COLLEGE OF DEVELOPMENTAL
STUDIES CENTER FOR FOOD SECURITY STUDIES

ASSESSMENT OF NUTRITIONAL STATUS OF UNDER FIVE CHILDREN IN BURAYU TOWN, OROMIA SPECIAL ZONE, ETHIOPIA

BY

ALEMU TESFAYE

A THESIS TO BE SUMMITED TO THE CENTER FOR FOOD SECURITY STUDIES COLLEGE OF DEVELOPMENTAL STUDIES ADDIS ABABA UNIVERSITY, IN FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER DEGREE IN DEVELOPMENTAL AND FOOD SECURITY

ADDIS ABABA, ETHIOPIA

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DECLARATION

This thesis is my original work and has not been presented for a degree of master in any other University and that all sources and materials used for the thesis have been duly acknowledged.

Declared By:

Name of Student	**Signature**	**Date**
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Thesis Approval

This is to certify that the thesis prepared by Alemu Tesfaye Etana entitled: "Assessment of Nutritional Status of under-five children in Burayu town, Oromia Special Zone, Ethiopia*"* and submitted in partial fulfillment of the requirements for the Degree of Master of Science in Food Security complies with the regulations of the Addis Ababa University and meets the accepted standards with respect to originality and quality.

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Abstract

Background: Under nutrition is decreased subsequently in these two decays but still the major community health problem in the world especially in developing nations like Ethiopia. In Ethiopia child under nutrition is the common most concern of community health problems. In Oromia region malnutrition is serious public health issues as we told above Burayu town is vulnerable to malnutrition there is common cause of under nutrition in the study area. Therefore, this study was undertaken to investigate the assessment of nutritional status of under-five children in Burayu town to assess the malnutrition problems. Materials and methods: A community-based cross-sectional study was employed to collect data from 202 households in six Kebeles using structured questionnaires. Different characteristics of the households were investigated along with and household food insecurity access scale. The data was entered into Epi info and exported to SPSS.v.25, for descriptive statistics, binary logistic regression and multivariate regression analysis. Anthropometric measurement of children was conducted using WHO anthro v.3.2.2 software to generate Z-scores. Result: The result of multivariate analyses revealed that maternal educational status, father education, monthly income, type of latrine and household food insecurity assessment scale are significant for stunting, Monthly income and private well significantly associated with malnutrition wasting and they're not get association with underweight. The findings of this study revealed that the prevalence of stunting of children is 13.86%, wasting 8.91% and underweight 4.95% respectively. Conclusion and recommendation: The Prevalence of stunting and wasting among children aged 6-59 months is relatively lower than national and regional but underweight is lower than national and regional prevalence. Malnutrition puts important burden on under five children in Burayu town. Oromia regional government, Burayu town administration and Burayu Health Institution and local non-governmental organization should design effective nutritional and household food address on household child with stunting; wasting and underweight is a vital task for the community to reduce malnutrition.

Keywords: Nutritional status, Under-five children, Stunting, wasting, underweight and Burayu town

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ABBREVIATION AND ACRONYMS

ANC	Anti Natal Care
AOR	Adjusted Odd Ratio
BCG	Bacillus Calmette Guerin
BMI	Body Mass Index
BMIA	Body Mass Index for Age
COR	Crude odd Ratio
DDS	Dietary Diversity Score
DHS	Demographic Health Survey
DPT	Diphtheria Pertussis Tetanus
EDHS	Ethiopian Demographic Health Survey
EPHI	Ethiopian Public Health Institute
FAO	Food and Agricultural Organization
FDRE	Federal Democratic Republic of Ethiopia
GIS	Geographic Information System
GNR	Global Nutritional Report
HAZ	Height for Age
HFIAS	Household Food Insecurity Assess Scale
NCHS	Nigeria community health survey
PCV	Pneumococcal vaccine
PME	Protein Energy Malnutrition
SD	Standard Deviation
UNICEF	United Nation International Child and Education Fund
USA	United States of America
WAZ	Weight for Age
WFP	World Food Program
WHZ	Weight for Height
WHO	World Health Organization

1. INTRODUCTION

1.1. Background of the study

Undernourishment is a universal issue holding back development with unacceptable human consequences (GNR. 2018). Food insecurity can be an effect of children's nutritional status due to decreased quantity and quality of dietary intake (Mulu et al., 2017). Generally, child growth status is based on length, height, weight, and age and is generally assessed based on the mutual indicators of height for age, weight for length/height, and weight for age (underweight) so on (Fransisco,2008).

Globally, at least 1 in 3 children is not growing well due to nutritional problems in its more visibly seen are stunting, wasting, and overweight. At least one in two children is suffering from hidden hunger due to inadequate diet and macro and micronutrients. At least one in three children is not getting the nutrition they need to grow well, particularly this problem from conception to birth, at birth to first six months of exclusive breastfeeding and first three years are vital. An increasing number of children and young people are surviving, but far too few are thriving because of malnutrition. To meet the challenges of the twenty-first century, we need to recognize the impact of forces like urbanization and globalization on nutrition and focus increasingly on using local and global food systems to improve the diets of children, young people, and women (***UNICEF. (2019***)

Malnutrition is a community health problem for under-five children who are living in a conflict area, it exposes to wasting, stunting, Underweight due to food shortage It was also marked by lack of household physical and financial access to food and health care, unprecedented catastrophe to the livelihoods of the Palestinians residing in the West Bank and Gaza (Abdeen et al., 2000).

In Africa one the major problem people of nutrition which are a million of people of Africa fall under poverty and hunger which mean parents can't feed their families with enough nutritious food, living children malnourished. Malnutrition leads to irreversibly stunted development and shorter, less productive lives (Bain et al., 2013). Over 204 million come from Sub-Saharan Africa. The situation is currently getting worse in this region as it moved from hundred seventeen million hungry people in 1990 to 204 million in 2002 (FAO. 2000). This increase has generally been attributed to poverty, illiteracy, ignorance, big family size, climate change, policy, and corruption. Infectious diseases are the major cause of mortality and morbidity in developing

countries. PEM is also associated with some co-morbidity such as lower respiratory tract infections including tuberculosis, diarrhea diseases, malaria, and anemia. These co-morbidities may prolong the duration of hospital stay and death among affected children (Pak Med Assoc., 2010). The Committee on Nutritional Anthropometry of the Food and Nutrition Board of the National Research Council (USA) recommended the following items (Fidanza, 1984). Low height-for-age (Stunting) or linear growth retardation is the best measure of child health inequalities as it is a multi-facet nutritional indicator that captures various dimensions of child health, development, and environmental influence and reflects chronic malnutrition accumulated during pre- or post-natal periods because of poor nutrition and health (e.g., chronic insufficient protein and energy intake. Because high priority is given to the investigation of under-five children; in Ethiopia, there is some shortage of data on food nutritional status of under-five children in the general population and particularly among vulnerable groups who are exposed to malnutrition in preschool children in the community. Thus, the purpose of this study is to assess the nutritional status of under-five children age of 6 -59 months in Burayu town, Ethiopia

1.2. Statement of the Problem

Children are vulnerable to malnutrition with sixty-six million children go to school hungry due to nutritional problem, one in four are stunted, and nearly half of deaths of children under five are due to poor nutrition (Lourenco et al.,2014). As concerning as these numbers are, by focusing narrowly on anthropometric consequences of malnutrition rather than on child food insecurity more holistically, we probably underestimate the extent to which children are negatively impacted by the food-related problem in the globe. Due to increasing population size, socio-economic disparities, and poor quality of health facility coverage, the prevalence of under nutrition is a major public health concern in many developing countries.

The prevalence of stunting was thirty-six percent in Africa and twenty-seven percent in Asia. These remain a public health problem, one that often goes unrecognized. More than 90% of stunted children in the world have been living in Africa and Asia. (WFP,2014) 40%, in Ethiopia prevalence of stunting was high 38% in 2016 based on demographic health survey (EDHS et al.,2016). some study recommends a series nutritional problem under-five children undernutrition are major headache of global is 23% of stunting, in Africa 32% in come to Ethiopia that 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. 37% child are stunting record down the regions are Tigery

is the highest stunting which is 49%and the lowest one 14% Addis Ababa. Stunting decreases according to the mother's education and wealth (*Gebremichael.et al., 2021*).

Under nutrition can lead to substantial problems in mental and physical development in children the impact of under nutrition on the cognitive ability may lead to poor school achievement in the latter year it can also suffer several diseases from nutrient inadequacy of macro and micronutrients from my study strongly call for the need to the improvement of nutritional status of under-five children. Especially,in the study area. To improve nutritional status in low-resource settings during this childhood age of growth and development, assessment of the nutritional status of under-five children is important. Therefore, this study aimed to assess the nutritional status of under-five children of Burayu town in surrounding of Finfinnee town which high population increasing area of Oromia special zone.

1.3.Objective of the study

1.3.1.General objective

The main objective of this study was to assess the nutritional status of under-five children in Burayu Town, Oromia Special Zone, Ethiopia, 2021.

1.3.2. Specific objective

1. assess the socio-demographic status of the family in the study area
2. examine the nutritional status of the under-five Children of the study area
3. Find the relationship between the nutritional status of under-five children and socio-economic characteristics of their family of the study area.
4. assess the food security status of households with under-five children using HFIAS of the study area
5. Determine anthropometric measurement with household diet diversity of the study area.

1.4. Research Questions

Having the above problem in mind, this study was designed to assess the nutritional status of under-five children in Burayu town; accordingly, the study tries to answer the following basic questions:

1. How the nutritional status of under-five children?
2. Does socioeconomic status of household affect nutritional status of the children?
3. How food security status of households with under-five children using HFIAS?

1.5.Significance of the study

The findings from this study were add to the contribution for information that was help the Burayu Town Health Office and other stakeholders to address the gaps in nutritional interventions and programs to reduce malnutrition rates and its complications among children in the target area. It can provide the relevant information concerning under-five nutritional status in the target area and other similar areas. In addition, the study will also contribute to knowledge on nutritional status and factors related to it. On top of this, the findings of the study may lead to other relevant research topics with further refinement.

1.6. Scope of the Study

The study considered under-five children aged between 6 -59 months old live in Burayu town. This is because those under-five children are normally the most at risk of nutritional problems and vulnerability for malnourishment within households and societies in the study area

1.7.Limitation of study

First Cultural practice is one of the factor household food insecurity assessment scale feelings are in community not expose poor in answering of real household status, there might be possible recall bias among respondents when they are answering questions related to past four weak and 24 hours recalls events it can affect result

1.7. Organization of the Paper

This thesis has five chapters. Accordingly, the first chapter deals with the background of the study and defines the problem of the study, basic questions and objectives of the study, the scope and limitation of study and the significance of the study. The second chapter includes concepts on child Malnutrition, empirical literature review and conceptual framework. The third chapter deals with study area description, research design and approach, source of population and study population, data sources, sample size determination, sampling technique and procedures, data collection instruments procedures used data processing and method of data analysis. The fourth chapter presents results, the fifth chapter discussions, and the sixth chapter of this paper deals with conclusions and recommendations.

2. REVIEW OF RELATED LITERATURE

2.1. Conceptual Related malnutrition

2.1.1. Malnutrition

Malnutrition is the global major health problems it is the main challenge and commonly develops some nutritional imbalance manifestation developed countries of overweight and developing countries are underweight and wasting and stunting it is this is a worldwide headache in this generation now in both developing and developed countries are worried now a time both causes of malnutrition the combination of all should expose to month health problem educational, weak immunity to overcome disease risk of death most of developing countries (*WHO,2019*). Under-five children are more vulnerable to the nutritional problem among children cause major morbidity and mortality according to a study shows in India 36% were underweight, 35.5% were stunted and 28.5% were having wasting. More than 50% of girl children were underweight and stunted it shows to need for a grounded-based study of the area (Sukla et al., 2018).

Malnutrition is a worldwide problem according to global report shows in 2018 are hundred fifty points eight are exposed to malnutrition 22.3% are exposed to malnutrition in globe. There is 7.5%and 5.6% are acute and chronic malnutrition problem. there is incident of malnutrition is high but low in the progress of awake from malnutrition 32.6% and 22.2% from 2000 to 2017 this is still low progress or change their progress seen in from 198.4 to 150.5 million change from 2000 to 2017 in Asia 38.8%to 23.8% in lateen American and Caribbean 16.9% to 9.6% also in Africa is to some extent decreased in percentage terms from 38.3% to 30.3% over the same period, from 2000 to 2017. due to the increasing population growth, the current number of stunted children has increased (*G*NR2 *et al.*,2018).

2.2. Empirical literature review

2.2.1. Nutritional Status

Nutrition has been defined as the food at work in the body cell of humans. Nutrition includes all things that occur at the time that until it various taken and used for various functions in the body cell. Nutrition is a core pillar of human development and concrete large-scale programming not only can to minimizing of the burden of undernutrition and scarcity but also advances the progress of nations (*Medical Gazzette., 2012*). According to a study in 2014 at municipality Sinta based on a non-experimental, descriptive, and cross-sectional study developed in a health care

center study shows 30.6%, 13.6%, 17% were overweight-obese, obese. The most consumed foods belonged to the "meat, fish and eggs" food group (Santos et *al.*, 2014).

2.2.2. Assessment of Nutritional Status

A Cross-Sectional Study in Poor Rural and Ethnic Minority Areas of Central South China on Dietary Diversity among under-five shows dietary diversity score (DDS) based on the 24-hr. recall method. The mean DDS among the sample children was 5.77 with a standard deviation of 1.22. Both household characteristics including the education level of the child's primary caregiver and the nutritional knowledge of the caregiver and nutritional knowledge of the child's preschool principal and teachers, nutritional training to children, and the preschool kitchen manager were positively associated with children's it most important Is the education of caregiver (Kevin et al., 2019).

A cross-sectional study was carried out in Baghdad in 2012 there is 5.28% for wasting, 16.17% for stunting, and 7.43% for underweight. The highest prevalence was that of being obese; 17.5% by weight to height and 15.35% by BMI to age. Malnutrition levels were higher in rural than in urban areas. It is related to lower socioeconomic status such as rural residence, lower levels of maternal education, unemployed mothers, and extended larger families (Muhammed Abdulla, 2016). A community-based cross-sectional study design is done which indicate that stunting was the most common malnutrition problem 15.50%, wasting is also the second health factor that affects 17.90% and 10.40% of are weight among under-five children in Burayu. There was also quite a high prevalence of wasting and underweight among under-five children given. The levels of malnutrition among children under five years in Burayu town (Hordofa, 2017).

Education of the mother is important to decrease under-five children's malnutrition. The nutritional status of under-five children is depending on the caregiver of the first five years of the life of the children (Chisom et al., 2018). Also, child feeding practice is more experience in under-five children caring mother is fed your child during health time complementary feeding of child is 53.6% of mother feed your child during illness time than during normal health condition (Degefa *et al.*, 2019). According to the study of prevalence rate of stunting and overweight it affected more male children in the rural area are exposed to stunting than female(Susan Keino et al.,2014).according to the study of Nepal shows preschool children are poor intake of diet variety of diet in this study only 8% only take of diary product,55.0%feed fruit once in the weeks,29.0% are not getting fruit diet 11% of the child feeds one to two times a per day and 79% of the child feed 3-4 times a day also 10% of the child not feed over 24hours (Chizoba et al., 2009). one study in Gambela shows there is good access to a high quality of water (82.7%) and 65% of well

build population are well-balanced latrines there is no gap in the economic statuses of household in the study area more than 59.5% of household are food insecure household food problem shows socioeconomic status, maternal educational status and quality of water is related stunting (Jemal et al., 2016). A study in Nigerian shows eight-nine percent of children are regular daily meals intake is most of the time constantly at the same number and the meals daily and eighty-nine percent are not skip their meals daily (Onifade et al., 2009). According to nutritional habits associated with educating mother important children's nutritional habits it shows 5.17% child are poor food habits (Lourenço *et al.*, 2014).

2.2.3.Anthropometric measurement

Nutritional anthropometry is focus of measurement of the difference between physical dimension and the gross composition of human body at different age levels and degrees of nutrition(Jellifies ,1966). Nutritional Anthropometry has most commonly been conducted on under five children, Nutritional status of the study in Bengal India shows assessed by conventional methods, Assessment of dietary status using anthropometric variables by multivariate analysis frequency of under nutrition was 45.9%, 56.7%,51.8% BMI, MUAC category and according to newly computed Composite Score. Further analysis showed that Composite Score has a higher strength of correct classification 98.7%, compared to BMI 95.9% and MUAC 96.2%(Bhattacharya *et al.*, 2019), MUAC assessment study shows 82.4% are normal, 16.9% had mild to moderate and 0.6%was severely undernourished. Most of younger age are malnourished(Islam, 2018).

Multistage sampling was carried out in the during study in Nigeria on Nutritional status of preschool children aged 2 - 5 years in Aguata in 2009. According to this study anthropometric measurements (weights and heights) and 3day weighed food intake methods. The mean weights and heights of the children ranged from 11.6 ± 2.19 to 19.3 ± 1.84 kg and 85.7 ± 7.61 to 111.6 ± 3.99 cm, respectively. Using NCHS (1976), Standard of reference, 7.7-, 7.7- and two-point four percent of the children were wasted, stunted and underweight, respectively. The daily energy intake of the children ranged between 51.2 and 62.9% of their energy requirement daily(Chizoba and Chinwe, 2009).the age group in which PEM is usually most prevalent and most severe. The commonly used anthropometric measurements or indicators of nutritional status for pre scholar children are briefly discussed

2.2.4. Socio-economic activity of Household

Socioeconomic activity these results confirm that malnutrition is a cause and consequence of economic status which is the key cause of the nutritional status of under-five children. This study

also found that household deprivation score is a stronger correlation of nutritional status of preschool children in rural areas of Hindu and Muslim children are equally likely to be undernourished, but Christian children are considerably better nourished. Children belonging to scheduled castes/scheduled tribes and other backgrounds are high levels of comparatively so nutritional condition of to the extent of malnutrition varies with the age of the child and the prevalence of underweight children and prevalence of underweight is not the same by age. The age-wise classification was higher in the 37-48 months age category (10.5%) and 49-60 months age category (10.2%). The higher incidence of malnutrition among children of 3 to 4 years of age is mainly due to poor infant feeding practices.

The survey findings indicate that only marginal differences in other of sex age ratio weight for weight of later-born patient are not the same in other wasting and stunting are significant values (Paschal Kum., 2014). Socioeconomic status according to the study in nutritional status in northwest Ethiopia social demographic in the study area lower income are a more affected nutritional problem is associated with economic activity it shows 28.5% of children underweight, 17.7%are wasting and 24%are stunting (Melkie et al., 2007). Income level is one of the outcomes of prone children overweight and not intake of adequate intake of micronutrients (Kim et al., 2015).

2.3.Conceptual framework for the study

Malnutrition among preschool major health concern in the modern health programming conceptual framework used for this study was adopted and modified from UNICEF's conceptual framework on the factors of malnutrition *(Bellamy.,et al (1998)*). Maternal health status is significantly influenced by the nutritional variety. Diet is in turn influenced by maternal demographic factors such as age, parity, gestation age, level of education, and morbidity or physiological status of the mother and environmental factors which are the immediate causes of morbidity status as there are reduced immunity and increased chances of developing infections. Socio-economic as measured by salary and occupation has been found

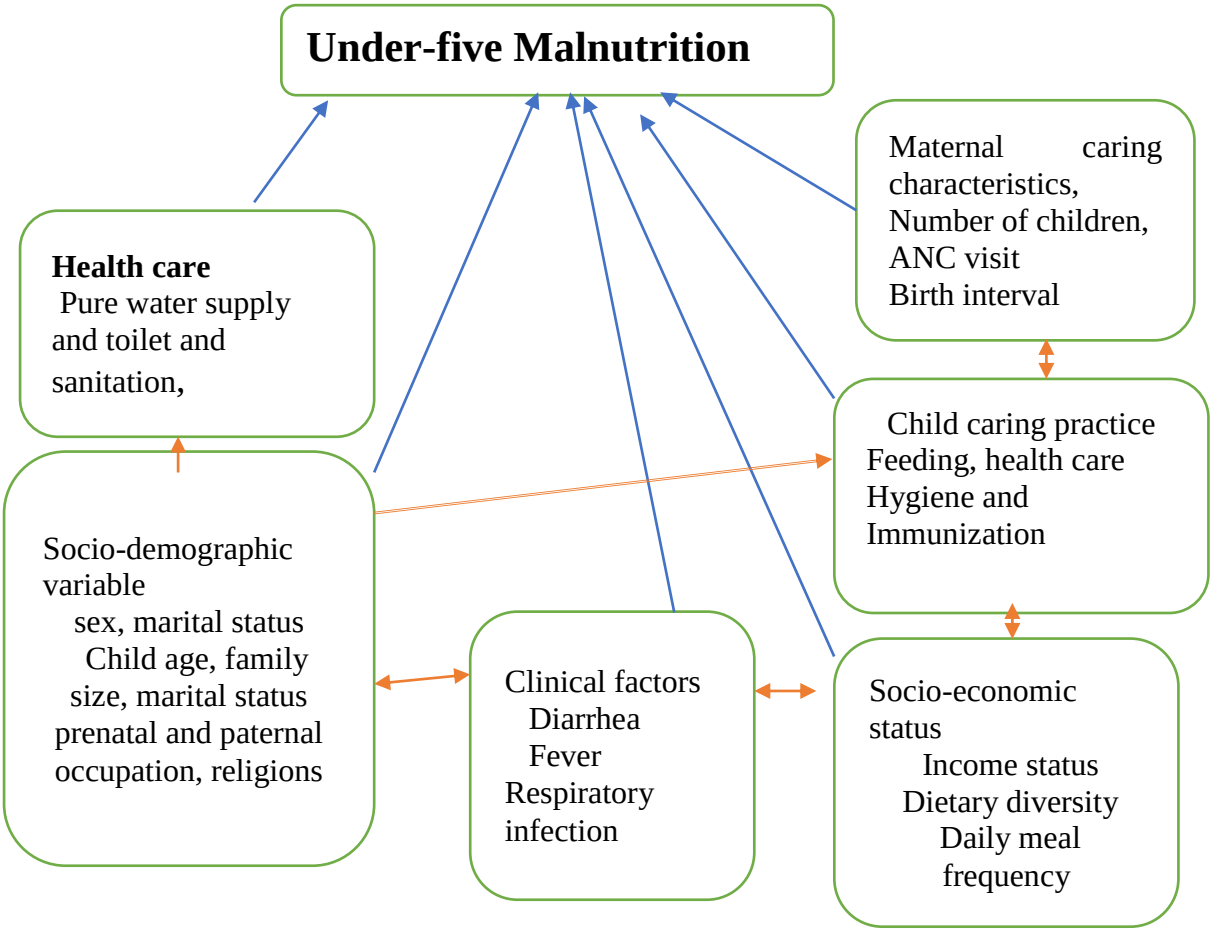

Figure 3.1: conceptual frame work be adopted and modified from UNICEF,1998

3. DESCRIPTION OF THE STUDY AREA AND RESEARCH METHOD

3.1.Description of Study Area

The study was carried out in Burayu town, which is one of the woredas of Shoa administrative spatial zone of Oromia National Regional State. It is located 15 km west of Addis Ababa. Burayu town is now a populated town According to 2007 register, the population size of Burayu town is 63,889 between 90% are lived in rural areas. According to this census, the Population size of the Oromia zone is 35 million in among which 63,889 are population live in Burayu town and surrounding farmer area (PHCE,.2007) The Burayu town administration is now estimated to be 156,463 which are 51% of are female in 2019(Wikipedia). Oromia is the largest zone of other zone and high population density from the other people between 0 and 5 years of age account for 15 percent of the *(UNICEF, 2019)*. population (fifty-one percent male and forty-nine percent female as indicated in female and astronomically it is located at the longitude of 38.78 and latitude of 8.95. The annual minimum and maximum temperatures of Burayu town are 08 & 23 degrees Celsius respectively. The town is a high land area located at an altitude of 2,580 m above sea level with an area of 66.5 km2. Burayu town is bounded: in the East by Finfinnee, in West by Walmera district, in North by Sululta Woreda, and in South by Sebata Hawas Woreda.

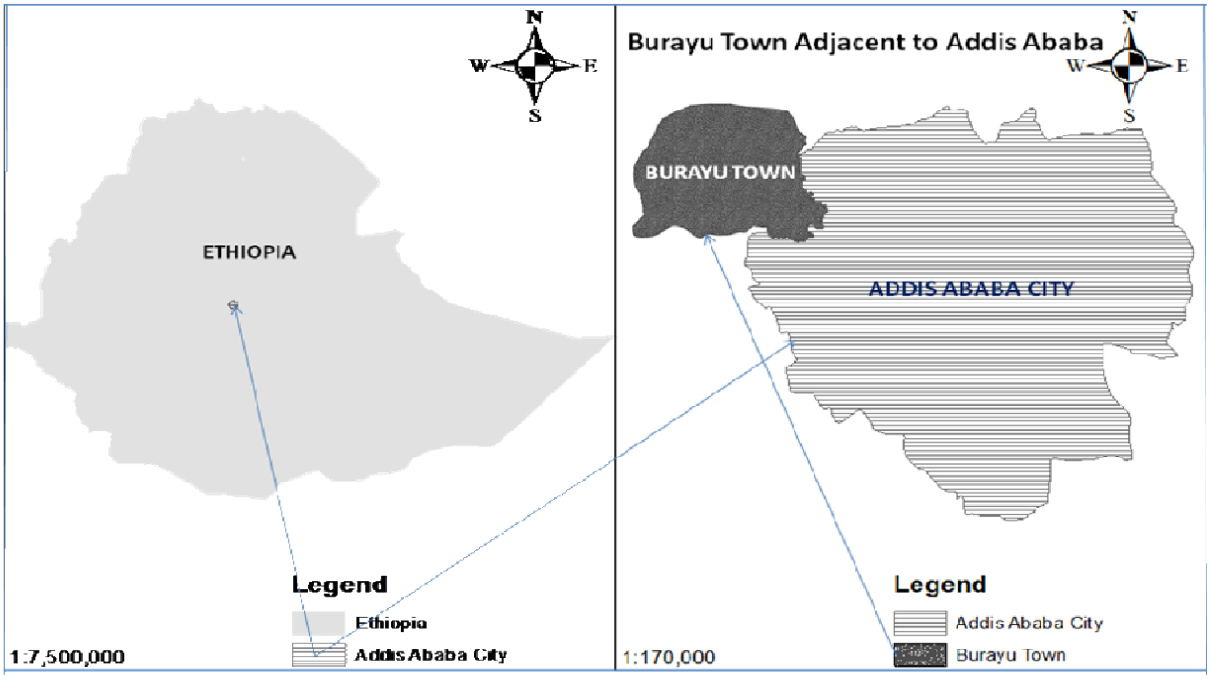

Fig 1 Location of Burayu Town in Ethiopia Adjacent to Addis Ababa City

Source: Google earth and Ethiopians Regions and Wereda of GIS

3.2. Study Design

Community based Cross-sectional design was employed to collect relevant and sufficient information within short period of time. The study design was used quantitative and qualitative research approach to assess the complex variables of nutritional status of under-five children aged 6 to 59 months in Burayu town; from April 1 to April 30/2021.

3.3.Source and Study Population

All 6-59 months of children who were live in Burayu Town at the time of the study was a source of population.

3.3.1.Study Population

The study population was children age 6-59 months pair with their mothers or caregivers lived in Burayu town in each selected kebeles exists in the study area at the time of data collection.

3.4.Inclusion and exclusion criteria

3.4.1.Inclusion Criteria

All under-five children aged 6-59 months living in the selected kebele, Burayu Town was include. Burayu Kata, Laku Kata, Gefersa Burayu, Gefersa Guje, Gefersa Nonno, and Malka Gefersa.

3.4.2.Exclusion criteria

The under-five children who have critically ill, any other chronic illnesses were excluded and those not present at home at the time of study

3.5.Sample size determination

The sample size was determined using the single population proportion formula by considering the assessment of under-five malnutrition. The previous study done on the subject among under-five children in Ethiopia was considered. The best estimate of the expected population proportion was considered as 14% to get the minimum sample size (Gebremichael.et al.,2021). The sample size was determined by using the Dobson formula.

$$n_i = \frac{\left(Z\alpha/_2\right)^2 * p(1-P)}{d^2}$$

Where, ni=initial sample size

$Z\alpha_{/2}$= confidence interval (95%)

p= proportion of under fiver malnutrition; 14%=0.14

d= is the margin of sampling error tolerated (5%) = 0.05

$$ni = \frac{(1.96)^2 * 0.14(1-0.14)}{0.05^2} = 185\ underfive\ children$$

For possible non-response rate, 10% is added to the sample size.

the total final sample size is: ni + 10% = 185+ (10×185)/100= 185 + 19 =204 of under-five of each household

3.6. Data collection procedure

Burayu town has 6 kebeles; from these kebeles, all six kebeles were randomly selected for this study to get the representative sample. Then, for each selected kebele number of total households was obtain. The study participants were selected from the target population through a systematic random sampling technique to the size of the households from each selected kebeles. The calculated sample size of 204 they distributed among each selected kebele proportionally to the size of the household in kebele to determine the number of individuals to be studied in each kebele. Then, every 25th units of households were visited systematically to choose one child aged between 6 month and 59 months each kebeles. When more than one eligible participant was founded in the selected household, one child aged 6-59 months old present in the house was select by use of a lottery system. Bowley (1926) originally proposed proportional allocation method

$$Nc = \frac{n * Nx}{N}$$

Where; n = total sample size=204 *under-five children*

N_c= sample size in stratum x

(N)= number of source population household=91,338

(Nx) = population size in stratum x = number of stratums

Table 3.1 : Burayu Town proportional household under-five children sample study

Name of selected kebele	No. of house holds	No. of households' children to be selected
Burayu Kata	19,718	44
Malka Gefersa	9,768	22

Laku Katta	19,800	44
Gefersa Guje	11,500	26
Gefersa Nonno	18,780	42
Gefersa Burayu	11,767	26
Total	91,338	204

Source: Burayu city administration Health extension office 2021

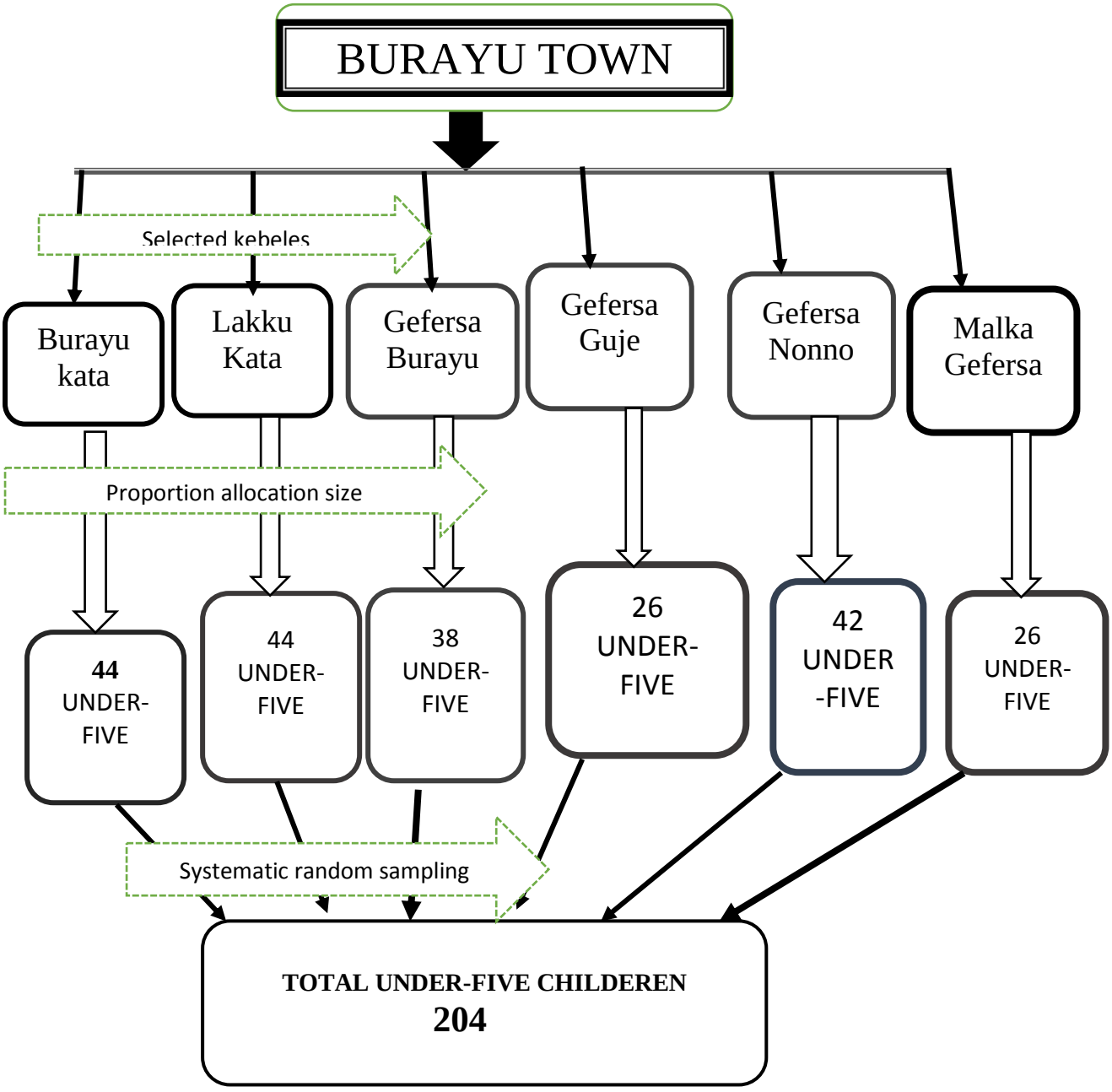

Figure 3.2: Schematic procedures of sampling techniques of participant

3.7. Sampling technique & sampling procedure

Proportional allocation was be made for each kebeles in Burayu Town simple random sampling of selected home during the study and based on household registered

3.8. Data collection instrument

For the proposed study three data collection instruments was used. Primary data was collected using a structured interviewer-administered questionnaire, anthropometric measurements were be done using standardized and calibrated weight and height measuring scales, the data collection process was followed daily by the supervisor, data collector, and principal investigator. The weight of participants was taken by a skilled level IV nursing professional using standard beam balance (United Nations children fund detector-medic detects scales ICN, USA) and the scale was checked at zero before and after each measurement. Participants' weight was measured after removing heavy clothes and recorded to the nearest 0.1 KG. Height measurement of participants was taken by using the standard measuring scale. Participants 'barefoot, stand erect, and look straight in the horizontal plane. The occipital, shoulder, buttocks, and heels touched measuring board and height was record to the nearest 0. 1cm. For those less than two years of age, length measurement was measure by using a length measuring board in a recumbent position on a hard and flat surface. For those who are two years old and above, height will measure in a standing position.

The height (length) of the child was recorded to the nearest 0.1cm. The presence or absence of bilateral pitting pedal edema currently on the child was also assess. other 24hours diet recall is collected by questioners Underweight, wasting, and stunting was compute using weight and height measurement

3.9. Data quality control

After reviewing the literature, the questionnaire was be prepared first in English and then translated to the local language Afaan Oromo. A data collector was be trained to check the completeness of each questionnaire whether every question has been completely answered and the Advisor was rechecked for the completeness of the questionnaire immediately after submission. Data is collected by skilled level IV nursing professional for exact data and checked for completeness and consistence daily supervised and to avoid over repetition of data strictly

3.10. Data Sources

Both primary and secondary sources of data were used to obtain the information required for the study. The primary data was collected from eligible respondents. Whereas, secondary data were collected from the available document of the Burayu Town Health Bureau

3.11. Study Variables

3.11.1. Dependent variable

Under -five malnutrition

- Wasting
- Stunting (Thinness)
- Underweight

3.11.2. Independent variable

Socio demographic variable, religion. Marital status, Child age and sex, Family size and Income status, Number of children,

3.12. Statistical Data analysis

Later coding the data was go into EPI Information 7 and analysis was be done by using SPSS version 25 statistical package and WHO Anthro was use for anthropometric calculation. Anthropometric measurement was change into bodily development indicators (WHZ, WAZ then HAZ). Binary Logistic relapses analysis was computing to assess the relations of the several issues against the level of under nutrition. Variables with a p-value of less than 0.25 in the Bivariate analysis was enter into multivariate analysis. P-value <0.05 at 95% CI was be considered statistically important.

3.13. Operational/ Definition of terms

Hygiene: care and attention that is given to keeping yourself and your environment clean

Income: is money in Ethiopian birr fund day-to-day expenditures. Investments, pensions, and Social Security are primary sources of income for retiree's low income, middle-level income, and high-income levels.

Immunized: It gives of vaccine to develop of antibodies to fight the disease to help you get better and defend you from getting the same illness again those of vaccine are, BCG, polio, DPT-Hep B, PCV, Rotavirus, measles and vitamins A

Under-five: children those ages of fewer than five years old from age 6 month to 59 months those not full-time education

Under nutrition: is defined as stunting or wasting, or underweight (WAZ or WHZ or HAZ) below -2 SD of the median value of WHO standard).

Underweight: Weight for age < -2 SD of the median value WHO references.

Stunting: Height for age < -2 SD of the median value WHO references.

Wasting: Weight for height < -2 SD of the median value WHO references.

Dietary diversity: is the number of reported different foods and food groups consumed in an individual over 24 hours. This includes food group consumed by outside home and less than 4 and greater or equal to 4 food group are fair/poor and good dietary diversity respectively

Household food insecurity assessment scale: Food Secure, it is the number of respondent different response that are fell and that are happen in past four weeks Mildly Food Insecure Access, Moderately Food Insecure Access, Severely Food Insecure Access (Jennifer et al,.2007)

3.14. Ethical Considerations

The study involved the use of human participants; an ethical consideration was taking into account. Permission were be sought beforehand from the relevant institution which is the Addis Ababa University School of Graduate studies ethical board, consent obtained and Addis Ababa University Anti plagiarism's policy checker a letter of authority to conduct the study. The official letter was taken to the Burayu town administrative office for commencing the study, the data collection was beginning after permission, and a cooperation letter is written to each selected kebeles authorities on which the study was carry out. At the household level, informed signed or thumb print consent was be sought from the respondents. The study, purpose, procedure and duration, possible risks, and benefits of the study they clearly explained for the participants using the local language. Respondents was be guaranteed confidentiality and informed that the information provided was only be used for research purposes. Confidentiality will assure by not including respondent names on the questionnaires but only identity numbers.

4. RESULT AND DISCUSION

4.1. Socio-demographic characteristics

4.1.1. Overview of Results

The data was collected using close ended questionnaire. The questionnaires were self-administered to the respondents. Out of 204 questionnaires that were issued 202 questionnaires were returned. This represents about a response rate of 99 %, which was significant to give reliable findings for this study. According to McBurney (2001), a low response rate could have a potentially biasing effect on the study results. However, 70% and above response rate is acceptable for any study. The table 4.1 below shows the response rate.

Table 4. 1: Response Rate in, Burayu town

	Number of households with child 6-59 months	**Percentage**
Non-Respondent	2	1 %
Actual Respondent	202	99 %
Target population	**204**	**100%**

Source: field survey of my thesis, April, 2021

Socio demographic characteristics of the study participants

4.2. Demographic Socioeconomic characteristics of Households

4.2.1. Demographic socioeconomic characteristics

Socio-demographic categorical variables of the head of household, marital status, level of education, the main occupation of the respondent, the main occupation of the husband, and religion were analyzed by using a chi-square test for a possible difference between nutritionally secured or nutritionally insecure. The finding of the results shows the only head of household are was statistically significant (table 4.2). Indicates household characteristics, from 146(72.3%) child mothers are engaged with male-headed, 56 (27.7%) of the household are female-headed. Among the household heads, 175(86.7%) are married, 12(6%) are divorced, seven (3.5%) are widowed and 6 (3%) are separated. The educational status of the child mothers is low among sample households. At least 15(7.4%) is No formal education,39(19.4%) mothers read and write, 32(15.9%) have elementary education levels, 56(27.7%) high school educational level and 60(28.7%) is college educational level and paternal educational status is among 92(45.5%)

college education,26(12.9%) are elementary education father,54(26.7%) of high school educated,8(4%) are no formal education and the22(10.9%) list of reading and writing

The family size of the sample households 178(88.1%) are family members of 2 to 5 family size from those family members 40(19.8%) are nutritionally insecure and 24(11.9%) of the household of the family size of more than five among those 6(3%) are insecure.

Among under-five children,145(71.8%) of the child family are one child less than five years per household,55(27.2%) are two children under-five years and list two households are 2(1%) are three children less than five years. mother's occupational status most of the mother which is 91(45%) are housewife,37(18.4%) is governmental organization employee from this 10(5%) are nutritionally insecure,29(14.4%) is on trade,18(8.9%) is employed on private organization among those,23(11.4%) is a daily laborer 4(2%) are in other activity which is are sex workers, father occupational status 62(30.6%) are governmental employee,40(19.8%) daily income is on trade,47(23.3) is a daily laborer and 34(16.9%),19(9.4%) are a private organization and other activity respectively. Among the study sample majority of 41.5%are orthodox,36.6% are protestant,19.4% are Muslim,1.5% are catholic and the list 0.5% are other cold waqeffata religion followers.

Table.4.2: Demographic and socio-economic characteristic respondent's in Burayu town

Variables	Number of households with Child 6-59 months N=202	Percent (%)
Head of the house hold Male	146	72.3
Female	56	27.7
Marital status Married	175	86.6
Divorced	12	5.9
Widowed	7	3.5
Separate	6	3.0
Single	2	1.0
total family size 2-5 household	178	88.1

>5 Household	24	11.9
How many children <5 year live in the HH 1st child	145	71.8
2 children	55	27.2
3 children	2	1.0
Maternal educational status No formal education	10	5.0
Read And write	39	19.3
Elementary	36	17.8
High school	57	28.2
College	60	29.7
Paternal educational status No formal education	8	4.0
Read and write	22	10.9
College	92	45.6
Elementary	26	12.9
high school	54	26.7
Occupation of mother House wife	91	45.0
Marchant/trade	29	14.4
Private organization employee	18	8.9
Government Employee	37	18.3
Daily labor	23	11.4
Other	4	2.0
Occupation of father Government Employee	62	30.7
Marchant /trade	40	19.8
Private organization employee	34	16.8
Daily laborer	47	23.3
Other	19	9.4
What is your religion Orthodox	84	41.6

Protestant	74	36.6
Catholic	3	1.5
Muslim	40	19.8
Other	1	0.5

5. **Others*** indicates: *Religion waqeffata, ** ** another mother -sexual worker**,** ***other father occupation-their no jobless

5.1.1. Income Status Characteristics of Households

With respect to income 132(65.35%) of household have greater than 3001 birrs, 49 (29.21%) have got 1001-3000 Birr and 11(5.45%) are income less than 1000 birr

Table 4.3: Childcare status characteristic of the respondent's in Burayu town

Variables	Number of households with Child 6-59 months N=202	Percent (%)
Income status		
Greater 3001 birr	132	65.35
1001 -3000	49	29.21
Less than 1000	11	5.45

Source: own field survey of the thesis, April, 2021

4.2.Child characteristics

Child characters was divided into characteristics related to birth, sex, age and weight at birth, immunization status and health status as presented below.

4.2.1. Child characteristics related to birth

About 107(53%) of the Children are male and 95(47%) are female. majority of the child 70 (34.6%) age are from 12 to 23 month and minority about 16(7.9%) of them are at the age 48 to 59 and majority of the child birth weight about three forth of the child weight is more than 2.6kg at birth and 6.5% of child weight are less than 2.6kg at birth and 23(11.4%) are not know about her child weight at birth, among study sample 194(96%) are single delivery and 8(4%) are twins or multiple delivery.

Table 4. 3 : child care status characteristic respondents in Burayu town

Variables		Number of households with Child 6-59 months N=202	Percent (%)
Child's Gender	Male	107	53.0
	Female	95	47.0
Gestational age at birth	< 9month	5	2.5
	At 9mont	102	50.5
	Don't now	1	0.5
	Greater	94	46.5
Age of Child	6-11 month	25	12.4
	12-23Month	70	34.7
	24-35 Month	52	25.7
	36-47Month	39	19.3
	48-59Month	16	7.9
Was your child weighted at birth	> 2.6 kg	149	73.8
	>4.1 kg	1	0.5
	1.5 kg-2	13	6.4
	3.6- 4 k	16	7.9
	Don't now	23	11.4
Type of birth	Multiple	8	4.0
	Single	194	96.0

Source: own field survey of the thesis, April, 2021

4.2.2. Child characteristics related to immunization

The immunization status of the under-five children that were involved in the study reveals that the majority of the children194 (96%) were immunized. Regarding Bacille Calmette-Guerin (BCG) immunization, most of the children had BCG scars198(98%) and non-immunized children were only 4(2%).polio and DPT Hep is 197(98.5%) are immunized,196(97%) are immunized

PCV vaccine and 196(98%)are take Rotavirus Immunization on measles immunization about 170(84.1%)take the vaccine and 32(15.9%)were not immunized On vitamin A supplement administration, some of the children do not receive vitamin A supplement 41(20.3%)and 161(79.7%) were received vitamin A within the past six months before the survey (Table4.4)

Table 4. 4 : Childcare status characteristic related to immunization respondents in Burayu town

Variables	Number of households with Child 6-59 months N=202	Percent %
Does the child ever been immunized? No	8	4.0
Yes	194	96.0
BCG Vaccine NO	4	2
Yes	198	98
polio Vaccine NO	3	1.50
Yes	199	98.50
DPT Hep B Vaccine No	3	1.50
Yes	199	98.50
PCV No	6	3
Yes	196	97
Rota Virus vaccine NO	4	2
Yes	198	98
Measles vaccine No	32	15.80
Yes	170	84.20
Vitamins A vaccine No	41	20.30

Yes	161	79.70

Source: own field survey of the thesis, April, 2021

4.2.3. Child characteristics related to Health status

Health status of under-five children Concerning to health status of the child involved in the study develop fever, respiratory diseases and diarrhea last two weeks and one year respectively based on variables questioner. Among the study population 158(78.3%) are no history of fever, 39(19.4%) children develop fever and other five (2.5%) do not know. Also, from study participant 172(85.1%) are no history of respiratory disease last two weeks and other 25(12.4%) develop respiratory disease .in the last diarrhea in last one year's participant 74(36.8%) are develop only once yearly, 69(34.1%) is twice a year, 50(24.8%) is developed three to four times a year.

Table.4.5: Child care status characteristic of respondents in Burayu town, 2021

Variables		Number of households with Child 6-59 months N=202	Percent (%)
Has the child been ill with fever at any time in the last two weeks	Yes	39	19.3
	No	158	78.2
	Do not know /not sure	5	2.5
How frequent the diarrhea in a year	Once	74	36.6
	Twice	69	34.2
	3-4 times	50	24.8
	> 5 times	9	4.5
Presence of respiratory disease in the last two weeks	Do not k	5	2.5
	No	172	85.1
	Yes	25	12.4

Source: own field survey of the thesis, April, 2021

4.3.Caring status of the child

They were analyzed by frequency distribution using. The study revealed that most of the mother, 196(97%) were ever breast feed their child. 121(59.9%) of the women start breast feeding immediately after birth and 71(35.1%) of the mother feed your child within less than two hours and 6 (3%) child are feed breast more than two hours ,Among all the participants, 10.9 % gave

pre-lactation food or fluid for the child and about 17(8.4%) pre lactation of formula feeding of the respondents gave additional food or fluid other than breast milk in the past 48 hours prior to the survey and 35.7% of children started additional food at age less than five months. Majority 81.1% of the child feeding practice was not changed during the presence of illness and more than 127(62.9%of child caring practice are their mother and the list of 16(7.9%) are of child are caring by grandmother most of child dish of diet are clean immediately after use (table 4.6)

Table 4. 6 : childcare status characteristic of respondents in Burayu town

Variables		Number of households with Child 6-59 months N=202	Percent (%)
Did you ever breast fed the child	No	6	3.0
	Yes	196	97.0
How long after birth did you first offer the child to breast feed	Immediately	121	59.9
	< 2 hours	71	35.1
	>2 hours	6	3.0
	Did not know/sure	4	2.0
Did you give the child pre-lactation food/fluid	No	179	88.6
	Yes	23	11.4
If yes, what did you give him (her)	No	180	89.1
	Milk	5	2.5
	Other	17	8.4
Breast Feeding within 24hrs	0-3times	2	1.0
	4-6times	36	17.8
	6-9times	73	36.1
	>9times	91	45.0
Additional feeding	0-5month	72	35.6
	>6month	130	64.4
Who is usually taking care of the baby feeding	Mother	127	62.9
	Grand mother	16	7.9
	Sister	29	14.4
	Servant	30	14.9

Bath taking of the child	Daily	129	63.9
	Weakley	45	22.3
	Every 2 week	1	0.5
	Other	27	13.4
How frequent you wash the equipment you use to feed your child	Twice daily	53	26.2
	once Daily	19	9.4
	Every other day	1	0.5
	Immediately after use	129	63.9

Others* indicates: *Bathing the child *every three to four days

Source: own field survey of the thesis, April, 2021

4.4. Maternal status of the mother

Among the women those participated in the study about 202(100%) all mother age are more than eighteen years old in addition to age among study participant mother about 128(68.7% of mother have a child less than two child and 64(32.3%) have a child of 3 to 5 child delivered. Among the women those participated in the study 106(52.5%) did not eat extra food consumed during pregnancy or lactation and 28(13.9%) of them had faced health problem during pregnancy. Majority 97.5percentage of the women involved in the study follows ant natal care during their pregnancy. 148(73.3%) of the mother are follow ANC 4 to 6 times until delivery. In relation to hand washing,200(99%) washes their hand after latrine,193(95.5%) before preparing food, 88.6% before serving food and 111(54.9%) are after care of child face in the last 66(32.7%) hand washing by use of soap sometimes and123(60.9%) wash your hand by soap always (Table 4.7).

Table 4. 7 : Maternal characteristics of respondents in Burayu town

Variables		Number of households with Child 6-59 months N=202	Percent (%)
mother age	>18	202	100.0
Age at first birth	<18	4	2.0
	>18	198	98.0
child birth interval	0-1 years	108	53.5

	2-3years interval	60	29.7
	>4years interval	34	16.8
During pregnancy or lactation, did you consume extra food	Yes	96	47.5
	No	106	52.5
Health status during the pregnancy	Good	174	86.1
	Not Good/not	28	13.9
health facility visits	0-3 times	45	22.3
	4-6 times	148	73.3
	> 6 times	9	4.5
After latrine use	No	2	1.0
	Yes	200	99.0
Before preparing food	No	9	4.5
	Yes	193	95.5
Before serving Food	No	23	11.4
	Yes	179	88.6
After cleaning of child face	No	91	45.0
	Yes	111	55.0
Other	No	182	90.1
	Yes	20	9.9
How do you wash your hand	Water Only	13	6.4
	Using soap Sometimes	66	32.7
	Using Soap always	123	60.9

Source: own field survey of the thesis, April, 2021

4.5.Environmental Status

The main source of drinking water for the respondents was private tap 64(31.7%),96(47.5%) uses of public tabs,6(3.5%) use of river and the list of them are the use of ponds and wells and among those of participant two-third of the household are not treat the water for use only 50(24.8%) of the drink after treating water. while 196(97%) had a latrine. And 33(16.4%) dispose of the garbage in the open field, 92(45.5%) uses the common pit for disposing of garbage and 68(33.5)

are other mechanisms of disposing of waste in collected by urban municipality and in-pit respectively. (Table 4.8)

Table.4. 8: Environmental characteristics of respondents in Burayu town

Variables		Number of households with Child 6-59 months N=202	Percent (%)
What is your main source of drinking water			
River	No	195	96.5
	Yes	7	3.5
Pond	No	199	98.5
	Yes	3	1.5
Private well	No	198	98.0
	Yes	4	2.0
Private tabs	No	138	68.3
	Yes	64	31.7
Other specify	No	199	98.5
	Yes	3	1.5
Do you treat water in any way to make it safer	No	152	75.2
	Yes	50	24.8
Do you have latrine	No	6	3.0
	Yes	196	97.0
Type of latrine you use? (Observation)	Private pit with cement slab	56	27.7
	Common pit with cement slab	95	47.0
	Shared latrine / cement slab	22	10.9
	VIP latrine	2	1.0
	Common latrine with Wood Slab	27	13.4

How do you dispose garbage	Open field disposal	33	16.3
	In pit disposal	6	3.0
	Common pit	92	45.5
	Burning	2	1.0
	Composting	1	0.5
	Other	68	33.7

Others* indicates: *dispose of garbage are by city municipality collection of system

Source: own field survey of the thesis, April, 2021

4.6. Diversity of Diet

Dietary diversity: proportion of children 6-59 months of age who receive foods 4 or more groups: where nine food groups used to include corn/maize, rice, wheat, sorghum, teff, millet, vitamin-A rich plants, vegetables and fruits, food that is made from pulse white roots and tubers, white potatoes, eaten eggs from chicken, seafood, meat, and meat products, milk and milk products milk and oil. Two hundred two households survey were applied for this study the respondent answer yes takes the value 1 and no 0. In terms of dietary score, grain, root, and tubers were the most popular food group consumed by children, followed by other fruits and vegetables and legumes. The eggs and meat were the least consumed food group in the study area.

The result of Figure 4.7 indicates that 41(20%) children had high diversity more than 6 food groups and 93(46 %) had moderate (medium) dietary diversity 4-5 food groups and 68 (34%) of children had low (poor) dietary diversity less than or equal to 3 food groups out of nine food groups.

.Figure.4. 1 : Dietary diversity of respondents in Burayu town

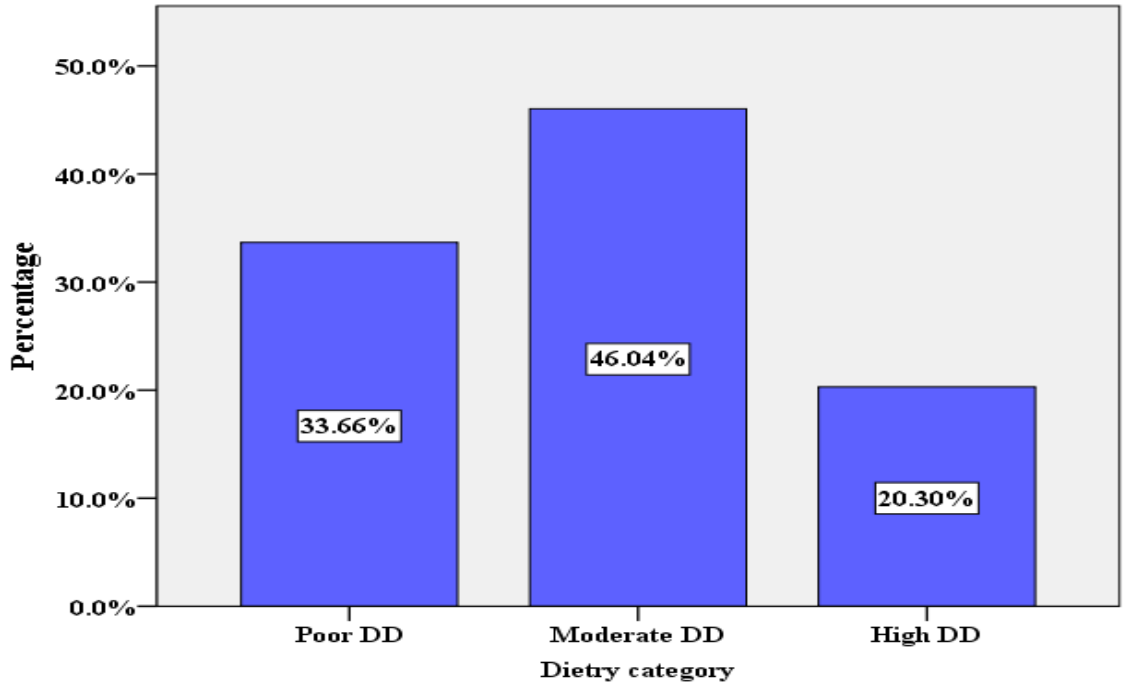

Figure 4.5: Food groups consumed by children and dietary diversity in the last 24-hours, Burayu town

Source: own field survey, 2021

4.7. Anthropometric

Prevalence of stunting, wasting, and underweight

Anthropometry is the measurement of the human body used to assess the nutritional status of individuals and population groups. This study has three observation or dependent variables in identifying the key risk factors associated with malnutrition among children aged 6-59 months in the study area: stunting, wasting, and underweight. Stunting (thinness) (low-height-for-age HAZ) is an indicator of the chronic or long-term nutritional status of children. It was computed or estimated by comparing the height-for-age of a child with a reference population (WHO,.2019). The z-score was computed for each measure to see how far a child is from the median height or length/weight of the reference distribution for children of the same height/length/weight, taking in to consideration the standard deviation of the reference distribution.

The analysis of the three anthropometric indices height-for-age, weight-for-age and weight-for-height in the study area: showing Z-scores and their corresponding means and standard deviations for HAZ, WAZ and WHZ were, the mean Z-scores show that stunting is the greater of the malnutrition problems with a Z-score of -0.11 and a standard deviation of 1.72 followed by Wasting with a Z-score of 0.38 and standard deviation 1.33 and a Z-score of -0.91 and a standard

deviation of 1.13 is underweight. During calculations of Z score using the WHO anthro v.3.2.2 software, and hence, z-score above 3SD were excluded from the analysis. A positive Z-score means that an individual's measurements are higher than the reference mean and a negative Z-score means that the measurements are lower than the reference mean.

The prevalence of stunting (low-height-age) was 13.86%, underweight (low weight-for-age) 4.95% and wasting (low-weight-for-height) 8.91% (See Figure 4.8.1 below).

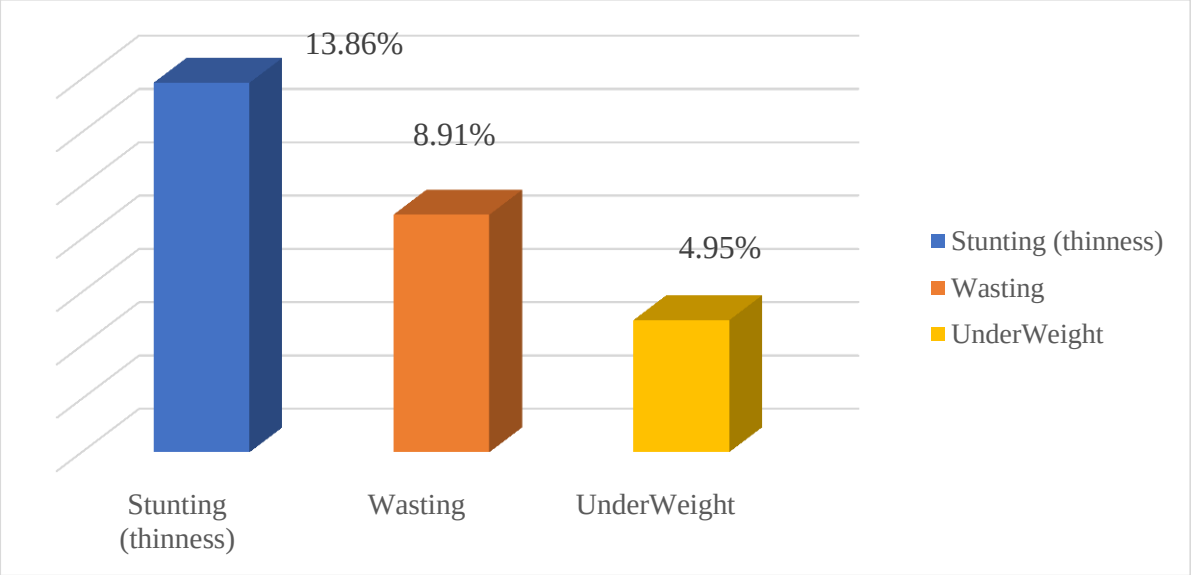

Figure.4.2 : Nutritional Status of Children in Burayu town, Oromia special zone

Source: own field survey, 2021

According to EDHS (Gebremichael.et al., 2021) the National figure of stunting is 37% wasting 7 % underweight 21%. However, the finding of this study revealed that stunting 13.86% which is slightly lower than the EDHS prevalence figure as well as Addis Ababa 14% which are relatively the same and wasting 8.9.%% is slightly higher than national. But underweight 4.95% is lower than the national 21 %.

Table.4. 9. Anthropometric measurement of respondent's, in Burayu town

Age group in month	Male	Female	Total
6-11	10(4.96%)	15(7.44%)	25(12.4%)
12-23	37(18.34%)	33(16.36%)	70(34.7%)
24-35	31(15.32%)	21(10.38%)	52(25.7%)
36-47	21(10.39%)	18(8.91%)	39(19.3%)

48-60	8(3.95%)	8(3.95%)	16(7.9%)
Total	107(52.96%)	95(47.04%)	202(100%)

Source: own field survey, 2021

4.8.Anthropometric measurement of respondent's, in Burayu town

Nutritional Status of Height –for- age Z-scores male and female Shows height for age Z-score distribution of children as compared to the standard reference population by sex indicates that height for age Z-score below -2SD 28.0% male with mean -0.44, SD 1.74 and 12.6 % female mean -0.27 and SD 1.63. As indicated in the figure stunting (thinness) in male children are higher than the female children. Nutritional Status of Weight –for- Height/length Z-scores boy and *girls' weight* for height distribution as compared to standard population reference by sex of under-five children with z-score below -2 Standard deviations 8.4 % male with mean 0.26, Standard deviations 1.33 and 14.8% female with mean 0.26 and Standard Deviations 1. 42. As indicated in the figure wasting in female children is higher than the male Children

Nutritional Status of Weight for- age Z-scores male and female weight for age distribution as compared to standard population reference by sex of under-five children with z-score.

The result indicates that 5.6% male children with mean of 0.03 and SD 1.13 and 5.3% of female of mean 0.26 and SD 1.42 are underweight. The anthropometric figure revealed that male children are more underweight than the female children are less.

Nutritional Status Nutritional status of under-five children and factors associated in Burayu town, sex of combined Height-for-age distribution as compared to standard population reference by sex combined with z-score below the -2SD 13.86% The result of anthropometric indicate that children stunting (thinness) in Burayu town is 13.86% which is lower than the national and regional prevalence and the graph is deviated to negative z-score or less than the reference population Nutritional status of under-five children and factors associated in Burayu town, results sex of combined sex weight-for-age nutritional status of children in reference population of combined sex indicates that 4.95 % of children were below - 2SD which means less than the reference population and deviated to negative z-score. Nutritional status in Burayu town weight for height/length 8.91% children were below the -2SD Z-score

4.9.Middle upper arm circumference

Table 4.8: Shows that mid upper arm circumference; in this survey MUAC used only for emergence case/ SAM: Severe acute Malnutrition triangulation; at the time of survey 9(4.46%)

children were severely acute malnourished and 56(27.72%) are moderate malnutrition recommended to the family to follow their child for severe malnutrition to treat the condition

Table 4.10: Shows that mid upper arm circumference of respondent's in Burayu town

Middle upper arm circumference			
Normal	moderate malnutrition	Severe acute Malnutrition	Total
137(67.82%)	56(27.72%)	9(4.46%)	202

Source: own field survey of the thesis, April, 2021

4.10. House Hold Food Insecurity Assessment Scale

Figure 4.9.1 shows below House hold food assessment scale in this survey 70(35.15%) food secure, 34(16.8%) mildly food insecure, 65(31.68%) moderately food insecure and 33(16.3%) severely food insecure.

Variables	N=202 Number of households with Child 6-59 months N=202	Percent %
House hold food assessment scale food secure	70	35.15
mildly food insecure	34	16.8
moderately food insecure	65	31.68
severely food insecure	33	16.3

Source: own field survey of the thesis, April, 2021

Figure.4. 3 : House Hold Food Insecurity Assessment Scale, Burayu town in (HHFIAS, 2007)

4.11. Over all Nutritional assessment

Figure 13: shows below are 156(77.2%) are nutritional secure and 46(22.8%) are under nutrition (insecure).

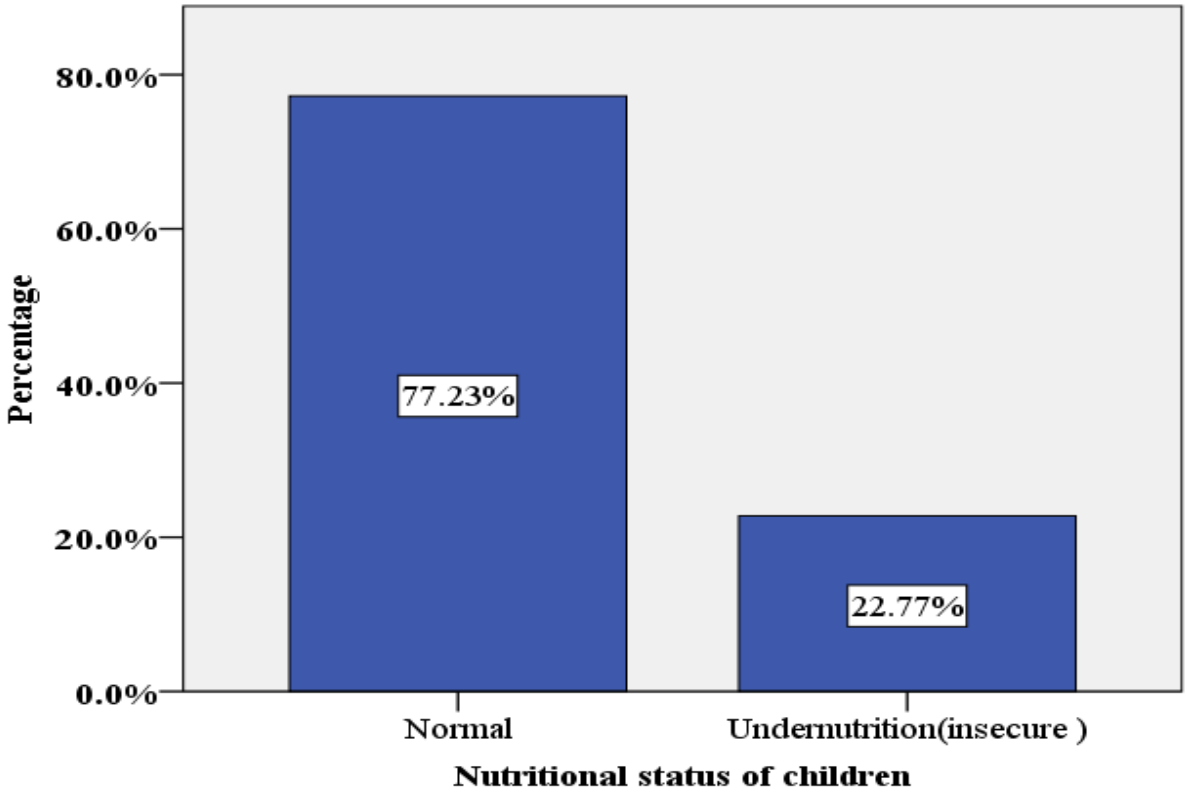

Figure 4. 4: over nutritional assessment score

Source: own field survey of the thesis, April, 2021

4.12. Multivariable Regression Analysis

4.12.1. Factor associated with Stunting (thinness)

Bivariate and multivariate analyses were performed between stunting (dependent variable) and associated factors (independent variable).

Binary Logistic regression was performed to assess the association of each independent variable stunting (thinness) malnutrition. Maternal educational status, monthly income, type of latrine, and household food insecurity assessment scale are significant for stunting (thinness)

The relationship between the age of the child and the nutritional status of children is cross tabular with the AOR of the high school educational status of the mother is 0.98 % {**AOR=0.098; CI (0.018-0.532)}** being negatively associated with child thin (stunted than those mother educational status of no formal education, Read And write, Elementary, and College

Paternal educational status: The analysis of this study revealed 7.645 times that {**AOR=7.645; CI (1.622- 36.034)}** elementary education is positively associated with child stunting (thinness). Primary education is stunted than college, high school, no formal education and read and write father.

Monthly income was significantly associated with stunting. income of household were 3.106 times {**AOR=3.106; CI (1.228 - 7.857)}** 1001-3000ET birr positively associated with child stunting than that income of greater than three thousand and less than one thousand incomes

Latrine type other variable that was associated with stunting (thinness was the use of Private pit with cement slab. Children with family those use Private pit with cement slab are 18.5% times **{AOR= 0.185; CI (0.044 - 0.772)}** more likely to develop stunting compared to children with family those use Shared Latrine cement Slab, VIP latrine, and Common Latrine with Wood Slab

Latrine type other variable that was associated with stunting (thinness was the use of Common pit with cement Slab. Children with family those use Common pit with cement Slab are 28.6 percent {**AOR= 0.286; CI (0.088- 0.926)}** more likely to develop stunting compared to children with family those use Shared Latrine cement Slab, VIP latrine, and Common Latrine with Wood Slab.

Household moderately food insecure variable that was associated with stunting was of moderately food insecure. Children with family of moderately food insecure are 10.015 times **{AOR=10.015; CI (1.772-56.606)}** more likely to develop stunting compared to children with family those Food secure, mildly food insecure, and severely food insecure associated with stunting (thinness). (Table4.11)

Table 4. 11 Factors associated with malnutrition stunting thinness) in Burayu town

Variables	Category	**Stunting**		COR	95% C.I: COR		AOR	95% CI: AOR		P-value
		Normal	**Stunting**		Lower	Upper		Lower	Upper	
Maternal educational status	No formal education	8(80.0)	2(20.0)	1.114	.207	5.986	.744	.083	6.633	.791
	Read And write	33(84.6)	6(15.4)	.810	.273	2.405	.401	.078	2.054	.273
	Elementary	30(83.3)	6(16.7)	.891	.298	2.659	.329	.070	1.555	.161
	High school	54(94.7)	3(5.3)	.247	.065	.939	**.098**	**.018**	**.532**	.007
	College	49(81.7)	11(18.3)	Reference						
Parenteral Education	No formal education	6(75.0)	2(25.0)	3.267	.516	20.692	1.768	.197	15.863	.611
	Read and write	19(86.4)	3(13.6)	1.547	.336	7.119	1.763	.320	9.721	.515
	College	78(86.7)	12(13.3)	1.508	.500	4.542	1.102	.223	5.440	.905
	Elementary	20(76.9)	6(23.1)	2.940	.805	10.742	**7.645**	**1.622**	**36.034**	.010
	high school	49(90.7)	5(9.3)	Reference						
Occupation of father	Government employee	54(87.1)	8(12.9)	.415	.117	1.466	.907	.144	5.717	.918
	Merchant /trade	35(87.5)	5(12.5)	.400	.100	1.599	.663	.113	3.875	.648
	Private organization employee	30(88.2)	4(11.2)	.373	.087	1.607	.713	.115	4.431	.717
	Daily laborer	41(87.2)	6(12.8)	.410	.108	1.554	.336	.065	1.727	.192
	Other	14(73.7)	5(26.3)	Reference						
Monthly income of ETB	<1000 birr	10(90.9)	1(9.1)	.843	.100	7.085	.780	.087	6.962	.824
	1001-3000	46(78.0)	13(22.0)	2.382	1.041	5.453	**3.106**	**1.228**	**7.857**	.017
	>3001	118(89.4)	14(10.6)	Reference						
Child's Gender	Male	89(83.2)	18(16.8)	1.719	.751	3.935	1.991	.806	4.913	.135
	Female	85(89.5)	10(10.5)	Reference						
Age of Child	6-11 month	17(68.0)	8(32.0)	3.294	.600	18.092	4.708	.781	28.376	.091
	12-23Month	61(87.1)	9(12.9)	1.033	.201	5.317	1.276	.233	6.975	.779
	24-35Month	47(90.4)	5(9.6)	.745	.130	4.264	.849	.139	5.198	.859

	36-47Month	35(89.7)	4(10.3)	.800	.131	4.874	1.312	.198	8.715	.779
	48-59Month	14(87.5)	2(12.5)	Reference						
Measles	No	31(96.9)	1(3.1)	Reference						
	Yes	143(84.1)	27(15.9)	5.853	.766	44.716	.963	.052	17.715	.980
Vitamins A	No	40(97.6)	1(2.4)	Reference						
	Yes	134(83.2)	27(16.8)	.124	.016	.942	10.249	.552	190.147	.118
Who is usually taking care of the baby feeding	Mother	112(88.2)	15(11.8)	.368	.139	.974	.389	.145	1.039	.060
	Grand mother	15(93.8)	1(6.3)	.183	.021	1.622	.198	.022	1.762	.146
	Sister	25(86.2)	4(13.8)	.440	.116	1.664	.434	.114	1.657	.222
	Servant	22(73.3)	8(26.7)	Reference						
How frequent you wash the equipment you use to feed your child	Twice daily	41(77.4)	12(22.6)	2.404	1.028	5.622	1.525	.378	6.149	.553
	Once daily	17(89.5)	2(10.5)	.966	.202	4.630	.000	0.000		.999
	Every other day	1(100.0)	0(0.0)	.000	0.000		.000	0.000		1.000
	Immediately after use	115(89.1)	14(10.9)	Reference						
Type of latrine you use? (Observation)	Private pit with cement slab	51(91.1)	5(8.9)	.233	.068	.801	**.185**	**.044**	**.772**	**.021**
	Common pit with cement Slab	84(88.4)	11(11.6)	.311	.110	.878	.286	.088	.926	.037
	Shared latrine / cement slab	18(81.8)	4(18.2)	.528	.135	2.061	.428	.098	1.868	.259
	VIP latrine	2(100.0)	0(0.0)	.000	0.000		.000	0.000		.999
	Common latrine with wood Slab	19(70.4)	8(29.6)	Reference						
How do you dispose garbage	Open field disposal	28(84.8)	5(15.2)	1.556	.454	5.333	.877	.214	3.588	.855
	In pit disposal	5(83.3)	1(16.7)	1.743	.177	17.126	1.896	.177	20.243	.597
	Common pit latrine	78(84.8)	14(15.2)	1.564	.595	4.114	1.366	.498	3.750	.545
	Burning	1(50.0)	1(50.0)	8.714	.489	155.246	14.142	.697	286.762	.084
	Composting	1(100.0)	0(0.0)	.000	0.000		.000	0.000		1.000

	Other	61(89.7)	7(10.3)	Reference						
Additional feeding	0-5month	65(90.3)	7(9.7)	.559	.225	1.387	.872	.167	4.560	.872
	>6month	109(83.8)	21(16.2)	Reference						
House hood food assessment scale	Food secure	60(96.4)	7(3.4)	5.270	1.139	24.390	1.486	.254	8.716	.660
	Mildly food insecure	31(91.2)	3(8.8)	1.500	.234	9.608	3.283	.421	25.624	.257
	Moderately food insecure	62(91.2)	6(8.8)	1.500	.286	7.868	**10.015**	**1.772**	**56.606**	.009
	Severely food insecure	31(93.9)	2(6.1)	Reference						
Birth interval category	First delivery	6(100.0)	0(0.0)	.000	0.000		.000	0.000		.999
	2-3years	47(78.3)	13(21.7)	9.128	1.138	73.215	7.684	.900	65.570	.062
	> 4years	33(97.1)	1(2.9)	Reference						

4.12.2. Factors associated with wasting

Bivariate and multivariate analyses were performed between wasting (dependent variable) and associated factors (independent variable).

Binary Logistic regression was performed to assess the association of each independent variable wasting malnutrition. The factors that showed a p-value of 0.25 and less were added to the multivariate regression model. In the binary logistic regression, Monthly income in ETB, child ever been immunization, Polio, hand washing After latrine use, pound water, Private Well add Other were associated with wasting. In the multi logistic regression, Monthly income and private well are significantly associated with nutrition wasting.

Monthly income was significantly associated with wasting. income of 1001-3000 household were 22.6% {**AOR=0.226; CI (0.043-0.780)}** more likely to develop wasting compared with that income less than one thousand and greater than three thousand and one birr.

The other variable that was associated with wasting was the use of drinking water in private wells. Children with family those use private wells are 12.1 times **{AOR=12.067; CI (1.586-91.829)}** more likely to develop wasting compared to children with family those use River, Pond, Private Tabs and Other they drink (Table 4.12).

Table 4.11: Factors associated with malnutrition wasting in Burayu town, Ethiopia

Variable	Category	Wasting		COR	95% C.I: COR		AOR	95% CI: AOR		P-value
		Normal	Wasting		Lower	Upper		Lower	Upper	
Monthly income in ETB	<1000 birr	9(81.8)	2(18.2)	1.873	.367	9.553	.599	.052	6.851	.680
	1001-3000	57(96.6)	2(3.4)	.296	.065	1.345	.226	.043	0.780	.040
	>3001	118(89.4)	14(10.6)	Reference						
Does the child ever been immunized?	No	6(75.0)	2(25.0)	Reference						
	Yes	178(91.8)	16(8.2)	.270	.050	1.447	2.714	.278	26.519	.391
Polio	No	2(66.7)	1(33.3)	Reference						
	Yes	182(91.5)	17(8.5)	.187	.016	2.168	3.640	.112	117.909	.467
After latrine use	No	1(50.0)	1(50.0)	Reference						
	Yes	183(91.5)	17(8.5)	.093	.006	1.552	.083	.005	1.392	.084
Pond	No	182(91.5)	17(8.5)	Reference						
	Yes	2(66.7)	1(33.3)	5.353	.461	62.117	9.879	.657	148.528	.098
Private Well	No	182(91.9)	16(8.1)	Reference						
	Yes	2(50.0)	2(50.0)	5.353	.461	62.117	12.067	1.586	91.829	.016
Other Specify	No	182(91.5)	17(8.5)	Reference						
	Yes	2(66.7)	1(33.3)	5.353	.461	62.117	3.712	.066	209.386	.524

5. DUSCUSION

5.1. Stunting

The study finding to the national prevalence for public health significance, is greater than 13.86% for stunting, it is lower than the national figure and similar is study of Addis Ababa which needs the attention of all concerned body. some in Tigray, Addis Ababa, also in burayu in past four years back shows 49%,14%,15.5% it shows away from capital city food stunting is increases and surrounding to Addis Ababa are decrease (Gebremichael.et al.,2021, Hordofa, 2017).In past study condacted in shows sunting rate is high in India about 51%(Dinesh Kumar et al,.2006),urban of slums prone 58%(Mamulwar, et al.,2014),rural area of Indus study shows 40%(Purohit L et al.2017) and study occur in Ethiopia conducted on South nation and nationality of Anlemo wereda 42.4% of Stunting indation to this study occur in Anlemo wereda Are similar in compere to sex study shows male are more affected than female for stunting or Thinness(Nigussie et al,.2017)it in same in may study shows that male (16.8%)and female (10.5%) are afected by stunting.This may be due to sample size differences and also the town under study is under nutiration

5.2. Wasting

The finding of our study revealed 8.91% of children age 6-59 months was affected by wasting which is lower with 2016 EDHS national figure 10% and lower than EDHS 2019 in the national area (EDHS,2016, Gebremichael.et al.,2021) from past four years.also some study high compared to our study was in Afganistan,Bangiladish,Nepal and pakistan (9.48%,14.36%,9.78% and 10.68%)respectively wasting(Harding et al.,2018) . cross-sectional study involved semi-pastoral communities of Longido and Monduli districts of Arusha region, in the northeastern corner of Tanzania shows 4.5%(Kassim et al.,2018),and other study conducted in rural area of india is (6.51%)(Mallapur et al.,2014),budega village of cameron 3.2%of wasting (Christofer et al.,2019) when compere to my study less parcentage of wasting respectively

In this study shows that child those not take imunization is 25% wasted and imunized are 8.2%of exposed to wasting non imunized mother are more exposed than imunithed child and other also those drink well water are exposed to wasting .This might be due to active immunity and due to comminucable diesease due water sorece are easliy exposed to contamination it can disterb child health.

5.3. Underweight

The finding of this study shows 4.95% of the children age 6-59 months were affected by underweight. This finding was lower than the national prevalence figure 23.6% as well as the regional 21.1%(Mini EDHS, 2019).this might be due to difference in sample size and area coverage. Age of children from 6- 11 months was about 20% are more likely to be affected by underweight than children age 12-59 months. Study conducted in sub Saharan Africa age-wise classification was higher in the 37-48 months age category (10.5%) and 49-60 months age category (10.2%)was underweight this study conclude that due to of age is mainly due to poor infant feeding practices(Paschal Kum.,2014). This might be due to active due age of transition time from exculsive breast feeding to weaning time.

5.4. The Result of Multivariate Regression

This study of analysis revealed that maternal education status, parental educational status, monthly income status of household, private pit latrine, common pit latrine and household food insecurity assess scale are significant and associated with child stunting. monthly income status of household and those drinking of private wells are significant and associated with child wasting.

Income is positively associated with child nutritional status Stunting income of household were 3.106 times **{AOR=3.106; CI (1.228 - 7.857)}** which means the house hold those receive better income have more probability to averse the risk of child stunting as compared with household with less income middle income than high income status (Zhihui et al., 2020)

Maternal education status: mother positively associated with stunting more educated mother are not expose of the child to stunting than lower education and no formal education mother and thus educate elementary (Zhihui et al., 2020)

Private Pit with cement slab and Common pit with cement Slab are negatively associated within stunting 18.5 % {AOR= 0.185; CI (0.044 - 0.772)} from household those have latrine with other type latrine children were less likely stunting than compared to another latrine

Household food insecurity assess scale: moderate and severe food insecurity were significantly associated with stunting (Ali et al., 2018)

drinking of private wells: positively associated and statistically significant with wasting (WHZ) 12.1 times {AOR=12.067; CI (1.586-91.829)} from those households that use water from unprotected/unsafe sources like private well, exposed to wasting than other source of water river, pond, public and private tabs in other words, child who had access to protected

/clean water were less exposed to illness of diarrhea in comparison to the child who get unprotected water in line with the study not develop wasting

Income status: negatively associated with child nutritional status wasting which means the house hold those receive better income have more probability to averse the risk of child wasting

6. Conclusion and Recommendations

6.1. Conclusion

The following are the major conclusions drawn from the findings of our study: assess the nutritional status of under-five children in Burayu Town, the findings of the study indicate that nutritional status of under-five children especially stunting and wasting is highly prevalent. The prevalence nutritional status in this study stunting area were lower than the regional and national figures found from Ethiopian mini–Demographic Health Survey 2019 national reports but wasting is higher than the regional and national report of 2019

The multivariate logistic regression model indicates that among the risk associated factors: Maternal and paternal educational status, monthly income, private pit latrine, common pit latrine and household food insecurity assessment scale are significant and associated with stunting of children aged 6-59 months. For wasting monthly income status of household and drinking of private wells, was found to be significant determinants in the multivariate logistic regression model.

The results our study indicate that under nutrition is immobile an important community health problem among children 6-59 months this result indicate that are needed to improve Maternal and paternal educational status by developing in adult education, also increase monthly income of the house hold by income producing activities and it if income is increase their solve household food insecurity problem., improved sanitation of private pit latrine and common pit latrine and provision

of safe and treated drinking of private wells water for prevention of diarrhea and other contaminations.

6.2. Recommendations

Accordingly, based on the finding of the study, the following recommendations have been suggested for critical consideration in light of the thoughts drawn here in before and the findings summarized above.

Therefore, based on the finding of our study, the following recommendations are forwarded

- Health care providers including health extension should provide education and necessary information on care of private pit latrine and common pit latrine, and health education coverage for malnutrition and give strong consoling on that undernutrition and well nutrition.

- The Maternal educational status of the child mothers was high school, therefore should be encouraged as it has been proved that it is the key to reduce and chronic malnutrition problems in children (stunting, and wasting)
- For the community: thus, of households had common pit latrine, promoting sanitation through hopeful people to common improved latrines and.
- Nutrition education by health extension works should be strengthening to improving the feeding practice of parents on appropriate children feeding.
- Continued attention should mandatory to address of under-five nutritional problems to produce productive of adult hoods
- Each Kebele health extension worker, health center and health office coordinator should be collaborated with others sectors and stake holders to improve hygiene of the latrine in individual or as the community level and way use private well tabs water in well treated and alleviate from contamination of water supply.
- Households should be treating drinking water which obtained from unprotected private wells water by boiling and strained through cloth
- Burayu Town administration should strengthen and established income generation active and saving at households like credit and saving process with collaborate of stake holders to improve family income.
- Supplementary study should be done to see other an explored associated factors that were not included in the present study.
- Nutrition surveillance needs to be done continuously and special attention should be given to vulnerable groups such as low income and the most exposed those of wasted and stunted children.
- Town environmental health workers try to address the quality of latrine in the standard of hygiene and also adequate treatment for underground water treatment before use and educate community use and treat of private wells tabs water to prevent infection and from water contamination

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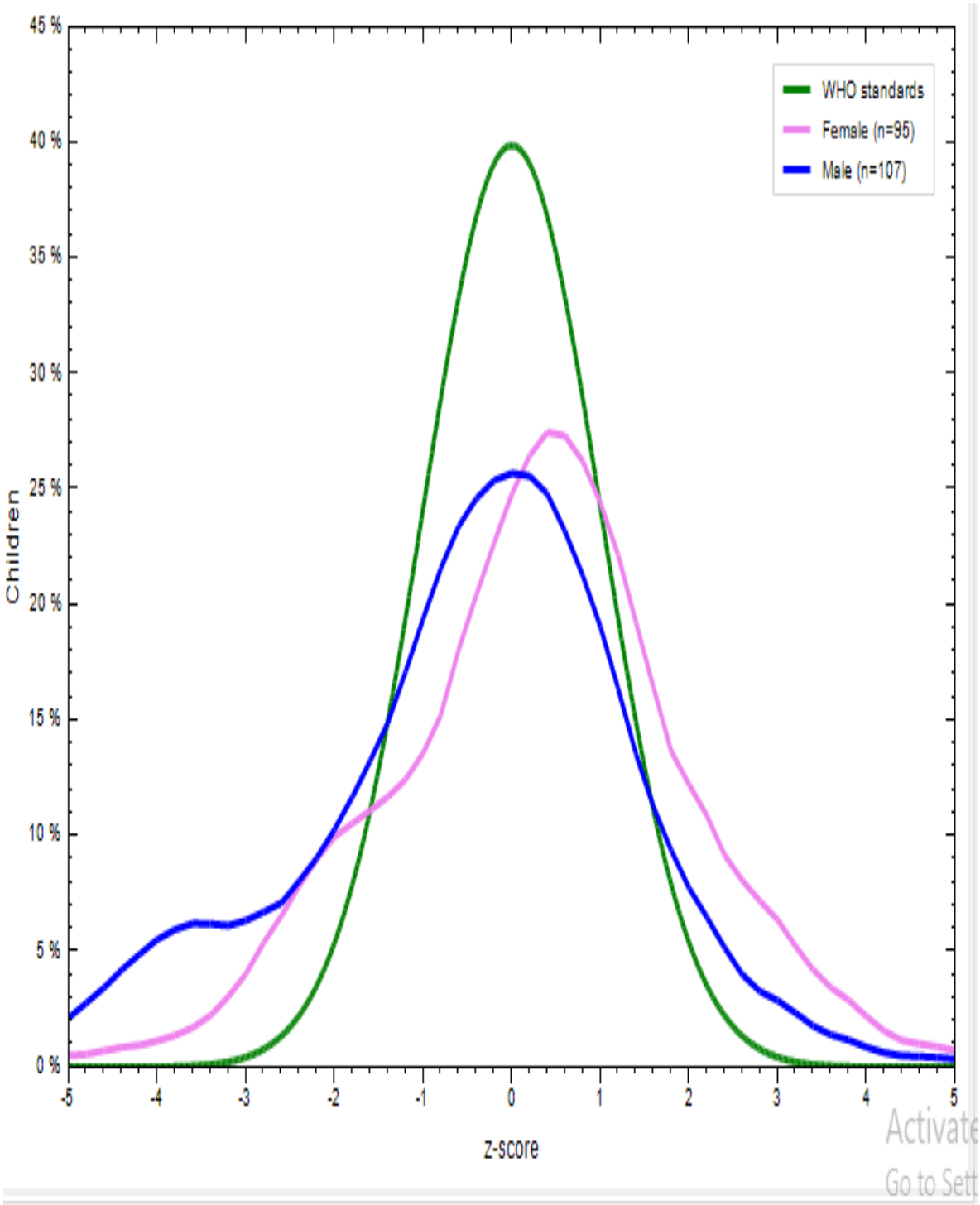
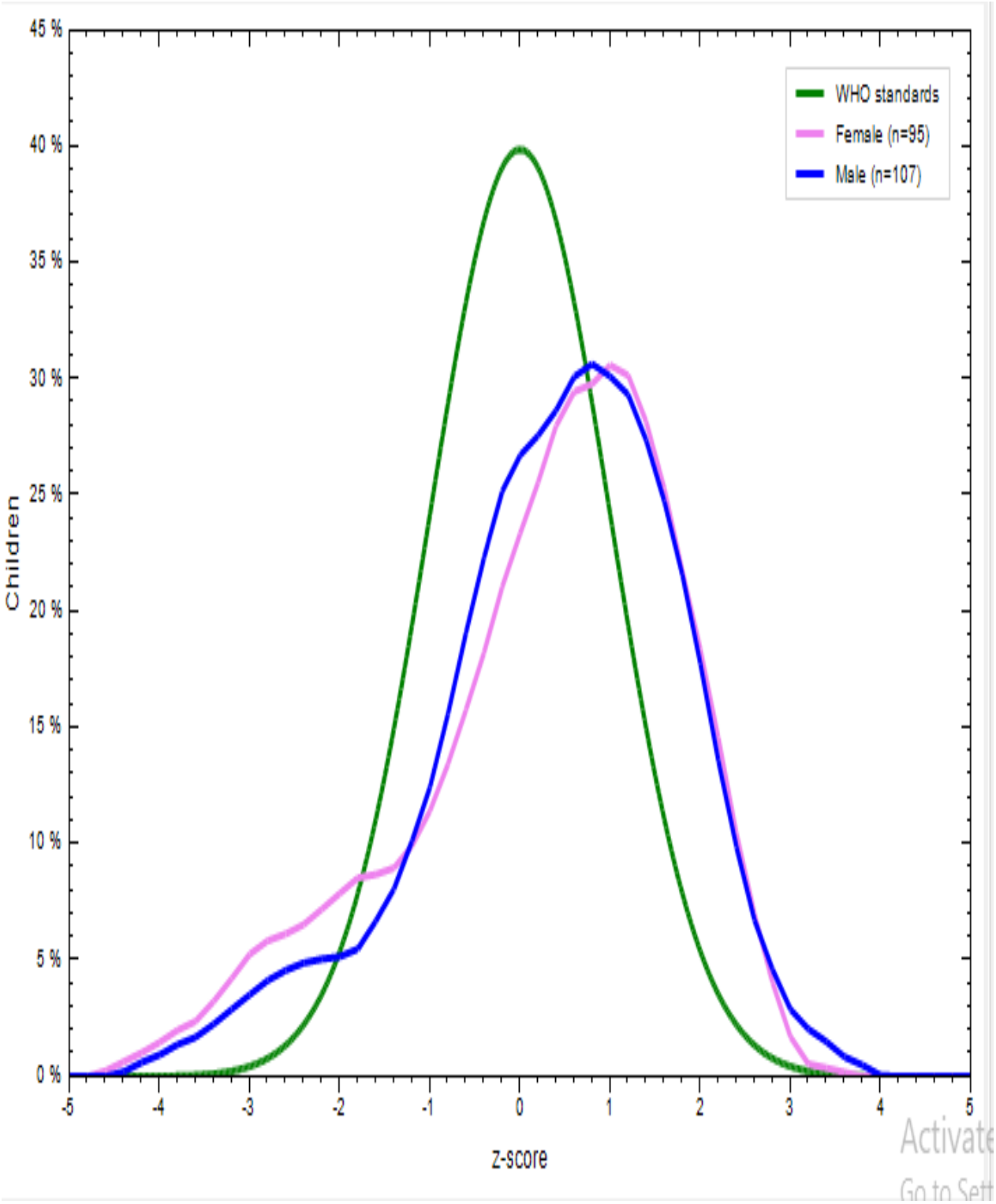
8. APPENDICES

8.2. ANNEX I: Nutritional Status of Height –for- age Z-scores male and female on anthropometric measurement

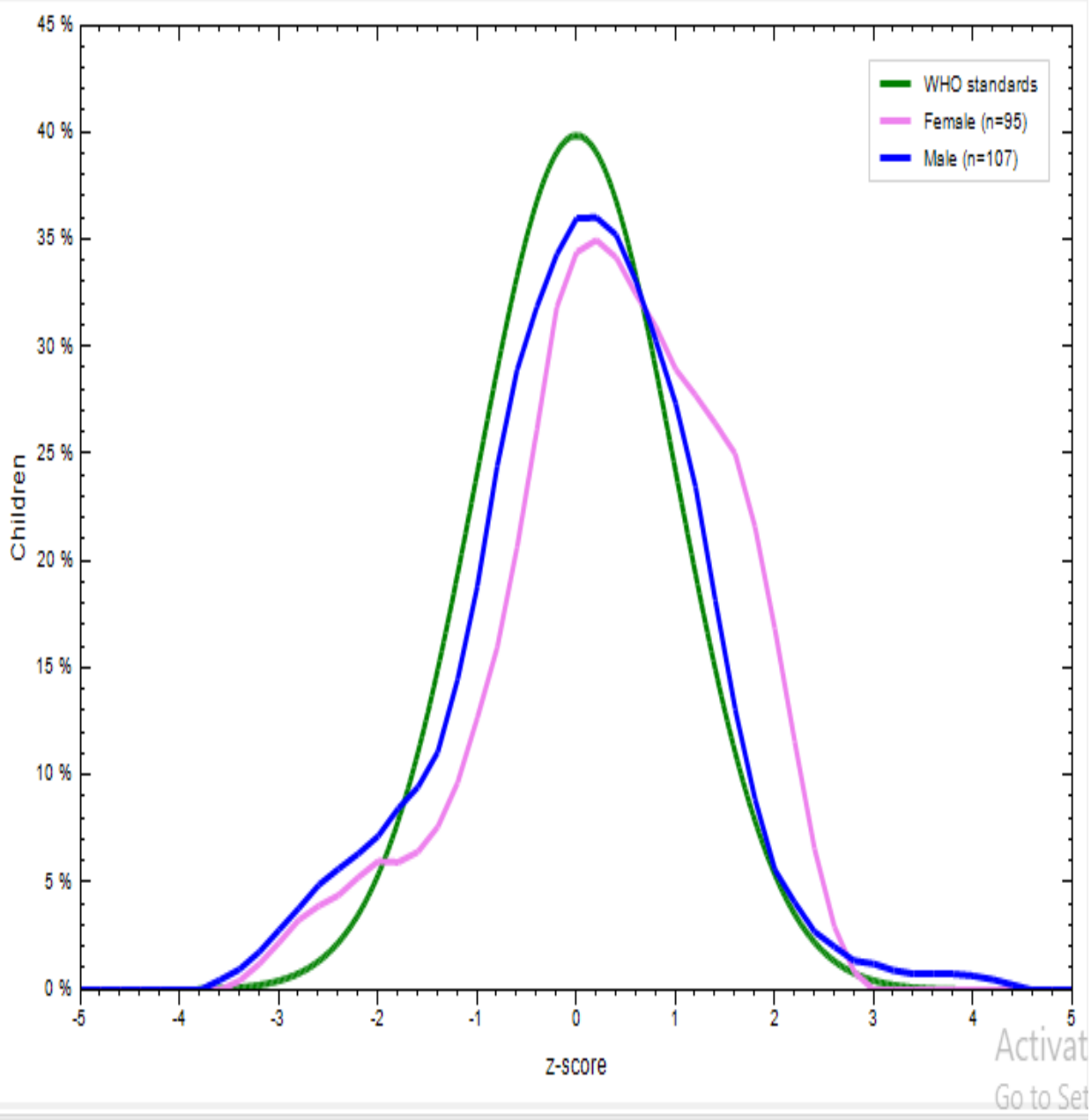


Source: own field survey, 2021

Nutritional Status of Weight –for- Height/length Z-scores boy and girl's anthropuls analysis

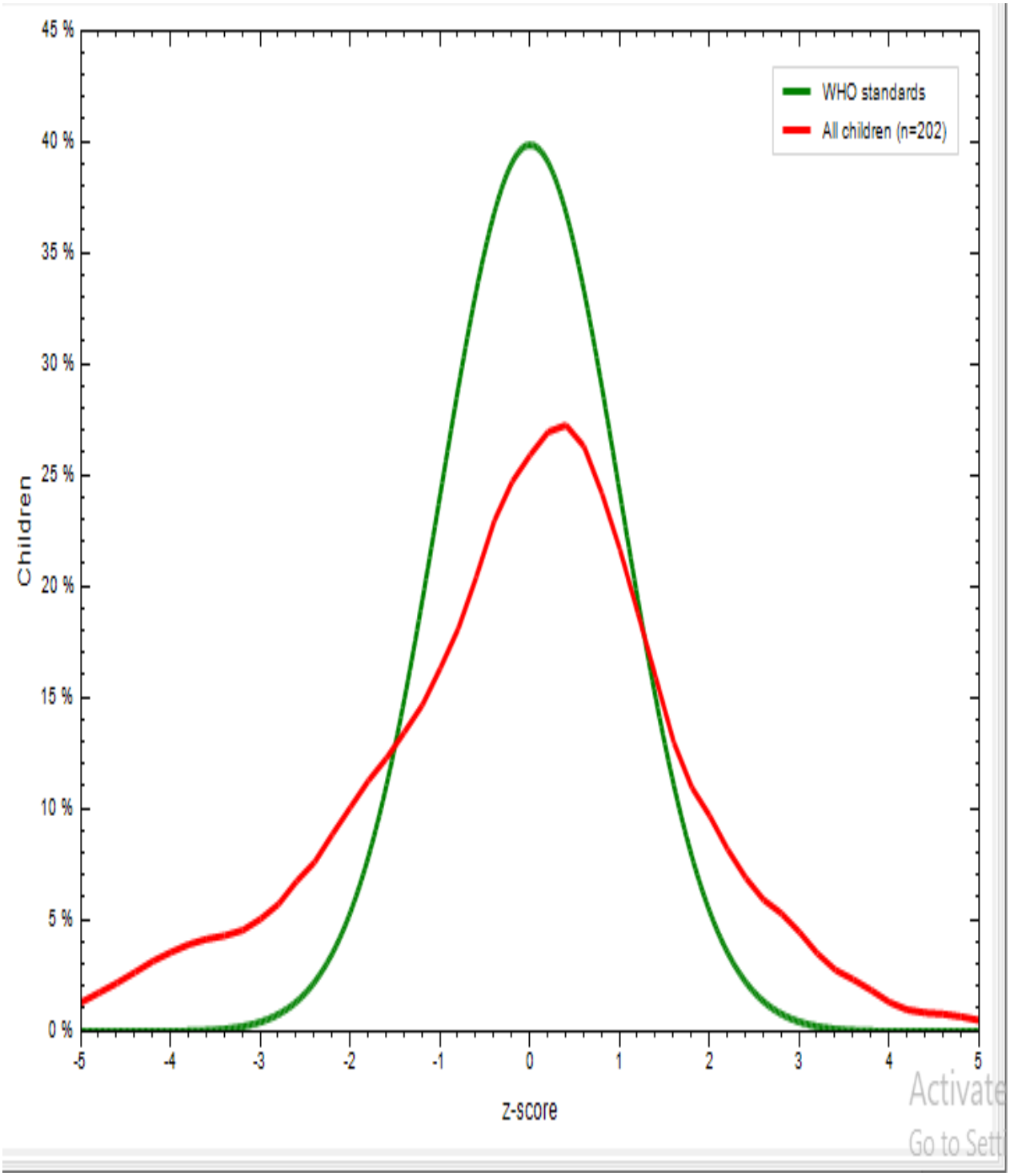


Source: own field survey, 2021



Source: own field survey, 2021

Figure.4. 5 : Nutritional Status Nutritional status of Burayu town, combined sex



Source: own field survey, 2021

8.3. Annex II: English version informed consent form

Dear participant,

This is research title named as Nutritional Status which is aimed to conduct among under five children's of Burayu town in Oromia region Finfinnee special zone. It is intended to solve community nutritional problem toward food security through assessing of anthropometric measurement and other nutritional statues measurement. After careful assessment, health education concerns prevention of mal nutrition in under-five children which are interesting of future productive and mentally mature and physically wellbeing also consulting child family. This research is also essential to initiate local and international NGO 's and other concerned bodies to make related policies based on the new findings &Burayu town administration and health bureau, to directly focus on that problem through focusing on identified problem. Hence, you are due to respond our questionnaire & stay patiently while we do some physical measurement throughout our study. If you find difficult to choose to participate, will never denied to not to participate. If this is so, please telling us prior to start!

If you have a question, please address to

Phone: 0912897186

Email: alemutesfaye1982@gmail.com

Thank you for your purposive participation and listening!

Are you willing to participate?

1. Yes = continue
2. No = thank you

Participant's Signature _____Date ____/___/____

Data collector's name _____ Signature _____Date ____/___/____

Advisor's name _____ Signature _____Date____/____/___

8.4. ANNEX III: English version Questionnaire

Questionnaire designed to asses of food nutritional status of under-five malnutrition children.

My name is Alemu Tesfaye. We are 3rd year student of MSc in food security at Addis Ababa University college of developmental study and food security. We are carrying out a study on food nutritional status among preschool children which are live in Burayu town. This involves asking you a number of questions on diet by use of anthropometric measurement use of height, weight, MUAC, body mass index. All the data collected will be treated with strict confidentiality and anonymity. If you feel that you cannot continue participating in the study. You are free to withdraw at any stage of the interview. The findings will give a better understanding of the nutritional status among preschool children which are live in the community in Burayu town. And also help in finding ways of addressing the nutritional problem in that town

• Are you volunteer to participate? 1) Yes

2) No

Annex IV: Questionnaire for the study of the assessment nutritional status of under-five children at the age of 6 month to 59 years in Burayu town.

Part one: Socio-demographic variables

No	Question	Response	Remark
	Head of the house hold	1. Male 2. Female	
	Marital status	1. Married 2. Divorced 3. Widowed 4. Separate 5. Single	
	Total family size (How many persons live in the HH?)	In number_____	
	How many children <5 year live in the HH?	In number_____	
	Maternal educational status	1. No formal education 2.Read & write 3.Elementrary 4.High school 5.Collage	
	Paternal educational status	1. No formal education 2.Read & write 3.Elementary 4.High school 5.Collage	
	Occupation of mother	1.Housewife 2.Merchant\ Trade 3.Privateorganization employee 4.Government employee 5.Daily laborer 6.Other (specify	
	Occupation of father	1.Government employee 2.Merchant\ Trade	

		3.Private Org. employee 4.Daily laborer 5.Other (specify)	
	What is your religion	1.. Orthodox 2 Protestant 3. Catholic 4. Muslim 5.Others(specify)	
	Monthly income of ETB	<1000 1001-3000 .>3000	
Part two: Children status			
	Child's sex	1. Male 2. Female	
	Gestational age at birth	1. Less than 9 Months 2. At 9 months 3. Greater than 9 Months 4. Do not know /Not sure/	
	Age of the child in month	1,6 months to 17 months 2. 18month to 30 months 3.31 months to 42 months 4.43month to 59 months	
	Was your child weighted at birth?	1. Yes 2. No If yes _____kg----------	
	Type of birth	1. Single 2. Multiple/Twin/	
	Does the child ever been immunized?	1. Yes 2. No	If yes
	Vaccines received (See card, if no card available ask them to recall) (More than one answer is possible)	1. BCG only (See Scar) 2. polio 3. DPT-Hep B	

		4. PCV 5. Rota virus 6. measles 7. vitamins A	
	Has the child been ill with fever at any time in the last two weeks?	1. Yes 2. No 3. Don't know/not sure	
	How frequent the diarrhea in a year?	1. Once 2. Twice 3. 3-4 times 4. >5 times	
	Presence of respiratory disease in the last two weeks	1. Yes 2. No 3. Do not know/not sure	
part three; -caring status of the child			
	Did you ever breast fed the child?	1. Yes 2. No	If ye, skip to 24
	How long after birth did you first offer the child to breast feed?	1. Immediately 2. ____ Hours (If less than 24 hours record hour) 3. ____ Days 4. Don't know/not sure/	
	Did you give the child pre-lactation food/fluid?	1. Yes 2. No	
	If yes, what did you give him (her)?	1. Water 2. Butter 3. Milk 4. other (Specify)	
	How many times feed in 24 hours?	_____ times	
	At what age did you start feeding additional feeding	_____ Months	
	Who is usually taking care of the	1. Mother	

	baby feeding?	2. Sister 3. Grand mother 4. Servant 5. Other (specify)	
	Bath taking of the child	1. Daily 2. Weekly 3. Other (Specify)	
	How frequent you wash the equipment you use to feed your child	1.Twice daily 2.Once daily 3.Every other day 4.Immediately after use 5.Other(specify)	
Part four: -maternal status			
	Mother's age in years	Year completed_____	
	Age at first birth	_____ Years	
	Age when the youngest child was born or age at last birth	_____ Years	
	Total number of children ever born? Birth interval	In number _____	
	During pregnancy or lactation, did you consume extra food?	1. Yes 2. No	
	Health status during the pregnancy	1. Good 2. Not good/sick	
	Did you visit health facility for ANC	1. Yes 2. No	If no, skip to
	How many times you visited health facility for ANC during the pregnancy?	_____ times	
	When do you usually wash your hands? (More than one answer is possible	1. After latrine use 2. Before preparing food 3. Before serving food 4. After cleaning child faces 5. Other (specify)	

	How do you wash your hand?	1. Using water only 2. Using soap some times 3. Using soap always 4. Using ash some times	
Part five: -environmental status			
	What is your main source of drinking water?	1. River 2. Pond 3. Private well 4. Public tap 5. private tap 6. Other (specify)	
	Amount of water used in the household daily?	In liters_____	
	Do you treat water in any way to make it safer?	1. Yes (Specify) 2. No	
	Do you have latrine?	1. Yes 2. No	If no, skip to 48
	Type of latrine you use? (Observation)	1.Private pit / wooden slab 2. Private slab / cement slab 3. Shared latrine/wooden slab	
	How do you dispose garbage?	1. Open field disposal. 2. In a pit 3. Common pit 4. Composting 5. Burning 6. Other (specify)	
Part six: - Diversity of diet			
	Have you eaten, corn/maize, rice, wheat, sorghum, millet or any other grains or foods made from these (e.g., bread, noodles, porridge or other grain products) with in 24hrs?	Yes No	
	Have you eaten vitamin-A rich plants like	Yes	

	orange, mango, papaya, carrots…within 24 hours?	No	
	Have you eaten any vegetables and fruits within 24 hours?	Yes No	
	Have you eaten any food that are made from pulse within 24 hours?	Yes No	
	Have you eaten white roots and tubers, white potatoes, white yam, white cassava, or other foods made from roots within 24 hours)	Yes No	
	Have you eaten eggs from chicken, duck, guinea fowl or any other egg within 24 hours?	Yes No	
	Have you eaten, fish, seafood, meat and meat products, within 24 hours?	Yes No	
	Have you eaten milk and milk products milk, cheese, yogurt or other milk product within 24hours?	Yes No	
	Have you eaten oil, fats or butter added to food or used for cooking within 24 hours?	1.Yes 2.No	
Part seven: Anthropometrical measurement			
	Child weight in kilogram	_____kg	
	Child height in centimeters	_____cm	
	MUAC measurement in centimeters	_____cm	

Part eight house hold food insecurity assessment scale		
1a	In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q2) 1 = Yes
1b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
2a	In the past four weeks, were you or any	0 = No (skip to Q2)

	household member not able to eat the kinds of foods you preferred because of a lack of resources?	1 = Yes
2b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
3a	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q2) 1 = Yes
3b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
4a	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q2) 1 = Yes
4b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
5a	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed	0 = No (skip to Q2) 1 = Yes

	because there was not enough food?	
5b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
6a	In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q2) 1 = Yes
6b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
7a	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q2) 1 = Yes
7b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
8a	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q2) 1 = Yes
8b	How often did this happen?	1 = Rarely (once or twice in the past four weeks)

		2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
9a	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (skip to Q2) 1 = Yes
9b	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)

8.5. Annex IV: Oromic Version Questionnaires Translated

Yunivarsitii Finfinnee Dipartimentii Gudinnaa Biyyaa Fi Sakantinsaa Nyaata, Qorannoo Sadarkaa Sirna Nyaata Ijoolee Ji'a 6-59 Gidduu Jiran Bullchinsaa Motummaa Naannoo Oromiyaati Magaalaa Burayyuu, Goodina Addaa Nannawaa Finiffinne, Itiyoophiyaa,2021

Waraqaa Gaaffii

Waraqaan gaaffii Kun kan qophaa'e raga sadarkaa nyaata ijoolle fi dhimmoota murteessaa isaa ta'an sadarkaa mana manatti funaanuuf, Bulchiinsa Magaalaa Burraayyuu, Naannoo Oromiyaa, 2021. Waliigaltee Nagaa Seensa Maqaan koo Alamuu Tasfayee jedhama. Ani kan hojjachaa jiru raaga qorannaa nyaata Yunivarsitii Finfinnee,gosaa Barnootaa Gudinna Biyyaa fi saakatinsaa nyaata waliin ta'uun mata duree" Sadarkaa sirna nyaata ijoole fi dhimmoota murtessaaisaa ta'an" irratti gageefamuu foolufachuudhan. Maqaan keessan guca kanairratii hin-bareefamu, akkasummasn raganaa keenitan walin qabsifamee itti hin-fayyadamamu. Gafiin isin deebisuu hin barbanne yoo jiratee dhisuun mirga keessan ta'e yeroo barbaadanis gaffii fi deebii gageesinu dhaabuun ni-dandeessu.

Gaffii sinnif hin galin qoranoo kanaratii yoo qabatan

Lakkofsaa bilbilaa: 0912897186

Kaaraa emealiitin : alemutesfaye1982@gmail.com

Haata'u malee, gaaffilee hundaaf deebiin sirrii ta'e kaayyoo qorannaa kanaaf bahe barbachisa dha.

Hirmaachuu dhaaf fedhii qabduu?

Gaaffii fi deebii kana xumuruuf daaqiiqaa 30'ta'u nuttini-fudhata.

Mallattoo gaafaataa,

Namni gaafatamu kun waligaltee isaa jechaan ibsu isaa mirkaneessuuf

001. Lakkoofsa waraqaa gaffii /_____/_____/

002. Maqaa nama gaafatuu _____ Mallattoo_____

003. Guyyaa gafii fi deebii _____

To'ata hordofe; Maqaa _____,

Mallattoo_____

Annex V: Qorannaa sadarkaa sirna nyaata ijoolleeji'a 6-59 gidduujiran Magaalaa bulchiinsa Burrayyuutti kan argaman, 2013A.H.

Kutaa 1ffaa: Gaaffilee Hawaasummaa fi Diinagdee

Lakk	Gaaffii	Deebii	Darbuu/ Ibsa
	Abbaan manaa	1.Dhiira 2.Dubartii	
	Haalli fuudhaa	1.Waliin jiru 2.Wal hiikan 3.Irraa du'e 4.Addaan bahan 5.Kophaa	
	Baayyina maatii mana keessa jiraatanii	_____lakkoofsaan	
	Baayyinni ijoollee wagga <5 mana keessa jiranii	_____lakkoofsaan	
	Haala Barumsa haadha manaa	1. Baruumsa bu'uraa kan hin qabnee 2.Barreesuu fi dubbisuu danda'uu 3.Barumsa sadarkaa 1ffa 4.Barumsa sadarkaa 2ffaa 5.Colleejii	
	Haala Barumsa abbaa manaa	1.Baruumsa bu'uraa kan hin qabnee 2.Barreesuu fi dubbisuu danda'uu 3.Barumsa sadarkaa 1ffa 4.Barumsa sadarkaa 2ffaa 5.Colleejii	
	Jiruun haadha manaa	1.Haadha manaa 2.Daldaltuu 3.Hojjetaa jarmiyaa dhuunfaa 4.Hojjetaa mootummaa	

		5.Hojjetaa guyyaa 6.Kan biraa (Ibsi)	
	Jiruun abbaa manaa	1.Hojjetaa mootummaa 2.Daldalaa 3.Hojjetaa jaarmiyaa dhuunfaa 4.Hojjetaa guyyaa 5.Kan biraa(Ibsi)	
	Amantiin keessan maali?	1.Ortodoksii 2.Protestaantii 3.Kaatolikii 4.Musiliima 5.Kan biraa(Ibsi)	
	Galin jihaan akka qarshii Ithiopiyaatii	1.<1000 2.1001-3000 3.>3001	
Kutaa Lammaffaa HaalaMucaa			
	Saalli mucaa maali?	1.Dhiira 2.Durba	
	Jiha meeqaffaatti dhalate?	1.Jia sagalii gadi 2.Jia salgaffaatti 3.Jia sagaliiol 4.Hibeekamu	
	Umuri da'imaa jihan	1.6 ji'aa hanga17ji'aa 2.18 ji'aa hanga30ji'aa 3.31 ji'aa hanga42ji'aa 4. jihaa 43 hanga jihaa	
	Yammuu dhalate ulfinniisaa/ ishee madaalameeraa?	1.Eeyyee 2. Lakki Yoo eeyyee tahe kg_-------- --_____	
	Gosni dhalootaa	1.Baaqqee 2.Lakkuu	
	Talaallii fudhatee/ttee beekaa/beektii?	1.Eeyyee	Yoo hin

		2. Lakkii	fudhanne
	Talaallii kam fudhate?(Kaardii ilaali,yoo hinjirre akka yaadatan gaafadhu) (Deebiin tokkoo olini dandahama)	1.BCG qofa(mallattoo ilaali) 2. polio 3. DPT-HepB(lakkofsaa doozi ilalii 4. PCV 5. Rottaa vayyiraasii 6.Gifiraa 7. vitaminii A	
	Torban lamaan darbe keessa mucaan dhukkuba garaa kaasaa qabaa /qabdii?	1.Qaba 2.Hinqabu 3.Hinbeekamu	Yoo hin qabne
	Waggaatti yeroo meeqa garaa kaasaan qabee?	1.Tokko 2.Lama 3.Yeroo 3-4 4. 5>Olli	
	Torban lamaan darbe keessa dhukkuba afuuraa ykn sombaa qabaa/qabdii?	1.Qaba 2. Hinqabu 3. Hin beekamu	
Kutaa sadaffaa: Haala Kunuunsa Mucaa			
	Mucaa keessan harma hoosiftanii beekttuu?	1.Eeyyee 2. Lakki	
	Yoo hin hoosifne sababisaa maali?	Sababa_____	
	Mucaan dhalatee/ttee hagamturtanii harma hoosisuu eegaltan?	1.Akkuma dhalateen 2.Sa'a _____booda 3.Guyyaa_____ booda 4.Hinbeekamu	
	Akkuma deessaniin nyaanni/ dhangala'aan mucaaf kennitan jiraa?	1.Eeyyee 2.Lakki	
	Yoo eeyyee, ta'e maal kennitaniif?	1.Bishaan 2.Dhadhaa	

		3.Aannan 4.Kan biraa (Ibsi)	
	Sa'a 24 darbetti yeroo meeqa hoosiftan?	Yeroo_____	
	Umurii meeqatti nyaata dabalataa laachuufii eegaltan?	Ji'a_____	
	Mucaa nyaachisuu yeroo hedduu eenyutu hordofaa?	1.Haadha 2.Obboleettii 3.Akkawoo 3.Hojjettuu manaa 4.Kan biraa(ibsi)	
	Yeroo meeqatti qama mucaa dhiqxu?	1.Guyyaa guyyaatti 2.Torbanitti 3.Kan biraa(ibsi)	
	Yeroo meeqatti meeshaa nyaataa kan mucaa dhiqxu?	1.Guyyaatti yeroo lama 2.Guyyaa guyyaatti 3.Guyyaa lammaffaatti 4.Akkuman nyaachisen 5Kan biraa (ibsi)	
Kutaa Arfaffaa Haala: Haala Haadhaa			
	Umuriin haadhaa meeqa?	Waggaa_____	
	Umurii mucaa isa jalqabaa itti deessan	Waggaa_____	
	Umurii mucaa isa dhumaa itti deessan	Waggaa_____	
	Baayyina ijoollee dhalattee/garaagarumaa wagoota ittin dhalatani	Ijoollee_____	
	Yeroo garaatti baattan / hoosistan (mucaa isa qoratamuu)nyata dabalataa (addaa) nyaattanii?	1.Eeyyee 2. Lakki	
	Haalli fayyaa keessanii yeroo garaatti baattan akkam ture?	1.Gaarii ture 2.Gaarii hin turre (ibsi)	
	Dhaabata fayyaa qorannaa dahumsa duraatiif ni deemtu turee?	1.Eeyyee 2. Lakki	
	Garaatti baattanii ji'a meeqaffaatti qorannaa dahumsaa duraatiif dhaaba	Ji'a _____tti	

	fayyaa deemuu eegaltan?		
	Yeroo meeqa qorano dahumsaan duraa tiif dhaaba fayyaa deemtaniittu?	Ji'aa_____tiif	
	Harka keessan yeroo kami dhiqattu? (yeroo hedduu)	1.Mana fincaanii booda 2.Nyaata qophessuun dura 3, nyaata dhiyessun duraa 4, fuulaa daimaa dhiqee booda 5 kan biraa ibsi	
	Akkamiin (maaliin) dhiqattu?	1.Bishaan qofaan 2.Saamunaa wajjin darbee 3.Yeroo hunda saamunaa dhaan 4.Daaraa wajjin al tokko tokko	
Kutaa Shanaffaa: Haala Naannoo			
	Maddi bishaan dhugaatii keessan?	1.Laga 2. Haroo 3.Biirii dhuunfaa 4. Boonoo uummataa 5.Boonoo dhunfaa 6.Kan biraa (ibsi)	
	Guyyaatti baayyina bishaan itti fayyadamtani meeqa	Liitra_____	
	Bishaanitti fayya damtan qulqulleessuuf yaaliin gootan jiraa?	1.Eeyyee (ibsi) 2.Lakki	
	Mana fincaaniini qabduu?	1.Eeyyee 2. Lakki	
	Gosni mana fincaaniiitti gargaaramtanii (ilaali)	1.Boolla dhuunfaa kan qadaadoo qabu 2.Boolla dhuunfaaa kan simmintoo 3.Boolla waliinii kan	

		qadaadoo mukaa 4.Boolla waliini simmintoo 5.'VIP' kan dhuunfaa	
	Haalli kosii qooraa itti gattan akkam?	1.Bakkeetti 2.Boolla dhuunfatti 3.Boolla waliiniitti 4. 'compost' gochuu 5.Gubuu 6.Kan biraa (ibsi)	
Kutaa Ja'affaa :-nyaata madaalaama garaagaraa			
	Nyaataa gossaa booqqoloo ,ruuzii,qammadii xaafii boobee ,kan akka garbuu fi misiraa (nyaata marqaa,dabboo,kannen biro fayadamterta sahaa 24 kanaa darbe kessati)	1.eyye 2.mitti	
	Nyaataa gosaa vitaminii A qabaan kan akka burtukana ,papaayee,mango,karrotii ….sa haa 24 kessatii fayadamera /tii?	1.eyye 2.mitti	
	Nyaata kuduraa fii muduraa dabuu sahaa 24 kessatii fayadamera /fayadamtetii?	1.eyye 2.mitti	
	Gosaa nyaataa sanyyii baqqelaa,attaraa fii misiraa nyateraa?sahaa 24 kana kessatii	1.eyye 2.mitti	
	Goosaa nyaata akaa hundee Addii ,adongaree sukaar dinichaa fii biqqilootaa lafaa jalaa biqilan sahaa 24 kessatii fayadamtanirtu	1.eyye 2.mitti	
	Gosaa nyaataa lukku, kille,gogorii,sololiyaa qabaan sahaa 24	1.eyye 2.mitti	

	kessatii fayadamterta		
	Nyaata gartuu fooni,qurxuumii,lubbu qabbeyii bishaan kesaa gosotaa fonii saha 24 kessatii fayadamtee	1.eyye 2.mitti	
	Gosaa nyaata annanii ,kanannan irraa homishaman kan akaa dhaadha ,ayibaa faaha sa'aa 24 kessatii fayantii/eraa?	1.eyye 2.mitti	
	Nyaataa kessatii sieasituu yokkan mieasituu akkaa, zayiitaa, dhaadhaa,fii coomaasahaa 24 kessatii fayadamtanirtu/ti	1.eyye 2.mitti	
Kutaa Joorbaaffaa: - Madaala Qaamaa			
	Ulfinni mucaa kiiloo graamaan	_____kiiloograamaan	
	Dheerinni mucaa seentii metraan	_____sentiimetiri	
	Madaalliin 'MUAC' kan mucaa seentii metraan	_____sentiimetiri	
Kuttaa 8ffaa sakkatainsaa nyaata fii dhiesaa nyataa			
1a	Batii dabeere jiha tokko kessatii mattin nyaata gahaa hin jiruu jedhani dhiphatanii bekanni ?	0 = mitii 1 = eyyee 2= hin bekuu	
1b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)	
2a	Batii dabeere jiha tokko kessatii ,issin yookin mattin kessan namnii biraa humnaa(dunyaa) dhabudhan nyaata barbadan nyachudhaf dhabdanii bektu ?	0 = mitii 1 = eyyee 2= hin bekuu	
2b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati)	

		2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)
3a	Batii dabeere jiha tokko kessatii ,issin yookin mattin kessan namnii biraa humnaa(dunyaa) dhabudhan nyaata guyya guyyan nyataa gosaa tokko qofaa fayadamtanii beektuu	0 = mitii 1 = eyyee 2= hin bekuu
3b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)
4a	Batii dabeere jiha tokko kessatii ,issin yookin mattin kessan namnii biraa humnaa(dunyaa) dhabudhan nyaata birbaadan argachuu dhabudhan nyaata hin barbadnee soramtanii bultanii bektuu	0 = mitii 1 = eyyee 2= hin bekuu
4b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)
5a	Batii dabeere jiha tokko kessatii ,issin yookin mattin kessan nyaata gahaan jirachuu dhabuun guyaatii kaan barbachisuu gaadii fayadamtanii beektuu	0 = mitii 1 = eyyee 2= hin bekuu
5b	Deebii eyyee yoo tahe rakkinii kun yeroo	1 = darbee darbee(guyyaa tokko

	hagamiif mudaate?	yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)
6a	Batii dabeere jiha tokko kessatii ,issin yookin mattin kessan nyaatnii gahaan dhabamudhan guyaatii kan faayadamtaan hiristaiinii jirtu ?	0 = mitii 1 = eyyee 2= hin bekuu
6b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)
7a	Batii dabeere jiha tokko kessatii ,sababaa dhabinsaattin nyaataa hoomaayuu dhabadanii bultaanii bektuu?	0 = mitii 1 = eyyee 2= hin bekuu
7b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)
8a	Batii dabeere jiha tokko kessatii ,issin yookin mattin kessan namnii biraa nyaataa gahaa dhabudhan ossoo belloftanii raftanii bultanii bektuu?	0 = mitii 1 = eyyee 2= hin bekuu
8b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii

		yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)
9a	Batii dabeere jiha tokko kessatii ,issin yookin mattin kessan namnii biraa nyaataa dhabuudhan oltanii bultanii bektuu	0 = mitii 1 = eyyee 2= hin bekuu
9b	Deebii eyyee yoo tahe rakkinii kun yeroo hagamiif mudaate?	1 = darbee darbee(guyyaa tokko yokkin lamaa guyya 30 kessati) 2 = guyyaa tokko tokko (guyyaa sadii yokkin guyaa 10 guyya 30 kessati) 3 = yeroo bay'ee ((guyyaa 10 olli guyya 30 kessatii)