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Effect of Employment Status of Mother on the Nutritional Status of Children aged 6-23 months: A Comparative Cross Sectional Study in Burayu Town, Oromia Region, Ethiopia 2019

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ACROMONY

AOR Adjusted Odd Ratio
CI Confidence Interval
CF Complementary feeding
COR Crude Odd Ratio
CSA Central statistics agency
EBF Exclusive Breast Feeding
EDHS Ethiopian Demographic and Health Survey
LAZ Length-for-Age Z-score
IYCF Infant and young child Feeding
NCHS National center for Health Statistics
PEM Protein Energy Malnutrition
UNICEF United Nations Initiative Child Emergency Fund
SD Standard Deviation
WHO World Health Organization
WHZ Weight-for-Height Z- score

ABSTRACT

Background: Mothers multiple roles as care-givers of her child & providers of family income may conflict with one another in child nutrition. Working mothers may not have adequate time to care for their offspring's which will negatively affect child nutritional status. On the other hand, working mothers generate income which could be utilized for better child nutrition. So whether the well-being of children is affected more by the time constraints of women who perform dual role of mother and earner, or by the increased income generated by the mother's working is a gap & require finding

Objective:-To compare the nutritional status (stunting and wasting) of children aged 6-23 months among employed and unemployed mothers in Burayu Town.

Methodology: A community based comparative cross-sectional study design was used from January to June 2019 in Burayu town on704 employed and unemployed mother-child pair. Multistage cluster sampling method was used for the selection of clusters and study participants. Data were entered into EPi info and analysis was performed using SPSS version 24.0, and WHO Anthro program was used for conversion of nutritional data of children into Z-scores. The differences in nutritional status of children aged 6-23 months between employed and unemployed mothers were analyised using Bivariate and Multivariate logistic regression at p-value 0.05.

Results: The multivariate analysis shows that children of employed mothers were stunted ((AOR:4.38, 95% CI(2.55-7.51) and wasted (AOR:2.38, 95%CI(1.16-4.91)). Children who received dietary diversity less than 4 food groups and meal frequency less than 4 times daily were stunted ((AOR:1.86, 95%CI(1.26-2.76) and (AOR:1.77,95%CI(1.06-2.94)) respectively. Children whose households had allocating lower monthly food expenditure, had using flush to septic tank type toilet facility, and boiling method of water treatment were stunted ((AOR:1.78, 95% CI(1.16-2.74), (AOR: 0.45, 95% CI ((0.25-0.81)and (AOR: 0.48, 95% CI(0.26-0.86)) respectively. Children of male sex and with parity of birth with one years, who didn't bottle fed and whose households using strained through cloth method of treatment of water were wasted ((AOR:2.42, 95% CI(1.45-4.02), (AOR: 3.74, 95% CI ((1.23-11.39), (AOR: 0.48, 95% CI(0.28-0.83) and (AOR: 0.22, 95% CI(0.07-0.72)) respectively.

Conclusion: Children from employed mother had significantly higher level of length for age Z-Score and weight for Length Z-Score than unemployed mothers. Mothers constraint's of time and inconvenient working area for feeding practice of children such as adequate dietary diversity (food groups) and meal frequency were the contributory factors for the higher nutritional status.

Recommendation: Giving emphasis for working mothers to receive more support in their work place to practice adequate dietary diversity (food groups) and meal frequency is recommended.

Key words: Stunting, Wasting

1. INTRODUCTION

1.1. BACKGROUND

In the fast growing of economy in urban, women have started looking employment outside their homes because of their gross economic necessity, raising their economic standards, having an independent income, to bring into success of their education(1). Women play multiple roles in the family that the role of women as care-givers & as providers of family income may conflict with one another, which may have potentially important implications for the welfare of children(2). Study in Malasiya shows maternal engagement in work influences child feeding practices which then affects child nutrition(3). It further states that feeding practices play a vital role in determining child health and food preferences in later life.

Evidence shows that working women's generating income and purchasing nutritious food for their children better than non working women's. Due to time constraints working women need support for care of their young children while they are at work. However, children who were cared by servants and any other family members(2) had poor nutritional status than those children cared by mother and being caring child for most of the time by servants and other family members had 3 fold higher risks for stunting as compared to child care provided by mothers(2)**.** Study shows that children of the unemployed mothers were taller significantly higher than those children of employed mothers (for the 2+ years children, $z = 3.42$, $p < 0.05$ and for the 3+ years children, $z = 3.6$, $p < 0.05$)(2, 4) respectively.

Study shows that time constraints of employed mothers in child care is an important factor in determining the growth and well-being of the children(5). Other study also shows that environmental, socio economic, socio demographic of mothers and children, child feeding practices and health care factors are affecting nutritional status of children(2, 4). The contribution of maternal employment to the nutritional status of children is not well studied in Ethiopia though few studies show the impact on the nutrition of children. Thus, this study is to compare the nutritional status of children aged 6-23 months between employed and unemployed mothers.

1.2. STATEMENTS OF THE PROBLEM

The first 1,000 days from conception to the second birthday is the most critical time in a child's development and is the window of opportunity for ensuring children survival, flourishing and fulfillment of their potential. Appropriate & adequate feeding of child is critical to good nutritional status in any given time of human life because consumption of nutritionally inadequate diet leads to malnutrition(6). Malnutrition is the most important risk factor for the burden of disease causing about 300, 000 deaths per year for more than half of all deaths in children of under five(7).

Malnutrition is not just consequences of too little food, but also a combination of factors including maternal work status, inappropriate complementary feeding and poor food quality, illness, and environmental factors(8) and socioeconomic factors, inadequacy of child care and alternate child cares(9-11). Ethiopia is one of the six countries in the world in which more than 50% of children under the age of five are stunted(6).

In urban areas most of the women cannot afford to live at home longer because they serve as an important contributor of their family income. Evidence shows participation of mothers in the income-generating activities resulted in a reduced childcare time leading to a negative effect on the children's nutritional status and health(2). Furthermore, being caring a child for most of the time by other family members had 3 fold higher risks for stunting as compared to child care provided by mothers(2).

Dealing with nutritional status of child is a challenge that requires understanding of the co-exist phenomena of maternal work status. In one hand work status of mother with increased income associated with her increase in income and investing on child food has a positive effect on the nutritional status of her child; while on the other hand her work status with the time taken away from child care when she goes work has a negative effect on the nutritional status of her child(5). So it would require finding out whether the well-being of children is affected more by the time constraints of women who perform dual role of mother and earner, or by the increased income generated by the mother's working.

1.3. SIGNIFICANCE OF THE STUDY

Maternal engagement in labor force and earning has dual purpose like for improving the nutritional status of child and household production activities. Due to time constraints for child caring, working mothers arranging different kind of child care strategies like taking along themselves to the work area and to day care institution or left at home with alternative caregiver or neighbors. However, being caring a child with alternate caregiver and other family members were inferior to the biological mother of child care where the child cared with alternate caregiver will be affected not only in nutritional status but also affected in psychosocial, physical & cognitive development etc.

Early weaning of exclusive beast feeding and introduction of cow milk's to a child is one of the effects of maternal engagement in work but it lead a child to a different kind of under nutrition like stunting and wasting, & diseases like anemic since cow milk's is poor source of iron respectively(9) since the growth pattern in early age of children is a foundation for future growth. And also early introducing complementary foods and fluids tend to displace breastfeeding and thus leads to inadequate nutrient intake which then lead to the increased risk of under nutrition, lowered immunity accompanied by frequent infections, and subsequent impaired growth(10-13).

The work status of the mother plays an important role in determining the health and nutritional status of her child. Evidence suggests that maternal employment with the time taken away from child care when she goes work is negatively correlated with the nutritional status of her child(2) and determining child health and food preferences in later life. So whether the well-being of children is affected more by the time constraints of mother's working or by the increased income generated by the mother's working is a gap. The aim of this study is to compare the nutritional status of children aged 6-23 months between employed and unemployed mothers in Burayu Town, Ethiopia. Hopefully these study findings will attempt to fill the gaps, can become a guideline for better research in community setting in future and provide relevant information for more effective intervention to be developed by concerned organization to optimize child nutrition status in Ethiopia like Ministry of Health, Regional Health Bureau, Town Administration, Women affairs and stakeholders, etc.

2. LITERATURE REVIEW

2.1. Nutritional status among children

Nutrition is central and an important input to promote health and development of child. Better nutrition means stronger immune systems, less illness and better health thus good nutritional status in any given time is critical to human life because consumption of nutritionally inadequate diet (under nutrition) leads to under nutrition(6).

Nutritional status is one of the great iniquities and social injustices of our age. Every minute of every day, four children die because of nutritional status. Nutritional status is critical in 1000 days of human life since stunting is irreversible then after. Nutritional status is a major public health problem in Ethiopia. According to the report of UNICEF, Ethiopia is one of the six countries in the world in which more than 50% of children under the age of five are stunted(6). Nutritional status is the most important risk factor for the burden of disease causing about 300, 000 deaths per year directly and indirectly responsible for more than half of all deaths in children(7). And also it is one of the leading causes of morbidity and mortality in children under the age of five in developing countries(6).

According to the WHO report about two in five children in sub-Saharan Africa (10.5% of the children are wasted where (2.2% are severely wasted) and 46.5% of the children are stunted(13). There are more than 90% of world's stunted children under the age of five live in Africa and Asia(6). In Ethiopia the prevalence of stunting and wasting were identified as 44% and 10% respectively in children under five(7). Although the trends had improved (from 2000 to 2011 where a 14% point reduction in stunting), prevalence of stunting in Ethiopia remains among the highest across sub-Saharan African. In Oromia region the prevalence of child undernourishment indicated that 9.6% of the children are wasted (where 2.4 % severe wasting) and 41 % of the children are stunted with 21.8 sever stunting(14).

2.2. Factors associated with nutritional status of children aged 6-23 months

Nutritional status is not just a consequences of too little food, but it is the result of complex interactions between food consumption and the overall status of health and health care practices, and a combination of factors including frequent illness, poor food quality, poor feeding practices, inadequate health services, and environmental factors(6) and socioeconomic factors, maternal education and employment, sex and age of child (socio-demographic factors), paternal financial support, adequacy of child care(2, 5, 15).

2.2.1. Infant and young child feeding (IYCF) practices

Inappropriate complementary feeding practices increase the risk of under nutrition, illness, and mortality in infants and young children less than 2 years of age(16, 17). Greater than two-thirds of under nutrition related child deaths are associated with inappropriate feeding practices during the first two years of life. Such inappropriate feeding practices includes inadequately nutritious diets, poorly diversified and infrequently feeding(18).

Study in Ethiopia shows that the prevalence of excusive breastfeeding was 44% and 65% among employed and unemployed mothers respectively. The study further justify that employed mothers were 32% times less likely to breast feed exclusively than the unemployed mothers (OR=0.32)(23). Similarly study by other scholar reveal that early weaning of exclusive beast feeding and introduction of cow milk's to a child is one of the effects of maternal engagement in work which lead a child to a different process of under nutrition like stunting and wasting, & diseases like anemic since cow milk is poor source of iron respectively(9).

However, evidence shows that the duration of EBF, duration of partial breast feeding & introduction of formula milk had no significant relationship with stunting and wasting ($p>0.05$)(11). The author reason out the finding that the high rate of stunting of children below 6 months of age had been caused by harmful cultural practices (like low rates of exclusive breastfeeding &early introduction of complementary foods of poor quality) which is a contribute of inadequate dietary intake during pregnancy and result in intrauterine growth retardation(5).

Study shows that employed mothers were significantly more likely to meet minimum meal frequency to the children in the 12 months compared to mothers not in employed(2). Similarly the study showing that complementary feeding less than 4 times a day (OR=3.60, 95% CI 1.32-9.95) and dietary diversity below WHO standard (OR=4.06, 95% CI 1.70-9.67) were factors of stunting children(2, 20, 21). The study done in Somali Ethiopia also showed that children received dietary diversity for greater than 4 food groups had lower odds for stunting (AOR = 0.45(95 % CI: 0.21-0.95))(22).The study links children's dietary diversity to the maternal and household-level characteristics like socioeconomic status since it promote the consumption of a variety of foods among infants and young children and also linked to structural aspects such as food security, including the availability, accessibility and affordability of nutritious foods at the household level.

Shcolars justify that bottle feeding was usually accompanied by the introduction of contaminants and foreign microorganisms to the infant's gut which lead to increased exposure to enteropathogenic bacteria, resulting in diarrheal diseases. Furthermore, it increases the risk of under nutrition, illness, and mortality in infants and young children less than 2 years of age(2, 10, 11, 13).

2.2.2. Mother's constraints to child care (Time constraints)

In many developing countries, the multiple role of women and their time constraints were so severe, that their participation in the income- generating activities resulted in a reduced childcare time, which in turn affects the children's nutritional status and health (10) and being caring child for most of the time by other family members had 3 fold higher risks for stunting as compared to child care provided by mothers(2). Maternal employment & nutritional status of pre-school children from low income households were assessed for height, and the result shows that variations in time mothers spent with their children daily were found to be significantly (P < 0.05) related with their occupational status. Using length for age, the level of stunting was 39.2%, 22.8% and 12.8% for mild, moderate & severe respectively(11)

2.2.3. Socioeconomic factor and autonomy of mothers

The study done in West Bengal on mother's status regarding their education and employment levels, and role in decision making including control over daily household expenses shows the proportion of stunting was more among under five children of illiterate mothers (55.8 %) when comparing with children of mothers having above primary education (42.9 %); and also proportion of stunting was more among under five children of mother who don't have any control over daily family expenditure (50.3%) when comparing with children of mothers who had such control (30.0 %) respectively(16). However, household care resources were found to have no significant association with children's nutritional status and care received, and thus may not limit mothers' ability to feed their children appropriately(5).

The study in Areka, Southern Ethiopia shows the prevalence of stunting among children 6-59 months old was 33.2 % (95% CI = 0.3 – 0.4). The study further showed that in multivariable logistic regression analysis of having no formal education [(AOR=5.7, 95%CI= (1.9-16.7)] was associated with stunting(23). Similarly having large family size (7+) was associated with stunting of the children [(AOR=4.9, 95%CI= (1.5-15)]. Occupation of the mothers was significantly associated with stunting of the children [(AOR=4.5, 95%CI= (1.8-11.2)](23).

The study done in Sri Lanka showed that the prevalence of stunting (17.5%) was higher in lower income category compared to the higher income groups where low income was found to be a contributory factor for malnutrition and the result indicates the association between lower income and poor nutritional status(16). Similarly the study done in Chandrapur District, Maharashtra, India also showed that the relationship between the economic status of families and child nutrition and health, where children of poorer families would have a poorer nutrition and health status(24). Also in similar manner study in Nepal showed that the odds of getting stunting was 4.26 times higher among food insecure household than in food secure households (OR=4.26, 95% CI 1.73-10.45)(2). The possible explanation is that low maternal income and household expenditure on food were socioeconomic indicators which remained significant risk factors of under-nutrition

2.2.4. Mother's education and alternative child care

The study showed that educational status of mothers, family size and occupation of mother were significantly associated with stunting. Study in Sri Lanka, India showed that there were declining of prevalence of stunting and wasting with increasing levels of education of mothers(16). Similarly, a study in Areka, Ethiopia showed that educational status of mother had a significant association with the stunting of the children i.e., children aged 6-59 months who had mothers not formally educated were 5.7 times more likely to be stunted than those mothers who had educated (AOR=5.7, 95%CI (1.9-16.7)) (23).

A study done in Managua, Nicaragua on a child care adequacy (adequate, poor, or non-working mother) and the finding indicated for length for age (LA) of children in the poorer care group were shorter than those children in the adequate alternate care group. Children with inadequate alternate child care (care by a preteen or care at the work place) had lower length for age, even controlling for the same variables and for maternal employment(15).The study justify that appropriate complementary feeding and caring practices by caregivers remain a challenge for most of households(25). Other scholar further clarified that in families with working mothers, caregivers were less likely to be observed washing their hands, child feeding and caring this showed that positive associations of mothers work for earnings might be due to income rather than improved care(2).

2.2.5. Child demographic factors (Age and Sex)

The study in Sri Lanka on nutritional status of children aged 6-24 months showed that the prevalence of stunting was significantly higher among boys than among girls (21.1% versus 13.2%) respectively, $p<0.05$)(20). Similarly the study done in Akpabuyo Area , River State Nigeria on Complementary feeding practices among mothers and nutritional status of infants showed that stunting was more common among males compared with females (28.7% vs 20.5%)(26). Whereas study conducted in Bangladesh showed that Girls had relatively poor nutritional status than Boys(27). Scholars justified the differences could be due to the socio economic back ground between Ethiopia and the above countries.The justification is further supported by the study in Selangor, Malaysia supportedshowed that the energy intake (caloric) of the boys was higher than recommendation with 101% for employed mothers and 125% for unemployed mothers; and also protein intake of the boys was also higher than recommendation in both employed (221%) and unemployed (278%) mothers(2).

The study done in Sri Lanka on nutritional status of children aged 6-24 months showed that the prevalence of wasting was higher among boys (22.4%) versus girls (11.2%) at $p<0.05$)(20). Similar study done in Akpabuyo Area, Cross River State Nigeria that showed Female children were less likely to be wasted compared with their male counterparts (OR 0.18; 95% CI 0.06–3.59, $p < 0.05$)(26). However, studies conducted in Bangladesh showed that girls had relatively poor nutritional status than boys(27). Scholars justified the differences in between the nutritional status of gender stated that mothers provide more protection and attention for girls than boys thus they were much less likely leave girls with an alternate caregiver than boys. So that Girls were much more likely to be cared for with inadequate child care than were boys that more likely improves nutritional status of girls than boys(15). And also others reason out due to the socio economic back ground between Ethiopia and the above countries.

2.2.6. Child Health care and environmental related factors

Early introduction of complementary foods associated with increased exposure to enteropathogenic bacteria, resulting in diarrheal diseases where frequent episodes of diarrheal diseases reduce the availability of nutrients. It also tends to displace breastfeeding and thus leads to inadequate nutrient intake, lowered immunity accompanied by frequent infections, and subsequent impaired growth(5). Study showed that appropriate child feeding practices can make a difference in stunting status of children. Scholars further justified that inappropriate complementary feeding practices increase the risk of under nutrition, illness, and mortality in infants and young children less than 2 years of age(12, 13). Evidence shows that the effect of mothers' work status had relative risks for younger children of getting measles, Pneumonia, severe diarrhea, and worm infestation were (22.5%, 14.5%), (12.5%, 13.0%), (7.8%, 37.6), and (22.5%, 14.0%) significantly higher in those whose mothers worked by (1.7, 1.0, 1.5, and 1.5) than non-working mother respectively(24).

Study showing that environmental factor are a risk factors for stunting(2). The study further justified that households with poor environment (poor latrine) had more likely stunted children than those households who had improved latrine since households with poor latrine where children might play toddler which was contaminated wastes with microorganisms (bacteria) which could lead to different health problems like incidence of diarrhea, reduction of appetite where taking less quantity of fluids and foods which could affect nutritional status of children.

2.3. Maternal employment and nutritional status among children

Study in Sri Lanka shows that the poor nutritional status among children of unemployed mothers than among children of employed mothers(16). Similarly, study in India shows that the adjusted odds of infants being wasted in employed mothers was 39% (OR=0.57; 95% CI=0.37–0.89; p=0.014) lower compared with mothers that did not participate in work after controlling for socioeconomic status, below poverty line, caste, duration of care by other careers, birth order and child's age but stunting did not differ significantly between groups (28).

Study in Ethiopia also shows that the mother's occupation (being unemployed) [(AOR=4.5, 95%CI (1.8-11.2)] was significantly associated with stunting of the children aged 6-59 months respectively(23). However, study done in West Bengal shows that proportion of stunting was more among children of employed mothers (80.6%) when comparing with children of housewives (47.8 %)(10). Similarly, the effect of mothers' work status on their children's aged 0-36 month nutrition and health was ascertained that the relative risk of a child of a working (88.5%) versus a non-working mother (81.2%) being malnourished was 1.8 by length for age respectively Chandrapur District of Maharashtra, India(16, 24).

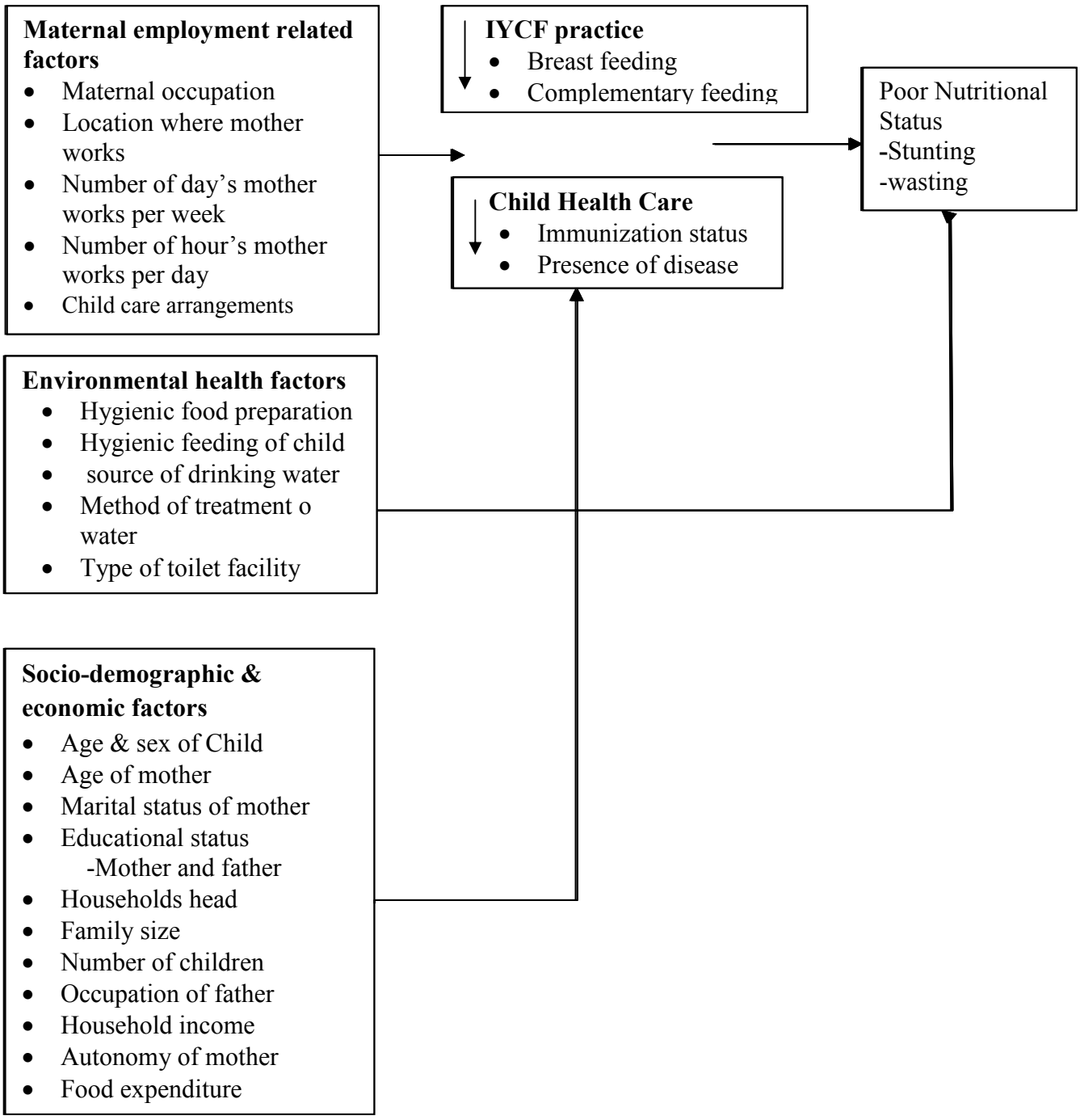


Figure 1: Proposed Conceptual Frame Work of the study

3. OBJECTIVE

3.1. GENERAL OBJECTIVE

To compare the Nutritional Status of Children aged 6-23 months between Employed and Unemployed mothers in Burayu Town, Oromia Region, Ethiopia, 2019

3.2. SPECIFIC OBJECTIVE

3.2.1. The Assessment of Nutritional Status (Stunting) of Children aged 6-23 months among Employed and Unemployed Mother in Burayu Town, Oromia Region, Ethiopia, 2019.

3.2.2. The Assessment of Nutritional Status (Wasting) of Children aged 6-23 months among Employed and Unemployed Mother in Burayu Town, Oromia Region, Ethiopia, 2019

4. METHODS

4.1. STUDY AREA

The study was conducted in Burayu town, found in Finfinne surrounding Oromia special Zone located 8 km to the west of Addis Ababa City (Finfinne), Oromia Region, Ethiopia. The town was administratively directly responsible to the Oromia Regional State. As the statement of Town Health office the town had a total of 6 kebeles and had a total population of 125,000, of which children aged 6-23 months constitute about 5,625 (4.5%).

The town is the center of industry where investment is taking place by Government, Private and Foreigners and it is also the preferable residential area. Because of such huge investment there are different types of manufacturing industry, factory and private businesses situated in the town that created a huge job opportunity to the professional as well as to the daily laborers residing in town and other job seekers. The demolition and reconstruction of nearby Addis Ababa City also fled a high number of populations to the town.

The majority of occupation of women in the town is daily laborer (skilled and non skilled related labor work), followed by trader (small microenterprise to capital intensive trade), professional related work, and others respectively.

As of the statement of town health office and municipal office, the town has 68 private clinics (32 medium and 36 primary clinics), 38 medicine retail outlet (4 pharmacy and 34 Drug stores); and 4 Government health centers. Since the town infrastructure (health facilities, electric and water supply, housing construction, and road/transport) are not designed as per the rate increase of population, women's and the infant and young child are the most affected population group in nutrition, health care, in adequacy of feeding practice, in availability & use of quality water, electric supply, in adulteration of food like oil and others etc. The watery diarrhea frequently affecting the population in the town is one of the evidence as the statement of Town Health Office.

4.2. STUDY DESIGN

A community based comparative cross-sectional study design was conducted using quantitative study method.

4.3. SOURCE OF POPULATION

All mother-child pair who was residing in Burayu town during the study period from January to June, 2019

4.4. STUDY POPULATION

A randomly selected mother-child pair who was residing in all kebele's of selected administration structure of Burayu town during the study period

4.4.1. Inclusion and exclusion criteria

Inclusion criteria: All mothers who had eligible young children (aged 6 months to 23 months) and who had been residents of the study areas for more than six months.

Exclusion criteria: Mother-child pair who had been residing in the town for less than 6 months and children with evidence of chronic health problems such as diagnostically proven active tuberculosis, and symptomatic HIV/AIDS or children who had signs of illness such as persistent vomiting, coughing, diarrhea, fever or acute signs.

4.5. STUDY VARIABLES

4.5.1. Dependant variable

Measurement of anthropometric data: The weight was measured using the Salter scale with minimum clothing and no shoes and the measurement was made two times and record was taken into the nearest 0.1kg. A length of children was measured using measuring board and the measurement was also taken

two times and the record was taken in to the nearest 0.1cm. The age of children was ascertained by comparing with child's birth certificate and the measurement was taken into the nearest decimal number.

4.5.2. Independent variables

The independent variables for the study were maternal employment and mothers working related factors, socio demographic and economic factors, environmental factors, child health care and IYCF practices

Maternal occupation related variables were defined as the mother's report of whether or not she worked for earnings in the past week. The mothers work might be trader, permanent employee, daily laborer and others. The mother also report the duration of her work in hour per a day and the number of days per a week; and whether she works at home or outside home. The mother also reports the type of child care arrangement she uses.

Socio economic variables were defined as the report of mother of her and her husband's income/salary they got and if assistances obtained from family member or others, monthly allocation of food expenditure of household, the autonomous in controlling household food expenditure.

Socio demographic variables were the report mother of her age, her and her husband's educational status, marital status and family size; her child age, sex and parity of birth, and number of children.

Environmental health variables were defined as the report of whether the mother/caregiver was ever washed her hands before and after preparation of food and feeding of child. The source of drinking water and cooking foods, type of toilet/larine facility and method of treatment of water prior drinking were also observed.

The child health care characteristic had two variables which were based on the report of mother for the completeness of vaccinations given to the child which was also observed from the vaccination certificates/cards. Vaccinations were required for measles, polio, BCG and DPT (diphtheria, tetanus, and whooping cough), pneumococcal and Rota. The mother also reported whether the child encountered disease in the past two weeks or not.

The IYCF practice variables were defined as the report of mother or caregiver feeding the child animal protein and food variety. A mother/ or caregiver also reported the minimum dietary diversity/food variety and meal frequency given to the child with in 24 hour of a day. A mother also reported whether or not still breast feeding, timely initiation of complementary feeding, and bottle feeding of her child.

4.6. SAMPLE SIZE DETERMINATION

The target sample size for the study was calculated by assuming a two-sided & two-sample comparison of proportions being considering each specific objective for both employed and unemployed mother and considering the largest sample size as the sample size for study. A double population proportion formula which was used for calculating the sample size for two-sided & two-sample comparison of proportions as indicated below.

$$\boldsymbol{n = \{z\alpha/2\sqrt{[2P'Q']} + z\beta\sqrt{[(P1Q1 + P2Q2]\}2}/(P1 - Q2)2}$$

Where

- **n=sample size required**
- **P1**=anticipated probability of under nutrition (disease) in children of employed mother exposed to the variables and P**2**= anticipated probability of under nutrition (disease) in children of unemployed mother not exposed to the variables
- P'= (P1+P2)/2 is the **mean** of P1 and P2; Q' = 1-Q'; P1= 1-P1, and Q2 = 1-Q2,
- **Z** is the value of standard normal distribution curve corresponding to the confidence interval 90% and the value of standard normal distribution curve corresponding to 80% power,
- **Z α, $Z\frac{\alpha}{2}$ and Z β, r**epresent the number of standard errors from the mean; Zα and Z $\frac{\alpha}{2}$ are functions of the confidence level and Z β is a function of the power of the test.
- α: The significance level of a test: The probability of rejecting the null hypothesis when it is true (or the probability of making a Type I error).
- **Confidence level**: The probability that an estimate of a population parameter is within certain specified limits of the true value; commonly denoted by "1- α ".
- β: The probability of failing to reject the null hypothesis when it is false (or the probability of making a Type II error).
- **Power of test**: The probability of correctly rejecting the null hypothesis when it is false; commonly denoted by "1 - β ".

4.6.1. Specific Objective one

The sample size for the study was calculated by using a two-sided & two-sample comparison of proportions. Assuming the prevalence of chronic under nutrition (stunting) of children aged 6-23 months among employed mother, P1= 88.5% and unemployed mother, P2= 81.1%(20)(16). Accordingly by employing the formula, the sample size required for the children among employed mother was 325 and also taking equal sample size for the children among employed mother, and also considering 8.5% non response rate the minimum sample size for the chronic under nutrition (stunting) required was 704.

4.6.2. Specific objective two

The sample size for the acute under nutrition was calculated by employing the same formula above and by assuming the adjusted odds of infants being wasted in employed mothers was 39% (OR=0.57; 95% CI=0.37–0.89; p=0.014) lower compared with mothers that did not participate in work. This implies the prevalence of acute under nutrition (wasting) of infants (infants aged 1 to <12 months) among employed mothers, P1= 39% and unemployed mother, by employing the following formula of of using OR and RR, then P2= 53.1%(17) (13). Accordingly by employing the formula the sample size required for the children among employed mother was 168 and also by considering equal sample size for the children among employed mother and considering 10% non response rate the minimum sample size for the acute under nutrition required was 371

If the OR or RR and one of the proportions are known, we can compute the unknown proportion by:

$$P1 = \frac{P2}{P2 + \frac{(1-P2)}{OR}} \qquad P1 = P2 * RR$$

Where:

P1=anticipated probability of under nutrition (disease) in children of employed mother exposed to the variables and **P2**= anticipated probability of under nutrition (disease) in children of unemployed mother not exposed to the variables; and OR= Odd Ratio, RR= Relative Risk

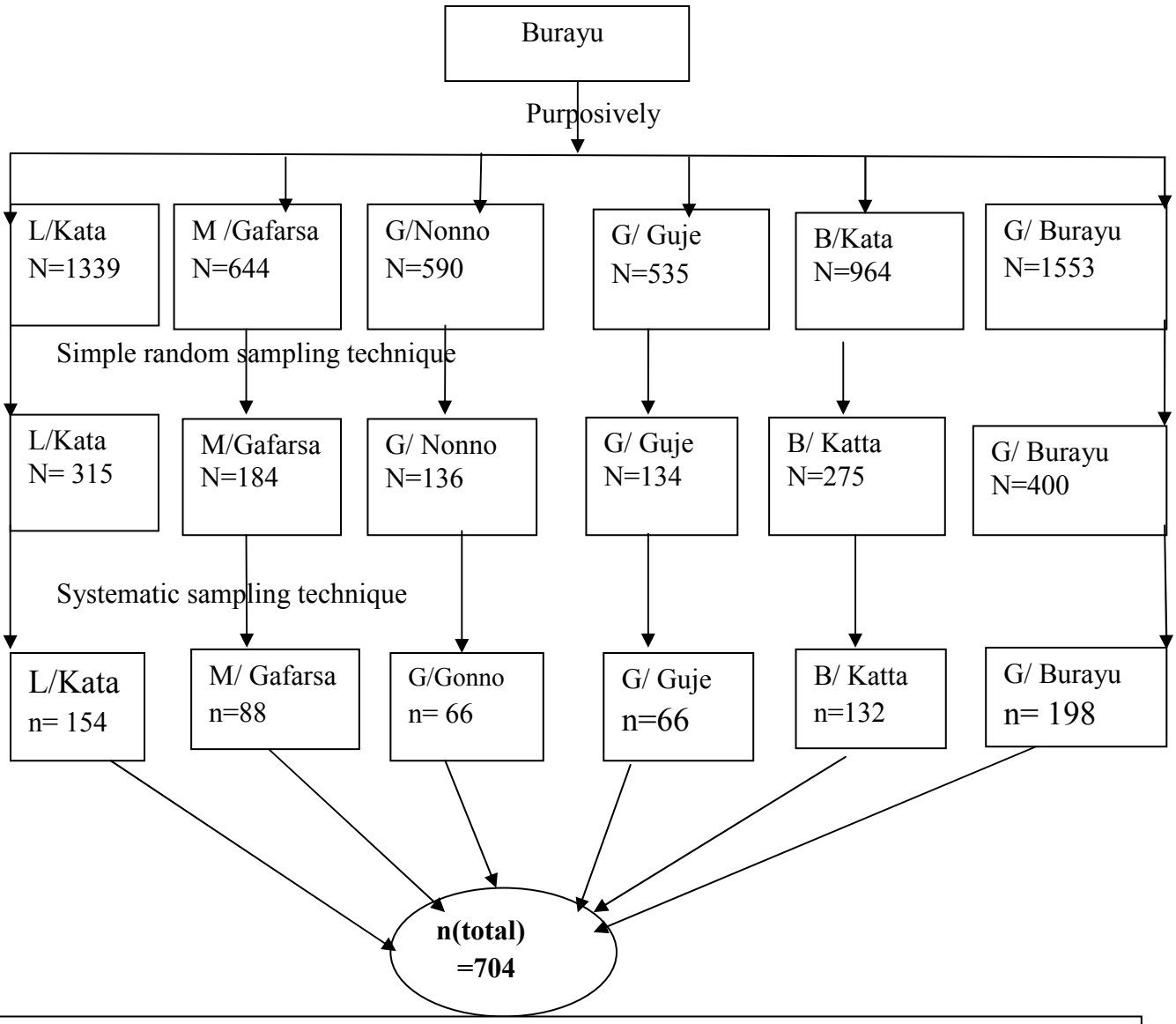
So the sample size calculated from the chronic under nutrition (stunting) was the largest sample size and accommodates the other, so the minimum sample size required for the study was 704

4.7. Sampling technique and Procedures

Burayu was purposively selected for the study. All of six (6) kebeles namely with total population, clusters and children aged 6-23 months (Lakku Katta (5,952, 30 and 1,339), Melka Gafarsa (2,860, 14 and 644), Gafarsa Nonno (2,623, 13 and 590), Gafarsa Guje (2,379, 12 and 535), Burayu Katta (4,284, 21 and 964) and Gafarsa Burayu (6,901, 35 and 1,553)) respectively were included in the study population. The number of clusters (sampling frame) and study participants (households) in each kebele was obtained from town health Office and health centers. Burayu had a total of 25,000 households and 125 formal lower administrative structures/clusters where each clusters comprises of a total of 200 households.

The study employed multistage cluster sampling technique for the selection of clusters and study participants (households)(17). The first cluster sampling technique was a sampling frame which employed a simple random sampling (lottery method) for the selection of clusters. It was based on the formal administrative structures/boundary rather than a list frame of participants due to the constraints of time and budget. While the second cluster sampling technique was a selection of study participants (households) from the already selected clusters in the first cluster sampling techniques. From the second cluster sampling techniques, subsequent households were selected by employing systematic sampling method based on fixed intervals (K=9).

Of the first and second cluster sampling technique, about 32 clusters, 6405 households and 144 children aged 6-23 months in each kebeles for instance in Lakku Katta (7, 1389 and 315), Melka Gafarsa (4,817 and 184), Gafarsa Nonno (3, 605 and 136), Gafarsa Guje (3, 595 and 134), Burayu Katta (6, 1224 and 275), and Gafarsa Burayu (9, 1775 and 400) respectively were included in the study particpants. The sample size of children's aged 6-23 months in each selected clusters were 22(30). Standing and spinning at the center of central location like formal administrative boundary, market, mosque or church, the direction was selected by simple random technique (lottery method) then walking in the selected direction and counting the number of houses until reaching the edge of cluster selected. Subsequent households were sampled by their physical proximity to the previous sampled households at a fixed size interval (constant interval, k =9 value) until the required sample size which fulfill the inclusion criteria were selected(12, 18).



Key:

N =**N**umber of infants in each kebele, and selected clusters per kebele

n= number of infants drawn per selected clusters

n(total)=Total number of infants drawn from Burayu Town

Figure 2 : The schematic Presentation of the Sampling technique

4.8. Methods of data collection procedures

4.8.1. Data Collection Tool

The tool for data collection was structured questionnaires. The questionnaire includes anthropometry measurement and related information. The data collection tools were prepared based on reviewing different available literature and standard questionnaires that were already validated by EDHS (2011) and Central Statistical Agency [CSA] and ICF international 2012. Dat on dietary diversity and meal frequency were adopted from WHO standardized questionnaire for IYCF practices. The questionnaire was developed in English and translated into the local language (Amharic and Afaan Oromo) and then administered through face-to-face interviews. Pretesting of the questionnaire was done on 5% of non participating clusters to assess practicability and respondent understands of the questionnaire

The weight was measured using salter scale with minimum clothing, no shoes, using hanging bag for child and using infant scale of 25 kg capacity into the nearest of 0.1 Kg, and also length of children was measured using infant scale or measuring board in to the nearest 0.1cm. The ages of children was ascertained by comparing with child's birth.

4.8.2. Data Collector/personnel

Data was collected by seven data collectors (including three Public health professionals, two BSC Nurse Professionals and two Diploma Nurses) and two supervisors (MPH and Nurse Professional).

4.8.3. Data quality management

The data collectors were trained for one day on the objective, methods, and each contents of question by the principal investigator. For the purpose of spot checking and standardization, the questionnaire was pre-tested on 5% of child aged 6-23 months in the households located outside of the selected cluster in the kebeles. Supervision was made by the principal investigator and supervisors through observation and

interviews. Finally, the collected data was reviewed and checked every day for completeness and consistency by the principal investigator and supervisors.

4.8.4. Operational definitions

Anthropometry is the measurement of the human body size and configuration which used to assess the nutritional status of individuals and population groups and as eligibility criteria for nutrition support program (7, 17).

Complementary feeding practice is a process of starting other foods besides breast milk to meet the increasing demand in terms of nutritional requirement

Employed mother is defined as the engagement of mother on work outside the home for income generation activities for at least 8 hours per day and also mother who perform work at home for income generation activities in addition to raising their child. The work could be formal or informal.

Food group/Dietary diversity): Proportion of children 6-23 months of age who receive foods from 4 or more food groups. The 7 foods groups used includes grains, roots and tubers; legumes and nuts; dairy products (milk, yogurt, cheese); flesh foods (meat, fish, poultry and liver/organ meats); eggs; vitamin-A rich fruits and vegetables and other fruits and vegetables

Length-for-age index is an indicator of linear growth retardation and cumulative growth deficits. Children whose length-for-age is below -2SD shorter for age (stunted) and are chronically malnourished and Z-score below -3SD is severely stunted.

Nutritional status is the condition that results from an imbalance between dietary intake and requirements. It includes under nutrition, which results from less food intake and hard physical work and over nutrition results from excess food intake and less physical activities.

Minimum dietary diversity: It is a proportion of children aged 6-23 months who received food from $\geq$4 food groups of the 7 food groups during the previous day. The food groups used for tabulation of this indicator are: Grains, roots, tubers, legumes and nuts, dairy products **(**milk, yogurt, and cheese), flesh

food (meat, fish, poultry, and liver/organ meats), eggs, vitamin A- rich fruits and vegetables, and other fruits and vegetables

Minimum meal frequency: The proportion of breastfed and non-breastfed children aged 6-23 months who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more during the previous day. The minimum meal frequency is defined as: 2 times for breastfed infants 6–8 months, 3 times for breastfed children 9–23 months, 4 times for non-breastfed children 6–23 months, and "meals" include both meals and snacks (other than trivial amounts), and frequency is based on caregiver report

Unemployed mother is defined as the mothers who is staying at home and raising their children, and not engaged in any income-generation activities

Weight-for-length index measures body mass in relation to body length and describes current nutritional failure. A child who's Z-scores below -2SD is considered as thin (wasted) for length are acutely malnourished and Z-score below -3SD is considered as severely wasted.

Main source of drinking water for the household is improved source and non improved source. **Improved water Source is** piped water, piped dwelling, piped into compound, piped outside the compound, tube well or borehole, dug well, protected well and protected spring. While n**on- improved water source is** unprotected well, water from spring, unprotected spring, rainwater, and tanker truck, surface water (river, dam, and lake/pond

Kind of toilet/latrine facility is Improved, not shared and non improved toilet facility. Improved, not shared is flush or pour flush toilet, flush to piped sewer, flush to septic tank, flush to pit latrine, ventilated improved pit latrine (VIP), and pit latrine with slab. While n**on- improved toilet facility is** flush to somewhere else, pit latrine without slab, open pit latrine, composing toilet, bucket toilet, hanging toilet/hanging latrine, no facility/bush/field.

4.9. Data entry and analysis

The data was coded, entered & cleaned using Epi-info version 3.4.3 statistical software and then exported to SPSS version 24.0 Statistical Software for analysis. The WHO Anthro program was used to convert nutritional data of children into sex-specific Z-scores of weight for age, height for age and weight for height being consideration age and sex based on the growth reference curves of NCHS population standards of WHO, 2011. The multivariate logistic regression analysis was used to control the possible confounders and determine the significance of the associations at 95%CI. Those variables with p-value of less than 0.05 were considered as significant.

4.10. Ethical consideration

A study protocol was approved & ethical clearance was obtained from school of Public Health, College of Health Science, Addis Ababa University Research& Ethical Committee (REC) & Oromia Regional Health Bureau Research and Ethical Committee. Then an official letter of cooperation was written from Oromia Regional Health Bureau Research and Ethical Committee to Burayu Administrative Town Health Office to get permission and support of each respected kebeles.

The purpose of the study was explained to the study participants and data was kept confidential throughout the research process. An oral consent was taken from the participants to confirm their willingness to participate. The beneficence of the study was explained to study participants. The beneficence could be through linking the most malnourished children to the nearby health centers, informing the town health offices, Regional Health Bureau and concerned stakeholders working on nutrition in the Oromia Region. All incomplete questionnaires were considered as non response rate. Confidentiality of responses was also ensured throughout the research process

4.11. Dissemination of results

The findings of this study will be disseminated to the Regional Health Bureau, Town Administration and Health Office, concerned Stake Holders that will have a contribution to improve the nutritional status of children in the town. The finding will be presented at various seminars and workshops & also at Regional Health Bureau Review meetings. Attempt will be made to submit the findings to journal.

5. RESULT

5.1. RESPONDENTS VARIABLE RELATED CHARACTERISTICS

5.1.1. Socio demographic characteristics of respondents

As shown on Table 1, mothers were asked about the socio demographic characteristics of household and responded that of a total sample of 704 mother-child pairs, 674 were included in the analysis, making the response rate 95.5% of which 312 (46.3%) were employed and 362(53.7%) were unemployed mothers. The mean (±SD) age of employed mothers were 27.56 ± 0.28 years and unemployed mothers were 27.4±0.24 years. The majority 220(70.5%) of employed and 242(66.9%) of unemployed mothers were in the age range of 20-29 years followed by 84(26.9%) and 107(29.6%) of them respectively in the age range of 30-39 years.

With regards to educational status of mother, almost all 608(90.2%) of mothers attended formal school, of which nearly half 154 (49.4%) of employed and nearly one six 63(19.5%) of unemployed mother were attended higher education (TVET, Diploma, Degree & above). More than half 127(54.3%) and about one six 63(19.5%) of husband of employed and unemployed mothers respectively were attended higher education (TVET, Diploma, Degree & above). Concerning the marital status of mother, the majority of 266(85.3%) employed and 321(88.7%) unemployed mothers were married followed by 35 (11.2%) employed and 35 (9.7%) unemployed mother were divorced.

The mean (±SD) age of children of employed and unemployed mothers were 14.3± 0.31 and 14.7±0.27 respectively. Almost half 208 (66.7%) employed and nearly two third 231 (63.8%) of unemployed mothers had 1-2 number of children. Nearly half 178(57.1%) and 197(54.4%) of female were belongs to employed and unemployed mother respectively. Nearly one third 118(37.8%) and 123(34.0%) children of employed and unemployed mothers respectively were in between age range of 6 to11 months.

Table 1: Respondent's Socio-demographic characteristics by Employment status in Burayu Town, Oromia, Ethiopia, 2019

Characteristics	Employed mother		unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Age of Mother's in year				
15-19	3	1.0	6	1.7
20-29	220	70.5	242	66.9
30-39	84	26.9	107	29.6
40-49	5	1.6	7	1.9
Total	312	100.0	362	100.0
Age of child in months				
06-11	118	37.8	123	34.0
12-17	94	30.1	112	30.9
18-23	100	32.1	127	35.1
Number of children				
<2	208	66.7	231	63.8
2-3	88	28.2	108	29.8
4+	16	5.1	23	6.4
Sex of children				
Male	178	57.1	197	54.4
Female	134	42.9	165	45.6
Marital Status				
Married	266	85.3	321	88.7
Divorced	35	11.2	35	9.7
Widowed and other	11	3.5	6	1.7
Educational level of mothers				
Cannot read and write			66	18.2
Primary education	126	40.4	178	49.2
Secondary education	96	30.8	105	29.0
Higher education (TVET,Diploma,Degree)	90	28.8	13	3.6
Educational level of Fathers				
Cannot read and write			5	1.5
Primary education (1–8)	41	17.5	106	32.8
Secondary education (9–12)	66	28.2	149	46.1
Higher education (Diploma, Degree)	127	54.3	63	19.5
Parity of birth interval				
<2	129	41.3	111	30.7
2-3	92	29.5	105	29.0
3	63	20.2	87	24.0
4 and above	28	9.0	59	16.3
Family Type				
Nuclear	266	85.3	321	88.7
Extended	46	14.7	41	11.3

5.1.2. Socio economic characteristics of respondents

As shown on Table 2, mothers were asked about the socio economic characteristics of household's and responded that nearly one third 122(39.1%) of husband's of employed mothers were permanent employee whereas 147(40.7%) of husband's of unemployed mothers were daily laborer. About half of 158 (50.6%) monthly income of household of employed mother was in the range of greater than 5501 (ET Birr)) whereas nearly one third 137(37.8%) of monthly income of house hold of unemployed mother was less than 3000 (ET Birr).

Regarding to the monthly allocation of household for food expenditure, nearly one third 110 (35.3%) of monthly allocation of household for food expenditure of employed mother was in the range between 2001-3000 (ET Birr) whereas nearly one third 114 (31.5%) of monthly allocation of household for food expenditure of unemployed mother was less than 1500 (ET Birr). Considering the autonomous in controlling household food expenditure, almost all (296(94.9%)) of household's of employed mother and nearly two third 218(60.2%) of household's of unemployed mothers were mother who controlling household food expenditure.

Table 2: Respondent's Socio economic characteristics by Employment status in Burayu Town, Oromia, Ethiopia, 2019

Socio-economic characteristics	Employed mother (312)		Unemployed mother(362)	
	Frequency	Percentage	Frequency	Percentage
Occupation status of Father				
No occupation	41	13.1	3	.8
Trader	44	14.1	89	24.6
Permanent Employee	122	39.1	100	27.6
Daily Laborer	90	28.8	147	40.6
Per timer/on contract base	15	4.8	23	6.4
Total	312	100.0	362	100.0
Autonomous in controlling the household expenditure				
Mother	296	94.9	218	60.2
Father	5	1.6	97	26.8
Mother and father	11	3.5	47	13.0
Monthly income of household (in Ethiopian birr)				
<3000	91	29.2	240	66.3
3001- 4000	70	22.4	69	19.1
4001- 5500	65	20.8	40	11.0
>5501	86	27.6	13	3.6
Monthly house hold food expenditure (in birr)				
<1500	89	28.5	15	4.1
1500-2000	73	23.4	152	42.0
2001- 3000	95	30.4	77	21.3
>3001	55	17.6	118	32.6
Household composition (Radio &TV)				
No	26	8.3	90	24.9
Yes	286	91.7	272	75.1

5.1.3. Maternal occupation characteristics of respondents

As shown on Table 3, employed mothers were asked the type of occupation they work and responded that nearly half 134(42.9%) of mothers were working as permanent employee followed by 95(30.4%) as daily laborer and 81(26.0%) as trader. Mothers were also asked the means of transport they use to reach their location of work area and responded that more than one third 127(40.7%) of mothers were going to the location of their work area by walking followed by 88(28.2%) of them using the services. Concerning the time needed to reach location of work area, nearly half 141(45.5%) of mothers spent for less than one hour followed by 122(39.4%) of them going for one hour.

With regards to working days in a week, more than half of 177 (56.7%) of mothers were working for 6 days per a week followed by 122(39.1) of them working for 5 days in a week. A majority 126(40.4%) of employed mothers were working for 9-10 hours per a day followed by 117(37.5%) of employed mothers were working 11-12 hour per day. Mothers were asked the arrangement of child care while they were at work, almost half 198 (63.5%) of employed mothers cared their child with alternate caregiver followed by 41 (13.1%) of child left with adults, neighbor & day care center. Mothers were also asked the convenience of their work area for child feeding and caring, and responded that more than three forth of 31(79.5%) of mothers work site was inconvenient for child feeding and caring

Table 3: Maternal occupation characteristics in Burayu Town, Oromia, Ethiopia, 2019

Maternal occupation characteristics	Employed mother (312)	
	Frequency	Percentage
Occupation status of Mother		
Pretty Trader	81	26.0
Permanent Employee	134	42.9
Daily Laborer	97	31.1
Total	312	100%
Mother means of transportation to work area		
On foot	127	40.7
public transport	20	6.4
By Service	88	28.2
By own vehicle/car	77	24.7
Time needed to reach work area		
< 1hour	143	45.8
1 hour	122	39.1
>1 hour	47	15.1
Mother working hour per day		
8 hour	69	22.1
9-10 hour	126	40.4
11-12 hour	117	37.5
Number of Mothers working day per week		
5 day	122	39.1
6 day	177	56.7
7 day	13	4.2
Arrangement of Child care while mother at work		
Brought with me to work area	39	12.5
leaves with siblings (elder females)	34	10.9
Leaves with adults, neighbor & day care center	41	13.1
leaves with alternate caregiver	198	63.5
Convenience of work area for child feeding		
No	298	95.5
Yes	14	4.5

5.1.4. Infant and young child feeding practice (IYCF)

As shown on Table 4, mothers were asked about the infant and young child feeding practice and responded that more than one third 117(37.5%) of employed and 126(34.8%) unemployed mothers were bottle feeding their children in the previous 24 hour. Almost all 297(95.2%) of employed and 341(94.2%) of unemployed mothers were still breast feeding their children. Almost all 301(96.5%) of employed mother and about one third 94(26.0%) of unemployed mothers were exclusively beast fed their children for less than 6 months.

Mothers were also asked the knowledge and time of introduction of complementary feeding to their children and responded that more than three fourth 288(92.3%) of employed and 306(84.5%) of unemployed mother had a knowledge when to introduce complementary feeds and drinks to their children. A majority 301(96.5%) of employed and one third 94(26.0%) of unemployed mothers were introducing complementary feeds and drinks to their children at age less than 6 months. Almost one third 105(29.0%) of unemployed mother were introducing complementary feeds and drinks to their children at the age of greater than 6 months. Pertaining to barriers for the introduction of complementary feeding, mothers were asked and responded that nearly two third 240 (80.0%) of employed mothers and nearly quarter 58(82.9%) of unemployed mothers reason out due to their work condition and lack of enough milk from their breast for the introduction complementary feedings to their child earlier than 6 months respectively. And also nearly one fourth 81(72.1%) of unemployed mother reason out due to the feeling of their breast milk were enough for child, advice of family and elders & other mothers they were introduced complementary feedings to their children latter than 6 months.

Mothers were asked the dietary diversity (food groups) and meal frequency received by their children in the past 24 hour and responded that more than two third 221(70.5%) of children of employed and 266(73.5%) of children of unemployed mothers were received 4 and above food groups in the past 24 hours. More than one third 132(42.3) of children of employed and nearly half 167(46.1%) of children of unemployed mothers were received meal 4 times daily. Considering the source of information, mothers were asked and responded that nearly one third 119(38.1%) of employed mothers were using Radio or and TV as source of information for introduction of complementary feeding whereas 136(37.6%) of unemployed mothers were using other mothers as source of information for introduction of complementary feedings.

Table 4: IYCF practice characteristics by Employment status in Burayu Town, Ethiopia, 2019

IYCF parctice characteristics	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Frequency
Still breast feeding				
No	15	4.8	21	5.8
Yes	297	95.2	341	94.2
Total	312	100.0	362	100.0
Bottle feeding of child yesterday				
No	195	62.5	236	65.2
Yes	117	37.5	126	34.8
Duration of EBF				
<6 months	301	96.5	94	26.0
6 months	11	3.5	163	45.0
>6 months			105	29.0
Breast feeding of child in the last 24 hour				
No	16	5.1	25	6.9
Yes	296	94.9	337	93.1
Knowledge when to introduce CF to a child				
No	24	7.7	56	15.5
Yes	288	92.3	306	84.5
Age of introduction of CF a child in months				
<6 months	301	96.5	94	26.0
6 months	11	3.5	163	45.0
>6 months			105	29.0
Dietary diversity (Food Groups)				
<4 Food Groups	91	29.2	96	26.5
≥4 Food Groups	221	70.8	266	73.5
Meal frequency in a day				
3 times	125	40.1	136	37.6
4 times	132	42.3	167	46.1
5 times	55	17.6	59	16.3
Reason for introduction of CF before 6 months				
My breast milk is not sufficient	45	15.0	58	82.9
Lack of information of time of introduction	15	5.0	12	17.1
I work for a long time outside my house	240	80.0		
Source of information for CF of the child				
Health professional	51	16.3	43	11.9
Health extension workers	64	20.5	86	23.8
From others mothers	60	19.2	136	37.6
Traditional birth attendant	18	5.8	5	1.4
Radio or/and TV	119	38.1	92	25.4

5.1.5. Environmental (Sanitation and Hygiene) characteristics of households

As shown on Table 5, mothers were asked the sanitation and hygiene of their household like type of toilet facility, water source, method of treatment of water and usual hand washing practice of the household and responded that nearly one third 135(43.3%) of household of employed and 104(28.7%) of unemployed mothers were using flush or pour flush type of toilet facility. Regards to the type of water source nearly more than half 188(60.3%) and 193(53.3%) of household of employed and unemployed mother respectively were using piped water (improved water source for drinking, cooking and hand washing) followed by 69(22.1%) and 82(22.7%) of them respectively were using piped dwelling water.

Regarding the treatment of water prior drinking, mothers were asked and responded that more than half 169 (54.2%) and 159 (43.1%) of household of employed and unemployed mother respectively were using Bleach/chlorine as a method of purifying or treating water prior to drinking followed by 77(24.1%) and 143(39.5%) them respectively were using water for drinking and cooking using boiling method.

Considering the usual hand washing practice, nearly more than three fourth 255(81.7%) and 291(80.4%) of household of employed and unemployed mother respectively were practicing hand washing before feeding their child followed by 225 (72.1%) and 272 (75.1%) of them respectively were practicing hand washing after they had gone to toilet.

Table 5: Environmental characteristics by Employment status in Burayu Town, Oromia, Ethiopia, 2019

Environmental health characteristics	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Type of toilet facility				
Flush or pour flush toilet	111	35.6	100	27.6
Flush to piped sewer	52	16.7	98	27.1
Flush to septic tank	58	18.6	68	18.8
Flush to pit latrine	29	9.3	51	14.1
Ventilated improved pit latrine	62	19.9	44	12.2
Total	312	100.0	1	.3
Type water source for drinking				
Piped water	167	53.5	169	46.7
Piped dwelling	75	24.0	110	30.4
Piped into compound	17	5.4	49	13.5
Piped outside the compound	53	17.0	34	9.4
Method of treatment of water				
Boiling	77	24.7	143	39.5
Bleach/chlorine added	169	54.2	156	43.1
Strained through cloth & Bio-sand,	40	12.8	32	8.8
Let it stand and No treatment	26	8.3	31	8.6
Usually hand washing practice				
After going toilet	225	72.1	272	75.1
Before preparing meal	157	50.3	139	38.4
After preparing meal	90	28.8	**67**	**18.5**
Before feeding the child	255	81.7	291	80.4

5.1.6. Child health care characteristics of respondents

As shown on Table 6, mothers were also asked the health care and immunization status characteristics of their children and responded that more than half 193 (61.9%) and 211 (58.6%) of children of employed and unemployed mothers respectively were sick in the past two weeks. Of the disease encountered in the past two weeks, nearly half 88(45.6%) and 75(34.7%) of children of employed and unemployed mothers were felt in sick for cough followed by 69(35.9%) and 89(41.2%) of them respectively were felt in sick with Diarrehea. Mothers were asked the frequency of Diarrehea in the past two weeks and they responded that nearly two third 48(69.5%) and 54(60.7) of children of unemployed mother were suffer with decendery diarrehea for more than three times daily.

With regrds the immunization status, a majority 301(96.5%) and 345(95.3%), 300(96.2%) and 343(94.3%), 298(95.5%) and 336(92.3%), 290(92.9%) and 340(93.9%), 261(83.7%) and 255(85.4%), and 209(67.0%) and 309(70.4%) of children of employed and unmployed mothers respectively were immunized for BCG, DPT (DPT1-3), Polio (polio 0-3), Rota, Pneumonia and Measles.

Table 6: Child health care characteristics by Employment status in Burayu Town, Oromia, Ethiopia, 2019

Child health care characteristics	Employed mother		Unemployed mother	
	Frequency	Percentage	Frequency	Percentage
Sickness child for the last two weeks				
No	119	38.1	150	41.4
Yes	193	61.9	212	58.6
Total	312	100.0	362	100.0
Type of disease the child was suffer from				
Fever	27	14.0	39	18.4
Diarrehea	69	35.8	90	42.5
Pneumonia	9	4.7	8	3.8
Cough	88	45.6	75	35.4
Frequency of diarrhea in the last two weeks				
One times	2	2.9		
Two times	19	27.5	36	40.0
Three and above	48	69.6	54	60.0
Immunization status of child for				
BCG	301	96.5	345	95.3
DPT (DPT1-3)	300	96.2	343	94.8
Polio (polio 0-3)	298	95.5	336	92.8
Measles	209	67.0	255	70.4
Pneumonia	261	83.7	309	85.4
Rota Virus	290	92.9	340	93.9

5.2. FACTORS ASSOCIATED WITH NUTRITIONAL STATUS

5.2.1. Factors associated with Nutritional sttaus (stunting)

The result of chi-square analysis showed that the prevalence of stunting was higher among children of employed mother 220(70.5%) compared to 177(48.9% among children of unemployed mother. The the prevalence of stunting was higher among female sex children of employed mother 108(80.6%) compared to female sex children of unemployed mothers 81(49.1%). Regarding the household's monthly food expenditure, the prevalence of stunting was higher among children of employed mother 72(80.9%) of whose household monthly allocation for food expenditure the lowest (below 1500 (ET Birr)) compared to 92(60.5%) among children of unemployed mother respectively for the same nutritional status and mothly household food expenditure. Pertaining the occupation of mother related factors the prevalence of stunting was higher among children 92(78.6%) of whose mother working for 11-12 hour per a day compared to 43(62.3%) among children of whose mother working for 8 hours per day. The prevalence of stunting was higher among children 214(71.8%) for inconvenient mothers work area compared to children of mothers 6(42.9%) convenient work area (Table 7).

Regarding the child feeding practice retated charactersistrics the prevalence of stunting was higher among children of employed mother 215(71.4%) who exclusively breast fed and introduced complementary feeding for less than 6 months of age compared to 38(40.4%) among children of unemployed mother for the same months. Considering dietary diversisty (food groups). The prevalence of stunting was higher among children of employed mother 67(73.6%) who received dietary diversisty for less than 4 food groups compared to 57(59.4%) among children of unemployed mothers for receiving same food groups. And also the prevalence of stunting was higher among children of employed mother 93(74.4%) who received meal less than 4 daily compared to 77(56.6%) among children of unemployed mothers for receiving meal for the same frequency. Conssidering environmental related characteristics the prevalence of stunting were higher among children of employed mothers 48(77.4%) whose house holds using ventilated improved pit latrine (VIP) compared to children of unemployed mother 27(61.4%) for the same type of toilet facility. The prevalence of stunting was higher among children of employed mother 22(84.6%) for whose households not treating water prior drinking and cooking foods compared to children of unemployed mother 19(61.3%) for the same method of treatment of water (Table 8).

Table 7: Socio demographic and economic factors association with stunting by Employment status in Burayu Town, Oromia, Ethiopia, 2019 (n=674)

Characteristics	Employed mothers		Unemployed mothers		x2-value	P-value
	Yes(1)	No(0)	Yes(1)	No(0)		
Age of child in months					3.55	0.17
06-11	84(71.2%)	34(28.8%)	67(54.5%)	56(45.5%		
12-17	68(72.3%)	26(27.7%)	55(49.1%)	57(50.9%)		
18-23	68(68.0%)	32(32.0%)	55(43.3%)	72(56.7%)		
Sex of child					4.1	0.04
Male	112(62.9%)	66(37.1%)	96(48.7%)	101(51.3%)		
Female	108(80.6%)	26(19.4%)	81(49.1%)	84(50.9%)		
Mother's Educational Status					18.14	0.00
No Education			23(34.8%)	43(65.2%)		
Primary school	62(80.5%)	15(19.5%)	99(55.6%)	79(44.4%)		
Secondary School	67(69.1%)	30(30.9%)	53(50.5%)	52(49.5%)		
Higher education	91(65.9%)	47(34.1%)	2(15.4%)	11(84.6%)		
Employment status of mother					32.3	0.00
Employed	220(70.5%)	92(29.5%)				
Unemployed	177(48.9%)	185(51.1%)				
Occupation of father					11.92	0.01
No occupation	26(63.4%)	15(36.6%)	2(66.7%)	1(33.3%)		
Trader	35(79.5%)	9(20.5%)	41(46.1%)	48(53.9%)		
Permanent Empoloyee	79(64.8%)	43(35.2%)	35(35.0%)	65(65.0%)		
Daily Laborer	71(78.9%)	19(21.1%)	87(59.2%)	60(40.8%)		
On Contrat/Partimer	9(60.0%)	6(40.0%)	12(52.2%)	11(47.8%)		
Monthly income of household in (ET birr)					5.62	0.13
<3000	71(78.0%)	20(22.0%)	137(57.1%)	103(42.9%)		
3001-4000	45(64.3%)	25(35.7%)	27(39.1%)	42(60.9%)		
4001-5500	47(72.3%)	18(27.7%)	11(27.5%)	29(72.5%)		
>5501	57(66.3%)	29(33.7%)	2(15.4%)	11(84.6%)		
Monthly food expenditure of household in (ET birr)					14.84	0.002
<1500	35(63.6%)	20(36.4%)	3(20.0%)	12(80.0%)		
15001-2000	72(80.9%)	17(19.1%)	92(60.5%)	60(39.5%)		
2001-3000	60(63.2%)	35(36.8%)	26(33.8%)	51(66.2%)		
>3000	53(72.6%)	20(27.4%)	56(47.5%)	62(52.5%)		
Working hour per day					6.5	0.04
8 hour	43(62.3%)	26(37.7%)				
9-10 hour	85(67.5%)	41(32.5%)				
11-12 hour	92(78.6%)	25(21.4%)				
Moher working day per week					3.28	0.19
5 Day	82(67.2%)	40(32.8%)				
6 Day	127(71.3%)	51(28.7%)				
7 Day	11(91.7%)	1(8.3%)				
Convenience of work area for child feeding					5.39	0.02
No	214(71.8%)	84(28.2%)				
Yes	6(42.9%)	8(57.1%)				

Table 8: Child feeding practices and environmental factors association with stunting by Employment status in Burayu Town, Oromia, Ethiopia, 2019 (n=674)

Characteristics	Employed mothers		Unemployed mothers		x2-value	P-value
	Yes(1)	No(0)	Yes(1)	No(0)		
Sill breast feeding					3.28	0.07
No	7(46.7%)	8(53.3%)	9(42.9%)	12(57.1%)		
Yes	213(71.7%)	84(28.3%)	168(49.3%)	173(50.7%)		
Bottle feeding in 24 hour					2.09	0.15
No	85(72.6%	32(27.4%)	67(53.2%	59(46.8%)		
Yes	135(68.9%	60(30.8%)	110(46.8%	126(53.4%)		
Duration of EBF of child					10.5	0.01
<6 months	215(71.4%)	86(28.6%)	38(40.4%)	56(59.6%)		
6 months	5(45.5%)	6(54.5%)	84(51.5%)	79(48.5%)		
>6 months	0		55(52.4%)	50(47.6%)		
Age of introduction of CF					10.5	0.01
<6months	215(71.4%)	86(28.6%)	38(40.4%)	56(59.6%)		
6 months	5(45.5%)	6(54.5%)	84(51.5%)	79(48.5%)		
>6 months	0		55(52.4%)	50(47.6%)		
Dietary diversity					5.87	0.02
<4	67(73.6%)	24(26.4%)	57(59.4%)	39(40.6%)		
≥4	153(69.2%)	68(30.8%)	120(45.1%)	146(54.9%)		
Meal frquency					7.50	0.02
3 times daily)	93(74.4%)	32(25.6%)	77(56.6%)	59(43.4%)		
4 times daily	91(68.9%)	41(31.1%)	77(46.1%)	90(53.9%)		
5 times daily (RC)	36(65.5%)	19(34.5%)	23(39.0%)	36(61.0%)		
Type of toilet facility					12.79	0.03
Flush or pour flush toilet	74(66.7%)	37(33.3%)	55(55.0%	46(45.5%)		
Flush to piped sewer	40(76.9%)	12(23.1%)	47(48.0%	51(52.0%)		
Flush to septic tank	38(65.5%)	20(34.5%)	27(39.7%	41(60.3%)		
Flush to pit latrine	20(69.0%)	9(31.0%)	21(41.2%	30(58.8%)		
Ventilated improved pit latrine (VIP)	48(77.4%)	14(22.6%)	27(61.4%	17(38.6%)		
Type water source					10.04	0.02
Piped water	118(70.7%)	49(29.3%)	78(46.2%)	91(53.8%)		
Piped dwelling	45(60.0%)	30(40.0%)	54(49.1%)	56(50.9%)		
Piped into compound	13(76.5%)	4(23.5%)	25(51.0%)	24(49.0%)		
Piped outside the compound	44(83.0%)	9(17.0%)	20(58.8%)	14(41.2%)		
Method of treatment of water prior drinking					18.86	0.003
Boiling	51(66.2%)	26(33.8%)	60(42.0%)	83(58.0%)		
Bleach/chlorine added	119(70.4%)	50(29.6%)	76(48.7%)	80(51.3%)		
Strained through cloth	28(70.0%)	12(30.0%)	22(68.8%)	10(31.3%)		
No treatment	22(84.6%)	4(15.4%)	19(61.3%)	12(38.7%)		

5.2.2. Factors associated with Nutritional status (wasting)

The result of chi-square analysis showed that the prevalence of stunting was higher among children of employed mother 220(70.5%) of practicing child caring compared to children of unemployed mother 177(48.9%) of practicing child caring. The prevalence of wasting was higher among male sex children of employed mother 50(28.1%) compared to male sex children of unemployed mother 20(10.2%). Considering the parity of birth the prevalence of wasting was higher among children of employeed mother 12(10.3%) with one (1) years parity of birth to the immediate elder compared to children of unemployed mother 39(28.5%) for the same parity of birth (Table 9).

The mother work related factors the prevalence of wasting was higher among children 34(29.1%) of whose mother working for 11-12 hour per a day followed by 25(19.8%) among children of working mother for 9-10 hour per day. Pertaining to the arangemnt of child care while mothers at work, the prevalence of wasting was higher among children 53(26.8%) of who cared by alternate caregiver followed by 8(23.5%) of children who were left with siblings (elder females).

Regarding the child feeding practice retated charactersistrics the prevalence of wasting was higher among children of employed mothers 53(27.0%) who bottle fed in the last 24 hour compared to children of unemployed mother 21(8.9%) for the same same period of bottle feeding. The prevalence of wasting was higher among children of employed mother 67(22.3%) who EBF and introduced complementary feeding for the age less than 6 months compared to children of unemployed mother 10(10.6%) for the same age (Table 10).

Pertaining to the method of treatment of water prior drinking the prevalence of wasting was higher among children of employed mother 11(42.3%) for using let it standing and no treatment as method of treatment of water prior drinking compared to children of unemployed mother 2(6.5%) for the same method of treatment.

Table 9: Socio demographic and economic factors association with wasting by Employment status in Burayu Town, Oromia, Ethiopia, 2019 (n=674)

characteristics	Employed mothers		Unemployed mothers		x2-value	P-value
	Yes(1)	No(0)	Yes(1)	No(0)		
Age of child in months					5.14	0.08
06-11	21(17.8%)	97(82.2%)	9(7.3%)	114(92.7%)		
12-17	16(17.0%)	78(83.0%)	8(7.1%)	104(92.9%)		
18-23	33(33.0%)	67(67.0%)	9(7.1%)	118(92.9%)		
Sex of child					13.54	**0.00**
Male	50(28.1%)	128(71.9%)	20(10.2%	177(89.8%)		
Female	20(14.9%)	114(85.1%)	6(3.6%)	159(96.4%)		
Parity of Birth of child					14.35	0.002
1 year	12(10.3%)	104(89.7%)	39(28.5 %0	98(71.5%)		
2 year	4(3.8%)	102(96.2%)	23(23.2%	76(76.8%)		
3 year	8(9.3%)	78(90.7%)	6(10.5%)	51(89.5%)		
4+ year	2(3.7%)	52(96.3%)	2(10.5%)	17(89.5%)		
Mother's Educational Status					11.53	0.01
No Education			13(9.6%)	122(90.4%)		
Primary school	41(32.5%)	85(67.5%)	10(7.6%)	121(92.4%)		
Secondary School	20(20.8%)	76(79.2%)	3(3.4%)	84(96.6%)		
Higher education	9(10.0%)	81(90.0%)		9(100.0%)		
Employment status of mother					31.92	0.00
Employed	70(22.4%)	242(77.6%)				
Unemployed			26(7.2%)	336(92.8%)		
Monthly food expenditure of household (ET birr)					11.05	0.01
<1500	16(29.1%)	39(70.9%)	1(6.7%)	14(93.3%)		
15001-2000	15(16.9%)	74(83.1%)	9(5.9%)	143(94.1%)		
2001-3000	21(22.1%)	74(77.9%)	9(11.7%)	68(88.3%)		
>3000	18(24.7%)	55(75.3%)	7(5.9%)	111(94.1%)		
Working hour of Mother per day					5.12	0.08
8 hour	11(15.9%)	58(84.1%)				
9-10 hour	25(19.8%)	101(80.2%)				
11-12 hour	34(29.1%)	83(70.9%)				
Arrangement of Child care					8.02	0.05
Brought with me to work area	5(12.8%)	34(87.2%)				
leaves with siblings (elder females)	8(23.5%)	26(76.5%)				
Leaves with adults, neighbor & day care center	4(9.8%)	37(90.2%)				
leaves with alternate caregiver	53(26.8%)	145(73.2%)				

Table 10: Child feeding practices and environmental factors association with wasting by Employment status in Burayu Town, Oromia, Ethiopia, 2019 (n=674)

characteristics	Employed mothers		Unemployed mothers		x2-value	P-value
	Yes(1)	No(0)	Yes(1)	No(0)		
Bottle feeding in 24 hour					8.38	0.004
No	17(14.5%)	100(85.5%)	5(4.0%)	121(96.0%)		
Yes	53(27.0%)	142(72.8%)	21(8.9%	215(91.1%)		
Duration of EBF of child					21.54	0.00
<6 months	67(22.3%)	234(77.7%)	10(10.6%)	84(89.4%)		
6 months	3(27.3%)	8(72.7%)	9(5.5%)	154(94.5%)		
>6 months			7(6.7%)	98(93.3%)		
Age of introduction of complementary feeding to child in months					21.54	0.00
<6months	67(22.3%)	234(77.7%)	10(10.6%)	84(89.4%)		
6 months	3(27.3%)	8(72.7%)	9(5.5%)	154(94.5%)		
>6 months			7(6.7%)	98(93.3%)		
Method of treatment of water prior drinking					7.9	0.09
Boiling	18(23.4%)	59(76.6%)	13(9.1%)	130(90.9%)		
Bleach/chlorine added	38(22.5%)	131(77.5%)	9(5.8%)	147(94.2%)		
Strained through cloth & Bio-sand, composite, ceramic pot filter	3(7.5%)	37(92.5%)	2(6.3%)	30(93.8%)		
No treatment	11(42.3%)	15(57.7%)	2(6.5%)	29(93.5%)		

5.3. Logistic Regression Analysis for factors associated with Nutritional status

5.3.1. Logistic Regression Analysis for factors associated with Nutritional status (stunting)

Multivariate logistic regression analysis showed that variables such as employment status of mother, sex of children, monthly allocation of food expenditure of house hold, dietary diversity (food groups), meal frequency, type of toilet facility, and treatment of water prior drinking were significantly associated with the outcome variables (stunting) at $p<0.05$ (table 7).

In multivariate logistic analysis the employment status and socio- demographic of mother, and the economic variables of household were a predicator variables assessed whether they had associated with stunting or not, where the result shows that the odds of employed mothers of practicing child caring were 4.38 times higher than unemployed mother at p-value of 0.00 [AOR: 4.38, 95% CI (2.55-7.51)] than those who did not. After adjustment was done in logistic regression, mothers educational status was associated with stunting and the odds of those mothers who did not attended school was 67% times less likely to be stunted than those mothers who attended higher level (Diploma and Degree) at p-0.00 [COR: 0.33, 95% CI (0.18-0.61)] but the association was lost after adjustment with other variables. Whereas children of whose households did allocating monthly for food expenditure below the average (1501-2000 ET Birr) were 1.78 times more likely to be stunted than those children whose households allocating monthly for food expenditure greater than the average (3000 ET Birr) at p-0.009 [AOR: 1.78, 95% CI ((1.16-2.74)]. Regarding the socio demographic variables of children, the result showed that male sex children were 31% times less likely to be stunted than those female sex children at p-0.032 [AOR:0.69, 95% CI (0.49-0.97)].

The IYCF practice such as age of introduction of complementary feeding practice of children, dietary diversity (food groups) and meal frequency received by the children were another predicator variables that were assessed whether they had association with stunting or not, where the finding showed that children who introduced complementary feeding at age below 6 months were 1.6 times more likely to be stunted than those children who introduced complementary feeding at age greater than 6 months at p-0.0.030 [COR:1.62, 95% CI ((1.05-2.50)] but the association was lost after adjustment with other variables. Whereas children who received dietary diversity in 24 hour for less than 4 food groups were 1.86 times more likely to be stunted than those children who received dietary diversity for 4 and more

food groups at p-002 [AOR:1.86, 95% CI ((1.26-2.76)]. Regarding the meal frequency, children who received meal less than 4 times daily were 1.77 times more likely to be stunted than those children who received dietary diversity for 4 and more food groups at p-0.03 [AOR:1.77, 95% CI ((1.06-2.94].

On the other hand the sanitation and hygiene factors such as toilet facility and method of treatment of water prior drinking were also another predicator variables were assessed whether they had association with stunting or not, where the finding showed that children whose households using flush to septic tank type toilet facility were 55% times less likely to be stunted than those children whose households using ventilated improved pit latrine (VIP) type of toilet facility at p-0.01[AOR: 0.45, 95% CI ((0.25-0.81)]. Considering the method of treatment of water, the finding showed that children whose households using a boiling method of treatment of water were 52% times less likely to be stunted than those children whose households using let standing and no treatment method of water prior drinking and cooking foods at p-0.01 [AOR: 0.48, 95% CI(0.26-0.86)].

Table 11: Logistic Regression Analysis of factors associated with Stunting by Employment status in Burayu Town, Oromia, Ethiopia, 2019 (n=674)

Characteristics	Stunting		COR	AOR
	Yes	No	(95%C.I)	(95%C.I)
Socio demographic factors				
Employment status of Mother				
Employed	220(70.5%)	92(29.5%)	2.5(1.82-3.44)**	4.38(2.55-7.51)**
Unemployed (RC)	177(48.9%)	185(51.1%)	`1.00	
Sex of child				
Male	208(55.5%)	167(44.5%)	0.73(0.53-0.99)*	0.69 (0.49-0.97)*
Female (RC)	189(63.2%)	110(36.8%)	`1.00	1.00
Educational Status of Mother				
No Education	30(38.5%)	48(61.5%)	0.33(0.18-0.61)**	0.67(0.31-1.46)
Primary School	169(61.9%)	104(38.1%)	1.07(0.71-1.62)	1.65(0.94-2.88)
Secondary school	110(59.1%)	76(40.9%)	0.91(0.59-1.41)	1.34(0.79-2.27)
Higher Level (RC)	88(64.2%)	49(35.8%)	`1.00	1.00
HH monthly food Expenditure				
<1500 (RC)	38(54.3%)	32(45.7%)	0.89(0.52-1.55)	0.58(0.30-1.10)
1501-2000	164(68.0%)	77(32.0%)	1.60(1.08-2.38)*	1.78(1.16-2.74)*
2001-3000	86(50.0%)	86(50.0%)	0.75(0.51-1.14)	0.70(0.44-1.12)
>3001 (RC)	109(57.1%)	82(42.9%)	`1.00	1.00
IYC practice related factors				
Age of introduction of CF				
<6months	253(64.1%)	142(35.9%)	1.62(1.05-2.50)*	0.57(0.31-1.03)
6 months	89(51.1%)	85(48.9%)	0.95(0.59-1.55)	0.77(0.45-1.32)
>6 months (RC)	55(52.4%)	50(47.6%)	`1.00	1.00
Dietary diversity				
<4 food groups	124(66.3%)	63(33.7%)	1.54(1.09_2.19)*	1.86(1.26-2.76)**
≥4 food groups(RC)	273(56.1%)	214(43.9%)	`1.00	1.00
Meal frequency				
3 times daily)	170(65.1%)	91(34.9%)	1.74(1.11-2.72)*	1.77(1.06-2.94)
4 times daily	168(56.2%)	131(43.8%)	1.20(0.78-1.84)	1.19(0.73-1.94)
5 times daily (RC)	59(51.8%)	55(48.2%)	1.00	1.00
Type of toilet facility				
Flush or pour flush toilet	129(60.8%)	83(39.2%)	0.64(0.39-1.06)	0.85(0.49-1.48)
Flush to piped sewer	87(58.0%)	63(42.0%)	0.57(0.34-0.97)	0.80(0.45-1.43)
Flush to septic tank	65(51.6%)	61(48.4%)	0.44(0.26-0.76)**	0.45(0.25-0.81)*
Flush to pit latrine	41(51.3%)	39(48.8%)	0.44(0.24-0.78*)	0.55(0.29-1.05)
Ventilated improved pit latrine(RC	75(70.8%)	31(29.2%)	`1.00	1.00
Method of treatment of water				
Boiling	111(50.5%)	109(49.5%)	0.4(0.18-0.67)**	0.48(0.26-0.86)*
Bleach/chlorine added	195(60.0%)	130(40.0%)	0.6(0.3-1.09)	0.49(0.27-0.90)*
Strained through cloth,Bio-sand,	50(69.4%)	22(30.6%)	0.890.41-1.91)	0.62(0.29-1.33)
No treatment(RC)	41(71.9%)	16(28.1%)	`1.00	1.00

*P-value < 0.05, **P-value <0.01, RC- Reference

5.3.2. Logistic Regression Analysis for factors associated with wasting

Multivariate logistic regression analysis showed that variables such as employment status of mother, sex of children, parity of birth, bottle feeding, and method of treatment of water prior drinking were associated with wasting at p-value < 0.05 (table 9).

In multivariate logistic analysis the employment status of mother and socio demographic factors of children were assessed whether they had association with wasting or not, where the result showed that the odds of employed mothers of practicing child caring were 2.38 times higher than unemployed mothers at p-value of 0.018 [AOR: 2.38, 95% CI (1.16-4.91)] than those who did not. Regarding the socio demographic factors of children, the result showed that male sex children were 2.4 % times more likely to be wasted than those of female sex children at p-0.00 [AOR:2.42, 95% CI (1.45-4.02)]. Considering the age of children, the result shows that children in the age range between 12-17 were 42% times less likely to be wasted than those children aged in between 18-23 months at p-0,049 [COR: 0.58, 95% CI (0.34-0.99)] but the association was lost after adjustment with other variables. Pertaining to the parity of birth, the result shows that children whose parity of birth with immediate elder with one (1)) years were 3.7 times more likely to be wasted than those children whose parity of birth with immediate elder 4 & greater years at p-0.01 [AOR: 3.74, 95% CI ((1.23-11.39)].

The household monthly allocation of food expenditure was a predicator variables assessed whether it had association with wasting or not and the result showed that children whose households did allocating lower monthly food expenditure (below the average (1500 ET Birr)) were 2 times more likely to be wasted than those children whose households monthly allocating for food expenditure greater than the average (3000 ET Birr) at p-0.03 [COR: 2.13, 95% CI ((1.07-4.24)] but the association was lost after adjustment with other variables

The IYCF practice such as bottle feeding of children and age of introduction of complementary feeding practice were another predicator variables that were assessed whether they had association with wasting or not, where the result showed that children who didn't bottle fed in the past 24 hour were 52% times less likely to be wasted than those children who did bottle fed at p-0.010 [AOR: 0.48, 95% CI (0.28-0.83)]. Regarding age of introduction complementary feeding, the finding showed that children who introduced complementary feeding at age below 6 months were 3.3 times more likely to be wasted than

those children who introduced complementary feeding at age greater than 6 months at p-0.0.004 [COR:3.32, 95% CI ((1.48-7.47)] but the association was lost after adjustment with other variables.

On the other hand a method of treatment of water was assessed whether they had association with wasting or not, where the finding showed that children whose households using strained through cloth & Bio-sand, composite, ceramic pot filter as a method of treatment of water were 78% times less likely to be wasted than those children whose households using let standing and no treatment method of water prior drinking and cooking foods at p-0.03 [AOR: 0.22, 95% CI (0.07-0.72)].

Table 12: Logistic Regression Analysis of factors associated with wasting by Employment status in Burayu Town, Oromia, Ethiopia, 2019 (n=674)

Characteristics	Wasting		COR	AOR
	Yes(1)	No(0)	(95%C.I)	(95%C.I)
Socio demographic and economic related factors				
Employment status of Mother				
Employed	70(22.4%)	242(77.6%)	3.74(2.31-6.04)**	2.38(1.16-4.91)*
Unemployed (RC)	26(7.2%)	336(92.8%)	`1.00	1.00
Age of child				
06-11	30(12.4%)	211(87.6%)	0.63(0.38-1.04)	0.70(0.40-1.22)
12-17	24(11.7%)	182(88.3%)	0.58(0.34-0.99)	0.57(0.32-1.02)
18-23(RC)	42(18.5%)	185(81.5%)	`1.00	1.00
Sex of Child				
Male	70(18.7%)	305(81.3%)	2.41(1.49-3.89)**	2.42(1.45-4.02)**
Female (RC)	26(8.7%)	273(91.3%)		
Parity of Birth Interval				
1 year	51(20.2%)	202(79.8%)	4.34(1.52-12.5)*	3.7(1.23-11.39)*
2year	27(13.2%)	178(86.8%)	2.62(0.88-7.75)	2.31(0.73-7.24)
3 year	14(9.8%)	129(90.2%)	1.87(0.59-5.91)	1.53(0.46-5.08)
4 & above year (RC)	4(5.5%)	69(94.5%)	1.00	1.00
HH monthly food Expenditure				
<1500 (RC)	17(24.3%)	53(75.7%)	2.13(1.07-4.24)*	1.52(0.70-3.32)
1501-2000	24(10.0%)	217(90.0%)	0.73(0.41-1.33)	0.64(0.34-1.21)
2001-3000	30(17.4%)	142(82.6%)	1.40(0.79-2.50)	1.02(0.55-1.91)
>3001 (RC)	25(13.1%)	166(86.9%)	`1.00	1.00
IYC practice related factors				
Bottle feeding in the past 24 hour				
No	53(27.0%)	21(8.9%	0.48(0.29-0.79)**	0.48(0.28-0.83)*
Yes(RC)	17(14.5%)	5(4.0%)	`1.00	1.00
Age of introduction of CF				
<6months	71(19.2%)	299(80.8%)	3.32(1.48-7.47)**	1.63(0.59-4.52)
6 months	18(9.0%)	181(91.0%)	1.39(0.56-3.45)	0.990.37-2.72)
>6 months (RC)	7(6.7%)	98(93.3%)	`1.00	1.00
Environmental related factors				
Method of treatment of water				
Boiling	31(14.1%)	189(85.9%)	0.50(0.24-1.06)	0.49(0.22-1.11)
Bleach/chlorine added	47(14.5%)	278(85.5%)	0.57(0.29-1.14)	0.42(0.19-0.91)*
Strained through cloth & Bio-sand, composite, ceramic pot filter	5(6.9%)	67(93.1%)	0.25(0.08-0.76)*	0.22(0.07-0.72)*
No treatment (RC)	13(22.8%)	44(77.2%)	`1.00	1.00

*P-value < 0.05, **P-value <0.01, RC- Reference

6. DISCUSSION

This study was aimed to compare the nutritional status (stunting and wasting) of children aged 6-23 months among employed &unemployed mothers in Burayu Town. Though that the work status of the mother plays an important role in earning income and determining the health and nutrition status of her child; there are a number of factors affecting nutritional status of children, maternal child caring and child feeding practices such as occupation of mother, socio-demographic, economic and environmental, child feeding practice and child health care characteristics. Study reveal that maternal employment negatively affects child caring time because working mothers are less likely available for feeding (breast feeding and complementary feeding) and preparing meals for their children than non working mothers(2, 10).

In the present study the multivariate logistic analysis showed that variables such as employment status of mother, sex of children, monthly food expenditure of house hold, dietary diversity (food groups), meal frequency, type of toilet facility, and treatment of water prior drinking were significantly associated with nutritional status (stunting) among children aged 6-23 months at ($p < 0.05$). And also variables such as employment status of mother, sex of children, parity of birth interval of children, bottle feeding, and method of treatment of water prior drinking were significantly association with the nutritional status (wasting) among children aged 6-23 months at ($p < 0.05$).

In the present study, the prevalence of stunting was higher among children of employed mother of practicing child caring than children of unemployed mothers (70.5% Vs 48.9%) respectively. The study also showed odds of stunting of children among employed mother of practicing child caring was higher than among children of unemployed mother (AOR: 4.38, 95% CI (2.55-7.51). The finding of present study is lower than the study done in West Bengal where the prevalence of stunting was higher among children of employed mothers (80.6%) versus children of housewives (47.8 %) (2, 10) and also lower than the study done in Chandrapur District, Maharashtra, India showed prevalence of stunting among children of a working (88.5%) versus a non-working mother (81.2%)(16, 24). The present study is higher than the prevalence of Oromia region (stunting (41%) (44). But the present finding is in contrast to the study done in Ethiopia that showed the mother's occupation (being unemployed) [(AOR=4.5, 95%CI= (1.8-11.2)] was significantly associated with stunting of the children aged 6-59 months respectively(23). And in Sri Lanka that showed poor nutritional status among children of unemployed mothers than among children of employed mothers(16).This discrepancy is due to the differences in socio economic

status between countries and also different scholars justified that under-nutrition is common in low socio economic conditions.

The present study also reveal that the prevalence of wasting was higher among children of employed mother of practicing child caring than children of unemployed mothers (22.4% Vs 7.2%) respectively. The study also shows odds of wasting of children among employed mother of practicing child caring was higher than among children of unemployed mother (AOR: 2.38, 95% CI (1.16-4.91)). The present study is higher than the prevalence of Oromia region (wasting (9.6%))(7). But the present study is in contrast to study in India that shows the adjusted odds of infants being wasted in employed mothers was lower 39% (OR=0.57; 95% CI=0.37–0.89; p=0.014) compared with mothers that did not participate in work (28) and also in contrast to study done in Surabaya, Indonesia showing the prevalence of wasting among children of employed mothers (8%) versus children of unemployed mothers (17%)(4).

The discrepancy for the nutritional status (stunting and wasting) of the present study is that due to the difference in socio economic status between countries, and also under-nutrition is common in low socio economic conditions and poor quality care. The other is that due to time constraints of working mother and inconvenient working area of mother for child feeding and caring practices thus working mothers arranged their children care with other family member like neighbor, siblings, adults and alternative caregiver. But the quality of child caring given by other family members differ from country to country (like knowledge and attitude of caring child, affection of the child, training of the child, hygienic food preparation and feeding of the child).

The present study shows that the prevalence of stunting were lower among children of whose mother (38.5%) not attended school compared to children (64.2%) of whose mother attended higher level (Diploma and Degree). The present study is similar to study done in Somali Ethiopia and Tanzania (5, 16) showed that maternal education was not statistically associated with any of the anthropometric indices. The study further stated that maternal employment and educational characteristics constrain good child-care practices. The present study is in contrast to study showing the declining of prevalence of stunting with increasing levels of education of mothers (16). This discrepancy can be explained by the fact that nutrition is not taught as such in primary schools, and therefore most of the mothers would have lacked formal nutritional knowledge of child feeding and care practices. So at constant household care

resources and control over there were no significant association with children's nutritional status and care received, thus may not limit mothers' ability to feed their children appropriately(5)

According to the present study, the prevalence of exclusive breasting feeding was lower among children of employed mother (3.5%) for exclusively breasting feeding to 6 months compared to children of unemployed mother (45%) for EBF the same months. Moreover, the study showed that higher prevalence of stunting among children of employed mother who exclusively breast feeding and introduced complementary feeding at age less than 6 months compared to children of unemployed mother ((71.4%) versus (40.4%) for the same nutritional status respectively. The finding of present study is similar to the study done in Ethiopia showing employed mothers were 32% times less likely to breast feed exclusively than the unemployed mothers (OR= 0.32)(19) and also similar to study in Nepal that showed inappropriate exclusive breast feeding (OR=6.90, 95% CI 2.81-16.97) was factors of stunted children(2). The possible explanation for this is that appropriate child feeding practices can make a difference in stunting status of children. This can be further supported by justification of other scholars that stated inappropriate complementary feeding practices increase the risk of under nutrition, illness, and mortality in infants and young children less than 2 years of age(12, 13).

The present study showed that higher prevalence of wasting among children of employed mother who exclusively breast feeding and introduced complementary feeding at age less than 6 months compared to children of unemployed mother ((22.3%) versus (10.6%)) for the same nutritional status respectively. The finding was in contrast to the study done in Somali Ethiopia that showed breastfeeding was independently associated with reduced odds of wasting (AOR = 0.38(95 % CI: 0.14-0.99)) (22). The possible explanation for this contrast finding is that the status of exclusively breast feeding and introduced complementary feeding rather than the duration can affect wasting of children. Furthermore, study justify that wasting was significantly associated with increasing age of the child ($p<0.05$) and late introduction of fat and oils into the diet (after 8 months of age) than earlier age before 6 month exclusively breast feeding and introduced complementary feeding ($p<0.001$) (16).

According to the present study, the prevalence of stunting was higher among children of whose mother working for 11-12 hour per a day than those children of whose mother working for 8 hours per day (78.6%) Vs 62.3%) respectively. The present study is higher than the study done in Southwestern Nigeria that showed 46.9% of mothers spent more than 8 hours at work and 62.7% worked outside their homes

accordingly that had a negative impact the nutritional status of children(20). This study is also similar to study done on maternal employment & nutritional status of children that showed the variations in time mothers spent with their children daily were found to be significantly related with their occupational status where height for age parameters were (39.2%, 22.8% and 12.8%) for mild, moderate & severe malnutrition respectively(11). The possible explanation is that mothers' involvement in work outside the house has a negative effect on their children's nutrition and health status. This can be due to the work load that can affect woman's own nutrition and health and consequently decrease her capacity to produce an optimum quantity of breast milk, and the other is due to the time constraints imposed by her involvement in work outside may prevent her from attending to the needs of her children(24).

According to the present study, the prevalence of stunting was higher among children of mothers inconvenient work area for child feeding and caring than those children of mothers convenient work area (71.8% Vs 42.9%) respectively. The possible explanation is that there was strong association between maternal places of employment and nutritional status of children with the timing of introduction of complementary foods(2) since the childcare given by the mother was superior to that was given by any other family member(29).

Because of mothers inconvenient work area for child feeding and caring, children were cared by alternative caregiver but the prevalence of wasting was higher among children of working mother (26.8%) who cared by alternate caregiver compared to children cared with mothers at work area and adults, neighbor & day care center (12.8%) and (9.8%)) respectively. This study is similar to the study done in Managua, Nicaragua showing that children with inadequate alternate child care (care by a preteen) had lower height for age, even controlling for the same variables and for maternal employment(15) since appropriate complementary feeding and caring practices by caregivers remain a challenge for most of households(25). It further clarified that in families with working mothers, caregivers were less likely to be observed washing their hands, child feeding and caring this showed that positive associations of mothers work for earnings might be due to income rather than improved care(2).

The multivariate logistic regression analysis of the present study showed that the prevalence of stunting was lower among male sex children than female sex children (AOR: 0.69, 95% CI (0.49-0.97). The present study is similar to the studies conducted in Bangladesh showed that Girls were having relatively poor nutritional status than Boys(27). In contrast to the present study, study done in Akpabuyo Area ,

River State Nigeria on Complementary feeding practices among mothers and nutritional status of infants showed that stunting was more common among males compared with females (28.7% vs 20.5%) (26). The present study is also incontrast to the study done in Sri Lanka on nutritional status of children aged 6-24 months showed that the prevalence of stunting was significantly higher among boys than among girls (21.1% versus 13.2%) respectively, p<0.05 (35). This difference is due to the socio economic back ground between Ethiopia and the above countries could be the reason for that.

Multivariate logistic regression analysis of the present study also showed that the prevalence of wasting was higher among male sex children than female sex children (AOR: 2.42, 95% CI (1.45-4.02)). This finding is similar to the study done in Sri Lanka on nutritional status of children aged 6-24 months showed that the prevalence of wasting was higher among boys (22.4%) versus girls (11.2%) at p<0.05)(16). The present study is also similar to study done in Akpabuyo Area, Cross River State Nigeria that showed Female children were less likely to be wasted compared with their male counterparts (OR 0.18; 95% CI 0.06–3.59, p < 0.05) (26). In contrast to the present study, studies conducted in Bangladesh showed that girls were having relatively poor nutritional status than boys (27). The differences in between the nutritional status of gender, scholar justified that mothers provide more protection and attention for girls than boys thus they were much less likely leave girls with an alternate caregiver than boys. So that Girls were much more likely to be cared for with inadequate child care than were boys which more likely improves nutritional status of girls than boys(15). This discrepancy is due to the socio economic back ground between Ethiopia and the above countries could be the reason for that.

Moreover, the present study reveal that the prevalence of wasting was higher among children with one (1) years parity of birth (AOR: 3.7, 95% CI(1.23-11.39)) compared to those children with 4 & greater years parity of birth. In contrast to the present study, other study showed that regardless of the parity of Childs birth, a child care adequacy (adequate, poor, or non-working mother) was associated with nutritional status where a children in the poor care group were shorter than those in the adequate alternate care group even controlling for the same variables and for maternal employment(15). This can be explained by the fact that the younger children with the lower parity need attention on appropriate feeding and caring where insufficient quantity and quality of care could affect their nutritional status.

According to the present study the prevalence of stunting was higher among children with lower allocation of household's food expenditure (AOR: 1.78, 95% CI ((1.16-2.74)) compared to those children

whose household's greater allocation for food expenditure. The finding is similar to the study done in Sri Lanka that showed prevalence of stunting (17.5%) was higher in lower income category compared to the higher income groups where low income was found to be a contributory factor for malnutrition and the result indicates the association between lower income and poor nutritional status(16). The present study is also similar to the study done in Chandrapur District, Maharashtra, India that shows the relationship between the economic status of families and child nutrition and health, where children of poorer families would have a poorer nutrition and health status(24). Also in similar to study in Nepal showed that the odds of getting stunting was 4.26 times higher among food insecure household than in food secure households (OR=4.26, 95% CI 1.73-10.45)(2). The possible explanation is that low maternal income and household expenditure on food were socioeconomic indicators which remained significant risk factors of under-nutrition

Furthermore, the study reveal that the prevalence of stunting was higher among children who received dietary diversity for less than 4 food groups compared to those children who received dietary diversity in the last 24 hour for 4 and more food groups (AOR: 1.86, 95% CI ((1.26-2.76)). And children who received meal frequency for less than 4 times daily were higher stunting compared to those children who received meal frequency for greater than 4 times daily (AOR: 1.77, 95% CI ((1.06-2.94)). This study is similar to the study showing complementary feeding less than 4 times a day (OR=3.60, 95% CI 1.32-9.95) and dietary diversity below WHO standard (OR=4.06, 95% CI 1.70-9.67) were factors of stunting children(2,21). The present study is also similar to the study done in Somali Ethiopia showed that children received dietary diversity for greater than 4 food groups had lower odds for stunting (AOR = 0.45(95 % CI: 0.21-0.95)) (2). This can be explained by the fact that children's dietary diversity are linked to maternal and household-level characteristics like socioeconomic status since it promote the consumption of a variety of foods among infants and young children and also linked to structural aspects such as food security, including the availability, accessibility and affordability of nutritious foods at the household level.

On the other hand the prevalence of wasting was lower among children who didn't bottle feed in the last 24 hour compared to those children who bottle fed (AOR: 0.48, 95% CI (0.28-0.83)). The study is similar to the study done in Northern Ghana showed that appropriate complementary feeding and caring practices by caregivers remain a challenge for most households(34). The possible explanation is that bottle feeding was usually accompanied by the introduction of contaminants and foreign microorganisms

to the infant's gut which lead to increased exposure to enteropathogenic bacteria, resulting in diarrheal diseases. Furthermore, it increases the risk of under nutrition, illness, and mortality in infants and young children less than 2 years of age (2, 10, 11, 13).

Regarding the sanitation and hygiene, the present study showed that the prevalence of stunting was lower among children whose households used flush to septic tank type toilet facility compared to those children whose households used ventilated improved pit latrine (VIP) type of toilet facility (AOR: 0.45, 95% CI ((0.25-0.81)). Finally, the prevalence of stunting and wasting were lower among children whose households were boiling and Bleaching/chlorine added method of treatment of water compared to those children whose household did not. This fnding is similar to the study showing environmental factor are a risk factors for stunting(2). The possible explanation is that households with poor environment (poor latrine) had more likely stunted children than those households who had improved latrine since households with poor latrine where children might play toddler which was contaminated wastes with microorganisms (bacteria) which could lead to different health problems like incidence of diarrhea, reduction of appetite where taking less quantity of fluids and foods which could affect nutritional status of children. Untreated water also contains microorganisms like bacteria when drunken which could which could lead to different health problems and affect nutritional status of children.

This study showed no association between educational status of mother and age of introduction of complementary feeding with stunting. This was in contradictory with study done in Sri Lanka (20) and Areka, Ethiopia(23); and in Tanzania(5) finding respectively. Educational status of mother is an argue where other scholars justify that at constant household care resources and control over, there were no significant association with children's nutritional status and care received, and thus may not limit mothers' ability to feed their children appropriately(5) and (also Somali Ethiopia).

This study also showed no association between the age of children, age of introduction of complementary feeding and household allocation of food expenditure with wasting. This was in contradictory with the study done in India (11, 15) and Tanzania (5) finding respectively.

7. STRENGTHS AND LIMITATION OF THE STUDY

7.1. STRENGTH OF THE STUDY

- The study employed a quantitative method with EDHS modified variables or check list for the validity of the findings.
- The study used double population sampling size which increases the validity of the findings.
- The study employed random sampling method and was representative

7.2. LIMITATION OF THE STUDY

- The study employed a cross-sectional study design which could not establish a cause and effect relationship between the dependent and Independent variables
- The complementary feeding practice and EBF was measured by asking caregivers or mothers in a 24- hour recall method but the quantity of liquids/foods given was not actually measured at the time of data collection
- Though intensive training, regular field supervision and pre-test were done, the study was not free from measurement and recall bias while conducting anthropometric and child feeding practice assessments, respectively.

8. CONCLUSION

- Children from employed mothers had significantly higher level of length for age Z-Score (LAZ) and weight for Length Z-Score (WLZ) than unemployed mothers. Mothers constraint's of time and inconvenient working area for feeding practice of children such as adequate dietary diversity (food groups) and meal frequency were the contributory factors for the higher nutritional status

- Sex of children, household's allocation of food expenditure, dietary diversity (food groups), meal frequency, type of toilet facility, and method of treatment of water were found to be significantly associated with the nutritional status (stunting) of children aged 6-23 months.

- Sex of children, parity of birth interval, bottle feeding, and method of treatment were found to be significantly associated with the nutritional status (wasting) of children aged 6-23 months.

9. RECOMMENDATIONS

For policy Makers

- To give more emphasis for working mothers to receive support in their work place to practice appropriate feeding practices such as breast feeding, adequate dietary diversity and meal frequency

For Ministry of Health and Regional Health Bureaus

- To give more emphasis on conducting further operational research on nutritional status at the present study area and others, supporting researchers and in time intervening with the findings.

For institutions and Organizations

- To give emphasis on creating conducive working environment for employed mothers on onsite child care at their working place like breast and complementary feeding of their children, and also child health care.

For health extension workers

- Should work and strengthen appropriate feeding practices such as breast feeding and complimentary feeding (adequate dietary diversity and meal frequency), utilization of hygienic condition of toilet facility and appropriate treatment of water prior drinking at household level.

For Community

- Health education of mothers on appropriate feeding practices such as breast feeding and complimentary feeding (adequate dietary diversity and meal frequency) where practices need to be strengthened, simple and understandable.
- Proper nutritional massages will be provided to the community through public health staff or volunteer trained food and nutritional professionals.
- Then the community should exercise appropriate feeding practices at their household level.

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ANNEX – I: ENGLISH VERSION QUESTIONNAIRE

ADDIS ABABA UNIVERSITY SCHOOL OF PULIC HEALTH

Hello, my name is _____. I am working with Mr Mulugeta Olika. He is a second year graduate student of Masters of Public Health in College of Health Sciences, School of Public Health, Addis Ababa University. This study is part of the requirements for the fulfillment of the MPH programme for which he is enrolled.

The component of this study is to measure nutrition related indicators such as height & weight of children aged 6-23 months among employed and unemployed mothers. And also the age of the child be computed from the birth certificate of the child. Mother-child pairs are selected from respective households based on the WHO cluster sampling method. So you are part of the selected mothers for the interview and your child for the study (measurement of age, weight and height). All of the measurements and interview is done with complete professionalism, carefulness and accuracy.

I hereby assure you that for the responses will be kept strictly confidential for all matters and it will only be used for the purpose of the study mentioned above. You and your child name will not be mentioned to protect your confidentiality. You have a right to answer or not for questions which might be inconvenient for you. The study may require_____ minutes. So please give me only some minutes to complete my question and take my measurements. If you have any additional questions, please feel free to contact the investigator with cell phone +251-911563916) and also use email address mulugetarh@gmail.com

I thank you in advance for being very cooperative with this research along with your child.

Consent form for study participants and confidentiality

Consent form for study participants

The purpose of this study is to assess the nutritional status of your child. The study will consists of child related information (like heights, weights and age measurements, information on feeding practices like breast feeding, complementary feeding, the meal frequency and dietary diversity); interview of information related on mothers occupation, socio-demographic and economic factors, environmental factors and child health care characteristics. The study has no any risks to the health of your child. You and or your child's participation in this research are entirely voluntary either to accept or refuse participation.

Confidentiality

The study records and forms including only numeric identifiers will be kept securely & not available to other participants. The study findings of your child's information will not be made available to persons or organization except the involving institutions/faculty. The finding of study will be communicated only in the summary forms like tables in number, percentage and frequency, figures and graphs.

I assure that I have read and understood the contents, objective and purpose of the study in the community settings including the potential risks, benefits and the right to participant or refuse, and that all of my questions about the study have been answered to my satisfaction. I hereby give my informed consent for my child to participate in this study and have their picture taken or be videotaped as necessary. After all these I understood and:

1. I agree to participate in the research voluntarily_____
2. I didn't agree to I didn't agree to participate in this research _____

Parent/Alternate caregiver Signature _____Date _____

Interviewer Name _____Signature _____ Date_____

Results of interview questionnaire-encircle from the given options

1. Completed
2. Refused
3. Partially completed
4. Other specify

Questionnaires

Date of visit _____/_____/_____/Code_____ Kebele _____

Direction1:- Questions related to mother's socio-demographic and economic information			
	Mother demographic and Educational level related information	1.	
Sr.No	**Characteristics**	**Alternatives:Choose/describe/category**	**Skip to**
101	What is your age?	Age: _____year Year | Month	
102	What is your Marital status?	**1.** 1. Married **2.** 2. Single/Never married **3.** 3. Divorced/separated **4.** 4. Widowed **5.** 5, Other/specify	
103	How many children's do you have?	1. Number of children _____	
104	What is the birth interval between this child and his/her immediate elder?	Interval in number__ (in year)	
105	What is your Family type?	1. 1. Nuclear (Father, Mother,& childrens) 2. 2. Extended (Father, Mother, childrens, Grand father & Mother, &Relatives)	
	Educational level related information		
Sr.No	**Characteristics**	**Alternatives: Choose/describe/category**	**Skip to**
201	Can you read and write?	1. 1. Yes 2. 2. No	
202	Have you ever attended school? (Mother)	3. 1. Yes 4. 2. No →	**Skip to 203**
203	5. What is the highest level of school you attended? 6. Educational status of mother	Highest level of school attended _____ **1.** No Education **2.** Primary school (1-8) **3.** Secondary school (9-12) **4.** Higher level (Diploma and above)	
204	Can your child father read and write?	7. 1. Yes 8. 2. No	
205	Is your husband ever attended school?	1. 1. Yes 2. 2. No →	**Skip to 301**
296	3. What is the highest level of school father of your child attended? 4. Educational status of Father	Highest level of school attended _____ **1.** No Education **2.** Primary school (1-8) **3.** Secondary school (9-12) **4.** Higher level (Diploma and above)	
	Child's Demographic related information		
Sr.No	**Characteristics**	**Alternatives: Choose/describe/category**	**Skip to**
301	What is the Sex of your child?	1. 1. Male **2.** 2. Female	
302	What is the birth order of your child?	Birth order: _____	

303	What is the age of your child? (Please show child's birth certificate)	Age: _____ months Year | Month | day	
	Measurements of Child's Height and Weight		
	To be measured by Data collector **You are requested to wear off the cloths and shoes of your child.**		
Sr.No	**Characteristics**	**First measurement**	**Skip to**
304	Height of child in centimeter (cm)	Length: in cm	
305	Weight of child in killo gram (Kg)	Weight: _____ in Kg in Kg | In gram	
	Socio-economic information of the household		
Sr.No	**Characteristics**	**Alternatives: Choose/describe/category**	**Skip to**
401	Have you been employed?	1. 1. Yes 2. 2. No	
402	Is your husband employed?	3. 1. Yes 4. 2. No	
403	If yes, what is his occupation?	1. Petty trader 2. Permanent employee 3. Daily laborer 5. 4. Other (specify)……	
404	What is the income of this household? (Monthly in Ethiopian birr)	1. 1.Mother: _____birr 2. 2. Father: _____ birr 3. Children's support **4.** other_ _____birr Total income _____ birr	
405	How much money do you spend monthly on food expenditure for this household? (in Ethiopian birr)	Monthly food expenditure _____ birr	
406	Who is autonomous in controlling the household expenditure?	1. 1. Mother 2. 2. Father 3. 3. Mother and father **4.** 4. Alternative caregiver	
	Household mass media presence condition	5.	
407	Is there mass media, including TV & radio in this household?	6. 1. Yes 7. 2. No	
	Maternal employment related factor information (For worked mothers only)		
Sr.No	**Characteristics**	**Alternatives: Choose/describe/category**	**Skip to**
501	What is your occupation?	1. Petty trader 2. Permanent employee 3. Daily laborer **1.** 4. Other (specify)……	
502	Means of transportation	1. 1. On foot	

		2. 2. By own vehicle 3. 3. By service 4. 4. Public transport 5. 5. others	
503	How much hour needed to reach your work area?	6. Distance in hour _____	
504	For how long you work per day? Please consider double trip of the journey	_____ hour	
505	How many days you work per a week?	**_____ days**	
506	How do you arrange your child care while you are at work?	**1.** 1. Brought with me to work area **2.** 2. leaves with siblings (elder females) **3.** 3. Leaves with adults **4.** 4. Leave with neighbor **5.** 5. leaves with alternate caregiver **6.** 6. leaves at day care center	
507	Is your work area convenient for breast feeding and complementary feeding?	**7.** 1. Yes **8.** 2. No	
	Child feeding practices related information		
Sr.No	**Characteristics**	**Alternatives: Choose/describe/category**	**Skip to**
601	For how long have you been EBF your children after delivery?	1. Number of months _____	
602	Are you still breastfeeding your child?	2. 1. Yes 3. 2. No	
603	Bottle feeding yesterday	1. Yes 2. No	
604	Breastfeeding in the last 24 hour	1. Yes 2. No	
605	Do you Know the exact time of initiation/introduction of complementary feeding to your child?	1. Yes 2. 2. No	
606	At what age did you first introduce complementary food to the baby?	1. Before six months 2. At six month 3. After six months	
607	If the mother start complementary food before six month what is her reason? (more than one answer is possible)	1. My breast milk is not sufficient 2. Due to problems in my breast 3. Due to medical illness 4. lack of information on the time of starting complementary food 5. Other mothers practice it 6. I work for a long time outside my house	
608	If mother introduce complementary food after six month (delayed) what are the reason?	1. Did not know exactly when to start 2. Mother feels that her milk is enough for baby 3. Family, elders and others mothers advice to star after six months 4. Mother feels child may not be able to digest it 5. Other specified	
609	Where did you get this information?	1. 1. Health professional 2. 2. Health extension workers	

<table>
<tr><td></td><td></td><td>3. 3. From others mothers
4. 4. Community health volunteer
5. 5. Traditional birth attendant
6. Radio or/and TV
1. Other specified</td><td></td></tr>
<tr><td>610</td><td>What kinds of dietary diversity (food groups) do you give to your child? Please tell us the child has taken by recalling in the past 24 hour).
More than one answer is possible</td><td><table><tr><td>Food diversity/Food group in the past 24 hour taken</td><td>Yes</td><td>No</td></tr><tr><td>1. Grains, roots and tubers</td><td></td><td></td></tr><tr><td>2. Legumes and nuts</td><td></td><td></td></tr><tr><td>3. Dairy products (milk, yogurt</td><td></td><td></td></tr><tr><td>4. Flesh food (meat, fish, poultry and liver/organ meats)</td><td></td><td></td></tr><tr><td>5. Eggs</td><td></td><td></td></tr><tr><td>6. Vitamin A- rich fruits and vegetables</td><td></td><td></td></tr><tr><td>7. Other fruits and vegetables</td><td></td><td></td></tr></table></td><td></td></tr>
<tr><td>611</td><td>How many times does your child eat those food groups in a day?</td><td>1. Meal frequency in a day __
1. Once a day
2. Twice a day
3. Three times a day
4. Four times a day
5. Any time the child is angry</td><td></td></tr>
<tr><td></td><td>Child Health Care and immunization status characteristics</td><td></td><td></td></tr>
<tr><td></td><td>Child Health Care related characteristics</td><td></td><td></td></tr>
<tr><td>Sr.No</td><td>Characteristics</td><td>Alternatives: Choose/describe/category</td><td>Skip to</td></tr>
<tr><td>701</td><td>Does your child fall sick for the past two weeks?</td><td>1. 1. Yes
2. 2. No ——→</td><td>SKIP TO 803</td></tr>
<tr><td>702</td><td>If yes, what are the disease he/she often suffers from?</td><td>6. 1. fever
7. 2. Diarrehea
8. 3. Pneumonia
9. 4. Cough
10. 5. Anemia</td><td></td></tr>
<tr><td>703</td><td>If diarrhea, what is the frequency of bloody diarreha in the past two weeks?</td><td>1. Frequency of diarrhea __ per a week two weeks?
2. 1. 1 times
3. 2. 2 times
4. 3. 3 and aobove times</td><td></td></tr>
<tr><td></td><td>Child immunization status related information</td><td>1.</td><td></td></tr>
<tr><td>Sr.No</td><td>Characteristics</td><td>Alternatives: Choose/describe/category</td><td>Skip to</td></tr>
<tr><td>801</td><td>Is your child immunized?
Please check the immunization certificate of child and if immunized for mark “ √ “ and if not immunized mark “ × “</td><td><table><tr><td>Immunized for</td><td>Yes</td><td>No</td></tr><tr><td>1. BCG</td><td></td><td></td></tr><tr><td>2. DPT (DPT1-3)</td><td></td><td></td></tr><tr><td>3.Polio (polio 0-3)</td><td></td><td></td></tr><tr><td>4.Measles</td><td></td><td></td></tr><tr><td>5. Pneumococcal</td><td></td><td></td></tr><tr><td>6. Rota</td><td></td><td></td></tr></table></td><td>Skip to</td></tr>
<tr><td></td><td>Sanitation and Hygiene related questions:</td><td>1.</td><td></td></tr>
</table>

	Directions: Data collectors should observe the Sanitation and Hygiene of this household before filling the questionnaires		
ተ.ቁ	**Sanitation and Hygiene related questions:**		
Sr.No	**Characteristics**	**Alternatives: Choose/describe/category**	**Skip to**
901	What type of toilet/latrine facility do you use in this household?	**1. Improved, not shared** is ✓ Flush or pour flush toilet, ✓ Flush to piped sewer, ✓ Flush to septic tank, ✓ Flush to pit latrine, ✓ Ventilated improved pit latrine (VIP), ✓ Pit latrine with slab . ✓ Protected spring **2. Non- improved toilet facility is** ✓ Flush to somewhere else, ✓ Pit latrine without slab, ✓ Open pit latrine, ✓ Composing toilet, ✓ Bucket toilet, ✓ Hanging toilet/hanging latrine, ✓ No facility/bush/field.	
902	What type of drinking water do you use in this household?	**1. Improved water Source is** ✓ **P**iped water, ✓ Piped dwelling, ✓ Piped into compound, ✓ Piped outside the compound, ✓ Tube well or borehole, ✓ Dug well, ✓ Protected well and **2.** 2. N**on- improved water source** ✓ Unprotected well, ✓ Water from spring, ✓ Unprotected spring, ✓ Rainwater, ✓ Tanker truck, ✓ Surface water (river, dam, and lake/pond	
903	How these households treat water prior drinking? (More than one answer is possible	1. Boiled 2. Bleach/chlorine added 3. Strained through cloth 4. Bio-sand, composite, ceramic pot filter 5. Let it stand and settle 6. Other 1. 7. No treatment	
904	When do you usually wash your hands? More than one answer is possible	1. After going to the toilet 2. Before preparing meal 3. After preparing meal 4. Before feeding a child **5.** Others/specify	

Thanks for spending your time and giving us information

ANNEX-II: AMHARIC VESION QUESTIONAIRE

አዲስ አበባ ዩኒቨርሲቲ የህብረተሰብ ጤና ሳይንስ ትምህርት ቤት
የጥናቱ አላማ መግለጫ

ጤና ይስጥልኝ ስሜ ---------- ይባላል፡፡ እኔ ከሙሉጌታ ኦሊቃ ጋር እየሰራሁ ሲሆን ይህ ጥናት በአዲስ አበባ ዩኒቨርሲቲ በድህረ ምረቃ ፕሮግራም የሁለተኛ ዲግሪውን በህብረተሰብ ጤና ሳይንስ መስክ ለመመረቅ ከሚያስፈልጉት መስፈርቶች አንዱና ዋነኛው ነው፡፡

የጥናቱ ዋና አላማ እድሜያቸው ከስድስት ወር አስከ ሀያ ሦስት ወር ድረስ ያሉትን ህፃናት እናቶቻቸው ሥራ ሳይኖራቸው እቤት ውስጥ ውለው የሚያሳድጌቸውና እናቶቻቸው ተቀጣሪ ሆኖ በሚያሳድጌቸው መካከል ያለውን የአመጋገብ ሁነታን ለይቶ ለማወቅና እንዲሁም ችግሮችን በተመለከተ መፍትሄ ለማግኘት የሚካሄድ ጥናት ነው፡፡

በዚህ መረጃ አስተሳሰብ ላይ የሚሳተፉ እድሜያቸው ከስድስት ወር አስከ ሀያ ሦስት ወር ድረስ ያሉት ህፃናት እናቶቻቸው ሥራ ሳይኖራቸው እቤት ውስጥ ውለው የሚያሳድጌቸው እና እናቶቻቸው ተቀጣሪ ሆኖ በሚያሳድጌቸው እንድሁም እናቶቻቸው ሲሆኑ እርሶም የመረጃ አሰባሰብ ዘዴን በመጠቀም ለሚደረገው ጥናት መስፈርቱን አሟልተው ከተመረጡ እናቶች አንዱ ነዎት፡፡ በዚህ ጥናት ውስጥ የልጆት ቁሜት እና ክብደት የሚለካ ሲሆን እድሜያቸው ከልደት ሰርትፍከታቸው ጋር ይተያይና ልዩነቱ የህፃኑ እድሜ ሆኖ ይወሰዳል፡፡ እርሶ ግን ከህፃናቱ አመጋገብና ተያያዘኘነት ባለቸው ቃለ መጠይቅ ይደረግሎታል፡፡ በዚህ ጥናት የሚገኘው መረጃ ለጥናቱ አላማ ብቻ የሚውል ሲሆን ከእርሶና ከልጆት የሚገኘውን መረጃ ሚስጥራዊነቱ የተጠበቀ ነው፡፡ የእርሶና የልጆት ሥም በዚህ መጠይቅ ውስጥ አይጠየቅም፡፡ በተጨማሪም የሚጠየቁትን ጥያቄ ሙሉ በሙሉ ወይንም በከፊል መመለስ ወይም በፈለጉ ጊዜ ከጥናቱ መውጣት መብትዎ ነው፡፡ መጠይቁ 30 ደቂቃ ይወስዳል፡፡ ለተጨማሪ መረጃ በስልክ ቁጥር 0911563916 ወይም በኢሜል አድራሻ mulugetarh@gmail.com መጠቀም ይችልሉ፡፡

በፍቃደኝት ስለሚደርጉት አስተዋኦ በቅድሚያ እናመሰግናለን፡፡

ለጥናቱ ተሳታፊዎች የስምምነት ቅፅ

የጥናቱን አላማ ተረድቸዋለሁ በመሆኑም ማንኛውም የሚሰጠው መረጃ ለዚህ ጥናት ብቻ እንደሚውል እንዲሁም ማንነቱ የማይለጽ መሆኑን ስለተረዳሁ በዚህ ጥናት ላይ ለማሳተፍ፡-

ፍቃደኛ ነኝ (የ X ምልክት ያድርጉ) ----------

ፍቃደኛ አይደለሁም (የX ምልክት ያድርጉ) ----------

የጠያቂ ስም ----------የጠያቂ ፊርማ ---------- ውጤት መለያ ----------

1. የተጠናቀቀ
2. ለመጠይቅ አልተስማሙም
3. በከፊል የተሟላ
4. ሌላ/ይገለጽ/

መጠይቅ

የጉብኝት ቀን _____/_____/_____ **ቀበለ** _____**መለያ ቁጥር**_____,

ቀን ወር ዓ.ም

ክፍል 1፡- *መሠረታዊ መረጃን የተመለከቱ ጥያቄዎች*

መመሪያ አሁን የእናቶችና ህፃናት መሠረታዊ እና የስነህዝብ የተመለከቱ ጥያቄዎችን እንጠይቀዎታለን			
የእናቶች *መሠረታዊ* በተመለከተ *መሰረታዊ* ጥያቄዎች			
ተ.ቁ	ጥየቄ	*መልስ*	**ወደ ሚቀጥለው ጥያቄ ይሂዱ**
`101	እድሜዎት ስንት ነው?	_____ *ዓመት* *ዓመት* / *ወር*	
102	የጋብቸ ሁኔታዎን ቢነግሩን?	2. 1. ያገባች 3. 2. ያላገባች 4. 3. አግብታ የፈታች 5. 4. በሞት የተለየ 6. 5. ሌላ/ይገለጽ	
103	ምን ያህል ልጆች አሎት?	7. የልጆች ብዛት ____	
104	በትንሹ ልጅዎና በእሱ/በእሷ ታለቅ መካከል ምን ያህል የእድሜ ልዩነት አለ?	**3.** የእድሜ ልዩነት በቁጥር--------	
105	ዚህ ቤት ውስጥ የሚኖሩት የቤተሰብዎን ሁነታ ቢገልጹልን?	1. 1. ኣባት፤ እናት እና ልጆች 2. 2. ኣባት፤ እናት እና ልጆች፤ የአባት እና የእናት በተሰቦች እና የልጅ ልጆች	
	የእናት እና የአባት የትምህርት ሁነታን በተመለከ		
ተ.ቁ	ጥየቄ	*መልስ*	**ወደ ሚቀጥለው ጥያቄ ይሂዱ**
201	እርሶዎ *መፃፍና ማንበብ* ይችላሉ?	1. አዎ 2. አልችልም ⟶	
202	*መደበኛ* ትምህርት ተከታትለዎል?	1. 1. አዎ 2. አልተከታተልኩም ⟶	**ወደ ቁጥር 204 እለፍ**
203	ያጠናቀቁት ከፍተኛ የትምህርት ደረጃ ስንት ነው?	የትምህርት ደረጃ---------- 1. የመጀመርያ ትምህርት (1-8ኛ) 2. ሁለተኛ ደረጃ ትምህርት (9-12ኛ) 3. ከፍተኛ ትምህርት (ድፕሎማ እና ከዚያ በላይ)	
204	የልጆዎት አባት *መፃፍና ማንበብ* ይችላሉ?	1. አዎ 2. አልችልም	
205	የልጆዎ አባት *መደበኛ* ትምህርት ተከታትለዎል?	1. 1. አዎ	

		2. 2. አልተከታተሉም ⟶	**ወደ ቁጥር 301 እለፍ**
206	የልጆዎ አባት ያጠናቀቁት ከፍተኛ የትምህርት ደረጃ ስንት ነው?	የትምህርት ደረጃ---------- 1. የመጀመርያ ትምህርት (1-8ኛ) 2. ሁለተኛ ደረጃ ትምህርት (9-12ኛ) 3. ከፍተኛ ትምህርት (ድፕሎማ እና ከዚያ በላይ)	
	የሕፃናትን መሠረታዊ እና የስነህዝብ በተመለከተ ጥያቄዎች	4.	
ተ.ቁ	ጥየቄ	መልስ	**ወደ ሚቀጥለው ጥያቄ ይሂዱ**
301	የህፃኑን ፆታ ቢነግሩን?	1. ወንድ---------- 5. 2. ሴት----------	
302	ልጆት ስንተኛ ነው የተወለደው	የልጁ ትውልድ ቅደም ተከተል --------	
303	የህፃኑ እድሜ ስንት ነው? **(የልደት ካርድን ብያሳዩን)**	የህፃኑ እድሜ--------- ወር **ዓ.ም** | **ወር** | **ቀን**	
	በመረጃ ሰብሳቢ/ጠያቂው የሚሞላ፡ **የሰውነት መጠን ልኬት**		
	መመሪያ፡ አሁን የልጅዎን ክብደትና ቁሜት የምንለካ ይሆናል፡፡ ስለዚህ ልጅዎ የለበሰውን ከባድ ልብሶች እና ያደረገውን ጫማ እንድታወልቅሎት እንጠይቃለን፡፡		
ተ.ቁ	**የሰውነት መጠን ልኬት**	የመጀመሪያ ልኬት	
304	የህፃኑ ቁሜት በሴንትሜትር	☐☐☐ **ሰንትሜትር**	
305	የህፃኑ ክብደት በኪሎ ግራም	ክብደት ---- ኪሎ ግራም **ኪሎ ግራም** | **ግራም**	
	ክፍል 2፡ የቤተሰብዎን እኮኖሚ እና መገናኛ ብዙኃን ሁኔታን በተመለከተ እንጠይቀዎታለን		
	የቤተሰብዎን እኮኖሚ እና መገናኛ ብዙኃን ሁኔታ በተመለከተ ጥያቀዎች		
ተ.ቁ	ጥየቄ	መልስ	**ወደ ሚቀጥለው ጥያቄ ይሂዱ**
401	እርሶ ተቀጣሪ ሰራተኛ ኖት?	1 1. አዎ 2 2. አይደለሁም	
402	የልጆችዎ ባለቤት ተቀጣሪ ሰራተኛ ናቸውን ?	1 1. አዎ 2 2. አይደለሁም	
403	መልስዎ አዎን ከሆነ የስራቸው አይነት ምንድን ነው?	1. ነጋዴ 2. መደበኛ ተቀጣሪ ሰራተኛ 3. የቀን ሰራተኛ 4. ሌላ /ይገለጽ/	

404	የቤተሰብዎ የወር ገቢ ስንት እንደሆነ ቢነግሩን ?	1. 1. የእናት የወር ገቢ --------- ብር 2. 2. የአባት የወር ገቢ ---------- ብር 3. 3. የልጅ/ጆች ድጋፍ -------- ብር 4. 4. ሌላ/ይገለጽ ---------- ብር 5. ድምር ---------- ብር ነው	
405	የዚህ ቤተሰብ የወር ምግብ ፊጆታ ወጪ ስንት እንደሆነ ቢነግሩን?	---------- ብር	
406	የዚህ ቤተሰብ የምግብ ፊጆታ ወጪ የሚቆጣጠረው ማን ነው?	1. 1. እናት 2. 2. አባት 3. 3. የቤት ሰራተኛ 4. 4. ሌላ/ይገለጽ	
	የቤተሰብዎ መገናኛ ብዙኃን ሁኔታ በተመለከተ የሚጠየቁ ጥቀዎች	5.	
407	በዚህ ቤተሰብ ውስጥ መገናኛ ብዙኃን የሚያገለግሉ (ሬድዮና ተሌቭዥን) ይኖራል? (ረድዮና ተሌቭዥኑ እንደሚሰራ ብያሳዩን)	6. 1. አዎ 7. 2. አይደለም	
	ለተቀጣሪ ሰራተኛ እናቶች ብቻ የሚጠየቁ ጥያቄ		
ተ.ቁ	ጥየቄ	መልስ	**ወደ ሚቀጥለው ጥያቄ ይሂዱ**
501	የስራዎ አይነት ብነግሩን?	ነጋዴ 2. መደነኛ ተቀጣሪ ሰራተኛ 3. የቀን ሰራተኛ ነ. 4. ሌላ /ይገለጽ/	
502	የሥራዎ ቦታ ምን ያክል ሳዓት ያስከዳል?	1. የሥራ ቦታ ርቀት ---- ሳዓት ያስከዳል	
503	የሥራዎ ቦታ በምን ይሄዳሉ?	2. 1. በእግር 3. 2. በግል መክና 4. 3. በሰርቭስ 5. 4. በፐብክ ትራንስፖርት 6. 5. ሌላ /ይገለጽ/ ---------	
504	በቀን ለምን ያህል ሰዓት ስራ ቦታ ያሳልፋሉ? ከደርሶ መልስ ጋር ደምረው ይንገሩን	በቀን ---------- ሰዓት	
505	በሳምንት ለምን ያህል ቀን ስራ ቦታ ያሳልፋሉ?	---------- ቀን	
506	እርሶዎ ስራ በሚሄዱበት ጊዜ ህፃኑን የሚመገበው ማን ነው?	7. 1. የስራ ቦታ ይገፎ በመሄድ እመግበዋለው 8. 2. በህፃን ልጆች (ታላቅ ሴት ልጅ) ትመግበዋለች 9. 3. አያቶች ይመግቡታል 10. 4. በቤት ሰራተኛ በመጠቀም እመግበዋለሁ 11. 5. የህፃናት መዋያ ማዕከል በማዋል 12. 6. ሌላ ካለ ይገለጽ ----------	
507	ልጅዎን የስራ ቦታ ይዞ በመሄድ የሚመግቡ ከኖነ በስራዎ ቦታ ልጆዎን ለማጥባትና ምግብ ለመመገብ የሚያስችሎ ሁኔታ አለ?	ነ. አዎ 2. የለም	

	ክፍል 3፡ የህፃን አመጋገብ፣ ጤና ክብካቤ እና የህፃናት ክትባት ሁኔታን ተመለከተ የሚጠየቅ ጥያቄ	1.	
	የህፃን አመጋገብን ብቻ ተመለከተ የሚጠየቅ ጥያቄ	2.	
ተ.ቁ	ጥየቄ	መልስ	**ወደ ሚቀጥለው ጥያቄ ይሂዱ**
601	ህፃናት ከተወለደ የእናት ጡት ወተት ብቻ ለስንት ወር ነው የጠባው?	3. ---------- ወር	
602	በአሁኑ ሰዓት ጡት በማጥባት ላይ ነዎት?	3. 1. አዎ 4. 2. አይደለም	
603	ትናንትና ህፃንዎን ጡጦ አጠብተዋል?	1. አዎ 2. አይደለም	
604	ትናንት ሌሊቱንና ቀኑን ጨምሮ ለምን ያህል ጊዜ ልጅዎን ጡት አጥብተዋል ? (ባለፈው 24 ውስጥ)	1. አዎ 2. አይደለም	
605	ትክክለኛውን ጊዜ ህፃንዎን ተጨማሪ ምግብ እንደሚያስጀምሩ ያውቃሉን?	1. አዎ 2. አይደለም	
606	ህፃንዎ ተጨማሪ ምግብ የጀመረው በተወለደ በስንተኛ ወር ነው?	---------- ወር 1. ከ6 ወር በፊት (<6) 2. በ6 ወሩ (=6) 3. ከ 6 ወር ቦኃላ (>6)	
607	ህፃኖን በመጀመሪያዎቹ 6 ወር በፊት ተጨማሪ ምግብ ያስጀመሩ/የመገቡ ከሆነ ቀደም ብለው እንድጀምሩ/እንድመግቡ የደረገዎት ምክንያት ቢገልጹልን? (ከአንድ በላይ መልስ መስጠት ይችላሉ)	1. ጡቴ በቂ ወተት አያመነጭም 2. በጡቴ ችግር ምክንያት 3. በሜድካል ህመም ምክንያት 4. በየትኛው ጊዜ ተጨማሪ ምግብ ማስጀመር እንዳለብኝ መረጃ ማጣት 5. ለሎች እናቶችም ስለማይመግቡ 6. ከቤተ ውጭ ለረጅም ሳዓት የሚሰራ ስለሆነ	
608	በመጀመሪያዎቹ ስድስት ወር ቦኃላ ለልጅዎ ተጨማሪ ምግብ ያስጀመሩ/የመገቡ ከሆነ ዘግይተው የጀመሩበት ምክንያት ቢገልጹልን? (ከአንድ በላይ መልስ መስጠት ይችላሉ)	1. እናት ትክክለኛውን ጊዜ ተጨማሪ ምግብ ማስጀምር እንዳለባት አለማወቅ 2. የጡቴ ወተት ለህፃኑ በቂ ነው ብየ ስለማስብ 3. ቤተሰብ፣ ታላለቆች እና ሌሎች እናቶች ተጨማሪ ምግብ መጀመር ያለበት ከ6 ወር ቦኃላ ብለው ምክር ስለሰጡኝ 4. እናት የህፃናት ጨንራ ችሎ ምግብ አይፈጭም ብላ ማሰብ 5. ሌላ/ይገለጽ	
609	ይህንን ተጨማሪ ምግብን ማስጀመሪያ ጊዜ መረጃን ከየት እንዳገኙ ብነግሩን?	1.ከጤና ባለሙያ 6. 2. ከጤና ኤክስተንሽን ሰራተኞች 7. 3. ከለሎች እናቶች 8. 4. ከፈቃደኛ የህብረተሰብ ጤና	

		9. 5. ከልምድ አዋላጅ 6.ከሬድዮና ቴለቭዥን 7. ሌላ/ይገለጽ	
610	ትናንት ሌሊቱንና ቀኑን ጨምሮ እስከ አሁን ድረስ ልጅዎ የሚመገበው የምግብ ዓይነት ምንድን ነው? ህፃናት በ24 ሳዓት ውስጥ የወሰዳቸው የምግበ ዓይነቶች አስታውሰው ይንገሩን)? (ከአንድ በላይ መልስ ይቻላል)	የምግብ ዓይነት / አዎ / አይደለም 1. አትክልት፣ ሥራ ሥር፣ ፍራፍሬ እና ቅጠላ ቅጠል 2. ኑግና ባቀላ እና አተር ነክች 3. የእንስሳት ተዋፅኦ ምግቦች (ወተት፣ እርጎ) 4. ሥጋ ነክ ምግቦች (ሥጋ፣ አሳ፣ ዶሮ፣ ጉበት) 5. እንቁላል 6. በቫይታሚን ኤ የበለጸጉ ምግቦችና ፍራፍሬች እና አትክልቶች 7. ለሎች ፍራፍሬች እና አትክልቶች	
611	ህፃንዎ በቀን የሚመገበው የምግብ ዓይነት ለምን ያህል ጊዜ ነው?	1. በቀን ለ---------- ጊዜ	
	የህፃናት ጤና ክብካቤን በተለመለከተ የሚጠየቁ ጥያቀዎች		
ተ.ቁ	ጥየቄ		**ወደ ሚቀጥለው ቁጥር እለፍ**
701	ባለፉት ሁለት ሳምንታት ህፃኖት ታሞ ያውቃል?	10. 1. አዎ 1. 2. የለም	
702	ህፃኖት ታሞ ከሆነ የሸታው ዓይነት ምን እንደሆነ ቢነግሩን?	1. 1. ትኩሳት 2. 2. ተቅማትና ትውከት 3. 3. የሳምባ ምች 4. 4. ጉንፋን 5. 5. የደም ማነስ	
703	ተቅማትና ትውከት ከሆነ ባለፉት ሁለት ሳምንታት ውስጥ ስንት ጊዜ ህፃኖን ደም የቀላቀለ ያስቀምጥ ነበር?	1. 1. 1 ጊዜ 2. 2. 2 ጊዜ 3. 3. 3 እና ከዚያ በላይ	
	በመረጃ ሰብሳቢ/ጠያቂው የህፃን የክትባት ካርድን በማየት የህፃናት ክትባት ሁኔታ የሚሞላ፡	**4.**	
ተ.ቁ	**የህፃን የክትባት ሁኔታን በተመለከተ የሚጠይቅ ጥያቄ**	**መልስ**	**ወደ ሚቀጥለው ቁጥር እለፍ**
801	ህፃኖት የሳምባ ነቀርሳ፣ የትክትክ ከ1-3, የልጅነት ልምሻ ከ0-3 እና ኩፍኝ ክትባት ወስደዋል? **የክትባት ካርድን ያሳዩ** ***መመሪያ፡*** ➢ ህፃኑ ክትባቱን ወሰዶ ከሆነ በ"√'' ምልክት ያሳዩ ➢ ክትባቱን ያልወሰደ ከሆነ በ"×"ምልክት ያሳዩ	**ህፃኑ የሚከተሉትን ክትባቶች ወስደዋል** / **አዎ** / **አልወሰደም** 1.የሳምባ ነቀርሳ 2. የትክትክ ከ1-3 3. የልጅነት ልምሻ ከ0-3 4. የኩፍኝ ክትባት 5. Pnemococcal"- 6. "Rotta"-	

	የአከባቢ ንፅህናና ሀይጅን በተመለከተ የሚጠየቅ ጥያቄ፡ መመሪያ፡በመረጃ ሰብሳቢው/ጠያቂው ሁኔታውን በማየት የሚሞላ	3.	
ተ.ቁ	**የአከባቢ ንፅህናና ሀይጅን ሁኔታን በተመለከተ የሚጠይቅ ጥያቄ**	**መልስ**	**ወደ ሚቀጥለው ቁጥር እለፍ**
901	ይህ ቤተሰብ ምን ዓይነት ሽንት ቤት እንደሚጠቀም ቢነግሩን? (ከአንድ በላይ መልስ ይቻላል)	ነ ነ. የተሸሻለ፤ ከሌሎች ጋር ያማይጋራ **Improved, not shared** is ✓ Flush or pour flush toilet, ✓ Flush to piped sewer, ✓ Flush to septic tank, ✓ Flush to pit latrine, ✓ Ventilated improved pit latrine (VIP), ✓ Pit latrine with slab . 2 Protected spring 3 2. ያልተሸሻለ N**on- improved toilet facility is** ✓ Flush to somewhere else, ✓ Pit latrine without slab, ✓ Open pit latrine, ✓ Composing toilet, ✓ Bucket toilet, ✓ Hanging toilet/hanging latrine, ✓ No facility/bush/field.	
902	ይህ ቤተሰብ ምግብ ለማብሰል የሚጠቀመው የውሃ ምንጭ ምንድን ነው?	4. 1. **የተሻሻለ የውሃ ምንጭ** **Improved water Source is** ✓ **P**iped water, ✓ Piped dwelling, ✓ Piped into compound, ✓ Piped outside the compound, ✓ Tube well or borehole, ✓ Dug well, ✓ Protected well and 5. 2. **ያልተሻሻ የውሃ ምንጭ** N**on- improved water source is** ✓ Unprotected well, ✓ Water from spring, ✓ Unprotected spring, ✓ Rainwater, ✓ Tanker truck, ✓ Surface water (river, dam, and lake/pond	
903	ይህ ቤተሰብ ውሃ ከመጠጣት በፊት የሚያጣራው በምንድን ነው? (ከአንድ በላይ መልስ መመለስ ይቻላል)	2. 1. በማፊላት 3. 2. በኬሚካል በማከም/ክሎሪን በመጨመር እና በውሃ አጋር በመጠቀም 4. 3. በአቡጀ/በልብስ በማጥለል 5. 4. በአሸዋ እና በሰራሚክ እንስራ በማጥለል 6. 5. እራሱ እንድጠል በማድረግ	

		7. 6. ምንም ዓይነት ህምና ሳይደረግ 8. 7. ማጣራት አላውቅም	
904	በዚህ በቱሰብ ውስጥ በምን ጊዜ እጅዎትን ይታጠባሉ? **(ከአንድ በላይ መልስ ያቻላል)**	1. ሽንት ቤት ከሄዱ ቦኃላ 2. ምግብ ከማዘጋጀት በፊት 3. ምግብ ካዘጋጁ ቦኃላ 4. ህፃናትን ከመመገብ በፊት 5. ሌላ/ይገለጽ	

ጊዘዎን ሰውተው በፈቃደኝት ስለተባበሩን እናመሰግናልን

ANNEX-III: GAAFFII AFAAN OROMOO (AFAAN OROMOO QUESTIONAIRE)

Mana Barumsa Saaynsii Fayyaa Hawwaasaa Univarsitii Finfinnee

Ibsa kaayyoo qo'anichaa

Fayyaan hundaa keenyaaf haata'u ani maqaan Koo _____ jedhama. Ani obbo Mulugeetaa Oliiqa wajjin kan hojjedhu yoo ta'u isaan Univarsitii Finfinneetti sagantaa eebba boodaa Digirii lammaaffaa Saayinsii Fayyaa Hawwaasaatiin eebbifamuuf qo'annoon kun ulaagalee barbaachisaan keessa isa guddaa dha.

Kaayyoon qo'annaa kanaa ijoollee umuriin isaanii ji'a jahaa hanga ji'a digdamii sadiitti jiran haatti isaanii hojii otuu hin qabatiin mana ooltee isaan guddiftuu fi haati isaanii hojii (fkn hojii humnaa, dhuunfaa, mootummaa, mit-mootummaa, daldaalaa,fkf) qabaattee mana dhala ooltee isaan guddiftu giduutti gara garummaa haala nyaataa isaanii wajjin walqabatee beekuuf akkasumaas rakkoolee uumaman addaan baasuu fi kallatti fuula duraa ka'uuf qo'annoo qo'atamuu fi dha.

Hirmaattoni funaansa odeeffannoo kana irratti hirmaatan ijoollota umuriin isaanii ji'a jahaa hanga ji'a digdamii sadiitti jiran haati isaanii qaxaramanii manaa dhala hojjechaa jiranii fi ijoollee haati isaanii mana ta'anii isaan giddisan yoo ta'u haadholee ijoollota kanaas kan dabalatu yoo ta'u mala funaansa odeeffannoo kanaatiin fayyadaminnee odeeffannoo funaamuuf isin ijoollee/micaa keessan wajjin ulaagalee kan guutan keessaa isaan tokko dha. Funaansa odeeffannoo kana keessatti hojjaa fi ulfinni ijoolleen keessankan safaramuu fi umuriin isaanii immoo sartifikeeta dhaloota wajjin walsimsifamee ni tilmaama. Isin immoo haala ijjoollota keessani ilaalchisee gaaffii fi deebiin ni godhama.Odeeffannoon qo'annoo kana keessa jiru kaayyoo qo'annoo kan qofaatiif ni oola. Ijoollee keessanii fi isin irraa odeeffannoon argamu icitii isaa ni eegama. unka gaaffilee kanaa irratti mqaan ijoollee keessanii fi kan keessan barreessuuun hin barbaachisu. Dabalataan gaaffiilee gaafataman kana gutummaa guutuutti ykn muraasa deebisuun ykn yeroo barbaaddan addaan kutuun mirga walabaa ni qabdu. Gaaffileen gaafataman daqiiqaa 30 ni fudhatu. Odeeffannoo dabalataa yoo barbaaddan lakkoofsa bilbila 0911563916 ykn saraara emeelii "mulugetarh@gmail.com" fayyadamuu ni dandeessu.

Fedhii irratti hundaa'ee deeggarsa barbaachisa ta'e gootaniif dursinee isin galatomfana

Gaaffilee

Guyyaa daawwanaan itti gaggeeffame _____/_____/_____ Lakk Kooddii_____

Guyyaa Ji'a Waggaa Ganda _____

Qajeelcha Kutaa 1ffaa; Haala odeeffannoo bu'uuraa fi dinagdee haadholee ittin gaafataman			
Odeeffannoo bu'uuraa haadholee fi da'iimmanii ittiin gaafatamu			
	Odeeffannoo bu'uura haadhaalee wajjin walqabate		
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
101	Umuriin keessan meeqa??	**Umurii** _____waggaa Waggaa | Ji'a	
102	Haala ga'eela keessani nuuf ibsaa?	**6.** 1. Kan heerumte **7.** 2. Kan hin heeruminne **8.** 3. Heerumtee kan ga'eelli ishee diigame **9.** 4. Heerumtee abbaan manaa jalaa du'e **10.** 5. Kan biroo/ haa ibsamu	
103	Baabyina ijoollee keessanii meeqa?	Baayina ijoollee _____	
104	Garagarummaan waggaa ijoollee kee ishee/isaa quxxusuu fi hangafaa giddu jiru meeqa?	3. Garagarummaa waggaa lakkoofsaan 4. _____	
105	Haala gosa maatii keessanii otuu nu ibsitanii?	5. 1. Maatii xiqqaa (Haadha manaa, abbaa manaa fi ijoollee) qabate 6. 2. Maatii guddaa (Haadha manaa, abbaa manaa fi ijoollee, maatii abbaa manaa fi haadha manaa fi ijoollee ijollotaa qabate)	
	Haala odeeffannoo barumsaa ittiin gaafatamu		
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
201	Dubbisuu fi Barreessuu dandeessu?	**5.** 1. Eeyyee **6.** 2. Lakkii	
202	Barumsa idilee baratanii jirtu	**7.** 1. Eeyyee **8.** 2. Lakkii →	**Gara 203 darbi**
203	Sadarkaa Barumsa ol'aanaa isin baratan meeqa?	1. Sadarkaa barumsaa _____ 2. 1. Sadrkaa 1ffaa (1-8ffaa) 3. 2. Sadarkaa 2ffaa (9-12) 4. 3. Barnoota Ol'aanoo (Diploomaa fi isaa Ol)	
204	Abbaan manaa/ijoollee keessanii dubbisuu fi Barreessuu dandeessu?	**9.** 1. Eeyyee **10.** 2. Lakkii	
205	Abbaan manaa/ijoollee keessanii barumsa idilee baratanii jiru	**11.** 1. Eeyyee **12.** 2. Lakkii →	**Gara 5.1 darbi**
	Sadarkaa Barumsa ol'aanaa isaan baratan meeqa?	5. Sadarkaa barumsaa _____ 6. 1. Sadrkaa 1ffaa (1-8ffaa) 7. 2. Sadarkaa 2ffaa (9-12) 8. 3. Barnoota Ol'aanoo (Diploomaa fi isaa Ol)	

206	**Gaaffii haala odeeffannoo ijjoolee**	7.	
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
301	Saalli daa'ima keessanii otuu nutti himtanii?	6. 1. dhiira **7.** 2. durba	
302	Micaan keessan meeqqaffaa dhalate/tte	8. Tartiiba dhaloota _____	
303	Umuriin daa'ima keessanii meeqa?	Umurii: Ji'a _____ Year | Month | day | | | | | |	
	Qajeelcha: Haala saffarii hojjaa fi ulfaatina ijoollee Ogeessa sassaabaa ragaatiin kan raawwatamuudha		
	Hojjaa fi ulfaatina ijoollee keessanii waan safaramuuf duraa dubaan kophee fi uffata ulfaataa ijoollee keessan irraa nuuf baasaa		
Lakka	**Saffara hojjaa fi ulfaatina**	**Safara duraa**	**Gara itti aanutti darbi**
303	Hojjaa daa'ima seentimeetiraan	Safara Hojjaa ____ seentimeetira (cm)	
305	Ulfinni daa'imaa kiilograamaan	Ulfina: _____ kiilogiraamaan (Kg) in Kg | In gram | | | | |	
	Qajaalcha kutaa 2ffaa:- Haala **dinagdee maatii mana wajjin walqabate**	5.	
	Gaaffilee dinagdee maatii mana wajjin walqabate ittiin gaafatamu		
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
401	Isin hojjettuu qaxaramtuu dha?	1. Eeyyee 2. Lakkii	
502	Abbaan manaa ijoollee keessan hojetaa qaxaramaa dha?	1. Eeyyee 2. Lakkii	
403	Deebiin keessan eeyyee yoo ta'e, hojiin isaanii otuu nuuf ibsitanii?	1. Daldaalaa 2. Hojjetaa qaxaramaa dhaabbii 3. Hojjetaa qaxaramaa guyyaa 4. Kan biro/haa ibsaamu……	
404	Galii maatii mana kanaa otuu nuuf ibsitanii?	1. Kan haadha manaa Qr_____ **5.** 2. Kan abbaa manaa Qr _____ **6.** 3. Gargaarsa ijoollee Qr _____ **7.** 4. Kan biro irraa Qr _____ **8.** Ida'ama galii Qr _____	
405	Ji'aan bittaa nyaata maatii mana kanaaf bahu otuu nuuf ibsitanii?	Ji'aan qarshii_____	
406	Baasii bittaa nyaataalee mana kana eenyutu akka to'atu otuu nuuf ibsitanii?	1. 1. Haadha manaa 2. 2. Abbaa manaa 3. 3. Haadha manaa fi abbaa mana **4.** 4. Hojjettuu manaa **5.** 5. Kan biro/haa ibsamu	
	Haala odeeffannoo meeshaalee	4.	

	qunamtii ilaalchisee		
407	Maatiin kun meeshaalee qunamtii kan akka Raadiyoo fi Televishinii ni qaba?	5. 1. Eeyyee 6. 2. Lakki	
	Haadha hojii qabaattee ijoollee guddiftuu qofaaf gaaffii gaafatmu		
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
501	Gosa hojii hojjetanii otuu nuuf ibsitanii?	1. Daldaalaa 2. Hojjetaa qaxaramaa dhaabbii 3. Hojjetaa qaxaramaa guyyaa 4. Kan biro/haa ibsaamu……	
502	Haala fageenya mana hojii keessanii sa'atiin otuu nuuf ibsitani?	7. Manni hojii koo deemsa sa'a _____ ni fudhata	
503	Mana hojii keessa haala kamiin deemtu?	8. 1. Miillaan 9. 2.Konkolaataa dhuunfaan 10. 3. Sarvisiitiin 11. 4. Geejiba hawaasaan 12. 5.Kan biroo haa ibsamu_____	
504	Guyyaatti sa'a meeqa hojjettu? Dhaqaa fi gala wajjin herreegaatii nutti himaa	Guyyaatti sa'a _____	
505	Torbeetti guyyaa meeqa hojjetu?	Torbeettii guyya _____	
506	Yommu gara hojii keessanii deemitan akkaata kamiin daa'ima keessan kunuunsitan otuu nuuf ibsitanii?	**9.** 1. Daa'ima koo mana hojii fudhadheen ni deema **10.** 2. Ijoollee xixxiqqoo kan koo fi firaa biratti dhiisseen ni deema **11.** 3. Akkoo/nama guddaa biratti dhiisseen deema **12.** 4. Hojjetuu kunuunsitu qaxareef jira **13.** 5. Wiirtuu oolmaa daa'imanitti ni oolcha	
507	Daa'ima leessan mana hojii fudhatanii ni deemtu yoo ta'e, manni hojii keessan mica keessan hoosisuu fi nyaata dabalataa nyaachisuuf mijataa dha?	**14.** 1. Eeyye **15.** 2. Lakki	
	Odeeffannoo haala shaakala nyaataa, kunuunsa fayyaa fi talaalli ijoollee ilaalchisee gaaffii ittiin gaafatamu		
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
601	Daa'imman keessan dhalatee/dhalattee ji'a meeqaaf harma qofaa hoosiftan/kennitaniif?	1. Ji'a _____ 2.	
602	Yeroo ammaa daa'iman keessan harmaa hodhaa jira?	4. 1. Eeyyee 5. 2. Lakkii	
603	Micaa keessan guyyaa kaleesasa Xuuxxoo hoosiftaniittu?	1. Eeyye 2. Lakki	
604	Kaleessa jalqabee hanga har'aatti sa'a 24 tiif micaan keessan harma hoosuiftanittu? (Breastfeeding in the	1. Eeyye 2. Lakki	

	last 24 hour)		
605	Daa'imni keessa dhalatee/tte ji'a meeqatti nyaata dabalataa akka jalqabdu beektu? (Do you Know the exact time of complementary feeding initiation)	1. Eeyye 2. Lakki	
606	Daa'iima keessan alatee/ate yeroo /Ji'a kamitti nyaata dabalataa jalqabsiftan?	1. Ji'a jahaan dura (<6 month) 2. Ji'a jahatti (At six months) 3. Ji'a jahaan booda (> 6 months)	
607	If the mother start complementary food before six month what is her reason? (more than one answer is possible)	1. My breast milk is not sufficient 2. Due to problems in my breast 3. Due to medical illness 4. lack of information on the time of starting complementary food 5. Other mothers practice it 6. I work for a long time outside my house	
608	If mother introduce complementary food after six month (delayed) what are the reason?	1. Did not know exactly when to start 2. Mother feels that her milk is enough for baby 3. Family, elders and others mothers advice to star after six months Mother feels child may not be able to digest it 4. Mother feels child may not be able to digest it 5. Other specified	
609	Where did you get this information?	1. Health professional 2. Health extension workers 3. From others mothers 4. Community health volunteer 5. Traditional birth attendant 6. Radio or/and TV 1. Other specified	
610	Daa'imaa keessaniif gosaalee nyaataa akkamii akka kennitaniif otuu nuuf ibsitanii? (Daa'imni kee sa'a 24 keessatti nyaata nyaate yaadachuun nutty himi) Tokkoo ol deebii kennuun ni danda'ama.	Gosa Nyaataa da'imni keessa sa'a 24 keessatti fudhate/tte — Eeyyee — Lakki 1. kuduraa fi muduraa fi baaloota isaanii 2. Nuugii fi Bolloqqee, Atarii fi Baaqelaa 3.Oomisha aannanii (Aannanii fi Baaduu) **4.** Nyaata Foonii, qurxummii, Handaaqqoo fi Tiruu **5.** Haqaaquu **6.** Vitaamiin A'n kan badhaadhee fi firaa firee fi atikiltii **7.** Firaa firee fi atikiltii biroo	
611	Gosaalee nyaataa kana daa'ima keessaniif guyyaatti yeroo meeqa akka kennitan otuu nuuf ibsitanii?	6. Guyyaatti yeroo _____ 1. Guyyaatti yeroo tokko 2. Guyyaatti yeroo lama	

		3. Guyyaatti yeroo sadii 4. Guyyaatti yeroo afur 5. Yeroo kamiyyuu yommu da'imni beeloftu	
	Odeeffannoo kunuunsa fayyaa daa'imanii wajjin walqabatee gaaffii ittiin gaafatamnan		
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
701	Torbee lamaan darbee keessatti micaan kee dhukkubsatee/ttee turee/tee?	2. 1. Eeyyee 3. 2. lakkii →	**Gara 803 tti darbi**
702	Deebii keessan "eeyyee" yoo ta'e dhukkubinni isaa maal ture?	11. 1. Ho'iinsa qaamaa 12. 2. Albaasaa fi gara kaasaa 13. 3. "Pneumonia" 14. 4. Utaalloo 15. 4. Hir'iina dhiigaa	
703	Dhukkubichaa Albaasaa fi gara kaasaa yoo ta'e torbee lama keessati yeroo meeqa ture?	5. 1. Yeroo tokko (1) 6. 2. Yeroo lama (2) 7. 3. Yeroo sadii (3) isaa ol	
	Haala talaallii daa'iman fudhatan ittiin gaafatamu	2.	
Lakka	**Gaaffii**	**Deebiin itti kennaa**	**Gara itti aanutti darbi**
801	Micaan kee taalaallii fudhatee/ttee jirti? Kaardii talaallii daa'iman kee fudhate nutty agarsiisi. **Qajeelcha:** Daa'imichi/ttiin talaallii fudtateera/tti yoo ta'e mallattoo " √ " and talaallii hin fudhanne yoo ta'e immoo mallattoo " × " tiin agarsiisi	<table><tr><th>Talaallii armaan gadii fudtaeera/tti</th><th>Eey yee</th><th>Lakki</th></tr><tr><td>3. BCG</td><td></td><td></td></tr><tr><td>4. DPT (DPT1-3)</td><td></td><td></td></tr><tr><td>3.Polio (polio 0-3</td><td></td><td></td></tr><tr><td>4.Measles</td><td></td><td></td></tr><tr><td>5. Pneumococcal</td><td></td><td></td></tr><tr><td>6. Rota</td><td></td><td></td></tr></table>	
	Sanitation and Hygiene related questions: Directions: Data collectors should observe the Sanitation and Hygiene of thois household before filling the questionaries	7.	
ተ.ቁ	**Sanitation and Hygiene related questions:**		
Sr.No	**Characteristics**	**Alternatives:Choose/describe/category**	**Skip to**
901	What type of toilet/latrine facility do you use in this household?	**3. Improved, not shared** is ✓ Flush or pour flush toilet, ✓ Flush to piped sewer, ✓ Flush to septic tank, ✓ Flush to pit latrine,	

		✓ Ventilated improved pit latrine (VIP), ✓ Pit latrine with slab . ✓ Protected spring **4.** N**on- improved toilet facility is** ✓ Flush to somewhere else, ✓ Pit latrine without slab, ✓ Open pit latrine, ✓ Composing toilet, ✓ Bucket toilet, ✓ Hanging toilet/hanging latrine, ✓ No facility/bush/field.	
902	What type of drinking water do you use in this household?	**2. Improved water Source is** ✓ **P**iped water, ✓ Piped dwelling, ✓ Piped into compound, ✓ Piped outside the compound, ✓ Tube well or borehole, ✓ Dug well, ✓ Protected well and **6.** 2. N**on- improved water source** ✓ Unprotected well, ✓ Water from spring, ✓ Unprotected spring, ✓ Rainwater, ✓ Tanker truck, ✓ Surface water (river, dam, and lake/pond	
903	How these households treat water prior drinking? (More than one answer is possible	1. Boiled 2. Bleach/chlorine added 3. Strained through cloth 4. Bio-sand, composite, ceramic pot filter 5. Let it stand and settle 6. Other 9. 7. No treatment	
904	When do you usually wash your hands? More than one answer is possible	1. After going to the toilet 2. Before preparing meal 3. After preparing meal 4. Before feeding a child **5.** Others/specify	

Yeroo keessan fudhatanii **gaaffi fi deebii gootaniif baayyee galatoomaa**