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Proportion of Malnutrition - Kunduz Regional Hospital Northeast Region-Afghanistan

Dissertation Submitted in partial fulfilment of the Requirement for the award of the degree of Master of Public Health

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Certified that the dissertation Proportion of Malnutrition in Kunduz regional hospital is a record of the research work undertaken by Dr Wais Lalzad Durani in partial fulfillment of the requirements for the award of the degree of Master of Public Health under my guidance and supervision.

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DECLARATION

I hereby declare that this dissertation Proportion of Malnutrition in Kunduz regional hospital is the bona fide record of my original field research. It has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Dr Wais Lalzad Durani

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ABSTRACT

Malnutrition is a serious and debilitating condition, it is the result of the complex interplay between underlying diseases, and disease related metabolic alterations and the reduced availability and absorption of nutrients. Malnutrition has been shown to adversely affect patients by increasing the risk of infection and pressure ulcer, delaying wounded healing, and decreasing nutrient absorption, accelerating the loss of muscle mass, lengthening of hospital stay and increasing mortality. With the consequences of malnutrition in mind, several tools have been developed to screen and assess, however their use in the clinical environment is inconsistent.

Meeting the Nutrition requirements of children aged 6months to five years has become a major global challenge, the current levels of malnutrition hinder Afghanistan's human, social, and economic development. Although the country has made tremendous progress in economic growth and poverty reduction over the past 20 years, but still its progress in reducing malnutrition remains very slow. This study approaches for addressing acute and chronic malnutrition have grown in different directions and lead to productive advances in the efficacy of specific interventions and steps to promote effective integration of acute and chronic malnutrition services.

The aim of this study is to describe the tools, approaches, actors engaged in the different responses, stressing the sources. It was obtained that differences and challenges convergence where potential for linkages exist. Additionally, areas identified where research on the delivery of nutrition actions can extend field program`s ability to offer more integrated services.

Method:

The study was a cross-sectional survey with a structured questionnaire conducted between Feb to May 2018 on 244 families. All families with children between 6-59 months were included in the survey. Anthropometric measurements were performed on randomly selected child from each family and nutritional status was determined according to the WHO new growth reference. With reference to principles, the cross sectional study took place in Kunduz regional hospital covering 268893 population including mothers and child caretakers. The information collected from Kunduz regional hospital HMIS, nutrition department and OPD registration. In duration of 4 months, the secondary data obtained for the 4 months of 2016 while the primary data collected for the 4 months of 2017 started by Feb and ended on May.

Result:

Based on finding, the proportion of malnutrition cases for 2018 noted 21% for acute and 79% for chronic cases. The result shows that from the collected and analysed data, 17% of cases recorded for male acute, 12% female acute, 28% for male chronic and 43% for female chronic cases.

The nutritional status evaluated based on Waterlow`s technique, the result describes that 33% of the recorded cases are underweight, 22% are wasted while 45% recorded for stunting. The risk factors for stunting were noted as increased feeding during diarrhoea, short maternal stature (<150cm) and LBW (low birth weight) (<2500g). Risk factor for wasting noted treating acute watery diarrhoea with

traditional/herbal medicine. Risk factors for underweight noted short maternal stature (<150cm), LBW(<2500g) and lack of knowledge about good complementary feeding.

The finding and results from study suggest substantial adverse impact on child health (nutrition) resulting from inappropriate diet which requires urgent response from health actors investing on health system to develop the system in order to improve child health based on providing needful malnutrition services to reduce infant and child mortality rate.

This study therefore was intended to compare the nutritional status of children in Kunduz. The results of the study would be of immense help to the regional level of health service as a whole for Kunduz regional hospital. It would also influence health partners including UNICEF and WFP in adopting further strategies for intervention to improve nutrition of children in the whole region.

Conclusion:

A primary difference in approach between acute and chronic malnutrition is that there is little evidence of effective approaches to treat or reverse chronic malnutrition once children are stunted, so in contrast to the swift musicalized treatment used to treat acute cases, the reduction of chronic malnutrition needs to focus mainly on prevention.

With the reference of malnutrition services in Kunduz regional hospital, the obstacles factors are still existing in the area and subsequently causing malnutrition. Most of the involved factors are relevant to social and behavioural determinant of health, however, some dietary practices were significantly associated with malnutrition. Additionally, systematic defects circulating factor affecting nutrition status of the children.

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ABBREVIATIONS:

AMICS----------Afghan Multi Indicators Cluster Survey

NNS----------National Nutrition Survey

NDSP----------National Development Strategic Plan

HSP----------Health Sector Policy

NPP----------National Priority Policy

MNCH----------Mother, Neonatal and Child Health

AGE----------Anti Government Element

NGO----------None Government Organization

UNICEF----------United Nations International Children's Emergency Fund

SBCC----------Social and Behavior Change and Communication

CHW----------Community Health Worker

W/A----------Weight for Age

W/H----------Weight for Height

MAM----------Moderate Acute Malnutrition

SAM----------Sever Acute Malnutrition

CMAM----------Community-based Management of Acute malnutrition

FBF----------Fortified Blended Food

MUAC----------Mid-Upper Arm Circumference

RUTF----------Ready-to-Use Therapeutic Food

BPHS----------Basic Package of Health Services

HMIS----------Health Management Information System

MoPH----------Ministry of Public Health

WHO----------World Health Organization

OPD----------Out Patient Department

PEM----------Protein Energy Malnutrition

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CHAPTER I

Overview

Of

Malnutrition

CHAPTER 1

OVERVIEW OF MALNUTRITION

1.1. WHAT IS MALNUTRITION:

Malnutrition is a board term that can be used to desire any imbalance in nutrition from over-nutrition often seen in the developed countries to under-nutrition seen in many developing countries [39], but also in hospitalized and residential care facilities in developed nations. Malnutrition can develop as a consequences of deficiency in dietary intake, increased requirements associated with a disease state from complications of underlying illness such as poor absorption and excessive nutrients losses, or from a combination of these aforementioned factors [40]. Malnutrition is associated with negative outcomes for patients including higher infection and complications rates [41, 43], increased muscles lose [43, 44], impaired wound healing [42, 45[, longer lengths of hospital stay [47, 48] and increased morbidity and mortality [49].

1.2. INTRODUCTION:

Nutrition is the sum total of the processes involved in the intake and utilization of food substances by living organisms, including ingestion, digestion, absorption, transport and metabolism of nutrients found in food [46]. Adequate nutrition during early childhood is fundamental to the development of each child's potential. It is established that the period from birth to two years of age is a "critical window" for the promotion of optimal growth, health and overall survival of children. Good food is important for good health. Children who are well fed during the first two years of life are more likely to stay healthy for the rest of their childhood [3]. During the first six months of a child's life, breast milk alone is the ideal food. It contains all the nutrients needed for healthy growth as well as immune factors that protect against common childhood infections. Good nutrition is the cornerstone for survival, health and development for current and succeeding generations. Well-nourished children perform better in school, grow into healthy adults and in turn give their children a better start in life (UNICEF, 2006). The United Nations Children's Fund (UNICEF) and the Ministry of Public Health (MoPH), recommend exclusive breastfeeding for the first six months of the infant's life [1]. Children between the ages of six months and four years who do not get enough of the right types of food to eat easily become malnourished.

According to UNICEF (2006), each year under-nutrition contributes to the deaths of about 5.6 million children under- 5 in the developing world and 146 million children younger than 5 are underweight and at increased risk of early death, illness, disability, and underachievement. UNICEF reports that, in the least developed countries, 42% of children are stunted and 36% are underweight as a result of poor nutrition or under nutrition [21,22]. The World Health Organization (WHO**)** refers to malnutrition as "Failure of cells to perform their physical functions due to inability to receive and use the energy and nutrients needed in terms of amount, mix and timeliness [1, 2, 35]. Water low and Insel (1995) described malnutrition as "Failing Health that results from long standing faulty nutrition that either fails to meet or greatly exceeds nutritional needs [53]. This description could mean inappropriateness of the food taken. Again, Harrison and Water low (1990) defined malnutrition as "The effects of any nutrient deficiency including energy, protein and micronutrients" [46]. Malnutrition can be operationally defined

as a lack of essential nutrients or failure to use available foods to best advantage. Malnutrition affects physical growth, morbidity, mortality, cognitive development, reproduction and physical work capacity and it consequently impacts on human performance, health and survival [50]. A well- nourished child is one whose weight and height measurements compare very well with the standard normal distribution of heights and weighs of healthy children of the same age and sex [51, 52].

In this perspective, malnutrition is not less food or food without the needed nutrients present. It is rather the failure of cells to perform their physiological functions due to inability to receive and use the nutrients in the right proportion. 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)Malnutrition refers to disorder resulting from an inadequate diet or failure to absorb or assimilate dietary elements. Malnutrition may involve under nutrition and include the symptoms of deficiency diseases or it may be due to over nutrition arising from excessive intake of nutrients. In the case of children under two years they suffer mostly from under nutrition specifically, protein-energy malnutrition [55].

Based on AMICS-2010 finding, overall 82 % Afghan children had both their weights and heights measured [35, 4]. Almost 1/3 children under age 5 in Afghanistan are moderately or severely underweight (31%). More than a half of children (55%) are moderately or severely stunted or too short for their age, and 18 % are moderately or severely wasted or too thin for their height [4, 6, 7]. The MoPH `s HMIS data for the first quarter for 2012 shows that 6.2% of children suffered from acute malnutrition [28, 29].

According to NNS 2013, Afghanistan has the highest stunting rate of under five children (40.9%), and such high stunting rate are considered " a silent emergency" and such most the targets are aged between 2 to 3 years [25, 26, 27]. Wasting and stunting generally coexist within populations, different nutrition situations described by different causes and each requires a specialized response based on the types and prevalence of malnutrition found in the country. The type and severity of malnutrition also vary within country and the response at national level which depend on the specific nutrition situation and other factors such as health system capacity, food availability, environment and resources availability.

Inappropriate or poor feeding practices of infant and young children are strongly linked with under-nutrition. Almost all Afghan babies are breastfed, but only 54% of children aged less than six months are exclusively breastfed [30, 31]. Even at the earliest ages, almost 40% of children receive liquids or foods other than breast milk which puts them at increased risk of consuming contaminated foods and water [30]. Minimum meal frequency is one indicator of appropriate infant feeding which is only 17.8% nationally with poor practice across all geographic, wealth and educational categories [28, 37]. Infant feeding practice are not only affected by poverty, but also by mother`s level of awareness and the extent to which social norms influence her decision making. Knowledge and awareness among caretakers and children, especially adolescents is important for children`s health and nutrition. The 2013 NNS showed that literacy and education level were key determinants for either men or women to be aware of health and nutrition issues. In a patriarchal society where men make many decisions affecting

the wellbeing of women and children, this is a matter of serious concern. Nutrition status of children highly correlated with the nutrition status of mothers. There is vicious cycle of malnourished mothers having small babies who grow up to become stunted mothers. In societies where women lack empowerment and children suffer from poor nutrition status, this has a direct impact on child nutrition and IQ of the next generation.

Although, there was some improvement in health outcome indicators over the past decade, but the health system still faces a number of challenges. There is no dedicated in service training or trained health care providers who can offer counselling on maternal and child nutrition or assess under-nutrition. As a result, rates of stunting, acute and chronic malnutrition are underestimated and receive much less focus than they should. Detailed causality analysis indicates clearly that, not only do investment in the health and nutrition sector need to be sustained and expanded, but also the best and most cost-effective result will come from a comprehensive multi-sectorial approach involving all the tools available in the pursuit of human development. Additionally, the obstacles related to social and behaviour determinant of health are constant in Kunduz and subsequently affecting health status of children.

Children who are malnourished are much more susceptible to life-threatening diseases such as malaria, pneumonia and diarrhoea infections. Complications from malnutrition are:

- Anaemia in children
- Convulsions
- Poor mental or cognitive development
- Stunting [10, 36]

1.3.PROBLEM STATEMENT:

During the last five years the MoPH made major strides in decreasing maternal and under-five mortality in Afghanistan [4, 7, 25, 26], but there are widespread inequities in all indicators such as at national level full immunization rate is 30%, the delivery attendant rate by skilled birth is 39% [6, 7, 26, 27]. The gain in maternal and child health are greatly contributed to by the political commitment of the Government resulting in a strong focus on maternal and child health in all key policy and strategic documents including Afghan NDSP (National Development Strategic Plan), HSP (Health Sector Policy) and NPP (National Priority Programmes).

These directions increased the coverage of health service delivery resulting in increased MNCH intervention. However due to contracted out model of health service delivery through BPHS (Basic Package of Health Services) to NGOs and in absence of strong accountability system, the service delivery is mainly curative and urban focused (accessible to 57% population) and out of pocket expenses are high (75%). Presence of Anti-Government Elements (AGE), insecurity and conflict affected areas remain a challenges in service provision. In addition weak governance particularly in the areas of policy analysis, strategic planning, health human resources planning shortages of qualified nurses, midwives and other

female health workers in the country, rural-disparities in the distribution of human resources are a great challenges in improving the coverage of maternal and child health services [4, 7, 25].

1.4.RATIONAL:

1.4.1. NUTRITION-CURRENT SITUATION AND KEY ISSUES:

Nutrition is both an immediate and an underlying cause of maternal and under 5 mortalities in Afghanistan. Under-nutrition contribute to 45% of under 5 deaths globally in the form of foetal growth restriction, sub-optimum breastfeeding, stunting, wasting and deficiencies of vitamin A and Zinc [6, 25, 26, 39].

In the context of these guidelines, the term of malnutrition relates exclusively to under nutrition which may be defined as a lack of the minimum amount of proteins, carbohydrates, lipids, vitamins, minerals and other nutrients essential for health and proper growth. It also may result from an inadequate food intake or a disease process resulting in an imbalance or malabsorption of nutrients or increased nutrient requirements/ losses.

1.4.2. CAUSES OF MALNUTRITION:

Malnutrition is a disease which is causes by the interaction of many factors. The UNICEF conceptual framework for malnutrition provides a way to understand how these causes are related to each other. The causes are divided to immediate, underlying and basic causes. The way in which these factors interact with each other is different for each country, for communities within each country and even for individuals within each community. Mostly the immediate causes resulting under 5 mortality, so it desires to mention some point about it [39].

1.4.2.1.IMMEDIATE CAUSES:

It has been divided into two parts:

1.4.2.1.1. INADEQUATE FOOD INTAKE:

It refers to both the quantity and quality of food required to provide adequate amounts of nutrients for health and growth. A poor intake of food may adversely affect the individual by disturbing biochemical processes which causes a decrease in organ function and can affects every organ in the body. The reduced function of body systems may lead to the onset or worsening of other disease conditions.

1.4.2.1.2. PRESENCE OF INFECTION:

It directly increase the nutritional requirements of the body because fever elevates body temperature and the rate of utilization of nutrients increases. Vomiting and diarrhoea may adversely affect the absorption and utilization of nutrients intake because the food does not pass through the gut in the usual way which may lead to an inadequate nutrient availability to the body.

1.4.3. CAUSES AND CONSEQUENCES OF ACUTE AND CHRONIC MALNUTRITION:

Malnutrition refers to deficiencies, excesses or imbalances of energy or nutrient in a person which may resulted from inadequate or less intake or much loss. The term of malnutrition addresses 3 broad groups of conditions:

Under nutrition, which include wasting (low weight-for height), stunting (height for age) and underweight (weight for age).

Micronutrient related malnutrition, which includes micronutrient deficiencies (a lack of important vitamins and minerals) or micronutrient excess.

Overweight and obesity which are linked to diet-related and none communicable disease (such as diabetes).

The causes of each condition helps to explain the current specialization.

Acute malnutrition often results from an immediate problem, a crisis induced by illness or deprivation due to seasonal shortages, sudden catastrophes or other such seasons.

Chronic malnutrition by contrast is more closely associated with latent poverty, chronic food insecurity, poor feeding practices and protracted health problem.

The consequences of each condition are also quite difference.

Acute malnutrition is accompanied by a high risk of mortality, 14.6% of all child deaths are attributed to acute malnutrition and unless provided with appropriate treatment.

Chronic malnutrition is also a key underlying factor of child morality but is less likely to be the direct cause of death. However, chronic malnutrition is early childhood has long-lasting consequences on a wide array of other outcomes such as educability, future work capacity, income-earning ability and susceptibility to chronic disease, all of which profound effects on individual and social development. [3, 5, 7, 8, 9]

1.4.4. INTERVENTION MODULE:

The different manifestation of malnutrition (chronic & acute) have led to academic and programmatic specialization. Good program models exist to address each of these conditions, but few programs are designed to cover both chronic and acute malnutrition. Yet the nutrition situation in the field especially

in Kunduz city is characterized by considerable overlap of chronic and acute malnutrition within regions, communities and households.

To comprehensively address malnutrition, programs thus need to blend available knowledge and combine multiple approaches, an important area for nutrition delivery science is how to design and implement programs that bridge this diversity. The purpose of this paper is to describe the tools, approaches, actors engaged in the different responses, stressing the sources of differences and challenges to convergence and finally to suggest where potential for linkages exist and identify areas where research on the delivery of nutrition actions can extend field program`s ability to offer more integrated services. The quantitative research designed based on cross-sectional principal. In order to follow the principals step by step, the consent letter of close supervision has been signed by my supervisor to review, guide and provide correction if needed. Meanwhile the second consent letter has been signed by Kunduz regional hospital director in order to allow me to complete my research in Kunduz regional hospital and use all needed tools. This study designed in order to encourage and sensitize mothers and child caretakers to:

- Learn the proper and regular breast feeding and its benefits.
- To know and use semi solid foods beside the breast milk which can be stated after age of 6 months.
- To learn about that complementary foods can be prepared from locally available cheap and affordable foodstuffs with high nutrient value.

The foods should be representative of Grow, Go and Glow foods in appropriate quantities.

In addition the families should be sensitize about what should added or reduced from diet so as to make it balanced. This will help curb the disease burden by improving the diet, nutrition and eventually the immunity. [3, 5, 10, 11, 19]

1.5.RESEARCH QUESTIONS/ HYPOTHESIS

Improvement of malnutrition services in Kunduz regional hospital and increase knowledge of mother & child caretakers based on preparation and frequency of proper diet in order to prevent malnutrition.

- What type of malnutrition services is available in Kunduz regional hospital in order to support malnourished children?
- What mothers and child caretakers know about complementary food provision?

1.6.OBJECTIVES:

1.6.1. PRIMARY OR GENERAL OBJECTIVE:

To determine and assess factors cause malnutrition in Kunduz city in order to maintain balanced diet to prevent malnutrition.

1.6.2. SECONDARY OR SPECIFIC OBJECTIVES:

- To identify source of factors influence child health.
- To assess knowledge of mothers and child caretakers about balanced diet.
- To assess, attitude and practice about the importance of complementary feeding, preparation, frequency and types of foods so as to maintain a good nutrition status for their children.

CHAPTER II

REVIEW

OF

LITERATURE

CHAPTER 2

REVIEW OF LITERATURE

2.1. INTRODUCTION:

The study sought to compare the nutritional status of children under-two years in two communities. The literature was reviewed based on the objectives of the study.

Adequate nutrition is essential during childhood to ensure healthy growth, proper organ formation and function, a strong immune system, and neurological and cognitive development nutritional status has a major impact on children's survival mainly due to the synergistic relationships between malnutrition and diseases. The two main anthropometric indicators used to define malnutrition– stunting, and wasting or thinness– represent different histories of nutritional insult to the child. Almost 31% of under 5 Afghan children are under weight, about 55% are severely stunted as they are too short of their age and 13% of children are severely wasted thin of their height. There is a silence emergency in Afghanistan as over 40% of under five children affected by sever acute malnutrition. Almost 54% of children aged less than six months are exclusively breastfed and 40% of children receive liquid or foods other than breast milk, which puts them at increased risk of consuming contaminated foods and water. The link between acute malnutrition and mortality has placed the design of solutions largely within the medical profession and implementation within humanitarian organizations (and more recently within development organizations and government health systems) staffed by medically trained persons. This proximity with the medical profession has facilitated the establishment of acute malnutrition services within MoPH at various levels from policy making, national guidelines to provide training for delivery of services at clinical and community sites and to referral systems that link health centres and community health posts to hospitals. To focus on changing long-standing determinants of the condition in order to prevent the problem from happening in the first place. Malnutrition generally include multi-sectorial actions aimed at promoting the adoption of practices to improve the quality of local diets, improving child feeding practices, and reducing exposure to illnesses. The more protracted nature of chronic malnutrition has led to 2 primary program approaches that complement each other:

Vertical programs (food fortification programs, or micronutrient supplementation programs, at times carried out in the context of national immunization days), MoPH are the dominant players for vertical programs

Horizontal programs (often community-based programs attempting to address the complex set of factors that cause stunting), NGOs often play leading roles in horizontal programs, with active linkages to ministries at the regional or local levels through support to CHW in integrated management of childhood illnesses programs, community mobilization for participants in national immunization days, or SBCC to create demand for services.

Infant feeding practices are not only affected by poverty, but also by mother`s level of awareness among caretakers and extent to which social norms influence her decision making. Knowledge and awareness among caretakers and children especially adolescence is important for children`s health and nutrition. According to 2013 NNS finding and analysis, literacy and education level were key determinants for either men or women to be aware of health and nutrition issues. There is dedicated in services training or trained health care providers whom can offer counselling on maternal and child nutrition or assess under-nutrition.

The study focused on both acute and chronic malnutrition, primarily would deal with acute malnutrition in order to avert child mortality which requires swift action to treat an immediate condition. This solution designed to be covered largely within the medical profession and humanitarian services providers such as organizations and government health system staffed by medically trained persons. Meanwhile secondly this study will contribute to find out and fill up the gaps causing chronic malnutrition, in addition it would develop child health under five and reduce their mortality. [4, 6, 7, 25, 26, 27, 34]

2.2. CULTURAL FACTORS:

Food consumption in developing countries is still strongly influenced by complex socio- cultural factors affecting food behaviour, including customary systems of food sharing within the family, cultural attitudes towards various foods, food preparation methods and child rearing practices. Qualitative evidence indicates that position as the head of a household and income-earning members receive preference in food sharing and take the best part of the food. In some traditional societies it is common for the youngest and weakest children to be at a further disadvantage in family food sharing.

A result of study in Kunduz showed that there were no firm rules to the frequency of feeding children on complimentary foods. Mothers and caregivers are often of the opinion that children should be fed as many times as the child wants while others maintain that it should be four times daily.

Each region or country has developed its own local diet over many years. Diets have evolved based on available foods which in turn depend on climate, geography, agricultural patterns, as well as social factors such as religion, culture, class, and lifestyle. Each diet contains a balance of essential nutrients.

A well-balanced diet which includes a variety of food will provide all the vitamins and minerals required for the efficient functioning of the body. It is only when diet becomes restricted in illness or because of food shortages or poor choice of foods that shortages of essential vitamins and minerals will occur (Beaver et al, 2002).

2.3. SOCIO-ECONOMIC STATUS:

A high socio-economic standing of a house-hold will determine the nutritional status of a child. The level of income is by far the greatest single cause of variability in food intake although income is not the only measure of poverty. Many other social and environmental factors contribute to malnutrition and are closely linked to the poverty levels of individuals and countries.

In developing countries income from home-produced food and payment received in kind are generally more important than cash income in the determination of food availability in a household in a rural community, however, food availability is determined primarily by cash income.

Meals in most northern communities of Afghanistan are known to be either monotonous with hardly any variety or are low in terms of protein and micronutrient contents. The nutritional status of a person depends largely on the quantity and quality of food available on the market, purchasing power of the household that would determine the accessibility to food and the distribution of food within the household. Although food intake influences the nutritional status of an individual to a great extent it is not the only critical factor responsible for malnutrition particularly in the case of children under five years of age. Living standards, water and sanitation, birth weight, birth interval, parity, sex of child, weaning practices and mothers certification are a few of the important contributory factors which have been identified from research stages carried out on the subject in the recent past, However, dietary inadequacy is certainly the basic cause of malnutrition in pre-school children and many of the above identified factors directly or indirectly contribute to the incidence of malnutrition. [1, 4, 23, 32, 33]

2.4 Diseases and infections:

Under-nourished children often come from poor families, with crowded houses and poor hygiene, so they are exposed to more infections. Micro-organisms are more likely to get into the child's body and multiply in it. The immune system is less able to fight infection in an under nourished child than it is in a healthy child, revealed that exclusive breastfeeding provides protection against mild upper respiratory tract infections, inflammation of the middle ear, urinary tract infections, bone and joint infections and diarrhoeal illness [54]. Malnutrition is a multisystem disorder when severe, immunity is impaired, wound healing is delayed and operative morbidity and mortality increased [50]. Malnutrition worsens the outcome of illness, example; malnourished children are susceptible to diseases and more apathetic. These behavioural abnormalities are rapidly reversed with proper feeding, but prolonged and profound malnutrition probably does cause some permanent delay in intellectual development [12, 13, 32, 33]. The WHO expressed concern about the vast numbers of infants and young children who are still inappropriately fed and whose nutritional status, growth and development; health and survival are thereby compromised. As much as 55% of infants who die from diarrhoeal diseases and acute respiratory infections may be the result of inappropriate feeding practices.

Usually during sickness such as malaria, measles and diarrhoea the child loses appetite. Therefore, inadequate food intake due to loss of appetite and poor absorption of the food eaten are the reasons why children who fall sick often do not grow well. Undernourished children have lowered resistance to infection; they are more likely to die from common childhood ailments like diarrhoeal diseases and respiratory infections, and for those who survive, frequent illness saps their nutritional status, locking them into a vicious cycle of recurring sickness and faltering growth [36, 37, 38]. Their plight is largely

invisible: three quarters of the children who die from causes related to malnutrition were only mildly or moderately undernourished, showing no outward sign of their vulnerability (UNICEF, 2006).

2.5 Mother's Knowledge in child nutrition:

A comparative assessment of a nutritional education in growth programme in India showed that counselling of mothers on feeding practices showed improved feeding practices even in areas where females are discriminated against (Ghosh et al, 2002).

A cross-sectional study was conducted in Kunduz regional hospital in order to document the prevalence and risk factors for malnutrition in children aged 0-5 years.

Malnutrition was associated with a mother's lack of resources such as water and inappropriate staple diet. Education and income were significant variables.

In 1979 the World Health Organization and the United Nations Children's Fund (UNICEF) recommended an exclusive breastfeeding (EBF) period of 4-6 months [24], however a WHO expert committee in 2001, upon assessing the extent of EBF concluded that for optimal nutritional status of a child, an EBF period of 6 months must be adhered to. The first six months of life are extremely important as the brain may suffer for the rest of life if the child does not get enough good food. At age six months of the child, breastfeeding should be complemented with appropriate solid foods. By this age, the gastro-intestinal functions are adequate to deal with the weaning foods while the kidneys can easily handle the solute load especially under conditions of low fluid intake. [14, 15, 16, 36].

The study on feeding practices showed that the food often offered to this category of children is unfortified, plant based and bulky. These foods thus, fail to meet their needs for certain micro nutrients particularly, iron, zinc, calcium and vitamins.

2.6. Nutritional Status:

Additionally, the nutritional status studied and summarized as below:

Table 2.1: Nutritional status 2017-2018

	Underweight	Stunting	Wasting
FEB 17	26 %	47 %	26 %
FEB 18	31 %	43 %	26 %
MAR 17	25 %	51 %	24 %
MAR 18	35 %	43 %	22 %
APR 17	31 %	43 %	26 %
APR 18	33 %	48 %	19 %
MAY 17	23 %	52 %	25 %
MAY 18	32 %	47 %	21 %

Source: Field data 2017-2018

This was attributed to inappropriate feeding practices. They concluded that to address childhood malnutrition, there should be an improvement of complementary feeding.

Table 2.2: Waterlow`s classification based on weight and height.

W/H / H/A	>M-2SD	<M-2SD
>M-2SD	Normal	Wasted
<M-2SD	Stunted	Wasted and Stunted

CHAPTER III

METHODOLOGY AND STUDY DESIGN

CHAPTER 3

3.1. METHODOLOGY AND STUDY DESIGN (CROSS SECTIONAL):

In medical research, a cross-sectional study also known as a transversal study or prevalence study, it is a type of observational study that analyses data collected from a population. Principally cross sectional study aimed to find out the prevalence of a phenomenon, problem, attitude or issue by taking a snap-shot or cross-sectional of the population. This study also measure the prevalence of disease, thus are often called prevalence studies as the measurements of exposure and effect are made at the same time. Cross-sectional studies also involves data collected at a defined time. They are often used to assess the prevalence of acute or chronic conditions in order to answer question about the causes of disease or the results of intervention. The use of routinely collected data allow large cross-sectional studies to be made at little or no expense and this is a major advantage over other forms of epidemiological study. Data from cross-sectional studies are helpful in assessing the health care needs of population. In addition as a natural of progression, it has been suggested that this cheap cross-sectional studies is more effective to routinely collect data which suggest hypotheses to case control studies in order testing them more specifically then to cohort studies and trials which cost much more and take much longer but may give stronger evidence. Data from repeated cross-sectional surveys using independent random samples with standardized definitions and surveys with clear purpose and this methods provides useful indications of trends.

As mentioned earlier, cross-sectional studies are relatively easy and inexpensive to conduct and are useful for investigating exposure that are fixed characteristics of individuals such as ethnicity or blood group. In sudden outbreaks of disease a cross-sectional study measures several exposures can be the most convenient first step to investigate the cause.

Most of the countries are conducting regular cross-sectional surveys in order to represent samples of their population focusing on personal, demographic, characteristics, illnesses and health-related habits. In addition the frequency of disease and risk factors can be examined in relation to age, sex and ethnicity through cross-sectional studies as this research designed based on cross-sectional study in order to determine proportion of acute and chronic malnutrition in Kunduz regional hospital. The expected duration is 4 months, the secondary data obtained for the first 4 months of 2016 while the primary data collected for the first 4 months of 2017.

3.2. SAMPLE SIZE AND SAMPLING TECHNIQUE:

Simple random sampling was used to select a community with the intervention and a community without the food program intervention. In duration of 4 months random sampling was used to select 224 mother-child pairs. The ages of the children recruited ranged between 6 and 56 months. All mother-child pairs who fell within this range were selected and informed about the anthropometric measures to be taken.

Table: 3.1 Sample size calculation

Sample Size Calculation For Malnutrition Proportion Survey 2018					Target Sample for Each month
No	Month	Male	Female	Total	
1	FEB	58	79	137	60
2	MAR	52	61	113	50
3	APR	46	77	123	54
4	MAY	61	74	135	59
Total		**217**	**291**	**508**	**224**

Table: 3.2 sample size calculation based on Slovin`s formula

Sample Size Calculation Based on Slovin's Formula	
Total Number (N)	508
Margin of Error (e)	0,05
Target Sample (n)	n=N/(1+Ne2)
e2	0,0025
Ne2	1,27
1+Ne2	2,27
Target Sample	**224**

3.3. DATA COLLECTION:

Data extracted from Kunduz regional hospital`s HMIS.

Registration books from polyclinic (OPD) cross checked.

Data extracted from monthly statistics forms from malnutrition ward.

Families with malnourished child whom reach the hospital interviewed.

(See annexes)

3.4. DATA ANALYSIS:

The collected data (Cross-sectional) intend at assessing the quantity of acute and chronic malnutrition in Kunduz regional hospital. The HMIS reports, registration books in OPD and monthly statistics report forms from the mentioned hospital used as a tool.

Table: 3.3 Data analysis 2017

	Acute per age			Chronic per age			M acute	F acute	Total Acute	M Chronic	F chronic	Total Chronic	Total cases	% of acute	% of chronic
	< 6 Ms	6-23 Ms	24-59 Ms	< 6 Ms	6-23 Ms	24-59 Ms									
Feb	13	17	1	17	54	42	16	15	31	49	64	113	144	20%	30%
Mar	15	13	0	11	44	26	16	12	28	30	51	81	109	18%	22%
Apr	21	29	1	13	40	27	36	15	51	26	55	81	132	33%	22%
May	21	25	0	20	43	33	25	21	46	37	59	96	142	29%	26%
TOTAL	**70**	**84**	**2**	**61**	**181**	**128**	**93**	**63**	**156**	**142**	**229**	**371**	**527**	**100%**	**100%**

SOURCE: SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017

Table: 3.4 Data analysis 2018

	Acute			Chronic			M acute	F acute	Total Acute	M Chronic	F chronic	Total Chronic	Total cases	% of acute	% of chronic
	< 6 Ms	6-23 Ms	24-59 Ms	< 6 Ms	6-23 Ms	24-59 Ms									
Feb	9	16	1	15	52	44	14	12	26	44	67	111	137	19%	32%
Mar	7	16	3	18	49	20	19	7	26	33	54	87	113	18%	24%
Apr	22	21	0	11	45	23	21	22	43	32	47	79	122	30%	22%
May	9	35	2	15	43	19	29	19	48	32	45	77	125	33%	22%
TOTAL	**47**	**88**	**6**	**59**	**189**	**106**	**83**	**60**	**143**	**141**	**213**	**354**	**497**	**100%**	**100%**

SOURCE: SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2018

3.5. STUDY POPULATION:

Mother and child pairs in Kunduz city formed the study population representing the selected communities. A mother with a child 6m to 5 years who has lived in the community, considered eligible to be enrolled for the study.

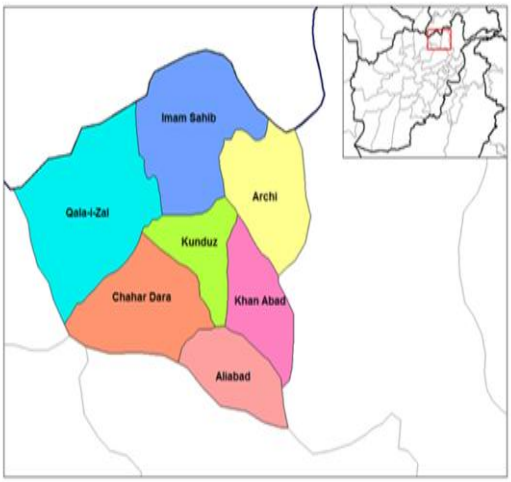
3.6. PURPOSE OF STUDY:

The main purpose of study is to determine proportion of acute and chronic malnutrition among malnourished children (under five) reaching Kunduz regional hospital in order to receive malnutrition services. Meanwhile the study designed to address all those obstacles preventing providing proper diet or nutrition supplies and causing malnutrition.

3.7. STUDY AREA:

Kunduz is one of the 34 provinces of Afghanistan, it is located in the northeast part of the country next to Tajikistan. The population of the province is around 953, 800, which is multi-ethnic and mostly a tribal society.

The Kunduz city has 304600 living community. Kunduz it the 5 largest province of Afghanistan. Kunduz is connected by highways with Mazar-Sharif to the west, Baghlan to the south, Tajikistan to the north and Takhar to the east.



3.7. HEALTH INFRASTRUCTURE:

The study took place in Kunduz regional hospital located in Kunduz city, the hospital has been designed with 250 beds to cover northeast provinces (Kunduz, Baghlan, Takhar and Badakhshan). Kunduz regional hospital is located in the centre of the city, it provides both primary and secondary health services. The hospital is supporting by the EPHS MoPH project with additional supports from NOGs. The hospital has144 medical professional (53 doctors, 91 nurses and technician).

CHAPTER IV

RESULT

AND DISCUSSION

CHAPTER 4

4.1. RESULT AND DISCUSSIONS:

During the study, obstacles factors identified such as in security, poverty, distance, access to health facilities, lack of professional health workers, unappropriated diet, lack of information on breast feeding, lack of education, lack of knowledge about importance of proper diet, road blockages due to conflict, displacement of the families during conflict, cultural barriers such as women are not allow to go to the health facility without male member of the family. Meanwhile it was found that majority of families using high calorific diet which included cereals, but greatly lacking in vitamins and proteins.

From the health system, the low salary scales, lack of space inside the ward, insecure environment, lack of nutrition supplies and security stress are logic noted points.

Therefore, an investigation took place in Kunduz regional hospital in order to collect and analyze data for the at least 6 months to find out the major gaps and reasons caused malnutrition from age 6 months to 5 years.

Based on finding the below figures describe that mostly children aged 2 years more affected than other categories of children which is a result of irregular breast feeding, foods highly lack of protein and following the cultural thoughts.

Additionally, considering the seasons, the major cases took place in spring, which can be the consequences of vomiting, diarrhea and dehydration.

Table: 4.1 data analysis 2018

	Acute			Chronic			M	F	Total	M	F	Total	Total	% of	% of
	< 6 Ms	6-23 Ms	24-59 Ms	< 6 Ms	6-23 Ms	24-59 Ms	acute	acute	Acute	Chronic	chronic	Chronic	cases	acute	chronic
Feb	9	16	1	15	52	44	14	12	26	44	67	111	137	19%	32%
Mar	7	16	3	18	49	20	19	7	26	33	54	87	113	18%	24%
Apr	22	21	0	11	45	23	21	22	43	32	47	79	122	30%	22%
May	9	35	2	15	43	19	29	19	48	32	45	77	125	33%	22%
TOTAL	47	88	6	59	189	106	83	60	143	141	213	354	497	100%	100%

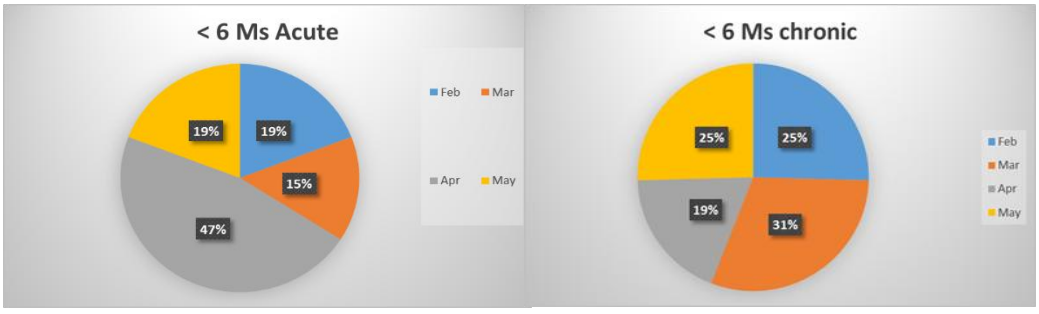
SOURCE: SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2018

The collected data extracted from Kunduz regional hospital HMiS, OPD and from monthly statistics from the malnutrition ward. The data categorized based on gender, age and proportion. From the total collected primary data (Feb to May 2017), 143 for acute and 354 cases recorded for the chronic malnutrition. From the total cases 40 % recorded for acute and 60% for chronic cases.

From the 143 acute cases, 41% cases recorded for the female children and 59% for the male children. Based on finding, the results shows that the frequency of the acute cases are more in male children, while from the given 354 chronic cases, 40% are male and 60% are female children. As a conclusion and according to recorded statistics, more acute cases recorded for the male children and chronic cases for the female, which shows that families pay more attention to the male children and in case of any sing of malnutrition they refer them immediately to the hospital but they ignore this effort for the female children which leads to increase chronic cases among the female children.

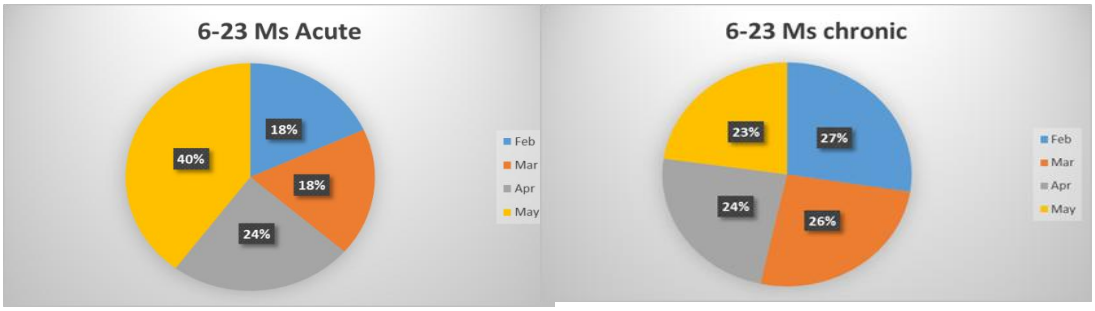
Additionally the collected data categorized based on ages which shows the most affected children are age 6 months to 2 years.

Figure: 4.1 percentage of acute and chronic cases among children aged less than 6 months.



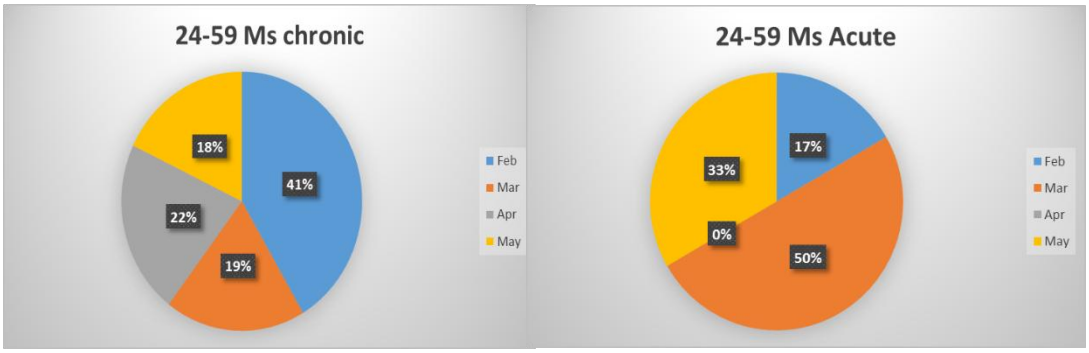
SOURCE: FIELD DATA & HMIS, OPD, IPD REGISTRATION BOOKS 2018

Figure: 4.2 percentage of acute and chronic cases among children 6 to 23ms.



SOURCE: FIELD DATA & HMIS, OPD, IPD REGISTRATION BOOKS 2018

Figure: 4.3 percentage of acute and chronic cases among children 24 to 59ms.



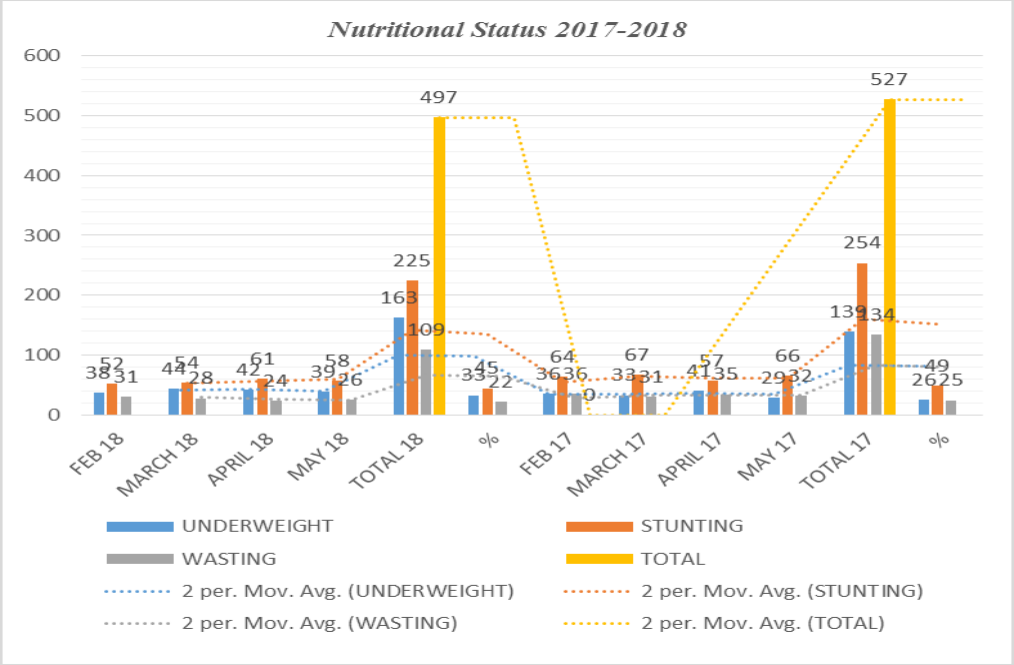
SOURCE: FIELD DATA & HMIS, OPD, IPD REGISTRATION BOOKS 2018

Table 4.2: Nutritional Status 2017-2018

	FEB 18	MARCH 18	APRIL 18	MAY 18	TOTAL 18	%	FEB 17	MARCH 17	APRIL 17	MAY 17	TOTAL 17	%
UNDERWEIGHT	38	44	42	39	163	33	36	33	41	29	139	26
STUNTING	52	54	61	58	225	45	64	67	57	66	254	49
WASTING	31	28	24	26	109	22	36	31	35	32	134	25
TOTAL					497		TOTAL				527	

SOURCE: PRIMARY FIELD DATA & SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017-2018

Figure: 4.4Nutritional Status 2017-2018



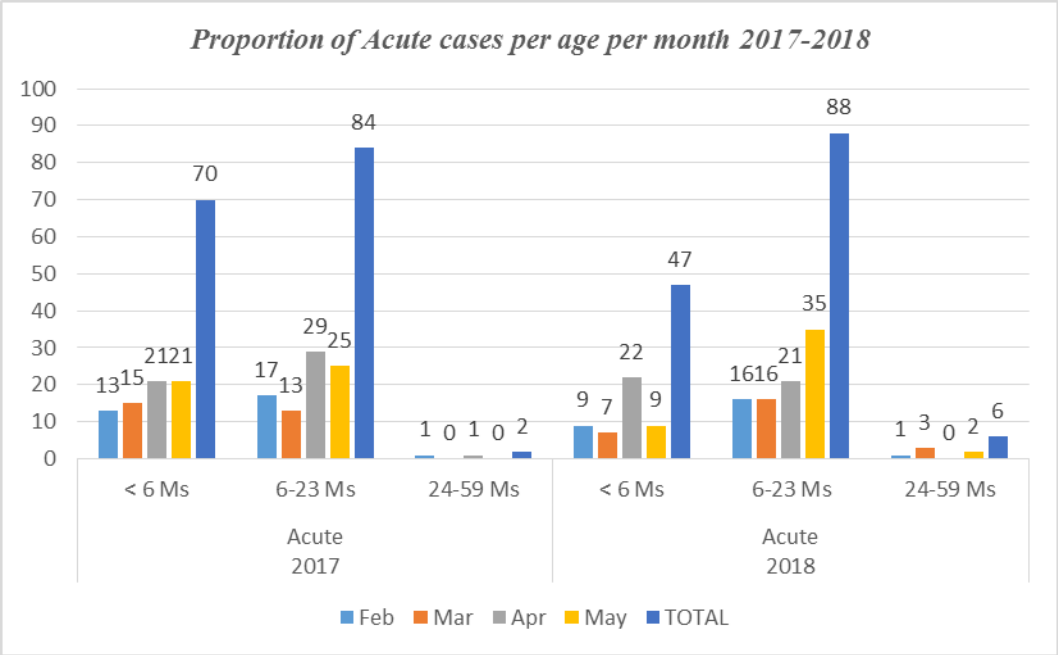
SOURCE: PRIMARY FIELD DATA & SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017-2018

Of the 224 children assessed using Waterlow's technique, 33% underweight, 45% were stunted and 22%wasted. The results confirmed that mother's educational level, age, parity; types of family and children's immunization status and age of child are some of the key determinants of the nutritional status under five. The intensification of exclusive breastfeeding, female education, compulsory food demonstration unit in all health centers, use of complementary feeds from 7 months upward, growth monitoring and promotion are some of the strategies to reduce the high prevalence of PEM in both rural and urban areas of developing countries.

Table 4.3: Waterlow`s classification based on weight and height.

W/H H/A	>M-2SD	<M-2SD
>M-2SD	Normal	Wasted
<M-2SD	Stunted	Wasted and Stunted

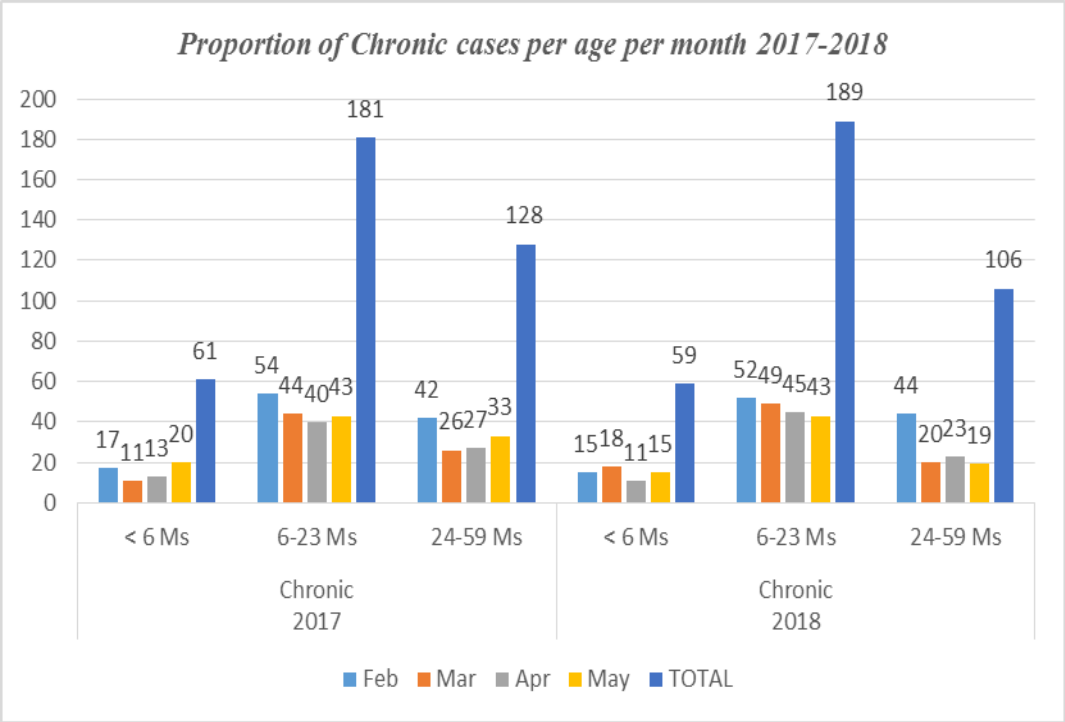
Figure: 4.5 Proportion of acute cases per age per month 2017-2018



SOURCE: PRIMARY FIELD DATA & SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017-2018

Considering ages, the most affected children are aged 6 to 23 months. Many reasons are behind this proportion. As a common consequences, the exclusive breast feeding is important factor. Most of the women in Afghanistan stop breastfeeding after six months of delivery and start feeding babies with the powder milks and fluid foods.

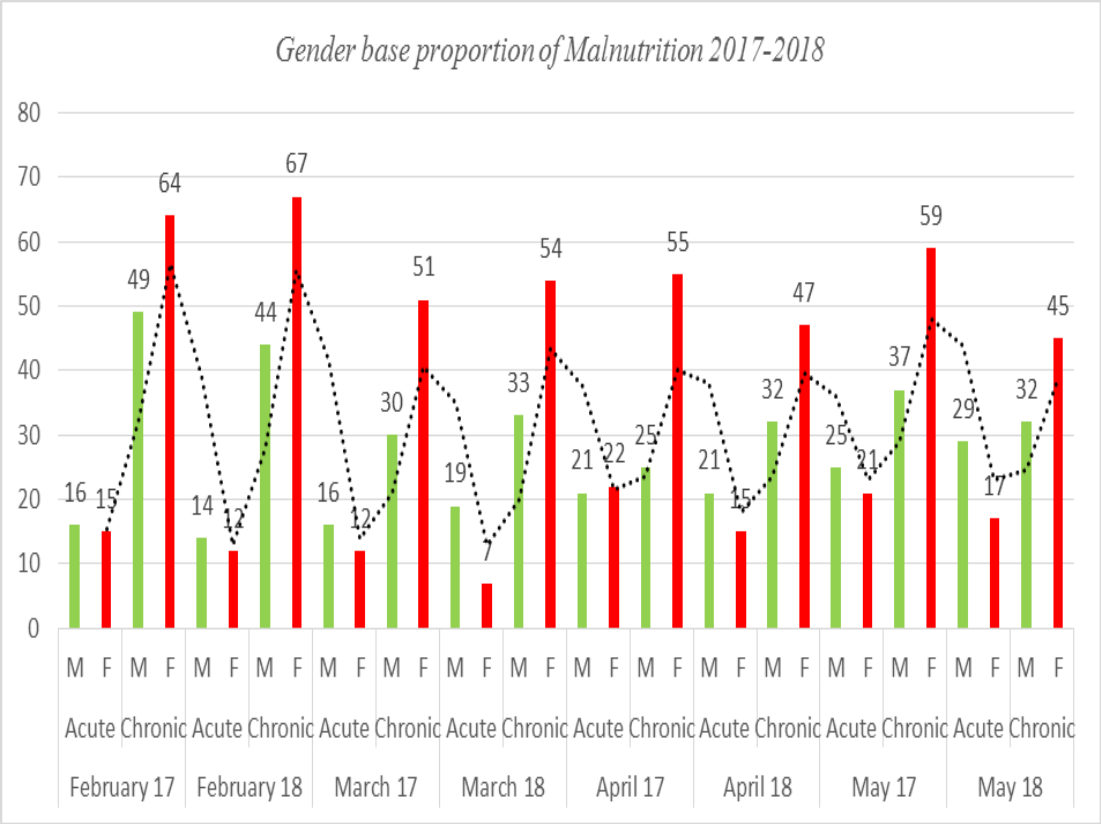
Figure: 4.6 Proportion of chronic cases per age per month 2017-2018



SOURCE: PRIMARY FIELD DATA & SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017-2018

Comparing to the acute cases, the chronic malnutrition is also seen more in age 23ms, and again it referrers to the cultural and behavioral determinants of the health in Kunduz. Culturally people tray to first treat their baby with some home remedies, rather than to refer to any health facility, but when the malnutrition or any other disease as well reach to last stage or get to the worse phase accompany with some complications, than they move toward the health facility or nearest medical personal, therefore, most of the children aged about 2 years are recorded for chronic malnutrition.

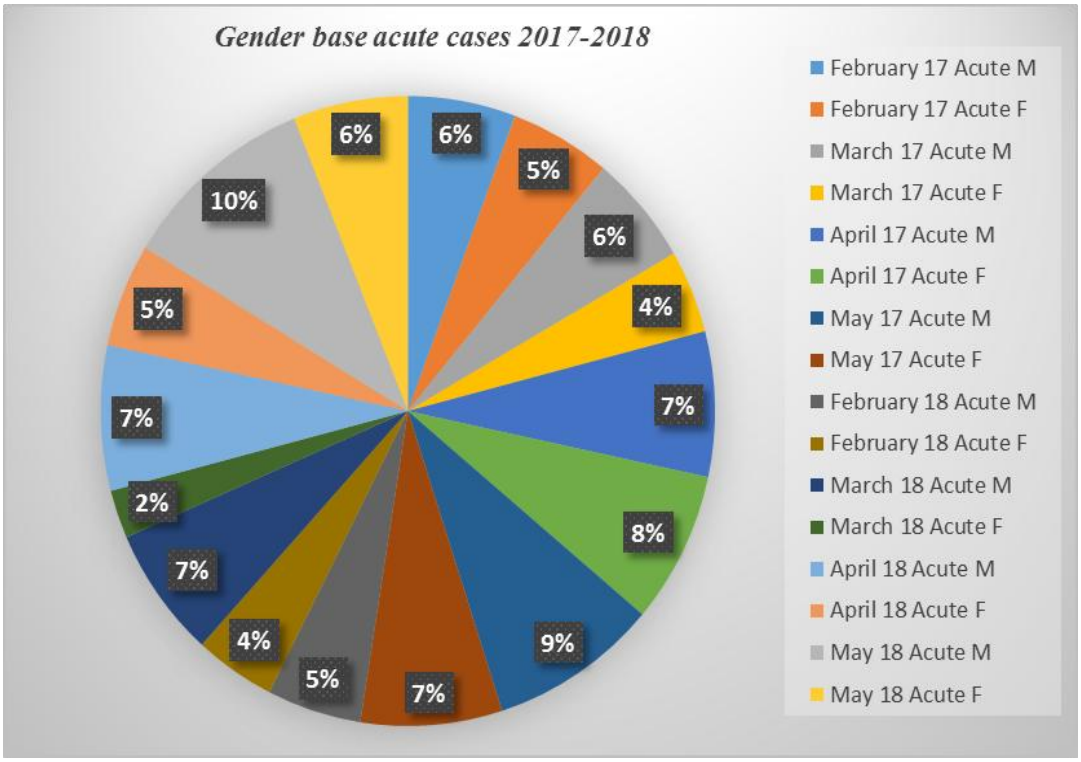
Figure: 4.7 Gender base proportion of acute and chronic cases 2017-2018



SOURCE: PRIMARY FIELD DATA & SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017-2018

To compare the cases on gender bases, it looks that male (children) have more affected acutely than the female, although somehow chronically female children are more affected. Culturally it is too common in Afghan people, that the families pay more attention on male babies in terms of feeding, treatment or growth which leads to affecting female babies with different diseases and challenges. On the other hand, based on findings it looks that there are some other obstacles and factors are involved, fore stance inadequate breast feeding, irregular feeding, latent poverty, chronic food insecurity, poor feeding practices, and protracted health problems.

Figure: 4.8 Gender base percentage of acute cases 2017-2018



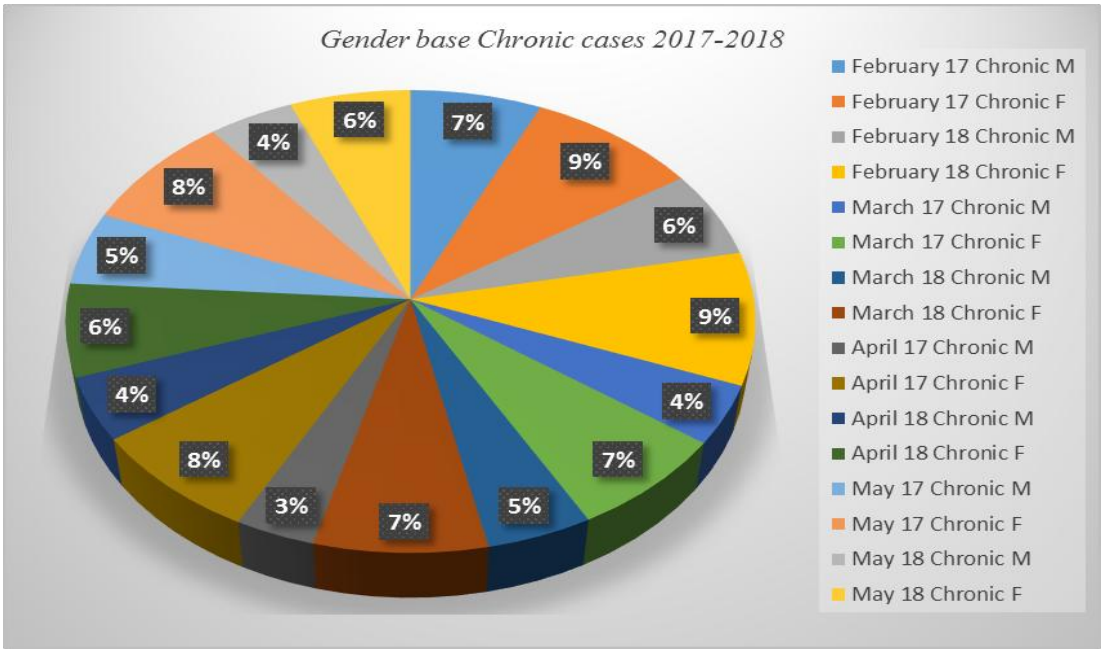
SOURCE: PRIMARY FIELD DATA & SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017-2018

Comparing the gender, most of the acute cases recorded for the male children which refers to the cultural and interest of the families to the male children to pay more attention and refer their male baby to the health facility as soon as they recognize any sign of the malnutrition.

Additionally, this subject refers to the cultural and behavioral determinants of health among Afghan people as well in Kunduz. Most of the families start their own type of treatment starting with the home remedies and herbal medicines.

On the other hand, mother`s knowledge and lack of education can play an important rules in babies nutrition, growth and life.

Figure: 4.9 Gender base percentage of chronic cases per month 2017-2018



SOURCE: PRIMARY FIELD DATA & SECONDARY DATA FROM HMIS, OPD, IPD REGISTRATION BOOKS 2017-2018

The frequency of chronic cases in the female present the cultural and socio determinant of health. Afghan families pay more attention to the male baby which can be call a discrimination, which leads to increase number of the chronic malnutrition cases especially among the female children.

4.2. CONCLUSTION/RECOMMENDATION:

Ttraditionally Kunduz people are using high calorific food with missing proteins and vitamins which resulted many malnourished cases to be admitted in the hospital for treatment. The products to be used in the treatment of acute malnutrition were confined to therapeutic milks such as F75 and F100, administered through in-patient services such as TFC. RUTF contain very little water and require no cooking. They are less susceptible to bacterial contamination and have an extended shelf life under ambient conditions, which allows them to be safely stored at home. These features have in turn allowed for the development of out-patient care services for children who present with SAM but no medical complications. Combining RUTF with antibiotic prophylaxis and anthelminthic treatment, a new kind of program emerged that dramatically expanded coverage by decentralizing some services to the community level, enabling many children to be treated at home, and increasing recuperation rates among children with SAM. [16, 17]

Efforts to address chronic malnutrition promoted the development of a different class of products meant to complement local diets and prevent malnutrition by providing nutrients that would otherwise be lacking in children's diets. FBF such as CSB and wheat-soy blends and point-of-use fortified such as micronutrient powders were shown to be effective in addressing some micronutrient deficiencies (iron) and in preventing chronic malnutrition when combined with strong SBCC and preventive health services.

The success of RUTF in the fight against acute malnutrition also led to the development of different formulations of specialized lipid-based products meant to supplement usual diets, including products designed to prevent chronic malnutrition in infants and young children. As mentioned, the advent of RUTF allowed for the emergence of new intervention models that took advantage of decentralization of management of acute malnutrition to vastly expand program outreach and coverage [15, 18]. The initial model was community therapeutic care, which focused on emergency settings, and subsequently evolved into CMAM, which incorporates the treatment of acute malnutrition in development settings and in routine health services. CMAM is now accepted as a global standard. The main components of CMAM include:

(1) Outpatient care for children 6–59 mo with SAM but without medical complications.

(2) Inpatient care for children 6–59 mo with SAM and medical complications and for children < 6 mo with acute malnutrition.

(3) The management of MAM among children (6–59 mo) community outreach, screening, and active case-finding for early detection and referral of SAM/MAM cases.

The effectiveness of CMAM relies on an enabling policy environment such as:

- Adequately trained personnel.
- An effective supply chain management system for RUTF and associated medications.
- Adequate infrastructure for screening, inpatient care, and outpatient care; effective community outreach and active case finding; follow-up and referral systems; and active community participation.

Increasingly, MoPH in several countries are managing and implementing CMAM services, often with technical and financial inputs from specialized international organizations (multilaterals such as UNICEF and NGO) that play key roles in building staff competencies and logistics capacities. By contrast, the control of chronic malnutrition in children focuses on maternal nutrition during pregnancy & lactation and on protecting the health and nutrition of the young child and mother during the first 2 y of life.

Meanwhile it is important that mothers therefore need to be educated about complementary feeding. This is where the child is breast feeding but along with breast milk, other semi solid foods are given. [18, 19, 20]

Complementary food can be prepared from locally available cheap and affordable foodstuffs with high nutrient value. The foods should be representative of the Grow, Go and Glow foods in appropriate quantities. The Grow foods have two categories:

- Plant products like beans and peas.
- Ground nuts and animal products like milk, eggs, and grasshoppers.

The Go foods are also divided into two categories:

- The fresh/wet like matooke, cassava, yams, potatoes.
- The dry like millet flour, sorghum flour, maize flour, rice and pumpkin.

Glow foods as well are of two categories that is:

- Fruits (bananas, oranges, passion fruits, and water Mellon).
- Vegetables (young pumpkin, tomatoes, avocado). [12, 14, 19]

Furthermore, health education and promotion should intensify health education activities on good nutrition and demystify food taboos that affect children adversely. Food demonstrations, using locally produced ingredients at community durbars and at child welfare clinics should be instituted for mothers to learn.

A system should be established to increase nutritional surveillance so that under nutrition would be identified early for intervention to prevent complication and improve the health status of children and the health of the nation in general.

All prescribers in the provincial and districts level should be trained in Intermittent Management of Childhood Illness (IMCI) approach to improve child health and reduce the incidence of under nutrition caused by repeated infections.

There should be channels for nutrition education of mothers and community at all contact points through Child Welfare and feeding Centers, and the use of mass media to educate the community on:

1. Exclusive Breastfeeding for 6 months and to avoid early supplements.

2. Introduction of nutritious foods (high caloric, micronutrient and protein).

3. Protecting children from infections, by measures such as immunization against common childhood diseases.

Additionally health partners such as WFP and UNICEF should adopt additional strategy in food ration and conduct trainings for health staff about how to do the screening and admission indicators for the malnutrition.

Community members and elders should organize community durbars and discuss the effects of malnutrition and its prevention.

There should also be peer education on adequate nutrition, feeding practices and disabuse the minds of people on food taboos that affect their lives.

Leaders should encourage mothers to exclusively breastfeed for six months before introducing complementary foods.

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ANNEXES

ANNEXES:

ANNEX1:

MOTHER-CHILD PAIR QUESTIONNAIRE

You are rest assured that any information will be held in confidence.
Please tick () Yes /No or explain where necessary.
Background Information
1. Child identity Number……..
2. Date of birth/age (month)……..
3. Birth weight……..
4. Birthplace……..
5. Age of mother
a. <20) b. 20-29 c. 30-39 d. 40 and above
6. How many children do have?
a. 1
b. 2
c. 3
d. 4
e. 5 and above
7. Mother's occupation
a. Petty trader
b. Apprentice
c. Teacher
d. Civil servant
e. House wife
f. Others (specify)
8. Father's occupation
a. Farmer
b. Apprentice
c. Teacher
d. Civil servant
e. Others (specify)
9. Educational level of mother
a. No schooling
b. Primary
c. Middle or secondary
e. Tertiary
10. Marital status of mother
a. Married
b. Divorced
c. Widow
d. Single
Nutritional status of the child
11. How is your child's appetite?
a. Good
b. Fair

c. Poor
d. Very good
12. What type of weaning food do you give to your child?
a. Porridge
b. Wean mix
c. Rice
d. Any food available
13. What was the weight of your child when you last weighed.
a. Below 5kg
b. 5-8kg
c. 9-12kg
d. Above 12kg
e. Others
Cultural factors affecting child nutrition
15. What are some of the foods that children are allowed to eat in your house- hold?
a. Porridge
b. Rice,
c. Eggs, meat, fish,
d. Yam, potatoes
e. All foods
16. Which are the foods that children are not allowed to eat?
a. Egg
b. Meat
c. Fish
d. All
17. State why children are not allowed to eat those types of foods.
18. Do you have any other taboos with regards to foods Yes ( ) No ( )
19. If yes state them…….
Socio-economic status of mother
20. How many times does your child eat in a day?
a. Once a day
b. Twice a day
c. Three times a day
d. Any time the child is hungry
21. Where do you get food for the child?
a. By cooking myself
b. By buying
c. From relatives
d. Others (specify)
22. Who provides money or food to be prepared?
a. Myself
b. My husband
c. Husband's relatives
d. My relatives
Mother's knowledge in child nutrition
23. What causes malnutrition?
a. Lack/inadequate food

b. Childhood sickness
c. Refusing to eat
d. Lack of time to feed child
e. Others (specify)
24. When did you start giving your complementary food?
a. 4wks-12wks
b. 13wks-23wks
c. 24wks-52wks(1year)
d. Above 1year
25. What type of food did you start with?
a. Porridge
b. Soup
c. Rice
d. Others (specify)
Disease condition of the child
28. How often does your child fall sick/
a. Once in a week
b. Twice in a week
c. Never fallen sick
d. Once in a month
29. What are the diseases he/she often suffers from?
a. Fever
b. Diarrhoea
c. Cough
d. Anemia
30. What do you do when the child falls sick?
a. Go to the clinic
b. Buy drugs from drug store
c. Consult traditionalist
Feeding practice
1; Exclusive Breastfeeding
2; Mixed feeding (complementary)
3; Exclusive Adult food.
Mother`s knowledge
1. Do you think what you were providing to your children was a balanced diet?
a. Yes
b. No
2. After nutritional education do you think it will help you to improve your diet?
a. Yes
b. No
3. What changes you will be able to bring in your diet?
4. Do you feel that now you are able to take judicious decisions related to your diet?
a. Yes
b. No
5. Do you consider yourselves that you know about different food, food groups and their proportion?
a. Yes

b. No
6. Do you know what energy is?
7. Which type of foods provides energy to our body?
8. Which type of foods builds and repairs our body tissues?
9. Which type of foods provide vitamins and minerals to protect and regulate our body function?
10. Do you feel nutritional knowledge is basic requirement for the individual?
a. Yes
b. No
11. Does nutritional knowledge help in maintaining good health?
a. Yes
b. No
12. Do you feel you can get sufficient nutritional knowledge from TV, Radio, News Papers, Magazines, relatives & friends?
a. Yes
b. No
If no:
• No knowledge of program timings.
• Do not have time to see the program / read articles.
• Missed few of the episodes.
• They are not satisfactory.
13. Do you think that imparting nutritional knowledge will help to improve nutrition and health of society?
a. Yes
b. No
If yes:
14. What method can be followed?
• Nutritional education of adults at their working place.
• Nutritional knowledge providing through TV, Radio, Newspapers & magazine.
• Nutritional education in schools.

ANNEX2:

INTERVIEW SCHEDULE

	Week 1						Week 2						Week 3						Week 4					
	Sat	Sun	Mon	Tue	Wed	Thu	Sat	Sun	Mon	Tue	Wed	Thu	Sat	Sun	Mon	Tue	Wed	Thu	Sat	Sun	Mon	Tue	Wed	Thu
Feb																								
Mar																								
Apr																								
May																								

Breakdown information:

a. 3 visits per week

b. 5 families per visit

c. 15 families per week

d. 60 families per month

e. 4 remain families on May week 1

TOTAL: Interviewed families with the malnutrition chile 244

Copy of Paper Published / consent for publication

Consent Form and Research Subject Information Sheet

ETHICAL CONSIDERATIONS

1. ETHICAL CONSIDERATION

The method that will be used for collecting information does not require any ethical consideration.

The approved version of the protocol for this study have been signed and stamped by hospital directorate and a copy submitted to the public health directorate as well in order to inform the malnutrition department. Every individual will be informed about objectives of the study in order to avoid any false expectation or any misunderstandings events.

2. LIMITATION OF THE STUDY

Based on finding from potential sources of bias in proposed study, the limitation refers to anticipate constrains impose by methods, location and situation of research. Potential sources of bias in the proposed study are present here and can show the limitation will be addressed, but still all those cannot take into account to prevent the study from being carried out. The limitation are major consideration before embarking on a study to ascertain the feasibility of accomplishment. Based well done, communication and coordination it is predictable that generally there will not be any limitation during this research but security concerns can delay data collection and interviews as the security situation in Kunduz is not stable and can be changed any time which may temporary disable the research process.

The End