THE IMPACT OF CHILD FEEDING PRACTICES ON THE NUTRITIONAL STATUS OF CHILDREN 0-24 MONTHS IN BELET HAWA DISTRICT, GEDO REGION SOMALIA

By:

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DECLARATION

I, Dr. Mohamed Abdi Farah, hereby declare that this thesis is my original work and has not been presented for a degree in any other university.

Signature.... _Mw.Abdi_ Date_ 5/9/2011_

This thesis has been submitted with our approval as university supervisors;

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Date _5/9/2011_

DEDICATION

To my mother and brother the late Ahmed Mohamed Omar who passed away during my absence to carry out this course.

Dr. Mohamed Abdi Farah

ACKNOWLEDGMENT

ABSTRACT

Despite food ration distribution, presence of feeding programmes and provision of free health care, during emergencies, malnutrition and morbidity persist and constitute a threat to child survival, growth and development in Somalia. In this regard factors responsible for affecting child health and nutritional status namely; morbidity, mortality and food consumption patterns in Belet-hawa district of Somalia, have been investigated by Food Security and Nutrition Analysis Unit (FSNAU) of Food and Agriculture Organization (FAO) and other agencies. However, none of the studies has focused on child care and the feeding practices. Accordingly, the study on the influence of feeding practices on child nutritional status was carried out in Beled-Hawa district. The study was cross sectional and descriptive in nature. The main objective of the study was to assess the effect of breastfeeding and complimentary feeding practices on the nutritional status of children aged 0-24 months in Belet Hawa District.

Multi-stage sampling technique was employed to obtain the targeted number of children. A total of 294 children aged between 0-24 months, their mothers and caregivers constituted the study group. All mothers or caregivers of participating children were interviewed. Data on socio-economic, demographic and socio-cultural factors, as well as the feeding practices on breastfeeding and complimentary feeding were collected. The nutritional status of the children was assessed by measuring child's height and weight, and presence of edema. Structured questionnaire was used as the tool to collect the data. Focus group discussions, key informant interviews and observation were used to validate the information obtained.

The study on GAM (weight for height <-2 Z scores or oedema) of 23.5% (21.1 – 26.7) and a high level (3.8%) of severe acute malnutrition, demonstrated a severe malnutrition status in

the district. This study also showed that malnutrition varied with age, where children aged 18 - 24 months were more severely malnourished compared with those aged 6 – 11 and 12 - 17 months (p < 0.05). The highest proportion of malnourished children in all nutritional indices was between ages of 18-24 months. It was found out that there was a strong association between underweight and child sex (p < 0.05), with more girls being underweight as compared with boys. However, child sex was not associated (p < 0.05) with the wasting and stunting status. The results also showed that small percentage (21%) of children who were bottle fed in Beled-hawa district were significantly associated with improved nutritional status of children (P <0.05). It was also established that children who were fed with fluids other then breast milk in the first three days of life were at risk of being malnourished compared to those who were fed with breast milk only (P < 0.05). There was significant association of frequency of feeding of children 6-24 months old with their nutritional status in this study (P < 0.05).

The relationship between breastfeeding practices and social economic/socio-demographic variables was significant (p < 0.05). Breastfeeding practices of mothers were significantly influenced (p < 0.05) by level of education of the mother, her marital status, area of residence, animal owned by the family and the age of the child. However, complementary feeding practices were not significantly associated with any of the socio-economic and socio-demographic factors.

It was concluded that the malnutrition rate (23.5%), was very high and alarming in Belet-Hawa district. The nutritional status of children was significantly positively associated with bottle feeding, and negatively influenced by pre-lacteal feeding and frequency of feeding, of children in Beled-Hawa district (P < 0.05). The breastfeeding practices of mothers were

strongly influenced by their area of residence, level of education, marital status of the mother, animal owned by the family and the age of the child. However, in this study, the socio-economic and socio-demographic factors were not associated (p > 0.05) with the complementary feeding practices of mothers.

From this study it is recommended that health and nutrition education activities be intensified targeting mothers, and other caregivers at the household level, in order to address care concerns. The main areas of focus should include promoting exclusive-breastfeeding, appropriate young child feeding, and diet diversification. To overcome the many barriers of breastfeeding and optimal complimentary feeding practices, there is a need for input from health professionals and voluntary workers, and a positive environment. As high levels of malnutrition have been seen throughout the study population, it is highly recommended that the local MCHs / local health personnel be well equipped with the knowledge and skills to manage severe malnutrition both during and outside periods of crisis.

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LIST OF ABBREVIATIONS

ACC/SCN   Administrative Committee on Coordination/ Sub-committee on
            Nutrition

CARE   Cooperative for Assistance and Relief Everywhere

FANTA   Food and Nutrition Technical Assistance

FGD   Focus group discussion

FSAU   Food Security Analysis Unit

GHC   Gedo Health Consortium

IDP   Internally Displaced People

IFE   Infant and young child feeding in Emergency

IYF   Infant and young child feeding

KPC   Knowledge Practices and coverage

NCHS   National centre for health statistics

NGO   Non-governmental Organization

PAHO   Pan American Health Organization

UNICEF   United Nations Children's Fund

UNSCN   United Nation System Standing Committee on Nutrition

USAID   United States Agency for International Development

WFP   United nation World Food Program

WHO   World Health Organization

CHAPTER ONE

1. INTRODUCTION

1.1   Background Information

About 9.2 million children under the age of five years die each year (UNUCEF, 2007), mostly from preventable causes, and mostly in poor countries (WHO, 2007). Generally the younger the children the more vulnerable they are; nearly 70% of under five deaths occur in the first year of life and 38% of under one year deaths occur in the first month of life (IFE core group, 2006). Diarrhoea and pneumonia are the most significant infections causing death, accounting for about 20% each (who, 2007). Child malnutrition is a major global public health problem. The 2008 Lancet Nutrition Series estimated that in developing countries, out of 555 million children aged 0 to five years (Black et al, 2008); 177 million or 32.0% are stunted (chronic malnutrition), 112 million or 20.2% are underweight (mixed malnutrition), 19million or 3.5% are severely wasted (acute malnutrition). Black et al, 2008 also reported maternal and child undernutrition was responsible for 35% of child deaths, and malnutrition for 11% of the total global disease burden.

The vulnerability of infants and young children to malnutrition, illness and death is heightened during emergencies. An emergency can be defined as "any situation where there is an exceptional and widespread threat to life, health and basic subsistence, which is beyond the coping mechanisms of individuals and the community" (Oxfam Humanitarian Policy, 2003).

Infant and young child feeding practices are a key determinant of vulnerability to malnutrition, disease and death. The recent Lancet series on Maternal and Child under-nutrition (Black et al, 2008) reinforced the importance of breastfeeding and complementary feeding in saving lives of children under five years of age. Breastfeeding support tops the

table of life-saving interventions, 13% of under five deaths could be saved through exclusive and continued breastfeeding until one year of age, and another 6% through appropriate complementary feeding (Jones et al, 2003). The significance of feeding practice is greatest with the youngest; where one-fifth (22%) of all neonatal deaths could be prevented by early initiation of exclusive breastfeeding (breastfeeding within the first hour) (Emond, et al. 2006). Nearly 12 million die before reaching their fifth birthday in developing countries each year (UNICEF, 1998). Those who survive may more often fall sick or grow up with mental retardations or physical disabilities. Malnutrition constitutes one of the health and well-fare problems among infants and young children in developing countries, as a result of both inadequate food intake and illness. Inadequate food intake is as a result of inadequate food available at the household level, and improper feeding practices. Poor sanitation puts young children at an increased risk of illness, in particular diarrhoeal diseases, which affect their nutritional status. Both inadequate dietary intake and poor environmental sanitation reflect underlying social and economical conditions (USAID, 1999).

The provision of interactions conducive to better health of the child is carried out by offering good childcare practices. Childcare practices including provision of physical, psychological, social and emotional needs of the growing child include: feeding (breastfeeding, and complementary feeding), sheltering, clothing, bathing, preventing diseases and attending clinic during sickness, nursing, stimulating mental development and socializing the child to its culture (Engle, 1992). Good feeding practices encompass use of appropriate food (quality, quantity and frequency) at right time, taking into account the age of the child. Too early complimentary food (before 6 months), carries the risk of increasing morbidity due to diarrhea and allergy, by introducing external challenges into the immature digestive system of the child. Too late introduction of complimentary food lead to faltering growth, decreased

immune protection and increased diarrhoeal diseases and malnutrition, when exclusive breastfeeding becomes inadequate (ACC/SCN, 2001). Science tells us that the optimal neural development in a child, which affects physical, mental and cognitive development, depends on the good nutrition, and loving stimulation the child receives during the first months and years of life. Research has also illustrated the powerful positive effect of bonding and interaction between infants, young children, their parents and caregivers on all aspect of child's survival, growth and development (UNICEF, 2000). On the other hand it has demonstrated that poor nutrition may trigger a down ward spiral for the child as malnourished infants lack the energy, appetite and curiosity to elicit their caregiver's attention and affection (UNICEF, 2000).

Malnutrition is considered to be the most vital, basic public health problem of population in the context of emergencies and humanitarian crisis (Food Security and Nutrition Analysis Unit (FSNAU, 2005). Nutritional assessment conducted by FSNAU and partners 2002 showed poor nutritional situation in Belet Hawa District. A nutrition situation survey by FSNAU in October 2002 reported a Global acute malnutrition of Weight for height less than - 2 Z-score or presence of edema in Belet Hawa town and IDP villages of about 21.5%. The study also showed that there was significant association between frequency of feeding and nutritional status (FSNAU, 2004). A study by FSAU in Beled-Hawa District has revealed that more than 98% of children were not exclusively breastfed during their first 6 months of age (FSNAU, 2004).

1.2 Statement of the problem

In Gedo and many other drought-affected regions the malnutrition and child mortality rates are reported to be severe and alarming. Nutritional survey in Gedo Region found Global

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Acute Malnutrition (weight for height of -2z score or edema) of 23.8 percent, while Severe Acute Malnutrition (weight for height <-3 Z score or edema) was 3.7 percent. Crude and under-five mortality rates of 1.04 per 10,000 persons per day and 2.46 per 10,000 persons per day, respectively, were reported (FSNAU, 2006).

Northern Gedo including Belet Hawa District had recurrent seasons of insufficient rains as well as persistence of civil insecurity. These have negatively affected all livelihoods zones of the district which predisposed the population to food insecurity and critical levels of malnutrition as reported in the nutrition surveys at Belet Hawa district (FSNAU, 2001, 2003). The results of the April 2006 nutritional assessment in Whole of Gedo region including Belet-Hawa District indicated that both global and acute malnutrition rates (23.8%) were significantly above the acceptance level of 5%. The crude mortality and infant mortality rates were also critical and alarming, triggering humanitarian interventions (FSNAU, 2006). The district was classified for the previous six years as humanitarian emergency area (Phase one in Humanitarian Phase Classification), (FSNAU, 2006). Other studies elsewhere in Somalia indicated that overwhelming number of children were introduced to foods other than breast milk before four months of age (FSNAU 2000-2006). Despite all these studies conducted to assess the nutritional status and morbidity of children in Belet Hawa District, study on the level and adequacy of child feeding conducted. It is therefore necessary to investigate on how feeding practices contribute to the already serious malnutrition rates, which is the main concern of this research. Studies done elsewhere established child feeding practices to be critical, and associated with child nutritional status (FANTA, 2007)

1.3 Justification of the study

Information on feeding practices (breastfeeding and complimentary feeding practices) for children in Belet Hawa district is inadequate. According to reports by FSNAU the nutritional

status of children in northern Gedo region and Beled-Hawa District has been deteriorating for the past six years. Beled-Hawa has been experiencing food shortage, civil insecurity and drought for the last five years. Allot of efforts were made in order to solve the severe malnutrition in Belet Hawa district by putting in place mitigating strategies. Such strategies can be appropriate only after understanding fully factors contributing to the malnutrition. Assessment of the feeding practices of the mother with children 0-24 months is deemed necessary to shed light on the causes for the alarming malnutrition rates among the children.

1.4 Expected benefits

The results from the study would add knowledge to existing information and generate data on feeding practices in Belet Hawa District. The information obtained from the study is also expected to be used by different organizations, especially UNICEF and Gedo Health consortium that are currently supporting nutrition and health programs in the region. The study would explain the high malnutrition rate among children 0-24 months of age in Belet Hawa District, in relation to child feeding practices, and provide baseline data for interventions aimed at reducing the malnutrition rate in the age group, and whole community.

1.5 *Research objectives*

1.5.1 The main objective

To determine the role of breastfeeding and complimentary feeding practices on the nutritional status of children aged 0-24 months in Beled Hawa District.

1.5.2 Specific objectives

1. To determine the socio-economic and socio-demographic characteristics of the study group

2. To determine the nutritional status of children 0-24 months

3. To determine breastfeeding practices of children 0-24 months

4. To determine factors influencing breastfeeding practices, including practices outside the home or in public places

5. To determine complimentary feeding practices among study children

6. To determine factors influencing complimentary feeding practices

7. To determine the relationship between breastfeeding practices and nutritional status of children aged 0-24 months

8. To determine the relationship between complimentary feeding practices and nutritional status of children aged 0-24 months

1.5.3 Research questions

1. Is there an association between nutritional status and breastfeeding practices in the study households of Beled-Hawa district?

2. How long do mothers breastfeed and/or exclusively breastfeed their children; and what are the determinant factors?

3. What is the mothers' knowledge of the WHO recommendations on exclusive breastfeeding and its effect on nutritional status

4. What other factors influence breastfeeding practices in the study area

5. What factors determine age for introduction of complimentary feeding in the study area

1.5.4 Hypothesis

This study was conducted to verify the following hypotheses:

1. There was no significant association between breastfeeding practices and nutritional status of children 0-24 months old in Belet Hawa District.

2. There was no significant association between complimentary feeding practices and nutritional status of children 0-24 months old in Belet Hawa District.

CHAPTER TWO

2.-1 LITERATURE REVIEW

2.1 *Infant and Malnutrition*

Some 30 million infants are born each year in developing countries with impaired growth due to poor nutrition during fetal life (ACC/SNC, 2000). During infancy and early childhood, frequent or prolonged infection and inadequate intake of nutrients-particularly energy, protein, vitamin A, Zinc, and iron- exacerbate the effect of fetal growth retardation. Most growth faltering, resulting in underweight and stunting, occurs within relatively short period- from birth until about two years of age (ACC/SCN, 2000). Nutritional deficiency is a significant contributory factor in death caused by infectious diseases in these children. This has been confirmed by studies carried out in central and south America, where nutritional deficiencies were found to contribute over 60% of deaths caused by infectious diseases (Metzner et al, 1984). Under-nutrition in early childhood has serious consequences. Under-weight children tend to have more severe illnesses, including diarrhea and pneumonia. There is strong exponential association between the severity of under-weight and mortality, (Baskketeig, 1998).

Malnutrition / Death

Manifestations

Inadequate Dietary Intake ← → Disease

Immediate
Causes

Insufficient Household Food | Inadequate Maternal/ Child Care | Insufficient Health Services/ Unhealthy Environment

Underlying
Causes

Resources and Control:
Human, Economic and Organizational

Basic
Causes

Political and Ideological Superstructure

Economic Structure

Potential Resources

Figure 1: UNICEF conceptual framework for determinants of child malnutrition

UNICEF proposed a conceptual framework for determinants of child malnutrition (figure 1). The causes of malnutrition are complex. The underlying cause for malnutrition is the failure of either the main food, health or care preconditions for good nutrition. The widely used food-health-care conceptual framework offers an analytical tool for portraying causes of malnutrition (ACC/SCN, 2000).

Prada et al 1998 found out that, the most determinants of growth retardation in developing countries are nutritional, namely; inadequate maternal nutritional status before conception and poor maternal nutrition during pregnancy. Diarrhoeal diseases, intestinal parasite

infection, and respiratory infections are common in developing countries and also have an important impact on growth retardation.

Nutritional deficiencies endured in early childhood can also bring about growth retardation or faltering both mentally and physically, a problem which may be carried into adulthood (Ebrahim, 1983). Growth faltering could be attributed to several factors including poor breast-feeding and complimentary practices. Generally, most infants thrive well on their mother's milk in the first 3-4 months of life. This is a period of rapid growth, characterized by increasing in body weight by 50% and length by 10% (Ebrahim, 1983). However, in most developing countries, the growth of a large proportion of children begins to slow down after the first 3-4 months of children as a result of malnutrition. Growth in both weight and height is most severely affected between 3 and 12 months of age. The slowing of growth in the first year of life accounts for 91% of the low body weight and 98% of retarded length at the age of 3 years (Ebrahim, 1983). Such a faltering of growth in the latter half of the first year of life is characteristic of the majority of children in the third world. Although the rate of child-growth normally slows down with age, the lost deficit from the malnutrition remains.

2.2 Infant feeding

It has been reported that malnutrition is responsible, directly or indirectly, for 60 % of the 10.9 million deaths annually among children under five. Well over two-third of these deaths, which are associated with inappropriate feeding practice; occur during first year of life *(WHO, 2005)*. No more than 35% of infants worldwide are exclusively breastfed during the first four months of life. Complimentary feeding frequently begins too early or too late, and the foods eaten are usually nutritionally inadequate of unsafe *(WHO, 2003.)* Because poor child feeding practices are a major threat to social and

economic development, they are among serious obstacles to attaining and maintaining health that face this age group. Adequate food is the most important requisite for growth while it is important throughout childhood, it is more crucial during the first five years of child's life. It is particularly so in the firsts 2 years when rapid growth occurs, and the child is entirely dependent on the mother and family for food. Insufficient food will not only result in under nutrition in terms of inadequate weight gain, but also hinder growth. In presence of infection, the breakdown of protein is accelerated, (Shanty Ghosh, 2004)

2.2.1 Breast-feeding

It is a common believe that nearly all women in developing countries breastfeed their babies. Such believes are by large true, but the exclusive breastfeeding is achieved in very few cases, (shanty Ghosh, 2004). The full impact of optimal breastfeeding and complimentary feeding, as measured by reduction in mortality, morbidity and improved health and development in the population, will never be realized unless women and caregivers adopt WHO recommendations (WHO, 1998). Of course, till recently there has been a great deal of confusion regarding the optimal duration of exclusive breastfeeding and; varying from 3 to 4-6 months according recent WHO/UNICEF resolution adopted at the World Health Assembly 2002, and finally opting for 6 months for the recommended period of exclusive breastfeeding, (Shanty Ghosh, 2004). WHO defines optimal behavior as exclusive breastfeeding for four months to six months, breastfeeding with complimentary feeding starting at about six months of age, and continued breastfeeding with complimentary feeding in the second year of life and beyond, (WHO, 1995).

2.2.2 Benefits of exclusive Breastfeeding

Breastfeeding and complimentary feeding behaviors are important predictors of infant and child nutrition, health, and survival (ACC/SCN, 2000). There is evidence linking breastfed of a child with strong intellectual development, and reduction of risk of cancer, obesity, and several chronic diseases, (von kries R, et al 1999). Breastfeeding also benefits maternal health. The women, who breastfeed have reduced risk of ovarian cancer and premenopausal breast cancer (Polly A, et al 1994). Improving breastfeeding and complimentary feeding practices will therefore improve health, nutrition, survival and contribute to well being of the future generation. Because of the increasing recognition of the importance of fetal and early childhood nutrition throughout the life cycle, data on breastfeeding and complimentary feeding are included for the first time in ACC/SCN report on the world nutrition situation (ACC/SCN, 2000). Breastfeeding contributes to infant nutrition and health through number of important mechanisms, namely;

- Breastfeeding provides a complete source of nutrition for the first six months of life, half of all requirements in the second six months of life, and one-third of requirement in the second year, (WHO, 1998). Breastfeeding also provides immunity as well as other factors that protect against specific illnesses

- When an infant becomes sick, breastfeeding provides an important source of nutrients because intake of breast milk is not reduced in contrast to the intake of complimentary foods, which decline considerably, (Dicken K, et al 1990).

2.3 *Determinants of feeding practices*

The adoption of optimal infant feeding behavior is a result of interactions of many factors, which are illustrated in figure two. The closest determinant relate to a women's

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choice. For optimal breastfeeding and complimentary behavior to occur women must both wish to use opportunities to infant feeding options and be able to choose them, (ACC/SCN, 2000). The two factors are influenced most immediately by the infant feeding information the women receives as well as the physical and social support provided to here during pregnancy, childbirth and postpartum. These factors are intern influenced by familial, medical and cultural attitudes and norms, demographic and economic conditions (including the resource to grow or purchase needed foods and maternal employment), commercial pressure and national and international policies and norms, (Lutter CK, 2000).
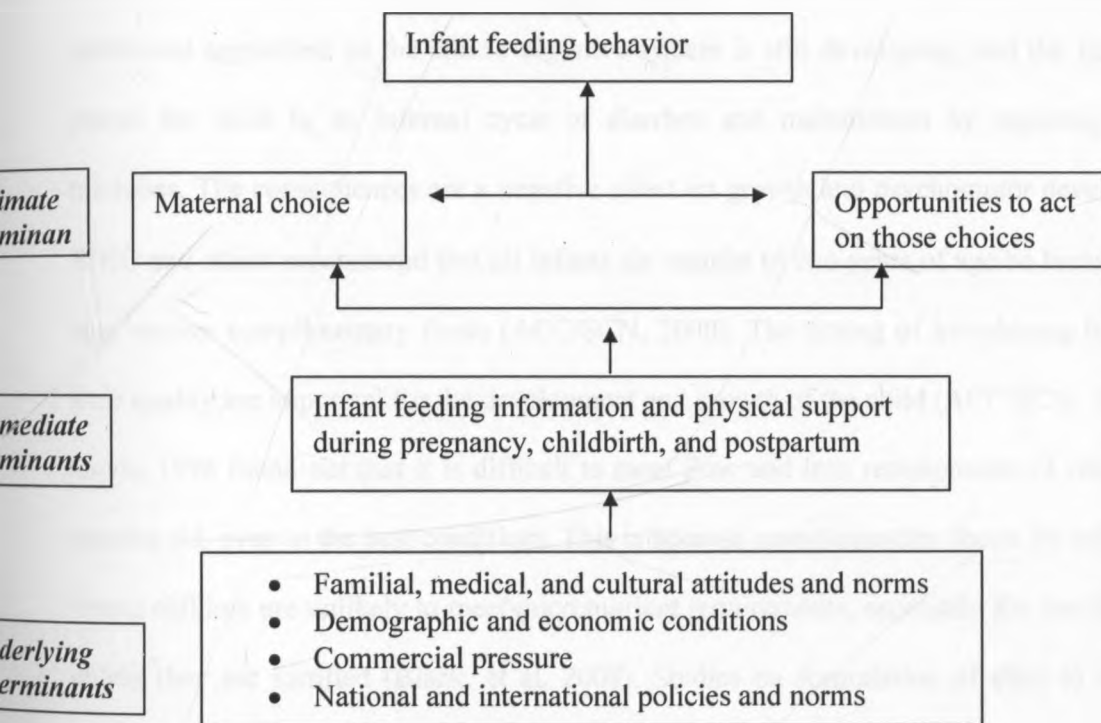
Figure 2: Follow chart for infant feeding behaviour
Source Lutter, CK 2000

To promote optimal breastfeeding and complimentary feeding behaviors, interventions need to be targeted not only to individual women but also to changing the context in which infants and children feeding choices are made.

2.4 *Complimentary feeding*

Complimentary feeding by definition means other foods, which compliments breastfeeding, (Shanti Ghosh, 2004). During first year of life children experience a change of considerable nutritional importance: They progress from a milk based liquid diet to a diversified diet based on solid foods. This change in feeding should be part of the natural process through which infants adjust to their new extra uterine environment. In many cases, however this becomes nutritional aggression as the child's digestive system is still developing, and the fact that it places the child in an infernal cycle of diarrhea and malnutrition by exposing him to microbes. The consequences are a negative effect on growth and psychomotor development. WHO and others recommend that all infants six months to two years of age be breastfed and also receive complimentary foods (ACC/SCN, 2000). The timing of introducing foods and their quality are important for the development and growth of the child (ACC/SCN, 2000).

Davis, 1998 found out that it is difficult to meet Zinc and iron requirements of children 24 months old, even in the best conditions. This is because complementary foods for infants and young children are unlikely to meet micronutrient requirements, especially for iron and zinc, unless they are fortified (Black. et al, 2008). Studies on formulation of diets to meet the nutrient needs of children 24 months old using linear programming techniques have been carried out in Latin America (Peru, Honduras, Guatemala), Ghana in Africa and Bangladesh in Asia (Dewey et al., 2004). Results of the studies indicated that a diet based predominantly on unfortified plant-based foods cannot meet the needs for micronutrients needs for this age and particularly iron, zinc, calcium and vitamin B12. Therefore it is advisable to include milk products, as well as meat, poultry, fish or eggs, as often as possible. Recently, Brown and co-

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workers have calculated the energy requirements needed from the complimentary foods for infants of various ages. This data reported on the minimum number of meals required with three different estimates of energy density namely 0.6, 0.8 or 1.0kcal/g. At the lowest energy density of 0.6 kcal/g 5-6 meals/day would be needed. The appropriate number of feedings required per day therefore depends on the energy density of the local foods, and the amounts consumed at each feeding. If energy density or amount of food per meal is low, more frequent meals are required. This work also showed that, theoretically, the estimated requirement for vitamin C, foliate, B12 and Se for infants 9-11 months old can be met exclusively from breast milk. In contrast, complimentary food should provide approximately 12 % of Vitamin A, 25 to 50% of Cu, riboflavin, and 50 to 75% of thiamin, assuming an average composition of complimentary foods, in addition to the intake of breast milk, (WHO, 2005).

Ignorance about nutrition is equally, if not more important. Studies in several countries have shown that almost half of all cases of malnutrition are to be found in households where there is no real shortage of food (Shanti Ghosh 2004). The reason why the available food was not given to the child is ignorance on the part of the mother in recognizing that her child did not grow and was malnourished, and had no clear idea of what food and how much she should give to the child.

CHAPTER THREE

3.0 METHODOLGY

3.1 Description of the Study Area

Gedo Region is situated in the Southern part of Somalia. It borders Kenya in the west and Middle Juba in the south. The region is one of the least developed regions in the country. The economy of the area is mainly dependent on two traditional resources namely; Livestock and Agriculture (Rain fed farm). The mean annual temperature is 28.3^0c. Rainfall is erratic, averaging 200-300 mm per annum and falling during two seasons, the short rain (Dayr) in October and long rain (GU) in April – June.

Belet Hawa is located along the borders of Kenya to the West, Ethiopia to the North, Dawa to the Northwest, Elwak to the South West, Luuq to the East and Garbaharey District to the South East. Situated within Northern Gedo region of Somalia, Belet- Hawa District is one of the most chronically food insecure areas in Somalia, with baseline deficits in food availability exacerbated by the very frequent civil crisis (FSNAU, 2006). Heath facilities in the district are limited. Gedo health consortium (GHC) currently has 50-bed hospital in Belet Hawa town and around 52 health clinics.

With the rainfall in the area becoming lower and irregular than usual for the last few years, the agricultural situation in Belet Hawa area, which is of paramount importance for the economy of the district, has steadily become worse. This is coupled with insecurity and civil unrest, which has lead to the displacement of civilians. Consequently it is not only the Internally Displaced People (IDP) who appear to be having problems in meeting their nutritional needs, but also the resident population of the district.

The local NGO representative of CARE International has been carrying out general food distribution in the district, while Gedo health consortium and Africa Muslims Agency have been implementing therapeutic and supplementary feeding programs respectively.

Figure 2 below shows the map of the study area in relations to other districts of Gedo Region and the rest of Somalia. The main livelihood of Dawo (Northern part of Gedo Region) is Pastoralist and agro-pastoralists in Southern Gedo.

Vulnerability Map of Gedo Region—June 2002
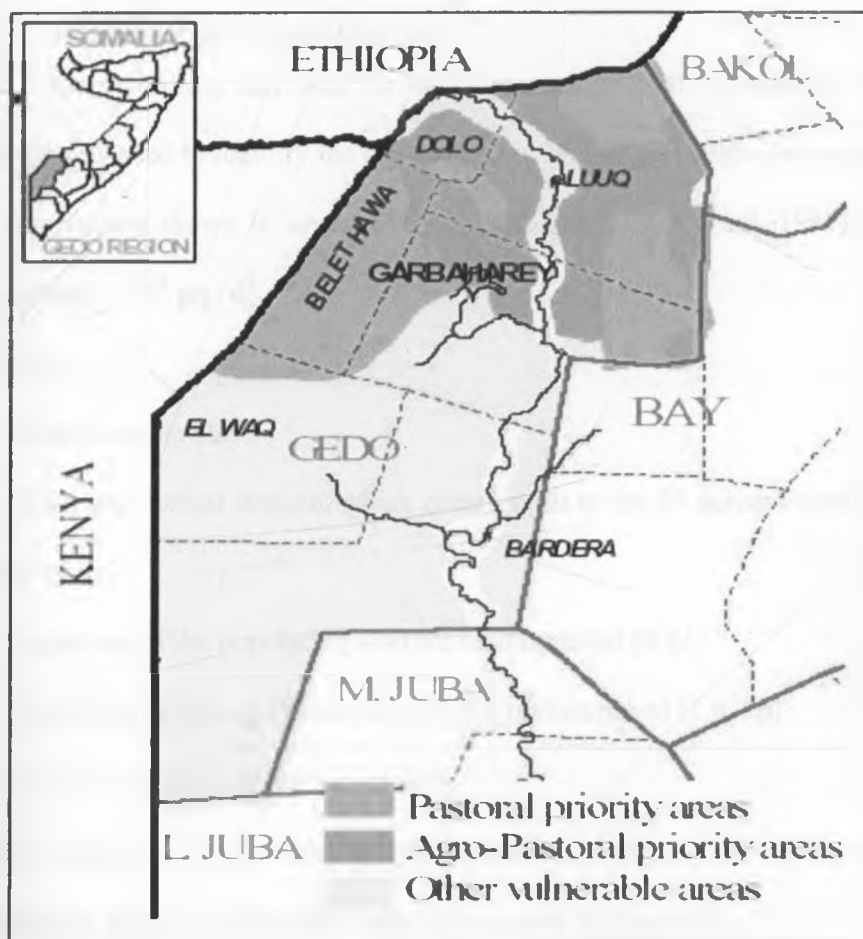
Adapted from: reliefweb.net 2002

Figure 3: Map of Gedo region and the main sources livelihood in the region.

3.2 Study Design

A cross-sectional survey, with descriptive and analytical components was carried out in Belet Hawa District. Quantitative data was collected using structured and pre-tested questionnaire (see appendix I). Additional qualitative data was collected through focus group discussions and key informant interviews. Data was collected between 15th May and 14 June 2006.

3.3 Sampling Frame

The target population of the survey was children aged between 0 and 24 months, and their mothers. The age group considered most vulnerable to malnutrition.

3.4 Sample Size Determinations

The Fishers' formula was used for the determination of the sample size in the study. This formula was used to identify the representative sample given that the population from whom the sample was drawn is larger than ten thousand (Fisher et all, 1991). The representative sample n= $\mathbf{Z^2\,pq\,/d^2}$

Whereby:

n = desired sample size

Z^2 = Standard normal deviate, which corresponds to the 95 percent confidence level set at 2 in this study.

p = proportion of the population who are malnourished (0.24)

q = proportion of the population who are not malnourished (1.0 – p).

d = the desired degree of precision (0.05)

Putting figures to the formula, N was calculated to arrive to 280 children, 5 % was allowed for attrition giving 294 children aged 0-24 months for the study.

3.5 Sampling Procedure

The study was carried out in two randomly selected areas from the fourteen sections of Blelet-Hawa town. This was because Belet Hawa town was considered to be the only urban area in the District. The study was also carried out in four randomly selected villages. The selection of mothers for the study from each section /village was based on proportionate representation of the population in rural and urban areas. More than 65% of district's population was living in the rural areas, while the remaining 35% lived in the Belet Hawa town. The mothers having children aged 0-24 months were systematically selected and interviewed, to gather information on breastfeeding and complimentary feeding practices. The survey team identified starting point in the middle of the villages/sections by sparking a pen and the first household with eligible child in that direction was interviewed. The subsequent child was selected on the basis of every other child. If the household had more than one child aged 0-24 months, only one of them was randomly selected and included in the study. The sampling procedure is as shown in the chart below.

SAMPLING PROCEDURE

SELECTION POCEDURE

BELET HAWA DISTRICT

PURPOSIVE

RURAL

STRAFIED

URBAN
BELET HAWA
TOWN

DHAGAXLE` SHIRKA   B/AMIN   B/AMIN
VILLAGE   IDP

RANDOM

SECTION
6

SECRION
14

SYSTEMATIC

191
CHILDREN

103
CHILDREN
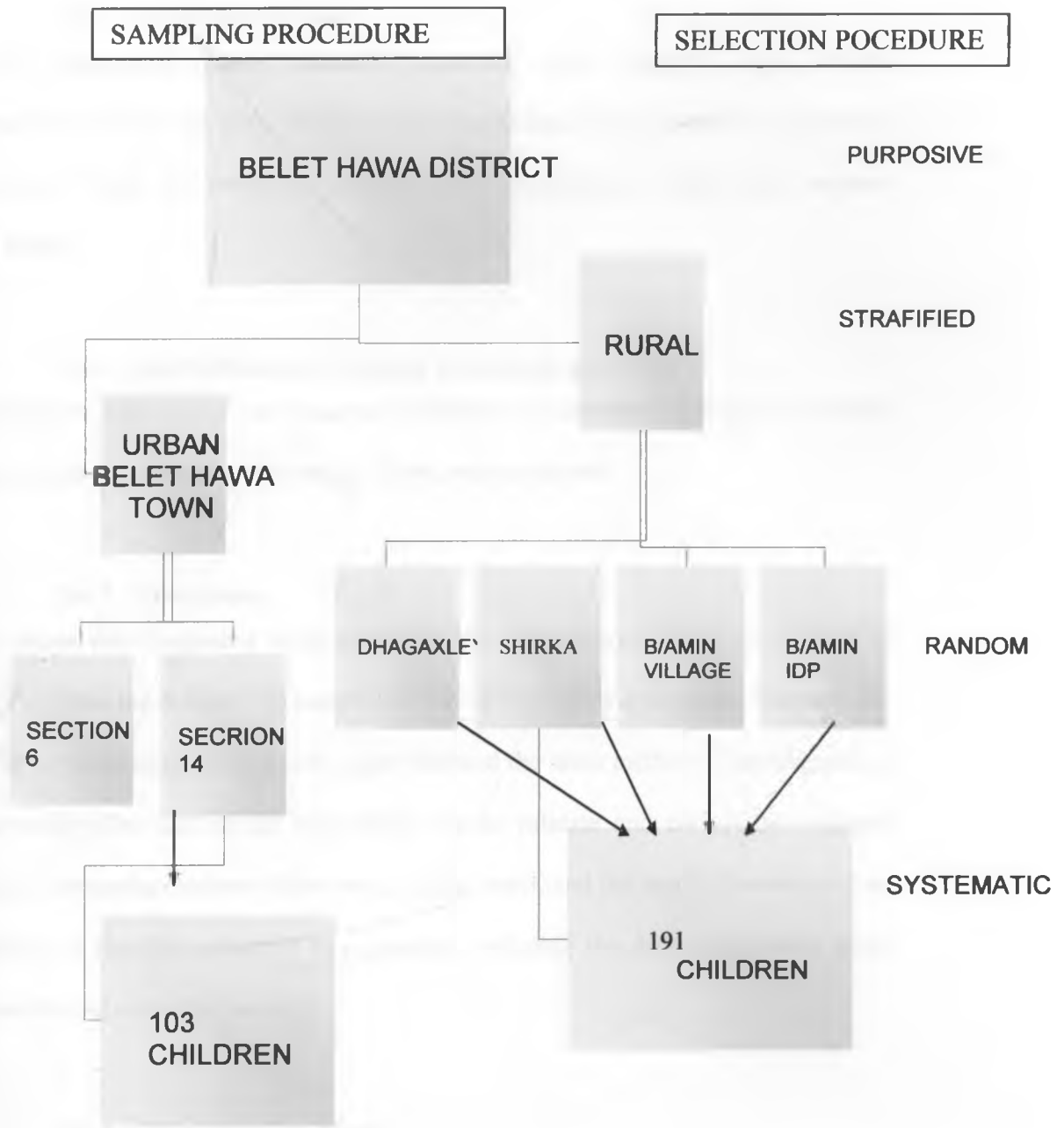
Figure 4—Follow chart showing sampling procedure

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3.6 Data collection Activities

3.6.1 Preparatory phase

During the preparatory phase, research approvals were obtained. Area leaders (administrative, political, in-charge of clinics and other leaders) were briefed on the purpose of the research. Funds and necessary resources were sought/made available and research assistants trained.

3.6.2 Recruitment and training of research assistants

A comprehensive training of the research assistants on interview techniques, selection criteria, and taking of measurements among others, was conducted.

3.6.3 Pilot phase

The pilot phase was conducted in an area with the same characteristics as the area of investigation within the district. The sample size for the pilot study was about 30 households. The method of investigation in the pilot phase followed the same method of investigation as the actual study. The aim of the pilot study was to validate and correct the proposed methodology for appropriateness of the tools, timing, input, and the required resources from the beginning of the data collection to processing, including the designed dummy tables, analysis of data and computer packages.

3.6.4 Data collection phase

Data was collected using the following methods.

3.6.4.1 Household Interview

Trained research assistants conducted the interview on the respondents namely mothers/caregivers and the index children. The interview addressed issues related to socioeconomic status including demographic factors, with emphasis on feeding practices

particularly breastfeeding and complimentary feeding practices. The questionnaire comprised the following sections:

i. General survey information

ii. Socio-economic and socio-demographic characteristics of the study households

iii. Breastfeeding practices

iv. Complimentary feeding practices, including food frequency for the past 24 hours

v. Knowledge of mothers on WHO recommendations on breastfeeding and complimentary feeding

3.6.4.2 Focus Group Discussion (FGD)

Four Focus Group Discussions (FGD) two in Belet-Hawa Town and two in the rural villages were conducted. In both places, mothers of children 0-24 months old who had not been interviewed took part in the Focus Groups. The focus group discussions weere conducted by the principle investigator with the assistance of trained team from the same area. The discussion mainly focused on feeding practices in the study area and factors influencing it.

3.6.4.3 Anthropometric measurements

The nutritional status of the children was assessed by measuring the weight and height of each child. Two measurements of each child were taken and the average was recorded. Salter scale was used to take the weights of the children above 6 months, while pediatric scale was used for the children less than 6 months of age. Weight was recorded to the nearest 10 Grams. Recumbent length was measured for each child using measuring board, and length was recorded to the nearest millimeter.

3.7 Data Analysis

3.7.1   Entry, cleaning, processing, and analysis

Data was entered and analyzed using EPI-INFO computer package, and SPSS (Statistical package for social science) 12th version. Running and tabulating all variable frequencies was carried out as part of data management. The cross- tabulation for frequency distributions and bar charts was used for presentation of the data. Box plot was used to check the normality of the data, so that multiple / logistic regression analysis was used to measure the effect of deferent variables such as duration of breastfeeding, time of initiation of complementary feeding, among others on the nutritional status of the children. Scatter diagram was also be used to check the relationship between deferent variables. Chi-square was used to check for differences in proportions. Student t-test was used to compare mean values. Significance level (P-value) of 0.05 was used

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of the study population

As shown in table 1, a total of 294 mothers with children aged 0-24 months were studied.

Information on household demographic characteristics, infant feeding practices, maternal

knowledge on recommended feeding practices and anthropometric measurements were

collected and analyzed. More than 65% of the respondents resided in rural area, while the

remaining 35% were living in Belet-hawa town. Majority (96%) of the mothers were married.

The mean household size was 5 members (SD = 1.92), with the size ranging from 2 to 10

persons. The population was split into almost equal proportions between residents (54%) and

non-residents (46%). And the majority of the non-residents were IDP (>98%).

4.1.1   Age and sex of head of the household

Data in table one showed that majority (87%) of the households in the study area were led by

male, while only 13% were led by female. There was a significant (p = 0.017) difference in

the sex of household head in rural and urban setting with most (67%) of the male led families

being in the rural setting. The mean age for the care givers was 29 years (S.D of 7.9), with

minimum age of 16 and maximum of 50 years. However, there is no significant (p = 0.666)

difference in the age for mothers in rural and those in the urban setting (table 2). Further

analysis showed that the sex and the age of the household head did not correlate with the

feeding practices in Beled-Hawa district (Table 3 and 4).

Table 1: Socio-economic/demographic characteristics of the study population

Characteristics (N)	(n)	%
Caregiver age group(N=294)		
16 – 20 years	50	17
21 – 25 years	60	20
26 – 30 years	80	27
31 – 35 years	41	14
36 – 40 years	39	13
41 – 45 years	16	5
>45 years	8	3
Sex of the head of the household (N=294)		
Male	256	87
Female	38	13
Marital status (N=294)		
Married	276	94
Widowed	7	2
Divorced	11	4
Occupation / source of income (N=294)		
Casual labor	281	94
Household help	3	1
Business	2	1
Salaried worker	4	2
Firewood collection	4	2
Ethnicity (N=294)		
Somali	294	100
Education level of the mother (N=292)		
Not attended	255	87
Lower primary	20	6
Upper primary	12	4
Secondary	4	2
Post- secondary	3	1
Livelihood system of mothers (N=294)		
Urban activities	253	86
Agro-pastoralists	15	5
Irrigated agriculture	6	2
Donations/food aid	20	7
Assets owned		
Land owned		
Non	278	95%
owned	16	5%
Animal owned		
Non	278	95%
owned	16	5%

4.1.2 Marital status of the mothers/caregivers

Over whelming majority (94%) of mothers of the study population were married, while only 2% and 4% were widowed or divorced respectively (table 1). Marital status was significant (p= 0.001) for the aria of residence, with more (68%) of mothers from rural setting married as compared to only 32% of those from urban setting. On the other hand 78% of the unmarried mothers came from urban setting compared to 22% in the rural setting. Moreover, the marital status of mothers was significantly (p = 0.045) associated with the frequency of breastfeeding of their children, with more of married mothers (57%) breastfeeding on demand, as compared to only 17% of unmarried mothers (Table 3). This indicates that marital status of the mother is an important determinant for the breastfeeding practices in Beled-Hawa district. However, there was no association between marital status of the mother and complimentary feeding practices in the study area (Table 4).

Table 2: Socio-economic/demographic characteristics versus aria of residence

Characteristics (N)	Rural		Urban		
Mother age group(N=294)	(n)	%	(n)	%	p
16 – 20 years	40	21	10	10	0.66
21 – 25 years	34	18	26	25	
26 – 30 years	46	24	34	33	
31 – 35 years	25	13	16	15	
36 – 40 years	27	14	12	12	
41 – 45 years	12	6	4	4	
>45 years	7	4	1	1	
Sex of head of the household (N=294)					
Male	174	67	84	33	0.017
Female	17	47	19	53	
Marital status of mothers/caregivers (N=294)					
Married	187	68%	89	32%	0.001
Unmarried	4	22 %	14	78 %	
Occupation (N=294)					
Casual labor	185	87%	96	93%	0.232
Others	4	3%	7	7%	
Ethnicity (N=294)					
Somali	294	100			
Education level of the mother (N=294)					
Not attended	99	38%	160	62%	0.002
Attended	31	89%	4	11%	
Livelihood system of mothers (N=294)					
Urban activities	154	61%	99	39%	0.001
Agro-pastoralists	15	100%	0	0%	
Irrigated agriculture	6	100%	0	0%	
Donations/food aid	16	80%	4	20%	
Assets owned					
Land owned					
non	181	65%	97	35%	0.795
owned	10	62%	6	38%	
Animal owned Owned	184	66%	94	34%	0.103
Not owned	7	44%	9	56%	

4.1.3   Livelihood and Source of Income

As shown in table 2, an overwhelming majority (86%) of the study households derived their livelihood from urban activities, with few being agro-pastoralists and farmers. It has been observed in the focus group discussion that, the successive drought, which affected the region for the past 5 years led to the loss of most of the livelihood systems mainly of pastoral and agricultural activity types, forcing majority of the population to depend on urban activities for their livelihood. This was also coupled with, the high movement of population from rural to urban settings, which forced many of the population in Belet Hawa district to adapt urban life style including the way they feed their children. However, livelihood system did not significantly affect the complementary feeding practices and nutritional status of children in Belet-Hawa district (Tables 3, 4 and 5).

Over 96% of the study population depended on casual labor as the main source of income, with very few depending on other income source such as business, salaried employed and firewood collection (Table 2). This was as result of prolonged drought and insecurity, where most of the pastoralists lost their livestock and had to result to casual labor for their livelihood. However, the source of income of mothers/caretaker was strongly associated (p=0.045) with the breastfeeding status of their children; with more of mothers (57%) working as casual laborers breastfeeding at the time of the data collection, compared to only 23% of those depending on other sources of income (table 3).

4.1.4   Assets of the care givers/mothers

An over whelming (95%) majority of the study household did not own any land or animals. While only a small proportion (5%) owned land or kept animals (Table 2). There was no significance difference in the households from rulal and urban areas for the assets owned (Tale 5). However, significant proportion (p= 0.045) of the mothers(58%) who did not own animals, breastfed their children on demand in the previous day, as compared to only 20% of

those who owned animal (Table 5). It has been observed in the focus group discussion that mothers who kept animal had tendency to feed their children with animal milk, and thus reduce the frequency of breastfeeding in Belet-Hawa district.

Table 3: Socio-economic/demographic characteristics versus breastfeeding practices

Socio-economic/demographic characteristics	Breastfeeding practices											
	Status of Breastfeeding		Initiation of breastfeeding in the 1st hour		Breastfeeding on demand in the previous day		Breastfeeding on first 3 days		Breastfeeding outside home/public places		Appropriate Age breastfeeding was stopped	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Education level	(p = 0.045)		P=0.539		P=0.629		P=0.715		P=0.574		P=1.000	
Attended	69%	31%	32%	68%	67%	33%	89%	11%	88%	12%	9%	91%
Not attended	51%	49%	27%	73%	53%	47%	92%	8%	81%	19%	15%	85%
Livelihood	P=0.626		P=0.128		P=0.946		P=0.237		P=0.152		P=0.951	
Urban	51%	49%	28%	72%	55%	45%	53%	47%	80%	20%	15%	85%
Agro pastoral	56%	44%	31%	69%	44%	56%	56%	44%	89%	11%	29%	71%
Irrigated pump	100%	0%	33%	67%	83%	17%	33%	67%	100%	0%	67%	33%
Donation	60%	40%	20%	80%	50%	50%	3%	40%	60%	8%	100%	0%
Respondent Occupation	P=0.850		P=0.890		P=0.274		P=0.532		P=0.036		P=0.618	
Household help	33%	67%	33%	67%	0%	100%	33%	67%	0%	100%	0%	100%
Casual labor	54%	46%	27%	73%	56%	44%	51%	49%	83%	17%	15%	88%
Business	50%	50%	50%	50%	0%	100%	50%	50%	100%	0%	100%	0%
Salaried employed	25%	75%	25%	75%	100%	0%	75%	25%	100%	0%	0%	100%
Firewood collection	0%	100%	25%	75%	-	-	50%	50%	-	-	0%	100%
Respondent source of Income	P=0.044		P=0.756		P=0.586		P=1.000		P=0.444		P=1.00	
casual labor	54%	46%	27%	73%	56%	44%	51%	49%	83%	17%	15%	85%
Others	23%	77%	31%	69%	33%	77%	53%	47%	67%	33%	9%	91%
Respondent Assets												
1. Animals	P=0.453		P=0.388		P=0.022		P=0.444		P=1.000		P=0.207	
Non	52%	48%	27%	73%	58%	42%	51%	49%	82%	18%	14%	86%
Owned	62%	38%	38%	62%	20%	80%	62%	38%	90%	10%	33%	67%
2. Land	P=0.076		P=1.00		P=0.135		P=0.444		P=1.000		P=0.467	
Non	51%	49%	27%	73%	57%	43%	51%	49%	82%	18%	14%	86%
Owned	75%	25%	25%	75%	33%	67%	62%	38%	83%	17%	25%	75%
Marital status	P=0.142		P=0.785		P=0.045		P=0.333		P=0.283		P=1.000	
Married	54%	46%	27%	73%	57%	43%	52%	48%	83%	17%	15%	85%
Unmarried	83%	67%	29%	71%	17%	83%	39%	61%	67%	33%	8%	92%

4.1.5 Education level mother/caregiver

The education level among the mothers/caregivers was very low as detailed in table 1. Overwhelming majority (87%) of the mothers/caregivers in the study area did not have any form of education, and very few (1%) attained secondary education (Table 1). The education level significantly (p = 0.002) varied among mothers/caregivers in rural and urban setting, with majority (87%) of mothers who attended any form of education belonging to rural setting (Table 2). Further analysis showed that there was no significant difference among those who attended any form of education and those who did not in their breastfeeding practices; namely in the initiation of breastfeeding, frequency of breastfeeding, breastfeeding outside home, pre-lacteal feeds and bottle feeding practices (table 3). However breastfeeding status at the time of data collection was significantly (P = 0.045) associated with the level of education of the mother. With more of mothers (69%) who attended any form of formal or informal education breastfeeding as compared to only 31% of those who did not attend, indicating that mothers with some education have better understanding of the importance of breastfeeding than those who did not (Table 3).

Table 4: Socio-demographic characteristics versus complimentary feeding practices

Socio-economic/demographic characteristics	Complimentary feeding							
	Age complimentary feeding started		Bottle feeding in previous day		Frequency of complimentary feeding		Dietary Diversity Score	
	Appropriate (4 – 6 months)	In appropriate (<4 and > 6 months).	Yes	No	≥ 4 times	<4 times	≥ 4 food groups (good score)	< 4 food groups (bad score)
Education level	P= 0.333		P= 1.000		P= 0.150		P= 1.000	
Attended	21%	79%	20%	80%	43%	57%	0%	100%
Not attended	6%	94%	22%	78%	44%	56%	1%	99%
Livelihood	P= 0.523		P=0.111		P= 0.657		P= 0.431	
Urban	5%	95%	23%	77%	54%	46%	0%	100%
Agro pastoral	0%	100%	13%	87%	81%	19%	13%	87%
Irrigated pump	0%	100%	17%	83%	671%	33%	0%	100%
Donation	10%	90%	10%	90%	40%	60%	0%	100%
Respondent Occupation	P= 0.963		P= 0.835		P= 0.110		P= 0.868	
Household help	0%	100%	0%	100%	100%	0%	0%	100%
Casual labor	8%	92%	22%	78%	26%	69%	99%	1%
Business	0%	100 %	0%	100%	100%	0%	0%	100%
Salaried employed	0%	100 %	25%	75%	50%	50%	0%	100%
Firewood collection	0%	100%	25%	75%	25%	75%	-	-
Respondent's source of Income	P=0.491		P= 0.741		P= 0.778		P=1.000	
casual labor	5%	95%	22%	78%	56%	44%	1%	99%
Others	8%	92%	15%	85%	55%	45%	0%	100%
Respondent Assets								
3. Animals	P=0.491		P= 1.000		P=0.442		P= 1.000	
Non	95%	5%	22%	78%	45%	55%	1%	99%
Owned	92%	8%	19%	81%	56%	44%	0%	100%
4. Land	P= 0.165		P= 0.354		P=0.306		P= 1.000	
Non	95%	5%	21%	79%	46%	54%	1%	99%
Owned	87%	13%	31%	69%	31%	69%	0%	100%
Marital status	P= 0.416		P= 1.000		P= 0.222		P= 1.000	
Married	8%	92%	22%	78%	56%	44%	1%	99%
Unmarried	17%	83%	22%	78%	39%	61%	0%	100%

4.1.6 Aria of residence of mothers versus nutritional status of their children

As detailed in the table 5, there was no significant difference in nutritional status for children in rural and urban setting. This indicates that the area of residence has no effect on the nutritional outcome of children 0 – 24 months in Beled-hawa district.

Table 5: Area of residence versus nutritional status of children

Nutritional status	Z-score	Rural / Urban		P-value
Wasting	WHZ	Urban	Rural	0.108
	≤ - 2	(17) 16%	(47) 25%	
	>-2	(86) 74%	(94) 75%	
	Total	103 (100%)	191 (100%)	
Stunting	HAZ			0.871
	≤ - 2	(26) 25%	(45) 14%	
	>-2	(77) 75 %	(146) 76%	
	Total	(103) 100%	(191) 100%	
Underweight	WAZ			0.494
	≤ - 2	(48) 47%	94(49%)	
	>-2	(55) 53%	97 (51%)	
	Total	(103) 100%	(191) 100%	

4.1.7 Child sex and age distribution

Gender distribution of study children was almost equal between boys (52%) and girls (48%) .

However, more than half (59%) of study children were aged twelve months and above,

according to the data in table 6.

Table 6: Age breakdown of the study children

Age (Months)	n=294	Proportion(%)
0-5	30	11
6-11	60	20
12-17	60	20
18-24	144	49

4.2 Nutritional status of surveyed children

The nutritional status of the children aged (6-24) months was measured using weight and

height indices. However, only the weight was measured for children under the age six

months.

4.2.1 Nutritional status by Weight/Height z-score (Wasting)

The distribution of the weight-for-height z-scores (mean= -1.5; SD=1.08) were skewed towards the left depicting poorer nutrition situation status for the study children compared with the reference normal population according to WHO. (Figure 6)

Figure 6: distribution of children by wasting
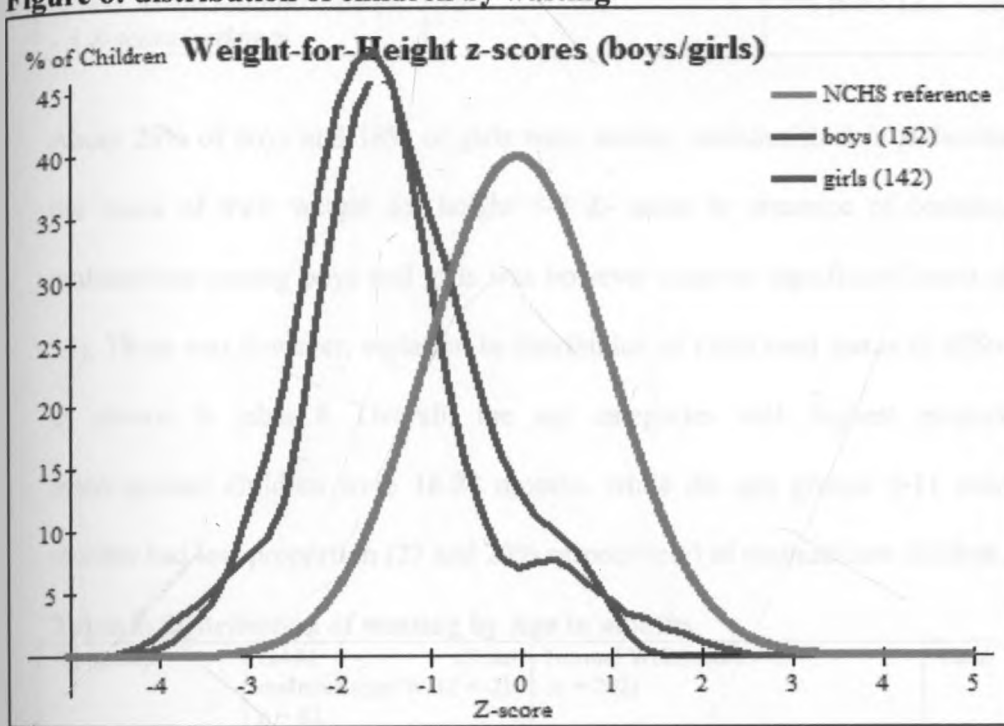
As shown in table 7 global acute malnutrition(GAM) of children aged 6-24 months using W/H Z score (<-2 z-scores or oedema) was 23.5% (CI: 19.1 – 29.7), while those who were severely malnourished (<-3 z-score or oedema) represented 3.8% (CI: 2.5 – 8.0). No edema cases were found during the assessment. A global acute malnutrition of 23.5% in Beled-Hawa district is very high and may be attributed to the very severe drought and civil insecurity in the area.

Table 7: Summary of Global and Severe Acute Malnutrition

Malnutrition rate	No	Proportion (CI)
Global Acute Malnutrition (<-2 Z-score or oedema)	52	23.5% (19.1 – 29.7)
Severe Acute Malnutrition (< - 3 Z-score/oedema)	10	4% (CI : 12.5 – 18.0)

About 28% of boys and 18% of girls were acutely malnourished in Balad-hawa district, on the bases of their weight for height <-2 Z- score or presence of oedema. The level of malnutrition among boys and girls was however close to significant levels *(p=0.06)* (Table 25). There was however, variation in distribution of nutritional status in different age groups as shown in table 8. Overall, the age categories with highest proportion (45%) of malnourished children were 18-24 months, while the age groups 6-11 months and 12-17 months had less proportion (27 and 29% respectively) of malnutrition children.

Table 8: Distribution of wasting by Age in months

Age group	GAM (Total malnourished WHZ <-2) n = 62	Normal WHZ-score >-2 (n = 202)	Total
6-11	27% (17)	21% (43)	60
12-17	29% (18)	21% (42)	60
18-24	45% (27)	58% (117)	144
Total	(62) 100%	202 (100%)	264

P = 0.028

The association between wasting and age categories was the found to be statistically significant (*p= 0.028*), with age group 18 - 24 months more wasted as compared to other age groups. This is the age in which children depend more on the caretaker for their nutrient requirements, and may indicate poorer feeding practices in Beled-Hawa district. However,

there was no association found between wasting status of children and their area of residence (Table 6).

4.2.2   Nutritional status by Weight/Age z-score (underweight)

As shown in figure 7, the distribution of those underweight according to weight-for age z-scores (mean = -1.923; SD = 0.84) was skewed towards the left, depicting poorer nutrition situation according to the international (WHO) standards (figure 7).

Figure 7: Distribution of study children by underweight and child sex
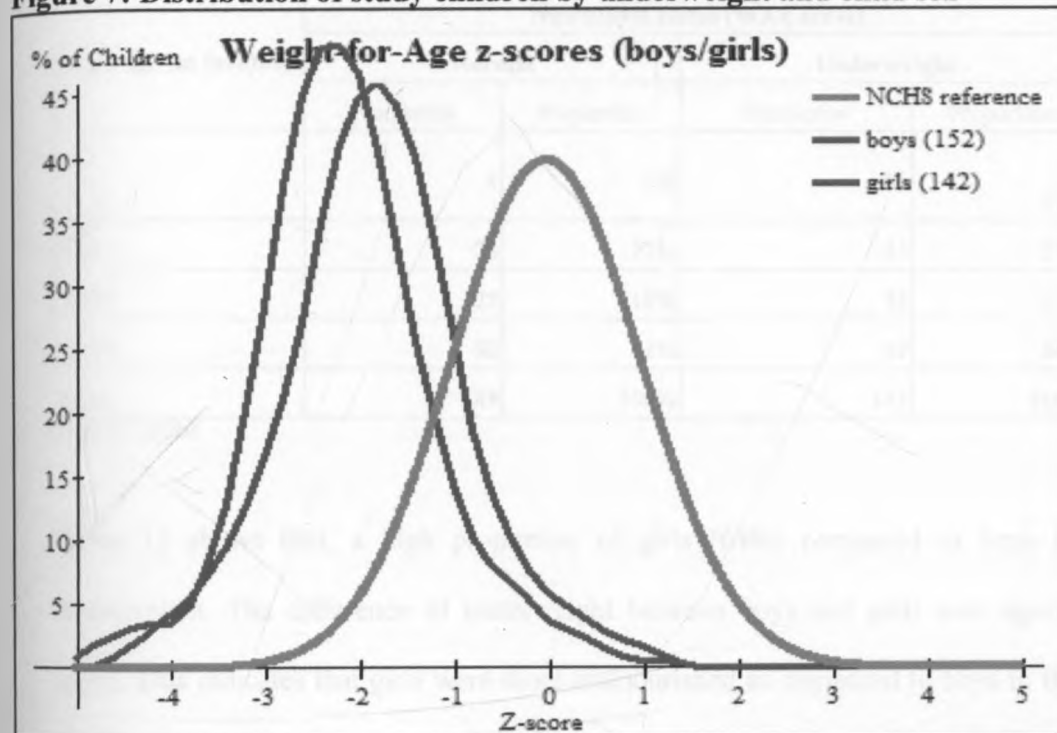
From table 9, it is clear that of the 294 children surveyed, (10%) were severely underweight with weight-for-age Z-score of less than 3 and/or with oedema, while almost half (49%) of the total children measured were under-weight.

Table 9: Nutrition categories according to underweight (WAZ)

Category	n = 294	Proportion
Moderate	115	39%
Severe	30	10%
Normal	149	51%

There was however, a significant variation (p = 0.01) in distribution of nutritional status in different age groups as shown in table 10. Overall, the age category with highest proportion (36%) of malnourished children was 18-24 months, while the age group 0-6 months had the least proportion of malnutrition (17%). This indicates that underweight is a serious nutritional problem in older (>18 months) children as compared to younger (<18 months) children in Balad-Hawa district.

Table 10: Distribution of children by underweight (WA z-score) and child age

Child age (in months)	Nutritional status (WAZ score)				Total
	Normal		Underweight		
	Frequency	Proportion	Frequency	Proportion	
0-6	4	3%	26	17%	30
7-11	26	17%	34	23%	60
12-17	27	18%	33	23%	60
18-24	92	62%	52	36%	144
Total	149	100%	145	100%	294

P value = 0.000

Table 11 shows that, a high proportion of girls (64%) compared to boys (36%) was underweight. The difference of underweight between boys and girls was significant (p = 0.01). This indicates that girls were more malnourished as compared to boys in Beled-Hawa district, but the reason for this discrepancy is not known. However, the area of residence of children did not affect their underweight status (Table 6).

Table 11: Distribution of children by underweight and child sex (weight/ Age z-score)

Nutritional status categories	Boys		Girls		Total	
	No	Proportion	No	percentage	No	percentage
Not under-weight (W/A ≥ -2 Z-score)	56	39%	89	61%	145	49%
Underweight (WA ≤ -2 Z-score)	96	64%	53	36%	149	51%

P. Value 0.01, r = 0.258

4.2.3 Nutritional status by Height for Age z-score (Stunting)

As shown in the figure 8, the distribution of the height-for age z-scores (mean= -1.7538; SD=0.431) for the study children was skewed towards the left depicting poorer stunting situation according to international (WHO) standards (figure

Figure 8: distribution of study children by stunting
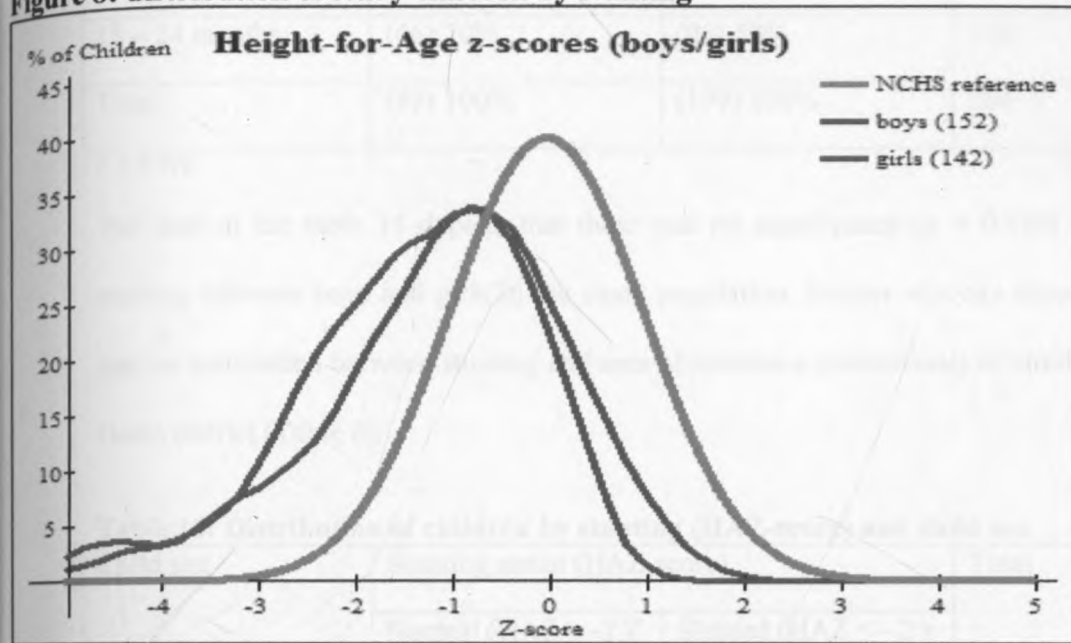
Data on the table 12 showed that 75% of the children aged 6 – 24 months in Belet-Hawa district were stunted (HA z-score <-2). And those severely stunted were 8% (not shown in the table), making stunting the worst reported malnutrition in the district.

Table12: distribution of children by level stunting

Stunting (HAZ-score)	n=264	Proportion
Total stunting	199	75%
Saver stunting	16	8%
Normal	65	25%
Total	294	100%

As shown in the table 13, stunting is the most prevalent malnutrition recorded in this study. This constituted half (50%) of the stunted children aged 18-24 months, while those aged 6-11 and 12-17 months old (25% each) made up the other half of the stunted children. This indicates that chronic malnutrition was prevalence among the elder children of Belet-Hawo district.

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Table 13: Distribution of children by stunting (HAZ-score) and child age

Child age groups	Stunting status (HAZ-score)		Total
	Normal (HAZ ≥ -2 Z score)	Stunted (HAZ ≤ - 2 z score)	
6 – 11 months	(10) 15%	(50) 25%	60
12 – 17 months	(9) 15%	(51) 25%	60
18 – 24 months	(46) 70%	(98) 50%	144
Total	(65) 100%	(199) 100%	264

P = 0.010

The data in the table 14 depicts that there was no significance (p = 0.156) difference in stunting between boys and girls in the study population. Further analysis showed that there was no association between stunting and area of residence (urban/rural) of children in Beled-Hawa district (Table 6).

Table 14: Distribution of children by stunting (HAZ-score) and child sex

Child sex	Stunting status (HAZ-score)		Total
	Normal (HAZ ≥ -2 Z score)	Stunted (HAZ ≤ - 2 z score)	
Male	(39) 29%	(99) 71%	139
female	(26) 21%	(100) 79%	126
Total	(65) 25%	(199) 75%	264

P = 0.156

Malnutrition rate of 23.5%, 49%, 75% for wasting, underweight and stunting in Beled-Hawa district is well above the accepted public health level and is alarming. It has been observed that the reason for the high malnutrition rate was due to prolonged drought and civil insecurity, allowing for no coping mechanism for the community. Child age was strongly (P= < 0.05) associated with all nutritional indices (wasting, underweight and stunting), while child sex was only associated with underweight status of the children. Area of residence of children had no impact of the nutritional status of children in the district.

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4.3 Breastfeeding practices of the study children

4.3.1   Breast feeding status of the study children (n=294)

Almost all (282) 96 % of the surveyed children were reported to have been breastfed at one time or the other, while only small proportion (12) 4% were reportedly never breastfed (Figure 9). Further analysis showed that there was no significant difference (p = 0.289) between boys and girls on the basis of their being breastfed (data not shown).

More than half 53% of the mothers reported that they have been breastfeeding their babies at the time of the study. While the remaining almost half (47%) were not breastfeeding. The proportion of boys and girls being breastfeeding were not statistically significant (p = 0.410). Data in table 15 also showed that, breastfeeding status at the time of data collection was significantly (P = 0.027) associated with the residence area, with more (58%) of the Breastfeeding mothers coming from rural setting as compared to only 48% from urban setting. This was attributed to the more educated mothers in rural area.

Table 15: Breastfeeding status versus area of residence (Urban/Rural)

Breastfeeding status	Urban / rural setting *(n=294)*		Total
	Urban	Rural	
Yes	(45) 43%	(110) 57%	(155) 100%
No	(58) 44%	(81) 56%	(139) 100%
Total	(103) 100%	(191) 100%	(294) 100%

P = 0.027

As detailed in table 3, breastfeeding status was also significantly associated (p = 0.045) with the level of education of the mother. More mothers (69%) who attended any form of education were breastfeeding as compared to only 31% of those who did not.
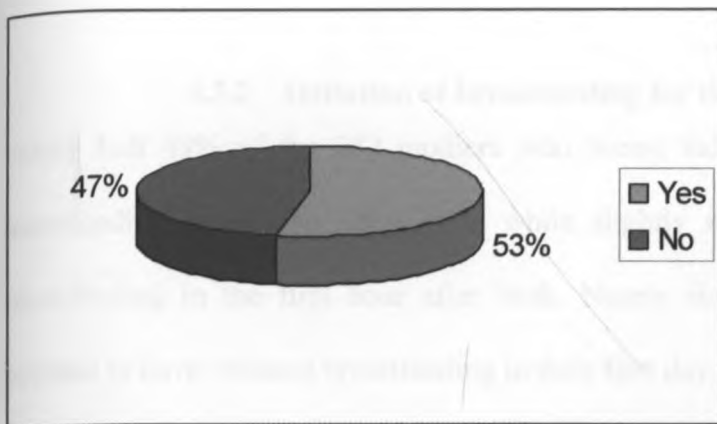
Figure 9: Distribution of children according to whether or not they are breastfeeding

There was a significant association (p = 0.000) between breastfeeding status and age, where rate of breastfeeding decreased with increasing age, as shown in the table 16.

Table 16: Breastfeeding status versus child age

Breast feeding status	Child age in months (n= 294)				Total
	0-5 (n= 30)	6-11 (n= 60)	12-17 (n= 60)	18-24 (n= 44)	
Yes	(27) 90%	(46) 77%	(38) 63%	(44) 31%	(155) 53%
No	(3) 10%	(14) 23%	(22) 36.7%	(100) 69%	(139) 47%
Total	30	60	60	144	(294) 100%

P Value = 0.00

More than half (57%) of mothers were breastfeeding at the time of data collection. Boys and girls were equally breastfeeding, but the age of the children strongly affected (p = 0.000) their being breastfed or not, with the proportion of breastfeeding children decreasing significantly as their age was increasing. The breastfeeding status of children was also affected by the level of education of mothers and their area of residence, with mothers from rural setting and those with higher level of education breastfeeding their children. In Belet-hawa district the age of child, education level of the mothers and their area of residence have strong influence on the breastfeeding status of the children.

4.3.2 Initiation of breastfeeding for the children

Nearly half 49% of the 282 mothers who breast fed at one time or the other, initiated breastfeeding three days after birth, while slightly more than a quarter (27%) initiated breastfeeding in the first hour after birth. Nearly similar number of the mothers (24%) reported to have initiated breastfeeding in their first day of delivery.

Breastfeeding in the first three days of life is important as the breast milk in these days contains colostrum which is rich in immunoglobulins, which protect the baby from many infections. Slightly more than half (51%) of the children were initiated to breastfeeding within the day of their birth, and hence benefited from colostrum. The rest were initiated to breastfeeding after three days, and might not have received as much colostrum (figure 11). There was no significant (p = 0.724) difference in boys and girls in respect to the time their breastfeeding was initiated (figure 11).
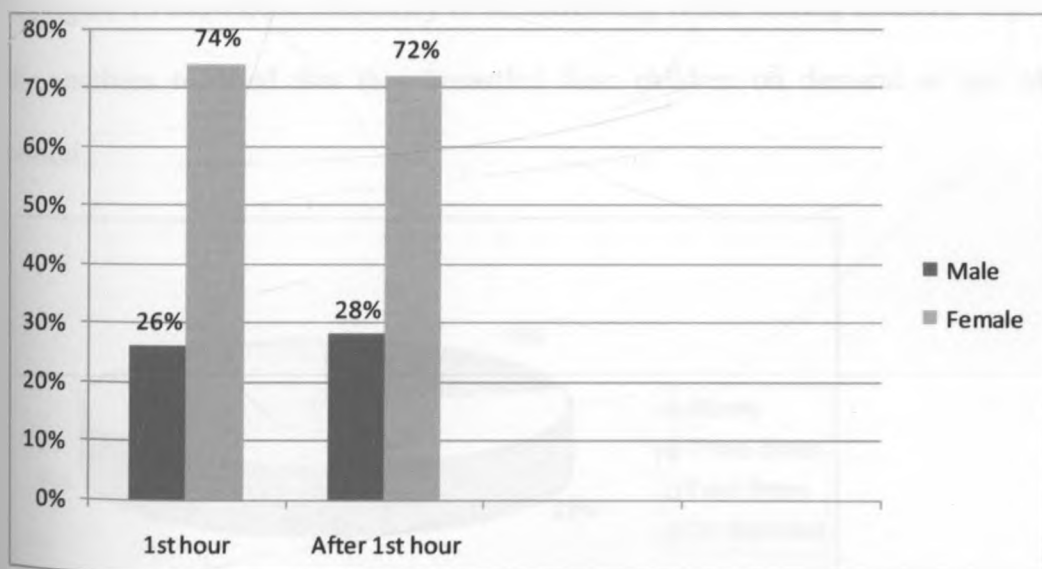
Figure 10: Distribution of study children by breastfeeding initiation and sex
P= 0.724

Figure 12 shows that the time breastfeeding was initiated is strongly associated (p=0.042) with the area of residence of the mother, with more than half (69%) of mothers from rural

41

setting initiating breastfeeding of their children after three days of their birth, as compared to only 31% from urban setting. This indicates that delayed initiation of breastfeeding is a serious nutritional problem in mothers of rural setting in Baled-Hawa district.
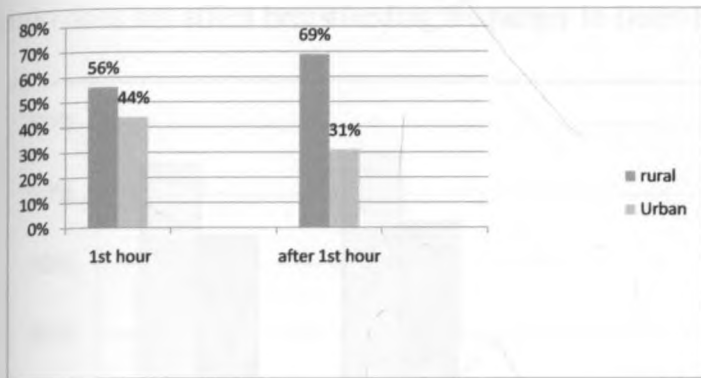
Figure 11: Distribution of mothers by area of residence and time they initiated breastfeeding of their children
P= 0.042

4.3.3 Frequency of breastfeeding

As figure 13 shows, the frequency of breastfeeding varied among mothers. Majority (56%) of the mothers reported that they breastfed their children on demand as per 24 hour recall period.
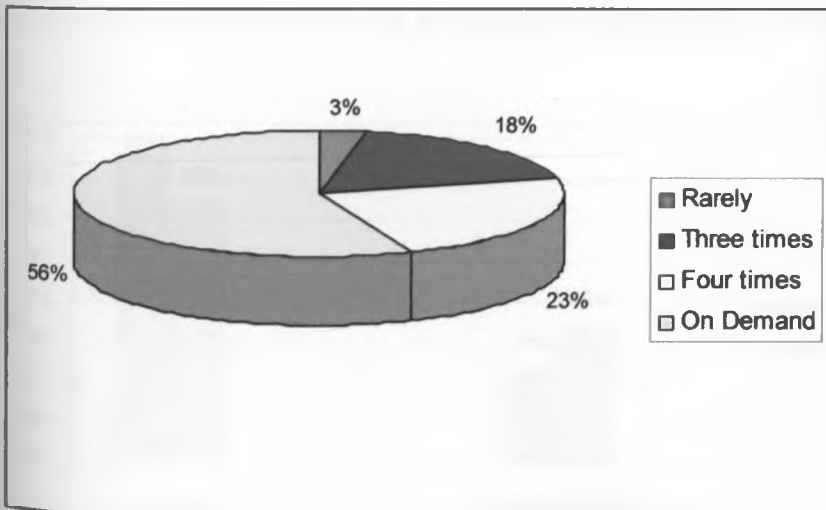
Figure 12: Distribution of children by frequency of breastfeeding in previous day

Figure 14 shows that although more boys (54%) as compared to of girls 46% are breastfed on demand, and more girls (56%) compared to of boys (44%) are breastfed inappropriately, but the difference was not statistically significant (p= 0.215), concluding that gender of the child does not affect breastfeeding frequency in Belet-Hawa district.
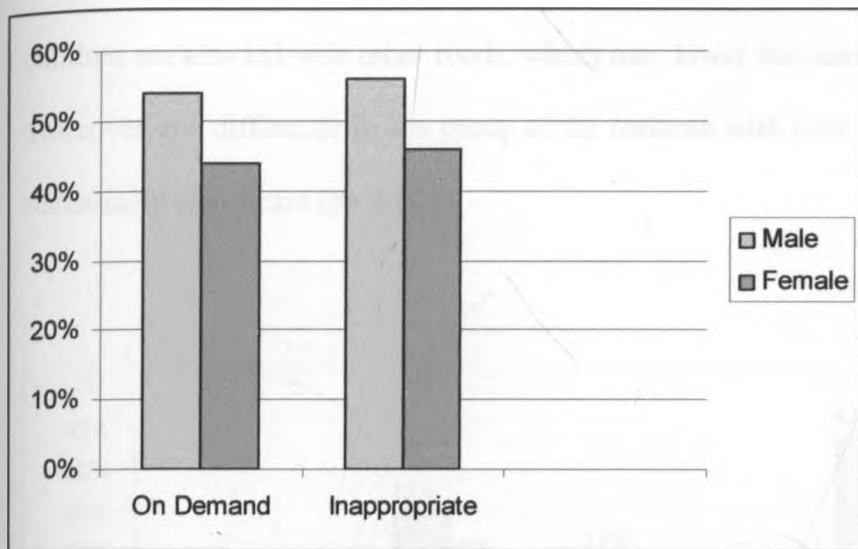
Figure 13: Distribution of children by frequency of breastfeeding and child sex
P= 0.215

Figure 15 shows that almost equal proportion of mothers from rural (76%) and urban (65%) setting breastfed their children on demand in the previous day, however. More mothers (35%) from urban were not breastfeeding on demand compared to 24% of those from rural setting However, the difference was not statistically significant (p = 0.158).
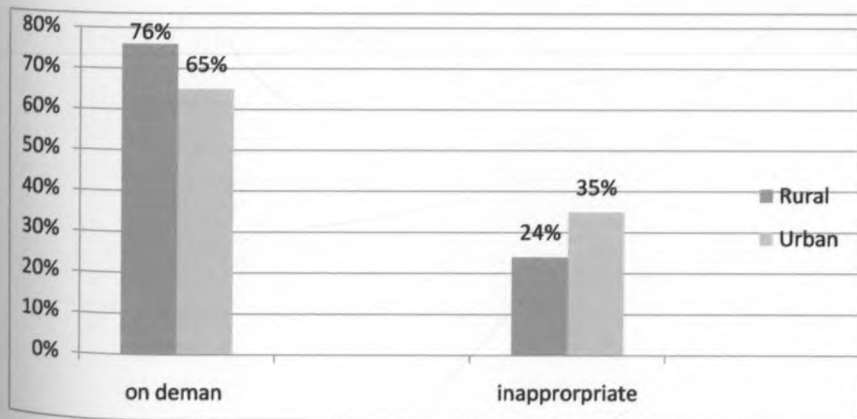
P= 0.158

Figure 14: Distribution of mothers by area of residence and frequency of breastfeeding

Data in the figure 16 showed that the frequency of breastfeeding of children in Belet-Hawa district varied with the age of the child, with older children (18-24 months old) breastfeeding less frequent as compared to their younger counterparts. This is due to the fact that the older children are also fed with other foods, which may lower the number of times they breastfeed. Moreover, the difference in age group of the children with their breastfeeding frequency was statistically significant (p= 0.005).
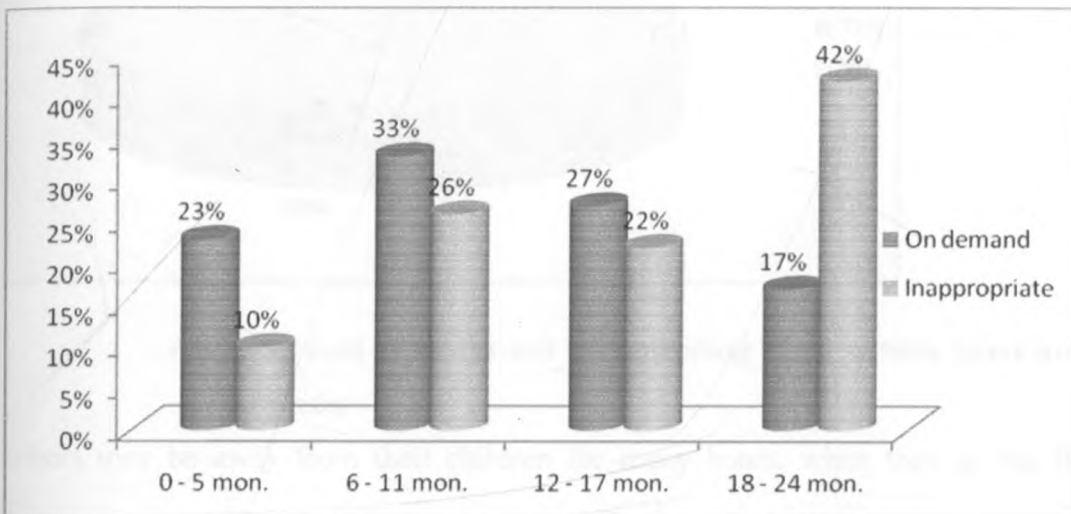
Figure 15: Distribution of children by age groups and Frequency of breastfeeding

4.3.4 Children exclusively breastfed for six months

Figure 17 shows, that majority (93%) of the mothers with children less than 6 months old already introduced foods other than breast milk to their children, and only two children 7% were exclusively breastfed. There was no significant difference (p = 0.34) in mothers of rural setting and those in urban setting in exclusive breastfeeding for their children.

Figure 16: Distribution of children by exclusive breastfeeding
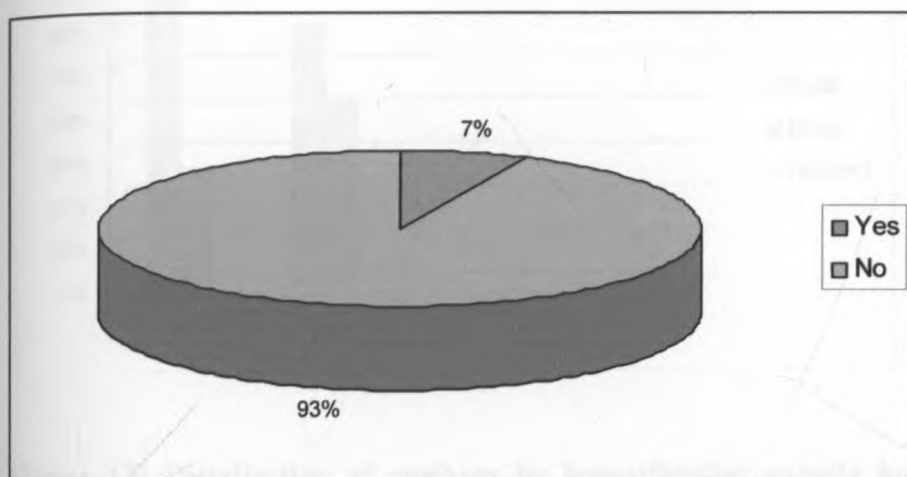
4.3.5 Reason given for not breastfeeding when outside home and public places

Mothers may be away from their children for many hours, when they go for fire wood collection or other income activities. Majority 83% of the respondents reported to have breastfed outside home and in public places.

Table 17: Distribution of mothers by reason of not breastfeeding outside home

Reason of not breastfeeding	N=27	Proportions
Embarrassment	22	81%
No space	3	11%
No chance	2	8%

Table 18 shows that, the reasons of not breastfeeding, when outside home/public places were varied. Majority (81%) of the respondents reported that they did not breastfeed because of embarrassment, while the remaining did not breastfeed either because of lack of space or chance.
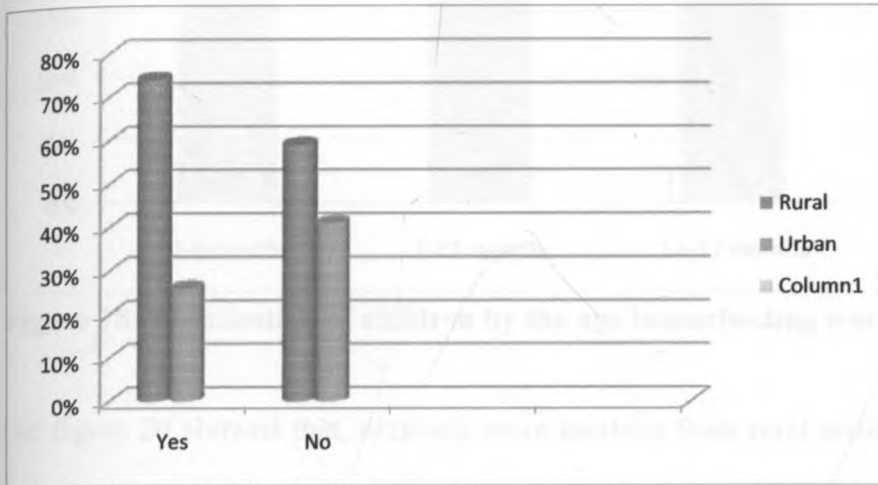
Figure 17: Distribution of mothers by breastfeeding outside home/public places and area of residence
P = 0.123

As detailed in the figure 20, although more of the mothers (74%) from rural setting breastfed outside home/public places, but the difference was not statistically significant (p = 0.123).

4.3.6   Age breastfeeding was stopped

Age breastfeeding was stopped varied among study population. As illustrated in the figure 19, thirty seven percent of the mothers reported they stopped breastfeeding their children between 12 – 17 moths, while almost equal number of mothers (30%) stopped breastfeeding at 7 – 11 months, 18% stopped below the age of 6 months, and only 15% of the mothers breastfed their children up to two years. This indicates that early stoppage of breastfeeding is a common practice in Beled-Hawo district.
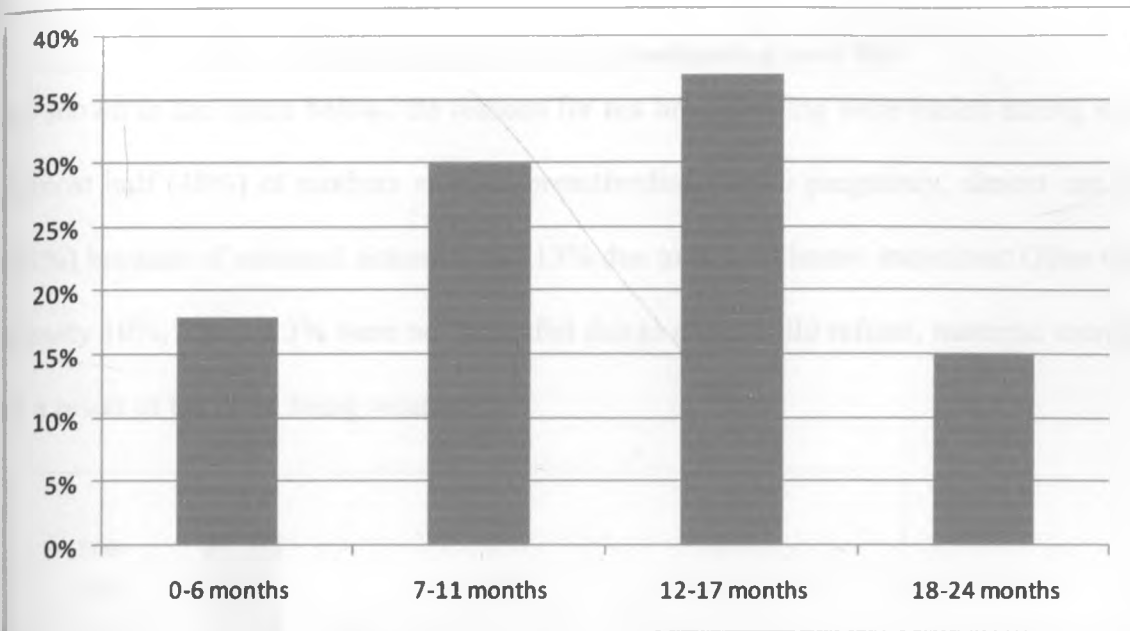
Figure 18: Distribution of children by the age breastfeeding was stopped

The figure 20 showed that, although more mothers from rural setting stopped breastfeeding early in all age groups as compared to mothers from urban setting, the difference was not statistically significant (p = 0.921). This may be attributed to the fact that, the main reason for stopping breastfeeding (second pregnancy) is more common in mothers (56%) from rural setting as compared to those (36%) from urban setting.
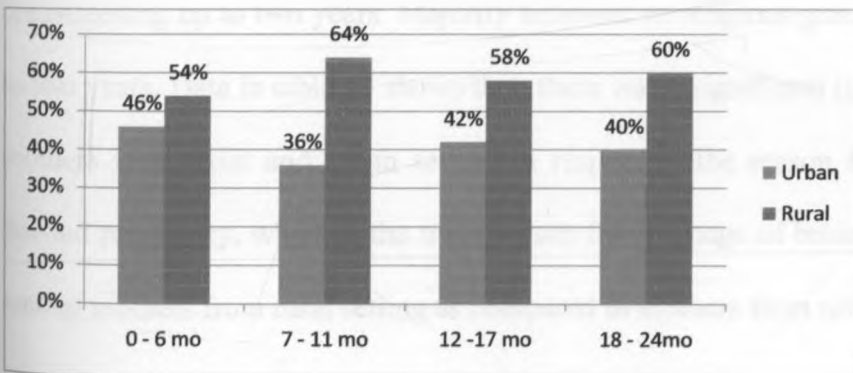
Figure 19: Distribution of children by age breastfeeding was stopped and area of residence
P = 0.921

4.3.7   Reasons given for not breastfeeding (n=139)

As shown in the figure below, the reasons for not breastfeeding were varied among mothers. Almost half (48%) of mothers stopped breastfeeding due to pregnancy, almost one quarter (22%) because of maternal sickness, and 13% due to lack of breast secretions. Other children namely 10%, 5% and 3% were not breastfed due to either child refusal, maternal mortality or as a result of the child being weaned.
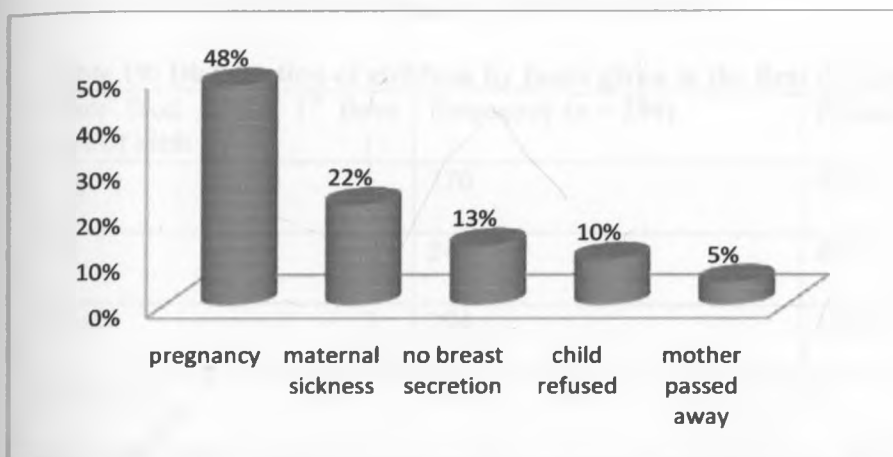
Figure 20: Distribution of mothers for reason of not breastfeeding

From the focus group discussion, majority of the mothers agreed that babies should continue breastfeeding up to two years. Majority believed on religious ground to breastfeed a baby up to two years. Data in table 18 shows that, there was a significant (p= 0.002) difference among mothers from rural and urban setting in respect to the reason for stopping breastfeeding. Second pregnancy, which is the main reason for stoppage of breastfeeding, is more common among mothers from rural setting as compared to mothers from urban in Belet-hawa district.

Table 18: Distribution of mothers for the reason of stopping breastfeeding their children

Area of residence	Reason for not breastfeeding					
	Sickness of the mother	Child refused	No breast milk	Child got old	Pregnancy	Mother passed away
Urban	33%	9%	17%	3%	36%	2%
Rural	14%	11%	10%	3%	56%	7%

P= 0.002

4.3.8   Feeding children with other foods in the first three days of birth

An overwhelming majority (92%) of mothers reported feeding their children foods other than breast milk during the first three days of birth (table 19).

Table 19: Distribution of children by foods given in the first three days of birth

Other food in the 1st three days of birth	Frequency (n = 294)	Proportion
Yes	270	92%
No	24	8%
Total	294	100%

P = 0.530

Only 8% children were reported not to have been fed foods other than breast milk. There was no significant (p = 0.530) difference among children in rural and urban setting being given foods in their first three days of life.

Table 20: Distribution of children by type of food introduced

Type of food introduced	N=270	Proportion
Water with sugar	147	50%
Plain water	84	29%
Cows' milk	21	7%
Tea/coffee	9	3%
Infant formula	9	3%

Table 20 shows that half (50%) of the mothers introduced their children water with sugar in the first three days of life. This was followed by plain water introduced to more than a quarter (29%) of the children. Others introduced cow's milk (7%), tea (3%) or infant formula (3%).
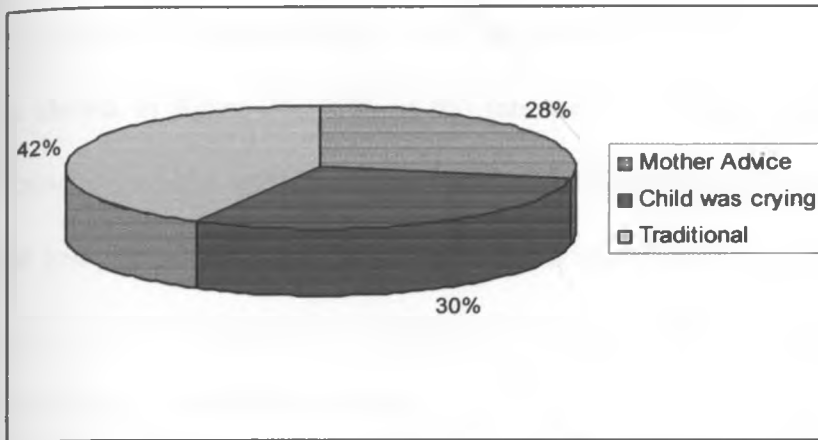
Figure 21: Distribution of mothers for choice of introduced food

Figure 23 showed that almost half (42%) of the mothers chose the foods they introduced based on their tradition, while 30 and 27% did it based in their mother's advice, and due to child crying respectively. This indicates that traditional believe is the major factor which affects the choice of the mother, followed by the advice from her mothers.

4.3.9   Barriers for breastfeeding of children

As shown in figure 17, majority 83% of the respondents reported to have not breast fed in public places. The reasons for not breastfeeding when outside home/public places were varied (Table 28).   However, majority 21(81.5%) of the respondents reported that they did not breastfeed because of embarrassment, while the remaining reported they did not breastfed either because of lack of space or chance. It was also elicited from the focus group discussion that some socio-cultural, physiological and psychological factors acted as constraints to breastfeeding. These included next pregnancy, belief that feeding formula was as good as breast-milk, perception that breastfeeding was painful and inconvenient, and poor breast milk supply. Contributing factors to improper breastfeeding included lack of support and appropriate advice, lack of knowledge, lack of confidence and low self-esteem

4.4 Complimentary feeding practices

Complimentary foods should be introduced after the age of 6 months for the infant, while continuing with breastfeeding. Majority 93% of the breastfeeding mothers already introduced their babies to complimentary foods. The age of introduction varied among study children. As shown in figure 26, 40% of the interviewed mothers introduced to their babies other foods/fluids at the age less than 1 month, while almost equal number (41%) introduced at the age less than 6 months, making early (less than 6 months) introduction of complimentary foods a common practice in Beled-hawa district. The rest introduced complimentary foods by the age 7-11 months and above.
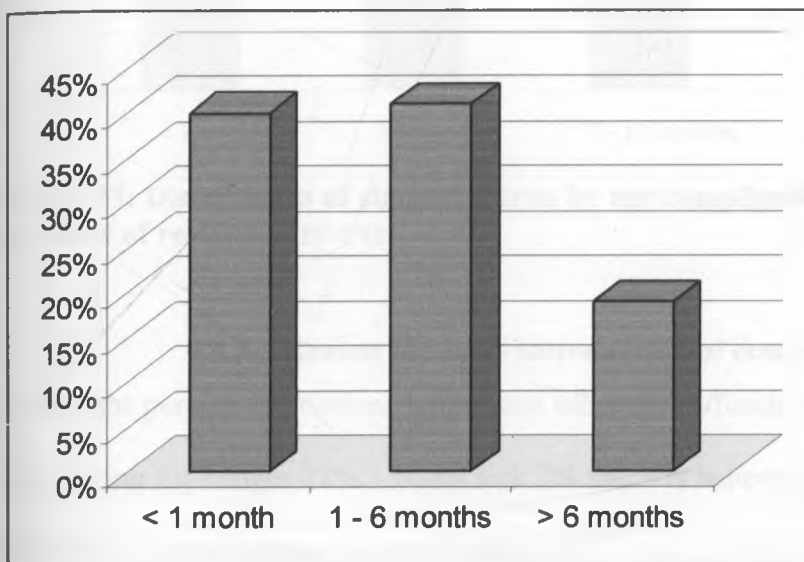
Figure 22: Distribution of study children by age when complimentary feeding was introduced

Early introduction of complimentary foods (during 1st 6 months of infancy) is clearly an important child feeding issue in rural setting of Belet-Hawa district. As shown in the figure 27, 74% of the infants aged 0 – 1 and 67% of those aged 1-6 month from rural setting were receiving complimentary foods. Inadequate intake of complimentary foods (during second year of childhood) was an important child feeding problem in urban setting of Beled-Hawa district. In this regard it is noted that, majority (57%) of children aged 7 -11 months and

substantial proportion (67%) of older children (>12 months) received no solid or semi-solid

in the previous 24 hours, according to the 24 hour recall data. (Figure 24)
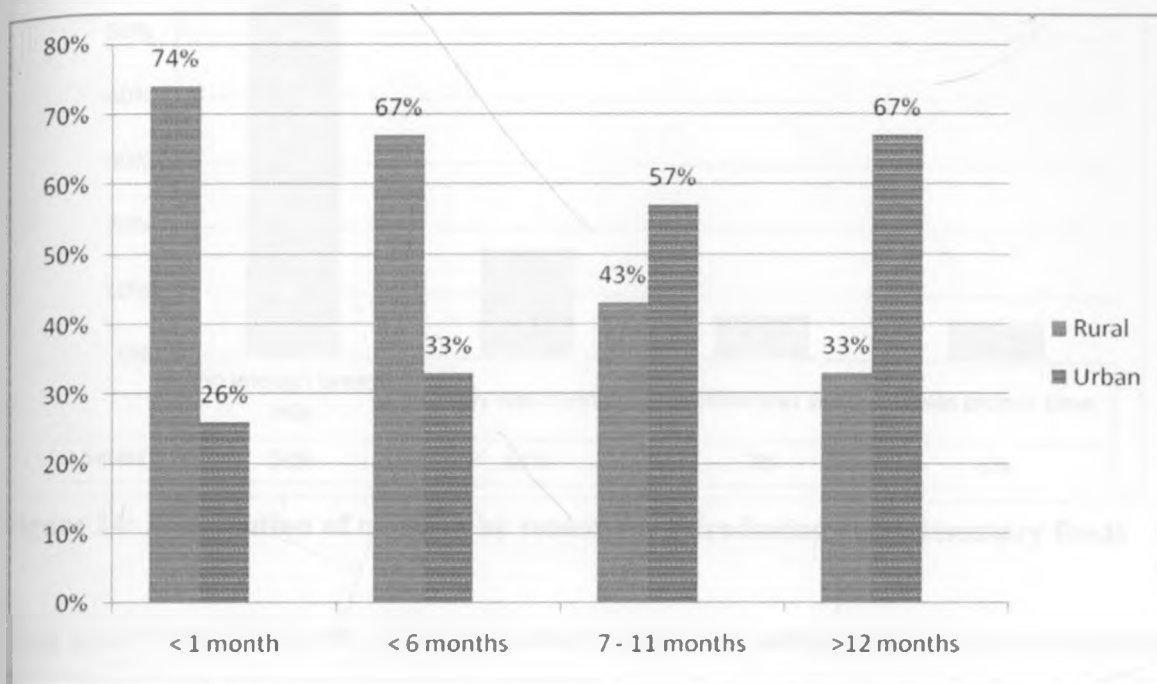
Figure 23: Distribution of study children by age complimentary feeding was introduced and area of residence (P= 0.921)

4.4.1 Reason for early introduction of complimentary foods

Fifty eight percent of mothers introduced other foods/fluids due to inadequate breast milk, baby crying for hunger 17%, being sick 7% and 6% believed that it was the proper time for introducing complimentary foods. (Figure 25)

	no enough breast milk	baby was crying	mother was sick	it was proper time
■ Series 1	58%	17%	7%	6%
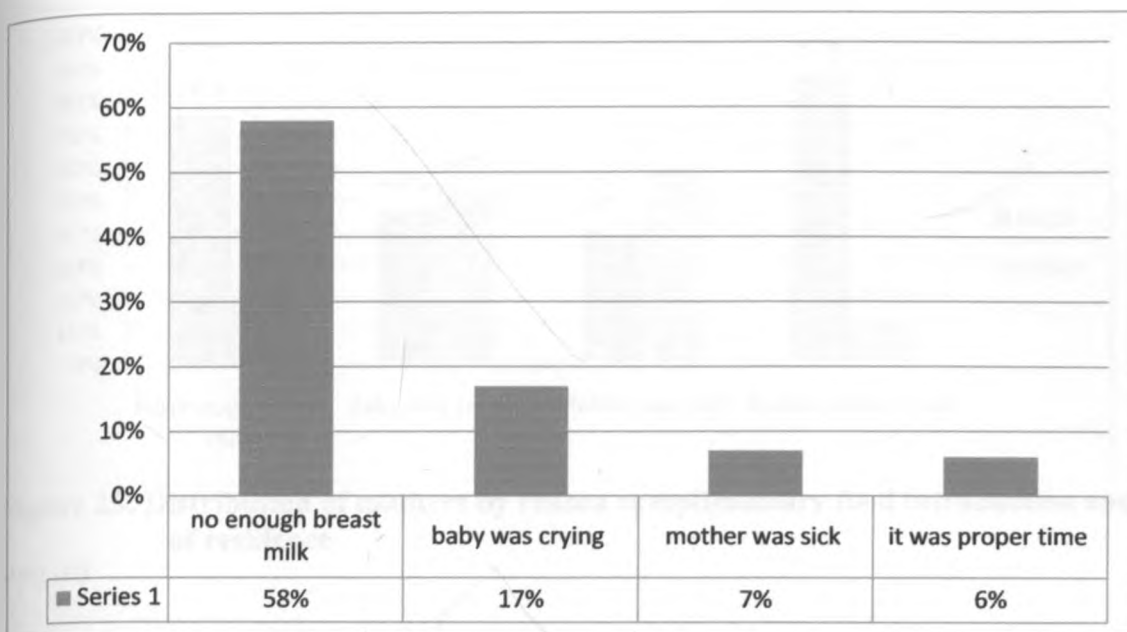
Figure 24: Distribution of mothers by reason for introducing complimentary foods

High proportions (87% and 76%) of mothers from rural setting introduced complimentary foods based on belief that it was proper time or lack of breast secretions respectively (figure 26). This, in addition to the early introduction of complimentary foods in rural setting reflects the poor feeding practices in that area. The figure also showed that 60% and 53% of mothers from urban setting claimed they introduced complimentary feeding because the mother was sick or the child cried respectively, A small proportion (13%) of mothers from urban setting claimed that it was the proper time to introduce complimentary foods to their babies. however, this differences in reasons provided for early introduction of complimentary foods in rural and urban setting was not significant (p = 0.108)
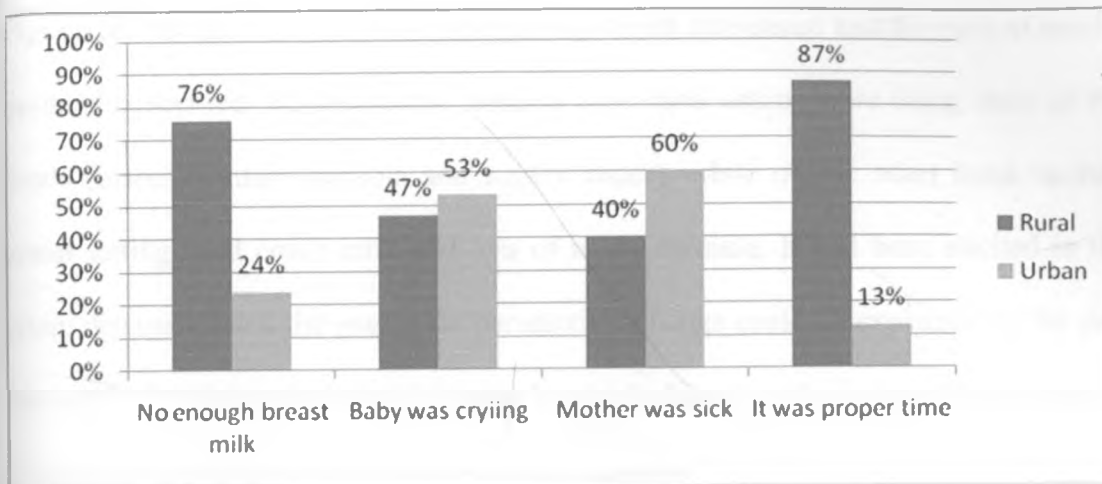
Figure 25: Distribution of mothers by reason complimentary food introduction and area of residence

P=0.108

4.4.2 Type of complementary foods/fluids given to the children

The types of complimentary foods given to the children are shown in figure 27: cow's milk was used by 47%, followed by sugary water 24%, infant formula 12% and biscuits 10%. Porridge, potatoes, tea and camel milk were used by only small (7%) proportion of the respondents, not shown in the figure 27.
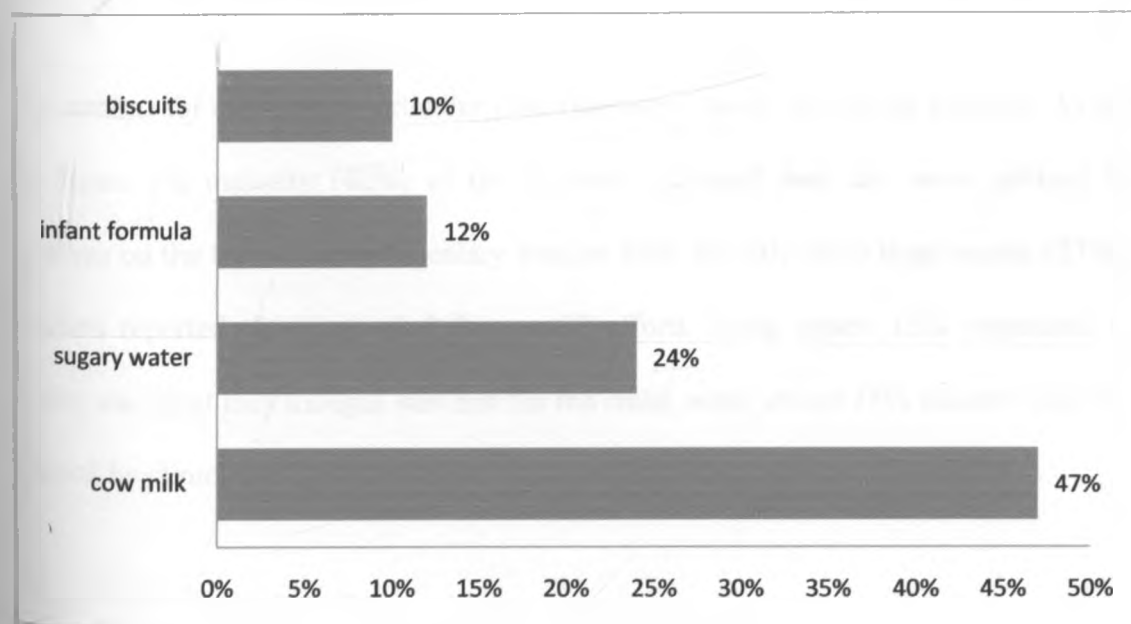
Figure 26: Distribution of children by type of food introduced

Figure 28 indicate the type of complimentary foods introduced and the area of residence for mothers concerned. Paradoxically, mothers from rural setting were using more of the urban foods (biscuits, infant formula and sugary water), while on the other hand mothers from urban setting used cow's milk and less of infant formula. It had been elicited in the focus group discussion that the reason for paradoxical change could be explained by the prolonged drought and subsequent loss of livestock, which forced mothers from rural setting to feed their children with foods provided by the aid agencies.
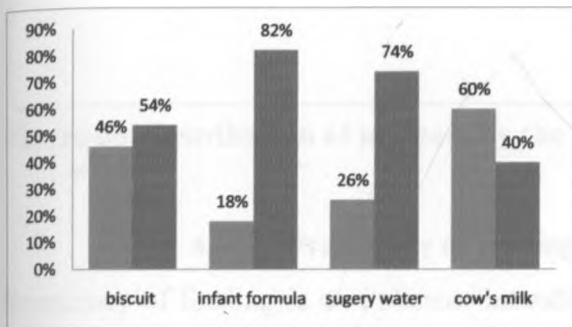
Figure 27: Distribution of mothers by food introduced and area of residence
(P= 0.089)

The reasons for choosing a particular food type were varied among the mothers. As shown in the figure 29, majority (42%) of the mothers indicated that they were advised by their relatives on the type of complimentary food to feed. Slightly more than quarter (27%) of the mothers reported choosing what they could afford. Some others 15% responded that the choice was what they thought was best for the child, while others 15% claimed that they were advised by clinic.

15%

15%

43%

■ Advice by relatives
□ That is what I could
■ Best for my child
■ Advice by clinic

27%
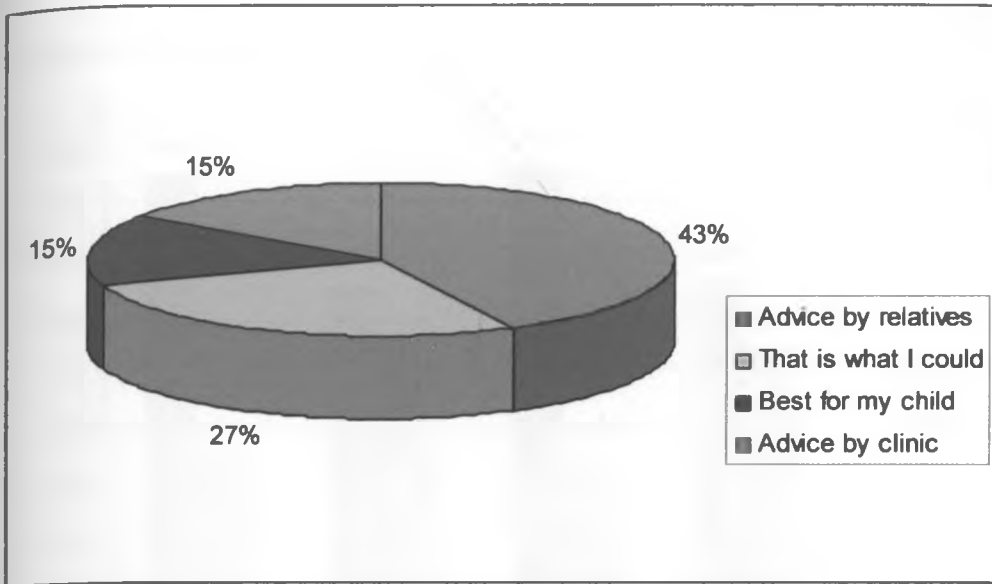
Figure 28: Distribution of mothers by the choice of complimentary foods introduced

4.4.3 Frequency of feeding

Frequency of feeding is an indicator intended as a proxy for energy intake from foods other than breast milk. Feeding frequency for breastfed children includes only non-liquid feeds and reflects the Guiding Principles for complimentary foods (*WHO/PAHO, 2003*). Feeding frequency for non-breastfed children includes both milk feeds and solid/semi-solid feeds, and was compared with the recommendations according to WHO Principles for these children (*WHO, 2005*). As shown in the figure 33, about 45 and 55% of the children were fed less than four times and four or more times respectively during the previous day. For average healthy breastfed infant, meals of complementary foods should be provided 2-3 times per day at 6-8 months of age, and 3-4 times per day at 9-11 and 12-24 months of age, with additional nutritious snacks (such as a piece of fruit or bread or chapatti with nut paste), offered 1-2 times per day, as desired. Snacks are defined as foods eaten between meals-usually self-fed, convenient and easy to prepare (PAHO, WHO, 1998).

The figure 30 and 31 illustrate the number of meals of complimentary foods fed to children and area of residence.
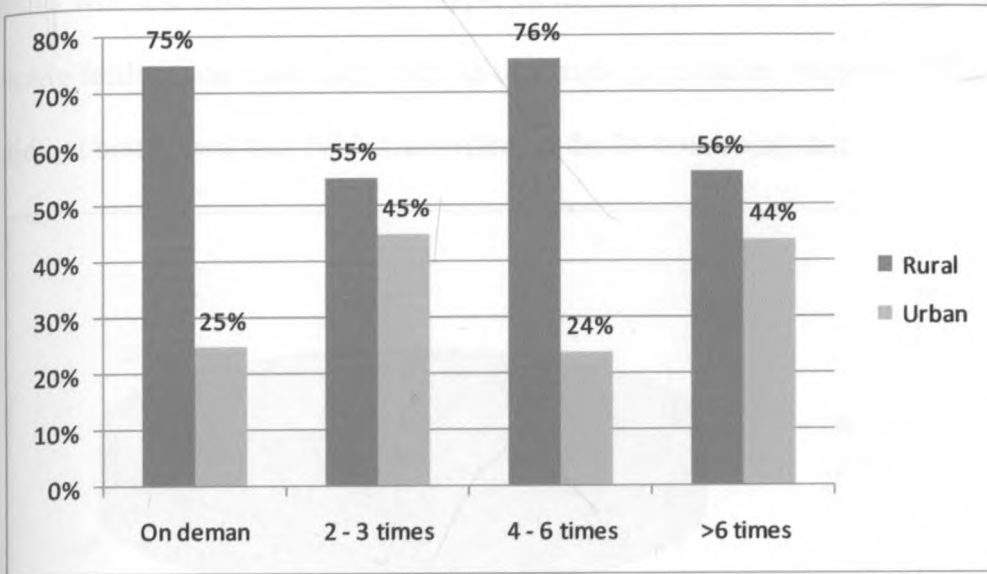
Figure 29: Distribution of mothers by frequency of feeding and area of residence
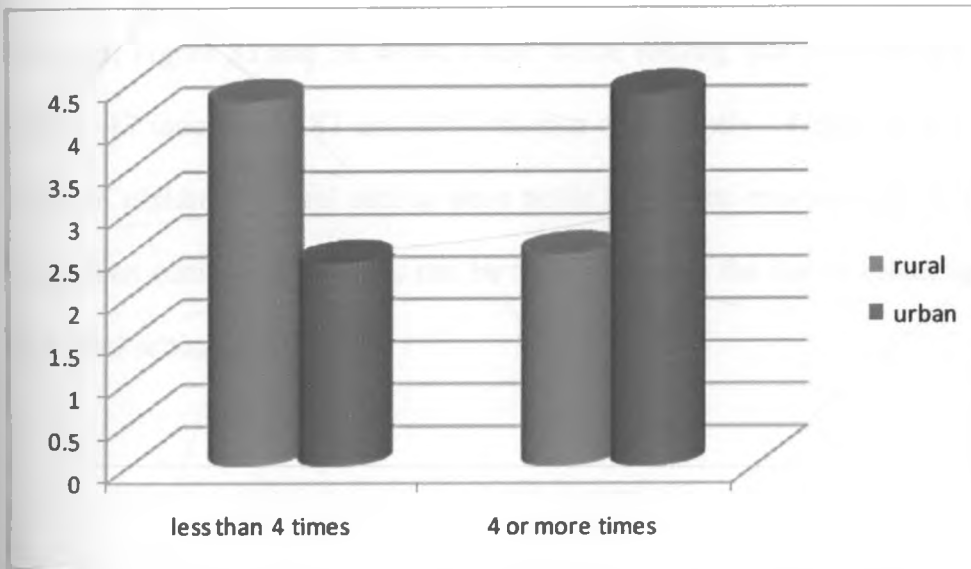
Figure 30: Distribution of study children by frequency of meals in the previous day and area of residence (P= 0.001)

4.4.4 Bottle feeding practices for study children

In this study, bottle feeding was measured using to 24-hour recall, and was defined as any child who fed from bottle with nipple in the previous day. From figure 32, it is clear that bottle feeding was markedly lower in this study population. Majority 78% (230) of mothers did not bottle feed their babies according to the 24-hour recall data.
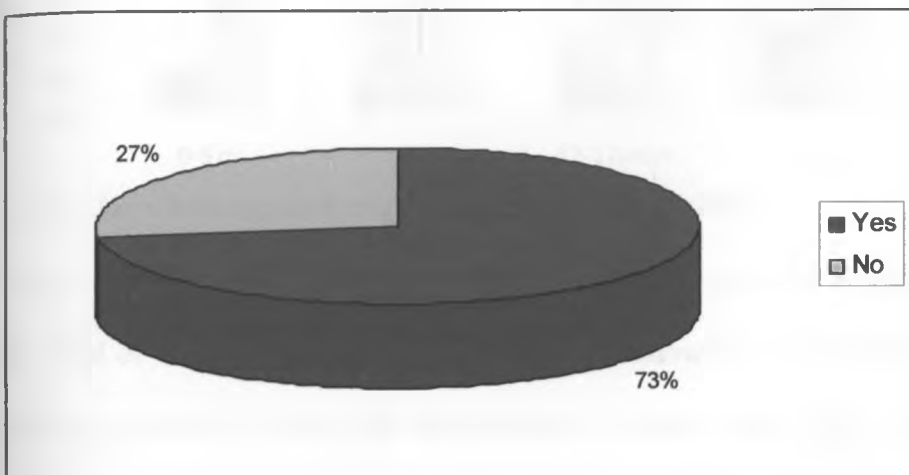
Figure 31: Distribution of children by bottle feeding in the previous day

However, Figure 33 and 34 showed that, bottle feeding was more among age groups 0 – 6 and 12 -17 months old 87 and 80% children respectively. Figure 38 also shows that more (64%) of children in rural setting were bottle fed in the previous day compared to children from urban setting (38%). This can be correlated with the use of infant formula by mothers from rural setting in figure 31.
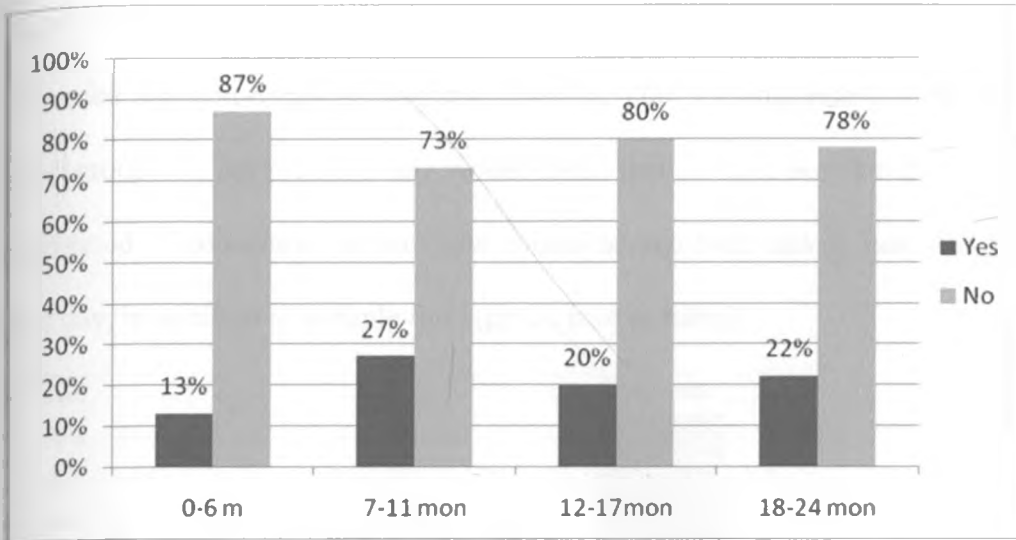
Figure 32: Child age and state of bottle feeding (n=294)

Data in figure 36 and 37 do indicate that bottle feeding practice is a child feeding problem in the rural of Beled-Hawa district. The data also showed no significant (p=0.864) difference between children in rural and urban setting in their bottle feeding status. However, bottle feeding is strongly associated (p= 0.003) with the underweight in Belet-hawa district.
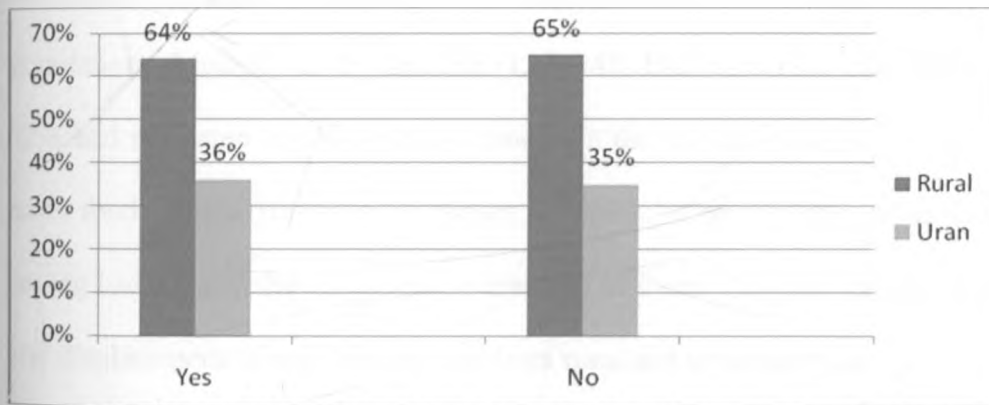
Figure 33: Distribution of mothers for bottle feeding practices and area of residence
P= 0.864

4.4.5   Dietary diversity score

There are currently no specific recommendations regarding the optimal number of foods or food groups that a child should consume each day at different ages. There is, however, a consensus that higher dietary diversity is desirable, and that a larger number of foods or food groups can help meet daily requirements for a variety of nutrients. In this study a cutoff point of at least 4 out of 7 food groups was used. The cut-off of at least 4 of the 7 food groups

listed elsewhere was selected because it is associated with better quality diets for both breastfed and non-breastfed children (*FANTA, 2007*). Consumption of foods from at least 4 food groups on the previous day would mean that in most populations the child had a high likelihood of consuming at least one animal-source food and at least one fruit or vegetable that day, in addition to a staple food (grain, root or tuber).

Figure 34: Distribution of children by food groups eaten in the previous day

As shown in figure 35 and 36, the food diversity score was very poor in the study populations. Majority of the children (128) 44% had eaten only one type of food, while (95) 32% had not eaten any of the food groups in the previous day, and only 1% have had 4 or more food groups. However, as shown in figure 39, the children from both urban and rural setting had equally shown poor food diversity of score. This may be due to prolonged drought and displacement of populations both from rural and urban settings.

Figure 35: Distribution of children by food groups eaten in the previous day

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Figure 34: Distribution of children by food groups eaten in the previous day

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Figure 35: Distribution of children by food groups eaten in the previous day

4.5 Mother's knowledge on the child feeding practices

Majority (76%) of mothers had no knowledge of the WHO recommended time for initiation of breast feeding, (Table *23*). The recommended time for commencement of breastfeeding is the first hour after baby is born. However, slightly more than half (51%) knew the recommended period for exclusive breastfeeding (up to 6 months), while the remaining almost half responded they would continue exclusive breastfeeding more than 6 months (Table 23).

Table 21: Distribution of mothers by knowledge of exclusive breastfeeding (N=294)

Period of breastfeeding (n=294)	Mother's knowledge	(n)	Percentage
Initiation at one month	Yes	71	24%
	No	223	76%
Exclusive breastfeeding	Up to six months	150	51%
	Up to one year	93	32%
	Up to one and half years	51	17%

It had been observed in the focus group discussion that almost all 98% of the mothers had knowledge about the benefit of breastfeeding. Their source of information was mainly relatives and friends. Majority 87% of respondents reported that they would avoid giving their children animal liver until a child can speak. Another 13% of the respondents reported unwillingness to fed solid foods to their children. This is in agreement with the traditional practices reported by the elderly mothers in the focus group discussion.

4.5.1 Mother's knowledge on frequency of child feeding according to age

Table 22 shows the frequency for feeding the children per day according to their ages. Knowledge by mothers for the recommended frequency of feeding is a positive indicator for better nutrition of the child.

Table 22: The mean frequency of feeding by age groups as recommended by WHO

Child age	Mean frequency of feeding
Less than 6 months	2 times
6-11 months	3times
12-17 months	3.78 times
18-23 months	4 times

Data in table 23, on the other hand shows knowledge of mothers on the number of times to feed their children is very poor in Belet-hawo district, where most mothers either fed more less than the recommended number of feeds in 24 hours.

Table 23: Distribution of mothers by knowledge of frequencies of meals of different age groups

frequency of feeding	child age in months	0 -6 mon.	7 - 11 mon.	12 - 17 mon.	18 - 24 mon.
on demand		10%	3%	7%	2%
2 - 3 times		27%	48%	4%	54%
4 - 6 times		55%	44%	54%	40%
> 6 times		7%	5%	2%	7%

P= 0.112

4.6 Data on care and feeding practices based on focus group discussions.

Focus group discussions indicated that most of the mothers introduced food other than breast-milk within the first few hours after delivery. Children were mainly given milk or water mixed with sugar. Breastfeeding usually commenced between 48 - 72 hours after delivery that is after 2-3 days. The mothers believed that the child would have diarrhea if they were breastfed colostrum immediately after delivery. In addition, they believed breastfeeding for the first few hours/days would increase the mothers' abdominal pain. It was noted that this was a common practice among Somali women. Further, the mothers weaned their children

mostly at the age of six months with foods available in the household at the time. Weaning foods included porridge made from maize or sorghum, *canjera* with tea, milk, oil and sugar added to soften food. When children were sick, certain foods were not given. For example when child had diarrhea and measles, fresh milk and fatty foods were not given. Pregnant women were not allowed to eat nutritious foods such as liver, milk and fatty meat in order to avoid fetus growing too big and cause complication during delivery.

4.7 The association between child age and sex, and their nutritional status

Data in table 24 shows a cross tabulation done for wasting and sex among study children. Although more boys (28%) were wasted as compared with girls (18%), the difference was not significant (p = 0.06). The level of stunting for the study children was found to be not significantly association with child sex (P = 0.156). However, it was found out that there was a strong association between underweight and child sex (p = 0.000), with more girls underweight as compared with boys. Stunting and wasting are not significantly associated with sex but significantly more girls were underweight than boys, meaning that girls suffered more current malnutrition (underweight) compared with boys.

Table 24: Child sex versus nutritional status

Nutritional status	Z-score	Child sex		P-value
Wasting (n = 264)	WHZ-score	Boys	Girls	0.060
	≤ - 2 / edema	(39) 28%	(23) 18%	
	>-2	(99) 72%	(103) 82%	
	Total	(138) 100%	(126) 100%	
Stunting (n = 264)	HAZ-score			0.156
	≤ - 2	(99) 50%	(100) 50%	
	>-2	39 (60%)	(26) 40%	
	Total	(138) 100%	(126) 100%	
Underweight (n = 294)	WAZ-score			0.000
	≤ - 2	(96) 63%	(53) 37%	
	>-2	(56) 37%	(89) 63%	
	Total	(152) 100%	(142) 100%	

A strong association was found between wasting (WHZ-score) and child age, as shown in the table 8. Children aged 18-24 months were more wasted as compared to their younger counterparts (P = 0.028). There was a significant (P = 0.03) deference in stunting among children with different age groups, with children aged more than 18 months more stunted as

compared to their younger counterparts (table 13). Data in table 11 showed that age difference was statistically significant (p = 0.00) for underweight, with children older than 18 months more malnourished. Further analysis showed that there is negative relationship between the age and underweight level of children that is with increased age the nutritional status went down. The highest proportions of malnourished children were within 18-24 months, indicating that malnutrition is a serious problem in older children in Belet-Hawo district.

4.8 The influence of feeding practices on nutritional status

4.8.1 Effect of the time breastfeeding was initiated on the nutritional status

Early initiation of breastfeeding (soon after birth) is recommended to reduce the risk of hypoglycemia, and maximize social bonding between mother and her child in order for the infant to get the protective colostrum (Academy of science. 1991). The data in table 25 showed that there was no association between wasting and time for initiation of breastfeeding (p = 0.669). The data also showed that, there was no significant deference of stunting among children who initiated breastfeeding in the first hour of birth (Appropriate) and those who initiated after first hours (inappropriate) (P Value = 0.959). The underweight status for the study children was also not associated with the time breastfeeding was initiated (P Value = 0.593). The time breastfeeding was initiated seemed to have no effect on the nutritional status for children in Beled-Hawa district. However, delayed initiation of breastfeeding affects nutritional status of the children through morbidity, which was beyond the scope of this study.

Table 25: Time breastfeeding was initiated versus nutritional status

Nutritional status	Z-score	Initiation of breastfeeding		P-value
Wasting (n = 252)		Appropriate (1st hour of birth)	Inappropriate (after 1st hour of birth)	0.669
	≤ - 2	18 (30%)	43 (70%)	
	>-2	51 (22%)	140 (78.0%)	
	Total	69 (24%)	183(76%)	
Stunting (n = 252)		Appropriate (1st hour of birth)	Inappropriate (after 1st hour of birth)	0.959
	≤ - 2	53 (27.5%)	140 (72.5%)	
	>-2	16 (27%)	43 (73%)	
	Total	(69) 100%	(183) 100%	
Underweight (n = 282)		Appropriate (1st hour of birth)	Inappropriate (after 1st hour of birth	0.953
	≤ - 2	41 (53.2%)	100 (48.8%)	
	>-2	36 (46.8%)	105 (51.2%)	
	Total	(77) 100%	(205) 100%	

4.8.2 The effect of whether the child was breastfeeding or not on nutritional status

As depicted in the table 26, there was no significant difference in wasting among the children who were breastfeeding and those who were not (P = 0.722). The data in the table 29 also showed that stunting status among children who were breastfeeding was not significantly different from those who were not breastfeeding at the time data collection (P = 0.883). It was also established that there was no association between underweight and status of breastfeeding (P Value = 0.126). Breastfeeding at the time of data collection is not associated with the nutritional status of children 0 – 24 months old in Belet-Hawa district.

Table 26: Children breastfeeding status versus their nutritional status

Nutritional status	Z-score	Breastfeeding status		P-value
		Breastfed	Not breastfed	
Wasting (n = 282)				0.722
	WHZ-score ≤ - 2	(34) 55%	(28) 45%	
	WHZ-score >-2	(94) 47%	(108) 53%	
	Total	(128) 100%	(136) 100%	
Stunting (n = 282)				0.883
	HAZ-score ≤ - 2	(97) 76%	(102) 75%	
	HAZ – score>-2	(31) 24%	(34) 25%	
	Total	128 (100%)	(136) 100%	
Underweight (n = 294)				0.126
	WAZ - score≤ - 2	(83) 53.5%	(62) 45%	
	WAZ- score >-2	72 (46.5%)	(77) 55%	
	Total	(155) 100%	(139) 100%	

4.8.3 The effect of frequency of breastfeeding on the nutritional status

Normal and healthy babies can self-regulate their feeding time to accommodate their varying nutritional and physiological needs. It is therefore recommended that they be breastfed on demand including at night to enable them meet these needs. The frequency of breastfeeding was measured by means of 24-hour recall of the breastfeeding mothers, and was found out that there was no significant difference ($P = 0.165$) in wasting among the children who were breastfed on demand and those who were not. Data in table 27 also shows that there was no significant association ($P = 0.100$) between stunting, underweight ($p=0.528$), and the frequency of breastfeeding among the study children. Frequency of breastfeeding previous 24-hours, according to WHO, is an important determinant of child nutritional status. However, in this study, it has being found out that frequency of breastfeeding was not significantly associated with the nutritional outcome of the study children. This was explained in the focus group discussion as due to the low quality of breast milk as mothers were also malnourished.

Table 27: Frequency of breastfeeding versus nutritional status

Nutritional status	Z-score	Frequency of breastfeeding		P-value
		On demand	Not on demand	
Wasting (n = 128)				0.165
	$\leq$ - 2	21 (62%)	13(38%)	
	>-2	45 (48%)	49 (52%)	
	Total	66 (100%)	62 (100%)	
Stunting (n = 128)				0.100
	$\leq$ - 2	54 (55.7%)	43 (44.3%)	
	>-2	12 (38.7%)	19 (61.3%)	
	Total	(66) 100%	(62) 100%	
Underweight (n = 155)				0.528
	$\leq$ - 2	48 (56%)	35 (58%)	
	>-2	38 (44%)	34 (50%)	
	Total	(86) 100%	(69) 100%	

4.8.4 The effect of bottle feeding in the previous day on the nutritional status

In this study bottle feeding was measured according to 24-hour recall and was defined as any child fed from bottle with nipple in the previous day. There was no significant deference (P = 0.721) in stunting and wasting (P = 0.176) status among children who bottle fed and those who were not in the last 24 hour (Table 28). However, bottle feeding practice in Beled-Hawa district was strongly associated with status for underweight children (P Value = 0.003). Where, children who were bottle fed were significantly fewer in underweight compared to those who were not. Bottle feeding significantly reduced the number of underweight children in the study area.

Table 28: Bottle feeding versus nutritional status

Nutritional status	Z-score	Bottle feeding status		P-value
Wasting (n = 264)		yes	No	0.176
	≤ - 2	(18) 49%	(44) 71%	
	>-2	(42) 21%	(160) 79%	
	Total	(60) 100%	(204) 100%	
Stunting (n = 264)				0.721
	≤ - 2	(42) 21%	(157) 79%	
	>-2	(18) 28%	(47) 72%	
	Total	60	204	
Underweight (n = 294)				0.003
	≤ - 2	(21) 33%	(124) 54%	
	>-2	(43) 67%	(106) 46%	
	Total	(64) 100%	(230) 100%	

4.8.5 The effect of pre-lacteal feeding in the first 3 days of birth on the nutritional status

The data in table 29 showed that there was no significant difference (P = 0.527) in wasting and stunting (P = 0.791) among children who were fed with fluid other than breast milk in the first 3 days of their birth and those who were not. However the children who received fluids other than breast milk in the first three days of their life had significantly more underweight (P = 0.009) as compared with those who did not. This is due to the fact that pre-lacteal feeding displaces breastfeeding and exposes the immature digestive system to microbes, which leads to both chronic and current malnutrition (underweight).

Table 29: Pre-lacteal feeding versus nutritional status

Nutritional status	Z-score	Pre-lacteal feeding		P-value
Wasting (n = 256)		Received	Not received	0.527
	≤ - 2	34 (24%)	28 (20%)	
	>-2	112 (76%)	111 (80%)	
	Total	147 (100%)	139 (100%)	
Stunting (n = 256)				0.791
	≤ - 2	177 (91%)	17 (9%)	
	>-2	58 (93.5%)	4 (6.5%)	
	Total	235 (100%)	21 (100%)	
Underweight (n= 294)				0.009
	≤ - 2	127 (47.0%)	18 (75.0%)	
	>-2	143 (53.0%)	6 (25.0%)	
	Total	270 (100%)	24 (100%)	

4.8.6 The effect of the time breastfeeding of children was stopped on the nutritional status

The age when breastfeeding of children in the study area was stopped did not affect their stunting, wasting and even underweight status as shown in table 30.

Table 30: Age breastfeeding was stopped versus nutritional status

Nutritional status	Z-score	Age breastfeeding was stopped		P-value
Wasting (n = 139)		18-23 months	<18 months	0.688
	≤ - 2	(5) 25%	(25) 21%	
	>-2	(15) 75%	(94) 79%	
	Total	(20) 100%	(119) 100%	
Stunting (n = 137)				0.709
	≤ - 2	(7) 6.8%	(96) 93%	
	>-2	(3) 8.8%	(31) 91.2%	
	Total	(10) 100%	(127) 100%	
Underweight				0.809
	≤ - 2	(8) 13%	(54) 87%	
	>-2	(12) 16%	(65) 84%	
	Total	(20) 100%	(119) 100%	

4.8.7 The effect of the frequency of feeding on the nutritional status

Analyzed data in table 31 showed that when analyzed the stunting status among children who were fed less than four times in the previous day was not significantly different from those who were fed four or more times (P = 0.472). When a cross tabulation was done for level of wasting and frequency of meals in the previous day among children, it was found that wasting was highly associated with the number of feeds in the past 24-hours (P = 0.042). Further analysis showed that there was weak and negative association between frequency of feeding and wasting among the study children (r = - 0.126). When statistical analysis was done for underweight and its association with frequency of feeding, it was found out that there was no significant correlation between stunting and the number of times the child was fed in the previous day (P = 0.126).

Table 31: Frequency of feeding versus nutritional status

Nutritional status	Z-score	Frequency of feeding		P-value
Wasting		< 4 times	> 4 times	0.042
	$\leq$ - 2	(40) 66%	(21) 34%	
	>-2	(102) 51%	(99) 49%	
	Total			
Stunting				0.472
	$\leq$ - 2	110 (55.6%)	88 (44.4%)	
	>-2	32 (50.0%)	32 (50.0%)	
	Total			
Underweight				0.126
	$\leq$ - 2	59 (44.7%)	86 (54.1%)	
	>-2	73 (55.3%)	73 (45.9%)	
	Total			

Frequency of feeding of children in the study area was strongly associated with their status of wasting, with more children (66%) who were fed less than four times wasted as compared to the children who were fed more than 4 times.

4.8.8 The effect of age of introduction of complimentary feeding on the nutritional status

The age when complimentary feeding of children in the study area was introduced did not affect their stunting, wasting and even underweight status as shown in table 32. Complimentary feeding is influenced by the household food security, which was very low in the study population. This lack of household food availability may have masked the effect of the complimentary feeding on nutritional status. However, morbidity, which has profound effect on the nutritional outcome, was not measures in this study.

Table 32: Age complimentary feeding introduced versus nutritional status

Nutritional status	Z-score	Age of introduction of complimentary feeding		P-value
		Appropriate	In appropriate	
Wasting (n = 128)				0.956
	≤ - 2	(3) 91%	(31) 9%	
	>-2	(8) 9%	(86) 91%	
	Total	(11) 100%	(117) 100%	
Stunting (n = 128)				0.625
	≤ - 2	9 (10%)	88 (90%)	
	>-2	2 (3%)	29 (97%)	
	Total	(11) 100%	(117) 100%	
Underweight (n = 155)				0.227
	≤ - 2	9 (11%)	73 (89%)	
	>-2	5 (6%)	68 (94%)	
	Total	14	114	

4.8.9 The effect of dietary diversity score on the nutritional status

Dietary diversity score was calculated from the number of food groups fed to the child in the previous day, a cut of point of four food groups was made to measure the food score. Children fed less than four food groups were considered to have poor score, while those fed with four or more food groups were considered to have a good dietary diversity score. The 7 foods groups used for tabulation of this indicator were:

— Grains, roots and tubers

— Legumes and nuts

— Dairy products (milk, yogurt, cheese)

— Flesh foods (meat, fish, poultry and liver/organ meats)

— Eggs

— Vitamin-A rich fruits and vegetables

— Other fruits and vegetables

Table 33: Dietary diversity score versus nutritional status

Nutritional status	Z-score	Dietary diversity score		P-value
Wasting (n = 264)		Poor score	Good score	1.00
	≤ - 2	62 (24%)	0 (0%)	
	>-2	199 (76%)	3 (100%)	
	total			
Stunting (n = 264)				0.573
	≤ - 2	197 (99%)	2 (1%)	
	>-2	64 (98.5%)	1 (1.5%)	
	total			
Underweight (n = 294)				0.619
	≤ - 2	143 (49.1%)	2 (66.7%)	
	>-2	148 (50.9%)	1 (33.3%)	
	total			

Table 33 shows that, the dietary diversity score of children in the study area did not affect their stunting, wasting and even underweight status. This may due to the fact that large proportion of the population is affected by drought which has disrupted the livelihood systems.

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CHAPTER FIVE

5.0 Discussion

Systemic efforts have been made to reduce nutritional problems in Gedo region by various UN and other relief agencies. Numerous studies were also conducted to identify nutritional situation in Beled-Hawo district, but studies on child feeding practices and nutritional status were lacking. In this regard the present study was conducted to highlight the role of feeding practices in the alarming nutritional situation in Belet-hawa district.

5.1 Social economic and demographic characteristics of the respondents

This study established that most (87%) of the households were led by males. The sex of the household head was significantly ($p < 0.05$) different for area of residence. This is in consistence with the male dominated Somali tradition. The education level among the mothers/caregivers (n=294) was very low. Overwhelming majority (87%) of the mothers/caregivers did not attend any form of education, and only 1% attained secondary education. The education level significantly ($p < 0.05$) varied among mothers/caregivers in rural and urban setting, with majority (87%) of mothers who attended any form of education belonging to rural setting. This is in contrast to FSNAU, 2006 finding, that mothers from urban setting were more educated, compared to those in rural setting. This was explained, in the focus group discussion that women migrated from the urban settings, which were more prone to civil insecurity. An over whelming (95%) of the study household did not own any land or animals. While only a small proportion (5%) either owned land or kept animal, this is due to the prolonged drought, which led to the loss of livestock and agricultural land. Accordingly, an overwhelming majority (86%) of the households in this study derived their livelihood from urban activities with few agro-pastoralists and farmers.

5.2 *The association of social economic and socio-demographic factors with child feeding practices*

The relationship between breastfeeding practices and social economic/socio-demographic variables was significant ($p > 0.05$). Status of breastfeeding at the time of data collection was strongly ($p > 0.05$) associated with the area of residence, level of education of mothers and age of children. 58% mothers from rural setting were breastfeeding at the time of data collection as compared to 32% from urban setting. This is in consistent with FSNAU finding in their study on feeding practices in Somalia (FSNU, 2006), which found that breastfeeding was more prevalent in rural setting. This may due to the fact that large proportion of the population is affected by drought which has disrupted the livelihood systems (FSAU, 2006). Lead to high dependence on short term aid. Most households had received some form of informal or formal assistance in the last three months prior to the assessment, from both local and international organizations (FAO, 2006). The main source of food reported by the majority of the households was food aid. In the areas, where food distribution had taken place there was similarity in the number and type of food groups consumed among the households of different social and economic groups. The formal and informal assistance in food received may have had an influence in the overall situation in the region. The second major source of food was purchase and own production `both of which had been adversely affected by the prevailing drought. Crop and livestock production for poor and middle group population in the region is largely dependent to availability of rain. The drought has therefore lead to crop failure leaving the population highly vulnerable to food insecurity. Reduced crop production in the area has led to rise in cereal prices, making it unaffordable to most people. Employment in the large farms had also been affected by the prevailing drought, hence reducing means of income in the region. Depletion of pasture and drying of water points has lead to massive livestock movement to other regions, mainly to Bay and Juba valley (FSAU 2006). This has dramatically reduced milk consumption as well as income from animal-based

products in the region. Only 27% of the assessed children reported to have consumed milk and milk products in the last 24 hours prior to the assessment. Overall, 72% of the assessed children consumed less diversified food with three or fewer food groups. This fails to meet the nutrition requirements of the population.

The result also showed that most people in the region are resident (54%), with almost equal proportion 46% of displaced people and returnees. This might have led to over stretching of the available resources, and compromised optimal child feeding. Civil insecurity and shortages of food and water were the main reasons cited for migration.

5.3 Nutritional status of the children

This study recorded GAM (weight for height <-2 Z scores or oedema) and sever acute malnutrition of 23.5% and 3.8% respectively. This is in consistent with the finding of the FSNAU survey in 2006 which showed a GAM rate of 23.8% (FSAU, 2006). The long term estimates of malnutrition from 1999 to 2005 have shown malnutrition rates of >20% in other parts of northern part of Gedo Region namely Garbaharey, Luuq and Elwak districts, 15 – 20% in Dolo district and 10 – 14.9% in Bardera districts (FSAU, UNICEF, and WFP 2006). The finding of this study is consistent with the findings of the past studies in other districts in the region. However, the malnutrition rate of 23.5% in this study indicates a worsening poor nutrition situation. It has been observed that the reason for the high malnutrition rate was due to prolonged drought and civil insecurity, which led to the loss of coping mechanisms by the community, namely, agriculture, livestock, business and other income generating activities.

The study also showed that there is a significant variation ($p < 0.05$) in distribution of nutritional status in different age groups. Overall, the age category with highest proportion of malnourished children (45% for wasting, 36% for underweight and 50% for stunting) was 18-24 months, while the age groups 6-11 and 12-17 months had the least proportion of

malnutrition (27 and 29% respectively). This is in consistent with the FSNAU, 2006 study results, where it was found out that older children were more malnourished as compare to their younger counterparts. Lack of breastfeeding and poor complimentary feeding practices may be the contributing factor for the bad nutritional status of older children. Breastfeeding continue if the mother is not yet pregnant. However, by this time the mother is either pregnant with another child, or has already given birth to a younger child. Very few children are on breast milk in the second year of life (FSAU, 2007). In addition to the lack of breastfeeding, the somewhat higher level of malnutrition in older age groups suggests that household food insecurity has had a strong influence in the overall high level of malnutrition in the region (FSAU, 2006). The older children depend entirely on what is served at the family table. The relatively lower level of malnutrition among children aged 6-11 months may partly be attributed to breastfeeding which although not significantly associated with wasting, was highlighted in the focus group discussion as a major contributing factor in the nutritional status of children. The result of another study by UNICEF in NWFP-Pakistan showed that both moderate and severe wasting rates were significantly higher among the 12-23 month old age group than the other age groups among IDP households (UNICEF, 2009).

It was found out that there was a strong association between underweight and child sex (p = 0.01), with more girls (61%) underweight as compared with boys (39%). However, Stunting and wasting were not significantly associated with child sex. Area of residence of children had no impact on the nutritional status of children in the district Boys were more likely than girls to be underweight but stunting was more common among girls as compared to boys

5.4 Breastfeeding practices of study children

Feeding practices are the principal determinants of a child's nutritional status and poor feeding exposed them to higher risk of illness and death. Breast feeding has been internationally recognized and promoted as the saver method to feed a baby. The benefit of

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breastfeeding especially exclusive breastfeeding are well established, particularly in poorer environments, where the early introduction of other milk is of particular concern, because of the risk of pathogen contamination and over dilution of milk, which leads to increased risk of morbidity and under-nutrition (Dennis et al, 2002). The relationship between breastfeeding practices and socio-economic/socio-demographic variables was significant (p > 0.05). In this study the prevalence of breastfeeding was very high (96%) and only a few mothers chose not to breastfeed. This high breastfeeding prevalence is comparable to previous studies in neighboring country (Nairobi, Kenya) (CBS, 2003 and Ngatia et al, 2005) where the prevalence of breastfeeding was 96.2% and 96% respectively. In Kanartaka India, the proportion of children (97%) who had ever breastfed was also high (Banapurmath, 1996). This contrasts finding in a developed country, Kentacky-USA where only 49.2% of children were breastfed (Bartan, 2001).

Status of breastfeeding at the time of data collection was strongly (p > 0.05) associated with the area of residence, level of education of mothers and child's age. Majority of the children (53%) were still breastfeeding and their mothers intended to continue breastfeeding them for at least twenty-four months of age. This was appropriate since it was recommended that children be breastfed for at least twenty-four months and stopped when mutually desired by the mother and the child. The main reason given for early discontinuation of breastfeeding (before the age of twenty four months) was second pregnancy. This is comparable to previous study in Somalia (FSAU, 2007) where the main reason for stopping breastfeeding was second pregnancy. Breastfeeding status at the time of data collection was significantly (P = 0.045) associated with the level of education of the mother, whereby, 69% of mothers who attended any form of education were breastfeeding, at the time of the data collection as compared to only 31% of those who did not attend. The result of this study is in consistent with that of

two studies conducted in Cambodia and Cameroon. A study in Cameroon revealed that the length of time for which the mother breast fed was significantly related to mother's level of literacy (Kenge et al, 2007), while the study in Cambodia showed that breastfeeding was far less in mothers with less than 4 years education (Almeida RM, et all, 2007). It is argued that educated women have higher status in the society and have the ability to make decisions that improve the nutritional status of children, while those with low status do not (Smith LC et al, 2003). The results for the current study showed that mothers with some education have better understanding of the importance of breastfeeding than those who did not. The education level of mothers significantly (p = 0.002) varied among mothers/caregivers in rural and urban setting. Paradoxically 87% of mothers, who attended any form of education belonged to rural areas. The study established that breastfeeding status at the time of data collection was significantly (P = 0.027) associated with the residence area, with more of the breastfeeding mothers (58%) coming from rural setting as compared to only 48% from urban setting. In Belet-hawa district the child's age, education level of the mothers and their area of residence have strong influence on the breastfeeding status children.

Normal and healthy babies can self-regulate their feeding time to accommodate their varying nutritional and physiological needs. It is therefore recommended that they be breastfed on demand day and night to enable them meet these needs. In this study more than half (56%) of mothers breastfed their babies on demand, which also was common practice traditionally. The study also revealed that the frequency of breastfeeding of children in Belet-Hawa district varied (p= 0.005) with the age of the child, with older children 18-24 months old breastfeeding less frequent as compared to their younger counterparts. This is due to the fact that the older children are also fed with other foods, which may lower the number of times they breastfeed. A statistically significant (p= 0.045) proportion (58%) of the mothers who

did not keep animals breastfed their children on demand in the previous day as compared to only 20% of those who owned animal. It has been observed in the focus group discussion that mothers who kept animal had tendency to feed their children with animal milk and thus reduce the frequency of breastfeeding in Belet-Hawa district

Early initiation of breastfeeding (soon after birth) is recommended to reduce the risk of hypoglycemia, and maximize social bonding between mother and her child, in order for the infant to get the protective colostrum. Colostrum, the milk secreted during the first three days postpartum contains high levels of carotenoids and immunoglobulins, but their concentration change rapidly in the 4th to 7th days. Not only, the nutrient contents of the milk change, but also the soluble antigens and anti-infective agents also changes with the functional development of the infant. Therefore, it was necessary that the infant benefits from the mother's milk in all stages of growth, starting from the hour after birth (Rebecca Williams, 1995).

In this study mothers who initiated breastfeeding within the first hour after delivery (27%) was very low (Table 25). This proportion is much lower than % reported in Kenya (CBS, 2004). In Kanataka-India only 3 infants (0.3%)were offered breastfeeding within one hour after delivery and most infants (90.9%) began breastfeeding 72 hours post-delivery (Baughcum et al, 1998). Most of the mothers put their children on breast 2-3 days after delivery, feeding their children with sugary water, and the colostrum is not fed to children by majority of mothers as it is considered heavy, thick, course, dirty, toxic, and harmful to children's health (FSAU, 2007). Similarly, in Tehran-Iran the average period between delivery and initiation of breastfeeding was 42.5 hours (Marandi, 1993). The study has established that the time breastfeeding was initiated was strongly associated (p=0.042) with

the area of residence of the mother, with more than half (69%) of mothers from rural setting initiating breastfeeding of their children after three days of their birth, as compared to only 31% from urban setting. This is a reflection of the poor maternal knowledge on the time to initiate breastfeeding (FSNAU, 2006), where majority have learnt from their mothers & grandmothers that in the first 3 days of life, there is no milk in the breast; hence there is no need to put the child on the breast (FSNAU, 2006).

Breastfeeding is known to provide the entire nutritional requirement for about six months of life and continue thereafter to contribute significantly to the overall nutritional status of the child well into the second year of life. In this study an exclusive breastfeeding rate of 7% was very low as compared to the national figure of 9% (WHO, 2005). On contrary, Miss Deena and co-workers found that 80% of Omanian mothers breastfed exclusively their babies up to 4-6 months (Miss Deena et al, 2000). Similarly, a study by Mamabolo et al, (2003) in the central region of South Africa, indicated that exclusive breastfeeding during the first three months was uncommon as mothers tended to introduce complimentary feeds at an early age, with 56% of infants receiving some form of supplements by the end of the first month. During focus group discussion, mothers supported continued breastfeeding up to the second year of the babies' life. They said "it is very good for the babies because our religion tells us". However, the they also stated that breast milk alone is not enough for the baby and is to be complimented with other fluids, mainly sugary water, cow's milk or goat milk. Continued breastfeeding is health practice and had been shown to have a strong positive association with the linear growth and development of the child especially in rural setting with poor sanitation and inadequate water supply (Onyango et al 1999). UNICEF list Somalia as one of the countries where exclusive breastfeeding has declined in the 1990s; the solution of achieving exclusive breastfeeding goal lies in convincing mothers that their milk is all the baby requires

for sufficient satisfaction in the first six months and in reducing workload of women. This community is Muslim, and Islamic religion fully supports continued breastfeeding up to two years and again the community adopts inappropriate infant feeing practices. It has been highlighted in the focus group discussion, that the role of religious leaders in the pattern of breastfeeding in the community is minimal, and information of breastfeeding is always dominated the tradition. The reason that both breastfeeding and exclusive breast-feeding were so slow in this community might also be the displacement and underlying factors of displacement. Women who were displaced from the traditional areas (urban / rural) to new areas adjust to new situation; adopt new attitude and pattern of behavior, which all can have negative impact of breastfeeding.

Breast milk should be the first baby food, but it was observed during focus group discussion that many mothers give pre-lacteal feeds, like sugary water and cow's milk to the baby soon after birth or in the first few days before beast can produce enough milk, which may replace breastfeeding. Studies in Uganda also showed that it is common for women to give plain water, sugar solution or gripe water during the first day after delivery (WHO, 2005). Therefore mothers should be informed that these prelacteal foods are not good for the newly born babies and encourage provision of colostrums. This study shows that almost all (92%) of children were fed with fluid other than breast milk in the first three days of life. This proportion is comparable to finding in Kanataka- India where all infants received prelacteal feeds (K Madhu et al, 2009). It was sad to note that this was uniform for mothers from both rural and urban setting. 50% of the mothers preferred water with sugar to breast milk that not only contains invaluable nutrients to the child in right quantities but also has added benefit to the child and mother.

system is still premature and cannot handle complex or bulky foods. In this study over one third (40%) of mothers introduced their babies other food/fluids at an age less than one month. while another high number of mothers 41% introduced food to their children less than 6 months of age. Infant formula and biscuits are popularly used in the study area, as well as porridge and mashed potatoes. Early complementation is attributed to next pregnancy, infant sickness and perceived insufficient breast-milk output since production and release of milk is modulated by the frequency and intensity of sucking (Dewey et al, 1999).

At the age 6 months, breast-milk alone is not sufficient to satisfy a baby's nutritional needs and therefore the baby should be introduced gradually to other foods. The baby's digestive system is still fully developed and so the appropriate foods should be given in small but frequently.

In this study, it was found that maternal knowledge about exclusive breastfeeding as recommended by WHO is extremely low, demonstrating a general lack of awareness. This seems to be educational gap as there are no efforts to educate the mothers on breastfeeding. It was established in the focus group discussion that, traditional foods given to the children were found unbalanced with regard to the nutritive value. Feeding of nutritionally unbalance food could cause protein energy malnutrition, Iodine deficiency disorder, Iron deficiency anemia and Vitamin 'A' deficiency disease, which might lead to malnutrition, disability and even to death of young children (Malla et al, 2004).

It was clear from the focus group discussion that the nutritional quality of complementary diets was positively influenced by continued breastfeeding and inclusion of nutritious foods, in which food availability and maternal knowledge on balanced diets are underlying factors.

5.5 Complementary feeding practices

A sizeable number of observational studies (Brown KH et all, 1998) and 2 randomized trials Cohen RJ, et al 1994) and (Dewey KG, et all 1999) failed to identify any benefit of complementary foods for infant growth before 6 months of age, even in low birth weight term infants. By contrast, several studies have documented a twofold or greater risk of enteric and other infections when these foods are provided before 6 months (Brown Kh et al 1984) and (Popkin Bm, et al 2004). Hence, WHO/UNICEF concluded that the optimal age of introduction of complementary foods is about 6 months. However, children may grow to maturity without breast milk, but the risk for malnutrition (both under and over nutrition) is very high.

Socio-demographic status of mothers in Belet-Hawa district could not influence their complimentary feeding practices. The study revealed that the mothers introduced complimentary feeding to their children at an early age. This study found early introduction of complementary feeding by 80% of the study mothers. Half (40%) of those were introduced to complimentary foods before the end 1st month of their life. It has also been established that early introduction (< 6 months) of complimentary foods was very common in rural setting, while late introduction (> 6 months) was a common practice in urban area of the district. In the focus group discussion early introduction of complementary foods was reported from birth to three (3) months. Early weaning (before the child is six months old) was also reported when the mother felt weak, became ill, or could not produce sufficient milk to feed the child whilst away from home such as when working on the family farm (FSNAU, 2006). Children are mainly fed on cow or goat milk in addition to breastfeeding. Breast-milk alone is sufficient for a baby for up to 4-6 months and any food/fluid other than medicine before this age is discouraged because it does not increase caloric intake and only displaces milk from the diet (Cohen et al, 1994). Early complementary food is also discouraged because the likelihood of contamination is high (Dewey et al, 1999) and the child's digestive

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The persons behind the quality of the diet include mothers and other caregivers. Safety of complementary feeding depends on hygiene practices of mothers and other caregivers.

The factors considered to be most important in influencing complementary diets are family setting (broken homes that have converted mothers into breadwinners), lack of knowledge, poor feeding practices and pregnancies that are too close (FSAU, 2007). The general view is that mothers and caregivers do not have adequate knowledge on complementary feeding because they are illiterate or have little education or do not have appropriate care-giving knowledge.

Most of the respondents (58%) claimed that they have introduced complementary food because there was no enough milk to satisfy the baby. There are currently no specific recommendations regarding the optimal number of foods or food groups that a child should consume each day at different ages. There is, however, a consensus that higher dietary diversity is desirable and that a larger number of foods or food groups can help meet daily requirements for a variety of nutrients. In the current study a list of food groups consumed in the past 24 hours included grains (cereals), roots and tubers crops, milk (other than breast milk), juices and vegetables.

The complementary foods fed to the study children was very poor according to this study. This was in consistent with the finding of the assessment of Bardere town, which showed that about 20% of the households had consumed a less diversified diet (i.e. three or fewer food groups) in the twenty four hours prior to the assessment (FSAU, 2006).

Current international recommendations for frequency of feeding exist (Brown, Dewey, and Allen1998), but these recommendations should be used in combination with information on the energy density of the diet (Mary Arimond et al, 2002). Frequency of feeding is an

indicator intended as a proxy for energy intake from foods other than breast milk. Feeding frequency for breastfed children includes only non-liquid feeds and reflects the Guiding Principles *(WHO/PAHO, 2003)*. Feeding frequency for non-breastfed children includes both milk feeds and solid/semi-solid feeds, and also reflects the Guiding Principles for these children *(WHO, 2005)*. Frequency of feeding in the past-24 hours of children in the study area was strongly associated ($p < 0.05$) with their status of wasting, with more children (66%) who were fed less than four times wasted as compared to the children who were fed more than 4 times.

Information on bottle feeding is useful because of the potential interference of bottle feeding with optimal breastfeeding practices and the association between bottle feeding and increased diarrhoeal disease morbidity and mortality (WHO, 2007). Bottles with a nipple are particularly prone to contamination. Included in the numerator of this indicator are children less than 24 months of age who received any food or drink from a bottle with a nipple/teat during the previous day (including breast milk), regardless of whether or not the infant was breastfed (WHO, 2007). In this study the rate of bottle feeding was 21.8% and was significantly associated with nutritional status of children ($P < 0.05$). Bottle feeding was documented to have negative effect on nutritional outcome of children. However, in this study bottle feeding was found to improve the nutritional status of children. This may be attributed to generalized malnutrition, which affected mothers (41%) as well (according to FSNAU, 2006), reducing the quality of breast milk. Accordingly, any additional food/fluid in any form (including bottle feeding) contributed positively to the nutritional status of children.

It was established that liver was not given until a child can speak and eggs are restricted until the child reaches one year. Also, the communities – quite rationally – avoid giving un-milled cereals or maize kernels to their youngest children to prevent choking

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5.6 The association of child feeding practices with the nutritional status

5.6.1 The association of breastfeeding practices with the nutritional status

The findings of this study showed that very low rate of exclusive breastfeeding (7.4%), which however was not significantly associated with the nutritional status (P <0.05). This could be due to the fact that the effect of breastfeeding on nutritional status was masked by the very worsening drought at the time of this study. In addition qualitative data indicated that mothers spend a lot of time in search of food for the whole family and when at home was busy taking care of the older children and house work. The result of the study also showed that, although not very high (21%) bottle feeding practices were significantly associated positively with the nutritional status of children in Belet-hawo district (P < 0.05). This study did not investigate morbidity associated with bottle feeding to validate the results of previous finding on high diarrheal diseases, which bottle feeding might have been a contributing factor. It has been found in the focus group discussion that when mothers are away for earning children are left with old siblings who are told to bottle feed the baby when it cries. This might have been an alternate nutrient intake when mother is away and cannot breastfeed the baby. Feeding babies with fluid other than breast milk in the 1st 3 days of life is common practice in the study area. It was established that children who were fed with fluids other breast milk in the first three days of life were at risk of been malnourished compared to those who were fed with breast milk only (P < 0.05). Early introduction of complementary foods (< 6 months) increases the risk of nutrient imbalance (Dewey et al, 2003) and infectious diseases (Kramer et al, 2003).

5.6.2 The association of complimentary feeding practices with the nutritional status

Complementary feeding is defined as the process starting when breast milk is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. The target range for complementary feeding is

generally taken to be 6 to 23 months of age, even though breastfeeding may continue beyond two years (PAHO/WHO, 2002).

From the age of 6 months, an infant's need for energy and nutrients starts to exceed what is provided by breast milk, and complementary feeding becomes necessary to fill the energy and nutrient gap (Dewey and Brown, 2003). If complementary foods are not introduced at this age or if they are given inappropriately, an infant's growth may falter. In many countries, the period of complementary feeding from 6–23 months is the time of peak incidence of growth faltering, micronutrient deficiencies and infectious illnesses (Dewey KG, 2008).

Even after complementary foods have been introduced, breastfeeding remains a critical source of nutrients for the young infant and child. It provides about one half of an infant's energy needs up to the age of one year, and up to one third during the second year of life. Breast milk continues to supply higher quality nutrients than complementary foods, and also protective factors. It is therefore recommended that breastfeeding on demand continues with adequate complementary feeding up to 2 years or beyond (*PAHO/WHO, 2002*). Complementary foods need to be nutritionally adequate, safe, and appropriately fed in order to meet the young child's energy and nutrient needs. However, complementary feeding as shown in focus group discussions in the setting of study is often fraught with problems, with foods being too dilute, not fed often enough or in too small amounts, or replacing breast milk while being of an inferior quality. Both food and feeding practices influence the quality of complementary feeding, and mothers and families need support to practice good complementary feeding (*PAHO/WHO, 2002*). There was significant association of frequency of feeding with nutritional status of children in this study ($P < 0.05$). This is in consistency with the results of previous assessments by UN and other humanitarian organization (FASU, 2007).

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

1. Level of education (defined as whether the mother attended any formal or informal education) was very low in the study mothers. Paradoxically, mothers from rural setting were more educated compared to their counterparts in urban setting; a finding unique to this study.

2. The prevalence of malnutrition (GAM of 23.5%) in Balat-Hawa district is the highest in the country, and indicates a critical nutrition situation as per WHO classification.

3. Nutritional status of children was associated positively with the bottle feeding practices of children and negatively with the prelacteal feeding in the first three days of live (p < 0.05). therefore, the hypotheses, which stated that breastfeeding practices of children less than 24 months old in Balat-hawa district has been no effect on the nutritional status has been rejected.

4. Nutritional status of children was also negatively associated with the frequency of feeding of children in previous 24-hours. Therefore, the hypotheses, which stated that complimentary feeding practices, have no effect on the nutritional status of children less than 24 months old in Balat-hawa district has been rejected.

5. Among under two years aged children of Belet-hawa district, bottle feeding was associated with improved nutritional status, while prelacteal feeding and frequency of feeding were the major hurdle in improving the nutritional status of the children

6. Breastfeeding practices of the study mothers were very poor, with very low exclusive breastfeeding, delayed initiation of breastfeeding, early stoppage of breastfeeding,

7. Factors determining breastfeeding practices of mothers were found to be; level of education of the mother, her marital status, the area of residence, source of income, age of the child, and whether or not the family owned animal.

8. Complimentary feeding practices of study mother were very poor, with both early (in rural) and late (in urban) introduction of complementary, low dietary diversity score, inadequate frequent of feeding and bottle feeding practices.

9. Bottle feeding practiced and use of infant feeding formula were common among mothers from rural setting.

10. Mothers seemed unaware of the recommended feeding practices, including importance of exclusive breastfeeding, on demand breastfeeding, frequency of feeding and time breastfeeding is to be initiated. Focus group discussions with the mothers of the study population indicated that there is trend linking issues related to the knowledge of mothers about recommended feeding practices and nutritional status of their children.

6.2 Recommendations

- As high levels of malnutrition have been seen throughout the study population, it is highly recommended that the local MCHs / local health personnel are well equipped with the knowledge and skills to manage severe malnutrition both during and outside periods of crisis.

- Mothers should be encouraged for traditional complementary feeding practices through popular media to promote nutritional status of the children.

- To overcome many barriers of breastfeeding and optimal complimentary feeding practices there is a need for input from health professionals and voluntary workers, and a positive environment (including the provision of information, support, and demonstration of practical skills and locally relevant strategies for Somali population)

- Intensifying health and nutrition education activities at the household level to address feeding practices, targeting mothers, and other caregivers. The main areas of focus should include promoting exclusive-breastfeeding and appropriate young child feeding, diet diversification.

- Knowledge and skill should be provided to practice nutritionally balanced traditional complementary foods in household levels

- The information contained in the continued nutritional studies should be complemented by in-depth qualitative studies to further refine the messages and the delivery of specific interventions, and to help understand cultural taboos and potential constraints to the adoption of recommended practices

- Further research: contributions of bottle feeding in child nutrition in emergency situations.

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APPENDICES

Appendix 1: QUESTIONANIRE FOR THE STUDY OF:

ASSOCIATION OF BREASTFEEDING AND COMPLIMENTARY FEEDING

PRACTICES WITH THE NUTRTIONAL STATUS OF CHILDREN 0-24 MONTHS

OLD IN BELET HAWA DISTRICT, GEDO REGION SOMALIA

SECTION ONE: GENERAL SURVEY DATA

Date ………………………………………………………..|____|____|2006|

Time…………………………………………………….|____|____|____|

Cluster Number……………………………………..|____|____|____|

Name of interviewer……………………………………………………

Name of the village/town ………………………………………………….

Name of the section……………………………………………………

Household Number …………………………………….|____|____|____|

Name of the household head……………………………………………

Questionnaire checked by Principle investigator|____| Signature_____

SECTION TWO: CHARACTERISTICS OF THE HOUSEHOLD (SOCIO-DEMOGRAPHIC AND SOCIO-ECONOMIC STATUS)

Q1. sex of the household head

       Male 1

       Female......2 |_____|

Q2. Number of children aged bellow 2 years |_____|

Q3. Household residence status

       Resident ……………..1 (if answer is 1 move to Q8) |_____|

       Internally displaced ………..2 |_____|

       Returnees ………………….3 |_____|

    Others (specify)_____

Q4. Place of origin…………………………………………………..

Q5. Duration of stay (number in months)…………………………..|____|

Q6. Reason of movement

       Lack of job ……………1 |_____|

       Insecurity………………….2 |_____|

       Food shortage…………….3 |_____|

       Water shortage……………4 |_____|

       Others (specify)………………………………………

Q7. What is the main livelihood system used by this household

       Pump irrigation/commercial crop production…….1 |_____|

       Rain fed firms…………..2 |_____|

       Pastoral ………………...3 |_____|

       Business………………….4 |_____|

       Agro-pastoral ……………7 |_____|

       Others (specify)…………………………………………………….

Q8. What is the total land cultivated by the household (ha)…………|_____|

Q9. How many cattle does the household own (Number)………… .|_____|

Q11. How may shoats does the household own?...............................|_____|

1 Please tell me about permanent household members

No	Name	12. Relation to HHH	13. Sex M/F	14. Age in years/ months	15 Marital status	16. Religion	17. Occupation	18, Education (only HHH)
1								
2								
3								
4								
5								
6								
7								

Code   Marital status

Relationship to HHH   **Occupation**   **Sex**   1. Marriage

1. **HHH**   1. Cashual labour   1.Male   2. single

2. spouse   2. Salaried employed   2. Female 3. separate

3. son   3. Saliried employed   4. Widowed

4 daughter   4. Household help   5. Divorced

5 Brother/sister   5. business

6. Nephew/niece   6. others (specify)….

7. others (specify)

Religion   **Education**

1. Muslim   1. Pre-school

2. others   2. Low-primary

                           3. Upper-primary

                           4. Secondary

                           5. Post-secondary

                           6. University

                           7. Not attended

                           8. Not applicable

SECTION THREE: BREASTFEEDING

(Randomly select the Index child if there are more than one below 2 years old)

Q18. Did you ever breastfeed (name)

                  Yes   ....1 |_____|

                    No ....2 (if no go to question 28) |____|

Q19. How long after birth did you first put (name) to the breast

                  First hour after delivery   ....1 |____|

                   First day after delivery ....2 |____|

                  Three days after delivery...............3 |____|

                  Others (specify).....................................

Q20. During first three days after delivery, did you give (name) the liquid that came from your breast

                  yes.........................1 |____|

                  no.........................2 |____|

                  don't know.............8 |____|

Q21. In the first three days after delivery was (name) given any thing to drink other than breast milk

                  Yes...............................1 |____|

                    No................................2 |____|

                  Don't know...................8 |____|

Q22. (If yes) what was (name) given to drink other than breast milk

(Do not read the list, record all mentioned by circling letter for each one mentioned).

Milk (other than breast milk) ....A

Plain water .... B

Water with sugar and/or salt C

Fruit juice ....D

Tea /Coffee infusions liquid or semi-liquid.....................…... ....E

Traditional medicine ....…..F

Infant formula .... …..G

Other (specify) _____.... ....…..x

Q23. why did you provide this food at this age

        Child was crying........................1

        Mother advised 2

8   Traditional 3

Do not know………………………..8

Q23. Are you still breastfeeding (name)

Yes ……………………………1 |___|___|

No…………………………….2 (go to 28) |_____|

Q24. (For mothers who are not currently breastfeeding) for how many months did you breastfeed (name)

(If less then one months write '00'……………… |_____|_____|

Q25. How many times do you breastfeed (name) last night   from sun set to sun rise?

On demand ………………1 |_____|

Three times a day …….2 |_____|

Four times a day……….3 |_____|

Rarely…………………….4 |_____|

Others(specify)…………….

Q26. How many times did you breastfed (name) yesterday, during the day light time

On demand……………….1 |_____|

Three times a day…….2 |_____|

Four times a day……….3 |_____|

Rarely…………………….4 |_____|

Others(specify)…………..

Q27. Do you breastfeed your child when you are outside the home or while in public places?

Yes……….1 |_____|

No…………2 |_____|

Q28. (If not), why don't you breastfeed?

Embarrassment………………….1

There is no space……………..2

No chance………………………3

Others (specify)_____……………….

Q29. (If not), how old was the child when you stopped breastfeeding

                             Les than 6 months...........1 |___|

                             6-11 months.....................2 |___|

                             12-17months.....................3 |___|

                             18-23months.....................4 |___|

                             Others (specify)...........

Q30. What was the reason for stopping breastfeeding?

                             Sickness   ....1 |___|

                             Child refused ....2 |___|

                             No breast secretion ....3 |___|

                             Others (specify).......................

SECTION FOUR: COMPLIMENTARY FEEDING

Q31. (Ask this question only mothers who are breastfeeding) Have you started giving your child any other food/liquids other breast milk

                         Yes..........1 |___|

                         No.........2) (If not go to Q 36, then go to section 5) |___|

Q32. At what age did you start giving the child something else other than breast milk?

                         <3 months....................1 |___|

                          3-6 months.................2 |___|

                          7-10 months.................3 |___|

                          Above 10 months.........4 |___|

Q33. What type of food did you introduce?

      Water with sugar 1

      Cow's milk..............................2

      Biscuits 3

      Infant formula 4

      Others (specify)...........................

Q33. Why did you introduce those foods at that time?

                         The baby was crying when people eat.......1 |___|

                         Mother was sick ......2 |___|

Mother did not have enough milk....3 |___|

Mother was at work.....4 |___|

Habit.........5 |___|

Proper time for introducing food.........6 |___|

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

Q34. What was the reason for your choice?

Provided by feeding program...............1 |___|

Advised by clinic................................2 |___|

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

Q35. Did (name) drink any of the following liquids yesterday during the day or at night)?
(Please interviewer, Read the list of liquids (A through H, starting with breast milk"). place a
check mark in the box if child drank liquid in question)

A	Breast milk?	A ....|___|
B	Plain water?	B .... |___|
C	Commercially produced infant formula?	C ....|___|
D	Any other milk such as tinned, powdered, or fresh animal milk?	

D ....|___|

....

E	Fruit juice?	E ....|___|
F	Coffee or tea?	F............|___|
G	Any other liquids such as sugar water,	G............ |___|
H	carbonated drinks, or soup broth?	H ....|___|
G	Others (specify)...	

Q36. Did (name) drink anything from bottle with a nipple yesterday or last night?

Yes......................1 |___|

No......................2 |___|

Don't know..........8 |___|

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Q37. Did [name] eat any of the following foods yesterday during the day or at night

FOOD TYPE	CODE YES........1 NO..........0 DON'T KNOW......8	FREQUENCY (number of times) Don't Know....8	SOURCE OF THE FOOD own production......1 purchased..............2 Food aid................3 Others (specify).........
A. Any food made from grains (e.g. sorghum, Maize, Rice, wheat, etc)			
B. Pumpkin, red or yellow yams or squash, carrots, or orange, yellow, or red fleshed sweet potatoes?			
C. Any other food made from roots or tubers [e.g., white potatoes, white yams, manioc, cassava, or other local roots/tubers]?			
D. Any green leafy vegetables?			
E. Mango, papaya [or other local vitamin a rich fruits]?			
F. any other fruits and vegetables [e.g., bananas, apples/sauce, avocadoes, tomatoes]?			
G. Meat, poultry, fish, shellfish, or eggs?			
H. Any foods made from legumes [e.g., lentils, beans, soybeans, pulses, or peanuts]?			
I. Cheese or yogurt?			
J. Any food made with oil, fat, or butter?			

SECTION 5: KNOWLEDGE

Q38. When a baby should be put on the breast after delivery

Within first hour ....1 |_____|

Within first day of delivery ....2 |_____|

Others (specify)..

Don't know.............................8 |_____|

Q 39. For how long should a baby be exclusively breastfed?

Number of months. |_____|

Q40. Why do you say that?

Clinic taught me.................1 |_____|

My mother told me ....2 |_____|

Imagination   ....3 |_____|

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

Q 41. Why do you breastfeed?

Balanced diet ....1 |_____|

Healthy.....................2 |_____|

I don't know..............8 |_____|

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

Q42. Did any body talk to you about breastfeeding?

Yes................1

No.................2

Q43. If yes, who was that?

Health personnel...................1 |_____|

Feeding program...................2 |_____|

TBA...................................3 |_____|

Others (Specify)..............................

Q46. If your child were aged 0-6 months would you provide anything other breast milk

YES...................1

NO....................2

Q47. How many times would you ideally feed children of the following age groups in 24 hours with foods/liquids other than breast milk?

Age group   Frequency

a.   0-6 months   ....

b.   7-11 months   ....

| | c. | 12-17 months | .... |
| | d. | 18-23 months | .... |

Q48. What is the reason why you would feed different age groups with different frequencies?

                          Child gets old...............1

                          Child is always crying......2

                          That how people feed.......3

                          Others (specify).........

Q49. Is there any food that you do not give to children bellow two years

Yes	1	|_____|
No	2	|_____|
Do not know	8	|_____|

Q50. If yes, may you tell me the names of that foods

        1...

        2...

        3...

Section 6: anthropometric measurement

Q49. Date of birth _____/_____/_____

Anthropometry for children aged 0-24 months in the household

ial ber	.Name	51.Sex f/M	52. Age (mon)	53.Oedema Yes=1 No=0	54. Weight in (cm)			55.Height in (cm)		
					1st reading	2nd reading	Average	1st reading	2nd reading	Average

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Appendix 2:

FOCUS GROUP DISCUSION

Group Number------------- Date------------- Name of the facilitator------------ No. of
participants in the focus group _____ Age of participants in years (only the
oldest and the youngest) Oldest_____| Youngest _____|

1. Generally at what age do mothers in this community start introducing other foods
   apart from breast milk to their infants, and when do they stop breastfeeding?

2. What locally available foods are used for complimentary food?

3. In what form or combination are they given to the children?

4. State the types of foods that are unsuitable for complementary and give reasons for
   their unsuitability?

5. What other foods are locally available, which in the opinion of the group can be used
   as complementary diets, but are not been used? Reason?

6. How best does the group think mothers in this community can make use of the locally
   available foods to improve the nutrient intake of their infants during weaning?

7. Do women in this community express colostrum?

8. Do women in this community usually wash or clean their breasts before offering this
   to the child?

9. Is there a change in feeding practices during sickness like diarrhea, fever and
   measles? What do mothers do if the child cannot eat?

10. What foods are not given to the child during each of sickness mentioned above?

11. Are fruits and vegetables easily available here and do lactating mothers eat fruits and
    vegetables?

12. What are the main factors which will prevent mothers from using commercial
    weaning diets

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APPENDIX 3

NUTRITION COUNTRY PROFILE

SOMALIA
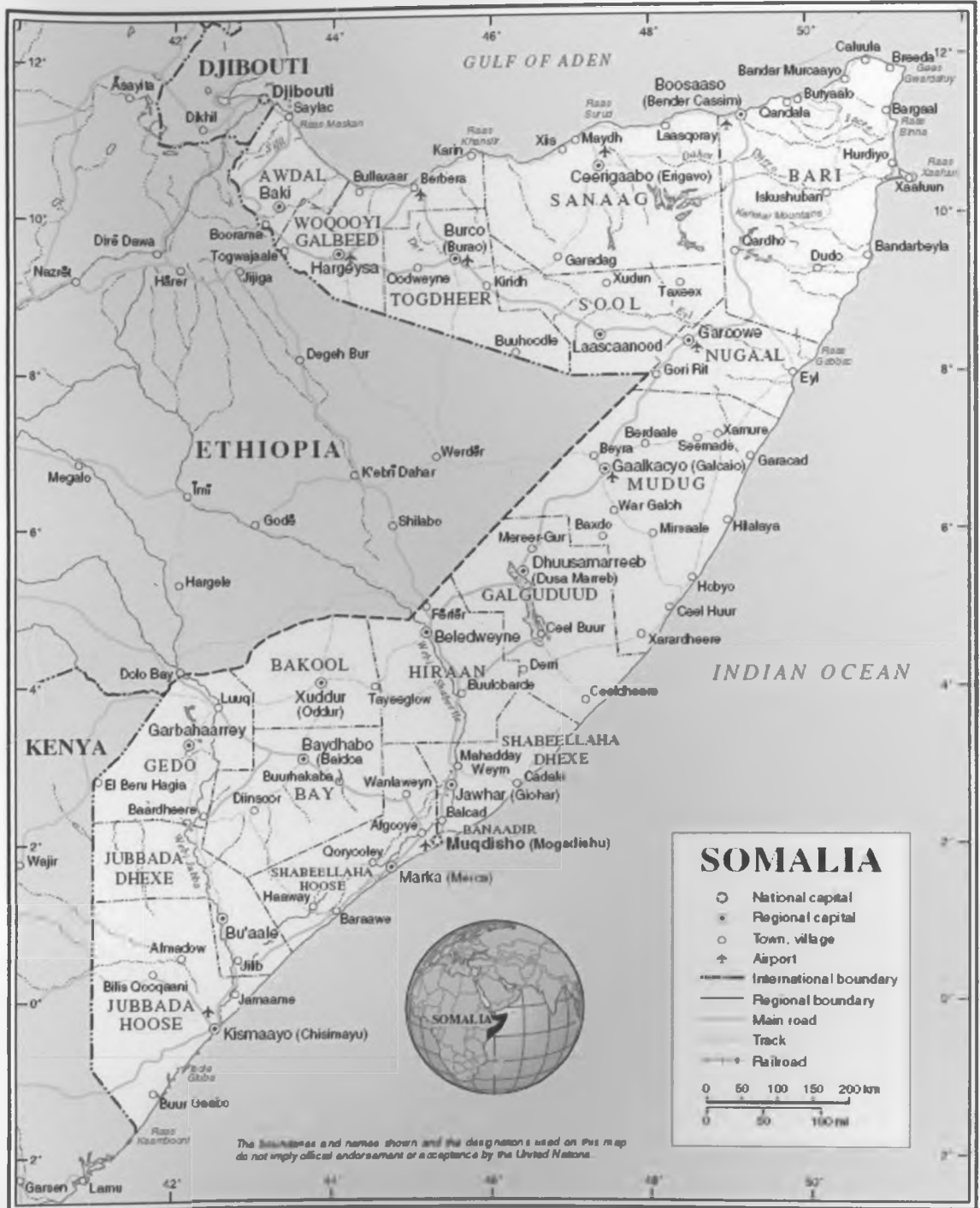
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