**CAUSES OF MALNUTRITION AMONG CHILDREN UNDER FIVE YEARS OF AGE IN**

**South Sudan OUTPATIENT THERAPEUTIC FEEDING CENTRE-PIGI COUNTY**

**BY**

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**DEDICATION**

This work is dedicated to my deer parents who inculcated in me the sense of going to school, watch me as I prosper

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I am greatly indebted to my supervisors and the course coordinators for their unrelenting support throughout my studies and when I was doing my research

My sincere appreciation goes to my colleagues for their help during this season more especially my immediate boss.

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**Abstract**

In May 2018, an estimated 51 million children under five years of age were wasted of which 16 million were severely wasted. This translates into a prevalence of 7.5 per cent and 2.4 per cent, respectively worldwide. In South Sudan, the severe acute malnutrition among children between ages 6-59 months is at 4%, twice the emergency threshold and global acute malnutrition rate is at 15.5 % in January 2017 placing children at risk of dying and delayed growth with loss of intelligence and poor performance at school. 12% of children in Pibor were estimated malnourished. This study was a health facility based descriptive cross-sectional study that was done on 162 purposively selected care takers of under five-year-old malnourished children at Pibor OTP. Researcher administered questionnaires to obtain data. Data was analyzed in percentages using computer software statistical package (EPI), presented in tables, bar, and pie charts. The causes of malnutrition among children under five year old in Pibor outpatient therapeutic feeding center. Were too many under five year old children in families to take care of, early age of production among young girls which leaves them unable to cater for their children effectively as they are still young at age less or equal to 19, conflict, poverty, poor breast feeding practices.Limited infant young child feeding messages to the community, food insecurity,and low level of education, poor sanitation and lack of clean drinking water were among factors leading to malnutrition among children under five years of age in Pibor payam.Continuous sensitization through health education on causes of malnutrition, community dialogue with cultural leaders on acceptance of every foodstuff for children.outreach programs to reach the neighboring communities and empower them on the causes and prevention of malnutrition and drilling bore holes in the area to access clean water could help reduce malnutrition among under five year old children in Pibor.

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**Operational definitions**

**Malnutrition:** deficiencies or imbalances in a person’s intake of energy and/or nutrients

**Stunting:** impaired growth and development that children experience from poor nutrition, repeated infection and inadequate psycho social stimulation

**Nutrition:**the process of ingestion (taking in of food), digestion, and utilization of food by the body for growth and development, reproduction, physical activity and maintaining health.

**Environmental factors:**these are situations or facts in the environment that influences nutritional status of people.

**Socioeconomic factors:**This society related factors influence the nutritional status of people.

**Feeding Practices:** these are actions of food intake.

**Payam:**an administrative area that is comparable to sub county in countries such as Uganda.

**Boma:** village.

**List of Abbreviations and Acronyms**

**C.H.D:** County Health Department.

**DRC:** Democratic Republic of Congo

**GAM:** Global Acute Malnutrition

**GDP**: Gross Domestic Product

**H.U:** Health Unit

**IRRM:** Integrated Rapid Response Mission

**IYCF:** Infant Young Child Feeding

**MAM**: Moderate Acute Malnutrition

**OTP**: Outpatient Therapeutic Feeding Programme

**PHCC**: Primary Health Care Centre

**PHCU**: primary Health Care Unit.

**SAM:** Severe Acute Malnutrition

**UNICEF:**United Nations Children Emergency Fund

**USAID:** United State Agency for International Development

**WFP:** World Food Pogramme

**WHO:** World Health Organization

**CHAPTER ONE**

**INTRODUCTION**

**1.0 Overview**

This chapter presents the background of the study, statement of the problem, research questions, research objectives, research hypotheses and justification of the study.

**1.1Background of the study**

The world health organization (WHO) defined malnutrition as deficiencies, excesses, or imbalances in a person’s intake of energy and/or nutrients. (WHO 2016). The term malnutrition addresses 3 broad groups of conditions namely: under nutrition, which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age);micronutrient-related malnutrition, which includes micronutrient deficiencies (a lack of important vitamins and minerals) or micronutrient excess; and overweight, obesity and diet-related non-communicable diseases such as heart disease, stroke, diabetes and some cancers.

According to WHO report, 22.2 per cent, or just under one in four children under age5 worldwide had stunted growth (WHO 2018). Between 2000 and 2017, stunting prevalence globally declined from 32.6 per cent to 22.2 per cent, and the number of children affected fell from 198 million to 151 million. In 2017, nearly two out of five stunted children lived in South Asia while more than one in three lived in sub-Saharan Africa.(WHO, 2018).According to UNICEF/WHO/World Bank joint child malnutrition estimates (May 2018), 51 million children under five were wasted of which 16 million were severely wasted. This translates into a prevalence of 7.5 per cent and 2.4 per cent, respectively and more than half of all wasted children lived in South Asia and about one quarter in sub-Saharan Africa, with similar proportions for severely wasted children. At nearly 16.0 per cent, South Asia’s wasting prevalence represents a situation requiring a serious need for intervention with appropriate treatment programs.

Malnutrition in East Africa manifests itself most clearly in underweight and stunted children. It also has long-term effects, both for the life prospects of the child and for their country as a whole. While significant progress has been made in ensuring proper nutrition for children, challenges remain throughout the world (UNICEF 2012).For Eastern and Southern Africa, stunting, also referred to as chronic malnutrition or low height for age, is of a particular concern with more than 25 million, or 40 percent of children under five years of age suffering from it. In addition, 18 per cent of under-fives are underweight i.e. they weigh too little for their age; and 7 percent are suffering from acute malnutrition also called wasting, a rapid loss of weight because of illness or insufficient food intake. Unlike underweight and wasting, stunting is largely irreversible, and it is affecting more children than the first two conditions combined in the region. (UNICEF 2012)

10 million East African children, 42 per cent of the region’s, 24 million children aged five and under, were stunted in 2010. Northeastern Burundi followed by Dodoma region in Tanzania and Karamoja region in Uganda are the worst places for children from a nutritional viewpoint. (SID, 2018)

In South Sudan, more than 360,000 children are estimated to be severely malnourished. More than 4 million people — close to 40 percent of the population — are food insecure and the world’s youngest country is facing a crisis of malnutrition among children. In seven out of the country’s 10 states, more than 15 percent of the population is malnourished — which is above the global emergency threshold. An estimated 360,000 children under five years are suffering from severe acute malnutrition (UNICEF 2016). Conflict, climate shock and collapsing economy in South Sudan placed 8 million people in need of humanitarian assistance- over half of them are children. As many as 1.2 million children are out of classroom, their educations, and futures, in jeopardy. (UNICEF 2016)

In Jonglei, trade flows are disrupted by violence in northern parts of the state, and movement is restricted. As of the beginning of January 2017, SAM is at 4%, twice the emergency threshold, and GAM is at 15.6%, just above the emergency threshold(Relief web 2017)

Information obtained from Pigi county health department showed that in a recent integrated rapid response mission (IRRM) conducted by WFP and UNICEF, out of 1,977children aged 6-59 months screened in Kurwai Payam using MUAC, 2231 (12%) were malnourished.

This research project is therefore aimed to assess the causes of malnutrition among children under five years of age in Pibor Outpatient Therapeutic Centre.

**1.2 Problem Statement**

Childcare practices are increasingly being recognized as a crucial input to child health and nutrition, along with food security, availability of health services, and a healthy environment, (Kulwa et al, and 2006). Although significant gains have been made in the fight against malnutrition, the nutritional status of children in urban areas is not improving,, and 2006). Poor child care practices of young children affect their nutrition intake leading to malnutrition, (UNICEF, 2010).

Globally, 148 million children under-fives are underweight for their age and an estimated 178 million have stunted growth in developing countries. Over 2 million deaths are directly attributed to stunting and severe wasting, (UNICEF, 2010). Majority of these children live in Asia (111.6 million) and Africa (56.9 million). Africa is the only continent in which malnutrition among children is rising, but malnutrition most pervasively remaining in Asia, (UNICEF, 2010). A Report by UNICEF indicated that in 2010, children under five deaths reduced to7.6 million, down from 8.1 million in 2009; 8.8 million in 2008 and 12.4 million in 1990. According to UNICEF about half of these deaths occurred in Africa resulting from one or a combination of infections such as diarrhoea, pneumonia, URTI, [measles](http://en.wikipedia.org/wiki/Measles) and [malaria.](http://en.wikipedia.org/wiki/Malaria) These infections reduce child’s immunity weakening the body systems, making a child susceptible and vulnerable to recurrent infections and diseases, threatening their lives or leading to child’s deaths, (Blck,Morris and Bryce, 2003).

Nearly half (45%) of all deaths in children under 5 are attributable to undernutrition, translating into the loss of about 3 million young lives a year. Undernutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections, ​delays recovery among children and this is common among the low- and middle-income countries. The World Bank’s Global Monitoring report 2012 stated that; a malnourished child has on average a seven-month delay in starting school, a 0.7 grade loss in schooling, and potentially a 10-17 percent reduction in life-time earnings – damaging future human capital and causing national GDP losses estimated at 2-3 per cent.(UNICEF/WHO/WORLD BANK 2018)

In South Sudan, the SAM among children between ages 6-59 months is at 4%, twice the emergency threshold and GAM is at 15.5 %in January 2017 (Relief Web 2017) placing children at risk of dying and delayed growth with loss of intelligence and poor performance at school. A recent assessment of children under the age of 5 showed that the GAM rate is at 12% (CHD Pibor report, July 2018)

Pibor OTP is one of the seven OTPs in Pibor county which has served 46% of 1647 of children with severe acute malnutrition and 51.1% of 1,916 under 5 years children with moderately acute malnutrition in 2017 (CHD Pibor report 2017).No research has been performed to determine factors associated with prevalence of malnutrition in Pibor and yet science has proven beyond doubt the consequences of malnutrition on children 6-59 months more specifically SAM can be lethal.

**1.3 Research objective**

The objective of this study is to assess the causes of malnutrition among children under five years of age in Pibor outpatient therapeutic feeding Centre

**1.4Specific objectives**

1. To assess the environmental factors leading to malnutrition among children under five years of age in Pibor Outpatient Therapeutic Feeding Centre
2. To examine the socio-economic factors leading to malnutrition among children under five years of age in Pibor Outpatient Therapeutic Feeding Centre
3. To determine feeding practices leading to malnutrition among children under five years of age in Pibor Outpatient Therapeutic Feeding Centre

**1.5 Research questions**

i. What are the environmental factors leading to malnutrition among children under five years of age in Pibor Outpatient Therapeutic Feeding Centre?

ii. What are the socio-economic factors leading to malnutrition among children under five years of age in Pibor Outpatient Therapeutic Feeding Centre?

iii. What are the feeding practices leading to malnutrition among children under five years of age in Pibor Outpatient Therapeutic Feeding Centre’s

**1.6 Research hypothesis**

This study anticipates that various environmental factors, socio economic factors and feeding practices can cause malnutrition among children under five years of age.

**1.7 Justification of the study**

The study finding is intended to be used by the ministry of health South Sudan to improve on policy and formulate programs targeting children under five years to improve on their health through prevention of malnutrition.

Pibor OTP will use the results from this study to develop strategies and interventions to address malnutrition among children under the age of five years.

Understanding the factors leading to malnutrition among children under five years will help county health department to improve on policies that will address the root cause of malnutrition within the community.

The study will help the researcher to acquire diploma in human nutrition.

**1.8 Scope and Limitation**

Being a health facility-based study; the findings may not reflect a true picture of malnutrition in the community.

The researcher anticipated problem of language barrier as the study should be done in a community other than that of the researcher.

The researcher further anticipates financial constraints in due course of the project.

There shall also be time shortage for carrying out the study.

**1.9 Rational**

Carrying out this research shall enable a deeper understanding of the causes of malnutrition among children under five years of age at Pibor OTP and this shall be a step forward to policy makers to formulate policies necessary to address malnutrition in Pibor County.

**CHAPTER TWO: LITERATURE REVIEW**

**2.1 Introduction**

Health and nutrition in children are closely linked and highly dependent on care practices, (Smith and Haddad 2000).Care entails all measures and behaviors that translate available food, health and resources into good child growth and development. Although child care is assumed to be exclusively a mother’s domain, it is, in fact the domain of all the other caregiver’s e.g. entire family, community and the society at large, (Smith and Haddad, 2000).

Care refers to behaviors and practices of caregivers: the mothers, father, sibling , community, society, and other care providers of food, health care, stimulation and emotional support necessary for child’s survival, growth, and development, (Tsehai, 2004).Care giving involves feeding, provision of shelter and emotional security, ’s child stress reduction, clothing, feeding, bathing and supervision of child’s bowel movement (toilet). Others includes; preventing and attending to child’s illnesses; nurturing and showing affection; interaction and stimulation; playing and socializing; protection from exposure to pathogens and providing safe environment for exploration, prenatal care, curative and preventive health or traditional health and provision of care by members of an extended family network, (Tsehai, 2004).

Child Care practices during complimentary feeding are very crucial particularly the food started to a child should be nutritious to promote developmental growth of a child, (Luter and Dewey, 2003). Children fed frequently with balanced meals are protected from malnutrition while infrequent child feeding contribute to child malnutrition. This is due to the fact that, child stomach cannot accommodate large amount of food at once, (Smith and Haddad, 2000).During complementary feeding the food given to a child should be rich in nutrients or (balanced food) to promote developmental growth of a child. Feeding frequency has been found to protect malnutrition. (Smith and Haddad, 2000).

Poor child feeding practices can be as a result of child rearing practices that influence nutritional status of children. These can be cultural and behavioral care practices interfering with child feeding practices, (Siddarth and Ramji 2009).

During complementary feeding, good hygiene and proper food handling is recommended, (WHO, 2010).Hygiene is crucial during complementary feeding, especially during food preparation and storage, (Monte, 2004). At this point, care providers are required to be extra conscious on contaminative items causing infection especially diarrhea. Diarrhea can be prevented through hygiene practices which operate at the personal, household and community levels. Household hygiene includes issues related to how care providers handle water and sanitation; faecal disposal especially among young children; quality of child play areas and cleanliness and hand washing to prevent food contamination, (Monte, 2004).

The vicious cycle of malnutrition, however, lowers the body’s ability to resist infections by undermining the proper functioning of the immune mechanisms. This leads to more severe and frequent episodes of illnesses that lasts longer and in turn increases the body requirements for nutrients. The frequent episodes of illnesses further affects young child eating pattern through loss of appetite, mal-absorption and altering metabolism leading to loss of nutrients, Sub-Committee on Nutrition/ Administration Co-ordination Committee (SCN/ACC, 1992), (Figure 1).

Weight loss

Growth faltering

Immunity lowered

Mucosal damage

Inadequate

Dietary intake

Disease

Incidence

Severity

Duration

Appetite loss

Nutrient loss

Mal

-

absorption

Altered metabolism

**Figure 1**: Malnutrition and Infection, **Source:** SCN/ACC, 1992

**2.1.1 Child Care during Illness**

Child morbidity leads to depletion of body nutrient stores through increased metabolism such as fever, loss of appetite, reduced food and nutrient intake, leading to demand for nutrients intake, International Baby Foods Action Network (IBFAN, 2010).

Disaggregated data show that infant and under-five mortality rates for the poorest slum residents are often higher than in similar groups in rural areas (APHRC 2002, UN H 2003). Infant mortality rate in Nairobi slums is 96 per 1,000 live births – higher than any other region of Kenya and 25% higher than the national average of 77 (see figure 5). Under-five mortality rates in the slums (151 per 1,000 live births) are more than double the Nairobi average of 62 and greater than for rural Kenya (113 per 1000 live births) (UN-Habitat, 2006; APHRC, 2002).

The care practices during illness especially with diarrhoea are important to control dehydration. Feeding and management of symptoms such as fever, mouth sores and breathlessness is crucial. Health care seeking behavior at the nearest health center or clinic or hospital determines the care that a child receives during illness. Where feeding is affected, special attention is needed especially during diarrhea. Oral rehydration therapy is necessary in counteracting the effects of dehydration caused by diarrhea, (Ahmed, 2012).

The management of ill health in children need health care seeking behavior and should be extended to a child’s safety at home, (Chege, 2011).Child’s environment at home is important and needs to be viewed as a multidimensional and not restricted to feeding and psychosocial care only, (Chege, 2011).Psychosocial care practice influence nutritional status of children and cognitive stimulation that help in support of child developmental growth, influencing social emotional and interaction between caregiver and a child, (Februhartantly, 2007).

**2.2 Maternal/Caregivers Characteristics**

A review of literature on maternal age, marital status, maternal education, maternal occupation, household income and household size is presented below.

**2.2.1 Maternal Age and Marital Status**

Age specific fertility rates have been found to be higher within the age range of 20-24 in the rural areas and 25-29 in the urban areas, (KDHS, 2008/09.The age at which child bearing starts has important health implications for care practices of a child. A study conducted in Uganda showed that stunting and wasting were higher among children of younger mothers than those of older mothers, (Efata, 2000). In yet another study done in Mbarara slums in Uganda, the level of stunting was higher among children of younger mothers compared to those of older mothers. This was attributed to the fact that older mothers have more and better experience in child care practices than their young counterparts, (Mehangye, 1999).

**2.2.2 Maternal Education**

Childcare practices and education goes hand in hand. Children of educated mothers have a great chance of survival and healthy growth and development than children from mothers less educated, (Augustine et al, 2009). A mother’s level of education and access to information determines whether the mother understands care practices of a child such as the duration of breastfeeding, when the child should be weaned; which foods to initiate for the first introduction; how foods can be best cooked for a child; whether water will be boiled or treated for drinking; why hands washing is important; how a child contract diseases like diarrhoea; how diarrhoea control treatment is administered at home and when a child will be weighed, vaccinated, and taken for health care services for growth monitoring and when sick, (Augustine et al, 2009).

Maternal education is said to be associated with the level of care provided to the children. Education increases both the ability of a mother to earn more income and the ability to appreciate the importance of child care giving. Educated mothers have better interactive abilities with their children than those mothers with little or no education, maternal education has been linked to increased levels of prenatal and postnatal care, (Augustine,et al, 2009). On family planning, it has been found that less educated women do not plan child births as opposed to the educated mothers who are able to plan the intervals between births, (Martinez et al, 2012).

A study conducted in Zimbabwe found education to have a significant negative effect on the duration of breastfeeding. The study indicated that the illiterate mothers breastfed their children for a significantly longer period than mothers who had postprimary education, (Matsvimbo, 1997).

In Kenya, mother’s level of education was found to have an inverse relationship with the three nutritional indicators Weight for age, Height for age Weight for Height (WA, HA, WH). Children of mothers with secondary education were found to have the lowest levels of stunting and underweight (19.3%), and (10.6%) respectively while (34.2%) and (34.5%) of children whose mothers had no education at all were stunted and underweight respectively. Mothers with no education at all were also found to have children with the highest levels of wasting (12.8%) compared to (2.8%) of wasting among children whose mothers had primary education, (KDHS2008/09).

In yet another study done in Kenya in Lower Nyakach Kisumu District, it was established that literate mothers with at least five years of primary education had significantly more underweight children than the illiterate mothers. Literature review therefore shows conflicting evidence to the relationship between maternal education and nutritional status of the children, (Opiyo, 1993).

**2.2.3 Maternal Occupation**

Women are forced to search for formal occupational employment to subsidize family resources and improve quality of living in the family. Women who are not in the formal employment spend more time than men in all working activities, in addition to child care. Mothers often must gather fire wood; fetch water; prepare food for the family and do farm work which could be productive or not, (Muhoozi, 1999). Some studies suggest that when mothers work outside the home, even on their own farms, their children are more likely to be malnourished, especially if they do not control income or if a child is under one year old. Other studies have found no negative effects on nutritional status of children from working mothers. On the other hand, some studies have found positive effect when mothers work was well paid, (Muhoozi, 1999).

The results of a study carried out in Tanzania showed that the prevalence of childhood malnutrition was higher in households of employed mothers than households of mothers who were housewives or self-employed. The prevalence of underweight was found to be more among children in well paid group of mothers than it was among children of mothers with low and no income. However, the same study observed that the levels of stunting were high among children of mothers with no income and also those with low income and middle income compared to those of high income mothers, (Mugyabuso,1996).

In many developing countries, women generally are involved in a lot of economic earning activities, but are rarely involved in the control of income, household resources, and decision making. A study done in rural Bomet and Murang’a Districts in Kenya showed that women are the major workers in agricultural farms. The same women are however, not involved in decision making on how the produce would be sold, and how the money from the farm sales would be used or allocated. The same study also showed that women especially those in the rural areas, face many problems, including gender inequality, illiteracy, legal and political discriminations. These are constraints that seriously limit women involvement in decision making on childcare practices and access to quality food supply through purchase, as well as quality health care services, and in all other spheres of life, (Nyagawa, 1997).

**2.2.4 Household Size and Household Income**

The effects of care practices and the household size on a child nutritional status are still controversial. Some argue that the size is small then the mother has more time to take care of the needs of the children. However, others argue that if the family composition is large, the other members of the household can contribute to the wellbeing of the child through financial contributions and child care, (Muhoozi, 1999).

The socio-economic status of a family influences the availability of resources for care to the household. An economically well-off family is more likely to have a better nutritional status because of the purchasing power of sufficient nourishing foods. It is a fact that limited resources lessen the quality and quantity of food purchased by each family, (Golpadas, Patel, and Bakshi, 1998).

A study carried out in Uganda showed higher malnutrition levels in smaller households than in larger households. It was found that stunting in smaller household and in the large household was almost the same with minimal difference of 39.2% and 27.7% respectively, (Mehagnye, 1999). A study carried out in Kibwezi in Kenya showed that children in households that did not receive remitted income were severely malnourished than children whose families received remittance, (Wright, 1998)

**2.3 Infant and Young Child Feeding Care Practices**

Child care is one of the key underlying causes of childhood malnutrition. Child care is manifested in the way a child is fed, nurtured, socialized and guided. Nutritional care encompasses all measures and behaviors that translate available food into good child health growth and development, (UNICEF, 2006).In accordance with the Global

Strategy on Infant and young child feeding, UNICEF’s overall is to protect, promote and support optimal infant and young child feeding practices. The expected results are improved nutrition status, growth, development, health and ultimately the survival of infants and young children, (UNICEF 2008). Child care is practiced commonly by women who carry out some of the care activities such as breast feeding and feeding of young children; psychosocial stimulation of children and support for their development; complementary food preparation, feeding and storage practices; hygiene practices and care for children during illness and adoption of health seeking practices, (Engle, Memon and Haddad, 1999).

**2.3.1 Breastfeeding**

The world health organization (WHO) recommends that a new born baby is introduced to breastfeeding immediately after birth between the first 30 minutes to one hour, (WHO, 2010). Breastfeeding care practices are influenced by early initiation of breastfeeding and should start immediately from birth to stimulate and increases the production of breast milk hence the mother does not have to give other feeds to her baby, (UN et al, 2000). The first milk, the colostrum protects the baby from infections as it boosts the immunity of the baby. Evidence shows that 22% of neonatal deaths would be prevented if all infants were breastfed within the first hour of life. In Kenya, 52.3% of children start breastfeeding within one hour after birth, (WHO, 2010).

Breastfeeding care practices are influenced by early initiation of breastfeeding and should start immediately from birth, (Breast milk contains unique immunological properties which protect children against infections and chronic diseases, (UNICEF, 2009).

In Kenya, breastfeeding is nearly universal with 97% of children born having been breastfed for some period of time in most of the provinces. Overall, 58% of children are breastfed within one hour after birth and 86% within one day after birth. About 42% of the children are said to be given prelacteal feeds either due to loss of mother or the mother’s illness after delivery or when there is not enough milk in the breast, (KDHS 2008/2009).

**Exclusive Breastfeeding**

Exclusive breastfeeding is unique and ideal for growing children up to 6 months. The first 6months of life is globally recognized as the most ideal period before introducing a child on other feeds, (Nankunda, 2012). It is recommended that even in the hottest driest climates, exclusive breastfeeding provides all the fluid a healthy infant need to satisfy thirst and control dehydration and no extra fluids are needed, (Nankunda, 2012). Exclusive breastfeeding is an effective preventive intervention for ensuring child survival although the practice is moving up slowly among Kenyan mothers, (Nankunda, 2012).Poor breastfeeding and infant feeding practices contribute to more than one thousand deaths per year, (Nankunda, 2012).

Exclusively breastfed children are protected from common childhood illnesses infections i.e. diarrhoea, upper respiratory tract infections and malnutrition. Breast milk contains disease fighting substances that support the body with natural immune system which protect children against infections and chronic illnesses. Breastfed babies have been found to grow well mentally, physically and psychologically when in close contact with their mothers, (UNICEF 2009).

The optimal breastfeeding promotion including exclusive breastfeeding cannot be successfully practiced if the knowledge, attitude, and the cultural beliefs are not adequately addressed. Exclusive breastfeeding for up to six months requires the mother and her infant to be in close proximity for the six months period and leaving expressed breast milk for separation of a short duration, (Pevera et al, 2011).

Babies who are exclusively breastfed have fewer illnesses and are better nourished than those who are fed other foods and drinks. If all babies were fed only on breast milk for the first six months of life, the lives of an estimated 1.5 million infants would be saved every year and the health and development of millions of others would be greatly improved, (UNCEF,2008).

**2.3.2 Complementary Feeding Practices**

Complementary feeding practices is giving other foods to children whether manufactured or locally prepared in addition to breast milk after six months in order to satisfy nutritional requirements for a child, (KDHS 2008/09). Breast milk alone is the right food and drink an infant need until the age of six months, (WHO and PAHO, 2008). After six months, the child needs a variety of foods in addition to breast milk, although breast milk on its own is sufficient to meet all nutritional needs of a child, complementary feeds with appropriate solids are required to meet the additional requirements for energy and nutrients after six months, (KDHS, 2008/09).

Children with or without mothers need a variety of additional foods after 6 months, and should continue with breastfeeding through its second year and beyond, (MoH 2002).A mother who may be employed or working away from her home can continue breastfeeding when she is with the child, and make sure she breastfeeds as often as possible, (Dewey, 2008).

Introducing complementary foods when the child is six months old is to reduce the risk of malnutrition (KDHS, 2008/09). Early introduction of complementary foods is common practice in Kenya. But children should be given solid or semi-solid complementary foods after six months and in addition continue breastfeeding till when the child is fully put on family diet, (KDHS, 2008/09). Children with or without mothers need a variety of additional foods after 6 months and should continue with breastfeeding through its second year and beyond, Ministry of Health (MoH 2002). Mothers who may be employed or working away from her home can make sure she continues breast feeding as often as possible when she is with the child, (Dewey, 2008). Further early complementary feeding is discouraged because of high likelihood of food contamination. Again the digestive system of a child is still premature and cannot handle complex or bulky foods, (Dewey et al, 1999).

In Kenya, for example 24% of newborn, less than two months of age are given, complementary foods or liquids. At the age 4-5 months, 60% breast fed children are given solids or semi-solid foods, (KDHS, 2008/ 2009). Early complementary feeding is discouraged because of high likelihood of food contamination. Again the digestive system of a child is still premature and cannot handle complex or bulky foods, (Dewey et al, 1999). This shows that complementary feeding practices are generally poor in most developing countries, exposing many vulnerable children to irreversible outcomes such as malnutrition and significantly increased risks of infectious diseases like diarrhea and pneumonia, (UNICEF 2008).

The most common used complementary foods for breast feeding children under 3 months are milk 51%, food made from grains 72%, fruits and vegetables 53%, tubers, roots and legumes 15% respectively. Between 6 months and 8 months, 81% of children are already receiving complementary foods. On the other hand, protein rich food (meat, fish, poultry and eggs are introduced gradually from 6 months to 8 months, (KDHS, 2008/2009).

According to United States Agency for International Development/ Academy for Education Development, malnutrition is more common during this transitional period. Families may not be aware of special needs of infant especially the first time mothers. Food complementary foods preparation from a family pot is important and how to use foods available locally to feed a child. Families may also be too poor to provide sufficient nutritious foods to a child, (USAID/AED, 2002).

The faulty feeding practices as warned by WHO, begins by giving any other foods than breast milk before the recommended time, (WHO, 2010). The WHO further warns that starting complementary feeding too early or too late is a major cause of poor nutritional status of infants and young children, (WHO, 2010).

**2.3.3 Feeding During Illness**

Feeding practice is important during common childhood illnesses, such as pneumonia, diarrhea, measles, HIV/AIDS, malaria and fevers. These conditions lead to serious feeding problems and interfere with nutritional status of children. Diarrhea is the most common and most often, is caused by faulty in infant feeding practices, particularly unhygienic food preparation for a child and where a child is given foods other than breast milk. Early detection of these conditions help to control the possibility of malnutrition, (WHO, BASICS/ UNICEF, 1999).

It is essential to encourage a sick child to eat, although sick children have no appetite, giving a sick child foods little by little at a time often is important United Nation Development Programme, (UNDP et al, 2002). It is good to continue with exclusive breastfeeding to a sick child and giving extra fluid especially when the child has diarrhea to help prevent dehydration. If illness and poor appetite persist for more than a few days, the child needs to be taken to a health worker (health professional) for evaluation and treatment. The child is not fully recovered from an illness until the weight records about as much as when the illness began, (UNDP et al, 2002).

**2.3.4 Intra Household Food Preparation and Allocation**

Intra household food preparation and allocation need hygiene practices, clean environment and nutritious food for a child nutritional status. Food preparation for children is very important to consider the consistency and the nutrients density necessary for the promotion of growth and development of children. The trend of maintaining high standards of hygiene practices is difficult, especially among the poor and those living in congested areas. Washing of hands, keeping cooked and left-over foods covered are important aspects in food preparation, (Crowley, 2010).

Children should not be served meals in a common dish with adults. Young children eat slowly and may not get enough food. They should have their own plate or bowl to ensure they eat what they are given, and the parents or caregivers can see how much they have eaten. Young children need encouragement and those with developmental disability require extra help when eating and drinking, (UNDP et al, 2002).

Intra household food distribution/allocation in countries like Africa and Asia is ignored. Mostly where traditions are closely observed, girls and women are generally less cared for by their families and even the society. It is common for men (in both regions) to eat the most and the best, leaving the women and children to eat last and the least. For example, in South East Asia, a mother will serve her son first with the best foods and herself with her daughters last with little food at the expense of her own and her daughters’ health and nutritional wellbeing, (Lindatorm and Haddad 2008).

**2. 4 Health Care Practices**

**2.4.1 Utilization of Health Services**

Availability, accessibility, affordability and utilization of health care services are major care practices that impact on maternal and child health in most developing countries. However, utilization of health services does not mean seeking for curative services, but also practicing health promotion and disease prevention behavior to ensure early detection and seek treatment in good time, (WHO/BASICS/UNICEF, 1999). Where services are available, affordability is very low due to high levels of poverty, (MoH, 2005).

In Nairobi’s slums, women seek maternal and child health care from privately owned, substandard and often unlicensed clinics and maternity homes within their communities. While unable to offer many of the functions of basic care, these facilities are well perceived both in terms of access and quality, presumably because they invest time in women, building trust and confidence,(Fotso and Mukiira, 2012).

A study done in sub-Sahara African countries in 2002-2003 showed that health cost ranged from 6% in Namibia, 62% in Chad and 45% in Kenya, (MoH, 2005). After these results, Kenya Government introduced the 10/20 policy in 2004 which now governs the user fees policy in the first level health care centers and dispensaries respectively. This was introduced as a means of improving access to health care by the poor. The introduction of 10/20 policy meant that patients seeking health care at public dispensaries only pay 10 shillings and 20 shillings in health centers for consultation and drugs respectively. And in large hospitals, the government introduced cost sharing and waiver system to increase access for hospital admissions by the poor, (MoH, 2005).

**2.4.2 Immunization**

Each year, 1.7 million children in the world die from preventable and immunizable diseases, (Ndiritu et al, 2006). Children who are immunized are protected from diseases such as, (polio, measles) which most often, lead to disability or death. It is necessary for the parents to know why, when, where and how many times the child should be immunized. Parents also should know that it is safe to immunize the child even if the child has an illness or a disability or is suffering from nutritional deficiencies, ( Ndiritu et al, 2006).

It has been proven that communicable disease spread quickly among people living in crowded areas. For this reason, all children living in congested conditions, particularly in the informal settlements, refugee or disaster situations camps, should be immunized immediately, especially against measles and Tuberculosis, (Ndiritu et al, 2006).

**2.4.3 Birth Weight and Growth Monitoring**

Birth weight is a strong indicator, not only of mother’s health and nutritional status but also new-born chances of survival, growth, long term-health and psychosocial development. A low birth weight, less than 2.5 kilograms raises grave health risks for children. Low birth weight is a public health problem in most developing countries. About 15.5% of all babies worldwide are born with low birth weight. Of these,

95.6% are in developing countries, (WHO/UNICEF, 2004).A study done in subSahara Africa showed that child birth weight was strongly associated with stunting and the association has been well documented and understood, (Hien and Kam, 2008). Another study conducted in Kenyan slums of korogocho and viwandani Nairobi county found that children birth weight had influence on their nutritional status, (Abuya,et al, 2012).

Growth monitoring and promotion is a process of weighing a child and graphing the weight on the assessing growth chart, providing counseling to mothers and motivating them for other actions to improve child growth,(WB, 2004).On each visit to a health center, the weight/height of every child should be measured using accurate and well balanced scales. Recording the weight and height of children serve three important purposes:(1) help to detect children at high risk of developing PEM; (2) used to follow and monitor the growth of an individual child; (3)used to track passed records on child illness and the treatment, (UNICEF,2007).

**2.5 Water, Sanitation and Hygiene Practices**

Water, Sanitation and hygiene practices in homes/houses are important part of livelihood, (KDHS, 2008/ 2009). Water is essential for life, health and requirement for human dignity in household, (KDHS, 2008 / 2009) .In extreme situations water may be insufficient and unavailable to meet basic needs, (UNICEF, 2010). In such cases, supply of safe drinking water is of critical importance for survival, (UNICEF, 2010). Poor sanitation water and hygiene have many other serious repercussions which are health related problems caused by poor hygiene and consumption of contaminated water, (UNICEF, 2010).

United Nations Children’s Fund estimates indicated that about 884 million people worldwide lack access to safe water, and yet water is a fundamental requirement for good nutrition. UNICEF also estimated that about 2.5 billion people lack access to adequate sanitation with only 18% of rural dwellers having access to adequate sanitation services, (UNICEF, 2010).

In Kenya, 63% of households get drinking water from an improved source. It is estimated that about 91% and 54% of the Kenyan urban and rural population respectively have access to safe drinking water. About 24% of rural households obtain drinking water from lakes, rivers or streams. In urban areas, 6% households use non- improved source of drinking water, and the proportion is far higher for rural households estimated at 46%, (KDHS, 2008/2009).

Among the improved sources the proportion of household with piped water into the plot accounts for 15%of households, with urban areas accounting for 33%. This is further estimated that 12% rural households source of drinking water is covered protected dug wells. The minority of households (32%) is within less than 30 minutes from their water source with urban 6% and rural 39%, (KDHS, 2008/2009).

Where there is suspicion of water contamination, 45% households treat their drinking water. The main method of treatment is boiling, with 29% of households practicing, while 18% of households add bleach or chlorine such as water guard to make water safer for drinking. Appropriate water treatment methods are more common among urban households at 57% than among rural households 40%, (KDHS, 2008/2009).

Hygiene ways of living are important practices in the prevention of illness and disease brought about by poor sanitation and unclean environment, (Wood, Glanville and Vaughan, 2008).The state of sewerage and human waste disposal in the informal settlements pose a major threat to health. Access to latrine which everyone uses is very crucial and it must be properly constructed, in good position and kept clean,(Wood, Glanville and Vaughan, 2008). If the latrine has to be used by children, the opening should be constructed with children in mind and made small to avoid children falling into the pit. Those children who are unable to use the latrine, their excreta should be collected and deposited into a pit latrine by the care giver, (Wood, Glanville and Vaughan, 2008).

The spread of disease can also be reduced through hand washing after defecating, handling baby’s faecal matter, preparing food, feeding children or eating to reduce the transmission of diarrhoea germs. Washing with water alone is not enough to remove faecal contamination. Hands must be washed with agents such as soap, mud, ashes that require the hands to be rubbed together. To reduce diarrhoeal diseases, adequate supply of water for hygiene purposes is important. Many times when water is scarce, people are likely to save it for drinking and cooking rather than personal hygiene. The more water is available the more people will campaign to promote hand washing, (Wilson, 1993).

Ensuring sanitation facilities is a millennium development goal that Kenya shares with other countries. In Kenya urban households are only slightly more likely than rural households to have an improved toilet facility, 30% and 20% respectively. The most common toilet facility in rural area is open pit latrine with a slab or without. In urban areas toilet facilities are shared in the homestead especially among middle class homes. In urban slum areas, 52% of households share toilets and about12% have no toilet facility at all, (KDHS, 2008/2009). According to a study done by Grellety at Mathare Valley indicated that the areas that have scarce toilet facilities end up using plastic bags (flying toilets) and that many public toilets facilities often are financed by NGOs and managed by community groups while others are private operating on a pay-as-use basis, (Grellety, 2008)

In housing situations, airborne diseases from poor environmental hygiene is common especially tuberculosis. Such poor environment is characterized by improper and inappropriate housing, crowded rooms where many people may opt to live and sleep and also unhygienic personal habits that make some diseases more likely to spread i.e. through poor fecal handling, coughing carelessly, contamination of hands, food, and water, (Wood, Glanville, Vaughan, 2008).

**2.6 Psychosocial Care Practices**

Psychosocial care is a practice of mother-child bond and best in early life of a child when cognitive behaviors, emotions and social behaviors of a child are developing, (Delange, 2010). Mothers who have malnourished children are apathetic and appear to have more personal and family problems. They are isolated and have low selfesteem, (Carvalhaes and Benicio, 2006).

The quality of psychosocial care is often determined by the interaction between mother and child. A protective effect on nutritional status is seen by talking to the child, storytelling, hugging the child, having a safe and attractive environment and encouraging independence, (Carvalhaes and Benicio, 2006).

Psychosocial care practices are important in the promotion of growth and development of children, (Murray and Hornbacker, 1997). Child growth and development is influenced by social and psychological ability of a caregiver and the child. Good psychosocial care in the first three years of life has a positive effect on nutritional status of a child and also influence the social, emotional and cognitive development of a child’s cues delivered through the provision of affection, attention, interaction and responsiveness from a mother/caregiver, (Ramakrishnan, 1995).

Parents should be involved as far as possible with their children’s care and they should be taught the importance of play, (Delange, 2010). Children who are not stimulated can have reduced psychomotor activities that can affect their millstone during growth period mostly crawling, standing and playing with other children. The moment children become less active and demanding, parents tend to provide less stimulation. Delange, 2010).

A study on psychosocial care and complementary feeding of children in Nigeria found that about 77% of the mothers in the study cared for their own children while 23.1% used caregivers (Agunba, 2008). A similar study was conducted by Delange indicated that psychosocial care among children who were on complementary feeding, 58.7% were assisted to eat by their mothers and motivated to eat, 76.4% sat with their mothers as they ate, 23.6% were forced by their mothers to eat and 76.2% ate on their own, (Delange,2010).

**2.7 Conceptual Framework**

**Independent Variables Dependent Variables**

**Figure**

**2**

**:**

Conceptual

F

ramework

**Hygiene Sanitation Practices**

Toilet availability

Hand Washing,

Water and Water Tre

atment

**Mothers/caregivers Socio**

**-**

**economic and demographic**

**Characteristics**

Age

Marital Status

Level of Education

Occupation

Household Size

Household Income

**Child nutritional status**

**5 years**

**<**

Weight for height

Weight for age

Height for age

**Child Demographic**

**Characteristics**

Child’s Age in Months

Birth Spacing

**Child Care Practices**

Breastfeeding

Complementary Feedin

g

Intra Household Food

Preparati

on and

Allocation

Feeding

d

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Illness

Infections

(

Diarrhoea, malaria)

**Utilization of Health Services**

I

mmunization

G

rowth monitoring

Source; Researcher (2018)

Figure 2 shows the schematic framework on how various factors for this study interacted. It also shows the relationship between independent and dependent variables.

**2.8 Knowledge Gaps**

Many studies on child Nutrition status have been done in most parts of South Sudan with the evidence of severe malnutrition but none has been conducted in Pigi County.

Pigi County has been a host to a number of internally displaced persons as well as hoisting a number of community members who are poor, it is important that we have such a study to help in purposes of planning.

**CHAPTER THREE; STUDY METHODOLOGY**

**3.0 Overview**

This chapter presented the philosophical paradigm, Study design, Study site, Research Approach, Research Method, Data needs, types and sources, Population, Sampling procedure and Data collection, Data Analysis, Data Presentation, Validity and Reliability and Ethics.

**3.1 Philosophical paradigm**

Malnutrition in children under five years of age has a link with environmental, socioeconomic and feeding practices, which was investigated in this study.

**3.2 Study design**

The study was descriptive cross sectional that employed quantitative methodology. This study design was selected because it was suitable for short period of study.

**3.2.1 Study site**

The study was conducted in Pibor OTP, that is in the Northern part of Jonglei state. It is bordered by New Pibor in the Eastern in the south, Pibor in the East. Pibor has a total population of 10,912 of which 2231 are children below five years of age. Of the 2231, 263 were malnourished according to a joint assessment done by UNICEF, WFP and Nile Hope in July 2018. There are five bomas in Pibor payam namely: Pibor is served by four OTPs, one PHCC and two PHCUs. This study shall be contacted in Pibor OTP because the researcher is familiar with the location. The researcher purposively chose Pibor OTP, because it has a large number of malnourished under five-year-old children.

**3.2.2Research Approach**

The study was done using descriptive cross sectional employing quantitative approach.

**3.2.3 Research Method**

The study employed quantitative method during the process of collecting and analyzing data.

**3.2.4Data needs, types and sources**

Data was collected using semi-structured questionnaire, which consisted of both open and closed ended questions. These tools have been selected because they favoured both literate and non-literate.

**3.2.5 Population, Sampling procedure and Data collection**:

**3.2.5.1 Population**

The study population included all mothers and caretakers aged eighteen years and above of malnourished under five years old children attending OTP at Pibor The population size was 162 mothers or caretakers of malnourished children calculated from Fisher’s formula at 95% significance level. Existing record indicated that the GAM rate in the area was approximately 14%. n=Z2Pq/d2 where n is the desired sample size, Z is the critical value associated with level of significance usually 1.96 corresponding to 95%; P is proportion of target population estimated to have a particular characteristic. P, the estimate for malnourished children was given as 12%; d is the margin of error i.e., 5%=0.05.

q=1-p.

n=1.962 × p (1-p) ÷ d2=sample size required

n=1.962 × 0.12 (1-0.12) ÷ 0.0502= (3.8416 × 0.1056) = (0.40567296) ÷ (0.0025)=162 children

**3.2.5.2 Sampling procedure**

Purposive simple random sampling method was used. Any mother or caretaker of a malnourished under five-year-old child present at the OTP had an equal chance of being selected to participate in the study. This continued until a total of 162 respondents have been interviewed.

**3.2.5.3 Data collection**

Before approaching and collecting data from respondents in Pibor OTP.The researcher got permission fromAfrica Institute for Project Management Studiesto the field coordinator Nile Hope- OTP implementing agency in Pibor requesting to carry the above research in the area and the researcher moved hand in hand with the in charge Pibor OTP during the whole process of data collection. The researcher and research assistants administered questionnaires to the respondents from the OTP. This improved efficiency during data collection.

**3.2.6 Data Analysis**:

Data was analyzed using computer software statistical package (EPI), coded, edited, cleaned and manually analyzed data was entered in the computer for validation. The information was analyzed inform of pie charts, tables, texts and graphs,

**3.2.7 Data Presentation**

Data was presented inform of text, tables, charts and graphs.

**3.3 Validity and Reliability**

To ensure validity and reliability of the study, the researcher pretested the data collection tools before embarking on the actual data collection. Trained research assistants assisted during data collection. The researcher ensured close supervision of the research assistants to ensure data accuracy and completeness. Where necessary field editing was carried out to ensure internal consistency and uniformity.

**3.4 Ethics**

Permission to carry out the study was sought from Africa Institute for Project Management studies addressed to management of Pibor OTP in order to carry out the study in the OTP and informed consent was obtained from the study participants. No forms of persuasions either monetary or in any kind was promised or given other than the benefits that accrued from the research. . Any information obtained was handled with high degree of confidentiality, as there was no writing of names of respondents but only their signatures on the data collection tool. The information obtained here was to be used for learning purposes only.

**CHAPTER FOUR:**

**PRESENTATIONS OF FINDINGS, ANALYSIS AND INTERPRETATION**

**4.0 Overview**

This chapter presents the findings on causes of malnutrition among children under the age of five years in Kurwai Outpatient Therapeutic Feeding Centre. The following areas were covered by the study: socio demographic characteristics of the respondents and environmental factors, socioeconomic factors and feeding practices leading to malnutrition among children under the age of five years.

**4.1 Socio-demographic characteristics of Respondents.**

**Figure 1: Distribution of respondents according to age (n = 162)**

Figure 1 above shows that most 70 (43.2%) of the respondents were aged less or equal to 19 years, followed by 39 (24%) aged between 40-49years, 30 (18.5%) between 20-29 years, 21 (13%) between 30-39 years and 2 (1.2%) aged 50 years and above.

**Figure 2: Distribution of respondents according to sex (n=162)**

Figure 2 above shows that majority 150 (93%) of the respondents were female and 12 (7%) were male.

**Figure 3: Distribution of respondents according to occupation (n=162)**

Figure 3 above shows that majority 139 (86%) of the respondents are unemployed, followed by 10 (6%) peasants, 8 (5%) employed and 5 (3%) others.

**Table 1: Distribution of respondents according to religion (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | catholic | 40 | 24.7 |
| 2 | protestant | 100 | 61.7 |
| 3 | Muslim | 0 | 0 |
| 4 | Pentecostal | 20 | 12.3 |
| 5 | others | 2 | 1.2 |
|  | Total | 162 | 100 |

Table 1 above shows that most 100 (61.7%) 0f the respondents are protestants. Followed by 40 (24.7%) catholic, 20 (12.3%) Pentecostal and 2 (1.2%) other religion.

**Table 2: Distribution of respondents according to marital status (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Married | 82 | 50.6 |
| 2 | Separated | 18 | 11.1 |
| 3 | Divorced | 20 | 12.3 |
| 4 | Widowed | 40 | 24.7 |
| 5 | Single | 2 | 1.2 |
|  | Total | 162 | 100 |

Table 2 above shows that most 82 (50.6%) of the respondents are married, 40 (24.7%) widowed, 18 (11.1%) separated and 2 (1.2%) single.

**Figure 4: Distribution of respondents according to level of education (n=162)**

Figure 4 above shows that most 120 (74%) of the respondents had no schooling, followed by 30 (18.52%) only stopped in primary, 10 (5.6%) had secondary education and only 2 (1.9%) had tertiary education.

**4.2 Environmental factors leading to malnutrition among under 5-year-old children.**

**Table 3: Distribution of respondents according to number of under five-year-old children in the family (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | 1-2 | 30 | 18.5 |
| 2 | 2-3 | 32 | 19.8 |
| 3 | 4-6 | 40 | 24.7 |
| 4 | 7& above | 60 | 37 |
|  | Total | 162 | 100 |

Table 3 above shows that most 60 (37%) of the respondents had 7 or more under five year old children in their families, followed by 40 (24.7%) who had between 4 to 6 under five year old children in the families, 32 (19.8%) had 2 to 3 under five year old children in their families and 30 (18.5%) had 1 to 2 children aged less than five years in their families.

**Figure 5: Distribution of respondents on child having diarrhea in the last two weeks (n=162)**

Figure 5 shows that more than half (53%) of 162 respondents reported that their children had diarrhea in the last two weeks and 76 (47%) reported no diarrhea in the last 2 weeks preceding the interview.

**Table 4: Distribution of respondents according to source of drinking water (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Borehole | 0 | 0 |
| 2 | Protected well | 0 | 0 |
| 3 | River or Stream | 162 | 100 |
| 4 | Others | 0 | 0 |
|  | Total | 162 | 100 |

Table 4 above shows that all (100%) of the respondents use river or stream as their source of drinking water.

**Table 5: Distribution of respondents on distance of water source from home (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Less than 10 minutes’ walk | 40 | 24.7 |
| 2 | 10-20 minutes’ walk | 41 | 25.3 |
| 3 | 20-30 minutes’ walk | 36 | 22.2 |
| 4 | More than 30 minutes’ walk | 45 | 27.8 |
|  | Total | 162 | 100 |

Table 5 above shows that most 45 (27.8%) of the respondents get drinking water at a distance of more than 30 minutes’ walk, 41 (25.3%) of the respondents obtain drinking water at a distance between 10 -20 minutes’ walk, 40 (24.7%) respondents obtain drinking water from a distance of less than 10 minutes’ walk while 36 (22.2%) get water within a distance of 20 to 30 minutes’ walk.

**Figure 6: Distribution of respondents on defecating in latrine (n=162)**

Figure 6 above shows that 121(74.7%) of the respondents do not defecate in latrine while 41(25.3%) defecate in latrine.

**Figure 7: Distribution of respondents on being displaced from home (n=162)**

Figure 7 above shows that most 92 (56.8%) of the respondents have been displaced from their home while 70 (43.2%) are not displaced.

**Table 6: Distribution of respondents according to cause of displacement (n=92)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Conflict | 82 | 89 |
| 2 | Unfavorable climate | 10 | 11 |
| 3 | Others | 0 | 0 |
|  | Total | 92 | 100 |

Table 6 above shows that majority 82 (89%) of the respondents have been displaced from their home area by conflict whereas 10 (11%) were displaced by unfavorable climate

**4.3 Socio-economic factors leading to malnutrition among under 5-year-old children.**

**Figure 8: Distribution of respondents according to level of monthly income (n=162)**

Figure 8 above shows that majority 150 (92.6%) of the respondents earn less than 20,000 South Sudanese pounds (1 US dollar is equivalent to 200 South Sudanese pounds), followed by 5 (3.1) respondents earning 40000 to 60000 South Sudanese pounds per month, 4 (2.5%) respondents earn 20000 to 40000 and only 3 (1.8%) of the respondents earn over 60000 south Sudanese pounds.

**Figure 9: Distribution of respondents on experience of food shortage (n=162)**

Figure 9 above shows that majority 160 (98.8%) of the respondents reported experiencing food shortage while only 2(1.2%) did not report experiencing food shortage

**Table 7: Distribution of respondents on degree of experience of food shortage (n=160)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Sometimes no food in the house | 82 | 51.3 |
| 2 | Sometimes eat once in a day | 78 | 48.7 |
| 3 | Enough food in the house | 0 | 0 |
|  | Total | 160 | 100 |

Table 7 above shows that most 82 (51.3%) of the respondents reported that sometimes there is no food in their house, followed by 78 (48.7%) who reported sometimes they eat once a day while none reported having enough food in their house.

**Table 8: Distribution of respondents on children not being allowed to eat some food stuff in their culture (n=162**)

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Yes | 76 | 47% |
| 2 | No | 86 | 53% |
|  | Total | 162 | 100 |

Table 8 above shows that most 86 (53%) of the respondents reported that children are not being denied eating certain foodstuff in their culture while 76 (47%) reported children are being denied to eat some food staff in their culture.

**Table 9: distribution of respondents according to food stuff children are forbidden to eat (n=76)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Chicken | 25 | 33 |
| 2 | Colostrum | 40 | 53 |
| 3 | Soup | 11 | 14 |
|  | Total | 76 | 100 |

Table 9 above shows that most 40 (53%) of the respondents reported that children are not allowed to eat colostrum, 25 (33%) reported children are not allowed to eat chicken in their culture and 11 (14%) reported that soup is not allowed for children under the age of 5 years.

**Figure 10: Distribution of respondents on involvement of men in food preparation or cooking for children (n=162)**

Figure 10 above shows that majority (94.4%) of the respondents reported that men are not involved in food preparation or cooking for children while only 5.6% of 162 respondents reported that men are involved in food preparation or cooking for children.

**Figure 11: Distribution of respondents on receiving information on infant young child feeding (n=162)**

Figure 11 above shows that majority 133 (82%) of the respondents received information about infant young child feeding while 29 (18%) reported they did not receive information about infant young child feeding.

**Figure 12: Distribution of respondents on how often they receive IYCF information (n=133)**

Figure 12 above shows that most 71(53.4%) of the respondents reported that they get IYCF information on every visit to the health unit (H.U), followed by 32 (24%) who reported that they receive IYCF information once a month and 30 (22.6%) receive IYCF information once a year.

**4.4 Feeding practices leading to malnutrition among children under 5 years of age.**

**Figure 13: Distribution of respondents according to duration of baby is suckling during breastfeeding episode (n=162)**

Figure 13 above shows that most 68 (43%) of the respondents reported. That their babies suckle for a duration of 5- 10 minutes during each episode of breastfeeding. 57 (35.2%) reported a duration of less than 5 minutes of suckling during each episode of breastfeeding, and 37 (21.8%) reported a suckling duration of more than 10 minutes during each breastfeeding episode.

**Table 10: Distribution of respondents according to age of introduction of complementary feeding (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Before 6th month of age | 39 | 24 |
| 2 | At 6th month of age | 85 | 52.5 |
| 3 | Between 6th -8th month of age | 20 | 12.4 |
| 4 | After 8th month of age | 18 | 11.1 |
|  | Total | 162 | 100 |

Table 10 above shows that most 85 (52.5%) of the respondents introduced complementary feeding to their babies at the age of 6 months, followed by 39 (24%) who reported having introduced complementary feeding before the age of 6 months, 20 (12.4%) introduced complementary feeding between 6th - 8th month of age and 18 (11.1%) introduced complementary feeding after 8th month of age.

**Table 11: Distribution of respondents according to age of stoppage of breastfeeding (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Before 6 months | 19 | 11.7 |
| 2 | At 1year of age | 46 | 28.4 |
| 3 | At 18 months | 23 | 14.2 |
| 4 | After 2 years | 64 | 39.5 |
| 5 | Still breast feeding | 10 | 6.2 |
|  | Total | 162 | 100 |

Table 11 above shows that most 64 (39.5%) of the respondents stopped breastfeeding their babies after 2 years of age, followed by 46 (28.4%) who stopped breastfeeding at 1 year of age, 23 (14.2%) stopped breastfeeding at 18 months of age and 10 (6.2%) are still breastfeeding

**Table 12: Distribution of respondents according to number of meals provided to children per day (n=162)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | One meal per day | 21 | 13 |
| 2 | Two meals per day | 70 | 43.2 |
| 3 | Three meals per day | 62 | 38.3 |
| 4 | More than three meals per day | 9 | 5.5 |
|  | Total | 162 | 100 |

Table 12 above shows that most 70 (43.2%) of the respondents feed 2 meals per day to their children, followed by 62 (38.3%) who feed 3 meals to their children per day, 21(13%) of the respondents feed only one meal to their children per day and 9 (5.5%) feed more than three meals to their children each day

**Figure 14: Distribution of respondents on cleaning breast with water before each act of breastfeeding (n= 150)**

Figure14 above shows that most 92 (61.3%) of the respondents reported that they clean their breast before breastfeeding while 58 (38.7%) do not clean their breast with water before breastfeeding.

**Figure 15: Distribution of respondents on sharing food in the same plate with under 5-year-old children (n=162)**

Figure 15 above shows that most 99 (61%) of the respondents reported sharing food from one plate with their under-five year old children while 63 (39%) do not share food from the same plate.

**Table 13: Distribution of respondents on reason for sharing food in the same plate (n=99)**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Frequency | Percentage (%) |
| 1 | Culturally sound way of raising a child | 69 | 70 |
| 2 | Not enough plates at home | 20 | 20 |
| 3 | Others | 10 | 10 |
| 4 | Total | 99 | 100 |

Table 13 above shows that most 69 (70%) of 99 respondents reported that sharing food with children in the same plate is a culturally sound way of raising a child, 20 (20%) reported not having enough plates is the reason they share food in the same plate with their under-five year old children and 10 (10%) gave other reasons.

**CHAPTER FIVE: DISCUSSIONS**

**5.0 Overview**

In this chapter, the reader introduced to the discussions and arguments behind the research findings. The discussions are focused on the study objectives. However, other findings that are not directly related to the research objectives but deemed necessary as influencing the results are also highlighted in the discussions.

**5.1 Demographic Characteristics of Respondents**

The study finding showed that most 43.2% of the respondents were aged less or equal to 19 years, followed by 24% aged between 40-49years, 18.5% between 20-29 years, 13% between 30-39 years and 1.2% aged 50 years and above. Malnutrition rate was more among children whose caretakers are less or equal to 19 years than the other age groups because at this age one is not able to take care of a child well since they are not fully mature. This is related to a study about determinants of malnutrition among children aged between 6-59 months in Kenya which found out that Close to two-thirds 64.0%of the mothers whose children aged 6-59 months were stunted and wasted had given their first birth within age of 12-19 years (Ole Tankoi EO, Asito SA, Adoka S 2016)

The study finding also showed that majority 93% of the respondents were female and 7% were male. This is because taking care of children under the age of five years is left to mothers in this society while the men concentrate on other family issues such as rearing cattle, which is so demanding in terms of labour.

Majority 86% of the respondents are unemployed, followed by 6% peasants, 5% employed and 3% others. Malnutrition rate is high among unemployed respondent because this group of people have unstable source of earning and are poor. This finding is similar to a study conducted in Kenya about determinants of malnutrition among children aged between 6-59 months, it was found out that majority 41.27% of stunted children and 31.75% of wasted children were from very poor family socio economic status (Ole Tankoi EO, Asito SA, Adoka S 2016)

The finding of the study further showed that most 61.7% of the respondents were Protestants. Followed by 24.7% catholic, 12.3% Pentecostal and 1.2% other religion. It is because most of the population in the area are Protestants. In addition, most 50.6% of the respondents are married, 24.7% widowed, 11.1% separated and 1.2% single.

The study found out that most 74% of the respondents had no schooling, followed by 18.52% only stopped in primary, 5.6% had secondary education and only 1.9% had tertiary education. This is similar to a study conducted about nutritional Status and the Characteristics Related to Malnutrition in Children under Five Years of Age in Nghean, Vietnam in which the education level of the mother was also found to be one of the most important factors of malnutrition. Children whose mothers have a junior high school education were found to be 1.7 times more likely to be underweight than children whose mothers have an education level of senior high school or higher. In addition, children whose mothers have an education level of junior high school were found to be 2.6 times more likely to show signs of wasting than children whose mothers have an education level of senior high school or higher (Nguyen Ngoc Hien, Sin Kam 2008)

**5.2Environmental factors leading to malnutrition among under 5 year old children**

The study showed that most 37% of the respondents whose children were malnourished had 7 or more under five year old children in their families, followed by 24.7% who had between 4 to 6 under five year old children in the families. This corroborates to a study done in Angola on Associated factors of malnutrition, among African children under five years old. in which it was discovered that 35% of children with wasting lived in a family with a number of under five year old children between 4 to 6 and 22.9 % lived in a family of over 7 under five year old children where a child has to compete for resources (Ema Cândida Branco FERNANDES, Teresa Gontijo de CASTRO and Daniela Saes SARTORELLI 2010)

The study discovered that more than half (53%) of 162 respondents reported that their children had diarrhea in the last two weeks. This is similar to a study done on Assessment of Factors Associated with Malnutrition, among Under Five Years Age Children at Machakel Woreda, Northwest Ethiopia. where it was found out that out of a total of 102 cases and 201 controls included, thirty nine (38.23%) of cases and 44(21.89%) of controls had history of diarrheal episode (Bantamen G, Belaynew W, Dube J 2014)

The study showed that all (100%) of the respondents use river or stream as their source of drinking water and 27.8% get drinking water at a distance of more than 30 minutes’ walk, 25.3% obtain drinking water at a distance between 10 -20 minutes’ walk and 74.7% do not defecate in latrine. This would mean there is poor environmental hygiene in the community coupled with no single borehole in the Payam. Moreover, water from river are not clean enough for human consumption. Furthermore, a distance of more than 30 minutes’ walk to obtain water would mean that less water than the recommended 15 litres per person per day can be collected hence resulting into poor hygiene leading to diseases such as diarrhea in the community and hence malnutrition.

The study also found out that most 56.8% of the respondents have been displaced from their home of which 89% have been displaced by conflict whereas 11% were displaced by unfavorable climate. Conflict displacement is associated with loss of properties and lives. This study is similar to a report about displacement and malnutrition in DRC, which showed that in August 2017, the number of displaced persons in the neighboring provinces of Kwango and Kwilu was 28,000. In July 2017, more than 700 cases of severe acute malnutrition were detected on these sites among women who were pregnant or breast-feeding, and children under 5. ([UN Children's Fund](https://reliefweb.int/organization/unicef), Nov 2017)

**5.3 Socio-economic factors leading to malnutrition among under 5 year old children**

The study revealed that majority 92.6% of the respondents earn less than 20,000 South Sudanese pounds (1 US dollar is equivalent to 200 South Sudanese pounds), followed by 3.1who earn 40000 to 60000 South Sudanese pounds per month. This would mean that majority of the respondents earn less than 5 dollars a day below the earning of a poor person. This is similar to a study about determinants of malnutrition among children aged between 6-59 months by Ole Tankoi EO, Asito SA, Adoka S (2016) in which poverty was associated to malnutrition.

Majority 98.8% of the respondents reported experiencing food shortage. This is similar to a study about Household Food Insecurity and Its Association with Nutritional Status of Children 6–59 Months of Age in East Badawacho District-South Ethiopia where 75.8% experienced some degree of food insecurity in the one month preceding thesurvey. Among these households 62 (12.6%) were mildly food insecure, 162 (32.2%) were moderate, and 152 (31.0%) were severely food insecure. Nearly 9 percent of the households enrolled in food aid program in the past 1 month preceding the survey. 32.3 percent reported that they have no food of any kind to eat; 10.7 percent reported sleeping without eating food; and 5.8 percent reported to have spent the day and night without eating any food. The overall malnutrition prevalence among under-five children was 26.3% for underweight, 45.6% for stunting, and 14.6% for wasting.

The study found that 47% of the respondents reported, that children are denied to eat certain food stuff in their culture 53% of these reported that children are not allowed to eat colostrum. 33% reported children are not allowed to eat chicken in their culture and 14% reported that soup is not allowed for children under the age of 5 years.

The study showed that majority 94.4% of the respondents reported that men are not involved in food preparation or cooking for children while only 5.6% of 162 respondents reported that men are involved in food preparation or cooking for children. This could mean that feeding under five year old children is entirely left to women but not a shared responsibility among men and women.

The study revealed that majority 82% of the respondents received information about infant young child feeding of this 53.4% reported that they get IYCF information on every visit to the health unit (H.U), followed by 24% who reported that they receive IYCF information once a month and 22.6% receive IYCF information once a year. This could mean that less people are being empowered with knowledge on proper infant nutrition and prevention of malnutrition.

**5.4 Feeding practices leading to malnutrition among children under five years of age**

The study showed that most 43% of the respondents reported that their babies suckle for a duration of 5- 10 minutes during each episode of breastfeeding, 35.2% reported a duration of less than 5 minutes of suckling during each episode of breastfeeding and 21.8% reported a suckling duration of more than 10 minutes during each breastfeeding episode. Less duration of breastfeeding would mean that the baby sucks little milk to sustain him or herself hence leading to wasting or stunting. This is related to a study done about feeding Patterns and Predictors of Malnutrition in Infants from Poor Socioeconomic Areas in Pakistan, where a majority of children 144 (49%) were being breastfed for less than 5 minutes followed by 38 (13%) > 5 minutes to 15 minutes, and 2 (0.7%) > 15 minutes while 110 (37 %) infants were not breastfed. Children who were breastfed were less likely to have severe malnutrition than those who were given formula, fresh cow or goat's milk, or more than one type of food. (Muhamad Umer Nisar et al 2014)

The study further revealed that although 52.5% of the respondents introduced complementary feeding at 6 months of age, 24% of the respondents reported having introduced complementary feeding before the age of 6 months and 12.4% introduced it between 6th - 8th month of age and 11.1% introduced after 8th month of age. Too early or late introduction of complementary feeding leads to malnutrition among breastfeeding children. This is similar to the study finding about Complementary feeding practices, among mothers and nutritional status of infants in Akpabuyo Area, Cross River State Nigeria.In which it was found that although the prevalence of timely introduction of complementary feeding among infants aged 6–8 months was 85.4%,children who did not receive timely complementary foods had higher odds for wasting. (Ekerette Emmanuel Udoh and [Olukemi K. Amodu](https://www.ncbi.nlm.nih.gov/pubmed/?term=Amodu%20OK%5BAuthor%5D&cauthor=true&cauthor_uid=28018781) 2016)

The study further showed that most 61% of the respondents reported sharing food from one plate with their under-five year old children of which 70% reported that sharing food with children in the same plate is a culturally sound way of raising a child. This could lead to malnutrition, as under five year old child would have to compete for food with adults and others in the same plate.

In regards to hygiene, most 61.3% of the respondents reported, that they clean their breast before breastfeeding. while 38.7% do not clean their breast with water before breastfeeding as compared to a study done in Ethiopia which showed that, almost all of households 840 (100%), washed their hands before feeding their children and about 8% reported that they did not wash their hands after toilet use. (Yalew BM 2014).

**5.5 Limitations of the study**

The searcher-faced problem of language in due course of the study as the area comprise people from different tribes. There was financial problem as the researcher had spent money on photocopying and transport. The researcher further faced the problem of time constraint, as a lot had to be done in a limited period.

**5.6 Recommendations**

It is therefore recommended, that continues sensitization through health education on causes of malnutrition should be put in place to reduce the rate of malnutrition in the community. Community dialogue with cultural leaders on acceptance of every foodstuff for children shall help reduce the rate of malnutrition. The government and other actors should put in place suitable ways of involving men in active care of children and sharing responsibilities of caring for under five year old children with women. The OTP should set up outreach programs to reach the neighboring communities and empower them on the causes and prevention of malnutrition among under five year old children. Government should drill boreholes in the area to ensure the community access clean water and prevent diseases related to poor hygiene. The researcher recommend that more researchers should do similar studies on the same topic but at community level to understand the causes of malnutrition from the community point of view

**5.7 Conclusions**

The research concluded that the major causes of malnutrition, among under five year old of children are many of families are encouraging early marriages. The rate of production among young girls is high among this community of Kurwai payam Pigi County, which leaves them unable to cater for their children effectively as they are still young at age less or equal to 19, conflict, poverty, poor breast-feeding practices and complementary feeding among breastfeeding children.

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**Appendices**

**Appendix i: Informed Consent Form for respondent**

I am Mr. Paul kaka Johnny from African institute for Management Studies. I am requesting you to participate in an interview regarding Causes of Malnutrition among children under five years of age in Pibor Outpatient Therapeutic Feeding Centre-Pibor County.

The purpose of this interview is to get information that will be used to improve service delivery to prevent malnutrition among children under five years old in Pibor payam. Your name is not required and the information you give to us will not contain any of your details. It will be kept confidential.

**Respondent’s signature/ thumbprint**: …………………………………………………

**Date**: …………………………….

The topic and its objectives have been explained to me and I have fully understood. I voluntarily agree and consent to participate in the study.

**Researcher’s signature**: ……………………………………….…………………………..

**Date**: ………………………………

**Appendix ii: Questionnaire**

**QUESTIONNAIRE ON CAUSES OF MALNUTRITION AMONG CHILDREN UNDER FIVE YEARS OF AGE IN KURWAI OUTPATIENT THERAPEUTIC FEEDING CENTRE-PIGI COUNTY**

Date ……………………………………. Serial No……………………………………………..

**Instructions**

This section is composed of four sections

State the answer in the spacing provided

**Section A: Demographic factors (please tick the correct answer)**

1. What is your age?
2. Less or equal to 19 years
3. 20- 29
4. 30- 39
5. 40- 49
6. 50 years and above
7. Sex
8. Male
9. Female
10. What is your occupation?
11. Employed
12. Unemployed
13. Peasant
14. Others please specify……………………………………………………………………………………..
15. What is your religion?
16. Catholic
17. Protestant
18. Muslim
19. Pentecostal
20. Others (specify)………………………………………………………………………………………………….
21. What is your marital status?
22. Married
23. Separated
24. Divorced
25. Widowed
26. 0thers (specify)……………………………………………………………………………………………………….
27. What is your level of education?
28. No schooling
29. Primary
30. Secondary
31. Tertiary

**Section B: Environmental factors leading to malnutrition among children under five years of age**

1. How many under five-year-old children do you have in your family?
2. 1- 2
3. 3-4
4. 5-6
5. 7 and above
6. Has your child had diarrhea during the last two weeks
7. Yes
8. No
9. What is your source of drinking water?
10. Bore hole
11. Protected well
12. River or Stream
13. Others specify………………………………………………..
14. How far is your water source from home?
15. A distance of less than 10 minutes’ walk.
16. A distance of 11-20 minutes’ walk
17. A distance of 21-30 minutes’ walk
18. A distance of more than 30 minutes’ walk
19. Do you and your children defecate in latrine at your home?
20. Yes
21. No
22. Have you been displaced from your own home?
23. Yes
24. No
25. If yes in question 12 above, what was the cause of your displacement?
26. Conflict
27. Unfavorable climate
28. Others (specify)……………………………………………………………………………………………………………………

**Section C:socio economic factors leading to malnutrition among children under five years of age**

1. What is your level of monthly income?
2. Less than 20,000 South Sudanese pounds
3. Between 20,000 - 40,000South Sudanese pounds
4. Between 40,000 - 60,000South Sudanese pounds
5. Over 60,000 South Sudanese pounds
6. Do you experience food shortage in your family?
7. Yes
8. No
9. If yes in question 15 above, how is your experience of food shortage in your family?
10. Sometimes there is no food completely in the house
11. On some days the family eats once a day
12. There is enough food in the family
13. Are there some foodstuff that children are not allowed to eat in your culture?
14. Yes
15. No
16. If yes in question 17 above, mention some of these food items

…………………………………………………………………………………………………………………………………………………..

…………………………………………………………………………………………………………………………………………………..

1. Are men involved in food preparation or cooking for children at home?
2. Yes
3. No
4. Have you ever received information about infant and young child feeding from your health worker?
5. Yes
6. No
7. If yes in question 20 above, how often you receive this information
8. Once a month
9. Once a year
10. On every visit to the health unit.

**Section D: Feeding practices leading to malnutrition among children under 5 years of age.**

1. How long does your baby suckle during each episode of breastfeeding?
2. Less than 5 minutes
3. Between 5 -10 minutes
4. Over 10 minutes
5. At what age did you introduce complementary feeds to your baby?
6. Before six months of age
7. At the sixth month of age
8. Between 6th -8th month of age
9. After 8th month of age
10. At what age did your child stop breastfeeding?
11. Before 6th month of age
12. At the age of 1 year
13. At the age of 18 months
14. After 2 years
15. Still breastfeeding
16. How many meals do you provide your baby every day?
17. One meal per day
18. Two meals per day
19. Three meals per day
20. More than three meals per day
21. Do you clean your breast with water before each act of breastfeeding?
22. Yes
23. No
24. Do you and other family members share food from the same plate with your less than 5-year-old baby?
25. Yes
26. No
27. Give reason for your answer in question 25 above

…………………………………………………………………………………………………………………………………………………..

…………………………………………………………………………………………………………………………………………………..

**The end**

**Appendix iii: map of Pibor showing Pibor payam**

**Map of Pibor County showing Pibor South Sudan**

**Appendix IV: MAP OF SOUTH SUDAN SHOWING JONGLEI STATE**

