PREVALENCE OF MALNUTRITION AMONG CHILDREN UNDER FIVE YEARS OLD IN HARGEISA

A Thesis proposal
Presented to the college of applied science and technology
Hargeisa Somaliland

In partial fulfillment of the requirements for bachelor Degree
Of Nutrition and Food Science

By:
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DECLARATION A

“I declare that this thesis is my original work and has not previously been submitted for the award of a bachelor degree in any university, college or other institution of learning”

________________________________________

Name and signature of Candidate

________________________________________

Date
DECLARATION B

“I confirm that the work reported in this thesis was carried out by the candidate under my supervision”

________________________                      __________________________
Name and signature of supervisor               Name and signature of supervisor

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Date                                          Date
Approval Sheet

I certify that this research report satisfies the partial fulfillment of the requirements for the award of the bachelor Degree of science of Hargeisa University in Somaliland

________________________________________
Name and sign of the supervisor

________________________________________
Date
DEDICATION

First thanks all ALLAH who allowed me to complete my thesis book and give me health.

Secondly I dedicate my parents and my family especially my dear mother Khadra Aden Buuni and my father for their support, helping and guiding. Also I dedicate my brothers and my sisters whose give me support and helping.

Also I dedicate may honorable teachers and students especially nutrition and food science student.
ACKNOWLEDGEMENT

First and foremost, and all praise belongs to my superior Allah who made possible for me intention to invent writing this paper and everything wouldn’t be possible and for granting my ability to conduct this study.

I am very show appreciation to my beloved parent and brothers as well as my relatives who provided me moral and created a supportive environment for conducting the study.

Secondly, I am most grateful to all my professors for providing me courage to obtain high quality education at the university.

I am particularly grateful to my honorable teacher as well as supervisor Dr: Khadar Ahmed Omer whom I and other consider them no only coordinating and advisor, but as well as their encouragement for reaching success and as role model would also like to express my sincere appreciation to the administrations to the university for their effort to provide an environmental field for learning.

Finally I wish to thanks to our student, faculty and stuff at the University of Hargeisa.
ABSTRACT

Malnutrition is the condition that develops when the body is deprived of vitamins, minerals, and other nutrients it needs to maintain healthy tissues and organ function.

In Somaliland prevalence of malnutrition is exist as the other regions in Africa so as to address this problem it is important to find the statistical number of children under five year who are suffering from malnutrition in Hargeisa to a base line that we can estimate the prevalence of malnutrition in Hargeisa city. 

Objectives: The main aim of this study is to assess prevalence of malnutrition among children under 5 years old in Hargeisa city

Methodology: This is across sectional study which will be conducted in Hargeisa district, in which quantitative technique were used

Findings: The finding of this study shows the prevalence of malnutrition in children under five in Hargeisa, Somaliland. So as the study reveals that 98% of respondents in study stated that malnutrition is prevalent among the children under five in Hargeisa Somaliland, as well as underlying causes of malnutrition, risk factors malnutrition and the type of malnutrition which among the children under five years who were hospitalized or attending in Hargeisa Group Hospital, there for 50% of respondents stated that marasmus is the most common type malnutrition who were attending health centers and hospitals.

Conclusion: Somaliland the study reveals that 98% of respondents in study stated that malnutrition is prevalent among the children under five in Hargeisa Somaliland, as well as underlying causes of malnutrition, risk factors malnutrition and the type of malnutrition which among the children under five years who were hospitalized or attending in Hargeisa Group Hospital, there for 50% of respondents stated that marasmus is the most common type malnutrition who were attending health centers and hospitals.
Reasons why malnutrition is prevalent in among the children under five year were inadequate breast feeding practice, poor dietary intake, inadequate health care parasitic infections, poverty.

 Recommendation:

- Young children should be provided an appropriate health care during this period
- Mothers and child cares should be Educated to minimize malnutrition in children under five year
- Children should provide good dietary intake before and after weaning to prevent malnutrition in children under five years
- Children under this year should be given good dietary after the weaning to avoid the incidence of malnutrition in children under five year.
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List of abbreviation

**WHO**: world health organization

**PEM**: protein energy malnutrition

**HIV**: human immunodeficiency virus

**AIDS**: acquired immune disease syndrome

**UNICEF**: united nation children’s emergency found

**TP**: tuberculoses

**GI**: gastrointestinal

**NCHS**: national center for health statistics

**MOH**: minister of health
CHAPTER ONE

1.0 Introduction

1.1 Background

Malnutrition is the condition that develops when the body is deprived of vitamins, minerals, and other nutrients it needs to maintain healthy tissues and organ function.

Malnutrition occurs in people who are either under nourished or over nourished. Today, in the U.S., more children suffer from malnutrition due to dietary imbalances rather than nutritional deficiencies.

Under nutrition occurs when not enough essential nutrients are consumed or when they are excreted more rapidly than they can be replaced. Over nutrition occurs in people who eat too much, eat the wrong things, don't exercise enough, or take too many vitamins or other dietary replacements. Risk of over nutrition is increased by being more than 20% overweight or consuming a diet high in fat and salt.

Malnutrition is a serious problem because it causing the deaths of 3.5 million children under 5 years old per year in the world, as well as it is at third level in the world of the disease burden in this age group, Even thought globally, childhood malnutrition declined relatively.

During the year 1990’s; its prevalence in Africa actually increased even during 1990’. More than 25% under five children in the developing world are malnourished which accounts about 143 million children. Among these 143 million malnourished children, nearly three quarters live in just 10 countries in Sub-Saharan Africa region and more than one-quarter of children under five are malnourished (in Nigeria and Ethiopia alone accounts more than 33%) .

Under nutrition, which is focus of this study, conversely has been estimated to be an underlying cause for around half of all child deaths worldwide. it has different types of measurements. Due to this fact, malnutrition continues to be
a significant public health and development concern not only in developing
country but also in the world.

Then child malnutrition still remains a public health problem mostly in
developing countries including Ethiopia. According to Ethiopia demographic
health survey of 2011 that in Ethiopia 29 percent of children under age five are
underweight and 9% are severely underweight and it is highest in Amharic
Region which is 33.4%. The proportion of under-weight children vary with
each age cohort. And it is highest in the age groups 24-35 months (34%) and
lowest among those under six months (10%). This may be their exposure
infections and susceptible illness because foods for weaning are typically
introduced and they expose to the environment those children in 24-35 age
groups. This is due to inappropriate or inadequate feeding practices may
contribute to -influence nutritional status among children in these age groups.

Many factors can be associated with the occurrence of malnutrition in
children. The primary determinants of malnutrition, as conceptualized by
several authors relate to unsatisfactory food intake, severe and repeated
infections, or a combination of the two. The interactions of these conditions
with the nutritional status and overall health of the child - and by extension -
of the populations in which the child is raised have been shown in the
UNICEF Conceptual framework of child survival. And so inadequate health
services and an unhealthy environment (Schoeman et al. 2010; Hioui et al.
2010), socio-cultural environments (Mashalet al.2008; Noughani&Bagheri,
2010), socioeconomic, maternal, and child factors (Lesiapeto et al.2010;
Hasselman et al.2006), and socio-demographic factors (Phengxay et al. 2007;
Handal et al. 2007).

Malnutrition levels are still high in developing countries around the world
(Sunil, 2009), an estimated wasting 9.8%, underweight 17.9% and stunting
29.2% (WHO, 2009), included Indonesia. According to the MoH Indonesia
informed frequency of malnutrition in children under five years of age during
the year 2010 in Indonesia 17.90% are underweight, 35.60% stunted, 13.30%
showed wasting, and in West Nusa Tenggara Province 48.30% are stunting, 30.50% are underweight and 14.90% are wasting.

The United Nations Children’s Emergency Fund (UNICEF) conceptual framework of child malnutrition that shows multiple levels for interventions that can reduce morbidity and mortality related to malnutrition. To prevent or treat malnutrition the factors causing the condition need to be evaluated. The different causes of malnutrition are interlinked and include immediate causes, underlying causes and basic causes (UNICEF, 2004)

Currently, the WHO recommended the use Z-Score or SD system to grade under nutrition. This method measures all the three indices and expresses the results in terms of Z scores or standard deviation units. Children who are more than 2 SD below the reference median (i.e. a Z-Score of less than -2) are considered to be undernourished i.e. to be stunted, wasted or to be underweight. Children with measurements below 3 SD (a Z-Score of less than -3) are considered to be severely undernourished

Evaluation of prevalence of malnutrition among pre-school children using z-score is a very vital issue often under reported in pediatrics practice and in this part of the world, its importance therefore cannot be downplayed especially its impact on health which had been mentioned above.

1.2 Problem statement

In globallly malnutrition is the most common nutritional disorder in developing countries, its most common cause’s child mortality and morbidity among children worldwide

In Somaliland prevalence of malnutrition is exist as the other regions in Africa so as to address this problem it is important to find the statistical number of children under five year who are suffering from malnurtrion in Hargeisa to a base line that we can estimate the prevalence of malnutrition in Hargeisa city.

The problems of increased prevalence of malnutrition were related to poor sanitary conditions and inadequate food intake. Mother’s education was found
to be the strongest factor associated with malnutrition among the children less than 5 years of age.

1.3 General objectives

The main aim of this study is to assess prevalence of malnutrition among children under 5 years old in Hargeisa city

1.4 Specific Objectives

- To find out the prevalence of malnutrition among the children under five years
- To determine underlying causes of malnutrition in children under five years
- To prevent causes of malnutrition in children under five years
- To clarify risk of malnutrition in children under five year old

1.5 Research Questions

Research questions will:
1. How is the prevalence of malnutrition in children under five year?
2. What are the underlying causes of malnutrition in children under five years?
3. How can we prevent causes malnutrition in children under five year?
4. What are the risk factors of malnutrition in children under five years?

1.6.0 Scope of the Study

1.6.1 Geographical scope of the study
The Geographical scope of this study will be carry out in Hargeisa city, the capital city of Somaliland that lies north –west of Somalia, this study will mainly focus the children under five year and how malnutrition effects

1.6.2 Time Scope of the Study
This study will take the time that will start from April to June, in 2015 by this year. From the begin of my study as researcher I will prepare my research instrument to conduct my thesis research as it was intended.

1.6.3 Content of Scope
This paper contributes more about prevalence of malnutrition among children under five years in hargeisa city context.

1.7 Significance of the study
This research will be an asset by the following institution and beneficiaries

Government especially minister of health and pediatric ward. Also will be benefited by everyone who works on health issues such as international or local agencies. Community in Hargeisa especially malnutrition children

1.8 Operational terms
Malnutrition or malnourishment is a condition that results from eating a diet in which nutrients are either not enough or are too much such that the diet causes health problems

Over-nutrition occurs when a person consumes a diet that exceeds the necessary requirements for the amount of essential nutrients, or the amount of calories a person needs to remain healthy.

Under-nutrition occurs when a person consumes a diet that does not meet the necessary requirements for the amount of essential nutrients or calories a person needs to remain healthy.

Weaning is the process of gradually introducing a mammal infant to what will be its adult diet and withdrawing the supply of its mother's milk.

Wasting gradually reducing the fullness and strength of the body A refers to the process by which debilitating disease causes muscle and fat tissue to "waste" away.

Morbidity: Illness, disease

Mortality the state or condition of being subject to death; mortal character nature or exist tense
An essential nutrient is a nutrient required for normal human body function that either cannot be synthesized by the body at all, or cannot be synthesized.

1.9 Conceptual framework

- **Child characteristics:**
  - Age, types of birth
  - Sex, vaccination status
  - Birth-order
  - Morbidly status

- **Malnutrition under-five children**

- **Socio-demographic factors**
  - Numbers of household member
  - Age of mother
  - Family educational status, occupation of mother

- **Environmental conditions**
  - Water-supply
  - Sanitation
  - Housing condition

- **Child caring practices**
  - Feeding hygiene of child
  - Vitamin A supplementation
  - Health-care-seeking
  - Immunization
  - Hand washing

This figure illustrated the prevalence of malnutrition in children under five years and its causes both food and nonfood factors.
2.1 Introduction
Malnutrition remains one of the most common causes of morbidity and mortality among children under five children throughout the World [7]. Worldwide, over 10 million Children under the age of 5 years die every year from preventable and treatable illnesses despite effective health interventions. At least half of these deaths are caused by malnutrition. Malnourished children have lowered resistance to infection; therefore, they are more likely to die from common childhood ailments such as diarrheal diseases and respiratory infections. In addition, malnourished children that survive are likely to suffer from frequent illness, which adversely affects their nutritional status and locks them into a vicious cycle of recurring sickness, faltering growth and diminished learning ability. In developing countries, malnutrition is a major health problem [8].

The burden of malnutrition is much higher in South Asia compared to that in Africa and other parts of the world. The prevalence of underweight and stunting in South Asia has been recorded as 46 and 44 percent, respectively [9]. Chronic malnutrition has been a persistent problem for young children in Sub-Saharan Africa. A high percentage of these children fail to reach the normal international standard height for their age; that is, they are “stunted” In contrast, the percentage of children stunted in Southeast Asia dropped from 52 percent to 42 percent between 1990 and 2006. The number of undernourished (low weight for age)people of all ages in sub-Saharan Africa increased from about 90 million in 1970 to 225 million in 2008, and was projected to add another 100 million by 2015, even before the current world food price hikes [10].

A study conducted on influence of socio-economic factors on nutritional status of children in a rural community of osun state, Nigeria revealed that the
prevalence rates of underweight, wasting and stunting were 23.1%, 9% and 26.7% respectively and also prevalence and determinants of malnutrition among Under-five Children of Farming Households in Kwara State, Nigeria results indicate that 23.6%, 22.0% and 14.2% of the sample children were stunted, underweight and wasted, respectively [11,12]

Study done on malnutrition among under-five children in Bangladesh revealed that, the high prevalence of stunting and underweight, for instance 42% and 40% of under-five children were stunted and underweighted, respectively [13]. Also study conducted nutritional status of under-five children in Mongolia also showed that, the prevalence of stunting, wasting and underweight were 15.6%, 1.7% and 4.7%, respectively [14]

The prevalence of children under five years with acute malnutrition in Southern Sudan is one of the highest in the world approximately one out of every five children (22%) suffers from moderate to severe acute malnutrition (wasting). The prevalence of acute malnutrition among this age population in Southern Sudan is almost twice as high as in other parts of Sudan and also study conducted in a decertified area of Sudan - Alrawakeeb valley revealed that the prevalence of malnutrition among these children is very high (27.5%) were severely malnourished and 35% suffered from either mild or moderate malnutrition [16, 17]

Malnutrition varies from country to country depending on economic, ecological, social, and other factors. In Ethiopia at present the most serious nutritional problems are mainly due to low intake of foods in general. The problem is more severe among children aged 1-3 years who suffer from Kwashiorcor and Marasmus (4%) and under weight (60%). Any change in income or income from influence of the nutritional status at the household and individual levels. The effect of income is measured by expenditure on food which reflects a household’s income and resources [26]. Study conducted by Bayesian Approach to identify predictors of nutritional status in Ethiopia, the main predictors of children nutritional status were place of residence, maternal
education, occupation of mother, preceding birth interval, source of water drinking, age of child, sex of child, mother’s BMI and age of mothers [27].

The main important associated factors of under nutrition include the education, income, and nutritional situation of the parents, access to clean water and sanitation, access to primary health care, sex and age of child. Factors that are contributing to malnutrition may differ among regions, communities and over time. Identifying the underlying causes of malnutrition in a particular locality is important to solve the nutritional problems. Various studies have been made and conclusions were reached by different scholars in the past regarding predictors of health and nutritional status. Survey of available literature indicated that factors like knowledge of health practices and caring level, educational level of parents, access to or interactions of age of the child have strong effect on household and community variables in which the child grows up [28]

Globally, malnutrition is a risk factor for illness and death, with millions of pregnant women and young children being affected due to infections, poor and inadequate diet. Malnutrition increases the risk and worsens the severity of infections (Muller and Krawinkel, 2005). Infants and young children are most affected by malnutrition as they have increased nutritional needs to support growth (Torun and Chew, 1994, p.952; Torun, 2006, p.883). Undernourished children, as well as children with severe malnutrition, have a higher risk of dying than children with an optimal nutritional status (Caulfield et al., 2004).

2.2 Prevalence of malnutrition
Except for sub-Saharan Africa, the nutritional status of children is improving globally. Progress is however, hindered because of poverty, infection and ineffective governance (Duggan and Golden, 2005, p.524). Even though global data shows a decrease in under nutrition, the malnutrition statistics for Eastern Africa are increasing (Cartmell et al., 2005).
There is not enough information available on the prevalence of severe or edematous malnutrition in communities. The data available from hospitals only shows the severe cases and therefore malnutrition in general is not always recorded because in most cases it is the secondary diagnosis (Duggan and Golden, 2005, p.518-522).

Cartmell et al. (2005) found that in the Central Hospital of Maputo the occurrence of malnutrition in the presence of infections, excluding measles, was greater in 2001 than in 1983. More children had marasmus than kwashiorkor in 2001. Possible explanations for this occurrence can be the increase in HIV infection; with marasmic malnutrition occurring more commonly in HIV infected children in South Africa, Maputo and Malawi (Cartmell et al., 2005).

Despite the work done in malnutrition and the reduced prevalence of stunting and underweight in some regions, the number of cases hasn’t changed over the last 10 years (Zere and McIntyre, 2003; Müller and Krawinkel, 2005) with about 30 percent of all children in low- and middle-income countries being underweight (Mother and child nutrition, 2007). Malnutrition is and will continue to be a health threat to developing countries, especially in Southern Asia and Sub-Saharan Africa (Müller and Krawinkel, 2005) and might actually be rising in the developing world such as Africa because of the HIV pandemic (Oyelami and Ogunlesi, 2007).

2.3.0 Perspective of malnutrition

2.3.1 Global perspective
In 1990 an estimated one out of three children (177 million) younger than five years in the developing world were or had been malnourished at one stage in their lives (Table 2.1). The diagnosis was based on a weight-for-age below two standard deviations (SD) of the National Centre for Health Statistics (NCHS) median. In countries where the prevalence of malnutrition is high, the total number of malnourished children has not decreased with an increase in population (Torún and Chew, 1994, p.951).
Ayaya et al. (2004) stated that malnutrition is still one of the leading causes of morbidity and mortality in children younger than five years and according to Kulich et al.(2004) severe PEM still affects 2-3% of the pediatric population worldwide.

Table 2.1 Prevalence of PEM among children under 5 years of age in developing countries, 1995(Müller and Krawinkel, 2005)

<table>
<thead>
<tr>
<th>Region</th>
<th>Stunting %</th>
<th>Underweight %</th>
<th>Wasting %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>39</td>
<td>28</td>
<td>8</td>
</tr>
<tr>
<td>Asia</td>
<td>41</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>18</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Oceania</td>
<td>31</td>
<td>23</td>
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</table>

The State of the World’s Children report published by UNICEF in 1998 stated that malnutrition is a “silent emergency” leading to almost seven million child deaths (approximately 55% of all child deaths) annually. Three quarters of children dying are mildly to moderately malnourished with no obvious outward signs of problems (Jones, 1998)

In 2000-2002 an estimated 852 million children were malnourished, of which 815 million were in developing countries (Zere and McIntyre, 2003; Müller and Krawinkel, 2005) and 34 million in developed countries (Vorster and Hautvast, 2002, p.4). During this time malnutrition was directly responsible for about 300 000 deaths per year and indirectly for about half of all deaths in young children (Zere and McIntyre, 2003; Muller and Krawinkel, 2005). More than 199 million children younger than five years suffer from acute or chronic protein and energy deficiencies (Vorster and Hautvast, 2002, p.4). In 2004 an estimated 55% of child deaths worldwide were the result of under nutrition (Caulfield et al., 2004).

There are still about 800 million undernourished people in the world and in some countries severe malnutrition is the most common reason for pediatric hospitalization. Around 27% of the children younger than five years of age in the developing world are underweight, 32 % are stunted, and10 % wasted
(seen as a deficit of more than two standard deviations below the WHO reference value) (Torún, 2006, p.882).

2.3.2 Malnutrition in South East Asia

In the mid 1990s the distribution of malnutrition in Asia was indicated as 41% for stunting, 35% for underweight and 10% for wasting (Müller and Krawinkel, 2005). In a study that used 1998 – 99 National Family Health survey for India, Nandy et al (2005) found that 45.2% of children aged 0 – 3 years were stunted, 47.1% children were underweight and 15.9% were wasted (Nandy et al, 2005). The researchers concluded that these rates were "…consistent with those published by UNISEF" (Nandy et al, 2005: 212).

When the states in India were studied for proportions of malnutrition in terms of the anthropometric measures of height-for-age, weight-for-age and weight-for-height the rates differed. Brennan et al (2004) in a study for the states of Karnataka and Uttar Pradesh found that 37% and 56% were stunted, 44% and 52% were underweight whilst 20% and 11% were wasted respectively (Brennan et al, 2004).

2.3.3 Malnutrition in Africa

The distribution of malnutrition in Africa among children under five years in 1995 was given as 39% stunted, 28% underweight and 8% wasted (Müller & Krawinkel, 2005). The prevalence of child malnutrition in Africa in respect of the literature review was referenced on from the eastern – Kenya and Uganda, and southern (South Africa, Tanzania and Zimbabwe) regions. In a study of the prevalence of malnutrition in eight provinces in Kenya Ngare and Muttanga (1999) found that stunting is 37%, wasting 6% and underweight 27%. These results differ from those found by Kwena et al. (2003) in Western Kenya where the prevalence of stunting, wasting and being underweight were 30%, 4% and 20% respectively.

In Uganda the prevalence of childhood malnutrition as indicated by stunting, and underweight was 23.8% and 24.1% respectively (Kikafunda et. al 1998). The prevalence in South Africa was reported as 25.4% stunting, 17% underweight and 8.9% wasting (Zere & McIntyre, 2003).
Alderman et al (2005) reported that in Tanzania the prevalence of malnutrition was 43% for stunting, 29% for underweight and 6% for wasting in 1999. Notwithstanding intra-country and inter-country variability the reports compare well with prevalence rates reported by Müller and Krawinkel.

**2.3.4 Malnutrition in Somalia**

Fifty three percent of children in Somalia have the risk of malnutrition (UN). With the increasing drought and violence rate, thousands of Somalis have fled in search for work in countries that border Somalia. The information assembled for this project includes behavioral, environmental dynamics of Malnutrition in children, and an explicit point of convergence of the general history of nutritional diseases in the country suffered by children. A large proportion of malnutrition.

Mortality is contributed by infections that are largely preventable cause. A large scale of these deaths happen at home and because the child is given no medical attention. There are majority of alternatives and programs that can be implemented in order to help reduce and solve the problem of malnutrition, this policy brief has therefore provided some recommendations to address to this growing health issue.

As of 2009 (2005 statistics), the World Bank has estimated that, the population of Somali children under 5 ranged from 1637 - 17000. Among that population 42% of children under 5 suffered firm shunting (WHO) while 36% of the total population of children suffered from underweight (NCHS/WHO) accompanied by severe malnutrition.

Somalia Severe crisis in food availability increased the mortality rate of different age groups but, children were mostly affected by it. Many people either leave to another town in search for work or leave the country altogether in search for a better quality of life. Somalia has suffered from consecutive droughts years that has caused a loss of livestock, population displacement and malnutrition - being the major issue leaving 10 million people at risk for starvation.
Children, particularly those who ranged less than 5 years of age usually have a higher death rate in such conditions. Based on data from ------, the search for malnutrition in children of Somalia, reported that approximately 53% of the total child population age ranged 5 years and below were malnutrition prevalent, while 180 per 1000 children lives under the age of 5 resulted in death, triggering an increase in child mortality rates. Mogadishu, the capital of Somalia experiences constant wars, poverty and diseases. Children who live admit this war crisis have no option but to depend on elders for basic necessities for survival.

2.4 Classification of malnutrition

2.4.1 Under weight

The underweight child is common and an important presentation of PEM, which is missed a lot of times (Wittenberg, 2004,p.203). When a diet is insufficient in protein and/or energy there will be a slowing down of linear height, failure to gain weight or weight loss (Wittenberg, 2004, p.203), and this is seen when the child is exposed to an acute food shortage (Golden and Golden, 2000, p.517-518). These children are underweight and underviseg, while at the same time they have relatively normal body proportions, e.g. weight-to-height ratios (Golden and Golden, 2000, p.517-518; Wittenberg, 2004, p. 203). Underweight children can also be stunted, wasted or both (UNICEF, 2009c, p.13). Underweight children must be identified early through regular growth monitoring of weight and height (Wittenberg, 2004, p.204; UNICEF, 2009c, p.13). Underweight children can easily be missed when both weight and height are not showed on the RtHC. When growth monitoring is done and a child presents with a weight for age below the third percentile (less than 80% expected weight or less than 90%expected height), the child must be suspected of being malnourished (Wittenberg, 2004, p.204).

Underweight children have a dietary deficiency that is not severe and therefore do not produce a clinical disease or symptoms. There are no real physical signs and the serum albumin is only slightly reduced. Underweight children
are however, still very susceptible to infections, such as gastro-enteritis, respiratory disease, measles and TB (Wittenberg, 2004, p.204). In the developing world, 129 million of children younger than five years are underweight and 10% are severely underweight. Underweight is more prevalent in Asia than in Africa, with Asia showing rates of 27% and Africa rates of 21%. Progress is slow and South Africa is not meeting the MDGs with the prevalence being 25% in 2008, whereas it was 28% in 1990 (UNICEF, 2009c, p.17-18)

2.4.2 Stunting

Stunting is a greater problem than underweight and wasting (UNICEF,2009c, p. 11) and is an indicator of nutritional deficiencies or status (Shetty, 2002, p. 321; UNICEF, 2009c, p.11) and illness that occurred during times of growth and development (UNICEF, 2009c, p.11) usually in infants and children younger than five years (UNICEF, 2009c, p.11). Stunting is the first clinical sign of malnutrition (Piercchet-Marti et al., 2006) and affects about 195 million children younger than five years in the developing world, where stunting affects about one in three children in Africa (UNICEF, 2009c, p.15).

Stunting can also be called failure to thrive or growth faltering, which refers to slow weight gain or inadequate growth in the infant and young child. Stunting is an indication of chronic malnutrition and long-term insufficient diet because of a chronic energy deficiency (Müller and Krawinkel, 2005; Williams, 2005, p.404; Duggan and Golden, 2006, p.519). As stunting is due to long-term under nutrition, it takes time to develop and to recover (Baker-Henningham and Grantham-McGregor, 2004, p.253).

Stunting is an indication of the height of the child compared to the height of a normal child of the same age (Golden and Golden,2000, p.518). A “stunted” child is small for his or her appropriate height for age. A height-for-age smaller than 85% of the median (50%) represents an SD score of minus (-) 3SD and is classified as severe stunting (Williams, 2005, p.406).
2.4.3 Wasting

Clinical wasting” is the term used to describe recent severe fat loss due to illness or severe food restriction (Duggan and Golden, 2006,p.519). Inadequate food intake leads to weight loss and growth retardation and when it is prolonged it leads to body wasting and emaciation (Torún and Chew, 1994, p.950; Torún, 2006, p.881). When growth is acutely affected a child falls behind one who is actively growing (Golden and Golden, 2000, p.517-518), with a body weight and height less than ideal for the child’s age (Shetty, 2002, p. 321).

Wasting is indicated as a low weight for height, occurring at any age (Shetty, 2002, p. 321) and is used as an indicator for identifying severe acute malnutrition (UNICEF, 2009c, p.13). A child is wasted when the weight for height is less than 70% of the median and is equal to a standard deviation score of –3SD (Williams, 2005, p.406). Wasting is the weight of the sick child compared to that of a normal child of the same height (Golden and Golden, 2000, p.518).

Of the children younger than five years old in the developing countries, 13% are wasted and 5% are severely wasted (about 26 million). Africa and Asia are the two countries with high rates of wasting and exceed 15%. Out of 134 countries, 32 of these countries have wasting prevalence of 10% or more. And ten countries are contributing to about 60% of all wasted children. In South Africa the prevalence of wasting is 5-9.9% (UNICEF, 2009c, p.21).

2.4.3.1 Kwashiorkor

Kwashiorkor was first described more than 70 years ago in 1933 (Golden and Golden, 2000, p.519; Katz et al., 2005). The first description came from the Gold Coast of Africa (now Ghana) (Katz et al., 2005), where kwashiorkor means, an “evil spirit that infects the first child when the second child is born”. Kwashiorkor sets in at the ages of one to three years (Torún and Chew, 1994, p.961-963; Berdanier, 1995, p.153; Sizer and Whitney, 2000, p.196; Whitney et al.,2001, p.83; Whitney and Rady, 2005, p.198; Torún, 2006, 56 p.891-893;

The nature and importance of the disease were only recognized in the 1950’s, when there were almost 40 names for the disease. One of the names used was “sindromepolicarencial de la infancies” (infantile pluricarential syndrome). This showed that young children were affected and that they were deficient in various nutrients. Others names such as “mehlnahrschade” (“damage by cerealfloors”), “starch oedema” and “sugar babies”, showed that the disease was caused by low protein diets (Torún and Chew, 1994, p.957 & 951; Sizer and Whitney, 2000, p.196; WhitneyandRady, 2005, p.198; Torún, 2006, p.891-893) and high carbohydrate or almost exclusively carbohydrate diets (Torún and Chew, 1994, p.951;Gallagher, 2008, p.66).

Kwashiorkor can present rapidly and usually refers to acute PEM (Torún and Chew, 1994, p.961-963; Sizer and Whitney, 2000, p.196;Whitney and Rady, 2005, p.198; Torún, 2006, p.891-893) and can develop within a few weeks (Heimburger, 2006, p.833). Kwashiorkor is generally more typical of rural areas (Monckeberg, p.121, 1991).

All systems and functions are affected in kwashiorkor. No single etiological agent is responsible. It is difficult to determine which factors are major contributors and which are responses. In combination with weight loss, oedema has been accepted as the main criteria to identify kwashiorkor. Kwashiorkor is more prevalent in children who are stunted or wasted but it can occur in children of normal size (Jackson and Golden, 1991, p.134-135). Children with kwashiorkor have a weight-for-age of 80-60 % of expected weight (Wittenberg, 2004, p. 203).

Kwashiorkor presents with growth retardation, skin changes (lesions), abnormal hair that is dry, brittle and easy to pull out, swollen belly, hepatomegaly (enlarged, fatty liver) and apathy (Torún and Chew, 1994, p.961-963; Sizer and Whitney, 2000, p.196; Whitney and Rady, 2005, p.198; Strobel and Ferguson, 2005, p.488; Torún, 2006, p.891-893; Heimburger, 2006,p.833)
2.4.3.2 MARASMUS
An inadequate intake of macronutrients together with the increased macronutrient requirements needed for maintenance and growth, lead to loss of body tissue. Marasmus is characterized by failure of linear growth (stunting) and loss of weight (wasting) (Jackson and Golden, 1991, p.134). Marasmus is linked to severe deprivation or impaired absorption of protein, energy, vitamins and minerals (Torún and Chew, 1994, p.952 & 961; Torún, 2006,p.883& 892; Sizer and Whitney, 2000, p.195; Whitney et al., 2001, p. 83; Whitney and Rady, 2005, p.198).

Anthropometrically, marasmus is seen as a weight-for-age below 60% of the expected weight for age (Monckeberg, 1991, p. 122-123; Torún and Chew, 1994, p.952 & 961; Torún, 2006, p.883 & 892; Sizer and Whitney, 2000, p.195; Whitney et al., 2001, p. 83; Whitney and Rady, 2005, p.198). Marasmus is generally characteristic of urban living, where factors such as cessation of breastfeeding and the incorrect use of formula milk, result in the development of marasmus (Monckeberg, p.121, 1991; NDoH, 2005b).

Mortality in these children is relatively low if there is no underlying illnesses or infections (Heimburger, 2006, p.833), with a global contribution to child deaths of about 1.7 million per year (Jackson et al., 2006).

Table 2.7 shows the comparison of marasmus and kwashiorkor according to clinical setting, time course to develop, clinical features, laboratory findings, clinical course and mortality.

Table 2.7 Comparison of marasmus and kwashiorkor (Heimburger, 2006, p.833)
### 2.4.3.4 Marasmic Kwashiorkor

Pure conditions of marasmus and kwashiorkor are uncommon as there are many cases which are not purely one or the other, but present rather with signs of both. This can be due to changes in diets and seasons. The term marasmic kwashiorkor therefore is used to describe the wasted form of PEM (as with marasmus, there is no subcutaneous fat), which has the characteristics of dermatoses and/or oedema that is seen with kwashiorkor (Torún and Chew, 1994, p.963; Wittenberg, 2004, p.207; Torún, 2006, p.893).

Infections such as diarrhoea can also change the symptoms and signs that a child presents with (Wittenberg, 2004, p.207) and therefore marasmic kwashiorkor can develop when a marasmic child experiences stress such as surgery, trauma or sepsis (Torún and Chew, 1994, p.963; Torún, 2006, p.893; Hamburger, 2006, p.834). Marasmic kwashiorkor presents as a weight-for-age of less than 60% expected weight, with oedema (Wittenberg, 2004, p.203), where the oedema disappears after nutritional treatment and the child then resembles a marasmic child (Torún and Chew, 1994, p.963; Torún, 2006, p.893).

<table>
<thead>
<tr>
<th>MARASMUS</th>
<th>KWASHIORKOR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical setting</strong></td>
<td>Low energy intake</td>
</tr>
<tr>
<td><strong>Time course to develop</strong></td>
<td>Months or years</td>
</tr>
<tr>
<td><strong>Clinical features</strong></td>
<td>Starved appearance</td>
</tr>
<tr>
<td></td>
<td>Weight &lt; 80% standard for height</td>
</tr>
<tr>
<td></td>
<td>Triceps skin fold &lt; 3 mm</td>
</tr>
<tr>
<td></td>
<td>Midarm muscle circumference &lt; 15</td>
</tr>
<tr>
<td></td>
<td>centimeter (cm)</td>
</tr>
<tr>
<td><strong>Laboratory findings</strong></td>
<td>Serum albumin &lt; 2.8 g/dL</td>
</tr>
<tr>
<td></td>
<td>Total iron-binding capacity &lt;</td>
</tr>
<tr>
<td></td>
<td>200 µg/dL</td>
</tr>
<tr>
<td></td>
<td>Lymphocytes &lt; 1,500/cubic</td>
</tr>
<tr>
<td></td>
<td>millimetre (mm³)</td>
</tr>
<tr>
<td></td>
<td>Anergy</td>
</tr>
<tr>
<td><strong>Clinical course</strong></td>
<td>Reasonably preserved responsiveness to short-term stress</td>
</tr>
<tr>
<td><strong>Mortality</strong></td>
<td>Low, unless related to underlying disease</td>
</tr>
<tr>
<td></td>
<td>High</td>
</tr>
</tbody>
</table>
2.5 Assessment of Nutritional State
The clinical, biochemical and physiologic characteristics of PEM vary according to the severity of the disease, the age, the presence of nutritional deficits and infections, and the predominance of energy or protein deficiency. To diagnose the malnourished child, a dietary history and the clinical features present should be evaluated (Torún and Chew, 1994, p.959; Torún, 2006, p.889). Assessments are used to provide information on the nutritional and health status of children and are an indirect measure of quality of life of a community or population (Shetty, 2002, p. 321).

In malnutrition, the main clinical feature is weight loss. Subcutaneous fat tissue is decreased and children with chronic PEM show growth retardation in terms of both weight and height. Children’s physical activity and energy levels are decreased with a reduced attention span, lack of liveliness, frequent episodes of diarrhoea and varying degrees of apathy. Immunocompetence, GI functions and altered behaviour are also present (Torún and Chew, 1994, p.960; Torún, 2006, p.891).

2.6 Impact of Malnutrition on Various Organs and Systems
Loss of appetite (anorexia) is a common feature. Causes can be infection, nutrient deficiency and liver dysfunction (Golden and Golden, 2000, p.519). Malnutrition causes a variety of internal and bone lesions, which can lead to death. Cachexia, severe lesions of the liver, pancreas, brain and bone are related to inadequate protein, vitamin and energy intake (Piercechi-Marti et al., 2006).

During malnutrition the physiology of the body changes to conserve nutrients and therefore the body reduces the amount of work performed. Unlike an undernourished child, a healthy individual can maintain digestive, absorptive, hepatic and renal capacity to deal with environmental changes. Reserves of tissue and functional capacity are “expensive” for the body to synthesize, replace and maintain. This capacity is not working in malnutrition and there is a reduction in the functional capacity of organs and energy requirements.

Growth results in high metabolic demands during infancy (the first year of life). Early in childhood various organs undergo their most rapid growth. Brain growth is almost completed in the early years of childhood. Prolonged and severe nutrient restriction at this age may be associated with lifelong functional deficits (Williams, 2005, p.379 and 387).

It is difficult to define if PEM, AIDS and / or other body wasting diseases cause the visible signs (Torún and Chew, 1994, p.961; Torún, 2006,p.892). Wide spectrums of clinical features are seen and are the consequence of environmental factors. Virtually all body systems or functions are affected (Jackson and Golden, 1991, p.134-135). Some of the features are acute gastroenteritis, dehydration, respiratory infections and eye lesions caused by hypovitaminosis A. Diarrhoea may be present. Systemic infections may lead to septic shock, intravascular clots and high mortality rates (Torún and Chew, 1994, p.961; Torún, 2006, p.892)and in severe cases it may lead to stupor/coma. Death is usually caused by infection (Katz et al., 2005)

Amino acids, such as leucine, and various micronutrients such as, zinc, copper, molybdenum and possibly vitamin A can influence linear growth. The cytokines that are produced in response to infection can slowdown bone growth. Frequent or chronic infections, such as HIV and worm infestation can cause growth to falter (Duggan and Golden, 2006, p.521). The skin and intestine are more affected than the visceral organs and central nervous system. The tonsils are atrophic. Angular stomatitis, lingual atrophy, follicular hyperkeratosis, oral candidiasis and specific signs of nutrient deficiencies, such as in the eyes (vitamin A deficiency) occur (Golden and Golden,2000, p.520).

### 2.7 Prognosis and Risk of Mortality

The severity of malnutrition depends on the timing and duration of the nutritional stress. Malnutrition increases a child’s susceptibility to illnesses,
such as infections, which doesn’t necessarily lead to death, but it can contribute to mortality due to the other illnesses (Duggan and Golden, 2006, p.523). The life-threatening complications that accompany severe malnutrition include jaundice, severe anaemia, respiratory distress, neurological and consciousness alterations and hypothermia (Torún and Chew, 1994, p.964; Torún, 2006, p.896).

Child mortality rather than infant mortality can give a better idea of the association between malnutrition and death. The nutritional status of the child affects the risk of death due to diarrhoea, respiratory infection and malaria (Duggan and Golden, 2006, p.523). Marasmus is associated with a lower mortality than kwashiorkor (Shetty, 2002, p.320). A high case fatality (from 20% for all types of severe PEM to >50% in kwashiorkor) is seen with severe malnutrition and oedema, which includes infection and metabolic complications. The difference between the long-term effects of severe malnutrition and persistent socio-economic deprivation are difficult to separate (Duggan and Golden, 2006, p.523). There is no clear evidence to show that the damage done by malnutrition and poor living environment cannot be corrected in a good, stimulating environment (Torún and Chew, 1994, p.964; Torún, 2006, p.896).

Mortality rates are also associated with the quality of treatment. With adequate treatment a mortality rate of 5% or less can be achieved. Severe anthropometric deficiencies are associated with a higher mortality rate. Mortality rates can be as high as 40% but with adequate treatment it can be reduced to less than 10% (Torún and Chew, 1994, p.964; Torún, 2006, p.896). In South Africa, malnutrition is one of the five causes of 75,000 child deaths per year, of which 40,200 babies and children can be saved through interventions (promotion of healthy diet, support for exclusive breastfeeding or other feeding options, vitamin A supplementation and prevention and treatment of children with HIV and AIDS) (Every Death Counts, 2008).

The goal with the treatment of mild and moderate PEM is to correct the acute signs (Torún and Chew, 1994, p.964; Torún, 2006, p.895). During
rehabilitation the catch-up growth in height may take long (Marcondes, 1991, p.74; Torún and Chew, 1994, p.964; Torún, 2006, p.895). The child will remain stunted, and if the child is small it may influence his/her maximal working capacity as an adult (Torún and Chew, 1994, p.964; Torún, 2006, p.895).

2.8 Treatment and Management of Severe Malnutrition
In the 1950’s nutrition rehabilitation centres were regarded as the best option for the management of malnutrition. Centres were established in developing countries such as Asia and Latin America as these were cheaper and more effective to run than hospitals. 100 In Indonesia and Peru studies found that the treatment of children on an outpatient basis led to a reduction in the case fatality rate to 16.6% and 2% respectively. A study in Bangladesh showed that home-based care was five times cheaper than caring for children in hospital (Orach and Kolsteren, 2002).

Malnutrition can be managed on five levels, namely in hospitals, in nutrition rehabilitation centers, in health centres, in the community and at home with regular follow up (Orach and Kolsteren, 2002). Rehabilitation programmers should promote shorter hospital stay and the home or community based treatment, especially in areas were resources such as supplies and personnel are limited (Fuchs et al., 2004).

The goals for the treatment of severe malnutrition can only be reached if the WHO treatment guidelines for PEM are followed. The guidelines can be simplified in such a way that the efficacy and effectiveness of the guidelines is enhanced allowing the guidelines to be used in resource-poor settings or communities. The basic principles of the WHO guidelines should, however not be compromised. Complementary guidelines for nutritional management of severely malnourished children need to be developed for use at community level and in emergency or crisis situations (Fuchs et al., 2004). If resources (e.g. staff) are available the WHO guidelines can result in lower mortality rates (Collins et al., 2006).
The guidelines are mainly for severe cases of malnutrition even though some children do not fall within the ranges as stipulated (<-3Z weight-for-length or/and oedema). When a low height-for-age alone is used, it can result in only stunted children being admitted. If less severe cases of malnutrition are admitted to malnutrition wards, it causes an unnecessary high risk of cross-infection and increases workload. Underweight children are sometimes referred to a hospital due to other diseases or causes and can benefit from a few days on catch-up formula or enriched family foods and the carers can benefit from the nutrition education. The benefits should be weighed against the risk of hospital acquired infections (Ashworth et al., 2004)

### 2.9 Prevention of malnutrition

Generally, malnutrition is caused by lack of nutritional components it can be prevented by providing special diet such as fruits, vegetable, milk product, oils, meat and beans etc with sufficient amount in timely. There are primary prevention, secondary prevention and tertiary prevention for malnutrition

#### Primary prevention

1: health promotion

- Education to mothers about good nutrition and food hygiene health workers
- Distribution of supplements (distribution of iron, folic acid and vitamin A)
- Promotion of breast feeding
- Development of low cost weaning foods
- Measures to improve family diet
- Nutritional education
- Home economics primary prevention
- Family planning and birth spacing
- Family environment

2: specific protection

- specific protein diet, eggs, milk, fresh fruit
Immunization
Fortification of food

**Secondary prevention**: early diagnosis and adequate treatment

- Periodic nutrition surveillance
- Early diagnosis of any lag of growth
- Early diagnosis and treatment of infection including diarrhea
- Developing supplementary feeding program during epidemics.
- Developing program for early dehydration of children with diarrhea
- Regular deforming of school preschool children

**Tertiary prevention**: nutritional rehabilitation

- Nutritional rehabilitation services
- Hospital treatment
- Follow up cases
CHAPTER THREE

3.0 METHODOLOGY

3.1 Research Design
This is across sectional study which will be conducted in Hargeisa district, in which quantitative technique were used. It specify the objectives of study through systematic data collection that deal with the study of the research study. The quantitative data will be used through the collection of standardized questionnaire

To explore the prevalence of malnutrition in children under the five in Hargeisa, Somaliland.

This paper is primarily based and emphasis the methodology and techniques which I will be used for over all the activity of my research paper including the various activity that I will carry out during my study

3.2 Research population
The research population of study is complete elements of the population that the same required characteristic. The target population of this study will comprised ~65 people. The researcher will visit in number of hospitals at Hargeisa district to find out the required information about the study.

3.3 Sample size
Sample size of the study is process of selecting some elements from the target population of study.

So the sample size of this study will be 56 respondents from the different hospitals at Hargeisa district, and these selected respondents will be the sample size of my study and will contribute the necessary information to this study. To selected the sample size of my study I will be guided the Slovene’s formular of selection

\[
N = n + N(0.05)^2
\]

n: 

1+N(0.05)^2

26
Where
\( n \) = number of sample

\( N \) = total population

\( e \) = level of significance 0.05

3.4 Sampling procedure
In this study as I researcher will be used for the stratified random sampling and purposive sampling both to meet the required respondents of my research. I as researcher I will select my respondents judiciously To make sure that I selected the group whom I attend to be respondents

3.5 Research Instruments
There was one important instrument which was used in the data collection. Questionnaire was basically the instrument which was used.

Questionnaire will be self-administered that will collect the data during this study. The questionnaire consisted of both open ended and closed questions.

The methods of data collection of the research will be survey which contains questionnaire. This method of data collection was based on the effort of the research will collect most of the primary data. These questionnaires the respondents will be provided to their options.

3.6 Validity and reliability
These are the instruments that the researcher is used to clarify and measured the consistent of the instrument measured. It also used to measure the validity and reliability and make sure to check if there is an error.

Then the researcher use to make sure validity and reliability by using the formula below.

\[
V = \frac{RQ}{TQ} \quad V: \frac{13}{18} = 72\%
\]

V: Validity

R: Reliability
**RQ: Relevant Question**

**TQ: Total number of Questions**

### 3.7 Data gathering procedure

After the questionaire is permitted the research will start to collect the data that is relevant to study in both primary data and secondary data by using questionnaire and attached to transmitted letter to inform the respondents.

As a researcher that will collect and categories in the following three stages:

**Before data collection:** at this time the researcher will prepare by the tools of the research study to conduct it effectively and efficiently

**During data collection:** at this time the researcher will make schedule and appointment for his respondents and make the arrangements it will have great benefit for the researcher to do this stage to minimize the time

**After the data collection:** at this stage the researcher will organize the by sorting out and checked for the preparation of the analysis and presentation to find the if there is any missing of the data

### 3.8 Data analysis

The data that will be obtained in a solid form from the respondent will be analyzed and figure out to be understandable and controllable form that can be interpret and analyzed by using statical package for the social science (SPSS) software

### 3.9 Ethical Consideration

This study will involve seeking the permission from the respondent and will be kept with their thoughts and ideas followed standard ethics and humanity of the respondents to persuade and shows them that information is kept and secure for any other reason. it is also crucial to know the respondent of researcher will not be met any harassment by means.
3.10 Limitations
The limitations may have different dimensions during this study and will be vary from one and another

❖ Limitation for the time
❖ Poor understanding of the respondent to the study
❖ Limitation for the resources
❖ Limitation may be budget attend to the study
CHAPTER FOUR

Presentation, Analysis and Interpretation of Data

4.0 Introduction
This chapter look at interpretation, analysis and presentation of data combined and compiled by Statistical package for social Science (SPSS) version 20.

The sample size was consisted of (56) respondent include student from Hargeisa University, nursing and doctors. The respondents were female and male of different ages, level of education and marital status.

Figure 4.1: This figure above shows the gender of the respondents whose 29 out of 56 of the respondents were male and 27 out of 56 were female which means 52% were male and 48% were female.
Figure 4.2: this figure above shows marital status of respondents that 42 of the respondents were single so it’s 75% of respondents and 13 of the respondent were married so it’s 23.3% of respondents and 1 of the respondent were divorced so it’s 1.8% of respondent.

Figure 4.3: this figure above show the age of the respondents that 5 of the respondent were about 18 years old so it’s 8.9% and 29 of the respondent between 18-25 years old so it’s 51.8% of the respondent, and 20 of the respondent’s between 25-35 years old so it’s 35.7% of respondents, and 2 of the respondent’s b/w 35-50 years old so it’s 3.6% of respondents.
Figure 4.4: this figure above shows Educational level of respondents whose 3 out 56 of the respondent where secondary level and 51 out 56 of the respondent where university level and 2 out of 56 of respondents were others. Which means 5.4% were secondary level and 91.1% were university and 3.6% where others.

Figure 4.5: this figure above shows occupation of respondents that 3 of the respondents were medical doctor so it’s 5.4% of respondents and 31 of the respondents were nursing so it’s 55.4% of the respondents and 14 of the respondents were medical student so it’s 25% of the respondents and 8 of the respondents were others so it’s 14.3% of the respondents.
**Figure 4.6:** This figure above showing the prevalence of malnutrition is high among the children under 5 years so 55 out of 56 the respondents were say yes and 1 out of 56 respondents were say no which means 98.2% were said yes and 1.8% said no.

**Figure 4.7:** This figure above shows why malnutrition is prevalent in children under five year, so 22 out of 56 of the respondents told because inadequate breast feeding practice, which were 39.3% of the respondents, meanwhile 10 out of 56 of the respondents stated because poor dietary intake which is approximately 17.9% of the respondents, while 4 out of 56 of the respondents stated because inadequate health care which were 7% of the respondents, 3 out of 56 of the respondents told because parasitic infections which means
5.4% of the respondents and 15 out of 56 of the respondents told because poverty which were 26.7% of the respondents and 1 out of 56 respondents said because other cause 1 was missing which was 1.8% of the respondents.

**Figure 4.8:** this figure above shows the malnutrition is common in children under 5 years so, 56 out of 56 of respondents were said yes which means 100% of respondents were known.

**Figure 4.9:** this figure above shows number of malnourished children that have you seen for the last two months so, 30 out of 56 of respondent’s told that they have seen 1-5 child of malnourished so it’s 53.6% of respondent’s and
10 out 56 of the respondents have seen 6-10 child of malnourished so it’s 17.9% of respondents, 5 out 56 of the respondents have seen 11-19 child of malnourished so it’s 8.9% of the respondent’s while 10 out 56 of the respondents have seen more than 20 child of malnourished so it’s 17.9% of respondent’s and 1 out 56 of the respondents was missing so it’s 1.8% of the respondent’s.

Figure 4.10: this figure above shows sign and symptoms of malnutrition so 55 out 56 of the respondents were said yes so its 98.2% of respondents while 1 out 56 of the respondent said no so its 1.8% of respondents.

Figure 4.11: this figure above shows the sign of malnutrition so 7 out of 56 of the respondents which was 12.5% said weight loss, 3 out of 56 of the
respondents that means 5.4% said poor appetite, 1 out of 56 of respondents which was 2% said Hair change and 45 out of 56 of the respondents told that malnutrition has all the above signs which were 80% of the respondents.

**Figure 4.12**: This figure above shows the underlying causes of malnutrition in children under five year, so 35 out of 56 of the respondents told that malnutrition was caused by disease which was 62.5%, 13 out of 56 of the respondents which means 23.2% said early weaning and 8 out of 56 which were 14.3% of the respondents stated that underlying cause of malnutrition was unknown.

**Can we prevent malnutrition in children under five years?**
Figure 4.13: This figure above indicates the prevention of malnutrition in children under five years therefore 56 out of 56 which means 100% told that malnutrition can be prevented.

![Graph showing prevention methods](image)

Figure 4.14: This figure above shows how malnutrition can be prevented, so 14 out of 56 of the respondents that malnutrition can be prevented by good health care which were 25% of the respondents, 22 out of 56 of the respondents told that malnutrition can prevent adequate dietary intake after weaning which were 39% of the respondents while 20 out of 56 of respondents told that malnutrition can be prevented good breast feeding that means 35.5% of the respondents.

![Graph showing risk factors](image)

What are the risk factors of malnutrition in children under five years?
**Figure 4.15:** This figure above shows the risk factors of malnutrition in children under the five years, so 4 out of 56 of the respondents said twins that means 7% of the respondents, 10 out of 56 of the respondents that means 17.9% of the respondents told that mother sick was risk factor of malnutrition, 21 out of 56 of the respondents told that more than two children under five were risk factors that was 37.5% of the respondents, 4 out of 56 of the respondents said parent loss were risk factors that means 7% of the respondents while 16 out 56 of the respondents said failure of lactation which means 28.6% and 1 out 56 of the respondents said risk factors malnutrition was others cause.

**Figure 4.16:** This figure above shows complications of malnutrition causes to the children under five year, so 42 out of 56 of the respondents which means 75% of the respondents said hypoglycemia and hypothermia were common cause, 13 out of 56 of the respondents said, which means 23.2% said Diarrhea was the most common cause while 1 out of 56 respondents said vomiting that was 2% of the respondents.
**Figure 4.17:** This figure above shows management of above mentioned complications, so 27 out of 56 of the respondents said medical therapy that means 48% of the respondents, 26 out of 56 of the respondents said Nutritional therapy that means 46.4% while 1 out of 56 of the respondents said counseling that means 1% of the respondents and 2 out of 56 of the respondents said other management that means 4% of the respondents.
Figure 4.18: This figure above shows the most common type of malnutrition in children under five years, there for 28 out of 56 of the respondents said marasmus was the most common type which means 50% of the respondents, 10 out of 56 of the respondents said kwashiorkor was the most common type that means 17.9% of the respondents and 18 out 56 of the respondents said marasmus/kwashiorkor was the common type of malnutrition in children under five year which means 32.1% of the respondents.
CHAPTER FIVE
Finding, Conclusions, Recommendation

5.0 Introduction
This chapter summarizes the result of the study that investigates the prevalence of malnutrition in children under five years in Hargeisa, Somaliland. It also emphasizes the risk factors that associated malnutrition in children under five years.

5.1 Finding
The finding of this study shows the prevalence of malnutrition in children under five in Hargeisa, Somaliland. So as the study reveals that 98% of respondents in study stated that malnutrition is prevalent among the children under five in Hargeisa Somaliland, as well as underlying causes of malnutrition, risk factors malnutrition and the type of malnutrition which among the children under five years who were hospitalized or attending in Hargeisa Group Hospital, there for 50% of respondents stated that marasmus is the most common type malnutrition who were attending health centers and hospitals.

Complications caused by this malnutrition in children under five were hypoglycemia and hypothermia that was 75% of respondents there was some other complications like diarrhea and vomiting that was stated by the respondents. Also prevention of malnutrition and management of its complication were discussed above the mentioned figures meanwhile signs and symptoms of malnutrition were clearly stated during this study period which were exploring the prevalence of malnutrition among the children under five years in Hargeisa, Somaliland.

Reasons why malnutrition is prevalent in among the children under five year were inadequate breast feeding practice, poor dietary intake, inadequate health care parasitic infections, poverty.

5.2 Conclusion
In conclusion malnutrition among the children under five year in Hargeisa was high as revealed by the study. Due to multiple causes that have been bounded...
to the children under five year such as poor dietary intake, early weaning, poor breast feeding practice and in appropriate health practice diseases and other causes poverty.

5.3 Recommendation

- Young children should be provided an appropriate health care during this period
- Mothers and child cares should be Educated to minimize malnutrition in children under five year
- Children should provide good dietary intake before and after weaning to prevent malnutrition in children under five years
- Mothers of child bearing age should be educated the importance of child spacing in order to prevent malnutrition in children under five
- Children should be offered good breast feeding for the first six months of their life to enhance their growth and have strong immunity to defense the diseases
- Children under this year should be givengood dietary after the weaning to avoid the incidence of malnutrition in children under five year.
APPENDIX A

REFERENCE


Dear respondents

The objectives of study will only focused to investigate the prevalence of malnutrition in children under five years in Hargeisa, Somaliland.

So dear respondents your participation of this study will help me to achieve the objectives of my study and the information you provide will be kept confidentially.

Your participation will be appreciated

QUESTIONNAIRE:

1. Gender of the respondent
   - Male
   - Female

2. Marital Status
   - Single
   - Married
   - Divorced
   - Widowed
3. Age of the Respondent (Optional)

About 18 18-25 25-35 35-50 Above 50

4. Educational level of the respondent

Intermediate level Secondary level

University level other

5. Occupation of the respondent

Health officer medical doctor Nursing

medical student Other, Specify

6. Do you think that the Prevalence of malnutrition is high among children under five years

Yes No

7. If yes why malnutrition is prevalent in children under five year?

Inadequate breast feeding practice poor dietary intake

inadequate health care parasitic infection Poverty

Others. Please specify

8. Do the malnutrition is common in children under five year?

Yes No

9. If yes how many malnourished children have you seen for the last two months?

1-5 child 6-10 child 11-19 child more than 20 child

10. Do you know sign and symptoms of malnutrition in children under five years

Yes No

11. If you know what are the sign and symptoms of malnutrition?

Weight loss poor appetite Hair change

All
12. The underlying causes of malnutrition in children under five years are?

Disease ☐ early weaning ☐ unknown cause ☐

13. Can we prevent malnutrition in children under the five?

Yes ☐ No ☐

14. If yes how we can prevent it mostly?

Good health care ☐ adequate dietary intake after weaning ☐
Good breast feeding ☐

15. What are the risk factors of malnutrition in children under five year?

Twins ☐ mother sick ☐ more than two child under five ☐
parental loss ☐ failure of lactation ☐ other ☐

Please specify________________________________________

16. Which are the most common complications do the malnutrition cause to the children under five?

Hypoglycemia and Hypothermia ☐ Diarrhea ☐
Vomiting ☐

17. How can we manage these complications?

Medical therapy ☐ Nutritional therapy ☐ counseling ☐
others. Please specify________________________________________

18. Which is the most common type of malnutrition in children under five year?

Marasmus ☐ kwashiorkor ☐ marasmus/kwashiorkor ☐