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Prevalence's of Undernourishment and It's Associated Factors of Children among 6-59 Months Age in Guto Gida District, East Wollega Zone, Oromia, Ethiopia

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ABSTRACT

Nutrition is central pillar of human life and its request differ with respect to age, gender and during physiological changes such as complimentary feeding and child age. Ethiopia has a high prevalence of Acute and Chronic Malnutrition, with almost half of Ethiopian children chronically malnourished and one-in-ten children wasted. About 47% of children under-five are stunted, 11% are wasted and 38% are underweight (EDHS, 2011). A community based cross- sectional descriptive survey and measurements of MUAC was used to investigate Prevalence of Undernourishment and Its Associated Factors among Children 6-59 Months of Age in Guto Gida District, East Wollega Zone, Oromia, Ethiopia. Multistage random sampling technique was used and 359 children aged between 6-59 months aged were selected from 398 enrolled children to the study.The quantitative data were analyzed using SPSS for windows version (17.0) and EPI-6. Multiple logistic regressions were run to assess factors that were associated with the dependent variable at p< 0.05 and to control the confounders. Finally, the study result shows 27.5 percentage of children were severe stunted, 41.78% less than 65% median for height meaning that stunted children, 11.14% wasting for among 24-59months age and wasted children 6-23months were 12.53%, 28.4% underweight, severe mal nourished 39.6%. The quality of water was also one of the bottlenecks of child undernourishment at study area. Despite many efforts going on, there is a need to intersectional collaboration to address the immediate and intermediate causes of child undernourishment in Guto Gida districts. Moreover, it is very demanding to scale-up the interventions in terms of the quality and quantity food reaching the majority who need it.

Keywords: Prevalence, undernourishment, associated factors, anthropometry, MUAC, Guto Gida District

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INTRODUCTION

Nutrition is central and an important input to promote health and development. Better nutrition means stronger immune systems, less illness and better health according to Modern Nutrition in

Health and Disease (Shills et el., 2006). Black and his colleagues report that more than a third of the deaths of children under the age of 5 years and disability-adjusted life-years worldwide can be attributed to under nutrition (Black et el., 2008).

Malnutrition continues to be a major public health problem in Ethiopia even though in developing countries. It is the most important risk factor for the burden of disease causing about 300, 000 deaths per year directly and indirectly responsible for more than half of all deaths in children (WHO, 2005). Much of the burden of deaths resulting from malnutrition, estimated to be over half of children deaths in developing countries, can be attributed to just mild and moderate malnutrition, varying from 45% for deaths due to measles to 61% for deaths due to diarrhea(Mercedes et.al ,2004). It is estimated that 53 percent of deaths among pre-school children in the developing world including Ethiopia are due to the underlying effects of malnutrition on diseases such as measles, pneumonia, and diarrhea (Mercedes, 2004).

Ethiopia had a very high level of undernourishment in 2006-08, the latest period available; 41 percent of the total population was undernourished. The number of undernourished decreased from 1990-92, benchmark period of the WFS and MDG, to 2000-02 while the proportion of undernourished decreased from 1990-92 to 2006-08 (FAO, 2011).

In Ethiopia, child undernourishment rate is one of the most serious public health problem and the highest in the world. High underweight rates in the country pose a significant obstacle to achieve better child health outcomes (UNICEF, 2012). Underweight and stunting rates among young children are the highest in sub-Saharan Africa (WHO, 2011). About two in five children (38%) are underweight, 10.5% of the children are wasted (2.2% are severely wasted) and 46.5% of the children are stunted that half of them are severely stunted (WHO, 2011). Other earlier studies in specific localities also indicated that prevalence of wasting; 12-13, stunting; 45-46.7 and underweight; 42-44% (Merceres, 2004).

According to Ethiopian Demographic Health survey, 29 % of children among 6-59 months of age was underweight (have low weight-for-age), and 9 % are severely underweight (EDHS, 2011). About two in five children in sub-Saharan Africa (38%) are underweight, 10.5% of the children are wasted (2.2% are severely wasted) and 46.5% of the children are stunted that half of them are severely stunted (WHO, 2011).

In Oromia region prevalence of child malnutrition indicated that 34.4% are underweight with 11% severe underweight, 9.6% of the children are wasted (2.4 % severe wasting) and 41 % of the children are stunted with 21.8 sever stunting (EDHS, 2010).

Malnutrition among young children is one of the most widely used indicators of the extent and severity of a humanitarian crisis. There is a long history of its application in famine situations, refugee crises and complex emergencies dating back to the 1960s (Davis et el**,** 1992). Since that, time approaches and methods have been developed and standardized to such an extent that acute malnutrition has become one of the most standardized and reliable indicators used in emergencies (Davis et el**,** 1992).

Food insecurity in 2011 further threatened more than 250,000 children who suffer from severe acute malnutrition (Ocha, 2011). Shortages of clean water contributed to outbreaks of acute watery diarrhea, measles and malaria, which were exacerbated by poor access to health services, particularly in Afar and Somali regions. Drought also led to 87,000 school dropouts and closure of more than 300 schools, primarily in Afar, Oromia and Somali regions (Ocha, 2011). According to the 2011 EDHS, the under-five mortality rate was 88 per 1000, stunting prevalence was 44.4%, and underweight prevalence was 28.7%. These rates have decreased quite a bit in the past decade, most notably with mortality almost halving. Additionally, at the current rate of 1.22 percentage points per year, Ethiopia is finally on track to meet the first Millennium Development Goal (MDG1) target of

halving the number of underweight children under five years of age. However, Ethiopia still needs a concerted effort to accelerate reductions in under nutrition.

Underweight is reflected by wasting, stunting, or a combination of the two, and therefore MDG1 can be achieved by decreasing the prevalence of either or both (Richard, 2011). In Ethiopia, stunting prevalence increases rapidly after six months of age through two years. Highlighting the need for more resources devoted to preventing under nutrition during the critical window from conception to two years of age (also known as the first 1000 days), after which it is almost impossible to recover from the developmental deficits (Hoddinott et el ,2008 & Alderman, 2006).

In addition to the basic or environmental factors, multiple underlying factors contribute to child malnutrition. Along with disease, quantity and quality (in terms of nutrient adequacy) of diet are the most proximal (UNICEF, 1990). According to the 2011 EDHS, nearly half of infants less than six months of age are still not exclusively breastfed. Timely initiation of complementary foods remains low and the quality of older infants' diets is extremely poor, with only 3% of children 6-23 months having a minimally acceptable diet and only 4% meeting the minimum dietary diversity threshold of four food groups.

Despite of several national programmed the nutritional status of children remains almost same as of previous years. Lack of food is not the sole cause of child malnutrition among Guto Gida; there are many Socio-demographic factors, which seem to be important contributory factors in determining the nutritional status of children in rural areas. Hence, this study was under gone to investigate the prevalence of undernourishment and its associated factors of children among 6-59 months age and to evaluate the association between dependent and independent variables.

Statements of the problem

In Ethiopia, child undernourishment rate is one of the most serious public health problem and the highest in the world. High underweight rates in the country pose a significant obstacle to achieve better child health outcomes. Underweight and stunting rates among young children are the highest in sub-Saharan Africa. About two in five children (38%) are underweight, 10.5% of the children are wasted (2.2% are severely wasted) and 46.5% of the children are stunted that half of them are severely stunted (WHO, 2011). Other earlier studies in specific localities also indicated that prevalence of wasting; 12-13, stunting; 45-46.7 and underweight; 42-44 percents. In Oromia region prevalence of child undernourishment indicated that 34.4% are underweight with 11% severe underweight, 9.6% of the children are wasted (2.4 % severe wasting) and 41 % of the children are stunted with 21.8 sever stunting (EDHS, 2010).

Tackling child malnutrition remains a pressing challenge that requires improved food security, behavioral and attitudinal changes and improvements to basic services. (Save the Children, 2012). Problems can be actually be inevitable when a certain activity is in place since the child mal nutrition is still the major public health problem in Ethiopia; it is believed to be influenced by some factors. This study was partly seeing problem associated with it. Hence, this research tried to answer the following questions: What are the associated factors of Child Undernourishment in Guto Gida District? To what extent prevalence of stunting, wasting, and underweight children obtained at the study area?

Objective of the Study

General objective

The general objective of the study was to investigate the Prevalence of Undernourishment and its associated factors among 6-59 months age in Guto Gida district, East Wollega Zone, Oromia, Ethiopia from March to June 2013.

Specific Objectives

- To the determine the Prevalence of undernourishment (underweight, Wasting, and stunting) at the study area.
- To identify associated factors of undernourishment among children 6-59 months age in the study area.

MATERIALS AND METHODS

Descriptions of study Area

This study was conducted independently in Guto Gida District; East Wollega Zone located at about 328 kilometers far from Addis Ababa possessing a total area of 901.80 km^2 and provided the baseline information to determine the impact of this population-based intervention on anthropometric indices. It is contiguous with Sibu Sire and Wayyu Tuka in the east, Sasiga, Digga and Benshengul Gumuz in the west, Gida Ayana, Abe Dongoro and Gudaya Bila in the north and Wayyu Tuka and Leka Dulecha to the south. It was divided in to 21 farmers associations and one urban center namely Nekemte. Agro-ecologically, it has 0.26% highland, 46.74 percent midland and 53% lowland .According to the recent population census conducted, the total population of the district was about 104,094 in the year 2002 E.C. of which about 52% were males 48% were females. Moreover, the crude population density of the district in this year reported to be 115.43 persons per km^2. However, in 2012G.C, the total population of Guto Gida was 105,332 and children under five reported to be 17,274.

Regarding to a health facility in the district there are two health centers, 24 health posts under government ownership providing health services for the community. In addition, there are 11 clinics under private ownership. The numbers of government primary schools are 31 of which 15 are first cycle, 16 are second cycle, and there is one senior secondary school.

Study designs

A community based quantitative cross-sectional survey design was conducted to assess the prevalence of undernourishment and its associated factors among children 6-59 months aged in Guto Gida district, Oromia regional state, western Ethiopia. In addition, the data designed to in well-structured way and anthropometry measurement taken. By conducting survey, the magnitude of child under nutrition and other nutritional status related condition identified.

Source of Population

All residing children among 6-59 months age in Guto Gida District.

Target population

All randomly selected children among 6-59 months age taken as study population. All children from 6-59 months aged residing in the district for six month and above before, the survey was included. Those children live less than six months excluded at the study area.

Variable

Dependent variable

The dependent variables for this study were the three anthropometric measurements: which indicates underweight, stunting, and wasting of the children among 6-59 months of age.

Independent variables

- Socio-economic status
- Housing quality
- Water quality
- Children Healthy condition

- Child characteristics
- Maternal Caring and characteristics
- Dietary history of child and mother

Sample size determination

By using single proportion population formula, 29 percent of children among 6-59 months of age was underweight (have low weight-for-age), and 9 percent are severely underweight (EDHS, 2011), totally 38 % of underweight proportion were sampled with 95% confidence level, and 5% precision between sample and population parameter, with the addition of 10% for possible attrition, the following formula was used.

$n = (Z_1\text{-}\alpha/2)^2 * p(1-p)/d^2$ $=>n= (1.96)^2*0.38(1-0.38)/ (0.05)^2$

The optimum sample calculated 398, where

α=5%=level of significance

d = absolute precision=0.05

p = 0.38=population proportion

n =determined children sample size

Z= z -value corresponding to a 95% level of significance (Z1-α/2=1.96=reliability coefficient)

Sampling Techniques and Procedures

The study employed multi-stage sampling scheme using stratified, cluster sampling, simple random and systematic sampling. First, the study area was stratified, then four kebeles were randomly selected; one from urban and three from the rural kebeles considering agro ecological areas. Systematic sampling method applied to select study participants.

The sample size ensures with a probability of 95% that the estimated prevalence will be within plus or minus 5% true prevalence. Using proportional allocation to the rural and urban based on population; 267(67%) samples from the rural kebeles and 131(33%) samples from the urban kebeles was selected by clustered ,Simple random sampling, and Systematic sampling method.

Data collection methods

The questionnaire was prepared based on reviewing different available literature and standard questionnaires that were already validated by EDHS (2011). It was modified to the local targeted community considering the study area culture, the norms and other contexts. Data was generated from both primary and secondary through different data collection methods (observation and questionnaires) and other health facility record reviews. Bilateral edemas of children were collected through observing by pressing with thump finger on both feet. The questionnaires translated from English to Afan Oromo, back to English by different person fluent in both languages, and have used to collect data.

The quantitative data was collected using structured questionnaires and anthropometric measurements as well. Weight was measured with minimum clothing and no shoes using a Salter spring scale and beam balance in to the nearest of 0.1 Kg. Measurement of height (length) was done in a lying position with wooden board for children of age under two years (below 85 cm) and for children above two years stature was measured in a standing position in centimeters to the nearest of 0.1cm. Only children under 12.5 cm (proxy for 5 year) and over 65 cm (proxy for 6 month were questioned to ascertain age using detail season calendar.

Some questions purposefully designed openly to seek the opinions of respondents for the qualitative component to triangulate responses obtained by the structured questionnaire on associate factors of child undernourishment among 6-59 months age.

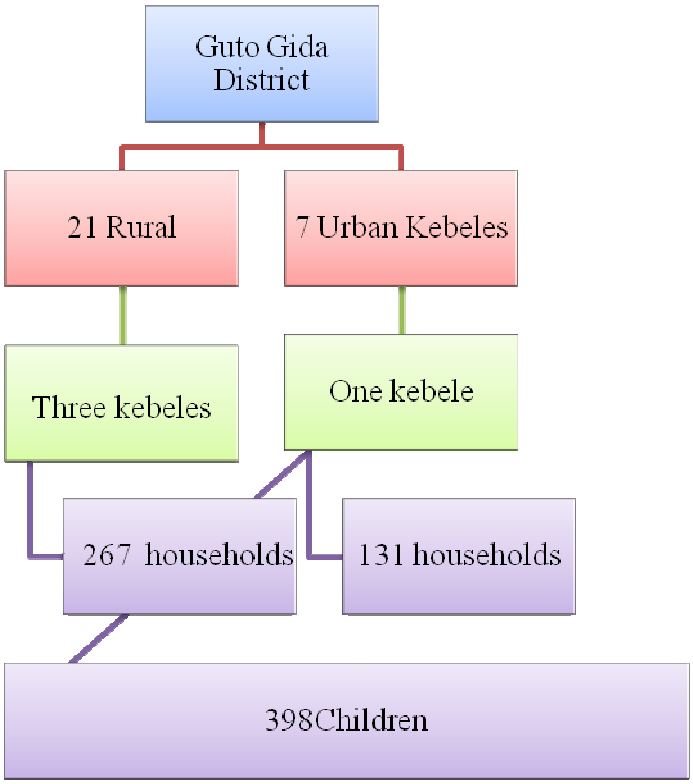

Figure1. Schematic presentation of sampling frame

MUAC offers the operational advantages of a simple, easily portable measurement device (the armband/ tape) and the use of a single cut-off for children 6-59 months of age (12.5cm) as a proxy for low W/H or wasting. MUAC has also been used as a screening device for pregnant women; because MUAC is generally a stable measure throughout pregnancy, it is used as a proxy of pre-pregnancy weight, and therefore an indicator of risk for low birth weight babies. One type of color-coded measuring tape, the Shakir strip, is made from locally available materials and is appropriate for illiterate/ innumerate workers; red signifies severe malnutrition, yellow is moderate malnutrition, and green signals adequate nutrition. MUAC was measured on left mid upper arm to the nearest 1mm and the result was recorded for children. Only bilateral edema was considered an indicator of sever acute malnutrition (kwashiorkor). Edema was assessed by applying medium thumb pressure on upper side of both feet for three seconds. It was diagnosed if a bilateral depression (pitting) remained after the pressure was released.

Data Collectors

Ten Health Extension Workers collected the data and three Health Officers took part in the supervision. Out of ten Healthy Extension Workers, four of them recruited from Healthy Extension trainees working for practical attachment. Those participants were involved on anthropometric measurement, data collection and supervising the enumerators.

The data collection team was recruited based on familiarity with the study area, Afan Oromo language and interest to participate on the study. Recruitment done at the presence of community leaders and the head of the nearby health institutions after the study objective was briefly communicated with them. They trained for consecutive three days on the objective, contents and each contents of question.

Data processing, analysis and presentation

First, the data checked for completeness and consistency for data entry and cleaning. Then, it coded and entered in the computer using EPI-6 variables names. It has a program (Epi-Nut) to convert nutritional data into Z-scores of the indices; H/A, W/H and W/A taking age and sex into consideration using NCHS reference population standard of WHO, 2011.

The data was analyzed SPSS version 17.0 programs and strata version eleven (11.0) for analysis; descriptive summary using frequencies, proportions, and cross-tabs used to present study results. P-value less than 0.05 considered as statistically significant.

Odds ratios at 95% confidence interval were used to see the significance of the study and the strength of association between study variables. In addition, biviarate and multiviarate logistic regression used to assess the association between the study variables and to control the possible confounding. Result analysis presentation by frequency, tables and ratios.

Data Quality Control

Five percent of the questionnaires were pretested in other place before the actual data collection. In addition, ten Health extension workers and three Healthy officers collected data. Training was given to data collectors and supervisors prior to the onset of data collection. Strictly, supervisors and principal investigator did supervision. The collected data reviewed and checked for completeness and consistency.

Ethical Considerations

The department of Nutrition and food science, school of graduate study, approved the study protocol and then by institutional ethical clearance review of Wollega University, Official letter of cooperation was written to Guto Gida districts administrations for permission. The nature of the study was fully explained to the study participants to obtain their oral informed consent prior to participation in the study and data was kept confidential. Informed consent was obtained from each respondent before interview.

Operational definition

Undernourishment: Nutrients intake that is insufficient to meet dietary energy requirements continuously. This term interchangeably used with chronic hunger, starvation, or, in this report it represents under nutrition. It is by well known that nutritional status in early life has severe consequences for adult health, cognitive development and adult socio-economic status.

Child nutrition: a balance between the high energy and nutrient content required for growth and development and establishing a healthy diet with weight control, in association with regular physical exercise.

Prevalence: the predominance of children severed with under nutrition.

Associated factors: determinants related to cause of undernourishment.

Underweight: a composite form of under-nutrition that includes elements of stunting and wasting and it is defined as weight for age below minus two standard deviations from the median weight for age of the standard reference population.

Acute malnutrition (Wasting): defined as weight for height below minus two standard deviations from the median weight for height of the standard reference population .Sever wasting; weight for height below -3SD or less than 65% of the median NCHS/WHO reference values.

Stunting means height for age below minus two standard deviations from the median height for age of the standard reference population. Height to age that is less than the international median NCHS/WHO reference value by more than two standard deviations below -3SD is severe stunting.

Mid-upper-arm circumference (MUAC): It is measured on a straight left arm (in right-handed people) midway between the tip of the shoulder (acromion) and the tip of the elbow

(olecranon).MUAC < 115mm indicates that the child is severely malnourished; MUAC < 125mm indicates that the child is moderately malnourished.

Anthropometry: An instrument used technique of taking body measurements, especially for use on a comparison or classification basis.

RESULT AND DISSCUSION

Socio-demographic characteristics

Socio-demographic characteristics of child caregiver's

Agro-ecologically, about 0.26% of the study area was High Land, 46.74%midland and 53% was low lands, which were residents of the study population distributed in rural and urban.

From March- June 2013, a total of 359-child caregivers were participated on this study from 398 proposed families. Considerably high proportions (81.17%) of the families or caregivers heads of the household were males and the rest 17.83% were females. Concerning the caregiver, about 148(43.4%) was 18-27years, the rest 27-37 years and above was 58.5%. A substantial proportion of the mothers in our sample never had any education. Accordingly, the illiteracy rate was lower among head of households of the cases 9.2% than the primary school 50.1% and secondary 30.6% and Diploma and higher 10%. With regard to their religion; 219(61%) were Protestants, 28.1% were Orthodox, 9.2% were Muslims and 1.7% were followers of other religion.

Majority of the mothers (32.4%) of the cases were daily laborer, 31.5% were homemaker (with no occupation), 22.8% were farmer or merchant and the rest 48(13.4%) were. Monthly family income of less than 1000 ETB was higher in the cases 75.2% than 1000 -2000 ETB, 16.4% and those who earn greater than 2000 ETB, 8.4%, respectively.

Regarding the farmlands of the respondents, about 10.3% caregivers possess no land, 45.4% have1-2 hectares, 42.3% have 3-5 hectare and 1.9% have greater than 5 hectares. In other way, about 18.9% have not livestock's, 60.4% had less than five livestock's and 20.6% have more than five livestock's. A larger family size with the number of children 6-59 months noticed more frequently in the household of the cases 67.1% than those having 24-59 months were 32.9%(Table-1).

Table_ 1: Socio-demographic of the child caretakers in Guto Gida District, March-June, 2013

Variables , N=359	Categories	Frequency(n)	Percentage (%)
Head of household	Male	295	82.17
	Female	64	17.83
Mother age	18-27 years	210	58.5
	28-37 years	148	41
	>37 years	1	0.3
Religion	Protestants	219	61
	Orthodox's	101	28.1
	Muslims	33	9.2
	Others	6	1.7
Educational Background	Illiterate	33	9.2
	Primary school	180	50.1
	secondary school	110	30.6
	Diploma	33	9.2
	Degree and above	3	0.8
Mothers occupation	House wife only	113	31.5

	Merchant or Farmer	82	22.8
	Employed	48	13.4
	Daily laborer	116	32.4
Children age	6-23 months	241	67.1
	24-59 months	118	32.9
Monthly in come	<1000 ETB	270	75.2
	1000-2000 ETB	73	16.4
	>2000 ETB	33	8.4
Agricultural Land	Have no land	37	10.3
	1-2 hectare	163	45.4
	3-5 hectare	152	42.3
	>5 hectare	7	1.9

Socio-demographic characteristics of Children

Out of 398 children sample to be included in this study from march5/2013 to June6/2013, about 359 children were included in the final analysis making response rate of 90.2%. From the total 359 actively participated children, 189(52.6%) were males and 170 (47.9%) were female.

According to age, group 221(61.6%) were 6month- 23 months and 138(38.4%) were age between 24-59 months of age. Place of delivery was at home for 151(36.7%) of the children and 261(63.3%) born at health center.

With respect to reference category, <65% serious wasting of median weight for height children ,between 6-23 months were more than 28.13% were as children between 24-59 months were 19.77%, this implies that early toddlers were highly vulnerable groups. Regarding the prevalence's of stunting 150 (41.78%) stunted at the study area (table_2).

Table_2: Socio-demographic characteristics of Children, Guto Gida District, March-June 2013

Variable, N=359	Categories	Frequency(n)	Percentage (%)
Child age	6-23 months	221	61.6
	24-59 months	138	38.4
Birth weight	<2.5Kg	102	28.4
	2.5Kg-3.5Kg	186	51.8
	3.5-4.2Kg	61	17
	>4.2Kg	10	2.8
MUAC	≤11.5cm	142	39.6
	≥12.5cm healthy child	217	60.4
Height of child	<65.8cm	95	26.5
	65.8-74.7cm	150	41.8
	<74.7cm	114	31.8

De-worming	No	293	81.6
	Yes	66	18.4
EBF	Yes	350	97.5
	No	9	2.5
Child sex	Male	189	52.6
	Female	170	47.4
Complete vaccine	No	293	81.6
	Yes	66	18.4
Place of delivery	Home	227	63.2
	Healthy center	132	36.8

Indicators of child undernourishment

a. Birth weight

Concerning childbirth weight, about 28.4% of children weight in the study was born low birth weight (2.5Kg cut-off point). From this 33.53% females and 23.8% were males, 186 (51.8%) at 2.5kg-3.5kg, 61 (17.0%) 3.5kg-4.2Kg and 10 (2.8%) born with more than 4.2Kg. (Table-2)

b. Height for age

With respect to median weight to height, about 150 (41.78%) were less than 65% serious wasting of median weight for height. From all respondents, about 112 (27.2%) were less than 65.8cm at 1 year age, the rest 171 (41.5%) between 65.8cm-74.7cm at 1year and 81.9cm at 2years was normal growth,129 (31.3)were less than cut-off point or 74.7cm at 2years and stunted(table_2).

c. Mid-Upper Arm Circumference (MUAC)

Out of enrolled 398 children, 217 (19.2%) measured MUAC≥12.5cm at 6-59 months with normal, 142 (39.6%) with MUAC≤ 11.5cm and less, meaning serious malnourished (table_2).

Healthy conditions of children

Concerning the healthy conditions of children, about 72.4% of the children visited health facility for illness care and did not take complete vaccine and 293(81.6%) children did not practice de-worming activities at all. Concerning diarrhea and vomiting, about 57.4% children had diarrhea just two weeks before this study was started study. Breathing problem from the enrolled children in this study constitutes 197 (54.9%) and 210 (51%) of children fever with loss of appetite, 171(47.6%) had constipation (table_3).

Table_3 .Healthy conditions of children, Guto Gida district, March-June 2013

Variable, N=359	Categories	Frequency(n)	Percentage (%)
Loss of appetite	No	178	49.6
	Yes	181	50.4
Constipation	No	171	47.6
	Yes	188	52.4
Breathing problem	No	197	42.6
	Yes	206	57.4
Diarrhea &vomit	No	153	42.6
	Yes	206	57.4
Dermatitis	No	222	61.8

	Yes	137	38.2

History of mothers related to pregnancy

Approximately 210(58.5%) of mothers gave their first birth between the age of 18-27 years, while 41.2% of them were between the age of 28-37 years and only 0.3% give birth to their first child at age of greater than 37 years. Regarding the ANC, almost all mothers (99.4) were attended ANC, while 0.6% did not (table_4).

Table_4: History of mothers related to pregnancy, Guto Gida district, from March-June 2013

Variable, N=359	Categories	Frequency (n)	Percentage (%)
Mothers age at 1st delivery	18-27 years	210	58.5
	28-37 years	148	41.2
	>37 years	1	0.3
Family planning	No	17	4.7
	Yes	342	95.3
Number of children	6-23 months	221	61.6
	24-59 months	138	38.4
ANC	No	2	0.6
	Yes, at a month	357	99.4
Consume extra food during pregnancy	Cereals & crops	271	75.5
	Vegetables &fruits	63	17.5
	Meats& poultry	3	0.8
	Dairy & its products	16	4.5
	Fats & sweats	6	1.7

Housing Quality

A considerable high proportion (89.7%) of families or caregivers had house with the roof constructed from tin sheet, while the remaining 37(10.3%) of the family in this study area had house made of locally available grass. As far as the floor and wall of their house was constructed, about 324 (90.3%) were made of mad, while significant proportion (9.7%) of the house were cemented.

Moreover, about 351(97.7%) of the family had separate kitchen, while the remaining 2.3% had no separate kitchen.

Furthermore, approximately 97(27%) of the family owned pit ground latrine, while the remaining 262 (73%) uses toilet with the wall and floor made of cemented as shown in (table_5).

Table_5. Housing quality of the study participants, Guto Gida district, March-June 2013

Variable, N=359	Categories	Frequency (n)	Percent(%)
Owner of the house	Private	291	81.1
	Rent	68	18.9
Roof type	Grass	37	10.3
	Tin sheet	322	89.7
Wall and floors	Mad	324	90.3
	Cemented	35	9.7
Rooms available	1 room available	21	5.8

	2 rooms available	139	38.7
	3 rooms available	166	46.2
	>4 room available	33	9.2
Toilet type	Pit ground latrine	97	27
	Cemented	257	71.6
	Ceramic	5	1.4

Quality of water supply

The present study also showed that, society at study area uses different types of water sources for consumption and other activities. For instance, about 81(19.7%) use river/lakes water, 23 (5.6%) consume ground water, 123 (29.9%) use well protected spring water and 162 (39.3%) use bono/line water). However, considerably highest proportion (83.8%) of the study population gets water from long (table_6).

Table_6: Quality of water supply of the study participants, Guto Gida district, March-June 2013

Variable N=359	**Categories**	**Frequency(n)**	**Percentage (%)**
Water source	River/lake	91	22
	Groundwater	30	7.3
	Well protected spring water	128	31.0
	Bono/stand pipe	164	39.7
Sufficient water	No	346	83.8
	Yes	66	16.0
Time to fetch water	1-3 minutes	80	19.3
	1-5 minutes	57	13.8
	5-10 minutes	94	22.8
	>10 minutes	181	43.8

Dietary History of children and caregivers

As far as the dietary history of children and mothers were concerned, considerably high proportions (75.5%) were depends on cereals and crops based food. Moreover, about 17.5%, 4.5% were consuming vegetable and fruits, diary and its products respectively. Besides, very insignificant proportions (< 5.3percentage) had accessible to use meat and fish (table_7)

Table_7: Dietary history of child and mothers, Guto Gida district, March-June 2013

Variables	**Categories**	**Frequency**	**Percentage (%)**
Stipple food pyramid	Cereals & crops	271	75.5
	Vegetables &fruits	63	17.5
	Meats& poultry	3	0.8
	Dairy & its products	16	4.5
	Fats & sweats	6	1.7
Frequency of using meat & derivatives	Daily	12	3.3
	3-4per week	7	1.9
	once a month	26	7.2
	Never	314	87.5

Eating fat and sweats	Daily	1	0.3
	3-4per week	383	91.9
	once a month	6	1.7
	Never	22	6.1

Prevalence's of Undernourishment

As clearly indicated in table_8, about 27.5% of children were severe stunted, while high proportions (41.78%) of children were stunted. On the other hand, about 11.14% of children of age 24-59 months in the study were wasted, but children among 6-23 months age were 12.53% more wasted. Moreover, the proportions of severely underweight and underweight children in this study area were 28.7% and 39.6% respectively.

Table_8. Prevalence of Undernourishment among 6-59 months of age, Guto Gida district

Child ages	Stunting		Wasting	Underweight	
	Severe stunted	Stunted	Wasted	Severe Underweight	Moderately Underweight
6-23 Months	27.5%	41.78%	12.53%	28.4%	39.6%
24-59 Months			11.14%		

Child Undernourishment and Its Associated Factors

In this study, child undernourishment and its associated factors among children 6-59 months age investigated in detail. However, there was significant deference seen between the prevalence has set by DHS in 2011 when compared with analysis of this particular study.

The prevalence of wasting among children who did not have complete vaccine was 1.73 times higher than in those who received vaccines irrespective of the doses. Wasting in children of illiterate and primary school mothers was 50% times higher than in those children of mother who attended at least secondary and above (table_9).

Children born at home were 63.3%, which was 1.9 higher than at health center. Wasting was higher in children born at home than in those born at health centers (AOR=1.7, 95%CI: 1.23-1.90). Underweight showed significantly high association ($P<0.01$) with children of mothers who did not take extra food during pregnancy and lactation, house holds monthly income less than 1000.00ETB and lack of house quality and insufficient water supply.

In this study the biviarate analysis showed that mothers age, staple food pyramid, birth weight of child, MUAC of child, previous exclusive breast feeding, complete vaccine, and de-worming have significant association with wasting ($P<0.01$). whereas child age, height of a child, number of children, child sex, constipation and breathing problem have no association with wasting of child ($P>0.05$). After bivariate analysis those predictors which showed statistical significance were used to run multivariate analysis. In multivariate analysis lack of complete vaccine, low birth weight, and staple food pyramid have showed also association with wasting of child ($P<0.01$).On multivariate analysis, loss of appetite, previous breast-feeding, did not showed significant association with wasting of child. On the other hand, anthropometric data analysis also showed that, considerably high proportion (38.8%) of children were seriously malnourished (MUAC≤11.5cm). MUAC of a child have strong statistical association with wasting of children ($P<0.001$). In multivariate analysis those children their MUAC <11.5cm were significantly wasted when compared to the children who had MUAC ≥12.5cm (AOR: 1.76, 95%CI: 1.48-1.98). Marginal Percentage (19.2%) of children MUAC≥12.5cm for age 6-59 months normal, 38.8%marginal

percentage <11.5-12.5cm was serious mal nutrition, 42% was MUAC≥12.5cm healthy child. In multiple logistic analyses, lack of complete vaccine of children was strongly associated with wasting. Those children did not take complete vaccine were 1.73 times more likely to be wasted (AOR=1.73, 95%CI: 1.20-1.97) than those who took the complete vaccine (table-9).

Table_9: Bivariate and Multivariate Logistic Regression analysis of factors associated to Wasting, Guto Gida District, Oromia, Ethiopia, March-June2013

N=359	Categories	**Wasting**			COR (95% CI)	AOR (95% CI)	P-value
		No	Yes				
Child age	6-23 months	151	101		1	1	1.00
	24-59 Months	86	71		1.175(0.76-1.81)	1.23(0.83-1.85)	0.463
Staple food pyramid	cereals &crops	163	108		1	1	1.00
	Veg. and fruits	31	32		0.666(0.49-0.92)*	1.28(1.24-6.84)*	0.012*
	Meats & poultry	1	2		0.771(0.144-4.13)	0.84(0.15-4.76)	0.797
	Dairy &products	11	5		0.554(0.031-9.98)	0.50(0.03-9.6)	0.689
	Fats and sweats	3	3		0.721(0.33-1.56)	1.59(0.23-11.0)	0.395
Mother age	18-27 years	113	97		1	1	1.00
	28-37 years	95	53		0.291(0.164-0.52)*	1.14(1.09-1.86)	0.001***
	>37 years	1	0		1	1	
Birth weight	<2.5KG	54	48		0.62(0.39-0.97)*	1.18(1.003-1.31)*	0.038*
	2.5Kg-3.5Kg	117	69		0.769(0.533-1.11)	0.37(0.19-0.73)*	0.162
	3.5-4.2Kg	33	28		1.034(0.28-3.76)	0.49(0.3-0.8)	0.959
	>4.2Kg	5	5		1	1	1.00
MUAC	>12.5cm	35	34		1	1	1.00
	≤11.5cm	83	59		1.70(1.22-1.93)*	1.76(1.48-1.98)*	0.001***
Height of child	serious stunting <65.8cm at 1yrs	50	45		0.80(0.04-0.15)	1.10(0.75-1.515)	0.721
	65.8-74.7cm age of 1/2-1yr	85	65		1	1	1.00
	serious stunting <74.7cm at 2yrs	74	40		0.72(0.42-1.24)	1.17(0.88-1.56)	0.235
Loss appetite	No	105	73		0. 67 (0.50-0. 91)*	1.249(0.65-2.38)	0.500
	Yes	104	77		1	1	1.00
No children	6-23 month	134	107		1	1	1.00
	24-59 month	5	3		1.066(0.64-1.79)	1.37(0.87-2.19)	0.808
De-worming	No	172	121		0.69 (0.38-0.802)*	1.64 (1.25-2.47)*	0.041*
	Yes	37	29		1	1	1.00

EBF	Yes	204	146		1	1	1.00
	No	5	4		0.57(0.5-0.73)*	0.51(0.11-3.1)	0.513
Child sex	Male	104	85		1	1	1.00
	Female	105	65		0.99(0.63-1.54)	0.88(0.57-1.35)	0.953
Constipation	No	103	68		1.12(0.595-2.38)	1.65(0.66-4.11)	0.73
	Yes	106	82		1	1	1.00
Breathing problem	No	117	80		1	1	1.00
	Yes	92	70		0.84(0.40-2.38)	1.36(0.50-1.66)	0.635
Complete Vaccine	Yes No	55 154	44 106		1 0.54(0.53-0.56)*	1 1.73(1.2-1.97)*	1.00 0.03*

NB: Wasting is considered when there if < 65% of median age for height and otherwise. MUAC>12.5cm normal for1/2-5years,≤11.5cm serious malnourished. AOR= Adjusted odds ratio, COR = Crude Odds ratio, ***** Significant at p<0.05 ,****** Significant association at p<0.01, strong association at p<0.001. OR=1 ,no statically significant, OR>1,risk factors, OR<1 protective

In this study the biviarate analysis showed that both children age between 6-23 months and 24-59 months with MUAC of child have significant association with wasting (P<0.01). After bivariate analysis those predictors which showed statistical significance were used to run multivariate analysis. In multivariate analysis children age between 24-59 months with MUAC of child have significant association with wasting (P<0.001).

On multivariate analysis, children age between 6-23 months with MUAC did not showed significant association with wasting of child. The finding of the study identified that MUAC of a child have statistical association with wasting of children (P<0.05).In multivariate analysis those children there MUAC less than 11.5cm were significantly odds of wasting compared to the children who had MUAC greater than 11.5cm (AOR: 1.76, 95%CI: 1.48-1.98). In multiple logistic analyses, lack of complete vaccine of children was significantly associated with wasting. Children who did not taken complete vaccine were 1.73 times more likely to be wasted (AOR=1.73, 95%CI: 1.20-1.97) than those have taken complete vaccine.

As the tables shows most of respondents are below severe stunting and moderate. Out of 359 participated children in this study, 69(19.2%) were measure greater than 13.5cm at 6-59 months with normal, 142 (39.6%) with MUAC≤ 11.5cm , meaning serious malnourished and 173(42%) with MUAC >12.5 cm was health child. The Marginal Percentage (19.2%) of children MUAC≥12.5CM for age 1/2-5 years normal, 39.6%marginal percentage was ≤11.5cm serious mal nutrition, 41.2% was MUAC≥12.5cm healthy child.

The dependent variable has only one value observed in 40 (58.8%) subpopulation as the anthropometric data nut children software calculate from the given coded data. There are wasting among children between 6-23 months and 24-59 months seen clearly from the analysis. In this study, the proportion of underweight was significantly higher among children 24-59 months age than 6-23 months age of Guto Gida children (table_10).

Table_10: Final logistic regression to predict wasting by MUAC with age, in Guto Gida district,2013

	Response	

Child age		Categories	No	Yes		COR	AO R	P-value
6-23 months		>65%w/ht <65%w/ ht	24 26	10 6 63		1 0.76(0.38-0.28)*	1 1.16(0.76-1.81)	1.00 0.463
24-59 months		>65% w/ ht<65%w/ ht	11 8	66 53		1 0.50(0.54-0.66)*	1 1.05(1.00-1.17)*	1.00 0.004*

NB: Wasting is considered when there if < 65% of median age for height and otherwise. AOR= Adjusted odds ratio, COR = Crude Odds ratio, ***** Significant at p<0.05. OR=1 ,no statically significant, OR>1,risk factors, OR <protective

From the total number of children at study area when referred to wasting children among 6-23 months age 221 greater than 65% median weight for height and138 were 24-59 months were with 65% median weight for heights, 150 (41.78%) below standard meaning that wasting were seen.

In this study the biviarate analysis showed that mothers age, staple food pyramid, age of child, mothers ANC have significant association with wasting (P<0.01). After bivariate analysis those predictors which showed statistical significance were used to run multivariate analysis. In multivariate analysis Vegetables and fruits from staple food pyramid, Mothers age and ANC with age of child have showed also association with wasting of child (P<0.01).

The finding of the study identified that ANC of a child have significant statistical association with wasting of children (P<0.002). In multiple logistic analyses, lack of ANC of mothers was strongly associated with wasting. Those children whose mothers did not take ANC were 1.17 times more likely to be wasted (AOR=1.17, 95%CI: 1.06-1.38) than those who took the ANC (table-11).

Table_11: Final logistic regression to predict wasting by age category, Guto Gida , March-June 2013

Child age		Categories	Wasting					
			No	Yes		COR	AOR	P-value
6-23 months	Mother age	18-27 years	80	62		1	1	1.00
		28-37 years	52	27		0.291(0.164-0.52)*	1.69 (1.14-1.86)*	0.001*
24-59 months	Mother age	18-27 years	33	35		1		1.00
		28-37 years	43	26		0.051(.42-1.00)	0.55(0.42- 1.05)	0.129
6-23 months	food items	Cereals& crops	115	70		1	1	1.00
		Veg.& fruits	10	15		0.666(0.49-0.92)*	1.28(1.24-6.84)*	0.012*
		Meats & poultry	1	2		0.771(0.144-4.13)	0.84(0.15-4.76)	0.797
		Dairy & prod.	4	2		0.554(0.031-9.98)	0.50(0.03-9.6)	0.689
		Fats &sweats	2	0		0.721(0.33-1.56)	1.59(0.23-11.0)	0.395
24-59 months	Food items	Cereals& crops	48	38		1	1	1.00
		Veg.& fruits	21	17		0.228(0.67-0.92)*	0.67(0.15-4.76)	0.066
		Dairy & prod. Fats &sweats 2	7	3 0		0.00(0.144-0.41) 0.003(-.58 -.02)*	0.42(0.03-9.6) 0.59(0.23-11.0)	0.059* 0.999

		No	1			0.385(0.16 -0.54)*	1.13(1.06-1.81)* 0.012*
6-23 months	ANC	Just at month	132	89		1	1 1.00
24-59 months	ANC	No	1	0		0.39(0.16 -0.524)*	1.17(1.06-1.38)* 0.002*
		Just at a month	76	61			1 1.00

N.B: Wasting is considered when there if < 65% of median age for height and otherwise. AOR= Adjusted odds ratio, COR = Crude Odds ratio, ***** Significant at p<0.05

In this study the biviarate analysis showed that age of child has significant association with wasting (P<0.01). After bivariate analysis those predictors which showed statistical significance were used to run multivariate analysis. In multivariate analysis, and 24-59 has showed association with wasting of child (P<0.01). On multivariate analysis, age of child 6-23 did not showed significant association with wasting of child. The finding of the study identified that age of child with 6-59 months have significant statistical association with wasting of children (P<0.05).

In multiple logistic analyses, age of children with 24-59 months has strongly associated with wasting. Those children between 24-59 months of age were 1.05 times more likely to be wasted than 6-23 months age (AOR=1.05, 95%CI: - 1.00-1.17) (table-12). The result of finding concerning the standard deviations is less than-2SD international median stunting. With respect to age group children between 6-23 months were -1.3 to 1.8SD and 24-59 months age were measure between -2.2 to 1.7SD (table_12). This implies that**,** acute malnutrition (Wasting) below minus two standard deviations from the median weight for height of the standard reference population, (UNICEF, 2011).

Table_12: Final logistic regression Model to predict stunting of children by age category in Guto Gida District, from March to June 2013

			Stunting		
			Yes	No	Yes
Child age	6-23 months	Count	72	90	59
		Std.	1.8	-0.2	-1.3
	24-59 Months	Count	23	60	55
		Std.	-2.2	0.3	1.7

N.B: Yes= (serious stunting <65.8cm at 6-59 months), No= (65.8-74.7cmat age of 6-59 months), Yes (serious stunting <74.7cm at 2years&above) respectively.

Most of the indicators related to the children themselves were significantly associated to the severity of malnutrition. Children between 24-59 months age were characterized by severe acute mal nutrition meaning that standard deviation (SD) less than two. For instance, female children are less likely to be either malnourished or severely malnourished than male children are. Stunting in children with low birth weight were 1.18 times higher (41.78% prevalence) (AOR=1.18, 9%CI: 1.003-1.31) than those children with average birth size.

Finally, this study result presented that children with multiple diarrheas and vomiting significantly suffer from malnutrition, which suggests that children in larger families in the study area face increased competition for scarce nutritional resources. Furthermore, the mothers' characteristics, especially educational attainment particularly on child and maternal nutrition, are important for reducing malnutrition. When a mother has some primary-level education, the severity of the child's undernourishment was significantly reduced. It should also be noted that the size of the education

variables increases with higher maternal educational attainment. A mother's attainment of a secondary or higher level education significantly reduces the severity of her child's malnutrition compared to the severity of malnutrition for a child whose mother either attained some secondary-level education or graduated from primary school than illiterate family.

DISCUSSION

The study reveals that undernourishment is a problem in Guto Gida District, where by it affects children among 6-59 months age as measured by the three indicators (underweight, Stunting, and wasting).Inadequate intakes of energy and essential nutrients may compromise growth & development to an extent, which may have lasting consequences. Undernourishment gets worse as the children grow older. The energy and nutrient density of the complementary foods are low as the foods were prepared from a limited number of local staple cereals without the addition of sugar, fat/oil or animal products.

However, in most relatively wealthy community where a wide variety of foods are available, growth and development usually occurs quite satisfactorily without detailed dietary advice. An important consideration is that eating habits determined in childhood may be important determinants of chronic disease in later life.

Prevalence's of Undernourishment

In the study area, child undernourishment was one of the most bottlenecks of public healthy to alleviate poverty. This indicates that the prevalence's of undernourishment and its associate factors among children 6-59 months age in Guto Gida District, Oromia Regional state, Ethiopia shares the magnitude of national Undernourishment.

Prevalence of child underweight is the percentage of children among 6-59 months whose height for age (stunting) is more than two standard deviations below the median for the international reference population ages 6-59 months. For children up to two years old height is measured by recumbent length. For older children height is measured by stature while standing (WHO, 2006). Low-birth weight babies are newborns weighing less than 2,500 grams, with the measurement taken within the first hours of life, before significant postnatal weight loss has occurred. Wasting prevalence is the proportion of children under five whose weight for height is more than two standard deviations below the median for the international reference population ages 6-59 months (WHO, 2006).

Ethiopia has a high prevalence of acute and chronic malnutrition, with almost half of Ethiopian children chronically malnourished and one-in-ten children wasted and two out of five were underweight. About 47% of children under-five were stunted, 11% were wasted and 38%were underweight (DHS, 2011). Child malnutrition increases with the age of the child, and the peak age is between 6 and 24 months of age.

The stunting z-scores are the outcomes of the ratio of height over age minus the median of the reference population and the standard deviation of the reference population Stunting two standard deviations and below -3SD is severe stunting. (Bhalotra and Rawlings, 2010). The result of finding concerning the standard deviations is less than plus or minus 2SD international median stunting. With respect to age group children between 6-23 months were -1.3-1.8SD and 24-59 months age were measure between -2.2-1.7SD.

There was very high prevalence of wasting, diarrhea and vomiting, under standard measures of MUAC and low birth weight in the study area alarming to increased risk of death to children. It

signifies acute malnutrition problem due to illness and/or recent food shortage. High chronic malnutrition also signifies children's failure to grow; influence both physical and mental capacity of the affected children and reduce productivity power in the future.

Still trend of undernourishment significantly high when compared to the magnitude of wasting 11% and underweight 38% (9% severe and 29%were moderate) which were predicted by EDHS in 2011.Similarly the prevalence of wasting and underweight in Guto Gida District from March-June 2013 were 11.14% and 39.69% respectively. Because the area were survey taken community had members of newly lunched who were migrated (mobility problem) from Hararge Zone. Estimated family monthly income per day was 11.11ETB, which was below poverty line (1.25USA dollar), was 75.2%. The quality of water was also one of the bottlenecks of child mal nutrition at study area.

Underweight

Health status of the children at the time of the survey explained by taking complete vaccine and de-worming activities two wise a year were one of the significant factors of underweight. In addition, diarrhea episode within two weeks of the survey day was one of the significant factor that exposed children for underweighting. Diarrhea was strong positive relationship with underweighting. This finding was consistent with previous findings (Saha N., 2004). The impact of this infectious disease on underweighting was due to the creation of mal-absorption of the intestine during the episode as well as loss of appetite (Petri W et al., 2008). On the other hand, mothers whose child became sick with diarrhea tend to minimize the amount of feeding believing that it could aggravate the disease. The cumulative impact as result of mal-absorption, lost appetite, deliberate cut of feeding by caregivers would exacerbate the child exposed for underweight in the study area.

Generally, the prevalence of underweight was increases in alarming stage at the study area. Indicators were the healthy condition of children seen during the cross-survey study such as: Underweight (wasting and stunting) and other related factors diarrhea and vomiting, edema-pitting, skin change-dermatitis, constipation, loss of appetite, law birth weight, and other related associate factors of child mal nutrition are point out severity at the study area as discussed above. When the result of study compared to outputs that of standard the prevalence was of child mal nutrition in the study area was high.

Stunting

The likelihood of being stunted were increased across age category of 6-23 months through age category of 24-59 months (AOR=1.05, 95%CI:1.00-1.17), while there was slight increment at the age category of 24-59 months by 1.05 times in reference to the age category of 6-23 months. In general both the descriptive and multivariable logistic regression analysis revealed that child stunting were increased by the increase of child age though the increases not learner with its pattern. This finding has also supported by (Wagsaff , 2003; and Van de Poel, 2007). This might be due to start of complementary food, which may affect the child in exposing for risk of external contaminates. Similarly as the age increase, the replacement of breast-feeding with solid food will progressively increase. On the other hand, the quality and the frequency of feeding will be matched with the type and frequency of feeding of the adults in family. This increases the likelihood of consuming contaminated foods and removes the protection provided by breast milk and children start playing at outdoor the unsanitary environment, which exposes them to infections.

The study revealed that children whose birth weight were perceived as below average were 1.18 times more likely exposed for risk of stunting than children whose birth weight were perceived as average and above. This finding was in line with many other findings reported that the negative relationship of birth weight to stunting **(**Rayhan and Khan, 2006, ORC and CSA, 2006, Willey *et al.,* 2009). This indicates the importance of adequate nutrition in utero through proper feeding of

mothers (Victora et al., 2008). Therefore, the unmeasured factors of maternal nutritional status could be one of the reasons for the child to be born as low birth weighted and consequently exposed for stunting. Analysis of prevalence of severe malnutrition conditions by child age group point out that severe stunting is higher in children aged 24-59 months, which indicates that the children are already in the state of being stunted because of cumulative effect of the risk factors.

Wasting

Agro-ecological has a negative and significant effect on wasting. It was also hypotheses that the agro ecology location could be a proxy for access to higher-level health care facilities and other socio economic variables. The prevalence of the survey result indicates that there was higher proportion of wasting as compared to midland areas. Similarly, the regression analysis showed that significant association of wasting with lowland. The current finding is in combatable with the previous studies that the different agro ecology zones differ in climate which influence both the plant and animal production sources of food level and pattern. As already noted, lowlands are sparsely populated and have limited in accessing the modern health facilities, which in turn resulted in high level of wasting. A review of the empirical literature showed that similar finding was reported (Woldemariam and Timotiows, 2002. Morales, 2004). Similar explanation might be due to differences in economic levels and disparities in the lack of knowledge and understanding of farmers' mothers on child health care practices. The same reason were also suggested by previous studies (Filiz *et al*., 2007)

Children who had breathing problem with duration of two weeks onset period were 1.8times more likely wasted as compared with children with no cough within the past two weeks. Children who were experiencing diarrhea episode within the past two weeks of the survey day were 1.4times more likely measured as wasted (low WHZ) as compared with children who had no diarrhea episode. These important factors were observed by to indicative descriptive variables of presence of breathing problem and diarrhea episode within two weeks of the survey day. Both had strong positive relationship with wasting. This finding was consistent with previous findings. (Sah N., 2004).

The impact of this infectious disease on wasting was due to the creation of mal-absorption of the intestine during the episode as well as loss of appetite (Petri W et al., 2008). On the other hand, mothers whose child became sick with diarrhea tend to minimize the amount of feeding believing that it aggravates the disease. The cumulative effect of this affected the deterioration of current nutritional status (Wasting) of children in the study area. In general, wasting magnitude shows 11.14 and 12.53% with respect to 24-59 and 6-23 months of age respectively.

Associated Factors of Child Undernourishment

The finding of this study indicates the positive association between stunting and having larger family size. This finding was in contrary to what (Measta et al., 2008) findings of the negative association between malnutrition and larger family size which indicated the larger size as an opportunity for the mother in getting substitute care givers for her child. But the possible reason for the current finding of positive association were, as the number of family member increase, the available resource for the family obtained from the small land holding will diminishes. Similarly, it would be possible to relate that increased size of the family in Ethiopia implies the increased dependency ratio, which further burden for the typical households (CSA, 2008).

The result of this study revealed that the livestock size owned by family were negatively associated with stunting of the children in the study area. The reason for this might be that the availability of especially milk cow benefits the child in diversifying its food variety. This were also widely

accepted that livestock serves as a major component of food security system in farming community (FAO, 2012).

The finding of this study showed that the association between the staple food pyramid usually given to children and stunting were significant. Children, who regularly provided with single type of food like cereals and crops that prepared for adult family members were stunted. Consuming mixed food type to 6-59 months of children was used as a proxy to diet quality and was found to be negatively and significantly related with stunting. A significant proportion of children who were feed with cereals and crops that served for adult, as a weaning food, were found to have been stunted possibly because of the low nutrient content. The findings of previous empirical studies were consistent with the current findings (de Onis et al., 2001, Engebretsen et al., 2008).

Similar to association of the type of food this study revealed that the negative association between frequency of meal served for the child and stunting. The risk of being stunted for children who had not received meats and it derivative per a month or never was 87.5% higher than children who obtained meat. It is obvious that children need frequent but small amount per meal than adults to get the required nutrient amount per day. Therefore, the less frequent meal serving family due to lack of resource, lack of child caring time or lack of awareness would increase the likely hood of their child stunted. This finding was also consistent with (Engebretsen et al., 2008, Onis, 2001).

Children from a family whose landholding size were less than 0.5 hectare were four fold times more likely stunted as compared with children whose family had more than or equals to 1-2 hectare of agricultural land. This finding was not consistent with the pervious study (Melkie, 2006). The possible explanation for this finding could be variation in size of land means a variation in level of income, which in turn implied variation in quantity and quality of available resources for the family. This could also create a significant variation in the nutritional status of the children who were the prime vulnerable for the problem.

This study finding revealed that stunting had strong negative association with annual income of the family. The descriptive analysis of this study showed that the population who were involved in producing raw food materials was as high, but not in mechanized way. As a result, they were prone to purchase of different cereals and other food items in a nearby market. Therefore, increased annual income would at least guarantee to purchase their food demand given the current uncertain market price. The finding of this study was also consistent with other previous findings, which showed the negative relationship between family income and stunting (Mahgoub et al., 2006, Melkie Edris, 2007).

Some community members said that, recently there was a failure of crop products to provide adequate foods and affected income of the households to purchase food items. Common staple food of the area is also cereals and crops that cannot provide nutritious food particularly for children as compared to food pyramid. In addition, there is inadequate child caring practices mainly on child nutrition.

Both biviarate and multivariate logistic analysis indicated that low birth weight, lack of balanced diet as of food pyramid and housing quality, water quality are some associate factors of stunting, underweight and wasting. In addition, in binary logistic analysis, maternal lack of education and socio-economic status were found significant predictors of stunting. In multiple logistic analyses, for example age of children with 24-59 months has strongly associated with wasting. Those children between 24-59 months of age were 1.05 times more likely to be wasted (AOR=1.05, 95%CI: 1.00-1.17) than those who took the complete vaccine.

This report also indicated that biological factors; child's age and mother's character sticks and social economic factors; dietary history; water quality, household wealth and mother's education, are important associated factors of a child's nutritional status. Moreover, the analysis of prevalence of serious malnutrition conditions by child age group point out that severe wasting are higher in

children among 6-59 months, which indicates that the children are already in the state of being wasting and stunting because of cumulative effect of the risk factors. This study was supported by on prevalence of undernourishment and the impact of some socioeconomic-demographical, health and nutrition care characteristics on the nutritional status of under two years old children of rural Bangladesh in 2012.

Interventions aimed at reducing child malnutrition in populations like the one reported in this paper should attempt to include all children among 6-59 months in the community to elucidate clearly the impacts of associate factors of undernourishment. Investments in child health and in particular child nutrition have a potentially high pay-off for the long-run development of the individual and of the society. It is important to understand if and to what extent nutritionist development can contribute to improvements of children's nutritional status. In particular, it is unclear whether overall child nutrition reaches those who are in need.

Due to sum-script and proximity of the Nekemte town, Guto Gida is on cross road to different regional states, zones, districts, and its tremendous agricultural resources, has a good opportunity to be a center of Agro-tourism and potentials for agro-diversity. The area has potential of commercial coffee production and conducive climate for other investment. Whatever the ecology of area is comfortable for agriculture for food security even for the MDG, the society still not reacts on food insecurity.

In general, there is a need to intersectional collaboration to address the basic, immediate and intermediate causes of child malnutrition in Guto Gida Districts. Annual income of family, lack of education on child nutrition, childcare practice, lack of adequate water and quality house, not taking ANC and complete vaccine were negative association with all three indicators (stunting, underweighting and wasting) of malnutrition in the study area. The inter relationship of one factors to the other can contribute for child undernourishment in one or the other ways.

CONCLUSION

Depending on facts of the study, it can be concluded that; child undernourishment or acute and chronic mal nutrition problem is highly observed in Guto Gida District. There was significant relation seen between Socio-economic status, House and Water quality, Children Healthy condition, Child and caregivers characteristics, Maternal Care, dietary history of child and mother, household food intake, and public healthy practice and dependent one. Both biviarate and multivariate logistic analysis indicated that low birth weight, lack of balanced diet as of food pyramid and housing quality, water quality are some associate factors of stunting, underweight and wasting. It may help the policy planners to develop strategies to combat different forms of malnutrition by targeting the vulnerable groups. Thus, it needs intersectional collaboration to address the basic, immediate and underlining causes of child under nutrition.

Finally, it can be concluded professional that most households in the study area were illiterate, had low income, consumed cereals and crops, had not get quality water, had low nutritional information, majority of children did not taken Rota viral vaccine(de-worming activities). Therefore, it is a time to tickle child undernourishment, which is a silent killer of the community.

Recommendations

Based on the finding of the results the following recommended as a researcher:

- Managing undernourishment through community mobilization to improve access to safe and adequate water supply, child nutrition, adopting American food pyramid, housekeeping, and mothers care practices were advisable.
- The quality and quantity of food intake, generally accepted as being crucially important in the rehabilitation of the malnourished children (For example blended glucose-protein food, Lakadama, and RUTF), since some of them were newly launched at the study area.
- It is crucial for the Healthy Institutions to coordinate different sectors and community leaders to influence the caregivers and the head of household in giving due attention for proper using of food pyramids and childcare practices, done by Healthy extension workers de-worming activities two wise a year and encouraging taking complete vaccine.
- Intervention initiatives should focus on improving agricultural mechanization, household food security; aware entrepreneurship, and nutrition education.

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