1 conceptual framework*
Adapted and modified from UNICEF (1997)

The amount of food one consumes directly influences the nutrition status. Inadequate food intakes in respect to the recommended intake lead to under nutrition. Inadequate dietary intake is mainly due to, lack of food, poor combinations, unbalanced diet and inadequate amount to meet needs. The health status of individual influences the food utilization in the body. Illness often leads to increased dietary requirements for body repair for tissues damaged by the disease and to cater for the increased loss of nutrients caused by the disease condition, mal-absorption of nutrients altered metabolism and loss of appetite.
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section reviews the relevant literature and identifies gaps of nutritional status and morbidity patterns of children of 6-59 months living in IDP camps of Wadajir District, Mogadishu.

2.2 Global overview of malnutrition in children (6-59 months)

Malnutrition has been dubbed the world's "silent emergency", a condition leading to death and disability on a vast scale, particularly among children and women of child-bearing age. Malnutrition destroys lives by compromising health, learning, productivity, curiosity, incentive and hope. Malnutrition engenders social and economic costs that cripple the development of individuals, communities and nations. Large segments of the world's people, mostly poor concentrated in developing nations are malnourished in calories, protein and/or micronutrients (FSNAU, 2012). Among the populations most vulnerable to malnutrition, are infants, pre-school children and pregnant and lactating women, all of whose nutritional demands are elevated. Malnutrition readily crosses generations. There is clear evidence that the major damage caused by malnutrition takes place in the womb and during the first two years of life; and that damage is irreversible.

Malnourished women are more likely to die in childbirth, or to suffer debilitating complications of pregnancy and childbirth. The infants of malnourished women begin their own lives malnourished, and face increased risk of early death, childhood disease and life-long impairments. Malnutrition can take a variety of forms that often appear in
combination. It is not only a silent emergency it can be a largely invisible one as well. Many of the world's undernourished children betray no outward signs of problems to a casual observer. Yet these "mildly to moderately" malnourished youngsters often fall victim to complications attendant on inadequate diets, compromised immune systems, chronic disease, or the dehydration associated with persistent diarrheas often aggravated by malnutrition. An even mildly underweight child faces increased risk of death and disease, as does a child of normal weight who suffers the "hidden hunger" of micronutrient deficiency (ICRC, 2012). Globally the rates of malnutrition are still high, and thus efforts to continually reduce them should be put in place. This requires information which this study aimed to provide.

2.3 Malnutrition among children in Somalia

Somalia has some of the highest malnutrition rates in the world. Young children suffer repeated illness, especially diarrhea, and have poor feeding and poor child care. Children and women have poor access to quality food as a result of conflict, displacement drought, flooding. Nationwide some 236,000 children under the age of five are malnourished (UNHCR, 2012), more than two thirds of them in the south where conflict and restricted humanitarian access combine to create some of the highest child mortality rates anywhere.

Somalia infant and young child feeding (IYCF) indicators are among the worst in the world and these poor practices contribute to high morbidity, mortality and poor development amongst young children (UNHCR, 2012). Changes in IYCF knowledge,
attitudes, and behaviors’ require a planned, coordinated, and comprehensive approach by all partners. The study data suggests that even in years of improved food production and relative stability, rates of acute and chronic malnutrition remain high in certain regions, indicating that other underlying causes play a significant role (UNHCR 2012). Somalia is also prone to drought and floods. Many of the environmental and manmade shocks have been multiple and recurrent, over stretching families’ coping mechanisms resulting in inadequate access to and availability of food at household level. However, even in years of relative stability and improved food production, the malnutrition rates in some regions of Somalia have been consistently high, pointing to the important role of other underlying causes. These include sub optimal infant, young child and maternal feeding and care practices as documented by the National Micronutrient and Anthropometric Nutrition Survey 2009, KAPS 2007 and MICS 2012 results. Due to the changing profile of refugees, the malnutrition levels of children in Somalia need to be assessed periodically.

This study aimed to assess the nutritional status.

2.4 Malnutrition among children in IDP camps of Wadajir District

Malnutrition results from a complex set of factors and not one simple cause. The UNICEF conceptual model of the causes of malnutrition provides a useful framework for the discussion of determinants of malnutrition in Wadajir Somalia. The volatile political situation and its resulting insecurity, civil unrest or outright war have led to a chronic and continuing humanitarian crisis that is at the root of the high prevalence of malnutrition in Somalia. With even in years of relative stability and improved food production, the malnutrition rates in IDP camps of Wadajir district of Somalia have remained
consistently high, providing evidence for the contribution of underlying causes (UNICEF, 2009).

Severe famine strike many parts of Somalia and have caused malnutrition and deaths to people and livestock. More than 400,000 people have fled from the drought and famine in southern Somalia to the country’s capital in search of food and aid in the last few months. Many walked for weeks on foot without food or even water, losing their loved ones and children too weak or malnourished to survive the hard journey (SCC, 2012). And those who survived reached the capital weak and malnourished, thus Somali Community Concern (SCC) in collaboration with some international NGOs responded to food aid distribution to the needy IDPs in Mogadishu. SCC has played an active role in getting involved and continuously providing food aid to Somalis in attempt to help alleviate the suffering of the drought stricken populations. So far SCC reached out 3300 households in IDP camps in Hodon, Howlwadag, Waberi, Wadajir and Dharkenley districts, (SCC, 2012). Food items distributed include: 165 tons of rice, 165 tons of flour, 34 tons of soap, and 16,500 liters of cooking oil and in some place nonfood items, like plastic packets and soup were along- side distributed (SCC, 2012). The periodical change in populations in IDP camps calls for continued assessments of nutrition status and the determinants. thus one purpose of this study.

2.5 Assessment of nutritional status among children 6-59months

Nutrition assessment is a process of determining nutrition status of individuals or group for purpose of identifying nutritional needs for planning interventions. The methods used
are anthropometric, clinical, biochemical, dietary recall and vital statistics (Akib, 2008). Anthropometric measurement is the most suitable for community nutrition survey because it is cost effective, noninvasive, applicable to large samples and universally applicable. To assess nutrition status of 6-59 months children stunting, underweight, obesity and wasting can be measured using height, age, weight and upper arm circumference (Gibson, 1990).

Rates of acute malnutrition and chronic malnutrition are alarming throughout the country with some variations by zone and livelihood system. The most recent assessment from food security and nutrition outlook (FSNAU, 2009) Post Deyr ‘09/10 found a national median global acute malnutrition (WHZ < -2 SD) rate of 16%, severe acute malnutrition (WHZ < -3 SD) rate of 4.2%, based on WHO growth standards (2006). These rates correspond to an estimated 240,000 children acutely malnourished of which 63,000 children are suffering severe acute malnutrition. Thus one in six children aged 6 to 59 months are acutely malnourished and one in twenty two, severely malnourished (WHO, 2009). There are gaps associated with information for use in program design. For yearly planning of programs to address under nutrition, assessing the nutrition situation is necessary.

2.5.1 Anthropometric measures used for assessing malnutrition

Anthropometric assessment is concerned with the measurement of the variations of the physical dimensions and gross combination of the body (Jellife, 1996). These methods are highlighted below: Weight for age measures underweight, Height for age measures
stunting, Weight for height measures wasting and mid upper arm circumference measurement for wasting for children. Low weight /age - Indication for acute and chronic malnutrition, low height / age - is indicator for chronic malnutrition and low weight for height is indicator for acute malnutrition (Clinical guideline 2001). MUAC- is useful for rapid assessment of nutrition status in emergency situation for reference to supplementary and therapeutic feeding centers (management of severe malnutrition 2005). According to the study done by (Berkeley et al., 2005) MUAC is simple and cheap method for mass screening. The study used Weight for Age (W/A), Height for Age (H/A), Weight for Height (W/H) and Mild upper arm circumference (MUAC) for anthropometric assessment.

2.6 Determinants of food consumption patterns among children 6-59 months in the IDP Camp.

Due to inadequate governance structures in parts of Somalia, nutrition response programming is mainly undertaken by UN, international and national NGOs. Nutrition interventions are primarily focused on responding to alarming rates of acute malnutrition throughout the country. Food security and nutrition surveillance and early warning reports (FSNAU, FEWSNET, and WFP) are key activities providing quality information and analysis for the targeting of appropriate and timely responses to changing needs in country outpatient therapeutic feeding programmes (OTPs) for the management of severe acute malnutrition. Malnutrition programmes are being implemented across Somalia by international NGOs and UNICEF in partnership with local NGOs, according to
operational guidelines that take into account the challenging environment, reduced supervision and limited monitoring (WFP, 2009).

Targeted supplementary feeding programmes (SFPs) for the management of moderately malnourished under-fives are being implemented by WFP through around 40 local and international NGOs. The current caseload is around 70,000 beneficiaries, of whom approximately 80% are under-fives and 20% pregnant and lactating women. The current nutrition situation and interventions based on latest reports. Activities for the prevention of moderate acute malnutrition include the provision of fortified supplementary food by WFP to all children under-five and pregnant and lactating women, through UNICEF-supported MCH clinics at selected sites in Wadajir district Somalia (UNICEF, 2009).

Currently 35 clinics are supported. In addition, in 2009, UNICEF launched a new initiative for the prevention of malnutrition, targeting 100,000 children aged 6-59 months with blanket distribution of ready-to-use food (Plumpy Doz) every two months in areas showing the highest malnutrition rates. Furthermore WFP is providing food assistance to vulnerable groups through institutional feeding and school feeding to around 90,000 beneficiaries. WFP also provides a general food ration consisting of cereals, CSB, sugar, fortified oil and iodized salt when available, to the rural population affected by the humanitarian crisis, the urban poor and IDPs. In 2009 this food assistance covered around 3 to 3.5 million people a month – almost half the population – on the basis of FSNAU seasonal assessments (FSNAU, 2009). The various determinants of causes of
malnutrition in Somalia are not well documented. This study aimed to bring out these gaps.

2.6.1 Household sources of food in the IDP camps

Somalia is chronically food insecure. Overall, around 80% of Somalia households rely on natural resource-dependent activities for their livelihood, making them highly vulnerable to environmental factors and shocks. Even in good years, Somalia is only able to produce 40% of its cereal requirements. In the last five years, local production has averaged about 30% of food needs. Somalia was a major recipient of international food aid even before the collapse of central government in 1991 (WFP, 2014). Food varies wildly by area, season and according to climatic, political and economic factors (openness of cross border markets and internal urban markets). Traditionally, the sedentary farmers of the Juba valley and around Baidoa have suffered the most acute and long lasting nutritional crisis. In comparison the pastoralists have fared best as their mobile, cattle based strategy is flexible and adaptive to the stresses of conflict and insecurity. Pastoralists rely on the consumption and sale of milk and animal products for their livelihoods. Livestock milk availability and consumption has a very significant influence over the nutritional status described in the assessment (FSNAU, 2009).

This shows that once availability of milk declines e.g. due to loss of livestock resulting from disease outbreak and or drought conditions, rates of acute malnutrition deteriorate to very critical levels but improve again once the livestock situation recovers and availability of milk increases. According to (FEWS, 2009), underlying causes of food
insecurity in the country are the following. Successive seasons of poor rains and seasonal flood affected crop and livestock production, which are the two main livelihood sources for the majority of the rural population. Recurrent conflict and civil insecurity, which have resulted in civilian displacement and restriction of internal and cross border trade flow (FEWS, 2009). Chronic macroeconomic shocks, such as the persistent ban of livestock export and lack of employment opportunities, affected investment in productive sectors like crop and livestock. Results of the most recently conducted FSNAU led multi-agency post deyr ‘09/10 seasonal Assessment indicates some improvement in the overall food security situation in the country, especially in rural areas of the south where crop and livestock production has improved following normal deyr rains.

However, although the number of people estimated to be in need of emergency humanitarian assistance and livelihood support has dropped to about 3.2 million (42% of the total population), this situation still represents a widespread Humanitarian Crisis affecting 42% of the total population. Conditions in the central regions of Mudug, Hiran and Galgadud are of particular concern. Failure of the deyr rains combined with escalation of conflict and resulting population displacements, on top of six consecutive seasons of drought mean that here 70% of the population are in need of urgent humanitarian assistance, which in turn is more difficult to deliver in the context of heightened insecurity and reduced access. The detrains also performed poorly in pastoral regions of the north and north east and has resulted in a deepening crisis in the Hawd, Addun and Sool plateau pastoral livelihood zones, with complete loss of livestock assets, especially sheep and goats (FSNAU, 2009).
2.7 Morbidity patterns among children 6-59 months

The frequency duration and severity of the disease contributes directly or indirectly while the spread use of oral rehydration therapy and antibiotic has led to the decline of disease severity and mortality from diarrhea and acute respiratory infections. The prevalence of these infections has not been significantly reduced as a result of the negative effects on malnutrition continues (CSN, 2008).

The frequency of bacterial infection, particularly diarrhea, measles and respiratory tract infection are highly prevalent in early life and damage mucosal surface required for absorption and are associated with vulnerability to malnutrition. Morbidity causes stunting growth because of its effects in suppressing appetite, increasing energy needs and in the case of diarrhea there is loss of nutrients through the stool. Morbidity is high while access to and utilization of quality health services is limited (MICS, 2006 and KAPS, 2007). Limited information exists on the morbidity profile of IDPs. this study sought to generate this information.
2.8 Summary of literature review

This section has reviewed literature related to the study topic. Malnutrition remains a big global challenge. The children under five are among the most affected. The situation is worse in countries like Somalia which has been having war for a long period. The war has led to many displacements leading to a very high population of IDPs. Due to scarcity of resources and complexity of the emergency situation in Somalia, there are challenges to address malnutrition. Reducing malnutrition has been one of the objectives. However there is limited information on the prevalence of malnutrition and the causing factors. This study sought to assess food consumption patterns and the determinants as well as, nutritional status of children (6-59 months) in camps of internally displaced persons in Somalia
CHAPTER THREE: MATERIAL AND METHODS

3.1 Introduction
This chapter discusses the procedures and strategies used in the study. It is prepared under the following sections: research design, variables, locations of the study, study population, inclusion criteria, exclusion criteria, sampling technique, research instrument, pre-test, validity and reliability of the research instrument, data collection technique and logistical and ethical consideration.

3.2 Research design
The study adopted a cross-sectional Analytical survey design. The descriptive survey design was quite appropriate for gathering information, summarizing, presenting and interpreting it for the purpose of clarification. The Analytical survey design was chosen because it allows effective use of questionnaires. This design was appropriate for good understanding of the assessment of nutritional status of children 6-59 months living in IDP camps of Wadajir district in Mogadishu.

3.3 Study variables
The dependent variable is the nutritional status of children 6-59 months. The independent variables are socio demographic characteristic, food consumption patterns, determinants of food consumption patterns and morbidity patterns.
3.4 Location of the study

The study was carried out in Wadajir district, which is located in Mogadishu the capital of Somalia. Wadajir district is one of the seventeen districts in Banadir region, it has borders Jazeera (lower shabelle) to the south direction and Hodan district to the west, Wabari district in the north and east direction Dharkenley district. The population life in Wadajir district is estimated around 300,000. People by the District Authority (DA), and more than 40% of these people are IDPs. The numbers of IDP Camps of Wadajir district are 42, and the numbers of IDP household of Wadajir district are 10,550. Wadajir district has four sub-districts which include Timacade, General Daud, Xalane, and Hawo Tako and each sub district have 250 to 252 house hold and each sub-district have four sub division.

3.5 Study population

The study population was children 6-59 months of age sampled from the target population for the children living in IDP camps of Wadajir district. The parents / guardians of the children 6-59 months were engaged in focused group discussions and Key informant interviews and use of questionnaires.

3.5.1 Inclusion criteria

Children 6-59 months of age living in IDP camps of Wadajir district and children whose parents consent to participate in the study
3.5.2 Exclusion criteria

Children below 6 months and children above 59 months living in IDP camps of Wadajir district

3.6 Sampling techniques

The district has four sub-districts. The four Sub-district of Wadajir district each Sub-district has 38-42 IDP camps. Simple random sampling was used to select one sub-district as shown in the Table 3.1.

Table 3.1: Sub-districts of Wadajir District

<table>
<thead>
<tr>
<th>Sub-District</th>
<th>Number if IDP camps</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>General daud</td>
<td>38</td>
<td>X</td>
</tr>
<tr>
<td>Timacade</td>
<td>40</td>
<td>X</td>
</tr>
<tr>
<td>Xaawo tako</td>
<td>39</td>
<td>X</td>
</tr>
<tr>
<td>Xalane</td>
<td>42</td>
<td>✓ (selected 12 IDP Camps)</td>
</tr>
</tbody>
</table>

The study used simple random sampling (table of random numbers) to select the 12 IDP camps in Xalane sub-district out of 42 IDP camps of Xalane sub-district. The study used systematic random sampling to select the households from a list of households with a child aged 6-59 months in each camp. The number of households in the village was obtained from IDPs Chairpersons. If a household had two or more children of this age, simple random sampling was used to select one child per household. The study interviewed caregivers who were either mothers, or guardians. Participants in the five focus group discussion where purposively selected from among caregivers with children
6-59 months, were three groups was composed of female only on the other was men respondent only. The key informant interview were conducted among public and private stakeholders operating within the Wadajir IDP camps and this include the district nutrition officer, nursing officer in charge of the Wadajir IDP camps health center, Saacid NGO field officer in charge of nutrition feeding program in the IDP, community health workers and public health officer in charge of district. Sample size was calculated for under five children as they were the participants whose nutrition status was assessed. Sample size was calculated using the formula below.

### 3.7 Sample size determination

Sample size was calculated by formula as used by Fisher et al. (1983).

\[ n = \frac{z^2pq}{d^2} \]

\( n \) = desired sample size

\( z \) = standard normal deviate (1.96) that corresponds to 95% confidence level.

\( p \) = Prevalence of the condition under study (prevalence of malnutrition Somalia is 12.7% (GAM UNICEF, Somalia 2013).

\( q = 1-p \)

\( d \) = the degree of accuracy desired (0.05 was used)

\[ N = \frac{1.96^2 \times 0.127 \times 0.86}{0.05^2} \]

\[ N = 168 \]

10% of the sample was added to cater for non-response was added to make 185. The estimated sample size was 185 subjects.
3.8 Research instruments

The research instruments consisted of questionnaires, key informant interview and focus group discussion. Administration of questionnaire to parents/care givers was done at household level to collect quantitative data. Anthropometric measurement was done on children 6 to 59 months, MUAC measurement were taken from the children who did not present any grade of edema. Salter scale to measure weight in kilogram, a length board to measure the height and the immunization card or birth certificate to get age of the child were used. FGDs guides were used they focused on care takers attitude towards child nutritional status, the various food sources, the coping mechanism during disasters. Unstructured interviews were applied to KII who include community elders, worker from health centers, community health workers and health officers in the Wadajir District IDP camps. The purpose of KII and FGDs was to add more information to the research topic and possibly to tackle issues that may not be well addressed by individual parents or care givers.

3.9 Pre-testing the data collection tools

Pre-test was done at Dherkenley district in Mogadishu on 10% which was 18 households but they were not included in the final sample. This helped the researcher to identify potential problem in the proposed study and inconsistencies in the research instrument. The focus group discussion guide was pretested on sample of 10 women who were not to form the final sample. The KI guide was also pre-tested on some officers who were to be omitted from the sample.
3.10 Validity and reliability of the research instruments

The reliability of the research instruments concerned with the degree to which the research instrument give way the same result. Reliability of the respondent’s instruments questionnaire was established through a test-retest method. The research was conducted with pre-tested instruments of a questionnaire in Dharkenltey district in the same city and the same instruments. For validity, a panel of qualified nutritionists examined the tools to ensure that the questionnaire cover the objectives of the study.

3.11 Data collection techniques

Research assistants were involved in data collection after a comprehensive training. Administration of questionnaires was done to collect quantitative data through an interviewer administered approach. Qualitative data was collected through focused group discussions and key informant interview

3.12 Data analysis

Raw data was entered in Excel and later SPSS version 16.0 for analysis. Appropriate summary tables, graphs, charts and summarized information were used to enhance the description made. Anthropometric data was analyzed using ENA for SMART computer software. The Z-scores were categorized as per WHO standards. Data analyses were carried out using Statistical Package for Social Science (SPSS). The quantitative data like for demographic and social economic characteristics, food consumptions patterns, nutrition status and morbidity patterns were summarized using descriptive statistics namely mean, frequencies and percentages. Pearson Product Moment correlation
coefficient was used to determine the presence, strength and direction of the relationship between dietary practices. Chi-square was used to assess relationships between categorical variables. Simple regression was used to assess the determinants of food consumption patterns. The qualitative data were transcribed, coded and categorized to come up with the emerging themes.

3.13 Logistical and Ethical consideration

Research authorization and proposal approval was sought from Kenyatta University graduate School and Research Committee. Research authority was obtained from the Ministry of Health in Somalia to carry out the study. Permission was sought from the Ministry of Education and Cultural in Somalia and local authorities in Wadajir District. Consent was sought from each respondent on voluntary basis.
CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter presents all the results of the study, demographic, socio-economic, nutrition Awareness, dietary patterns and morbidity patterns in the population studied.

4.2 Socio-demographic characteristics of the care givers and children 6-59months

The demographic characteristics of the caregivers were related to the nutritional status of children 6-59 months.

Table 4.1: Characteristics of the caregiver

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Sig (P – value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>51</td>
<td>27.6</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>134</td>
<td>72.4</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-25 years</td>
<td>56</td>
<td>30.3</td>
<td>(r=0.313; p=0.056)</td>
</tr>
<tr>
<td>26-35 years</td>
<td>76</td>
<td>41.1</td>
<td></td>
</tr>
<tr>
<td>36-45 years</td>
<td>49</td>
<td>26.5</td>
<td></td>
</tr>
<tr>
<td>Above 46 years</td>
<td>4</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>24</td>
<td>13.0</td>
<td>χ²=1.39; df=3; p=0.062</td>
</tr>
<tr>
<td>Married</td>
<td>115</td>
<td>62.2</td>
<td></td>
</tr>
<tr>
<td>Windowed</td>
<td>14</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>32</td>
<td>17.3</td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>100</td>
<td>54.1</td>
<td>χ²=84.9; df=3; p=0.036*</td>
</tr>
<tr>
<td>Primary</td>
<td>27</td>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>23</td>
<td>12.4</td>
<td></td>
</tr>
<tr>
<td>Higher education</td>
<td>35</td>
<td>18.9</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife</td>
<td>103</td>
<td>55.7</td>
<td>χ²=107.09; df=3; p=0.058</td>
</tr>
<tr>
<td>Garbage collector</td>
<td>14</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>Casual labour</td>
<td>48</td>
<td>25.9</td>
<td></td>
</tr>
<tr>
<td>Community workers</td>
<td>20</td>
<td>10.8</td>
<td></td>
</tr>
</tbody>
</table>
In this study, the caregiver were mostly female at 72.4% and 27.6% of the caregiver were male (Table 4.1). Most of the caregivers were between the ages of 26-35 years at 41.1%, 30.3% between 15-25 years, 26.5% between 36-45 years and 2.2% were above 46 years of age (Table 4.1). There was a no significant relationship ((r=0.313; p=0.056)) between caregivers age and nutrition status of children 6-59 months.

Most of the caregivers in the study highlighted being married at 62.2%, 17.3% divorced, 13.0% were single while a 7.6% were widowed. It is believed that children from married parents are better taken care of than children who have a single parent as they are engaged in other activities to provide for the family. There was a no significant relationship ($\chi^2=1.39; \text{df}=3; P=0.062$) between caregivers marital status and nutrition status of children 6-59 months. Over a half of the caregivers had no education at all. Education showed a significant relationship ($\chi^2=84.9; \text{df}=3; p=0.036^*$) with nutrition status of children 6-59 months.

More than a half of the mothers in the study were housewives at 55.7% while a 25.9% of them were casual laborers 7.6% of the mothers were garbage collectors while another 10.8% involved themselves in other jobs (Table 4.1). From FGDs, it was reported that most women had nothing to do and so remained as housewives. There was a no significant relationship ($\chi^2=107.09; \text{df}=3; p=0.058$) between the occupation of caregiver and nutrition status of children 6-59 months.
Most of the children were male at 52.4% compared to females who were at 47.6% in the sampled respondents (Table 4.2).

**Table 4.2: Demographic characteristics of the child**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>97</td>
<td>52.4</td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>47.6</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 - 12 Months</td>
<td>49</td>
<td>26.5</td>
</tr>
<tr>
<td>13 - 22 Months</td>
<td>50</td>
<td>27.0</td>
</tr>
<tr>
<td>23 - 36 Months</td>
<td>48</td>
<td>25.9</td>
</tr>
<tr>
<td>37 - 44 Months</td>
<td>25</td>
<td>13.5</td>
</tr>
<tr>
<td>45 - 59 Months</td>
<td>13</td>
<td>7.0</td>
</tr>
<tr>
<td>Birth place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle/lower Shabelle</td>
<td>39</td>
<td>21.1</td>
</tr>
<tr>
<td>Other district of Mog</td>
<td>80</td>
<td>43.2</td>
</tr>
<tr>
<td>Bay and Bakool</td>
<td>43</td>
<td>23.2</td>
</tr>
<tr>
<td>Middle/Lower Jubba</td>
<td>18</td>
<td>9.7</td>
</tr>
<tr>
<td>Wadajir district</td>
<td>5</td>
<td>2.7</td>
</tr>
</tbody>
</table>

The study focused on children between 6-59 months, this age group in children is the most vulnerable to morbidity and mortality. These were divided into five groups. Twenty seven percent of the children were between 13 to 22 months, twenty six point five percent were between 6 to 12 months, twenty five point nine percent were between 23 to 36 months, thirteen point five percent were between 37 to 44 months and seven percent between 45 to 59 months (Table 4.2). In the study, 43.2% highlighted being born in other district of Mogadishu, 23.2% in Bay and Bakool, 21.1% in middle/lower Shabelle, 9.7% in middle/lower Jubba and 2.7% in Wadajir district (Table 4.2).
4.3: Nutrition status of children 6-59 months

Nutritional status was determined using anthropometric measures to assess underweight, stunting, wasting, MUAC and Oedema.

4.3.1: Underweight, stunting and wasting of children 6-59 months.

According to WHO, Z-scores of less than 2.0 is considered global acute malnutrition.

Weight for age is used to determine underweight which is acute and chronic malnutrition combined (WHO, 2006) this is low weight for age, it is a weight below -2 SD of reference population.

Figure 4.1: Underweight, stunting and wasting
In the study, 5.9% of the children had severe underweight (< -3.0 z-scores) while 16.8% had moderate underweight (-3.0 to -2.0 z-scores). This depicts 22.7% (< -2.0 z-scores) underweight in this age group in the camp (Figure 4.1). Stunting is low length/height for age, it is length/height below -2 SD of reference population it is a sign of chronic nutritional disorder (WHO 2006). Height for age describes stunting in children. Stunting is usually a sign of chronic malnutrition which is irreversible thus prevention and maintaining good nutrition through the lifecycle is advised. Thirty five point one of the sampled children were stunted with 10.8% being severe while 24.3% had moderate stunting (Figure 4.1). Weight for height depicts wasting which is low weight for length/height is usually wasted children are below -2 SD of the reference weight for length/height, is acute nutritional disorder (WHO 2006). Acute malnutrition usually occurring due to seasonal stress in availability of food. Nineteen point five of children in the study were wasted, 5.9% were severe while 13.5% were moderately wasted (Figure 4.1).

### 4.3.2: Oedema and mid upper arm circumference

Oedema is a vital clinical sign in severe acute malnutrition in children (Somalia MOH-IMAM, 2009). In the children screened in the study at least 3.2% of them presented with
oedema (Table 4.4). Nutrition status was categorized as recommended by WHO (2000) which are severe < -3 Z score, moderate -3 - < -2 Z score, normal > -2 Z score.

Table: 4.4: Presence of oedema and mid upper arm circumference (MUAC)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of oedema</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>179</td>
<td>96.8</td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>3.2</td>
</tr>
<tr>
<td>MUAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe</td>
<td>13</td>
<td>7.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>27</td>
<td>14.6</td>
</tr>
<tr>
<td>Normal</td>
<td>145</td>
<td>78.4</td>
</tr>
<tr>
<td>Total</td>
<td>185</td>
<td>100</td>
</tr>
</tbody>
</table>

Nutrition status was also assessed using MUAC which were categorized as recommended by WHO (2000). These are severe < 11.5cm, moderate 11.5 – 12.4cm, normal >12.5cm. MUAC is used to screen children and classify them in different categories depending on their risks to malnutrition. It was noted in the study that 7.0% had severe malnutrition with a MUAC of below 11.5cm while 14.6% had moderate malnutrition with a MUAC of 11.5-12.4cm (Table 4.4).

4.4 Food consumption patterns of children 6-59months

This study assessed the daily access for feeding in reference to age at which complementary feeding was started, food for complementary feeding and times of feeds in the day.
4.4.1: Daily access for feeding

In the study, it was noted that most caregivers started complementary feeding at six months at 67.6% though 24.3% reported starting at less than six months of age. 8.1% of the caregivers also reported starting to feed at one year (Table 4.5). There was no significance relationship between age which complementary feeding start and nutritional status of children 6-59 months ($\chi^2=107.09; \text{df}=3; p=0.058$).

Table 4.5: Daily access for feeding

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Sig (P – value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age which complementary feeding started</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Months</td>
<td>125</td>
<td>67.6</td>
<td>$\chi^2=107.09; \text{df}=2; p=0.058$</td>
</tr>
<tr>
<td>Less than 6 months</td>
<td>45</td>
<td>24.3</td>
<td></td>
</tr>
<tr>
<td>One year</td>
<td>15</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>Food for complementary feeding (types of food)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Porridge</td>
<td>111</td>
<td>60.0</td>
<td>$\chi^2=107.09; \text{df}=3; p=0.054$</td>
</tr>
<tr>
<td>Beans</td>
<td>17</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td>Rice</td>
<td>42</td>
<td>22.7</td>
<td></td>
</tr>
<tr>
<td>Others (Snacks)</td>
<td>15</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>Times of feeds in the day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once</td>
<td>8</td>
<td>4.3</td>
<td>r0.814p&lt;=0.031*</td>
</tr>
<tr>
<td>Twice</td>
<td>62</td>
<td>33.5</td>
<td></td>
</tr>
<tr>
<td>Three times</td>
<td>111</td>
<td>60.0</td>
<td></td>
</tr>
<tr>
<td>Others(4-5Times)</td>
<td>4</td>
<td>2.2</td>
<td></td>
</tr>
</tbody>
</table>

In the study, porridge was the most preferred food for complementary feeding at 60.0%, rice at 22.7% and beans at 9.2% in the target population (Table 4.5). ($\chi^2=107.09; \text{df}=3; p=0.054$) there is no significant relationship between the food for complementary feeding and nutritional status of the children 6-59 months. Porridge was most preferred and as reported from FGDs, it was due to the consistency in feeding infants who are not able to
consume hard solid foods at introduction to complementary feeding. In the study, it was noted that 60% of the children were fed three times a day, 33.5% fed twice while 4.3% fed once (Table 4.5). The study noted was a significant relationship between times of feeds in the day and nutritional status of children 6-59 months ($r=0.814p<0.031^*$).

4.4.2: Level of income of the household

Almost all the households accessed some income (Figure 4.2). Household income is a contributing factor to food consumption patterns. About 5.4% earned less than 20 USD ($). Majority of the households 25.9% earned between 81- 100 USD ($). Only a few 14.6% earned more than 100 USD ($). The average income per household was 68.8 ± 22.3 SD. FGDs revealed that, people at the camp have limited opportunities to raise income.

---

**Figure 4.2: Household monthly income in the IDP camps**
The relationships for income and nutrition status were done using Pearson correlation. There was a significant relationship (r=0.562; p=0.038*) between caregivers income and nutrition status of children 6-59 months.

4.5: Determinants of food consumption patterns of children 6-59months

The determinants found to influence the food consumption patterns are household size, source of food and awareness of malnutrition.

4.5.1 Household size

Majority of the households had five members (35.7%) (Figure 4.2).

![Household size](image)

**Figure 4.3 Household size**

The minimum household size was 3 while maximum was 10. The mean household size was 5.6 ± 0.8 SD. The household size affects the amount of food per child and thus nutritional status of a child. Large household sizes lead to food sharing as reported in FGDs. The relationships for household size and nutrition status were done using Pearson
correlation. There was a significant relationship \((r=0.623; p=0.042^*)\) between caregivers household size and nutrition status of children 6-59 months.

### 4.5.2: Source of food

It was highlighted from the study that most of the caregivers 79.5% cooked food for the child while 8.6% had their food from feeding centers in the camp, 6.5% from relatives with a 4.9% buying the food they consumed (Table 4.6). Source of child’s food was not significantly \((\chi^2=412.05; df=4; p=0.055)\) related to nutritional status of children 6-59 months.

**Table 4.6: Sources of food**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Sig (P – value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source of child’s food</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By cooked in the HH</td>
<td>147</td>
<td>79.5</td>
<td>(\chi^2=412.05;)</td>
</tr>
<tr>
<td>By buying feeding centers</td>
<td>9</td>
<td>4.9</td>
<td>df=4; (p=0.055)</td>
</tr>
<tr>
<td>From relatives</td>
<td>16</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>Others(Aid)</td>
<td>1</td>
<td>.5</td>
<td></td>
</tr>
<tr>
<td><strong>Money for food</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>68</td>
<td>36.8</td>
<td>(\chi^2=388.09;)</td>
</tr>
<tr>
<td>Father</td>
<td>68</td>
<td>36.8</td>
<td>(df=3; \ p=0.055)</td>
</tr>
<tr>
<td>Father relatives</td>
<td>30</td>
<td>16.2</td>
<td></td>
</tr>
<tr>
<td>Mother relatives</td>
<td>21</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td><strong>Food consumed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bread, rice, canjero, beans bread</td>
<td>144</td>
<td>77.8</td>
<td>(\chi^2=366.04;)</td>
</tr>
<tr>
<td>Meat, fish or organ meat</td>
<td>29</td>
<td>15.7</td>
<td>(df=2; \ p=0.057)</td>
</tr>
<tr>
<td>Mango, Papaya, sweet potato</td>
<td>22</td>
<td>11.9</td>
<td></td>
</tr>
</tbody>
</table>
Provision of finances for food was within the same level for the caregiver and the husband at 36.8%. Husband’s relatives and caregiver’s relatives provided financial support for food at 16.2% and 11.4% respectively (Table 4.6). There was no significant relationship ($\chi^2=388.09; df=3; p=0.055$) between source of money for food and nutrition status of children 6-59 months. Bread, rice, canjero, beans, bread were the main consumed food for 77.8% of the respondents with 15.7% having consumed meat, fish or organ meat while 11.9% of the respondents consumed mango, papaya, sweet potato as their main meal (Table 4.6). There was no significant relationship ($\chi^2=366.04; df=2; p=0.057$) between type of food consumed and nutrition status of children 6-59 months.

4.5.3: Nutrition Awareness of the caregivers

The caregivers highlighted lack of food as the main description of malnutrition at 59.5% while 24.9% described malnutrition as a disease. 20.0% of the respondents highlighted poor hygiene practices as malnutrition while a 2.2% of the respondents described malnutrition as excess eating of food (Table 4.7).
There was no significant relationship ($\chi^2=201.2$ df=4; $p=0.054$) between awareness of caregivers on what is malnutrition and nutrition status of children 6-59 months.

**Table 4.7: Awareness of caregiver’s malnutrition**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Sig (P-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of caregivers on what is malnutrition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of food</td>
<td>110</td>
<td>59.5</td>
<td>$\chi^2=201.2$</td>
</tr>
<tr>
<td>Excess eating of food</td>
<td>4</td>
<td>2.2</td>
<td>df=4;</td>
</tr>
<tr>
<td>Diseases</td>
<td>46</td>
<td>24.9</td>
<td>$p=0.054$</td>
</tr>
<tr>
<td>Poor hygiene practices</td>
<td>37</td>
<td>20.0</td>
<td></td>
</tr>
<tr>
<td>Others (Infection)</td>
<td>2</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Awareness on symptoms of malnutrition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of weight</td>
<td>117</td>
<td>63.2</td>
<td>$\chi^2=128.2$</td>
</tr>
<tr>
<td>Child become weak</td>
<td>47</td>
<td>25.4</td>
<td>df=4;</td>
</tr>
<tr>
<td>Headache and fever</td>
<td>5</td>
<td>2.7</td>
<td>$p=0.056$</td>
</tr>
<tr>
<td>Swelling</td>
<td>35</td>
<td>18.9</td>
<td></td>
</tr>
<tr>
<td>Others (Weakness)</td>
<td>3</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Awareness on causes of malnutrition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack/ inadequate food</td>
<td>115</td>
<td>62.2</td>
<td>$\chi^2=124.8$</td>
</tr>
<tr>
<td>Childhood sickness</td>
<td>26</td>
<td>14.1</td>
<td>df=4;</td>
</tr>
<tr>
<td>Refusing to eat</td>
<td>28</td>
<td>15.1</td>
<td>$p=0.058$</td>
</tr>
<tr>
<td>Lack of time to feed child</td>
<td>21</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td>Others (Large family)</td>
<td>5</td>
<td>2.7</td>
<td></td>
</tr>
</tbody>
</table>
Malnutrition presents with several symptoms, the caregivers highlighted loss of weight as the main symptom of malnutrition (63.2%). Weakness was also highlighted by 25.4% as a symptom, swelling (oedema) at 18.9% and a 2.7% highlighted headache and fever as a symptom that a child presents when they are malnourished (Table 4.7).

There was no significant relationship ($\chi^2=128.2; \text{df}=4; p=0.056$) between awareness on symptoms of malnutrition and nutrition status of children 6-59 months. Though the causes of malnutrition are diverse, 62.2% of the caregivers highlighted lack/inadequate food as the main cause of malnutrition while 15.1% thought refusal to eat caused malnutrition. Disease 14.1% was believed be a cause malnutrition and 11.4% highlighted lack of time to feed the child as a cause of malnutrition (Table 4.7). There was no significant relationship ($\chi^2=124.8 \text{ df}=4; p=0.058$) between awareness on causes of malnutrition and nutrition status of children 6-59 months.

4.6: Morbidity patterns of children 6-59months

This study assessed the presence of disease, symptoms, whether consultation was done or not, reason for not consulting and places of consultation.

4.6.1: Prevalence of disease in the last 2 weeks

The study highlighted more than half (67.6%) of the children had been sick in the last two weeks, with only 32.4% of the children having not reported being sick (Table 4.8).
There was no significant relationship ($\chi^2=107.09; \text{ df}=1; \text{ p}=0.053$) between presence of illness and nutrition status of children 6-59 months.

**Table: 4.8: Prevalence of the disease in the last 2 weeks**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
<th>Sig (P - value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>126</td>
<td>68.1</td>
<td>$\chi^2=107.09; \text{ df}=1; \text{ p}=0.053$</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>31.9</td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td>42</td>
<td>22.7</td>
<td>$\chi^2=107.09; \text{ df}=6; \text{ p}=0.056$</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>52</td>
<td>28.1</td>
<td></td>
</tr>
<tr>
<td>Vomiting</td>
<td>28</td>
<td>15.1</td>
<td></td>
</tr>
<tr>
<td>Cold</td>
<td>15</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>Skin Infection</td>
<td>12</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>Lack of appetite</td>
<td>22</td>
<td>11.9</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Consulted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>57</td>
<td>45.2</td>
<td>$\chi^2=107.09; \text{ df}=1; \text{ p}=0.059$</td>
</tr>
<tr>
<td>No</td>
<td>69</td>
<td>54.8</td>
<td></td>
</tr>
<tr>
<td>Reason for not consulting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of money</td>
<td>21</td>
<td>34.8</td>
<td></td>
</tr>
<tr>
<td>No health facility</td>
<td>28</td>
<td>40.6</td>
<td></td>
</tr>
<tr>
<td>Mild illness</td>
<td>29</td>
<td>29.0</td>
<td></td>
</tr>
<tr>
<td>Place of consultation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health facility</td>
<td>52</td>
<td>91.2</td>
<td>$\chi^2=107.09; \text{ df}=1; \text{ p}=0.055$</td>
</tr>
<tr>
<td>Traditional healer</td>
<td>5</td>
<td>8.8</td>
<td></td>
</tr>
</tbody>
</table>

Diarrhea was the most prevalent symptom with a 28.1% of the sick, cough was at 22.7% and vomiting at 15.1%. Lack of appetite was also prevalent at 11.9 with cold at 8.1% of the sick children. Skin infection was also highlighted by a 6.5% of the respondents (Table 4.8). There was no significant relationship ($\chi^2=107.09; \text{ df}=6; \text{ p}=0.056$) between symptoms of illness and nutrition status of children 6-59 months. FGDs noted that the sanitation in the camp was no good and attributed the diarrhea cases to it. Of all the sick children 54.8% did not seek consultation while 45.2% consulted for treatment. There was no significant relationship ($\chi^2=107.09; \text{ df}=1; \text{ p}=0.059$) between seeking medication and nutrition status of children 6-59 months.
From the study, it was noted that of the 54.8% who did not seek consultation for the illness, 40.6% blamed lack of health facilities as the main reason, this was also supported by focused group discussion as the main reason. Thirty point eight percent lacked money to access medical attention while 29% considered the illness as mild (Table 4.8). There was no significant relationship ($\chi^2=107.09; df=3; p=0.055$) between place of consultation and nutrition status of children 6-59 months. It was noted that 91.2% of the consultations were from a healthy facility. However, 8.8% consulted traditional healers. There was a significant relationship ($\chi^2=124.0 df=3 p=0.041*$) between sickness and nutrition status of children 6-59 months.

4.6.2: Number of days the children was sick.

The number of days the children were sick was assessed.

![Graph showing the number of days children were sick](image)

**Figure 4.4: Number of days the children was sick**

Most of the children were sick for about 1 to five days (52.4%). The rest were either sick for 6 – 10 days (23.0%), 11-15 (12.7%) and >20 (11.9%) (Figure 4.4)
CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section provides the discussion, summary, conclusion and recommendations of the study. The way the variables relate to each other is discussed.

5.2 Discussion

5.2.1: Socio-economic characteristic

From the study, it is evident that malnutrition is a major problem in IDP camps in Somali. This is evident from the socio-economic status of caregivers and household heads. With a very high level of mothers/caregivers having not had any education affects nutrition awareness and ability to acquire employment and job opportunities which translates to high dependency rate from little available resources at the household level. This is in agreement by a study by Groth et al. (2001) that shows low education affects the type of occupation adopted and finally the income.

Mothers and caregivers who are literate are much able to take care of their children in both nutrition and health seeking behaviors than illiterate mothers. A study by Turrell et al., (2003) also noted the same. Working mothers are able to provide more in the family budget than housewives which affects food security of their families. High levels of illiteracy especially in mothers and caregivers is therefore a challenge and a contributor to malnutrition in children especially the under fives. Evidence has shown from several studies that maternal level of education is an important determinant of infant and child mortality. Children born of mothers who are educated have a lower mortality risk as
educated women tend to marry and have their first child at a later age than those who are uneducated (Groth et al., 2001; Turrell et al., 2003). Another study by Mittal et al., 2007, also noted that the prevalence of under nutrition in children was highest where mothers were illiterate.

More than a half of the mothers in the study were housewives and casual laborers. While ether caregivers were garbage collectors while another involved themselves in other jobs (Table 4.1). There was significant correlation between the occupation and income (Chi square= 78, P value = 0.43) as different occupations were enumerated differently. Studies have shown that malnutrition is higher among children of working mothers than housewives who stay home with their children thus able to take care of the children (Mittal et al., 2007).

5.2.2: Nutrition status of children 6-59 months

Three forms of growth failure were assessed. Wasting (acute malnutrition), stunting (chronic malnutrition) and under weight (acute malnutrition/or chronic malnutrition) as each form reflects a different condition. Nutrition status was also assessed using MUAC which were categorized as recommended by WHO (2000). These are severe = <11.5cm, moderate = 11.5 – 12.4cm, normal = >12.5cm. and Oedema which is a vital clinical sign in severe acute malnutrition in children (Somalia MOH- IMAM, 2009). In the children screened at least 3.2% of them presented with oedema. According to the findings high percentage of children are malnourished and need immediate attention. the causes of malnutrition is primary due to poor dietary intake as majority of children according to the
caregivers especially those involved into the focus group discussion, ate rice, beans, was the most preferred food. A good number takes porridge on a daily basis without ether meals. Key informant interview agreed that high number of children with in the IDP camps require immediate attention due to their poor nutritional status.

Prevalence of malnutrition among the children in the study was considerably high. The rates of malnutrition in the age group were high above the WHO recommendation calling for interventions (WHO, 2000). Inadequate intake of food among children has been found to have an effect on the nutrition status (Mclaren and Frigg, 2001). Food sources were a major problem with most of the households having a problem accessing food for the members. This was supported by key informants who highlighted shortage of food and high market prices in the last three months. They also highlighted the need for donors and government to support treatment and management of malnutrition and programmers aimed at improving farming which they believed would improve nutrition status of children and the entire population in the camps by preventing food insecurity.

5.2.3: Food consumption patterns of children 6-59 months

Key informants highlighted that normal food of the family and wet food are given to children and that the nutrition of the children is affected by social income and ignorance of caregivers. When infants grow older, breast milk is no longer enough to meet the nutritional needs and complementary foods should be included. This transition period covers the ages from 6 to 24 months which is the most vulnerable age to malnutrition and significantly contributes to high malnutrition prevalence in under fives. WHO estimates
that 2 out of 5 children are stunted in low-income countries. WHO recommends that complementary feeding should be timely, meaning that all infants should start receiving foods in addition to breast milk from 6 months onwards. It should be adequate, meaning that the complementary foods should be given in amount that is enough to provide required nutrients.

The food should also be safe and appropriate in consistency such that the infant is able to ingest (WHO/UNICEF, 2003). In the study, porridge, rice, beans was the most preferred food for complementary feeding. Porridge was most preferred due to the consistency in feeding infants who are not able to consume hard solid foods at introduction to complementary feeding. In the study, it was noted that most children were fed three times a day which was irregular. A study by Gibson and Hotz (2001) noted that few meals per day contribute to low nutrient intake. WHO recommends that infants start receiving complementary foods at 6 months of age in addition to breast milk, initially 2-3 times a day between 6-8 months, increasing to 3-4 times daily between 9-11 months and 12-24 months with additional nutritious snacks offered 1-2 times per day, as desired

5.2.4: Determinants of food consumption patterns of children 6-59 months.

Poor economic status in the households was noted as some have to seek for finances from relatives. Every increase in family size results in decrease in per capita food and nutrition availability and this slows down the quality of nutrition and improvement of health standards. This, in turn, has its effect on productivity of labour, which ultimately affects
the overall economic development. UNICEF Report (2009) demonstrate large household size is widely regarded as a risk factor for malnutrition in developing countries.

This was also highlighted by focused group discussion where most of the IDP’s purchase food and some receive rice, sorghum flour and oil from food aid. The respondents indicated consuming starchy foods more than proteins and fruits. This would directly affect their nutritional status with prevalence of PEM and micro-nutrient deficiencies. This was also supported by comments from key informant interviews who highlighted that nutrition for children is important for their growth development, for if not done, there would be malnutrition which can result from children developing low immunity to disease and finally death.

Several indicators are used to determine levels of malnutrition, some include; Z-scores, MUAC, presence of oedema, biochemical tests and clinical signs and symptoms among others. As per the UNICEF framework on malnutrition, causes of malnutrition are classified in immediate causes (inadequate dietary intake and diseases), underlying causes (inadequate food access, inadequate care for children and women and insufficient health services and unhealthy environment) and basic causes (political, socio-cultural, climatic and economic factors) (UNICEF, 1997). Interventions meant to prevent and treat malnutrition therefore, should take a comprehensive approach.

Nutrition awareness on infant and young child feeding practices among caregivers is required. Key informants considered creating health promotion and training to enhance
awareness of the mothers and caretakers about malnutrition. Nutrition awareness on exclusive feeding for 6 months and timely introduction to complementary feeding is vital in ensuring proper nutrition care of children below five years. Education on malnutrition, its causes, symptoms and regular growth monitoring to enhance early detection and treatment of malnutrition is vital for caregivers to embrace in the fight to curb malnutrition in this vulnerable age group.

5.2.5: Morbidity patterns of children 6-59 months

Diseases are an immediate cause of malnutrition in children, diarrhea diseases and upper respiratory diseases are major diseases that cause a high prevalence of malnutrition in under fives. The large proportion of the children interviewed had an infection in the last 2 weeks with diarrhea being the most prevalent infection. With majority not seeking consultation for the infection, is an indication possibility of disease progress to severe levels as highlighted by WHO (2013).

Early detection and treatment is important in preventing malnutrition and improved recovery. Awareness on health seeking behavior is required to prevent mortality from preventable and treatable diseases. Though lack of health facilities was the major reason the caregiver did not seek medical attention, lack of money was also an important factor. This indicated high disease prevalence among under fives in the camp. Though, focused group discussion highlighted malaria, bronchitis, pneumonia, diarrhea, common cold and measles as being the common diseases affecting children 6-59 months in the camp, Diarrhea disease is the second leading cause of death in children under five years old, and
is responsible for killing around 760,000 children every year. It is also a major cause of malnutrition in children (WHO, 2013).

5.3 Conclusion

This study concludes the following:

Malnutrition is high prevalent (19.5%) children had global acute malnutrition in the Wadajir IDP camps. Malnutrition among children 6-59 months was influenced by many different factors of which. Food consumption, Nutritional status of children 6-59months in Wadajir IDP camps was poor as depicted by the high levels of malnutrition according to sever malnutrition; stunting (10.8%), wasting (5.9%) and underweight (5.9%).

According to the findings in the study, Consumption of foods below the recommended dietary allowance exposed the children to high risk occurrence of malnutrition. Majority of children did not consume adequate food hence it deepened the problem of malnutrition among them. The education level was low among the caregivers, it is evident that low income is a major challenge in IDP camps which consequently affect their nutritional status as majority of them are unable to access food as their economic power is low due to lack of employment.

The study found the Determinants of malnutrition among children is influenced by Sources of food, Nutrition awareness of the care givers and Household size. Nutrition awareness is also not well conceptualized among the IDP’s as which is a major factor in nutrition status of the population.
Morbidity levels were also high with more than a half of the children interviewed having had an illness in the previous two weeks. Diarrhea was the most prevalent symptom. Diarrheal diseases resulted in poor growth through decreased absorption of nutrients and increased requirements thereby contributing to general protein – energy malnutrition.

Results from the study showed that Education level was significantly related (p=0.036*) with nutrition status of children 6-59 months. There was a significant relationship (p=0.038*) between caregivers income and nutrition status of children 6-59 months. There was a significant relationship (p=0.042*) between caregivers household size and nutritional status of children 6-59 months. There was a significant relationship (p=0.041*) between sickness and nutrition status of children 6-59 months. There was a significant relationship between times of feeds in the day and nutritional status of children 6-59 months (r=0.814p=<0.031*).

5.4 Recommendations of the study

This study has the following recommendations:

1. Regarding to the food consumption the Ministry of Public health of Somalia should plan and implement intensive health education programs to change incorrect believes specially those related to food consumption and nutritional status. Empowering mothers and caregivers economically through income generating activities and other micro finance credit facilities to strengthen their resource base.
2. Public health officers should increase the awareness of malnutrition in the IDP camps. Mothers/ care givers should intensify their income searching efforts so as to improve household sources of food and resource base to meet the health and nutritional needs of children.

3. Regarding to morbidity patterns public health officers should educate mothers and care givers importance of treatment and to support major reductions in the number of diarrhea cases.

4. On nutritional status there should be decentralization and improved quality for IMAM in the key health facilities serving in this IDP camps. Develop supplementary feeding programs (SFP) and outpatient nutrition programs (OTP) to address the cases of moderate malnutrition and severe malnutrition, respectively. Secure pipeline of therapeutic nutrition commodities to children regardless of 6-59 months status for moderately malnourished children to help reduce numbers requiring therapeutic service e.g. CBS, UNIMIX and food prescription ,These recommendations are important towards helping improve the quality of their food consumption, nutritional status, morbidity, for children 6-59 moths in IDP camps of Wadajir district.

5.5 Recommendations for further research

The study suggests the following area for further research:

1. A study on assessment of nutritional status and morbidity patterns of children 5-12year in the camps of internally displaced people of Wadajir District.
2. A study is required on how to improve dietary intake and hygiene practice in the camps of internally displaced people which all contribute to the good health and nutritional status of children less than five years.

3. A study on nutritional status of pregnant and lactating mothers in the camps of internally displaced people in Wadajir District.
REFERENCES


Living Standards in Asia. Washington D C, World Bank (Living Standards
Measurement Survey.)

SCF - UK FEAT. (1996). - Description of the Deshek food economy group;
BuaaleDistrict.

SCF - UK. (1991). - Inter-Agency/MOH nutrition surveys of the main towns in
Somaliland.

UNHCR Kenya/Somalia, WFP Somalia (1994) Guidelines for the use of food aid to
Address food insecurity in Somalia.


www.sustaintech.org/world/index.htm


C. UK
APPENDICES

Appendix 1: Consent form

I am Farhia Abdiaziz Sh.Hussien a postgraduate student at Kenyatta University undertaking a research as part of the requirement of the degree of Masters in Public Health (monitoring and evaluation). Aimed at establishing Nutritional status among children 6-59months in IDP camps of Wadajir district.

I kindly request you to be truthful as possible in answering the questionnaire, any information provided will be treated with strict confidence, used exclusively and for academic purpose. Your cooperation will be greatly appreciated.

Questionnaire no…………………..

Date of interview………………

Signature……………………….
Appendix 2: Questionnaire for mothers and care givers

A. Demographic characteristics

1. Gender:  a. Female  [ ] b. Male  [ ]

2. How old are you?
   a. 15-25 years  [ ]
   b. 26-35 years  [ ]
   c. 36-45 years  [ ]
   d. Above 45 years  [ ]

3. What is your marital status?
   a. Single  [ ]
   b. Married/living together  [ ]
   c. Widowed  [ ]
   d. Divorced  [ ]

4. What is your level of education?
   a. No education  [ ]
   b. Primary  [ ]
   c. Secondary  [ ]
   d. Higher Education  [ ]

5. What is your occupation?
   a. Housewife  [ ]
6. What is your income _________________?

B. Nutritional status and consumption patterns

7. What is Malnutrition?

   a. Lack of food
   b. Diseases
   c. Poor hygiene practices
   d. Others (specify)____________________

8. When child gets malnutrition develops the following symptoms and signs

   a. Loses weight
   b. Child becomes weak
   c. Headache and fever
   d. Swelling

9. What causes malnutrition?

   a. Lack/inadequate food
   b. Childhood sickness
   c. Refusing to eat
   d. Lack of time to feed child
10. What age do you start giving other food (complementary feeding)

__________________________________________________________________

11. What kind of food do you use for complementary feeding?

a. Porridge
b. Beans
c. Rice
d. Others (specify)__________________

12. How many times is food served in a day?

a. Once
b. Twice
c. Three times

Others (specify)-----------------

13. Where do you get food for the child?

a. By cooked in the house hold
b. By buying
c. By feeding centers
d. From relatives
e. Others (Specify)-----------------------------------------------
14. Who provides money or food to be prepared?
   a. Mother  
   b. Father  
   c. Father’s relatives  
   d. Mother relatives  

15. Which type of food does the family normally consume?
   _________________________________________________________________
   _________________________________________________________________
   _________________________________________________________________
   _________________________________________________________________

16. How many people in the house?
   _________________________________________________________________

C: 17. Morbidity status for children 6-59 months.

1. During the past 2 weeks, did the child suffer from any illness/injury?
   a. Yes  
   b. No  
   c. If yes, how many days did the child suffer? _______  

2. Can you describe the symptoms?
   a. Cough  
   b. Diarrhea  

c. Vomiting, [ ]
d. Cold, [ ]
e. Skin Infection, [ ]
f. Lack of appetite, [ ]
g. Others Specify [ ]

3. Was any one consulted for that illness?
   a. Yes [ ]
   b. No [ ]

4. If No, what is the reason?
   a. Lack of Money [ ]
   b. No health facility nearby [ ]
   c. Mild illness [ ]
   d. Other Specify ----------------------------------------

5. If yes, where did you go for consultation?
   a. Health Facility [ ]
   b. Traditional Healer [ ]
D: anthropometrics form for assessing malnutrition

Forms: to be filled for each child in household

18. Sex:
   a. Male  
   b. Female

19. Birth place
   a. Middle/Lower Shabelle
   b. Banadir
   c. Bay and Bakool
   d. Middle/Lower Jubba
   e. Others (specify)_________________

20. Age in month
   a. 6-12 months
   b. 13-22 months
   c. 23-36 months
   d. 37-44 months
   e. 45-59 months

21. Oedema……… Present
                Absent

22. Mid upper arm circumference (MUAC)…………………….. cm

23. WEIGHT_____________ kg

24. HEIGHT_____________ cm

THANKS
Appendix 3: Focus group discussion

1. How does the community cope with food shortages?

2. What are the major sources of household income in this area?

3. What has been the trend of food availability in this area?

4. What are the major common illnesses experienced by the area residents?

5. How accessible are health facilities in the area?
Appendix 4: Key in format interview

1. What is your general view of child nutrition and morbidity pattern?

2. What are food types are readily available to feed young children in these IDP camps?

3. Is there farming done around here? How is it important as a source of food?

4. Do you have any data for the last 3 months on children regarding nutritional status in this IDP camps?

5. What supplements do you have for malnourished children?

6. What qualifies a child to be put under food supplements?

7. Do you conduct sessions to educate mothers on good nutrition?

8. In your own view, what hinders caregivers from feeding their children with proper balanced meals?

9. What is the Somali Government doing to improve the nutritional status of young children?

10. How can other stakeholders assist in improving the nutritional status of young children?
Appendix 5: Kenyatta university graduate school approval

KENYATTA UNIVERSITY
GRADUATE SCHOOL

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

FROM: Dean, Graduate School
TO: 
Ms. Farhia Abdiaziz Sh. Hussien
C/o Community Health Dept.
Kenyatta University

DATE: 26th June, 2014

REF: Q57E/CTY/PT/20607/12

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board at its meeting of 11th June, 2014 approved your Research Proposal for the M. P. H. Degree, Entitled “Nutritional Status of Children 6-59 months in Camps of Internally Displaced People in Wadjir District, Mogadishu, Somalia”.

You may now proceed with your Data collection, subject to clearance with the Permanent Secretary, Ministry of Higher Education, Science and Technology.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking Forms per semester. The form has been developed to replace the progress Report Forms. The Supervision Tracking Forms are available at the University’s Website under Graduate School webpage downloads.

Thank you.

JULIA GITU
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Community Health Dept.

Supervisors:

1. Dr. Justus O. S. Osero
C/o Community Health Dept.
KENYATTA UNIVERSITY

2. Dr. Eunice Njogu
C/o Foods, Nutrition & Dietetics Dept.
KENYATTA UNIVERSITY

JG/cao

Committed to Creativity, Excellence & Self-Reliance
Appendix 6: Kenyatta university graduate 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. 57580

DATE: 26th June, 2014

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

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR MS. FARHIA ABDELAIZIZ SH. REG. NO. Q57F/CTY/PT/20607/12

I write to introduce Ms. Farhia who is a Postgraduate Student of this University. She is registered for M.P.H. Degree programme in the Department of Community Health in the School of Public Health.

Ms. Farhia intends to conduct research for a proposal entitled, “Nutritional Status of Children 6-59 months in Camps of Internally Displaced People in Wadajir District, Mogadishu, Somalia”.

Any assistance given will be highly appreciated.

Yours faithfully,

JG/cao

Committed to Creativity, Excellence & Self-Reliance
Appendix 7: Permit from National Commission for Science, Technology and Innovation in Kenya

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote Ref. No.

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI KENYA

NACOSTI/RCD/3/014/VOL. XIV/1431

Farhia Abdiaziz Sh. Hussein
P.O Box 23388-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Your letter dated 27th June 2014 refers.

It is noted that the research titled: "Nutritional status of Children 6-59 months in camps of internally displaced people in Wadjir District, Mogadishu, Somalia" will be carried outside the Kenyan territory.

For this reason, Farhia Abdiaziz Sh. Hussein does not require a research permit under the Science, Technology and Innovations Act, 2013, part IV section 12 and there is no administrative requirement for issuance of research permit for any research to be conducted outside the country.

Said Hussein
FOR: SECRETARY/CEO

Copy to:

The Dean, Graduate School
Kenyatta University
P.O Box 43844, 00100
NAIROBI.
Appendix 8: Authorization from Ministry of Health - Somalia

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "Nutritional status among children 6-59 months in IDP camps of Wadajir District Mogadishu Somalia" I am pleased to inform you that you have been authorized to undertake research in Wadajir District for a period ending 31\textsuperscript{th} December, 2014.

You are advised to report the Ministry of Health before embarking on the research project.

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

Best Regards,

Dr Mohamed Abdi Farah
Acting DG and Director of Public Health, Ministry of Health
Federal Government of Somalia

Tel: +252-1-8930524 / E-mail: dfrarah2011@gmail.com/skype dfrarah21  Mogadishu-Somalia
Appendix 9: Research clearance, Ministry of Culture and Higher Education - Somalia

Ref: WHTS/XAG/00360/2014  Date: 16th November, 2014

TO WHOM IT MY CONCERN

RE: RESEARCH CLEARANCE PERMIT

This is to certify that Ms. Farhia Abdiaziz Sh. Hussien of Kenyatta University P O BOX 43884, Nairobi, has been permitted to conduct research for M.P.H Degree, in Wadajir District, Mogadishu, Somalia on the topic “Nutritional status of Children 6-59 months in camps of internally Displaced People in Wadajir District, Mogadishu, Somalia” for a period ending 31st December, 2014.

Best Regards

[Signature]

Ismail Yusuf Osman
Director General
Appendix 10: Authorization from Wadajir district - Somalia

To whom may concern

Subject: Authorization letter for conducting research in Wadajir district

Mrs. Farhia Abdiaziz Sh. Hussein

With reference to your request letter to conduct research at Halane area in Wadajir district, I am pleased to welcome your research project.

As indicated in your letter, the research project entitled:

"Nutritional status of children 6-59 months in camps of internally displaced people in Wadajir district Mogadishu, Somalia"

I understand that this research will be carried out following sound ethical principles and that participant involvement in this research study is voluntary and provides confidentiality of research data as described in your consent letter.

Therefore, as the district authority, I hereby confirm that I agree Mrs. Farhia research project can be conducted at our district.

Sincerely,

District Commissioner

Ahmed Abdulle Afrah
### Appendix 11: Study time frame

<table>
<thead>
<tr>
<th>Tasks in research</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preliminary</td>
<td></td>
</tr>
<tr>
<td>• Literature review</td>
<td>April 2014</td>
</tr>
<tr>
<td>• Problem identification and formulation</td>
<td></td>
</tr>
<tr>
<td>• Proposal preparation</td>
<td></td>
</tr>
<tr>
<td>• Submission of proposal</td>
<td></td>
</tr>
<tr>
<td>2. Planning</td>
<td></td>
</tr>
<tr>
<td>• An exploration visit to sampled area</td>
<td>May 2014</td>
</tr>
<tr>
<td>• Map preparation and sample frame</td>
<td></td>
</tr>
<tr>
<td>• Draft pretest questionnaire</td>
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</tr>
<tr>
<td>3. Field survey</td>
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</tr>
<tr>
<td>• Pilot survey</td>
<td>June 2014</td>
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<tr>
<td>• Tabulation of field returns</td>
<td></td>
</tr>
<tr>
<td>4. Data processing, analysis and submission</td>
<td></td>
</tr>
<tr>
<td>• Arrival and application for permissions</td>
<td>July 2014</td>
</tr>
<tr>
<td>• A pre-visit to the sampled areas</td>
<td></td>
</tr>
<tr>
<td>• Final reconstruction of the sample frame</td>
<td></td>
</tr>
<tr>
<td>• Final construction of questionnaire</td>
<td></td>
</tr>
<tr>
<td>• Field interviews</td>
<td></td>
</tr>
<tr>
<td>• Collection, checking and verification of field-in questionnaires</td>
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<tr>
<td>• Data entry and processing</td>
<td>August 2014 up to January 2015</td>
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<tr>
<td>• Data analysis</td>
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<tr>
<td>• Correction and production of draft</td>
<td></td>
</tr>
<tr>
<td>• Reproduction of final copy</td>
<td></td>
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<tr>
<td>• Binding and submission of thesis</td>
<td></td>
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</table>
### Appendix 12: Study budget

<table>
<thead>
<tr>
<th>ACTIVITY BUDGET</th>
<th>CORE ACTIVITY</th>
<th>ITEMS/PARTICIPANTS</th>
<th>COST (KSHS)</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Consolidation of literature (2 months)</td>
<td>Library search Traveling expenses Kshs 100 x 20 days</td>
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<tr>
<td></td>
<td>Designing and developing research instruments</td>
<td>Typing and photocopying of research instruments</td>
<td>3,000</td>
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<tr>
<td></td>
<td>Pilot survey</td>
<td>Transport for researcher</td>
<td>70,000</td>
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<tr>
<td></td>
<td>Finalizing of research instruments (typing and photocopying)</td>
<td>20 questionnaires @ kshs 20 per questionnaire</td>
<td>6000</td>
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<tr>
<td></td>
<td>Main field data collection (2months)</td>
<td>Travel and accommodation</td>
<td>50,000</td>
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<td></td>
<td>Data processing, analysis and report writing</td>
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<td>40,000</td>
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<tr>
<td></td>
<td>10% contingency and institutional costs</td>
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<td>1150</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>172,150</strong></td>
</tr>
</tbody>
</table>
Appendix 13: Map of the study area