



**EFFECT OF MALNUTRITION ON CHILDREN UNDER  
FIVE YEARS IN GURIEL DISTRICT**

**BY**

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## DECLARATION

We declare that this thesis entitled **“Effect Of Malnutrition On Children Under Five Years in Guriel District”** is result of our own research except as cited in the references.

For our best knowledge, the title of this project has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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## **SUPERVISOR APPROVAL**

I hereby declare that I have read this thesis entitled **“Effect Of Malnutrition On Children Under Five Years In Guriel District”** and in my opinion this project is sufficient in terms of scope and quality for the award of the degree of public administration and i accepted for the submission to the examining panel.

Name:.....  
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## EXAMINING PANEL APPROVAL

This thesis entitled “**Effect Of Malnutrition On Children Under Five Years In Guriel District**” prepared and submitted Abdisalan Moalim Ali Abdi, Ahmed Abdi Hussein and Nasteha Ali Hassan is fulfillment of the requirement for the award of the degree of bachelor of public Administration and has been examined and accepted by examining panel with a grade of \_\_\_\_\_.

Name and Signature of Chairman of Examining Panel

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 INTRODUCTION**

Section one represent research background, Section two investigate statement of the problem, section three state research objectives , Section four prepare research questions, section five exhibit significant of the study, Section six is working definition, section seven will research scope of the study and limitation, then making conclusion.

#### **1.1 RESEARCH BACK GROUND**

Malnutrition is one of the major public health problems all over the world. Currently, it faces and associated with more than 41% of the deaths that occur annually in children from 6 to 24 months of age in developing countries, which were approximately 2.3 million (A. Sandoval-Priego, 2002.)

Worldwide, 165 million children below five years of age were affected with under nutrition, of which 26% were stunted. This figure reduced by 35% from 253 million in 1990. The prevalence of stunting was 36% in Africa and 27% in Asia. These remain a public health problem, one that often goes unrecognized. More than 90% of stunted children in the world have been living in Africa and Asia. An estimated 80% of world's stunted children lived in just fourteen countries (India, Nigeria, China, Pakistan, Indonesia, Bangladesh, Ethiopia, Democratic Republic of Congo, Philippines, United Republic of Tanzania, Egypt, Kenya, Uganda, and Sudan). Sub-Saharan Africa and South Asia were the home to three-fourths of the world's stunted children, 40% and 39%, respectively. (S. A. Ohnson, 2010.)

Globally, an estimated 101 million children below five years of age were underweight. These accounted for 16% of children below five years of age. The prevalence was the highest, which was 33%, followed by Sub-Saharan Africa, which was 21%. These were 59 million in South Asia, while 30 million were in sub-Saharan Africa [4] Globally, the

prevalence has declined, from 25% in 1990 to 16% in 2013; these reduced by 37% (UNICEF, Improving Child Nutrition: The Achievable Imperative for Global Progress, 2013.)

The other predictor of undernutrition is wasting. Globally, 52 million children below five year of age were moderately or severely wasted, 11% decrease from 58 million in 1990. More than 29 million children below five years of age, an estimated 5%, suffered from severe wasting (M. De Onis & others, 2012)

Wasting was decreased by 36% from 1990, which was 159 million, while 51 million children below five years of age were wasted, and 17 million were severely wasted in 2013. The prevalence in 2013 was 8% and closely a third of that was for severe wasting, totaling 3% and approximately two-thirds of all wasted children who lived in Asia and one-third in Africa [3]. The prevalence of wasting was the highest in South Asia, which was approximately 16%. This moderate or severe wasting was the highest in India, which had more than 25 million wasted children (UNICEF, 2013.).

About one-third of deaths among children below five years of age were attributed to under nutrition and it can lead children to be at greater risk of death and severe illness due to common childhood infections, such as pneumonia, diarrhea, malaria, human immunodeficiency virus, or AIDS and measles [3] World Health Organization (WHO) in 2001 reported that 54% of all childhood mortality was attributable, directly or indirectly, to malnutrition (C. K. Lutter and J. A. Rivera, 2003)

It is not only an important cause of mortality and morbidity but also leads to physical and mental impairment in children. Health and physical consequences of prolonged states of malnourishment among children were delay in their physical growth, lower intellectual quotient, poor cognitive ability, decreased economic productivity, decreased reproductive performance, poor school achievement and poor school performance, greater behavioral problems and deficient social skills, and susceptibility to contracting diseases (B. Holaday, 1995)

For the pre-war period, the malnutrition rates reported for Nugal, Mudug and Gal Galgadud regions, were very different during the same period (March/April 1987) from one area to the other. - Only one survey for Bari region was found for the pre-war period. This survey was carried out on September 1988 and the global malnutrition rate found was low (8.4%). (Desalegne & others, 2016)

## **1.2 STATEMENT PROBLEM**

For the last two decades, the nutritional status of Somali children has been among the worst in the world. The burden of under nutrition in Somalia remains high as evidenced by the high levels (approximately 14.9 per cent) of acute malnutrition combined with a high prevalence of micronutrient deficiencies, suboptimal breastfeeding and complementary feeding practices and low human resource capacity. In addition to the existing chronic food insecurity, there is poor access to facilities and services for health and for WASH. The aforementioned problems are exacerbated by a continuously insecure environment.

Malnutrition in Somalia is multifaceted affecting mothers, infants, young children, adolescent girls and women. It restricts inclusive development and overall prosperity of the nation and cost for the last two decades, the nutritional status of Somali children has been among the worst in the world. The burden of under nutrition in Somalia remains high as evidenced by the high levels (approximately 14.9 per cent) of acute malnutrition combined with a high prevalence of micronutrient deficiencies, suboptimal breastfeeding and complementary feeding practices and low human resource capacity. In addition to the existing chronic food insecurity, there is poor access to facilities and services for health and for WASH. The aforementioned problems are exacerbated by a continuously insecure environment.

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existing chronic food insecurity, there is poor access to facilities and services for health and for WASH. The aforementioned problems are exacerbated by a continuously insecure environment.

### **1.3 RESEARCH OBJECTIVES**

#### **1.3.1 General objectives**

- To find out the effect of malnutrition on children under five years in Guriel district

#### **1.3.2 Specific objectives**

- To determine how malnutrition effect children under five years.
- To clarify the role diseases plays to occur mal nutrition.
- To determine how stages occur mal nutrition,

### **1.4 RESEARCHER QUESTION**

- How mal nutrition effect children under five years?
- What role disease plays to occurs malnutrition?
- How stages occur malnutrition?

### **1.5 SIGNIFICANT OF THE STUDY**

The results of this study are useful to provide information about effect and associated risk factors of malnutrition among children under five years in Guriel region. If central government, Galmudug state and local NGOs cooperate to reduce the effects of malnutrition in children people awareness to avoid factors that brings increase affected malnutrition.

The information obtained from the study may also be useful in giving an estimate of the prevalence among mal nutrition on children thus it is helpful for the future researchers as a base. its findings may contribute literature that maybe used by the academicians

that are interesting to carry out for further study in this field and to help anyone who will conduct research about nutrition including students.

The findings and conclusions of this thesis should be useful for community health workers who Work in hospitals, NGOS. The research will benefit the Health sector through providing information on the Determinants of malnutrition related of knowledge attitudes among high school students the research will also provide the much needed information for policy formulation and systems amplification.

## **1.6 SCOPE OF THE STUDY**

This study of mal nutrition in children under five years only be in Galgadud particularly Guriel region.

## **1.8 OPERATIONAL DEFINITIONS**

Malnutrition: A term used to refer to any condition in which the body does not receive enough nutrients for proper function. (Melissa).

Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers 2 broad groups of conditions. One is 'under nutrition'—which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, obesity and diet-related non communicable diseases (such as heart disease, stroke, diabetes and cancer). (Q&A, 8 July 2016).

Malnutrition refers to when a person's diet does not provide enough nutrients or the right balance of nutrients for optimal health (Brazier, J, anuary 3, 2020)

### **1.8.1 WORK DEFINITION**

Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers 2 broad groups of conditions. One is 'under nutrition'—which includes stunting (low height for age), wasting (low weight

for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, obesity and diet-related non communicable diseases (such as heart disease, stroke, diabetes and cancer). (Q&A, 8 July 2016)

## **CHABTER TWO**

### **LITERATURE REVIEW**

#### **2.0 INTRODUCTION**

This chapter contains concepts, opinions, or ideas from authors, experts, and theoretical, conceptual, applications perspectives

#### **2.1 CONCEPTS, OPINIONS, OR IDEAS FROM AUTHORS/ EXPERTS**

Malnutrition is defined as “a state of nutrition in which a deficiency, or excess, of energy, protein and micronutrients causes measurable adverse effects on tissue/body form (body shape, size and composition) and function, and clinical outcome” (Stratton RJ, (2003) However, in case of under-nutrition, this definition does not take into account the cause of unintentional weight loss. Unintentional weight loss may have three primary syndromes: starvation, sarcopenia and cachexia (D C. a., (2007) (2011).

Starvation generally occurs as a result of protein-energy deficiency and is synonymous with PEM. The main difference between starvation and other syndromes of unintentional weight loss is that it is reversed when adequate energy and protein intake is achieved (D T. , 2002). In sarcopenia there is a progressive loss of muscle mass that occurs with normal ageing though this area is still under investigation [ (Cruz-Jentoft AJ, (2010) ) (Fielding RA, (2011)]. (Muscaritoli M, (2010))

Dietary management alone would be unlikely to address weight loss as sarcopenia is thought to occur regardless of energy balance (Rolland Y, (2011)) Cachexia is caused by pro inflammatory cytokines and is associated with a number of chronic conditions such as cancers, HIV/AIDS, heart failure and chronic obstructive pulmonary disease (COPD). A group of prominent researchers together develop a consensus definition for cachexia which indicates that “cachexia is a complex metabolic syndrome coupled with underlying illness and characterized by loss of muscle with or without the loss of fat (. Evans WJ, (2008)

Malnutrition is classified on the basis of what nutrients are absent in the diet, for how long and at what age. There are two major types of malnutrition which have been further divided as shown in the Table 1. Deficiency in energy balance and protein are characteristics of malnutrition, which may impair the proper functioning of various physiological processes (C, 2006)].

Even though, obese patients can also have malnutrition but it is mainly used synonymously with under nutrition (Lochs H, (2006) about, 14% of world population was affected by malnutrition in 2008. (United-Nations.) At a later stage of the life, the risk factors which are considered to prompt cardiovascular and metabolic disease are the perinatal malnutrition and slowed weight gain at birth (Barker DJ, (1993) (. Barker DJ, 1997)

In the policy discussions on food security micronutrient malnutrition has taken center stage. It is accepted that food security does not refer to just providing adequate energy intakes only but also to ensuring sufficient intakes of essential micronutrients. The diets of developing countries are deficient in vitamin A, iron, and zinc. Estimated number of micronutrient malnutrition affected people is high up to 5 billion people. WHO 2005 said Malnutrition is fairly common worldwide in both children and adults and accounts for 6 million Deaths annually.

In the industrialized world, PEM is predominantly seen in hospitals, is associated with disease, or is often found in the elderly. Note that PEM may be secondary to other conditions such as chronic renal disease or cancer cachexia in which protein energy wasting may occur. Protein–energy malnutrition affects children the most because they have less protein intake.

The few rare cases found in the developed World are almost entirely found in small children as a result of fad diets, or ignorance of the nutritional needs of children, particularly in cases of milk allergy. Protein-energy malnutrition (PEM) is a problem in many Developing countries most commonly Affecting children between the ages of 6 months and 5 years.

The condition may result from lack of food or from infections that cause loss of appetite while increasing the Body's nutrient Requirements and losses Malnutrition 'especially among young children is a widespread problem in most developing Countries. Over one hundred million children less than five years of age suffer from protein Energy malnutrition and more than ten million of them suffer from severe protein energy Malnutrition which is usually fatal if untreated (( WHO, 1981)).

The primary causes of morbidity And mortality among children aged less than 5 years are pneumonia, diarrhea diseases, low birth Weight ,asphyxia and in some parts of the world, human immunodeficiency virus (HIV) infection and malaria. One out of every two such deaths has malnutrition as the underlying cause ( ((Murray sand Lopez, 1997))However, malnutrition is rarely cited as being among the leading causes of death even though it is prevalent in developing countries ((WHO 2. , 2000)).

Malnutrition or malnourishment is a condition that results from eating a diet in which nutrients are either not enough or are it may involve calories, protein, carbohydrates, vitamins or minerals. Not enough nutrients is Called under nutrition or undernourishment while too much is called over Nutrition. Malnutrition is often used specifically to refer to under nutrition where there arenot enough calories, protein, or micronutrients.

If under nutrition occurs during pregnancy, or Before two years of age, it may result in permanent problems with physical and mental Development According to World Health Organization, protein energy malnutrition (PEM) refers to “an imbalance between the supply of protein and energy and the body's demand for them to ensure optimal growth and function”. It is a major public health problem in Africa.

It affects particularly the preschool children (<6 years) with its dire consequences ranging from physical to cognitive growth and susceptibility to infection. This affects the child at the most crucial period of time of development which can lead to permanent impairment in later life (Marry 2000). PEM is measured in terms of underweight (low weight for age), stunting (low height for age) and wasting (low weight for height).

The prevalence of stunting among under five is 48% (moderate and severe) and wasting is 20% (moderate and severe) and with an underweight prevalence of 43%(moderate and severe). It is the highest in the world. The majority of children suffering from Under nutrition (80%) are the mild and the moderate forms which go unnoticed and the early Ages are affected more which makes the process irreversible ((WHO, 2015).Malnutrition is currently the leading cause of global burden of disease ((Ezzati et al., (2002).

And has been identified as the underlying factor in about 50% of deaths of children under 5 years of Age in developing countries ( (Black et al., 2003)). The condition may result from lack offood or from infections that cause loss of appetite while increasing the body's nutrient requirements and Losses. Children between 12 and 59 months old are especially at risk since they are the most vulnerable to infections such as gastroenteritis and measles ((WHO 2. , 2000).

### **Causes of Malnutrition**

Food production of many Sub-Saharan Africa countries, which is often affected by environmental conditions (i.e. soil fertility, rainfall, temperature), face the risk of failing food availability as indications of warming climates on current food systems (Brown M, (2008) (Funk C B. M., (2009). There is anincreasing strain on food resources due to climatic factors as well as due to decreasing of land area suitable for planting and agricultural production (Funk C E. G., (2006)).

These changes (reducing the area suitable for Cultivation and climatic change) may accelerate food shortages and May therefore, lead to an increase in child malnutrition. According to The World Food Summit and the Food and Agriculture Organization, There are three core aspects of food security which includes: Availability access, and utilization (FAO).

1. **Oral health of geriatric patients:** Malnutrition in the elderly is a Complex and multifactorial problem. Particularly, when they need to reside in a long-term care

facility they are susceptible to malnutrition. The Oral health of aged people has a negative impact on quality of life.

2. **Chronic renal failure:** Malnutrition is normally seen with chronic renal failure patients.
3. **Cancer:** In numerous publications it has been reported that Malnutrition is a common problem in pediatric patients with cancer and its clinical relevance has been widely accepted by professionals

### **2.1.1 TYPES OF MALNUTRITION**

1-Disease Deficiency Protein energy malnutrition –Types of protein energy malnutrition include

1. Kwashiorkor (protein malnutrition predominant)
2. Marasmus (deficiency in calorie intake)
3. Miasmatic Kwashiorkor (marked protein deficiency and marked calorie insufficiency signs present, sometimes referred to as the most severe form of malnutrition)

#### **2.1.1.1 KWASHIORKOR**

Kwashiorkor, also called wet protein-energy malnutrition, is a form of PEM characterized primarily by protein deficiency. This condition usually appears at the age of about 12 months when breastfeeding is discontinued, but it can develop at any time during a child's formative Years ( (Manary et al., 1998). Kwashiorkor usually manifests with fluid retention (edema) usually Starting in the legs and feet and spreading, in more advanced cases, to the hands and face. Edema may be detected by the production of a definite pit as a result of moderate pressure for 3 Seconds with the thumb over the lower end of the tibia and the dorsum of foot. Because of Edema, children with kwashiorkor may look “fat” so that their parents regard them as well fed protein energy malnutrition ((Manary et al., 1998).

There is hair discoloration or loss of pigmentation; Curly hair becomes straight easily pluck able colored, dark skin may become dried and lighter in some places especially in



the skin folds; Outer layers of skin may peel off and ulceration may occur; the lesions may resemble burns ((Cundiff and Harris, 2006).Children with Kwashiorkor are usually apathetic, miserable, and Irritable. They show no signs of hunger, and it is difficult to persuade them to eat. There is Hepatomegaly, lethargy, severe immune deficiency and early death occurs ((UNACC, 2000) Hypo albumin anemia and electrolyte imbalance have been put forward as possible causes of the edema (Water low)

#### **2.1.1.2 MIASMIC KWASHIORKOR.**

This is a severe wasting in the presence of edema. It is a mixed form of PEM, and manifests as Edema occurring in children who may or may not have other signs of Kwashiorkor ((Manary and Brewster, 1. (1997) ((Manary et al., 1998)

#### **2.1.2. CLINICAL FEATURES OF PEM**

Protein–energy malnutrition usually manifests early, in children between 6 months and 2 years of age and is associated with early weaning, delayed introduction of complementary foods, a low protein diet and severe or frequent infections ((Kwena et al., 2003)PEM is characterized by atrophy and weakness of the skeletal muscles (including the respiratory muscles), reduced heart muscle mass ((Powell-Tuck, 1997).Impaired wound healing, skin thinning with a predisposition to decubitus ulcers, fatigue, apathy and hypothermia .The extracellular fluid compartment characteristically expands in PEM, occasionally causing edema ((Hoffer, , 2001)

Synthesis of pigments in the hair and skin fails (e.g., hair color may change and skin becomes hyper pigmented) because of a lack of substrate (e.g., tyrosine) and coenzymes ((Muller and Krawinkel, 2005.)The other essential aspects of severe protein–energy malnutrition are the fatty degeneration of the liver and heart. This degeneration is not just a sign of severe malnutrition; it also causes subclinical or overt cardiac insufficiency, especially when malnutrition is accompanied by edema. If the myocardial insufficiency is not corrected, iatrogenic fluid and sodium overload quickly escalate it into cardiac failure ((Kwena et al., 2003)

Another injurious aspect of PEM is the loss of subcutaneous fat, which markedly reduces the body's capacity for temperature regulation and water (Alam et al., 2003)). As a result, malnourished children become dehydrated, hypothermic and storage (hypoglycemic more quickly and severely than others ((Gracey, 1999), Severe protein-energy 14 malnutrition is associated with atrophy of the mucosa of the small bowel, leading to a loss of absorption as well as of digestion Capacity ( (Alam et al., 2003)).

Furthermore PEM is associated with chronic hypovolemia, which leads to secondary hypo aldosteronism, and further complicates fluid and electrolyte balance ((Kwena et al., 2003) PEM affected children do not show signs of Hyperkalemia. This is because the development of muscular dystrophy mobilizes much of the body's potassium, which is then lost through urine ((Manary and Brewster, 1. (1997)

### **2.1.3 EFFECT OF PROTEIN ENERGY MALNUTRITION ON CHILDREN**

Chronic PEM has many short-term and long-term physical and mental effects, including growth Retardation, lowered resistance to infection, and increased mortality rates in young children (al. (. e., 1995). It was recognized in the 1950s that the severe forms of protein-energy Malnutrition, kwashiorkor and miasmas, were associated with marked cognitive effects ((Scrimshaw et al., 1968)) although the lasting effects on survivors were unknown. Effects of Malnutrition in early childhood can be devastating and permanent.

Whether or not children are well-nourished during the prenatal period and the first years of life can have a profound effect on their health status, as well as their ability to learn, communicate, socialize, reasoning and adapt to their environment ((Pelletier et al. 1. )

### **2.1.4 DIAGNOSIS OF PEM**

The diagnosis of malnutrition is generally based on objective measurements of nutritional status, Including assessments of oral intake, weight loss, anthropometric data, and determination of cell Mediated immunity, biochemical parameters, physical examination and body composition analysis ((Hulst et al., (2004) 2-Protein Dietary

Vitamins and minerals Osteoporosis Rickets Titan Calcium-Goiter Iodine deficiency-Keshena Selenium Anemia Iron Growth retardation Zinc Beriberi Thiamine (Vitamin B1) Pellagra Niacin (Vitamin B3)Scurvy Vitamin C Osteoporosis Rickets Vitamin D.

Before the war, little background information existed on health and nutritional status among representative populations in Somalia. Studies tend to focus on distressed populations, so baseline data are difficult to locate. It appears that a lot of health records and libraries had been destroyed during the fighting making it difficult to trace studies. Some nutrition surveys had been conducted before 1987, but most of the nutrition surveys have been carried out in 1987 in drought affected areas.

Several years of drought coupled with extended civil unrest, the collapse of government and the destruction of the country's infrastructure created a situation in 1992 where thousands of people were reported as malnourished and dying. Relief workers were experiencing extreme difficulties in providing aid because of the insecure conditions. Between mid-1991 and early 1993, a number of epidemiological studies were undertaken to assess the situation. Geographically, most of the studies were conducted in the central and Southern parts of the country.

Since late 1993 up to 1996 several nutrition surveys were conducted in order to establish reference of malnutrition rates in some areas. In fact the objectives of the surveys were sometimes not well defined. The methodologies followed are still very different from one agency to the other, and it is difficult to define baseline on malnutrition rate from these information.

Malnutrition is globally the most important risk factor for illnesses and death, affecting especially hundreds of millions of pregnant women and young children. It is currently the Leading cause of global burden of disease ((Ezzati et al., (2002)However, evidence has shown that child death and malnutrition are not equally distributed throughout the world. The World Health Organization defines malnutrition as "the cellular imbalance between supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions ((Scrimshaw et al., 1968).

Severe malnutrition, typified by wasting, edema or both, occurs almost exclusively in children (Brabin and Coulter, 2. (2003)Protein-energy under nutrition (PEU), previously called protein-energy malnutrition, is an energy deficit due to chronic deficiency of all macronutrients. It commonly includes deficiencies of many micronutrients. PEU can be sudden andtotal (starvation) or gradual. Severity ranges from subclinical deficiencies to obvious wasting (with Edema, hair loss, and skin atrophy) to starvation. Multiple organ systems are often impaired.

Diagnosis usually involves laboratory testing, including serum albumin. Treatment consists of correcting fluid and electrolyte deficits with IV solutions, then gradually replenishing nutrients, orally if possible. Protein energy malnutrition affects physical growth, morbidity, mortality, Cognitive development, reproduction, and physical work capacity, and it consequently impacts on human performance, health and survival.

It is an underlying factor in many diseases for both Children and adults, and is particularly prevalent in developing countries, where it affects one out of every 3 preschool-age children. A well-nourished child is one whose weight and height Measurements compare very well with the standard normal distribution of heights and weights of healthy children of the same age and sex (Brabin and Coulter, 2. (2003)

WHO 2005 said PEM is fairly common worldwide in both children and adults and accounts for 6 million deaths annually. In the industrialized world, PEM is predominantly seen in hospitals, is associated with disease, or is often found in the elderly. Note that PEM may be secondary to other conditions such as chronic renal disease or cancer cachexia in which protein energy wasting may occur. Protein–energy malnutrition affects children the most because they have less protein intake. The few rare cases found in the developed world are almost entirely found in small children as a result of fad diets, or ignorance of the nutritional needs of children, particularly in cases of milk allergy .Protein-energy malnutrition (PEM) is a problem in many developing countries, most commonly Affecting children between the ages of 6 months and 5 years. The condition may result from lack of food or from infections that cause loss of appetite while increasing the body’s nutrient Requirements and losses.

Malnutrition commonly affects all groups in a community, but infants and young children are the most vulnerable because of their high nutritional requirements for growth and development. Another group of concern is pregnant women, given that a malnourished mother is at high risk of giving birth to a LBW baby who will be prone to growth failure during infancy and early childhood, and be at increased risk of morbidity and early death.

Malnourished girls, in particular, risk becoming yet another malnourished mother, thus contributing to the intergenerational cycle of malnutrition. In developing countries, poor per natal conditions are responsible for approximately 23% of all deaths among children younger than five years old. These deaths are concentrated in the neonatal period (i.e. the first 28 days after birth), and most are attributable to LBW ((Kramer, 1987). )

LBW can be a consequence of IUGR, preterm birth, or both, but in developing countries most LBW births are due to IUGR (defined as below the tenth percentile of the Williams sex-specific weight-for-gestational age reference data). Although the etiology of IUGR is complex, a major determinant of IUGR in developing countries is maternal under nutrition.

Evidence has shown that there is a greater incidence of IUGR births among women who are underweight or stunted prior to conception, or who fail to gain sufficient weight during pregnancy ( ((Kramer, 1987). ); (King & Weininger, 1989) (WHO, 1995a); (Bakketeig et al., 1998) compared to women with normal weight and weight gain .Growth assessment is the single measurement that best defines the health and nutritional status of a child, because disturbances in health and nutrition, regardless of their etiology, invariably affect child growth.

There is ample evidence that the growth (height and weight) of well-fed, healthy children from different ethnic backgrounds and different continents is remarkably similar, at least up to six years of age ( (Habicht et al., 1974)). Based on this finding, WHO has been recommending that a single international reference population be used worldwide, with common indicators and cut-offs, and that standard methods be used to analyze child growth data (al. (. 1., 1977); (WHO, 1995a)).

Moreover, growth assessment is universally applicable: it does not pose any cultural problems; measuring equipment is easy to transport; the tools are simple and robust, can be set up in any environment; users require little training; and the procedure is inexpensive and non-invasive (WHO, 1995a) Even though it has long been recognized that malnutrition is associated with mortality among children ( (Trowel, 1948); (Gomez et al., 1956)

A formal assessment of the impact of malnutrition as a risk factor was only recently carried out. In the early 1990s, results of the first epidemiological study on malnutrition showed that malnutrition potentiated the effects of infectious diseases on child mortality at population level ((Pelletier et al. 1. ), (1995)) a result that up until then had only been observed clinically.

The methodology was based on the results of eight community-based prospective studies that looked at the relationship between anthropometry and child mortality in developing countries ((Pelletier et al., 1994)). The literature review used to select the eight studies was published separately ( ((Pelletier et al. 1. ), (1995)).

The results of the eight studies were consistent in showing that the risk of mortality was inversely related to weight-for-age, and that there was an elevated risk even at mild-to-moderate levels of malnutrition. In fact, most malnutrition-related deaths were associated with mild-to-moderate, rather than severe, malnutrition, because the mild-to-moderately malnourished population was much bigger than the severely malnourished population.

The study also confirmed that malnutrition has a multiplicative effect on mortality. Taking into account all underlying causes of death, the results suggested that malnutrition was an associated cause in about one half of all child deaths in developing countries. From a national policy perspective, however, the epidemiological study had a limitation: the global estimate of malnutrition-associated mortality could not be applied to countries with distinct disease profiles.

To fill this gap, a joint WHO/Johns Hopkins University working group was set up to estimate the contribution of malnutrition to cause-specific mortality in children. The first step was a literature review to collect data for estimating the relationship between malnutrition and mortality from diarrhea, acute respiratory infections, malaria and measles (Rice et al., 2000).

Cause-specific mortality was estimated by applying the method of (al. P. e., 1994) to the data of 10 cohort studies that contained weight-for-age categories and cause-of-death information. The weight-for-age categories were based on the number of standard deviations (SDs) from the median value of the National Centre for Health Statistics (NCHS)/WHO international reference population ( $< -3$  SD;  $-3$  SD to  $< -2$  SD;  $-2$  SD to  $< -1$  SD; and  $> -1$  SD).

All the included studies contributed information on weight-for-age and risk of diarrhea, malaria, measles, acute respiratory infections and all-cause mortality (comprising other remaining infectious diseases besides HIV). These other infectious diseases include: tuberculosis, sexually transmitted disease excluding HIV, pertussis, poliomyelitis, diphtheria, tetanus, meningitis, hepatitis B and C, tropical-cluster diseases, leprosy, dengue, Japanese encephalitis, trachoma, intestinal nematode infections, upper respiratory infections and otitis media.

In WHO they said that, protein energy malnutrition (PEM) refers to “an imbalance between the supply of protein and energy and the body's demand for them to ensure optimal growth and function. It is a major public health problem in Africa. It affects particularly the preschool children ( $<6$  years) with its dire consequences ranging from physical to cognitive growth and susceptibility to infection. This affects the child at the most crucial period of time of development which can lead to permanent impairment in later life.

PEM is measured in terms of underweight (low weight for age), stunting (low height for age) and wasting (low weight for height). The prevalence of stunting among under five is 48% (moderate and severe) and wasting is 20% (moderate and severe) and with an underweight prevalence of 43% (moderate and severe), it is the highest in the world.

The majority of children suffering from under nutrition (80%) are the mild and the moderate forms which go unnoticed and the early ages are affected more which makes the process irreversible.

2015 Journal of Evolution of Medical and Dental Sciences the researcher was said Protein-energy malnutrition (PEM) is a widespread problem in developing countries. About 60-70% of children with PEM suffer from mild to moderate type and 2-5% is of severe type. PEM in turn makes children more prone to infections. Infections and helminthic infestations are important contributing factors in the causation of malnutrition in preschool children consuming inadequate diets.

Other factors such as poverty, illiteracy, large family have been shown to contribute to malnutrition. The risk of death from common childhood diseases is doubled for a mildly malnourished child, tripled for a moderately malnourished child and eight times for a severely malnourished child. A strong foundation in the very early years of a child are important in the form of care and nurturing, good nutrition including exclusive breast feeding for six months, immunization access to safe water and sanitation. It also requires that mothers are well cared for during antenatal, intranasal and postnatal period so that children will have a good start in life.

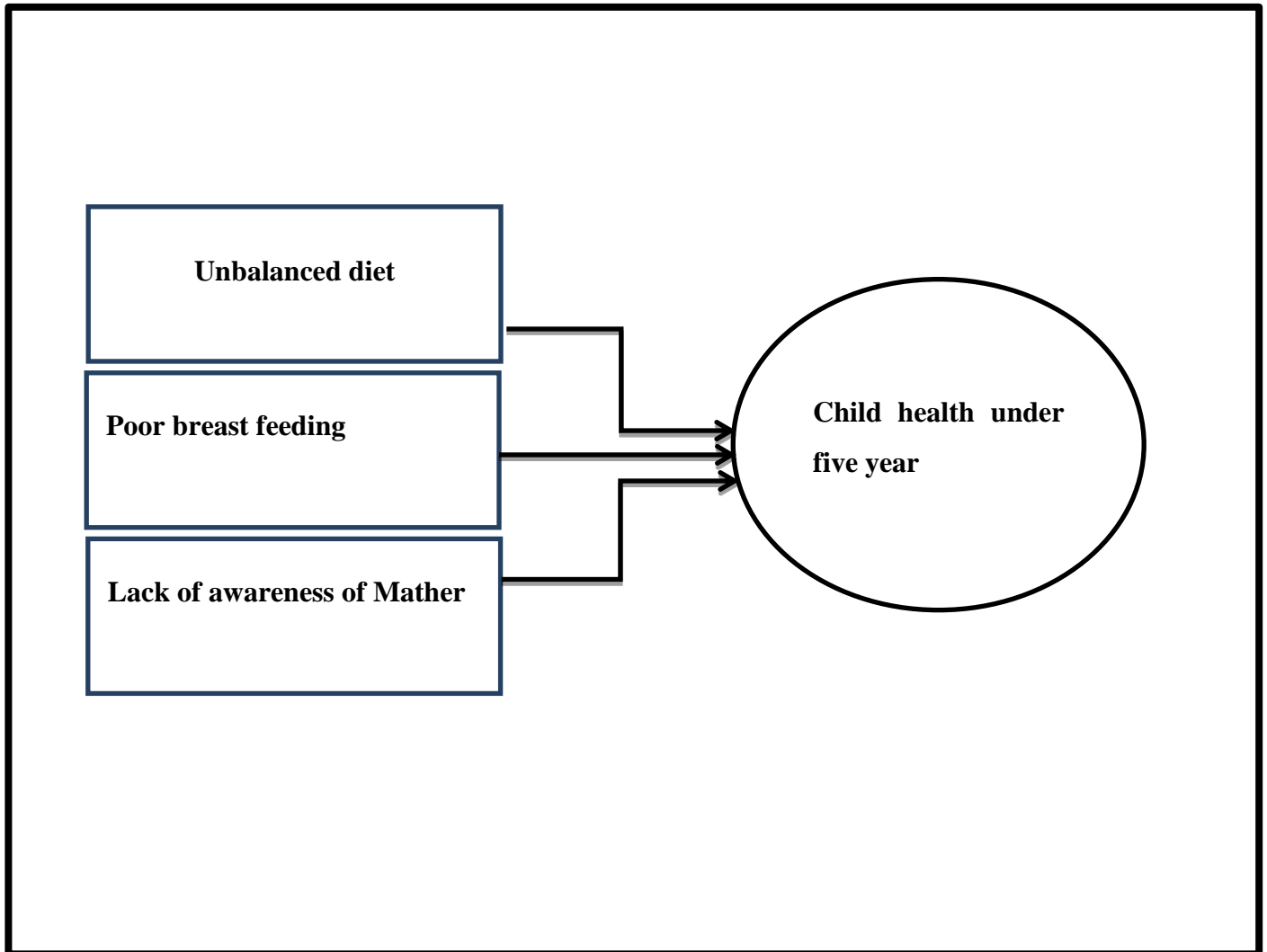
The Integrated Child Development Services Program was started in 1975 incorporating interventions such as food supplementation, immunization, health care and referral services for children as well as pregnant and lactating mothers. The following study was conducted in Anganwadis in Hoskote, Bangalore rural area with the objectives a) to assess nutritional and health status of anganwadi children in the rural area in Hoskote, Bangalore and b) to determine factors contributing to protein energy malnutrition among preschool children 2013.



## 2.2CONCEPTUAL FRAMEWORK

**Independent Variables**

**Depend Variable**



**Variables**

### 2.2.1. Unbalanced diet

There is not one single food or type of food that provides all the nutrients that the human body needs to function efficiently. A balanced diet will depend on the types of

food eaten over a period of time and the nutritional needs of the particular individual. The wider the variety of foods eaten, the more nutrients will be provided by them. It is now known that some health problems are caused by dietary intake, such as too much fat causing heart Child health under five year disease and too much salt contributing to strokes In 1991, the Committee on Medical Aspects of Food Policy (COMA).

Good nutrition, based on healthy eating is one essential factor that helps us to stay healthy and be Active Poor eating habits include under- or over-eating, not having enough of the healthy foods we need each day, or consuming too many types of food and drink, which are low in fiber or high in fat, salt and/or sugar .These unhealthy eating habits can affect our nutrient intake, including energy (or kilojoules) protein, carbohydrates, essential fatty acids, vitamins and minerals as well as fiber and fluid.

Poor nutrition can impair our daily health and wellbeing and reduce our ability to lead an enjoyable and active life. In the short term, food of poor nutrition can contribute to stress, tiredness and our capacity to work, and over time, it can contribute to the risk of developing some illnesses and other health problems Your body requires variety and specific amount ((Rahman et al., 2007)).

it's of nutrients to function properly and perform the activities of daily life. If your body does not get those nutrients, which is common when eating an unbalanced diet, it can develop health problems. A common-sense approach, including eating from a variety of food groups and maintaining proper portion control, may help avoid any potential problems, as well as keep you healthy and vibrant in the process ( (Ibeziako L NS, 2012)).

### **2.2.1. Lack of awareness of mother on child nutrition**

Despite of various nutritional health programs, malnutrition among children remains the big Health problem in Somalia. Suboptimal utilization of services by mothers is a big challenge before all programs. Utilization of services also depends upon the awareness regarding the service and its perceived usefulness among beneficiaries.

However, socio economic status and educational level of mothers were significantly associated with presence of awareness among mothers.

Health and nutrition messages are usually targeted to mothers, most of whom have not received formal education. These women usually patronize health services at antenatal clinics and child welfare centers (CWC). Additionally, patronage of preventive health services provides an opportunity to improve care practices through both preventive healthcare (immunization, antenatal care for the mother, etc.) as well as management of childhood morbidity.

Effective utilization of knowledge and skills gained from health and nutrition education is, therefore, expected to improve the health and nutritional status of children through improved knowledge and care practices. However, there are limited data on the impact of nutrition education, especially in women who have not received formal education. Care behavior choices are mediated by knowledge as well as by resource availability (( (Ahmed et al., 2009)

### **2.2.2 Poor breast feeding**

According to The LANCET (2006, 2006) appropriate breastfeeding and complementary feeding practices are fundamental to child health, growth, development, and survival. Exclusive breastfeeding from the birth to six months has the potential to prevent 13 per cent of child mortality, and it is estimated that the lives of at least 1.2 million children worldwide would be saved every year. However, large numbers of children living in West and Central Africa (WCA) do not benefit from these practices.

Even though almost all children are breastfed, only one third initiate breastfeeding within the recommended first hour after birth, and less than one forth are breastfed exclusively during the first six months of life<sup>2</sup> (21 per cent compared to 38 per cent in developing countries). Togetherwith a daily diet poor in micronutrients after six months and inadequate access to health care and poor sanitation, nonexclusive breastfeeding compromises the nutritional status of children. As a result, an estimated 40% of under-

fives are stunted in Western and central Africa and more than 60%--in some countries more than 90%-- are anemic.

These children will thus not attain their potential to learn and earn throughout their lives. Breastfeeding or nursing is the feeding of babies and young children with milk from a woman's breast. It is estimated that about 820,000 deaths of children less than five years old could be prevented globally per year through more widespread breastfeeding. Breastfeeding decreases the risk of PEM and infections. This is true both in developing and developed countries.

Other benefits include lower risks of asthma, food allergies, celiac disease, type I diabetes, and leukemia. Breastfeeding may also improve cognitive development and decrease the risk of obesity in adulthood. Some mothers may feel considerable pressure to breastfeed, but children who are not breastfed grow up normally – without significant harm to their future health ((Ahmed et al., 2009)

Not all of breast milk's properties are understood, but its nutrient content is relatively consistent. Breast milk is made from nutrients in the mother's bloodstream and bodily stores. Breast milk has an optimal balance of fat, sugar, water, and protein that is needed for a baby's growth and development ((Rahman et al., 2007))

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 INTERDICTION**

This section contains, research design, research population, sample size, sample procedure, research instrument, validity and reliability of instrument, data collection procedure, data analysis technique, Ethical consideration, limitation of the study,

#### **3.1 RESEARCH DESIGN**

The study will be conducted between February and August 2020 in Gurriel district. It was community based cross sectional done. This means that the sample was taken from the target population and information was obtained at the same time on a particular point in time. Cross sectional study design was used in this study.

In this study the researcher will conduct through descriptive research design to investigate the effect of malnutrition on under-five children. Research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (former principle, 2004).

**Descriptive research** .Sometimes an individual wants to know something about a group of people. Maybe the individual is a would-be senator and wants to know who they're representing or a surveyor who is looking to see if there is a need for a mental health program. The researchers choose descriptive because Descriptive research may be a pre-cursor to future research because it can be helpful in identifying variables that can be tested.

#### **3.2 RESEARCH POPULATION**

According to target population refers to all members of a real set of people for this study (Ali, 2016). Although accurate statistics of population size in Gurriel district is not available because there is no effective working local authority in this district right now.

Thus the researchers adapted the target population that most literatures adapted (120-50 individuals) in this study the researchers adapted 100 individuals as target population of this study as shown in the below table.

**Table 1: Target population distribution**

No.	Respondents	Target Population	Sample Size
1.	Effected children	33	20
2.	Tewfik NGO.	33	20
3.	MCHs	34	30
<b>Total</b>		<b>100</b>	<b>80</b>

### 3.2.1 Sample Size

To determine the sample size from the target population of the study, the researchers used **Slovene's formula**.

$$n = \frac{N}{1 + N (e)^2}$$

Where **n**= sample size, **N**= target population, **100** and **e** = margin of error of 0.05

**n=80.**

$$\frac{100}{1 + 100(0.05)^2}$$

### 3.2.2 Sample Procedure

The researcher used simple random sampling and all the respondents will have an equal chance to participate when responding the question being asked.

## 3.3 RESEARCH INSTRUMENT

Questionnaire method has been used for data collection. this questionnaire was easy to analyze since it was in immediate usable form they was easier to administer because each item is followed by alternative answer and it was economical to use in items of times and money on the other hand it was more difficult to construct because categories must be well throughout and response was limited

The study will use mainly primary data and secondary data. Primary will be collect by using questionnaire. Questionnaire is the easiest method which data collects from the respondents. Questionnaire is a data collection instrument consistent of a series of questions and other prompts for the purpose of gathering information from respondents.

A questionnaire is a research instrument that consists of a set of questions or other types of prompts that aims to collect information from a respondent. A research questionnaire is typically a mix of close-ended questions and open-ended questions. Open-ended, long-form questions offer the respondent the ability to elaborate on their thoughts. Research questionnaires were developed in 1838 by the Statistical Society of London.

The data collected from a data collection questionnaire can be both qualitative as well as quantitative in nature. A questionnaire may or may not be delivered in the form of a survey, but a survey always consists of a questionnaire.

### **Questionnaire Examples**

**Customer Satisfaction Questionnaire:** This type of research can be used in any situation where there's an interaction between a customer and an organization. For example, you might send a customer satisfaction survey after someone eats at your restaurant. You can use the survey to determine if your staff is offering excellent customer service and if the overall experience was positive.

**Product Use Satisfaction Questionnaire:** You can use a product use research questionnaire to better understand the usage trends of your product and similar products. This also allows you to collect customer preferences about the types of products they enjoy or want to see on the market.

**Company Communications Evaluation Questionnaire:** Unlike other types of questionnaire examples, a company communications evaluation looks at both internal and external communications. It can be used to check if the policies of the organization are being enforced across the board, both with employees and clients.

The above survey questionnaire examples are typically less expensive to execute than in-person surveys or interviews. Additionally, the standardized answers of a survey questionnaire instead of a person-to-person conversation make it easier to compile useable data. Questionnaires aren't without limitations. The biggest limit of a data collection questionnaire is that respondents need to read all of the questions and respond to them.

For example, you send a questionnaire invitation through email asking respondents to complete the questions on social media. If a target respondent doesn't have the right social media profiles, they can't answer your questions

### **3.3.1 Validity and reliability of the instrument**

Two of the most important aspects of the research and data occurrences are validity and reliability of the data. The issue of validity and reliability is one important part that is value to be considered when selecting research design. Thus the study should have to be aware of pressure of reliability and validity of the result in this study.

Defined reliability as the degree to which data collection techniques will yield consistent findings. To increase reliability, the study adapted relevant questionnaire and slightly modified. While Validity refers to the extent to which data collection method accurately measures what it was intended to measure or to the extent to which research findings are about what they are claimed to be about.

To ensure the validity of the instrument, it will be given to experts to evaluate the relevance of each item in the instruments to the purpose of this study. So the next section will point out the procedure of data collection. Pre-testing will be conducted to assist in determining accuracy, clarity and suitability of the Research instrument.

According to Bog and Gall (1989), ten cases are sufficient for the pilot study therefore, the researcher will deficiency since the subjects in this research was 31 Heterogeneous, and ten cases was reasonable representing the different categories of the Participants.



### **3.4 DATA COLLECTION**

After the research proposal approve, the researcher passed administrative process to obtain Approval from academic authorities, the permission to collect the research within the selected respondents. Questionnaire tool was administered to collect quantitative data from the selected respondents. The researcher will prefer this method because it is the most appropriate in collecting view respondents whose place was geographically spread

#### **3.4.1 Disadvantages are also present when using such questions**

1. They do not allow the respondent the opportunity to give a different response to those suggested.
2. they 'suggest' answers that respondents may not have considered before.
3. With open-ended questions the respondent is asked to give a reply to a question in his/her own words. No answers are suggested.

### **3.5 DATA ANALYSIS**

In this study the researcher will employ Statistical Package for Social Science (SPSS) version 17 to be processed and analyzed the data collected from the designed questionnaires. SPSS is a suitable for this research Because SPSS can summarize and present data in form of number and percentage.

the researchers used quantitative method of data analysis, to analyze data the researchers used the software package of SPSS version 17 and excel adopted for data analysis. Spss is a software program that helps researchers to analyze data electronically with coded and quick procedure

(gordy ethlic, 2012))the researchers have chosen it because it's easy process and for saving time and cost. SPSS Statistics is a format that IBM offers for complete analysis. It is the acronym for Statistics product and Service Solution. The **IBM** SPSS Statistics is a family of advanced **computer** programs of statistic analysis. It is a wide and flexible software that is responsible for analyzing all the data

Data which is provided during the performance of various statistical calculations. SPSS Statistics also offers all the tools and tests necessary to make any prediction. Since it performs both simple and complex statistical analyses. Analyses that allow discovering relationships between variables (dependence and interdependence) as well as classifying subjects and other factors.

The program offers many functions of advanced and basic statistics, as well as 2-variable statistics such as ANOVA and the T-test. It also includes frequencies, cross-tabulations, as well as linear and non-linear models. Through a series of dialog boxes, the program can perform any analysis of a large amount of **data** and variables thanks to its efficient design. It also contains a section to edit data and a menu complete enough to make the necessary adjustments

### **3.5.1 SPSS STATISTICS TYPES**

There are other different products in the suite, each offering their two-variable unique features. SPSS is popular software among Windows users, and it is used to perform data capture and analysis to create tables and graphs with complex data. The SPSS is known for its ability to manage **large volumes of data** and carry out text analysis among other formats.

The SPSS statistical software base includes descriptive statistics such as tabulation and crossover frequencies, statistics, plus T, ANOVA, and correlation tests. With SPSS, it is possible to perform data collection, create statistics, analysis of management decisions, and much more.

**Numeric Variables** – This variable contains only numbers and is responsible for numeric calculations. Numeric calculations, for example, addition and multiplication.

**String Variables** – This variable can contain letters, numbers, and also other characters. In string variables, you cannot do the calculations, even though these variables contain only numbers

### **3.6 ETHICAL CONSIDERATIONS**

All residents that look part in this study have been explained for them to fill the questionnaire, all data collected from respondent was kept confidentiality maximum privacy was being maintained

1. Every respondent was asked about permit ion to complete the questionnaire
2. More explanation is given before respondent of questionnaire.
3. Confidentiality of the secret information has the high priority freedom to participate the study.
4. The researcher will think about the ethical issues throughout research project and will keep the privacy and confident his respond denasality of the respondents from the public.
5. The undisclosed information will stay confidential.
6. Good explanation of the respondents was done before filling the questionnaire.

### **3.7 Limitations of the study.**

1. Lack in sufficient library and reference books.
2. In sufficient time.
3. Insufficient reports that the researcher can get from exact data.

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