Texila International Journal of Academic Research
ISSN: 2520-3088
DOI: 10.21522/TIJAR.2014.12.03.Art031

Prevalence of Malnutrition among Children Under 5 Years of Age in Chukudum Hospital, Budi County, South Sudan

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Abstract

South Sudan was faced with a lot of geo-political issues which some had impacted on children health resulting in poor nutritional status. This research study is to find out the prevalence of malnutrition among children aged 6-59 months sampled in Chukudum hospital, Budi County. The study used descriptive cross- sectional study design which involved 222 children sampled amongst children age 6-59 months in Chukudum hospital. The purposive sampling technique has been used for this study in which any mother or caretaker who comes with a child for health services in the hospital were included. The questionnaires were designed to gather information about prevalence of Malnutrition. The data was collected was analyzed using the SPSS 25 statistical package. Most of the mothers or caretakers were between the ages of 20-25 years who were interviewed during the study. 167(75.2%) of the respondents stopped their children from breastfeeding after two years. 143(64.4%) of the respondents feed their children on vegetables while 164(73.9%) of the respondents feeds their children twice a day.124 (55.9%) of the respondents earned incomes of 5000-10000 SSP per month. 115(51.8%) of the respondents said they don't produce enough food to eat. 89 (40.1%) of the children present signs and symptoms of dry, loose skin. The prevalence of wasting (16.6%) stunted (2.7%) and underweight (7.7%) among the children 6-59 months.

Keywords: *Breastfeeding, Malnutrition, Stunted, Underweight, Wasted.*

Introduction

Malnutrition is a situation of nutrition in which there is excess or inadequate nutrients consumption that can result in negative impact for the effective functioning of the human body and clinical outcome [1]. Prevalence of malnutrition is more of sub-acute in children from 6-59 months in which there are different stages with varying degree with under- or over nutrition and inflammatory activity that led to changes in body tissues and reduced normal functioning. Malnutrition is the imbalances between nutrients requirements and intakes in which it can result to accumulative deficits of energy, protein or micronutrients which in long run can negatively affect the growth and development of children [2].

Globally there are various forms of malnutrition which include but not limited to; Under nutrition which comprised of wasting, stunting, underweight and deficiencies in Vitamins and minerals and this make children more vulnerable to infection resulting to death. Low weight-for-height is sometimes referring to as wasted which indicates severe weight loss because of inadequate food intake or infectious diseases like diarrhea which affect the weight leading to weight lost and most of the children who are wasted has high risk of death but if medical assistant is seek early, can be treated.

Low height-for-age is also known as stunting; and this mostly result from persistent or frequent under nutrition couple with socioeconomic conditions, poor nutrition or

Received: 24.01.2025 ***Accepted: 18.04.2025*** ***Published on: 31.07.2025***
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improper infant and preschool children eating habit and care in live. The situation of stunting can affect the physical and mental potential of children hence affecting their capability to perform in lives. Sometimes children can have low weight-for-age which is also known as underweight, and this type of children can be stunted or wasted or both.

There was strategies and guidelines laid down by World Health Organization to tackle global malnutrition cases in the midst of children5-59 months of age in order to prevent and manage wasting, obesity and edema [3]. This achievement is very important for the issue of malnutrition which affect majority of the children worldwide every year. Before the last two years, approximately 37 million children age 5-59 months are not meeting their required weight for height and millions were expected to be overweight or obese and nearly half of the deaths among children age 5-59 months are linked to under nutrition [3]. Most of malnutrition situation occurred in developing countries and Asia that has long lasting economic, social and developmental medical impacts on individual families, communities and countries [3].

The United Nation General Assemble has dedicated 2016-2025 as the year for United Nations Decade of Action on Nutrition and it has given unprecedented opportunities for countries to address all forms of Malnutrition globally [4]. It set a time frame for the implementation of the commitment made during the past conference on nutrition for the purposes of achieving the targets and food-related non-communicable diseases by a decade as well achieving the Agenda of Sustainable Development Goals by 2030 specifically Sustainable Development goal 2 (eliminate hunger, achieve food safety and improve diet and encourage sustainable Farming) and Sustainable Development Goal 3 (ensure fitness and promote welfare for all at all ages).

Women who are not feeding well during the time of their pregnancy will deliver children with low birth weight and hence will affect the physical and mental health of the children as they grow up. For example in Burkina Faso 29 region were in emergency Phase 2 to Phase 3 situation of hunger in the last quarter of 2019 which was the highest period for reported cases of malnutrition. It is estimated thousands of children less than five years will suffer from acute malnutrition during 2020 based on the results of the national nutritional survey [5].

With the relative peace in South Sudan, Malnutrition among children from 6-59 months would have improved but however from 2013-2014, humanitarian partners through the IPC projected 480,000-1.17 millions children to suffered from different categories of malnutrition ranging from Severe Acute Malnutrition to Moderate Acute Malnutrition. In Eastern Equatorial State, an estimated 560,000 people (52.6% of the State population) were facing emergency crisis classification phase 3 or worse acute food insecurity in August 2019.7 Budi County is classified in Emergency crisis phase 4 while Ikotos, Kapoeta South, Lopa/Lafon, Magwi and Torit counties are classified in emergency Crisis Phase 3. In Budi County, survey conducted by partners [6] indicates the malnutrition prevalence is beyond the Global Acute Malnutrition (GAM) WHO emergency threshold of 15% and this occurred because of low livestock ownership at 31% of the population coupled with delayed rainfall, poor market access and high food prices are contributing to Emergency (IPC Phase 4) acute food insecurity outcomes. During the time of the survey in 2022, Budi County Malnutrition prevalent rate is 17.5% [6]. This situation aggravated the situation of malnutrition within under five years children in Budi County since they are not having enough food which can provide nutrient for them as well as for the mothers. Despites Government and partners' commitment to

fight hunger to reduce malnutrition among children, there still a lot of constraint faced, and Budi County children still have issues of malnutrition due to various challenges like the unreliable rainfall which affect the harvest of the farms.

Objective

To assess the prevalence of malnutrition among children age of 6-59 months in Chukudum Hospital, Budi County, 2024.

Specific Objectives

1. To determine the causes of malnutrition among children aged 6-59 months.
2. To find out the common types of malnutrition among children aged 6-59.
3. To determine the impacts of malnutrition among children aged 6-59 months.

Statement of the Problem

Malnutrition is one of the health condition that is very common in South Sudan, and it causes high morbidity and mortality among children from 6-59 months. It affects many children in different part of the country, and it is more prevalence in Eastern Equatorial state estimated at around 17%. Therefore, it is important to carry out a research on the occurrence of Malnutrition in children less than five years in Chukudum Hospital, Budi County which is the main referral hospital in the County.

Purpose/Justification of the Study

There is high prevalence of malnutrition among children under the age of 6-59 months causing high morbidity and mortality rates among children. Therefore, I intend to identify the possible causes, type of malnutrition among the children and the effect of malnutrition in Budi County.

Research Questions

1. What are the common causes of Malnutrition among children aged 6-59 months?
2. What are the types of malnutrition occurring in Budi County.
3. What are the negative impacts of malnutrition on the growth and development of children 6-59 months?

Hypothesis Testing

Malnutrition is highly prevalent and causing high morbidity and mortality among children from the age of 6-59 months in Budi County, South Sudan.

Significance of the Study

The importance of this study is to get a better understanding of how to reduce the occurrences of cases of malnutrition which in turn reduced the effect of children physical and mental development in the county. Because reducing the prevalence of malnutrition cases will improve the health standard and the quality of life of children from age of 6-59 months. The findings from this study will be used to inform policy makers to adapt policies and practice in the country which can help improve the malnutrition status of children 6-59 months.

Methodology

Description of the Site

The study was conducted in Chukudum Hospital which is the main referral hospital in Budi County. The County has 7 Payam (Kimatong, Lotukei, Komiri, Loudo, Lauro, Ngarich and Nagishot). The County has two ecological zones of lowland and highland and the highland run from north to south towards boarder with Kapoeta County. The inhabitant of Budi County is the Didinga and Buya people and Buya people made up of around 20-30% of the population of the County while the Didinga are around 70-80% of the total population. By 2005 estimates population of Budi County range from 128,385-155,847and Buya occupy the lowland of Northern part of Budi County (Kimatong and Ngarich Payam) while the remaining Payams of the Southern

part are settled by the Didinga. Both the Didinga and Buya people are Agro-pastoralist and their main crops are Sorghum, Maize, Bulrush millet, Potatoes, Sesame and beans. These crops are produced in small scale for home consumption while some are sold for buying some items like clothes and soap from the market in Chukudum. Buya people measures their wealth with number of cattle they have while Didinga measures their wealth with cattle and granaries of grains. Livestock plays central roles for both Buya and Didinga during initiation and marriage where they are slaughter for food or exchange for gifts during the occasion.

Study Design and Sampling Method

This study used descriptive cross- sectional study design which involved 222 children sampled amongst children from the months of 6-59 seeking health care services in Chukudum Hospital. A set of questionnaires were developed to carry out the assessment whereby the mothers or the caretakers are administered questions regarding the prevalence of malnutrition in Children. The questions take like around 15-25 minutes and were conducted after seeking the consent of the mothers or caretakers of the child. The sample size was calculated using the formula for calculating sample size for cross sectional study. The current rate of Malnutrition among children under 5 years of age in Budi County is around 17.5% according to health survey by Humanitarians respond [7].

The following formula can be use.

$$n = \frac{Z^2 P(1-P)}{d^2}$$

Where n = Sample size,

Z = Statistic for a level of confidence (1.96 for 95% confidence level),

P = Expected prevalence.

d = Random error.

Where

P=17.5%

d=5%

Cl=95%

$$n = \frac{(1.96 * 1.96) * 0.175(1-0.175)}{0.05 * 0.05}$$

$$n = \frac{3.8416 * 0.175(1-0.175)}{0.0025}$$

$$n = \mathbf{222}$$

Ethical Clearance

The ethical clearance for this study was granted from the National Ministry of Health directorate for research and ethics Republic of South Sudan and endorsed by Budi County Health Director. The Chukudum hospital administrator was then notified by the County Health Director to allow the data collection to take place in the hospital as stipulated in the letter from the National Ministry of Health directorate of Research and ethics. During the conduct of the questionnaires, the participants who were involves in this study are inform about the confidentiality of keeping the information secret and the process is voluntary. Their consent was sought and anyone who participated accepts it willingly during the process of the study.

Ethical Consideration

The data collected is treated with confidentiality and non-judgmental by the research team to avoid bias and give grantee to the mothers/caregiver of the children that the data collected will not expose their children health status. There was no taking of names of the children whose detail are in the medical record but only code numbers are used so that to keep their identity secret from anyone.

Data Analysis

The data was collected using questionnaires, tabulated and later analyzed using the SPSS 25 statistical package

Results

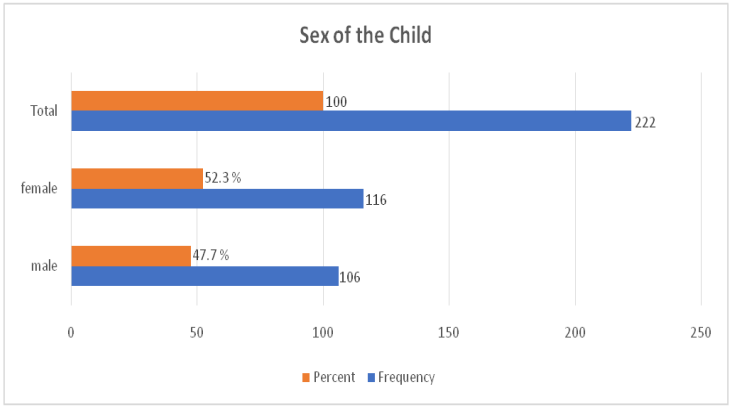

Figure 1. Distribution of Gender Characteristic of the Children

According to figure1, the gender of the children based on the finding, 116 (52.3 %) of the children were female, while (47.7%) of the children were male. The majority of the respondent's children were female according to the finding.

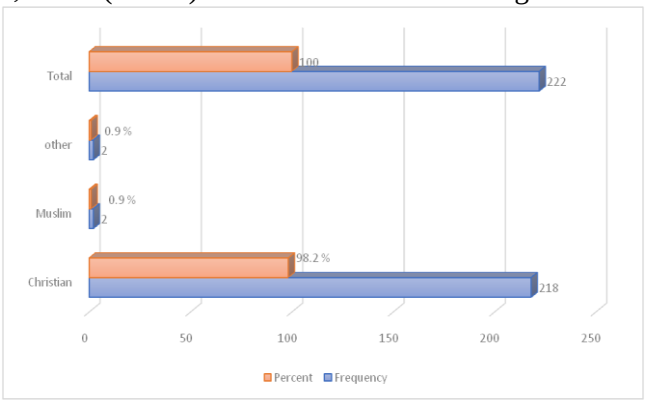

Figure 2. Distribution of Religion of the Respondents

The figure show the majority of the respondents in this study were christian with precentage of 218(98.2%) and followed by muslim 2(0.9%) and laslty 2(0.9%) of respondents were others . Therefore the majority of the chilren belongs to the family who are christian.

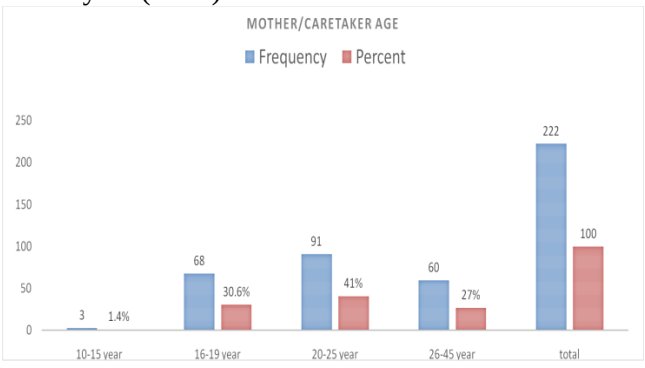

Figure 3. Distribution of Age for Mothers or Caretakers

The figure show the mothers or caretakers age of the respondents, based on the finding, 91(41.0%) of the respondents were between 20-25 year while 68(30.6%) of the respondents were from age 16-19 year followed by 60(27.0%) were between age 26-45 years and

lastly 3 (1.4 %) of the respondents from age 10-15 year. Therefore, the majority of the mothers or caretakers were between the age of 20-25 years.

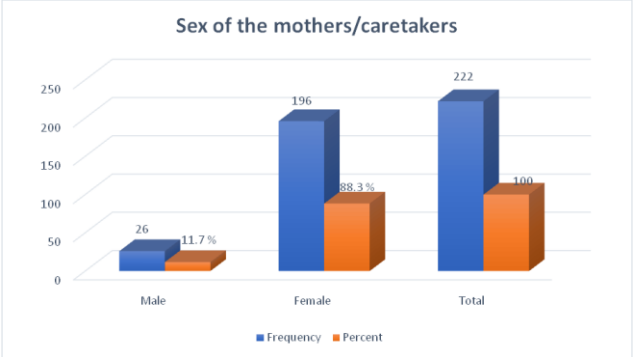

Figure 4. Distribution of Gender of the Mothers or Caretakers

This figure shows the gender of the mother or caretaker of the children during the study. From the finding, 196 (98.3%) of the respondent were mothers or female during the time of the interview while 26(1.7%) of the respondent were male who adult who brought the children to the hospital.

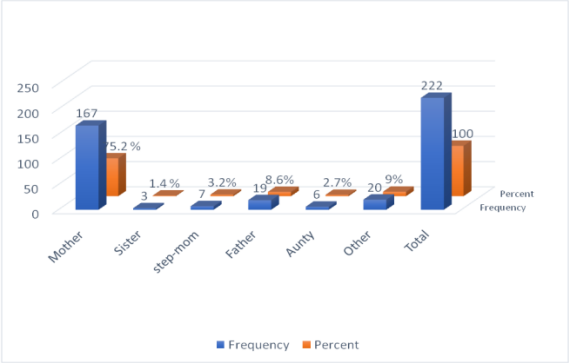

Figure 5. Relationship between the Child and the Respondents

According to the figure, 167(75.2%) of the respondents were mothers of the children, while 20(9.0%) of the respondents were others and followed by 19(8.6%) of the respondents were father of the children,7(3.2%) were step-mothers,6(2.7 %) were the aunty of the children and lastly 3(1.4%) of the respondents were brought to the hospital by their sisters .Therefore majority of the children were brought to the hospital during the time of the study by their mothers.

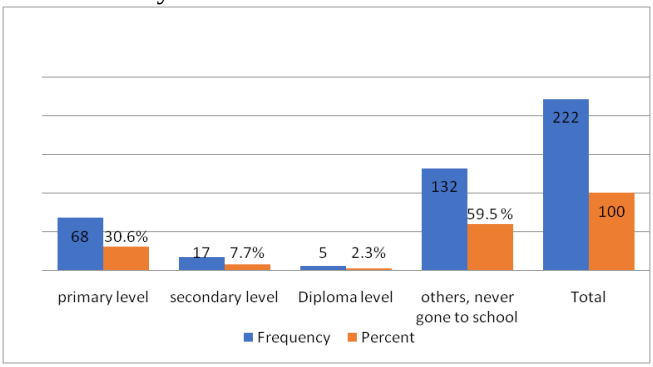

Figure 6. Educational Level of the Mothers or Caretakers

The figure regard the caretakers or mothers' educational level, 132 (59.5%) of the respondent did not go to school, 68 (30.6%) obtained primary level, whereas 17(7.7%)

were secondary level and 5 (2.3%) reached diploma level of education.

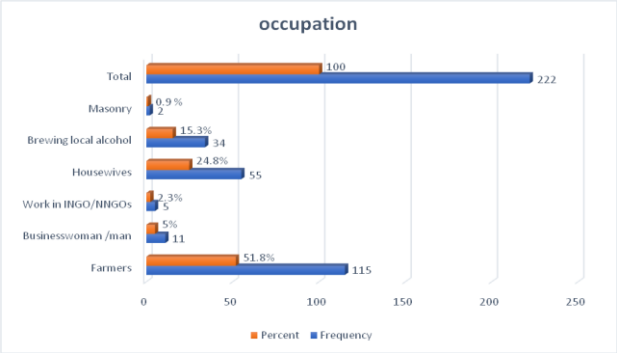

Figure 7. Show the Occupation of the Respondents

The figure show 115(51.8%) of the respondents are farmers,34 (15.3%) respondents are earning through brewing local alcohol, 55(24.8%) respondents are housewives,11(5%) of the respondents are businesswomen/men,5(2.3%) of the respondents work in International or national organizations, 2(.9%) respondents are doing masonry work and only 5(2.3%) of the mothers or caretakers are employed while majority 115(51.8%) are peasant farmers who live by cultivating as their main sources of livelihood.

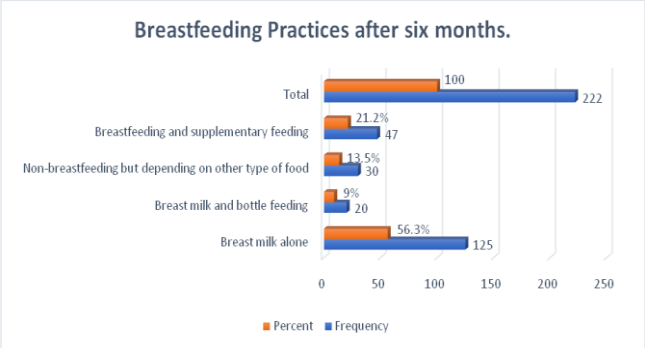

Figure 8. Distribution of Breastfeeding Practices after Six Months

Regarding the breastfeeding habit of the children, the finding show that 125(56.3%) of the respondents feeds their babies with breast milk only, while 47(21.2%) of the respondents feed their babies with breast milk and others supplementary feedings. And 30(13.5%) of the respondents feeds their babies with others type of food and lastly 20(9.0%) of the respondents feeds their babies with breast milk and bottle feeding. Therefore, many of the respondents give their children only breast milk during six months however in situation of maternal death during delivery, the baby must be fed on supplementary feeding.

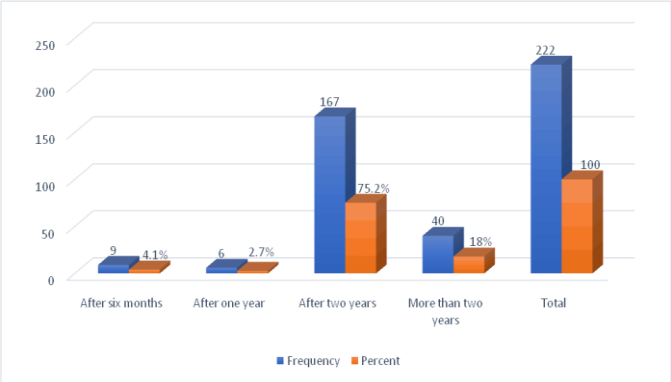

Figure 9. Weaning Time of the Children

This figure show the time for weaning of the children, 167(75.2%) of the respondents stopped their children from breastfeeding after two years and 40(18.0%) of the respondents stopped their children from breastfeeding after more than two years, 9(4.1%) of the respondents stopped their children from breastfeeding after six months and lastly 6(2.7%) of the respondents stopped their children after one year. Therefore, majority of respondents stopped their children from breastfeeding after two years.

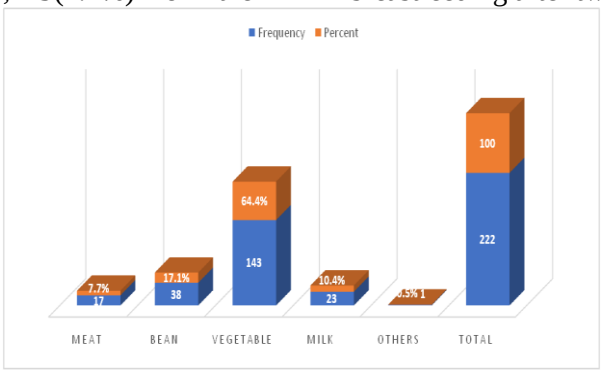

Figure 10. Type of Food Children Eat

The figure show the type of food the children eat, 143(64.4%) of the respondents feed their children on vegetables, 38(17.1%) of the respondents give their children bean, while 23(10.4%) of the respondents give their children milk and17(7.7%) of the respondents give their children meat and lastly 1(5%) of the respondents give their children others food type after six months. Therefore, majority of the respondents feed their children on vegetables.

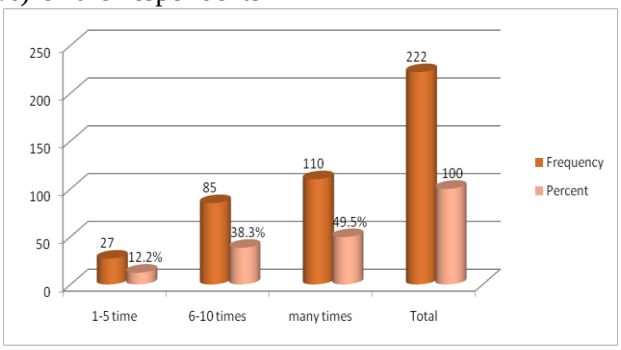

Figure 11. Breastfeeding Practices for the Children in a Day

This finding showthat 110(49.5%) of the respondents breastfeeds their children many times a day, 85(38.3%) of the respondents feeds their children 6-10 times a day and lastly 27(12.2%) of the respondents feed their children 1-5 times a day. Therefore, majority of the respondents feeds their children many times a day.

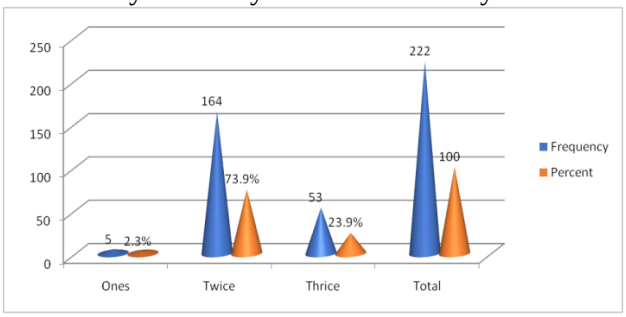

Figure 12. Frequency of Children Eating Food in a Day

The finding showed that 164(73.9%) of the respondents feeds their children twice a day, 53(23.9%) of the respondents feeds their children thrice a day and lastly 5(2.3%) of the respondents feed their children once a day. Therefore, most of the respondents feed their children twice a day.

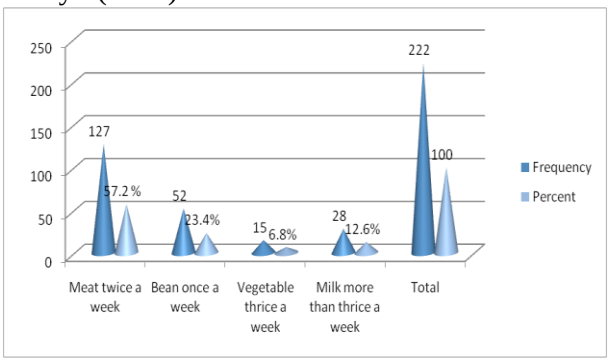

Figure 13. Children Eating Habit in a Week

The figure Show the number of times the children eat different type of food per week. The finding showed that 127(57.2%) of the respondents give their children meat twice in a week and 52(23.4%) of the respondents give their children bean once in a week while 28(12.6%) of the respondents give their children milk more than thrice in a week and lastly 15(6.8%) of the respondents give their children vegetables thrice in a week. Therefore, most of the respondents feed their children on milk and vegetable according to this study.

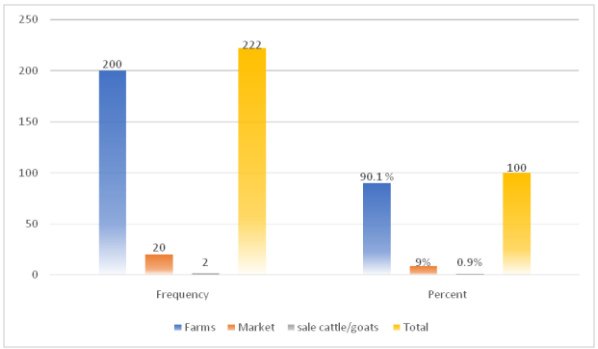

Figure 14. Access to Food

The figure show 200 (90.1%) of the respondents gets their food from the farm, while 20(9%) of the respondents do small scale retail business in the market so that they can afford food and 2(0.9%) of the respondents' sale cattle like goats or cows so that they can buy food item from the market.

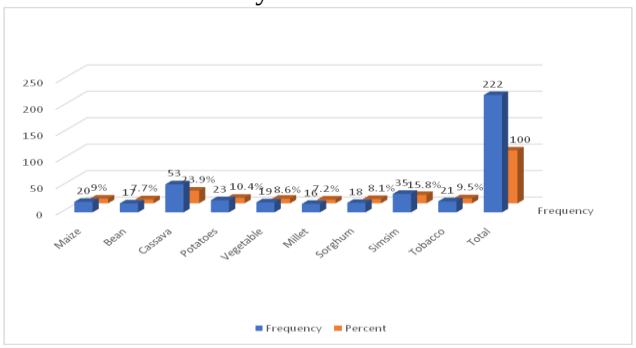

Figure 15. Type of Crops Grown

The study found out that 53(23.9%) of the respondents grow only cassava, 35(15.8%) of the respondents grow sesame, while 23(10.4%) grow potatoes, 21(9.5%) of the respondents plant tobacco, 20(9.0%) of the respondents grow maize only, 19(8.6%) of the respondents plant only vegetables,18(8.1%) of the respondents grow sorghum,17(7.7%) of the respondents plant bean and lastly16(7.2%) of the respondents grow millet. Therefore, majority of the people grow cassava according to the respondents for this study.

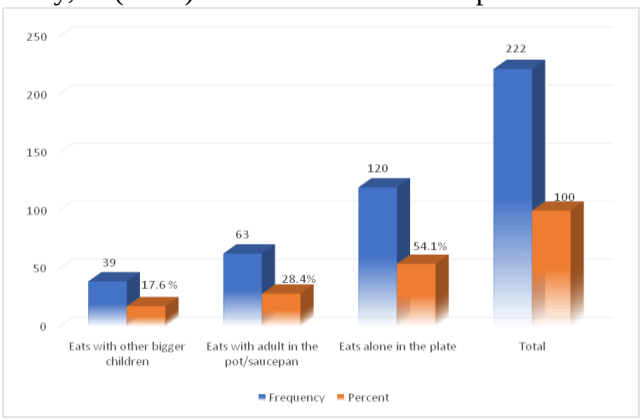

Figure 16. Feeding Method of the Children

According to figure above, itshows the way the respondents feed their children, the finding indicate that 120(54.1%) of the respondents feed their children by giving them food in the plate, 63(28.4%) of the respondents make their children eat with adults in a plate while 39(17.6%) households' children under five years eats with the bigger children.

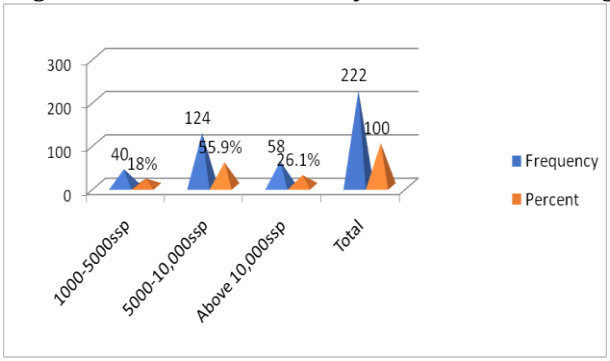

Figure 17. The Estimate Distribution of Monthly Income of the Respondents

The finding showthat124 (55.9%) of the respondents earned incomes of 5000-10000 SSP per a month, 58 (26.1%) of the respondents earned more than 10000 SSP per month and lastly 40 (18.0%) of the respondents earned 1000-5000 SSP per month. Therefore, majority of the respondents earned from 5000-10000 SSP per a month.

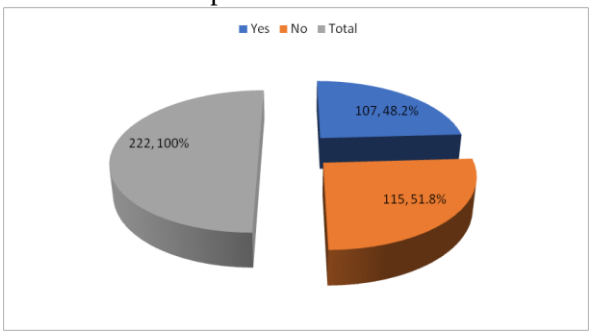

Figure 18. Availability of Food to Feed the Family and Sale

Regarding food security, 115 (51.8%) of the respondents said they don't produce enough food to eat and sale while less than half 107(48.2%) of the respondents can produce enough food both for home consumption and for sale. Therefore, many of the respondents don't have enough food for the family and for sale.

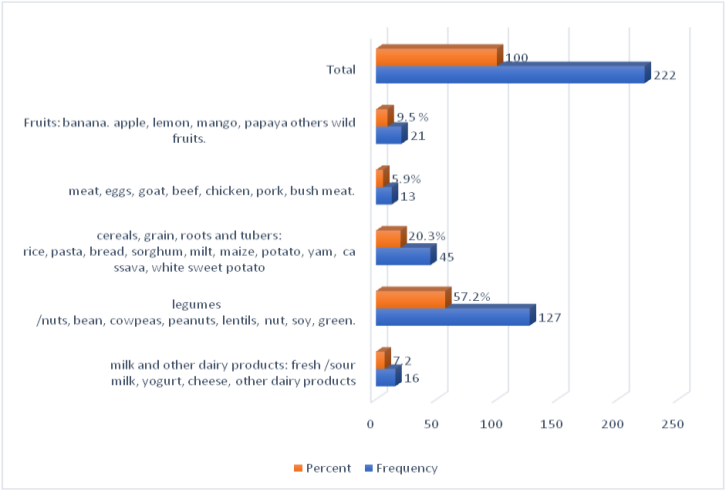

Figure 19. Access to Food Types in the Last 4 Weeks

The finding shows that 127(57.2%) of the respondents feed their children on milk and other dairy fresh food products. While 45(20.3%) of the respondents feed on bread and sorghum (vegetable), 21(9.5%) of the respondents eats banana and others wild fruits, 16(7.2%) of the respondents were milk and other product and lastly 13(5.9%) of the respondents were meat, fish, and egg. Therefore, majority of the respondents feed their children on milk and other dairy fresh food product.

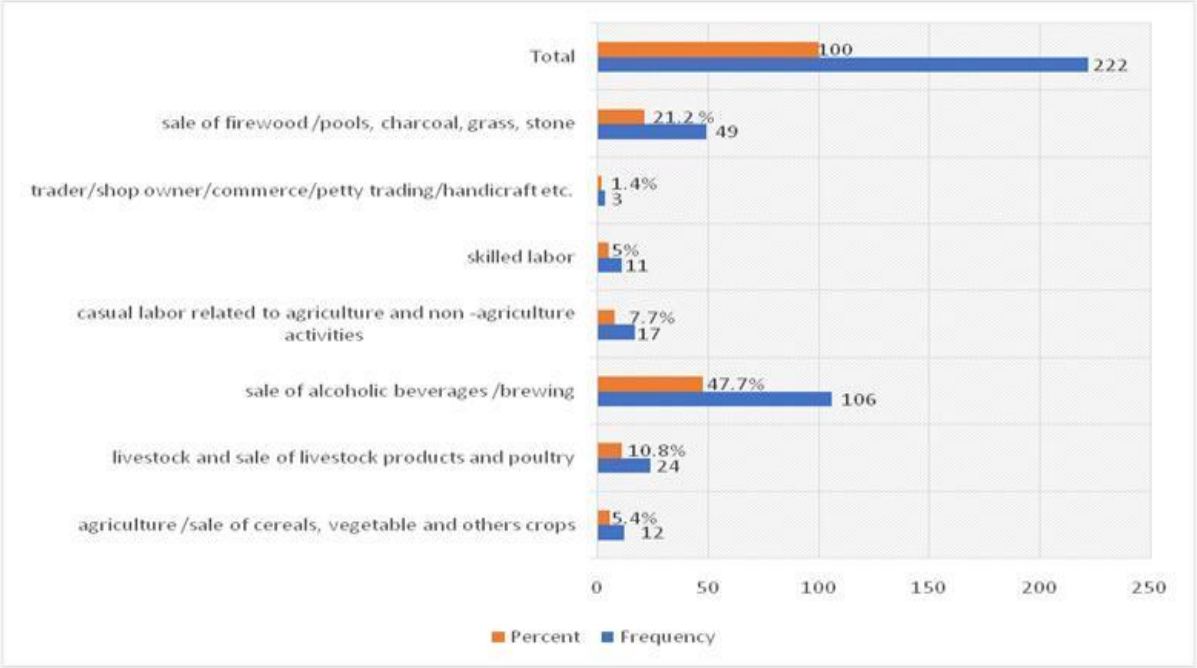

Figure 20. Distribution of Activities in the Last 6 Months

This figure show the kind of main activities the family member were engaged in the last six months, based on the finding, 106(47.7%) of the respondents were involved in sale of alcohol while 49(21.2%) of the respondents were involved in sale of firewood ,pools ,charcoal, and 24(10.8%)of the respondents were involved in sale of the livestock product and 17(7.7%) of the respondents were on agricultural and non agriculture activities, while 12(5.4%) of the respondents were involved in agriculture /sale cereals and 11(5.0%) of the respondents were skill labor, lastly 3(1.4%) of the respondents were trader and shops owner/ commerce. Therefore, most of the respondents during this research said they sale alcoholic drinks to earn some income.

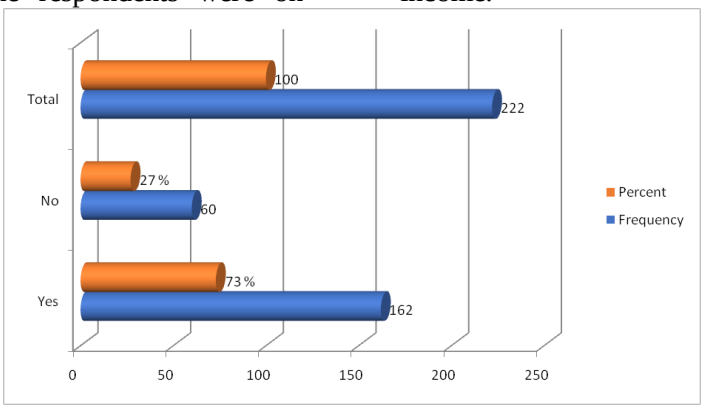

Figure 21. Distribution of Access to Farmland

According to the finding in figure 21, the family members have farmland based on respondents 162(73.0%) of the result showed that they have enough farmland while 60(27.0%) of the respondents said they don't have enough land for farming. Therefore, majority of the respondents said they have farms land for cultivation.

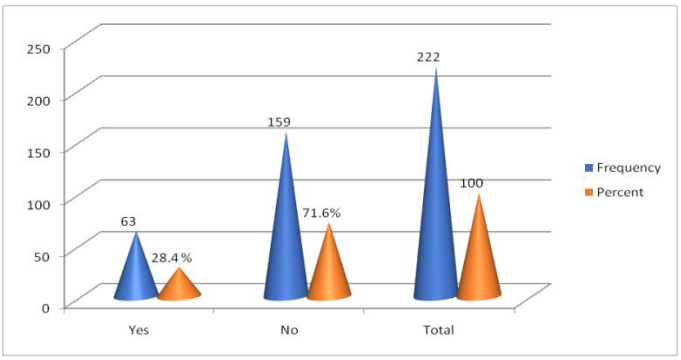

Figure 22. Availability of Money to Buy Food in the Last 3 Months

According to the finding from figure 22 above, 63(28.4%) respondents said they have enough food in the last three months, based on the finding, 159 (71.6%) of the respondents said they don't have enough food in the last three months. Therefore, most of the respondents during the research said they don't have money to buy enough food to feed their family members in the last three months.

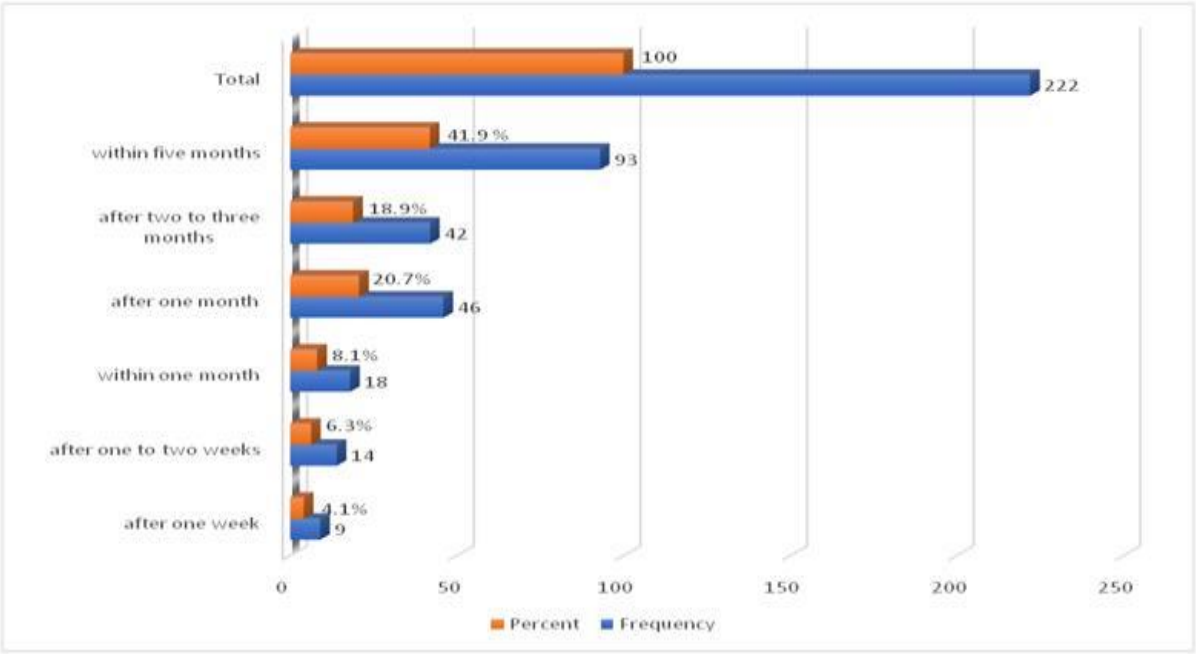

Figure 23. The First Time the Child Felt Sick

Based on the finding from the above figure, 93 (41.9%) respondents said their children felt sick within five months after delivery,46 (20.7 %) of the respondents said that their children felt sick after one month, 42(18.9%) of the respondents were after two to three month and while 18(8.1%) of the respondents said their children felt sick within one month,14(6.3%) were after one to two week and lastly 9(4.1%) of the respondents said their children felt sick after one week and majority 191(86.0%) of this respondent said they take their children to the hospital when they fall sick. Therefore, majority respondent said their children felt sick within five months.

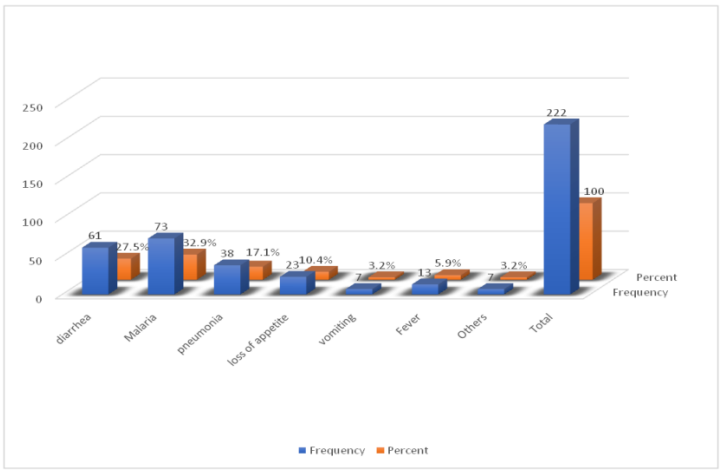

Figure 24. Common Sickness the Children Suffered from in the Last Six Months

According to figure showed above, the common sickness the children were suffering from in the last six months based on the finding, 73(32.9%) of the children suffered from malaria, 61(27.5%) of the children suffered from diarrhea and while 38(17.1%) of the finding were pneumonia, followed by 23(10.4%) of the finding were loss of appetite, 13(5.9%) were fever and 7(3.2%) of the finding were vomiting. Therefore, majority of the children suffered from malaria in the last six months according to the respondent interviewed.

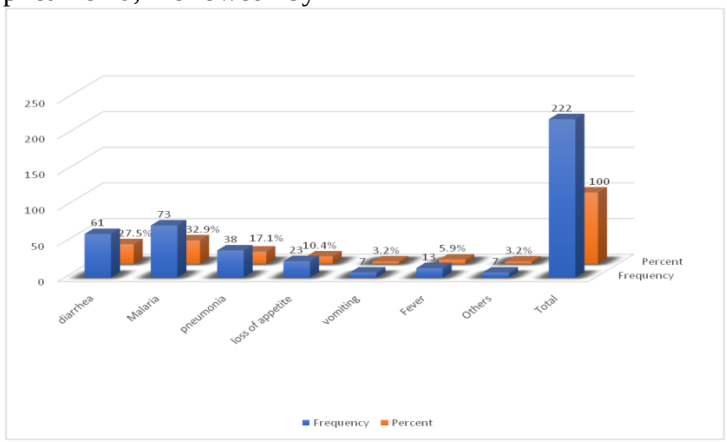

Figure 25. Sign and Symptom of Kwashiorkor and Marasmus

This figure show 89 (40.1%) of the children present signs and symptoms of dry, loose skin, 65 (29.3%) of the children shows signs and symptoms of lethargy and weakness, 21(9.5%) of the children showed sign of oedema, 16(7.2%) of the children showed signs and symptoms of stunted, 15(6.8%) of the children as if they are older, 11(5.0%) of the children have brittle hair and lastly 5(2.3%)of the finding showed visible wasting of fat and muscle. Therefore, majority of children in this research have dry, loose skin as per visible appearing during the interview.

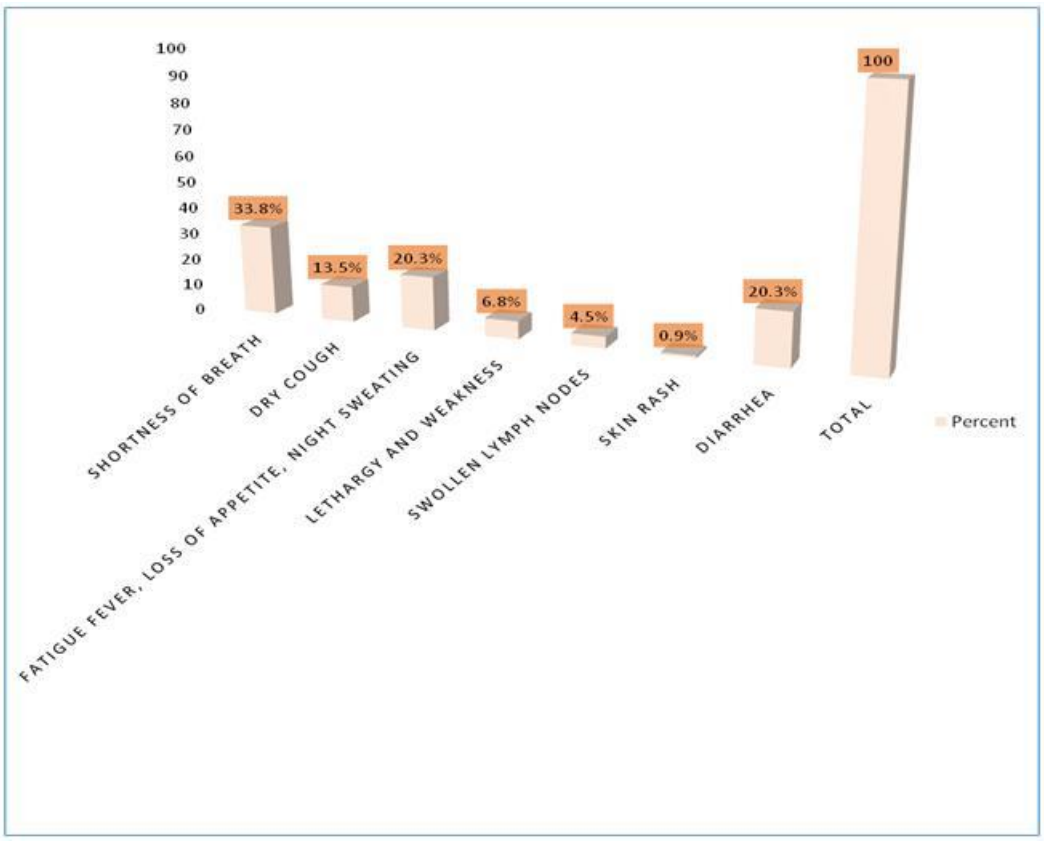

Figure 26. Sign and Symptom for Co-morbidity

According to the figure above, it show the sign and symptoms of co-morbidity children developed, based on the respondents, 75(33.8%) of the respondents said their children developed shortness of breath,45(20.3%) of the respondents said their children developed fatigue, fever, loss of appetite and diarrhea, while 30(13.5) of the respondents said their children have developed dry cough and 15(6.8%) children had lethargy and weakness, 10(4.5%) children have swollen lymph nodes and lastly 2(9%)children have skin rash. Therefore, majority of respondents said their children developed shortness of breath.

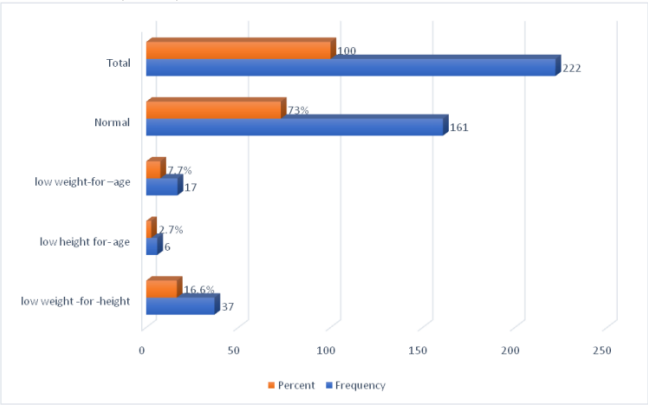

Figure 27. Domain for Z-Score of the Children

The figure show 161(73%) of the children showed normal weight, 37(16.6%) of the children have low weight-for-height, while 6(2.7%) have low height-for-age and lastly, 17(7.7%) have low weight-for-age. From this finding, majority of the children who were

brought to the hospital during the study have normal weight.

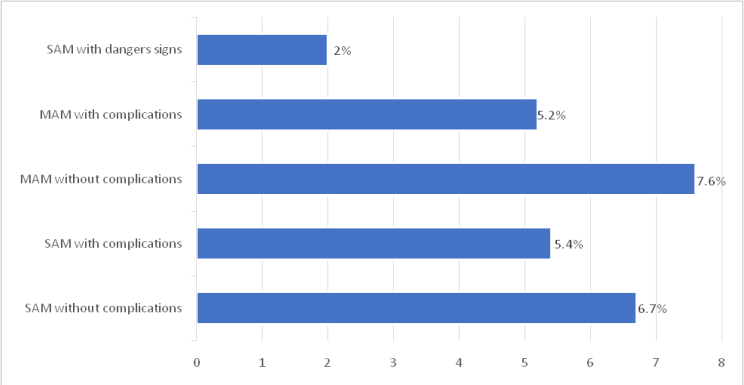

Figure 28. Malnutrition Category

From the 27% malnourished children in figure 28 above, 3(5.4%) children were in category of SAM with complications. The complications include Anemia, Hypoglycemia, loss of appetite, oedema and dehydration.4 (6.7%) of the children were in category of SAM without complications and they have signs and symptoms of Marasmus and 1(2%) of the children showed dangers signs like convulsion, vomiting and lethargy. These children were admitted in pediatric ward for the management of the complications. While 3(5.2%) of the children were in the category of MAM with complications and these children were admitted in OTP for the management of the case like malaria and ears infections. Lastly 5 (7.6%) of the children were having MAM without complication and they were in OTP department in the hospital to get RUTF.

Discussion

This study general objective is to find out the prevalence of malnutrition among children under the age of five years. From the finding, the prevalence rate of malnutrition is 27% (wasting 16.6%, underweight 7.7%, stunted 2.7% and overweight 0%) and this result has great difference with study about prevalence of under nutrition among children age 5-59 months in Babylon, Iraq among 230 children which found out the malnutrition rate 14.3%[8]. The finding from this study disagreed with study conducted in Pakistan among 3964 children under five years of age which indicated the prevalence rate of stunted at 16.2%. This difference can be attributed to different economic situation in these countries however comparably all the countries are developing nations[9].

A study conducted in India suggested that parental awareness on safe and nutritious food preparation and handling play a greater role in determining a child nutritional welfare[9]. It went further asserted that mothers independence in the community level also have positive contribution in which they can be aware of proper food handling. A study carried out in India found out that children aged 13-24 were 81.8% stunted,45.5% underweight and 18.2% wasted was high among children 37-48 months [10]. From this study, children aged 11-25 months made up of(46%) compared to other age groups. This showed that children more than one year of age are more likely to suffer from malnutrition compared to those less than one year.

A study conducted in Ethiopia showed that there was concurrent prevalent of stunting and anemia among the children under five years of age where 23.9% of the children were anemic[11]. This showed significant association between anemia and stunting which was so common and can be expected among this age group of the children, the

underweight children under five years of age accounted for 6 percent however study conducted found out that underweight were 15.6%,wasting 9% which is higher than the national figure of 8%.This different can be explained by changes in increased underweight children number compare to previous years which is expected from deteriorating breastfeeding practices, increasing food insecurity and poverty rates in Ethiopia[12].

The findings from this study correspond to research conducted in Jinja Main referral hospital to find out the prevalence and factors associated with malnutrition under five years of age which found malnutrition rate to be 16% among children under five years of age however this study disagreed with study conducted in Khartoum State in Sudan in which MAUC indicate showed 20.9% children under five years of age are poorly nourished[13].

In another study about the risk and prevalence of malaria, malnutrition and anemia in children under five years of age in Nigeria, it established that the occurrence rates are 55.5%,41.2%, and 54.0% for malaria, malnutrition and anemia respectively. Prevalence for stunting, underweight, and wasting were 39.2%, 11.2%, and 0.04%, respectively. This study highlighted that malnutrition does not occur in isolation but amid other health concerns[14].

In some African culture, male children are given more nutritious food compare to the female children because they believed that male children will live to carry on with the family name while females will be given out in marriage, thus placing the female child at high nutritional risk. This report also indicated that more than quarters of the male children at a household were first given food before their female counterpart. Furthermore, there was report that showed moderate wasted children are high with 4.1% who were between the ages of 6-11 months compare to lower rate among children age in 48-59 months1.1%. In the same study, more than 65.7% of the children were female children who are wasted than boys' counterpart among the age of 5-59 months[15].

The government of South Sudan engaged in a coordinated program with UNICEF to scale-up nutrition programs to reduce the prevalence of malnutrition. This effort was designed to employ "lessons learned" during the first half of the decade and make modifications in the delivery and maintenance of nutrition programs. There were effort made to bring together treatment protocols and centralizing programs that simplify a given protocols since there were decline in health facilities and professional, digitizing records and combining nutrition screening in the rapid response mechanisms, and introduction of cognitive development sessions for children [16].

Adequate dietary group should comprise of various group of food in the daily diet. A study conducted in Cambodia found out that children who did not received adequate diet diversity were 5 times more likely to be underweight and this indicated the relationship between this study in which majority of the mothers or caretakers mostly feed their children on vegetable compared to other variety of food [17].

Causes of Malnutrition

This study has found out that majority of the caretakers / mothers of the children have enough land for cultivation and yet most of them don't have enough food to eat and sale however they are depending on farming as a way of survival. With climate change affecting many parts of the globe, South Sudan and Budi County is hard hit with little rain in the last three years consecutively which affected the yield of crops for individual household level of food security hence resulting to inadequate supply of required nutrients for the young infant and children. According to study conducted by International Food Policy

Research Institute (IFPR on climate change in Sub-Saharan African, predicts constant higher temperature and mix precipitation changes for the 2050 period which leads to lower yield and growth retardation in crops resulting in higher food prices in the markets and therefore fewer people affording to buy hence reducing calories availability and increasing child malnutrition in Sub -Saharan Africa [18].Agricultural production and good nutrition are affected by impacts of climate change. Even a slight change in temperature can affect the weather condition. A study carried out in over 40 developing countries showed that climate change directly or indirectly influence the decline in agricultural production and may as a result increase the number of people suffering from hunger each year [19].In Sub Saharan African, extreme weather conditions like drought, insect infestation can diminished the productivity of many crops species thereby exacerbating the impact of malnutrition[20].

In this study, the prevalence rate of malnutrition among the children under five years of age included wasted represent the majority (16.6%), stunted (2.7%) and while underweight (7.7%). This indicate these children who are wasted may either died because of severe malnutrition or couple with some infection if the mothers or caretakers does not follow closely with health care advice.

The study found out that most of the children suffered from malaria frequently compared to other type of sickness. This showed the mothers or caretakers need to know the important of sleeping under treated net so that the children cannot get infection from mosquitoes at night.

Food insecurity usually results from inability of individual to purchase enough food and sometimes not because of lack of food itself but because of poor roads network, scarcity of food in market and poor family level income are some of the factors that promote food insecurity among the population [21]. Sometimes families depend on importation of food especially when there is food scarcity in their counties or countries. Many people especially the poorer populations are affected by price fluctuation and in situation when the prices of food are lower, farmers may produce less food products which may not be proportional to the demand of the consumers and hence results to food scarcity in the markets[22].

Education can affect the child's health through direct transfer of health information from one generation to another; through the ability to promptly detect illness, treatments administered and through educated mothers raise the awareness for children health and household with higher income, live in better neighborhood, get higher paid jobs which directly or indirectly influence child survival and health [23].

The community level factors such as area of residence and its environmental risks factors would determine nutritional status of the children including availability of health facilities for the diagnosis and treatment of cases of malnutrition in the community, shared community and cultural belief would either increase or reduce the risks of malnutrition among children among age 5-59 months. There were external factors that influence food availability, accessibility and utilization is highly influenced by politics, ideology, pandemics, economics, WASH and climate[24].

Low level of education among the mothers or caretakers might have played a role in the malnutrition of the children. It has been observed that in most developing countries, the dietary practices in a population experiencing food insecurity tend to meet their energy needs but do not provide sufficient nutrients needed by the children to promote health and prevent infection. Children whose parents are educated up to tertiary level are more likely to have nutritious diet irrespective

of income level due to their increased knowledge level on basic child nutrition. Malnutrition is one of the economic problems that resulted due to household level poverty that comes as family structure were disturbed and ignorance of the mothers for healthy ways of lives for children under five years of age.

Type of Malnutrition

From this study finding, undernutrition is the leading cause of malnutrition among the children enrolled in this study where they showed signs and symptoms of Protein Energy Malnutrition (PEM) and it manifest itself in the following ways:

Wasting: This study finding showed 37(16.6%) of the children who were brought to the OTP and SC are wasted. This means they are too thin for their age and height and is also known as low weight- for- height is usually indicate severe weight lost because the person did not have enough food to eat or has undergone prolonged infection from communicable diseases like diarrhea which cause them to lose weight.

Stunting: This is sometimes known as low height-for-age 6(2.7%) which is because of chronic or recurrent undernutrition and is associated with poor socioeconomic conditions, inappropriate infant and young child feeding practices and frequent illness and this hold children back from obtaining their physical and cognitive potential.

Underweight: This is also known as low weight-for-age 17(7.7%) when the child weight less compared to a child age supposed to have and this child can be wasted, stunted or both.

Micronutrient deficiencies: These micronutrients include vitamins, Iodine, iron, Zinc which are playing a great role essential for health, development, growth and enable the body to use other nutrients as well. From the study, some of the children were anemic and these are mainly because of iron deficiencies in the children or there are iron inhibitors which make the absorption of mineral in the gut very slow.

Effects of Malnutrition

Increase number of malnourished children mortality rate among the under five years of age. In many countries, it has been observed that children mortality arises from the synergistic impacts of effect on undernutrition and infection. Children who are severely malnourished are susceptible to impaired cognitive growth and development which consequently affect them later in life as they grow up.

Developmental delay in congenital factors and behavior, a study conducted in India by Medical council team showed there was delay among the malnourished children who were severely exposed to malnutrition cases in the area of motor development and vision, language and socialization with other children and this affect their school achievement hence behavioral problem.

Malnutrition can have profound consequences, beginning with a compromised immune system that increases children's susceptibility to infections. Additionally, malnutrition increases risk of communicable diseases. The immediate causes contributing to malnutrition and high mortality in under five-year children are inadequate dietary intake and recurrent episodes of diarrheal and respiratory diseases. The situation gets worse due to poor sanitation, inadequate hygiene, and inadequate feeding practices. Further, socio-cultural practices such as limited focus on supplementary feeding, delayed initiation of complementary feeding and poverty constitute significant causal factors contributing to malnutrition. Addressing malnutrition is paramount to ensuring healthy growth in children.

There were iron deficiencies which lead to anemia among the children identified who are stunted and wasted during the study. This result in deficiencies in oxygen absorption in

the blood and impaired mental development among the children under five years that compromises the immune system exposing them easily infection from infectious diseases resulting to death.

Conclusion

In general, malnutrition has greater negative impact among children age 5-59 months in Budi County is so evidence and this has profound effects on the physical and mental health of the children. Mothers or caregivers of these children need a support in nutritional education, food hygiene and livelihood so that they can overcome the challenges of malnutrition among the children. There is need for integrated approach from Primary health care provider to the community as gateway so that there will be early detection and treatment by screening the children for malnutrition cases and referral of cases which need treatment to the main hospital.

Recommendations

Following the finding from this study, the following recommendations can be drawn for the stakeholders.

1. The State MoH and County health department should follow and implement the social and behavioral change policy interventions to improve nutritional knowledge and skills of the mothers or caregivers of the children that lead to nutritious food preparation and hygienic food handling.
2. The State MoH and Budi County health department should plan and implement integrated health services delivery to widen the coverage to provide micronutrients supplementation to the children during immunization campaigns.
3. The Budi County health department and implementing partners should encourage mothers or caretakers in the remote villages to take their children to health facilities earlier for proper diagnosis and treatment to avoid complication of malnutrition
4. The Budi County health department and implementing partners should have a coordinated strategic intervention to train Boma Health workers (BHW) to assess the nutritional status of the children and refer them to the health facilities for proper management before they develop complication.
5. The local Government through the County Director for agriculture to encourage communities to adapt to climate change practices such as planting early yielding crops as strategy to improve food security and livelihood to avert hunger and reduce malnutrition among children under five years.
6. The Budi County health department and implementing partners to ensure implementation of routine awareness raising at village level to promote appropriate breastfeeding and complementary feeding practices targeting mothers of children under five.
7. During routine immunization, Mothers should be taught on the frequency for feeding their children since growing children need enough food for growth and to meet their energy needs for the day.
8. The State Ministry of Agriculture and its implementing partners (FAO) should leverage programs to improve dietary diversity and supporting the scaling-up of FS&L programs to improve children's access to nutritious and diverse complementary foods hence improve the availability of and access to the nutrient-dense foods that children need to grow up healthy.
9. The State Ministry of Gender and Social welfare should come up with strategies that can empower and give rights to the caretakers or mothers of the children to improve the status and increase their household decision-making process

particularly on the issue of health care for children.

10. The local government at the county level in Budi should encourage the community members to own and utilized the available arable land for cultivation so that they can produce enough food.
11. The county health department and its implementing partners should have routine outreach in the villages in which they will screen children for malnutrition cases and give them the ready-to-use-therapeutic foods.

Acknowledgments

The author thanks the Ministry of Health department of ethic and research board for giving go ahead with the topic proposed. I thank the Budi County Health Director for his approval and acknowledgement of the importance of the topic at hand which its finding can help the county authorities to designed programs. I also wanted to extend my gratitude to hospital administration, clinicians, and nutrition nurses for their effort in facilitating the data collections by directing mothers or caretakers to participate in the questionnaires.

My last thank goes to the supervisor John Suraj who with a lot of commitment in other activities managed to give his invaluable time to guide in this research work.

Conflict of Interest

The author hereby declared that there is no conflict of interest in this study.

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