WOLKITE UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

MAGNITUDE AND ASSOCIATED FACTORS OF SEVERE ACUTE MALNUTRITION AMONG UNDER FIVE CHILDREN IN CHEHA WOREDA, GURAGER ZONE, SOUTHERN ETHIOPIA, 2021 G.C.

BY: MESKEREM FIKRE (261/10)

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FIRAOL BEKELE (089/10)

A PAPER REPORT SUBMITTED TO THE DEPARTMENT OF PUBLIC HEALTH, COLLEGE OF MEDICINE AND HEALTH SCIENCES, WOLKITE UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHLER.

SOUTHERN ETHIOPIA

NOVEMBER,2021

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Acronyms

BMI= Body Mass Index

CDC= Centre for Disease Control and Prevention

CI= Confidence Interval

CSA= Central Statistical Agency

EBF= Exclusive Breast Feeding

EMDHS= Ethiopian Mini Demographic and Health Survey

HFA= Height for Age

MUAC= Mid-Upper Arm Circumference

NRU= Nutritional Rehabilitation Unit

PEM= Protein-Energy Malnutrition

SAM= Sever acute malnutrition

SD= Standard Deviation

SNNRP= South Nations and Nationality Region People

SSA= Sub-Saharan Africa

UNICEF= United Nations Children's emergency Fund

WAZ= Weight for Age Z score

WFA= Weight for Age

WFH= Weight for Height

WFP= World Food Program

WHO= World Health Organization

WHZ= Weight for Height Z score

Abstract

Background: Malnutrition is the intake of an insufficient, surplus or disproportionate amount of energy and/or nutrients. Globally, Severe Acute Malnutrition has been reduced by only 11% over the past 20 years and continues to be a significant cause of morbidity and mortality. Severe acute malnutrition affects nearly twenty million children under 5 years, causing up to 1 million deaths each year by increasing susceptibility to death from severe infection.

Objective: The aim of this study was to assess magnitude and associated factors of severe acute malnutrition among under than five children, in Cheha woreda, Gurage zone in 2021 G.C.

Methods: Institutional based cross sectional study was used. The final sample size calculated as 184. The study units were chosen using systematic random sampling. A structured interviewer administered questionnaire used to generate the data. The data was entered and analyzed by using SPSS version 20.

Result:

The response rate was 92.4%. The magnitude of SAM in Cheha woreda health facilities is 19.4 [with 95% CI: 13.9-26.5]. Severe acute malnutrition was significantly associated with age groups above 6 months (AOR = 6, 95% CI 2.2–17), residency(AOR = 3, 95% CI 1–8), child sex(AOR =1.6, 95% CI 0.4–7), respiratory tract illness preceding 2 weeks before SAM(AOR = 6.6, 95% CI 1.7–24), fever preceding 2 weeks before SAM (AOR = 0.6 95% CI 0.2-3), diarrhea preceding 2 weeks before SAM(AOR = 4.4, 95% CI 1.4–14) and usage of family planning(AOR = 2, 95% CI 0.5–8) .

Conclusion and recommendation: Based on the findings of this study we can conclude that; child malnutrition is still high in the study area which is higher than the national and regional EDHS 2019 national report. Residence of patient, age categories, occurrence of diarrhea in the last two weeks and exposure to RTI were found to be significantly associated with the occurrence of SAM among under five children of Cheha woreda health facility.

We recommend that nutritional education should be given by health extension workers to improve feeding, hygiene practice at HH level and on proper utilization and benefits of family planning. We would like also to suggest them to continue to implement the integrated management of acute malnutrition.

CHAPTER: 1 INTRODUCTION

1.1.BACKGROUND

Malnutrition is the intake of an insufficient, surplus or disproportionate amount of energy and/or nutrients (WHO, 2020). Malnutrition is a significant global public health burden with greater concern among children under five years (Simonyan H; Sargsyan A; Balalian.A; Davtyan k; Gupte H.A, 2020).

Malnutrition is expressed through either under nutrition (the most common in less developed countries), a situation of low protein-energy intake which usually manifests at different anthropometric indices in stunting, wasting and underweight), and/or over nutrition, which is commonly associated with too great an intake of protein-energy (a situation widely associated with developed society, but of less concern in the developing countries, perhaps a dangerous position to assume especially in Africa) (Akombi,B.J; Agho,K.E; Hall,J.J; Merom,D; Astell-Burt,T; Renzaho,A.M, 2017).

Sever acute malnutrition(SAM) is defined by two distinct clinical entities: i. Severe wasting (marasmus; defined as middle upper arm circumference [MUAC] <115mm in children 6-59 months, or a weight-for-height/length <-3 Z scores according to the 2006 WHO growth standards) in children aged 0 to 59 months; ii. Nutritional edema (kwashiorkor; defined as bilateral pitting edema) (WHO- UNICEF- WFP, 2007).

Children with SAM are classified according to the absence or presence of medical complications:

i. Uncomplicated SAM: children who are clinically well without signs of infection or other indication for hospital admission, with a retained appetite (‘passed an appetite test’). Retained appetite is regarded to indicate the absence of severe metabolic disturbance. These patients are deemed to be most appropriately managed as outpatients, with ready-to-use therapeutic foods.

ii. Complicated SAM: children who have clinical features of infection, metabolic disturbance, severe edema, hypothermia, vomiting, severe dehydration, severe anemia or a lack of appetite, requiring inpatient treatment initially with low-protein milk-based feeds. Children are discharged to continue nutritional management as an outpatient is recommended when complications have resolved (Dubray C; Abdelmutalib M; Guerin PJ; Dantoine F; Legros D; Brown V, 2008)

Generally, malnutrition can lead to cognitive and physical impairment in children, especially those under five years old, with a high rate of morbidity and mortality (Akombi,B.J; Agho,K.E; Hall,J.J; Merom,D; Astell-Burt,T; Renzaho,A.M, 2017). A child's fundamental right to a higher level of physical and mental health development worldwide is boosted with access to good nutrition (Amalia, 2020)

1.2 STATEMENT OF THE PROBLEM

SAM affects nearly twenty million children under 5 years, causing up to 1 million deaths each year by increasing susceptibility to death from severe infection (Black RE; Victora CG; Walker SP;et al, 2013).The most susceptible age for malnutrition is 6 to 18 months, (when growth velocity and brain development are especially high); however, with many low-income settings introducing solids to children as young as two months, it is increasingly recognized that SAM may occur in infants aged <6 months (Kerac M; Mwangome M; McGrath M;Haider R; Berkley JA, 2015)

Globally, 7.5 million under-five children are wasted and 16.4 million are severely undernourished. Survivors of acute malnourished children are at increased risk of developing stunting and various diseases, disorders, poor educational performance, and low productive life (WFP, 2007).

Child under nutrition is a critical public health issue ubiquitous in many developing countries where various infectious diseases are rampant (UNICEF/WHO/World Bank, 2020)

In recent times, Sub-Saharan Africa (SSA) has had so much to grapple with in terms of the malnutrition burden. In 2015, SSA accounted for more than 30% of global underweight children (WHO- UNICEF- WFP, 2007). Additionally, in 2018, despite a worldwide decline in childhood stunting, the African region witnessed a rise in the relative figure from 50.3 million to 58.8 million children (Kerac M; Mwangome M; McGrath M;Haider R; Berkley JA, 2015)**.** Interestingly, the 7.1% prevalence of children under five wasting in Africa is lower than the global rate of 7.3% (UNICEF/WHO/World Bank, 2020). Within the SSA region, sub-regional variations in malnutrition are reported in the literature. Akombi et al. (Doctor H.V; Nkhana-Salimu S., 2017) concluded in their study that countries in East and West Africa bore the greatest burden of malnutrition in the SSA region.

In Ethiopia, child malnutrition rate is one of the most serious public health problem and the highest in the world (Alemu M; Nicola J; Belele T, 2005) .The Global Nutrition Report classifies Ethiopia as experiencing two forms of malnutrition – anemia and stunting.

The government of Ethiopia has taken several steps toward reducing under nutrition in the country. The recently endorsed 2019 Food and Nutrition Policy aims to achieve optimal nutritional status throughout the life cycle via coordinated implementation of nutrition-specific and nutrition sensitive interventions. In addition, through the Seqota declaration, Ethiopia has committed to ending under nutrition in children under age 2 by 2030. To accelerate reductions in malnutrition, Ethiopia developed the National Nutrition Programme (NNP) I (2008-2015) and the NNP II (2016-2020) with a specific focus on multisectoral coordination of nutrition interventions.(EDHS 2019).

1.3. SIGNIFICANCE OF THE STUDY

This research help in knowing the magnitude of severe acute malnutrition among under 5 children who reside in Emdeber, Gurage zone and comprehensive reviews that would have a shred of strong evidence for designing interventions are lacking. So, this research was conducted to bridge this gap. In doing this it will give information for others who want to do research on this topic. Also to give valuable information for the government, NGOs, the community, students and concerned bodies about severe acute malnutrition and how directions to solve the problem.

CHAPTER 2: LITERATURE REVIEW

2.1 THE MAGNITUDE OF SEVERE ACUTE MALNUTRITION

The percentage of wasting has decreased only from 12% to 7%. The prevalence of stunting has decreased from 51% to 37%, while the prevalence of severe stunting has decreased by more than half (from 28% to 12%) (EDHS, 2019)

37% of children under age 5 are stunted, and 12% are severely stunted. Seven percent are wasted and 1% severely wasted. Twenty one percent of children are underweight, with 6% severely underweight. Only 2% of children are overweight (EDHS, 2019)

The prevalence of stunting increases sharply with age, from 17% among children less than age 6 months to a peak of 45% among children age 24-35 months; this represents the impact of under nutrition in the first 1,000 days of life (EDHS, 2019)

Children in rural areas are more likely than those in urban areas to be stunted (40% versus 26%), underweight (23% versus 15%), and wasted (8% versus 5%). (EDHS, 2019)

2.2 ASSOCIATED FACTORS OF SEVERE ACUTE MALNUTRTION AMONG UNDER FIVE CHILDREN

2.2.1 INFANT AND YOUNG CHILD FEEDING PRACTICES

Appropriate infant and young child feeding (IYCF) practices include early initiation of breastfeeding (within the first hour of life), exclusive breastfeeding for the first 6 months of life, continued breastfeeding for 2 years or more, and introduction of safe, appropriate, and adequate complementary foods at age 6 months (WHO 2008).

2.2.1.1 Early Initiation of Breastfeeding

The National Guideline on Adolescent, Maternal, Infant, and Young Child Nutrition (AMIYCN) (FDRE 2016) promotes optimal feeding and care practices that are in line with international recommendations. Mothers are encouraged to breastfeed exclusively until the child is age 6 months without adding any water, other fluids, or foods and to continue breastfeeding until the child reaches age 2.

Ninety-six percent of last-born children born in the 2 years before the survey were breastfed at some point. Seventy-two percent were breastfed within 1 hour of birth, and 91% were breastfed within 1 day of birth. Twelve percent of children received a prelacteal feed. (EDHS, 2019)

There have been slight declines since 2016 in the percentages of children who began breastfeeding within 1 hour of birth (from 73% to 72%) and 1 day of birth (from 92% to 91%). Over the same period, the percentage of children receiving a prelacteal feed has increased from 8% to 12%. (EDHS, 2019)

2.2.1.2 Exclusive Breastfeeding

Exclusive breastfeeding for 6 months prevents infections such as diarrhea and respiratory illnesses and provides the nutrients and liquid an infant requires for optimal growth and development.

Overall, 59% of children under age 6 months are exclusively breastfed; the percentage of exclusive breastfeeding declines with age, from 73% among children age 0-1 months to 40% among those age 4-5 months. Contrary to the recommendation that children under 6 months be exclusively breastfed, many infants also receive other liquids such as water (14%), non-milk liquids (1%), and other milks (8%) before reaching age 6 months. Moreover, 13% of infants begin complementary foods before age 6 months, with nearly one-fourth of children age 4-5 months consuming complementary foods.

Sixty-eight percent of children under age 24 months are receiving age-appropriate breastfeeding. Sixty-nine percent of children are introduced to solid, semisolid, or soft foods at 6-8 months, an improvement from 2016 (60%). Continued breastfeeding at age 1 is relatively high at 87%, and 72% of children continue breastfeeding until their second birthday. Twenty-two percent of children under age 2 are bottle fed, as compared with 14% in 2016 (EDHS, 2019)Exclusive breastfeeding among children under age 6 months increased from 49% in 2005 to 59% in 2019.

2.2.1.3 Introduction of Complementary Foods

▪ only 3% of breastfed children and 7% of non-breastfed children age 6-23 months consumed infant formula in the 24 hours before the survey.

▪ Sixty-five percent each of breastfed and non-breastfed children consumed food made from grains in the 24 hours before the survey.

▪ Twenty-seven percent of breastfed children and 25% of non-breastfed children are given fruits and vegetables rich in vitamin A.

▪Children age 6-23 months are much less likely to consume fortified baby food (5% among both breastfed and non-breastfed children) than other solid or semisolid foods.

2.2.1.4 Minimum Dietary Diversity and Minimum Meal Frequency

Minimum dietary diversity is a proxy for adequate micronutrient density of foods. Consumption of food from at least five groups means that the child has a high likelihood of consuming at least one animal source of food and at least one fruit or vegetable in addition to a staple food such as grains, roots, or tubers (WHO 2008).

▪ Children in urban areas (59%) are more likely than those in rural areas (54%) to be fed according to the minimum meal frequency standards. (EDHS, 2019)

Minimum meal frequency is a proxy for meeting energy requirements. Breastfed children ages 6-8 months are considered to be fed with a minimum meal frequency if they receive solid, semisolid, or soft foods at least twice a day. Breastfed children ages 6-23 months are considered to be fed with a minimum meal frequency if they receive solid, semisolid, or soft foods at least three times a day. Non breastfed children age 6-23 months are considered to be fed with a minimum meal frequency if they receive solid, semisolid, or soft foods or milk feeds at least four times a day and if at least one of the feeds is a solid, semisolid, or soft food. (EDHS, 2019)

▪ Children in urban areas (16%) are more likely to be fed according to the minimum dietary diversity standards than those in rural areas (12%). (EDHS, 2019)

▪ The proportion of children fed according to the minimum dietary diversity standards increases with increasing household wealth, from 6% among children in the lowest wealth quintile to 20% among those in the highest quintile.

2.2.1.5 Minimum Acceptable Diet

According to the 2019 EMDHS, 11% of children ages 6-23 months meet the minimum standards with respect to all three IYCF practices (breastfeeding status, number of food groups, and times they were fed during the day or night).

The percentage of children fed according to the minimum acceptable diet standards has increased slightly since 2016, from 7% to 11%.

▪ The proportion of children fed according to the minimum acceptable dietary standards is somewhat lower among those who are not breastfed (8%) than among those who are breastfed (12%).

▪ Children in urban areas (14%) are more likely to fed according to the minimum acceptable dietary standards than those in rural areas (10%).

▪ The proportions of children receiving a minimum acceptable diet generally increase with increasing mother's education and household wealth. However, the proportions are quite low even among children whose mothers have more than a secondary education (19%) and children from households in the highest wealth quintile (17%).

2.2.2 MICRONUTRIENT INTAKE AND SUPPLEMENTATION AMONG CHILDREN

Consumption of foods rich in vitamin A or iron remains low among young children in Ethiopia. Thirty-nine percent of children age 6-23 months consumed foods rich in vitamin A, while 24% consumed iron-rich foods.

▪ Among children age 6-35 months, those in urban areas (53%) are more likely than those in rural areas (45%) to have received a vitamin A supplement in the 6 months before the survey.

2.2.3 MICRONUTRIENT SUPPLEMENTATION DURING PREGNANCY

According to the 2019 EMDHS, 40% of women with a child born in the last 5 years did not take any iron tablets during their most recent pregnancy. Only 11% of women took iron tablets for 90 days or more.

The percentage of women taking iron supplements for 90 days or more increased from 5% in 2016 to 11% in 2019 but remains at a substandard level. The percentage of women who did not take any iron supplements decreased from 58% to 40% over the same period.

▪ Women in urban areas were more likely than those in rural areas to have taken iron supplements for at least 90 days during their most recent pregnancy (14% versus 9%).

▪ The percentage of women taking iron supplements for 90 days or more is highest in Dire Dawa (22%) and Addis Ababa (19%) and lowest in Somali (2%) and SNNPR (4%)

2.2.4 MATERNAL EDUCATION

The proportions of children who are stunted and underweight generally decline with increasing mother's education and household wealth. For example, the prevalence of stunting among children whose mothers have no education is 42%, as compared with 22% among children whose mothers have more than a secondary education.

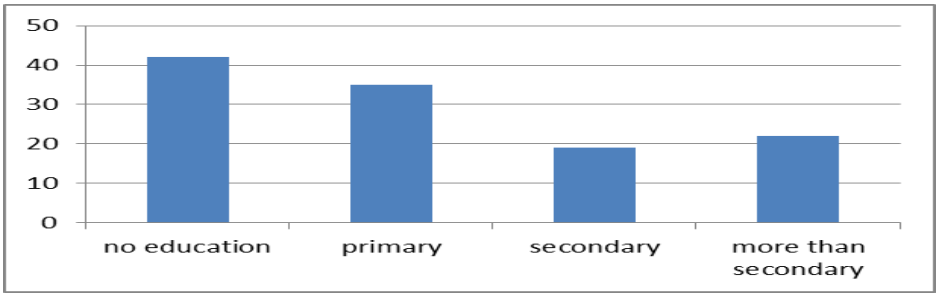


Figure 1: showing stunting in children by mother's education (adopted from EDHS 2019)

▪ The proportion of women taking iron tablets for 90 days or more increases with increasing education. Twenty-seven percent of women with more than a secondary

education took iron tablets for 90 days or more, as compared with 7% of women with no education.

▪ Consumption of foods rich in vitamin A and iron increases with increasing mother's education. For example, 41% of children whose mothers have more than a secondary education consume foods rich in iron, compared with 14% of children whose mothers have no education.

▪ The percentage of children fed with a minimum meal frequency increases with increasing mother's education, from 46% among children whose mothers have no education to 70% among those whose mothers have more than a secondary education

2.2.5 SAFELY MANAGE SANITATION SERVICES

Children in low-income countries face a range of interrelated problems, such as poor nutrition, inadequate water, sanitation, and hygiene (WASH), consequent infections, and growth and development impairments (G, Tadesse; E, Yared; Y, Wuletaw; JET, Grimes; IA, Gardiner; MR, Templeton; al, et, 2017)

According to world health organization safely managed sanitation services of six countries in Africa are below 10% (Burundi, Chad, Eritrea, Ethiopia, Madagascar and Mauritania) [The Africa Health Transformation Programme 2015–2020].

2.2.6 GENDER AND MALNUTRITION

According to the Food and Agricultural Organization, FAO, vulnerable women and girls are more likely to die of malnutrition than men and boys. An odd of being stunted was higher for females as compared to males (Samson K, Fithamla B, Tesfahun M, Habtamu A.and Efrata G., 2019). This finding is different from other study findings from Ethiopia, Nigeria, Tanzania and Uganda where males have higher risk of being stunted (Asfaw M, Wondaferash M, Taha M, Dube L, 2015). On the other hand, a study from Eastern Ethiopia reported that females had higher chance of being stunted (Ma'alin A, Birhanu D, Melaku S, Tolossa D, Mohammed Y, Gebremicheal K., 2016). This may be due to cultural issues, gender preferences and differential feeding practice which neglect girls (Belachew T, Hadley C, Lindstrom D, Gebremariam A, Michael KW, GetachewY, et a,

2011) . Girls are more likely than boys to experience food insecurity due to selective availability of the limited food for boys than girls in Ethiopia.

2.2.7 INFECTION AND MALNUTRTION

According to a UNICEF report, five infectious diseases (pneumonia, diarrhea, malaria, measles, and AIDS) account for more than one-half of all deaths in children aged <5 years, most of whom are undernourished (UNICEF, 2006).

2.2.8 ANC FOLLOW UP AND MALNUTRITION

Child and maternal under nutrition is responsible for approximately 3.5 million deaths of under-five age children. Under nutrition during pregnancy physiologically demanding period would result in adverse pregnancy outcomes .Under nutrition makes the women more susceptible to diseases, more risk of having miscarriages, and give birth to low weight baby whose survival is at risk (Black RE; Allen LH; Bhutta ZA; Caulfield LE; de Onis M;Mathers C; Rivera J; Maternal and Child Undernutrition study group, 2008) .

Among pregnant women visiting the ANC clinics in Silte Zone, southern Ethiopia, one in every five women was found under nutrition (21.8% (MUAC< 23). Age of the women, Dietary change as a result of current pregnancy, Birth intervals, and Nutrition knowledge were significant determinants of under nutrition. (Muze M; Yesse M; Kedir S. et al, 2020).

2.2.9 IMPACT OF FAMILY SIZE AND INCOME ON MALNUTRITION

Households with five or more members and households with three or more children were statistically associated with SAM. Higher the number of family members in the household more will be the burden to households to provide optimum nutritious food to all the family members and children. Higher the number of children in households, it unlikely that every child gets proper care and time, putting them at a higher risk of being malnourished (Ghimire, U., Aryal, B.K., Gupta, A.K. et al, 2020)**.**

2.3 Conceptual frame work

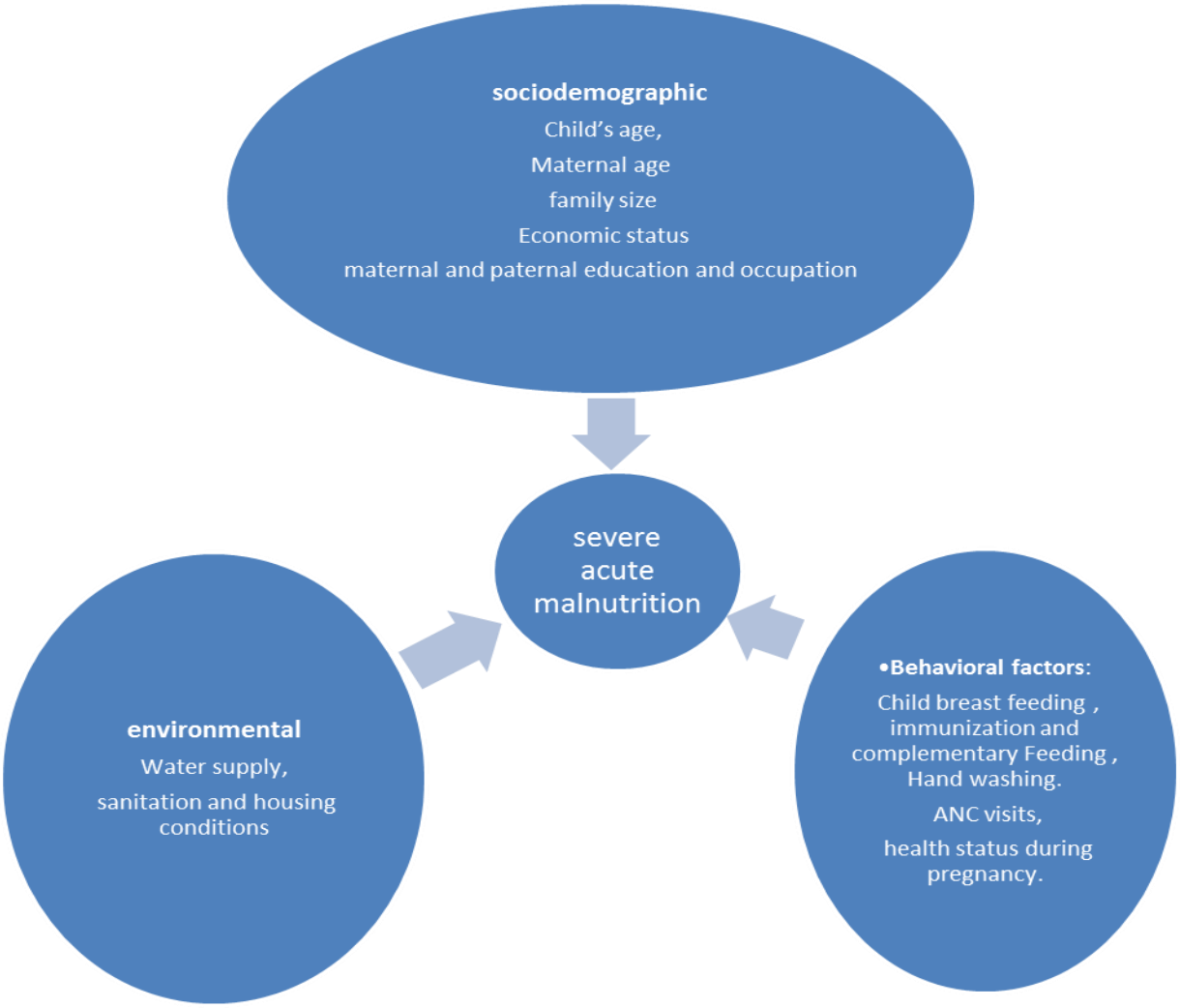


Figure 2: conceptual frame work for severe acute malnutrition of Cheha woreda, 2021.

This figure was adapted from other research

CHAPTER 3: OBJECTIVES

3.1 GENERAL

To assess the magnitude and associated factors of severe acute malnutrition among under 5 children in Cheha woreda, Gurage zone in 2021 G.C.

3.2 SPECIFIC

To determine the magnitude of severe acute malnutrition among under 5 children in Cheha woreda, Gurage zone in 2021 G.C.

To assess the associated factors to severe acute malnutrition among children less than 5 in Cheha woreda, Gurage zone in 2021 G.C.

CHAPTER 4: METHOD OF THE STUDY

4.1 Study area

The study was conducted in Cheha woreda. This is a woreda southwest of Addis Ababa, in the central part of Ethiopia. Located in the Gurage zone of in the SNNPR, has a latitude and longitude of $8^0$7'N $37^0$56'E and an elevation between 2130 and 2164 meters above sea level. It is 183km from Addis Ababa (south west), 33 km from wolkite (east) and 20 km from the University of Wolkite found in Gubre. The town has total population of 135,256 of this 67357 are males and 67899 females. Has 36 health posts for the 36 kebeles, 4 government and 2 NGO health centers and 1 hospital.



Figure 3: showing map of Cheha, 2021.

4.2 STUDY PERIOD

The study was conducted from august 1-30/2021

4.3 STUDY DESIGN

Institutional based cross sectional study design was used.

4.4 SOURCE OF POPULATION

All under five children was the source of population.

4.5 STUDY POPULATION

The study population was those under five children who visited health institutions at Cheha woreda**.**

4.6 STUDY UNIT

Under five children and those who were visiting pediatrics OPD during study period was taken to be the study unit.

4.7 INCLUSION AND EXCLUSION CRITERIA

From the source population all patients who don't fulfill the exclusion criteria was included in the study.

4.7.1 Inclusion criteria

• Both sexes

• Age b/n birth–59 months

• Patients with any of the SAM complications

• Patients who have no previously diagnosed comorbidities

4.7.2 Exclusion criteria

- Children who have a previously Diagnosed comorbidity i.e. mentally ill, seriously ill
- Parents or caregivers of under five children who had hearing and speaking difficulties

4.8 SAMPLE SIZE DETERMINATION

The single population formula used to calculate the sample size by using a 12.3% of prevalence of stunting (HFA) in Ethiopia of SNNPR Data in EMDHS 2019, with a margin of error (d) of 5%, (Zα/2) of 95% confidence interval level and 10% non-response rate (19). The final sample size calculated as 184.

$n= (Z/2)^2 p (1-p) /d^2$

Where, n= sample size

p= 12.3% (prevalence of stunting (EMDHS 2019)

z= confidence interval at 95%

d=margin of error (5%)

n= $(1.96)^2 \times 0.123(1-0.123)/ (0.05)^2$ =165+19(non responders) =184

Similarly, when we used 1.2 % of prevalence of underweight (WFA) of EMDHS 2019, the sample size becomes 21. When we used 5.2% of prevalence of wasting (WFH) of EMDHS 2019, SS become 83. SS of 184 which is calculated from prevalence of (HFA) of EMDHS 2019 because it is the largest sample size, so we have taken to be our SS.

4.9 SAMPLING PROCEDURE

Systematic random sampling technique was used to assess magnitude of malnutrition in child at Cheha woreda.

Sampling interval = N/n

Were N=Total number of under five children in Cheha woreda health facility.

n= sample size

k= sample interval

Randomly select by lottery method

=340/184=1.9 nearly 2

4.10 STUDY VARIABLES

Dependent variable

- Severe acute malnutrition

Independent variables

Three categories of factors were assessed as independent variables;

- Socio-economic and demographic variables; Number of children under-five years of age, and child's age, maternal age, family size, economic status , maternal and paternal education and occupation, child characteristics; Sex, birth weight and morbidity status**.**
- Behavioral factors: Child caring practices; breast feeding, immunization and complementary feeding, hand washing. Maternal Caring and characteristics; ANC visits, health status during pregnancy.
- Environmental Health condition; Water supply, sanitation and housing conditions

4.11 DATA COLLECTION METHOD AND PROCEDURES

Data collected using structured questionnaire. Some of the questions were adapted from other prior similar study conducted in Ethiopia. Then, questionnaire was further developed to include important predictors of the study. The questionnaire was initially developed in English and was translated into 'Amharic' during the interview to obtain correct data since the official language is 'Amharic'. The questionnaire was incorporated both open and close ended questions.

Two data collectors were recruited to collect data. Interviewer administered questionnaire have been used.

4.12 DATA QUALITY CONTROL

Quality control measures such as completeness of the questioner was under taken every day during collection and at end of data collection. By checking each questions of questionnaire are field with the appropriate response. Each participant completed a general questionnaire to collect information.

Appropriate information and instruction on the objectives, relevance of the study was given for the respondents.

Questionnaires was prepared in English then translated into Amharic language during the interview. Data completeness was checked daily by the principal investigator.

4.13 ETHICAL CONSIDERATION

The study was approved by Wolkite University, Public health department. An official letter of cooperation was written from Wolkite University, Public health department to obtain their consent the necessary explanation about purpose of the study and its procedures done informed consent was taken from each respondents. Unwilling participants in the study were not encountered more over any omission was not present to ensure confidentiality anonymous interviewer was conduct.

4.14 DATA PROCESSING AND ANALYSIS

After data collection, each questionnaire was checked for completeness and code was given during data collection. Data entered in to database, cleaned and explored for outliers, missed values and any inconsistencies and was analyzed using SPSS version 20(SPSS). Descriptive studies like tables, graphs, and descriptive summaries used. Bivariate and multivariate logistic regression was used to assess the association b/n

independent variable with dependent variable. Model fitness was checked by doing a Hosmer and Lemeshow test and multicollinearity was checked using VIF. Variables that were show association (p-value ≤ 0.25) in the bivariate analysis were included in the final multivariable logistic regression model. Odds ratios for logistic regression along with 95% confidence interval was estimated. A table having crude and adjusted Odds ratio, as well as 95% confidence intervals, was constructed along with the corresponding p-value. A value of less than 0.05 was declared as a level of statistical significance.

4.15 STANDARD DEFINITIONS

Acute respiratory illness: A child with cough and fast breathing or difficulty in breathing

Complementary foods: Are foods which are required by the child, after six months of age, in addition to sustained breastfeeding.

Diarrhea: A child with loose stools for three or more times in a day and a sign of dehydration

Family size: refers total number of people living in a house during the study period.

Fever: A child with elevated body temperature than usual

Income: It is periodical monthly earning from one's business, lands, work, investment etc

Malnutrition: refers to under nutrition or deficiency in protein-energy nutrition.

Measles: A child with fever, generalized rash and conjunctivitis (red eyes)

SAM: Severe wasting will be defined by an MUAC, 115 mm and/or a weight-for-height z score (WHZ) less than 3 of the median WHZ in WHO Child Growth Standards. All children 6–59 month with bilateral pitting edema, and/or MUAC, 115 mm

Wasting: Weigh for length <-2SD to >-3SD (Moderate); <-3SD (severe)

WHO Wasting For age 6mo-59mo 115-125mm MUAC (moderate) ;< 115mm (severe)

4.16 DISSEMINATION OF STUDY RESULTS

Data was analyzed and important conclusions and recommendations generated. These presented at Wolkite University and Emdeber health bureau, Emdeber health center and the information was informed to the Gurage zone health bureau .The result of the study communicated to relevant bodies and furthermore, all attempts will be made to present the findings to scientific conference and attempt will be made to publish the finding in local reputable journal.

CHAPTER 5. RESULTS

Socio- demographic

From the total 184 planned study subjects, only 170 responses with a response rate of 92.4% were obtained. Male headed HHs were 129 (75.9%) percent and the rest were female headed HHs. From the study subjects 144 (84.7%) percent were married,20 (11.8%) percent divorced, 6(3.5 %) percent were separated. About 36.5% of the HHs had a total family size of more than four while, 63.5% of the HHs had family size of less than or equals to four. About 61.8% of the HHs had one under five year children, 38.2% of the HHs had two under five year children.

Variables		Frequency	Percentage
Head of HHs	Male	129	75.9
	Female	41	24.1
	Total	170	100
Marital status	Married	144	84.7
	Divorced	20	11.8
	Separated	6	3.5
	Total	170	100
Residency	Rural	78	45.9
	Urban	92	54.1
	Total	170	100
Family size	</= 4	108	63.5
	>4	62	36.5
	Total	170	100
Under 5 children	1	105	61.8
	2	65	38.2
	Total	170	100
Income	<1500	27	15.9
	1500-2000	39	22.9

	2000-3000	29	17.1
	>3000	75	44.1
	Total	170	100

Table 1: socio demographic characteristics of study participant of Cheha woreda,2021.

Educational status of mothers and fathers respectively shows that 27.6% and 16.5 % were illiterate, 21.8 % and 25.3% learnt up to grade 6, 43.5% and 35.9% were from Grade7-12, 7.1% and 22.3% were above Grade 12.

Occupations of the heads of the households were farming (41.2%), merchant (21.2%), government employee (12.4%), Daily laborer (14.1%) and other (11.2%).

About 44.1% of the HHs earns monthly income of more than 3000 birr, 22.9% earn 1500-2000, 17.1% of them earn 2000-3000 and the rest 15.9% earns less than 1500. Occupation of the father

Child characteristics

From the total children, 58.2 % were males, while 41.8% were females. Their age was 35.9% among <6 months, 64.1% >6months. Place of delivery at Health institution was100%. Their gestational age at birth was 9 months for 80.6% of children, 4.7% was greater than 9 months and 14.7% was less than 9 months. From the total children, 100% were weighted at birth. Concerning Immunization, 91.8% were immunized. Among the total children 100% were single birth.

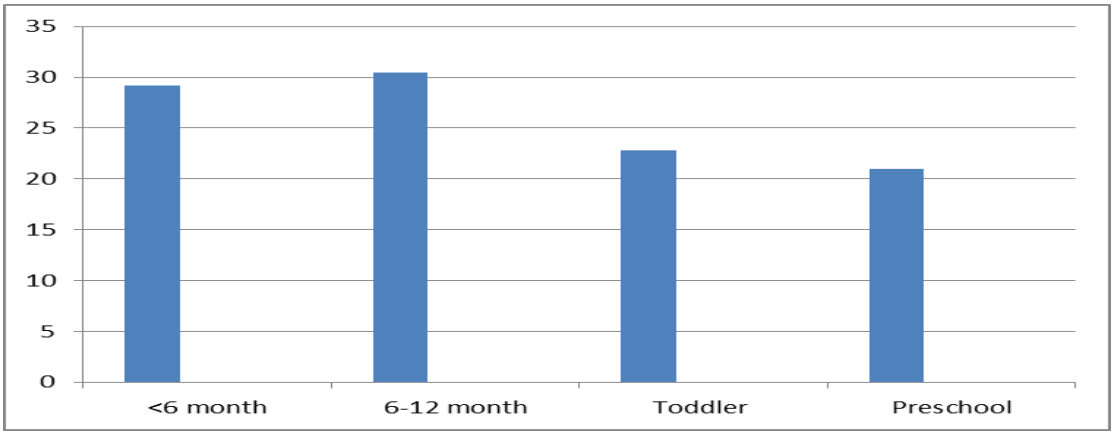


Figure 4; child age distribution of study participant of Cheha woreda,2021.

Child caring practice

Breast feeding: All children had breast fed after birth, among these 79.4% were breast fed immediately (within an hour), 20.6 % were breast fed after 1 hour.10.5% of children were exclusively breast fed for less than six months, 80.1% of the children for six months and the rest 9.4% were EBF for greater than six months. 54.7% of the children started complementary feeding at 6 months and 20.6% at greater than 6 months and the rest 24.7% of them haven't started yet. About 9.4% of the respondents squeezed out (threw) the first milk (colostrum) and 100% of the mothers had never given pre-lactation food for their newborn baby.

From the total number of study subjects, 73.5% are still breast feeding. About 50% breast feed less than eight times in 24 hours, 50% from 8 up to 12 times in 24 hours. Most of respondents used Bottle for feeding (35.9 %) whereas 31.8% used Cup/spoon feeding and 88.3% of households; mothers were usually taking care of babies feeding.

Maternal characteristics

100% of the mothers had ANC follow up among these mothers 80.5% had good health during pregnancy. About 100% of mothers had knowledge about family planning, and 83.1%of mothers had used FP in the past. But currently only 46.4% of mothers are using FP. Among them 39.6 % of mothers are using Depo-Provera, 12.3 % are using Implanol and 31.2% are using Pills.

Environmental health condition

Majority of the respondents were using pipe water (57.1%) but only16.2%of them had treated the water to make safer. All of the HHs have latrine.

Traditional private pit latrine with wooden slab was the commonest type (92.2%) being utilized. Regarding solid waste disposal about 42.9% of the respondents dispose garbage on open field, 20.8% dispose to common municipal pit whereas16.2 % dispose in private pit and the remaining20.1% burn their wastes. Most of houses of the respondents' floors were Earth/soil (61%) and 39 % cement/brick.

Nutritional status of the children

The overall prevalence of stunting, and wasting were 27.9% and 20.1% respectively. None of the children had bilateral pitting edema. From 154 children, about 27(17.5%) had MUAC measurement of less than 11.5 cms

Magnitude of severe acute malnutrition

The magnitude of SAM in Cheha woreda health facilities is 19.4 [with 95% CI: 13.9-26.5]. (figure 6).

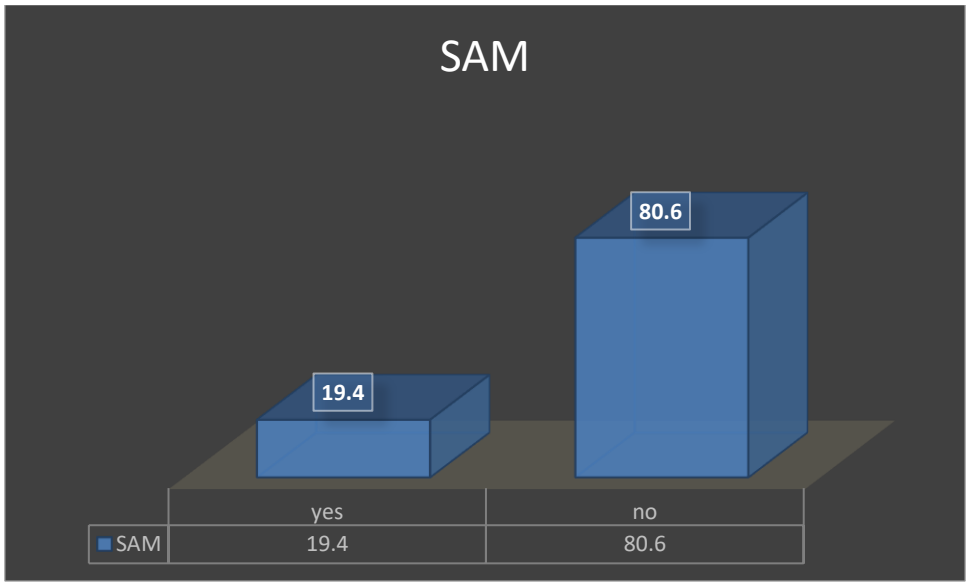


Figure 5; magnitude of SAM among under five children of Cheha woreda health facilies, SNNPR, Ethiopia, 2021.

Factors associated with SAM among under five children of Cheha woreda health facilities.

Binary logistic regression was carried out to determine factors associated with SAM. Residence of patient, age categories, sex, occurrence of diarrhea in the last two weeks, exposure to RTI, using FP and fever were factors associated with SAM at a p-value of less than 0.25. Consequently, these variables were subjected to multivariable logistic regression analysis, and it was noted that Residence of patient, age categories, occurrence of diarrhea in the last two weeks and exposure to RTI were found to be significantly associated with the occurrence of SAM among under five children of Cheha woreda health facility at a p-value of 0.05.

Accordingly, children who had lived in rural areas were about 3 times riskier to SAM than that of the children who had lived in urban areas with (AOR=3, 95% CI; 1.1-8). In the other hand children who were at the age of less than or equal to 6 months were more likely expose to SAM when compared to above 6 months of age with (AOR= 6, 95% CI;2.2-17), P=0.01). Likewise, increased odds of SAM were observed among children who had diarrhea in the last two weeks compared with its counterpart (AOR= 4.4, 95% CI; 1.4-17, P=0.014).

In addition, children who had exposed to respiratory tract infection were nearly seven times riskier to SAM when compared to who hadn`t (AOR = 6.6, 95%, CI; 1.7-24, P=0.005) (table 2).

Variable		SAM		COR(CI)	AOR(CI)	P-value
		YES	NO			
Residence	Rural	26	66	4(1.6-9.8)	3(1.-8)	0.05
	Urban	7	71	1	1	
Child age	≤ 6 months	24	37	1	1	
	> 6months	9	100	7(3-16)	6(2.2-17)	0.001
Child sex	Female	21	47	1.6(0.8-3.5)	1.6(0.4-7)	0.5
	Male	10	76	1	1	
Diarrhea	Yes	18	56	1	1	
	No	15	81	1.7(0.8-4)	4.4(1.4-14)	0.014
Respiratory disease	No	28	82	1	1	
	Yes	5	55	3.8(1.4-10)	6.6(1.7-24)	0.005
Fever	No	19	59	1.8(0.8-4)	0.6(0.2-3)	0.6
	Yes	14	78	1	1	
Use of FP	Yes	30	100	1	1	
	No	3	37	3.7(1.1-12)	2(0.5-8)	0.4

Table 2; Associatiated factors of selected child characteristics of SAM in Cheha woreda, 2021.

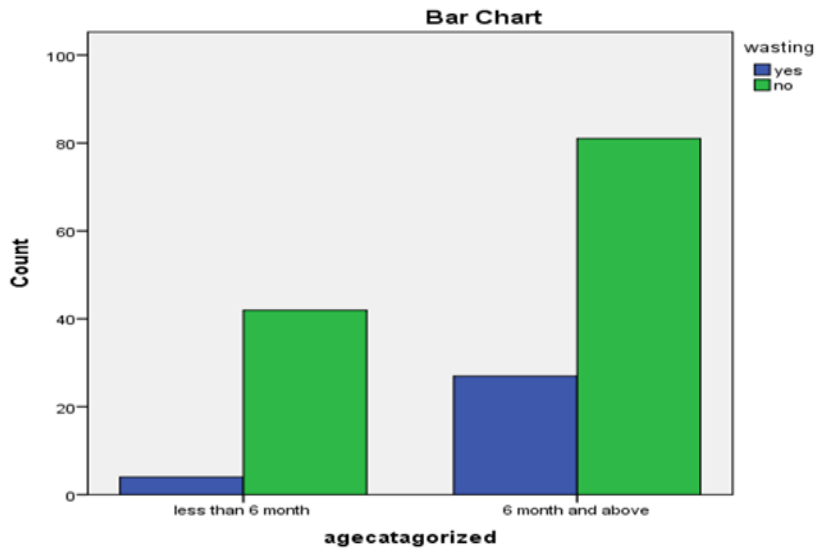


Table 3; wasting w/c categorized in d/t age group in Cheha woreda health facility,2021.

CHAPTER 6: DISCUSSION

Generally, from our study that we found the magnitude of severe acute malnutrition is 19.4% which is higher than the regional (SNNRP) wasting magnitude (5.4%) that was reported on EDHS 2019.

Out of 170 children 21 females were severely malnourished likewise from other studies in Ethiopia; Girls are more likely than boys to experience food insecurity due to selective availability of the limited food for boys than girls in Ethiopia. (Belachew T, Hadley C, Lindstrom D, Gebremariam A, Michael KW, GetachewY, et a, 2011). But against this finding study which held in India shows males have higher risk of being stunted. This may be due to cultural issues, gender preferences and differential feeding practice which neglect girls.

From our Binary logistic regression the magnitude of severe acute malnutrition in rural area residents is 4 times higher than those who reside in urban areas.[AOR=3 CI-1-8]. Accordingly a research from India shows that rural residents had 6.4% of being malnourished. This might be because of cultural belief of the community and lack of education on proper nutrition. (ajeet singh bhadoria, umesh kapil and amit mohan, 2017)

In this study the presence of diarrheal disease was significantly associated. Children who had diarrheal disease in the prior 2 weeks were 4.4 times more likely to be severely malnourished. the main reason for this is that diarrhea may result in lower appetite, poor digestion, and malabsorption. The other reason might be malnourished children would have more diarrheal episodes and a child with diarrhea losses weight and can quickly become malnourished this result is same as other researches which was done in Ethiopia. (L. Abera,D Tariku,, 2017).

Respiratory tract illness was the other associated factor with severe acute malnutrition. Children with RTI had 6.6 odds of being severely malnourished than those who didn't had. Similarly from case control study which is done in India shows same thing (Yogesh Shukla; Pratibha Verma;Rajesh Tiwari;Pradeep Kumar Kasar, 2015)

CHAPTER: 7 CONCLUSION AND RECOMMENDATION

7.1 Conclusion

Based on the findings of this study we can conclude that; child malnutrition is still high in the study area and is greater than the regional EDHS 2019 national report. Residence of patient, age categories, occurrence of diarrhea in the last two weeks and exposure to RTI were found to be significantly associated with the occurrence of SAM among under five children of Cheha woreda health facility.

7.2 RECOMMENDATION

We recommend that nutritional education should be given by health extension workers to improve feeding and hygiene practice at house hold level. Upon these the community should be given awareness on that there is no gender difference when it comes to food and also on proper utilization and possible benefits of family planning. Lastly we would like to suggest them to continue to implement the integrated management of acute malnutrition.

CHAPTER 8: WOK PLAN AND BUDGET

8.1 WORK PLAN

	Tasks to be performed	Dates	Days required
1	Proposal preparation and submission	June30/2021 - July/2021	21 days
2	Designing questionnaire	July 15-20/2021	5 days
3	Journey to study area	August/2021	2 days
4	Data collection	August /2021	7 days
5	Data entry and cleaning	August /2021	10 days
6	Data analysis and write up	August /2021	15 days
7	Defense		

Table 5: work plan

8.2 BUDGET BREAK DOWN

No	Budget category	Unit of measurement	Unit cost (birr)	Multiplying factor	Total cost (birr)
1	Transport		Cost/travel	N^{o} of travels x Cost/travel	100*3persons=300
	•By Car		•Birr 20	5*20=100birr	
2	Supplies		Cost/item	Number	
	•Pens	Each	10 birr	5	50
	•Duplicating papers	Each	2 birr	428	856
3	Grand total				1206

Table 6: budget break down

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7 ANNEX

Introduction and Consent

Wolkite University College of Medicine and Health Sciences

Department of public health

Questionnaire on incidence and associated factors of severe acute malnutrition among Under Five Children in Cheha woreda, Emdeber town, Gurage zone in 2013 E.C.

Self introduction:

We are students Of Wolkite university, who are conducting a study on incidence and associated factors of severe acute malnutrition under 5 children .You are kindly requested to assist in the study of the above topic by answering some questions relating to the study. You will not be identified as an individual and your responses will be treated as Confidential. You have the right to declare not to participate in this study. If you decide to participate first, you have the right to with draw from participating at any time and this will not result in any loss of benefit of you and your child that you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Thank you for your co-operation and participation.

Signature of the respondent…….

Interviewer name……..

Date…….

PART ONE : DEMOGRAPHIC AND SOCIOECONOMIC STATUS

Q1.Head of the HH

A. Male

B. Female

Q2.Marital Status of the HH

A. Married

B. Divorced

C. widowed

D. Separated

E. single

Q3. Residence: A. Urban B. Rural

Q4. Number of persons in the family----------

Q5. Number of under-five children in the family----------

Q6. Relation of the respondent to the child A. Mother B. Father C,caretaker

Q7. Educational status of the mother/caretaker

A. can't read or write B. Read and write C. 1-4 D. 5-8 E. 9-12 F. 12+

Q8. Occupation the mother/caretaker

A. Government employee B. Housewife C. Merchant D. Farmer E. Others (specify)

Q9. Educational level of the father

A. Illiterate B. Read and write C. 1-4 D. 5-8 E. 9-12 F. 12+

Q10. Occupation of the father

A. Government employee B. Merchant C. Farmer D. Daily labour E. Others (specify

Q11. Monthly income of the family is……birr

A. <1500 B. 1500-2000 C. 2000-3000 D.>3000

PART TWO:BEHAVIORAL CONDITIONS

CHILD CHARACTERSTICS

Q12. Child's sex A. Male B. Female

Q13. Child's age---------- Months

Q14. Place of delivery A. Home B. Health institution C. Other (specify)

Q15. Gestational age at birth A. Less than 9 Months B. At 9 months

C. Greater than 9 Months D. Do not know /Not sure/

Q16. Was your child weighed at birth? A. YES B. NO

Q17. What was the weight of child birth?

Q18. Type of birth A. Single B. Multiple/Twin/

Q19.Does the child ever been immunized? A. Yes B. No

Q20. Has the child had diarrhea in the last two weeks A. Yes B. No

Q21. How frequency of diarrhea in a year A. Once B. Twice C. 3-4 times D. >5 times

Q22. Has the child been ill with fever at any time in the last two weeks? A. Yes B. No

Q23. Presence of respiratory disease in the last two weeks A. Yes B. No

Q24. Has the child get sick with measles in the last year A. Yes B. No

Q25. Presence of oedema on the child (Observe) A. Yes B. No

CHILD CARING PRACTICE

Q26. Did you ever breast feed the child? A. Yes B. No

Q27. If no, reason for not breastfeeding? Reason_____

Q28. How long after birth did you first out the child to breast feed?

A. Immediately

B. ____ Hours (If less than 24 hours record hour)

C. ____ Days

D. Don't know/not sure/

Q29. Did you give the child (NAME) pre-lactation food/fluid? A. Yes B. No

Q30. If yes, what did you gave him (her)?A. Water B. Butter C. Milk D. other (Specify)

Q31. Did you squeeze out and throw the first milk? A. Yes B. No

Q32. Are you still breastfeed? A. Yes B. No

Q33. How many times in the last 24 hours you breastfed?_____ Times

Q34. How many times in 24 hours? _____ times

Q35. At what age did you start feeding other additional food? _____ Months

Q36. What do you use to feed the child? A. Bottle B. Cup/spoon C. Other (specify)

Q37. For how many months did you exclusively breast-fed the child?

A._____ Months

B. Don't know/not sure

Q38. Who is usually taking care of the baby feeding?

A. Mother B. Sister C. Grand mother D. House maid E. Other (specify)

Q39. How did you usually treat your child when get sick

A. Usually home treatment B. Taking to traditional healers

C. Taking to Health institution D. Other (Specify)

MATERNAL CHARACTERISTICS

Q40 .Age at first birth _____ Years

Q41. Health status during the pregnancy A. Good B. Not good/sick

Q42. Did you visited health facility for ANC A. Yes B. No

Q43. Do you know about family planning. Yes B. No

Q44. Have you ever used family planning methods A. Yes B. No

Q45. Which method have you ever used? (More than one answer is possible)

A. Pills B. Depo-Provera C. Norplant D. IUCD E. condom

Q46. Do you use it now? A. Yes B. No

Q47. For how long do you think should a child exclusively be breast-fed? In months_____

PART THREE: ENVIRONMENTAL CONDITIONS

Q48. Type of floor material of the living house

A. Mud B. Wood C. Cement D. Other (specify

Q49. Do animals live in the same house where the member of the family live

A. Yes B .No

Q50. Number of rooms in the house……

Q51. Do you have hand washing facility? A. Yes B. No

Q52. Do you have latrine? A. Yes B. No skip go to Q55

Q53. Type of latrine facility

A. pit laterine B. Ventilated improved pit (VIP) latrine

C. Flush/pour flush to pit latrine D. other(specify)

Q54. Ownership of the latrine A. Private B. Shared with neighbor

Q55. If the household has no latrine, where do you dispose human waste?

A. Open field B. Other (specify

Q56. How do you dispose refuse?

A. Pit B. Burning C. Open field D. Garbage can E.Other

Q57. From where do you get water for drinking?

A. Pipe B. Protected well/spring C. Unprotected well/spring D. River E. Other (specify)

Q58. Distance from house to water source ---------Minute

Q59. Type of collection container

A. Pot B. Plastic bucket C. Jerry can D. Other

Q60. Do you treat your water in any way to make it safer to drink? A. Yes B. No

Q61. What do you usually do to the water to make it safer to drink?

A. Boil B. Add bleach/chlorine C. Strain through a cloth D. Others (specify

Anthropometrical measurement

Child weight in kilogram_____

Child height in centimeters_____

MUAC measurement in centimeters _____