

***JIMMA UNIVERSITY***  
***INSTITUTE OF HEALTH, FACULTY OF PUBLIC***  
***HEALTH, DEPARTMENT OF POPULATION AND***  
***FAMILY HEALTH, HUMAN NUTRITION UNIT***



**CONCORDANCE OF MOTHER-CHILD (6-23MONTH) DIETARY  
DIVERSITY, ITS IMPLICATIONS AND ASSOCIATED FACTORS IN  
KUCHA DISTRICT, GAMO GOFA ZONE, SOUTH ETHIOPIA**

**BY TESHAYE GUJA (BSc in PH)**

RESEARCH THESIS TO BE SUBMITTED TO JIMMA  
UNIVERSITY,INSTITUTE OF HEALTH, FACULTY OF PUBLIC HEALTH,  
DEPARTMENT OF POPULATION AND FAMILY HEALTH, IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE MASTERS OF  
SCIENCE (MSC) IN HUMAN NUTRITION

**JUNE, 2017**

**JIMMA, ETHIOPIA**

***JIMMA UNIVERSITY***  
***INSTITUTE OF HEALTH, FACULTY OF PUBLIC***  
***HEALTH, DEPARTMENT OF POPULATION AND***  
***FAMILY HEALTH, HUMAN NUTRITION UNIT***

**CONCORDANCE OF MOTHER-CHILD (6-23MONTH) DIETARY  
DIVERSITY, ITS IMPLICATIONS AND ASSOCIATED FACTORS IN  
KUCHA DISTRICT, GAMO GOFA ZONE, SOUTH ETHIOPIA**

**BY TEFAYE GUJA (BSc in PH)**

**ADVISORS:**

**1-MR. ALEMAYEHU ARGAW (MSc, PhD CANDIDATE)**

**2-MRS. YABSIRA MELAKU (MSC)**

**JUNE, 2017**

**JIMMA, ETHIOPIA**

## Contents

List of tables.....	6
List of figures .....	7
Acknowledgments.....	8
Abbreviations and Acronyms .....	9
Chapter -1.....	11
Background.....	11
1.1. Introduction .....	11
1.2. Statement of the problem .....	14
1.3. Significance of the study .....	16
Chapter- 2.....	17
Literature Review.....	17
2.1. Do the diets of mothers reflect the diets of children in mother-child pairs?.....	17
2.2. Factors associated with maternal and child dietary correlation .....	18
2.3. Conceptual frame work .....	22
Chapter – 3.....	23
Objectives .....	23
3.1. General objective.....	23
3.2. Specific objectives.....	23
Chapter – 4.....	24
Methods.....	24
4.1. Study area & period.....	24
4.2. Study design .....	25
4.3. Population.....	25
4.3.1. <i>Source population</i> .....	25

4.3.2. Study population.....	25
4.4. Eligibility criteria .....	25
4.4.1. Inclusion criteria .....	25
4.4.2. Exclusion criteria: .....	25
4.5. Sample size determination and Sampling technique.....	25
4.6. Sampling technique .....	26
4.7. Study variable.....	28
4.7.1. Dependent variable.....	28
4.7.2. Independent variables: .....	28
4.8. Data collection methods and measurements .....	29
4.9. Data quality control.....	30
4.10. Data analysis .....	31
4.11. Ethical Consideration .....	31
4.12. Dissemination plan.....	32
4.13. Operational and standard definition of terms .....	32
Chapter 5.....	34
Result.....	34
5.1. Description of the study population .....	34
A- Socio-Demographic and economic characteristics of the mothers .....	34
B- Child characteristics.....	37
5.2. Proportion of dietary consumption of mothers and children.....	38
5.3. Proportion of dietary diversity score .....	39
5.4. Positive or negative deviant mothers in dietary diversity consumption.....	40
5.5. Predictors of maternal and child dietary diversity concordance .....	40
A- Bivariate analysis .....	40

<i>B- Multivariable logistic regression</i> .....	43
5.6. Strength of concordance/association.....	46
Chapter- 6.....	47
Discussion.....	47
Strengths.....	51
Limitations .....	51
Chapter- 7.....	52
Conclusions.....	52
Recommendations.....	53
Reference .....	54
Annexes.....	60
Annex I: The Information Sheet.....	60
Annex II-The Consent Form .....	61
Annex III: Questionnaire.....	62

## List of tables

Table 1: Socio-demographic and economic characteristics of mothers in Kucha District, Gamo Gofa Zone, Southern Ethiopia, 2017 .....	35
Table 2: Child characteristics and care related factors in Kucha district, Gamo Gofa zone, South Ethiopia, 2017.....	37
Table 3: Proportion of food groups consumption of mothers & children in the previous 24 hrs in Kucha district, Gamo Gofa zone, South Ethiopia, 2017. ....	38
Table 4: The proportion of positive and negative deviant mothers among the discordants in DDS in Kucha district, Gamo Gofa Zone, South Ethiopia March, 2017 .....	40
Table 5: A bivariate logistic regression output for predictors of maternal- child dietary diversity in Kucha District, South Ethiopia, 2017.....	41
Table 6: A multivariable logistic regression output showing the predictors of maternal-child dietary diversity concordance in Kucha District, South Ethiopia, 2017. ....	44
Table 7: Summary of regression results, Predictors of concordance and level concordance/discordance in respect to minimum dietary diversity score in Kucha District, South Ethiopia, 2017. ....	45

**List of figures**

Figure 1: Constructed conceptual framework from different literatures, showing concordance of maternal - child dietary diversity..... 22

Figure 2 : Map of Gamo Gofa Zone including Kucha District..... 24

Figure 3: Schematic presentation of sampling technique ..... 27

Figure 4 : Shows proportion of mothers and children (6-23 months) in consuming each dietary diversity score in Kucha district, Gamo Gofa zone, South Ethiopia, 2017 ..... 39

## **Acknowledgments**

First of all, I would like to thank the Almighty God who helped me in all the challenges I faced during this study and gave me strength on this work. Thanks to Him beyond my words of expression.

I gratefully acknowledge Jimma University and Arba-minch College of Health sciences for sponsoring this study. I also express my gratitude to my advisors Mr. Alemayehu Argaw for comments on the proposal part and Mrs. Yabsira Melaku for her comments throughout the study and polite approach.

My indispensable gratitude goes to Professor Tefera Belachew, who helped me from the topic selection to the end.

I would like to acknowledge some instructors, very special thanks to Mr. Beakal Zinab for valuable comments on the proposal and my colleagues who give constructive comments to shape the study in this way.

I would also like to recognize the valuable contributions of Gamo Gofa zone health desk, Kucha district health office, administrators of kebeles, Selam Ber health center staffs, health extension workers in the selected Kebeles, mothers who became volunteers to give informations and data collectors.

At last but not least my special thanks goes to Dr. Gurmessa Tura, head of the department of population and family health, Jimma University for his advice and way of solving the problem I faced during the final stage of this study and facilitating an appropriate way to present the final defense.



## Abbreviations and Acronyms

ANC	Antenatal care
ASF	Animal source foods
DASH	Dietary Approaches to Stop Hypertension
DD	Dietary diversity
DHS	Demographic and Health Survey
EDHS	Ethiopian Demographic and Health Survey
FANTA	Food and Nutrition Technical Assistance project
FAO	Food and Agriculture Organization of the United Nations
HFIAS	Household Food Insecurity Access Scale
HH	Household
IYCF	Infant and young child feeding
MDD	Minimum dietary diversity
MDD-W	Minimum dietary diversity of women (15-49 years)
NGO	Non Governmental Organization
PNC	Postnatal care
PPS	Probability proportional to size
SES	Socio economic status
SNNPR	South Nations Nationalities and Peoples Region
SPSS	Statistical Package for the Social Sciences
SRS	Simple random sampling
USA	United States of America
USAID	United States Agency for International Development
UNICEF	United Nations Children's (Emergency) Fund
WHO	World Health Organization

## Abstract

**Introduction:** Meeting minimum standards of dietary quality in mothers & children is a challenge in many developing countries including Ethiopia. Until recently, the focus has been primarily on micronutrient supplementation, which is essential for nutritionally high risk mothers and children and emergencies, but cannot provide the long term nutrition and economic benefits. Emerging evidence suggests that maternal and child dietary diversity is associated but little is known about associated factors & there are no/ few studies, on concordance of mother-child dietary diversity and associated factors in Ethiopia and none is documented in the study area.

**Objective:** To examine the concordance/ discordance of mother- child (6-23month) dietary diversity, its implication & associated factors in Kucha district, Gamo Gofa zone, South Ethiopia

**Method:** Community based cross-sectional study was conducted in Kucha district, South Ethiopia from March 6 to April 13, 2017. A total of 791 mother- child (6-23 months) pairs were assessed in 11 selected kebeles of the district. Mother-child pairs were selected by simple random sampling method using the family folder of the health post as a sampling frame. The socio-demographic & economic characteristics, the previous 24 hours dietary consumption of mothers and children, food insecurity status /HFIAS/ and wealth index of the household data were collected by trained interviewers. The 7 food groups of WHO for children (IYCF) & the 10 food groups of FANTA/FAO, 2016 (MDD-W) for mothers were used to analyze. Cohen's Kappa statistics was calculated to see the strength of concordance. Multivariable logistic regression model was fitted to determine the predictors of mother-child dietary diversity concordance.

**Result:** Cohen's Kappa statistics (Kappa = 0.43), showed that the strength of concordance between mother- child dietary diversity was **good**. Only 56 (7.1%) of mothers were **negative deviants** and 133 (16.8%) of mothers were **positive deviants** in dietary diversity consumption. A rural dwellers (AOR =3.49; 95% CI: 1.90-6.41), mothers who had no formal education (AOR= 1.8; 95% CI: 1.08-3.05, mothers who had no milking cow (AOR= 1.7; 95% CI: 1.10-2.56) and children who fed low diversity diets (AOR= 8.23; 95% CI: 5.17-13.08) and mothers who consumed low dietary diversity (AOR= 0.46; 95% CI: 0.29-0.74) were found to be independent predictors of concordance. An increase in the percentage of children reaching the minimum dietary diversity was greater with successive increase in maternal dietary diversity.

**Conclusion and recommendations:** Despite, interesting similarity between mothers & children dietary consumption, more than three quarter of concordants didn't achieve the recommended dietary diversity score (were low concordants). Take into account the multi-sectoral and multi-dimensional nature of nutrition- continued mobilization (monthly) of mothers by health facilities on diversified diet consumption, facilitate rural women's access to high school education, enhance home based milking cow rearing and promote nutrition sensitive agriculture to meet the dietary requirements of mothers and children in a sustainable manner and public health efforts to improve child nutrition may be strengthened by promoting maternal dietary diversity due to its potential effect on the entire family.

# Chapter -1

## Background

### 1.1. Introduction

Adequate nutrition is fundamental to proper growth and development of children and for survival as well as for health and reproductive performance of women(1). Therefore providing sustainable diets rich in micronutrients and macronutrient is vital in the effort to combat malnutrition in mothers and children (2).

Dietary diversity, the sum of food groups consumed over a period of 24 hours has been documented as a valid and reliable indicator of dietary adequacy. Available compelling scientific evidence demonstrates that dietary diversity is indeed strongly associated with dietary quality and nutrient adequacy. This has been explained by the fact that there is no any single food which contains all the required nutrients for optimal health (3,4)

In developed countries the diets of lactating mothers reflect not only their own intake, but also the diets of their small children and families as well (5,3). That is, maternal dietary diversity is also strongly linked to that of infants in the same household and to the average household nutrient adequacy. In short, lactating mothers with higher dietary diversity have children and family with higher dietary diversity (3).

A recent study of mothers and child found that if mothers had poor diet their infants were at increased risk for poor diet quality (6,7). Dietary diversity is an important component of dietary quality: consumption of a higher number of food items and food groups is associated with improved nutritionalstatus(8).

Because of the perceived importance of dietary diversity for health and nutrition, indicators of dietary diversity have become increasingly popular in recent years (9). Dietary diversity is a reasonably easy- to- measure proxy variable for young children's nutrient intake, and the World Health Organization (WHO) uses dietary diversity as one of the key indicators to assess child feeding practices (10,11) i.e., individuals consuming more diverse diets are thought to be more likely to meet their nutrient needs (9). Recognizing the role of infant and young child feeding

practices on the nutritional status of under two years of children, the World Health Organization (WHO) developed and validated a set of core indicators to assess infant and young child feeding (IYCF) practices. The 7 food groups are used for tabulation of this indicator. These food groups are: 1) grains roots and tubers 2) legumes and nuts 3) dairy products (milk, yogurt, cheese) 4) flesh foods (meat, fish, poultry and liver/organ meats) 5) eggs 6) vitamin A rich fruits and vegetables. 7) Other fruits and vegetables. The cut-off is at least 4 of the 7 food groups was selected because it is associated with better quality diets for both breastfed and non-breastfed children. Consumption of foods from at least 4 food groups on the previous day would mean that in most populations the child had a high likelihood of consuming at least one animal-source food and at least one fruit or vegetable that day, in addition to staple foods (grain, root or tuber). Consumption of any amount of food from each food group is sufficient to “count”, i.e., there is no minimum quantity, except if an item is only used as a condiment(12-14).

On the other hand promotion of diverse diet is one of the several approaches to improving micronutrient nutrition for women of reproductive age. Maternal micronutrient malnutrition is a wide spread nutrition challenge faced by women living in resource-poor settings, the consequences of which affect not only the health and survival of women but also that of their children. One of the main factors responsible for this type of malnutrition is the poor quality of women’s diets as they lack dietary diversity(15).

Hence, ensuring maternal dietary diversity to the acceptable level is very important which in turn may enhance the dietary diversity of children that will help in tackling maternal and child malnutrition. Dietary diversity is also a proxy indicator of diet quality for women of reproductive age in resource-poor settings(16). For dietary diversity assessment of women of reproductive age, FANTA and FAO developed an indicator in 2016, which is named as minimum dietary diversity of women (MDD-W) indicator (17). The MDD-W is so named to harmonize with a similar Minimum Dietary Diversity indicator for infants and young children, WHO 2008 (17). The ‘minimum dietary diversity-women’ (MDD-W) is a global indicator recently endorsed aimed at improving the diet of women of reproductive age (15). It is a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten defined food groups the previous day and night. Women with a dietary diversity score of five or more food groups was classified as having higher dietary diversity, while <5 was classified as low dietary

diversity (17). The ten food groups are: 1) grains, white roots, tubers and plantains 2) pulses (beans, peas and lentils) 3) nuts and seeds 4) dairy 5) meat poultry and fish 6) eggs 7) dark green leafy vegetables 8) other vitamin A-rich fruits and vegetables 9) other vegetables 10) other fruits (5,17).

There is ample evidence from developed countries that dietary diversity is indeed strongly associated with nutrient adequacy and the growing evidence from developing countries supports this association(15). Different foods and food groups are good sources for various macro- and micronutrients, so a diverse diet best ensures nutrient adequacy. The principle of dietary diversity is embedded in evidence-based healthy diet patterns, such as the Mediterranean diet and the “DASH” diet (Dietary Approaches to Stop Hypertension). A diverse diet is most likely to meet both known and as yet unknown needs for human health. A more varied diet is necessary for proper growth and healthy living, associated with reduction of risk of mortality from cancer and cardiovascular disease, in mothers and highly correlated with caloric and protein adequacy and consumption, associated with improved nutritional status of children(18).

However studies showing the association of maternal and child dietary diversity and its predictors in Ethiopia are limited and is needed to determine the relative contribution of these factors in order to design culturally appropriate, cost effective, evidence base programs in decreasing malnutrition in mothers and children.

## **1.2. Statement of the problem**

Maternal and child under nutrition and micronutrient deficiency affect approximately half of the world's population (19). Greater than two thirds of malnutrition related child deaths are associated with inappropriate feeding practices during the first two years of life in such a way that infants and young children received inadequately nutritious diets and poorly diversified (20). Adequate feeding interventions alone were estimated to prevent almost one fifth of under five children mortality in developing countries (21).

Meeting minimum standards of dietary quality is a challenge in many developing country settings including Ethiopia, especially in areas where household food security is poor, and it has often not been given enough emphasis(22,23).

Lack of dietary diversity is a particularly severe problem among poor populations in the developing world, where diets are based predominantly on starchy staples and often include few or no animal products and only seasonal fruits and vegetables. For vulnerable infants and young children, the problem is particularly critical because they need energy, and nutrient-dense foods to grow and develop both physically and mentally and to live a healthy life (9)

It is a vicious cycle: Generation after generation, children are robbed of their potential because they can't get access to good nutrition. Those lost futures take an enormous toll on the country's economic well-being. But the Seqota Declaration lays out a plan to stop the cycle of under-nutrition by bringing together all areas of government — a collaborative approach that can be a model for other countries. Ethiopia recognizes that it must attack the problem on many fronts, including improving agriculture, food quality and micronutrient fortification.(24)

In general a number of successful strategies have been developed to improve feeding practices in under two year children in the country, where practical difficulties can limit adherence to complementary feeding guidelines. However feeding the first two years of children, quality and diversity of foods in low income countries is a critical problem. Lack of quality and quantity of complementary feeds has negative impact on the child's development (25).

Most of the children in resource poor areas did not meet the minimum dietary diversity score. For example a cross- sectional study conducted in Gamo Gofa zone, South Ethiopia, showed that 76.7% of under 2 year children fed  $\leq 3$  food items within 24 hours preceding the survey (26).

In resource-poor environments across the globe, low quality monotonous diets are the norm(15,27). When grain or tuber-based staple foods dominate and diets lack vegetables, fruits, and animal source foods, risk for a variety of micronutrient deficiencies is high(15,28). Those most likely to suffer from deficiencies include infants and young children, and adolescent girls and women of reproductive age. Similarly, comparable information about dietary patterns and diet quality for women across countries is also scarce including Ethiopia (29). Much of the available information is focused on pregnant women, and sometimes on only one or several nutrients related to specific health outcomes. Non pregnant women of reproductive age – including lactating women – are also vulnerable (30).

Thus, it was hypothesized that children’s dietary diversity would be positively associated with mothers of each food group. Assessing this relationship is important to establish an effort to determine the best way for delivering interventions to promote healthy eating habits in children and their mothers on this specific study area.

Therefore, besides the scarcity of evidence on this similar topic in the country, specifically in the study area, this study assessed the concordance of maternal- child dietary diversity and its predictors, which pointed-out the association and recommended solutions for improving maternal and child dietary diversity.

### **1.3. Significance of the study**

The study can provide baseline information to formulate programs for accelerating malnutrition intervention activities.

It helps governmental and nongovernmental organizations /NGO/ especially which work to improve maternal and child nutrition, especially on food based approaches to meet the micronutrient needs in the study area.

It fills the research gap on the maternal and child dietary diversity and can also be used as a reference and base line information for other researchers who are interested to conduct further study in different parts of the country on similar topics.



## Chapter- 2

### Literature Review

#### 2.1. Do the diets of mothers reflect the diets of children in mother-child pairs?

Parents may play an important role in shaping their children's eating habits. A study conducted in USA on association of maternal food intake and infants' and toddlers' food intake showed that maternal food intake is an important correlate of children's food intake. Infants and toddlers fruit, vegetables and snack food intake were significantly associated with maternal intake of each of these foods, respectively(7).

Another study which was conducted with African American adolescent mothers, found that maternal reported food intake was associated with the variety of foods offered to their 13-month-old children. The greater maternal self-reported intake of fruits, vegetables and snacks/desserts were associated with greater variety of fruits, vegetables and snacks/ desserts respectively, offered to their children at 13 months of age (7,31)

In addition to these studies with infants and young children, there is evidence that parental eating behaviors are associated with older children's and adolescent's food intake. For example, among pre-school age children 2–6 years old, parental consumption of fruits and vegetables was associated with children's consumption (7,32). Additional studies with children and adolescents, Fisher and colleagues found that the 5-year-old daughters of parents who reported consuming more fruits, vegetables and milk also had greater intake of these foods (7, 33). Long bottom and colleagues found a significant correlation for fruits chips and chocolate confectionery in the 5.5- to 8.5- year-olds and their mothers (7, 34). Findings from adolescent studies also show an influence of parental eating behaviors both concurrently and prospectively (i.e. as adolescents become young adults) (7, 35, 36, 37).

As Hart et al studied even at very young ages, maternal food intake is an important correlate of children's food intake. Timely solid food introduction and dietary diversity were associated with reduced probability of underweight and stunting that was further associated with maternal education (7,38).

According to DHS analysis of Ghana, Haiti and Cambodia, the percentage of children eating different food group was strongly related to their mothers ate that food group, though the strength of relationships varied by diet and country. This study showed that maternal and child dietary diversity was associated. Children whose mothers consumed >5 food groups were 5-9 times more likely to achieve minimum dietary diversity compared with those whose mothers consumed <3 food groups. Children are likely to consume the same foodgroups as their breastfeeding mothers, and mothers with higher dietary diversity have children with higher dietary diversity (5).

A study on association between maternal and child dietary diversity, analysis of 2008 Ghana DHS showed that an increase in maternal DD was associated with a significant increase in child DD, after accounting for the influence of child, maternal and HH level factors. A difference of one food group in mother's consumption was associated with a difference of 0.72 food groups in the child's food consumption. Although, statistically significant positive associations were observed such that higher child DD was associated with older child age, and with greater women's empowerment (39).

According to a study conducted in three countries; Vietnam, Bangladesh, and Ethiopia, on maternal and child dietary diversity association with mother's diet, there was mother/ child agreement for staple foods across 3 countries but disagreement for flesh foods, dairy, fruits and vegetables. A strong positive association was seen between maternal and child; a difference of one food group in mothers consumption was associated with a difference of 0.29, 0.3, and 0.24 groups in child's consumption in Bangladesh, Vietnam, and Ethiopia respectively. The odds of achieving minimum DD ( $\geq 4$  food groups) were higher among children whose mother consumed four food groups compared with three food groups(40).

## **2.2. Factors associated with maternal and child dietary correlation**

A cross-sectional study conducted in Arsi Negele on factors associated with appropriate feeding practices of children aged 6–23 months showed higher maternal education, better household wealth, adequate antenatal and post-natal contacts, child's sex and age, institutional delivery, maternal occupation, urban residence, receiving feeding advice in immunization are determinant factors for appropriate feeding. Mothers who are illiterate, children age 6–11 months and families with large size were associated factors for inappropriate feeding practices (41)

Similarly a cross-sectional study conducted on low dietary diversity and intake of animal source foods /ASF/ among school aged children in Libo Kemkem and Fogera Districts of Northern Ethiopia showed that chronic malnutrition and micronutrients deficiencies in school-aged children have been associated with a low DD and the lack of ASF consumption, together with other socio demographic factors (42).

A study on baseline data generated from a 2-year longitudinal agriculture-nutrition panel survey conducted in south west Ethiopia showed that low household dietary diversity and extreme food insecure household were predictors of concordance of poor child feeding (43).

A recent cross-sectional study on dietary diversity, frequency and associated factors among infant and young children in North West Ethiopia showed that mothers education, age of the child, living in urban area, having home gardening, mothers involvement in decision making and having postnatal visit were positively associated with dietary diversity of young children(44).

And also a cross sectional study conducted in Kemba district, Southern Ethiopia on dietary diversity of 6-23 month children showed that place of delivery, who follow growth monitoring in health facility and those who have access to cow milk and mothers who work in home as house wives were significantly associated with achieving minimum dietary diversity (26).

An institutional based cross-sectional study on dietary diversity and related factors among lactating women visiting public health facilities in Aksum Town showed that dietary diversity among lactating mothers was low. The mean DD score was 3.4 and a total of 56.4 % lactating mothers had low DD (less than the mean) (45).

In general in low income countries the production of diversified foods and consumption of nutritious foods among the farming community is constrained by lack of knowledge on food groups and dietary diversity strategies; very limited access to farm land, income and socio-cultural factors (46).

Maternal education was associated with both maternal and child DD; food security and socioeconomic status were associated only with maternal DD (47).

### **Household economic status**

A study conducted in Aksum town on dietary diversity and related factors among lactating women showed that lactating mothers who had low monthly income were more likely to have low dietary diversity than those who had monthly high income (45). A study of maternal and child dietary diversity in Bangladesh showed low socioeconomic status was associated with low dietary diversity (8)

### **Back yard gardening**

A facility based cross sectional study conducted in Aksum showed that those who did not practice home gardening were more than two times more likely to have low dietary diversity than those who practice home gardening (45). Another study on North West Ethiopia on child dietary diversity also showed having home gardening was positively associated with dietary diversity (48).

### **Occupation**

Employment may increase women's status and power, and may booster a woman's preference to spend her earning on health and nutrition. Employed women without control over their income and decision making authority within the HH are deprived of economic and social power and the ability to take actions that will benefit their own and the children's wellbeing. A cross sectional study conducted in North West Ethiopia showed that children from mothers involved in decision making in the HH were 1.5 times more likely to provide the recommended diet as compared to the children from the mothers not involved in decision making in the HH (49).

### **Child morbidity**

A study on low dietary diversity is a predictor of child stunting, in rural Bangladesh showed that having diarrhea in the past week was more likely to have decreased diversity (8)

### **Place of residence and age of the mother and child**

In the Bangladesh study, a high level of maternal education was a predictor for poor dietary diversity association of mothers and children (40). And on a study conducted in North West Ethiopia mothers education and age of the child were more than two times more likely to be

associated with dietary diversity (49). A study among the lactating mothers of Aksum showed that urban dwellers were having more diverse diets (49).

However there is limited knowledge of socioeconomic factors and other predictors on concordance of mother- child dietary diversity. Moreover, there are geographical, cultural and religious variations in the production and consumption of food types in different parts of the country, there is scarcity of evidence in revealing the problem and giving solution in general and in the study area in particular and all the studies in the country did not show detailed information, on the concordance of mother –child dietary diversity. Therefore this study can be used as a baseline for further study.

### 2.3. Conceptual frame work

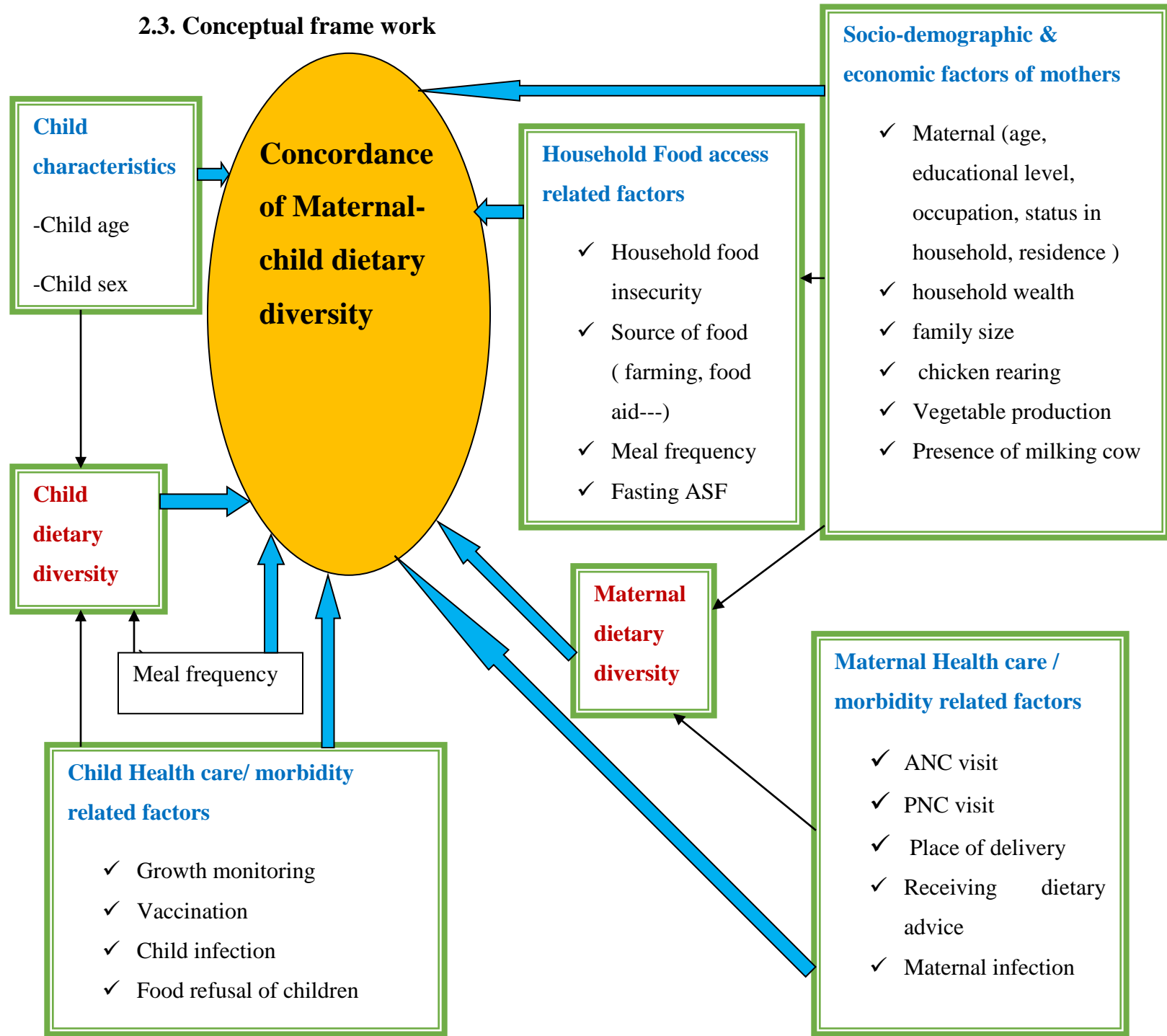


Figure 1: Constructed conceptual framework from different literatures, showing concordance of maternal- child dietary diversity.

## **Chapter – 3**

### **Objectives**

#### **3.1. General objective**

- ❖ To assess the level of concordance of maternal-child dietary diversity, its implication and associated factors in Kucha district, South Ethiopia 2017

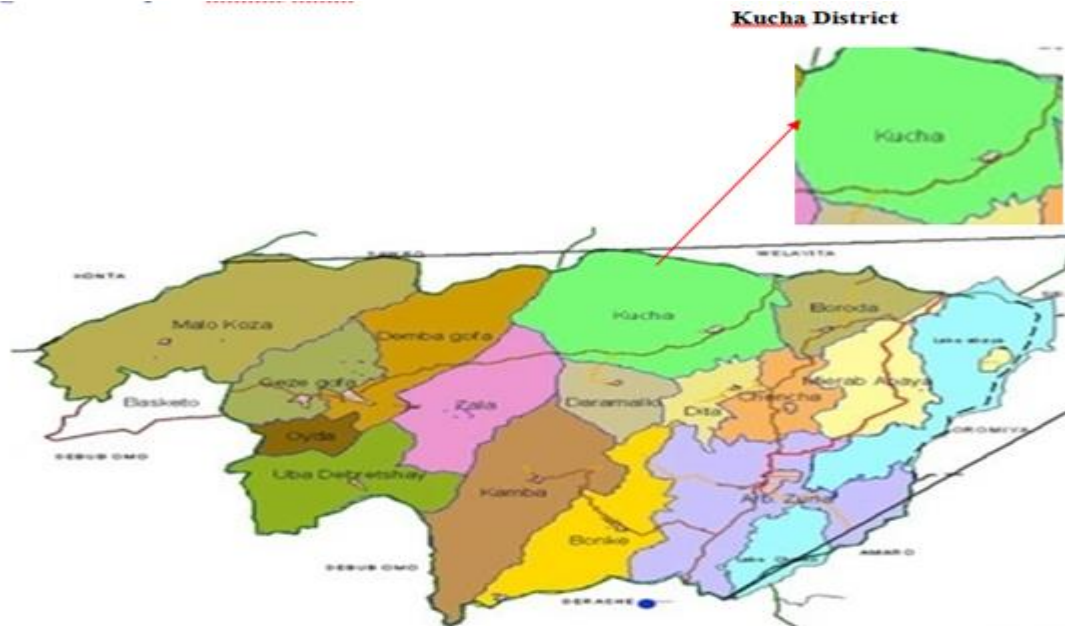
#### **3.2. Specific objectives**

- 1- To assess the strength of concordance and its implication in dietary diversity between mother- child (6-23 months) dyads.
- 2- To identify the predictors of concordance in mother-child dietary diversity.
- 3- To determine the proportion of positive and negative deviants, consumption percent from the 7 (for children) /10 (for mothers) food groups and the minimum dietary diversity score of mother- child pairs.

## Chapter – 4

### Methods

#### 4.1. Study area & period



**Figure 2 : Map of Gamo Gofa Zone including Kucha District/**  
*source:<http://search.yahoo.com/search?ei=utf-8&fr=tightropetb&p=map+of+gamo+gofa+Ethiopia&type=30429-020117>*

The study was conducted in Kucha district which is located 450kms away from the country's capital, Addis Ababa and 215kms from the regional's capital Hawassa. The district is located in Gamo Gofa zone under South Nations Nationalities' and Peoples' Region (SNNPR) and contains a total of 35 (32 rural, 3 urban) administrative sub districts called kebeles. According to Kucha district health office estimate the district has a total population of 189,233 in 2017 and of which mothers 15-49 years are 37544 (19.8%) and 6642 (3.5%) are children (6-23 months). The district has eight health centers, thirty nine health posts, one preparatory school, eight high schools, fifty one second cycle and eighteen first cycle primary schools. According to the agricultural office of the district report, the altitude of the district ranges from 1150-2750 Ms above sea level. Common crops produced in the area include maize, sweet potato, nut, and teff. The district has



dega (high land), weina dega (mid land) and qola (low land) weather conditions. The study was conducted in March and April, 2017.

## **4.2. Study design**

Community based cross-sectional study was conducted.

## **4.3. Population**

### ***4.3.1. Source population***

All mothers - children pairs with child aged 6-23 months living in Kucha district.

### ***4.3.2. Study population***

Randomly selected mother-child pairs from the source population who met the study's inclusion criteria.

## **4.4. Eligibility criteria**

### ***4.4.1. Inclusion criteria***

All consenting mothers - children (6 - 23 months) pairs (breast feeding and non breast feeding who are on complementary feeding), who have been living in Kucha district for at least 6 month..

### ***4.4.2. Exclusion criteria:***

Those mothers who had mental illnesses, interfering with the interview.

Mothers, who were seriously ill (fail to communicate) during study time.

## **4.5. Sample size determination and Sampling technique**

To calculate the sample size for each specific objective, no appropriate previous studies were found and especially for the third and fourth objective no prevalence study was found. Therefore the sample size was determined by using single population proportion formula taking 0.05 margins of errors at 95% confidence level. Considering the fact that the proportion closer to 50% will give the largest sample size, was used in the sample size calculation using the formula for estimation of single population proportion  $n = (Z_{\alpha/2})^2 p (1-p) / d^2$ , where

n= minimum sample size,

$Z_{1-\alpha/2}$  = significance level at  $\alpha = 0.05$  (95% confidence level = 1.96)

d = expected margin of error (5%)

P = mother –child DD proportion (50 %),

$$= \frac{(1.96)^2 \cdot 0.5(1-0.5)}{(0.05)^2} = \frac{3.84 \cdot 0.25}{0.0025} = \underline{\underline{384}}$$

Since source population is 6642 which is less than 10,000, using correction formula,

$n = \frac{n_0}{1 + \frac{n_0}{N}}$ , Where: N = Population size (6642, 6-23 months children and mother pairs)

$$n = \frac{384}{1 + \frac{384}{6642}} = 362$$

By considering (10%) non-response rate,  $362 \times 0.1 = 36$ , thus, the sample size was 398.

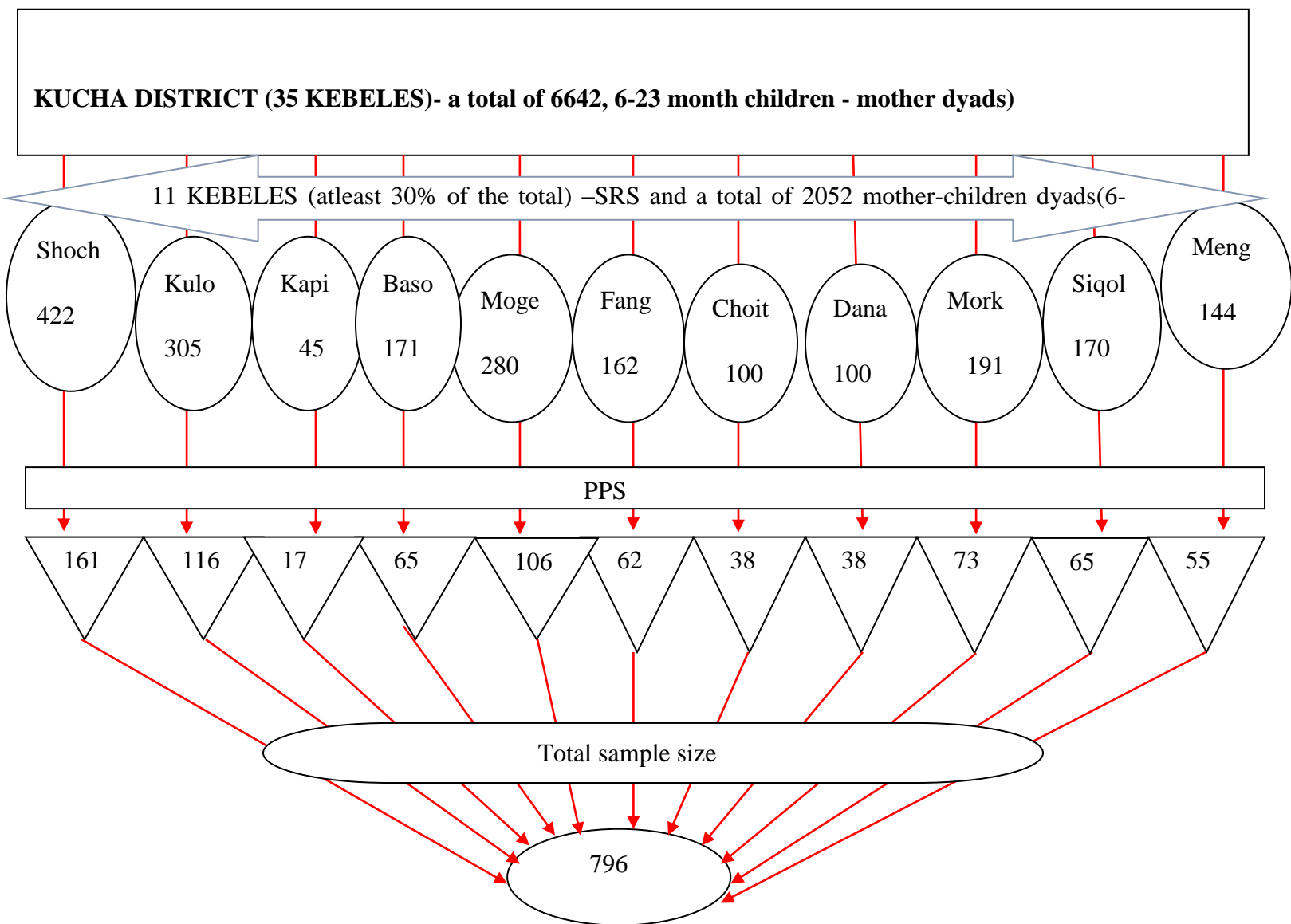
Using the design effect 2 to multiply the sample size, increase the sample size incases increases the precision in multi-stage sampling.

$$n_f = 398 \cdot 2 = 796$$

Therefore the final sample size was 796

#### 4.6. Sampling technique

From the total 35 kebeles of the district, eleven kebeles, which is 30 % of the total as WHO recommendation, were selected using Simple random sampling /SRS/ method. To identify mother and child (6-23months) pairs from the selected kebeles the family folder (register book of all families with their children) of the health post was used using random numbers. Using this register data as a sampling frame, mothers - children (pairs were selected by simple random sampling method to be interviewed). In case of twins one of the twins was randomly selected. When two or more children in the specified age range in one HH the last child with his mother was selected.



**Figure 3: Showing schematic presentation of sampling technique and the total number of mother-child dyads date stated according to the estimate of Kucha District health office, 2016/2017**

## **4.7. Study variable**

### **4.7.1. Dependent variable**

- The concordance between maternal and child dietary diversity score.

### **4.7.2. Independent variables:**

#### **❖ Socio-demographic and economic factors**

- Maternal (age, educational level, occupation, status in household)
- child age
- child sex
- residence
- household wealth
- family size
- Presence of -milking cow
- chicken rearing
- vegetable gardening

#### **❖ Health care related factors**

- ANC
- PNC
- Delivery site
- Growth monitoring
- Vaccination
- Dietary advice

#### **❖ Morbidity related factors**

- Child infection
- Maternal infection
- Food refusal of children

#### **❖ Diet and food access related factors**

- Dietary diversity of mothers
- Dietary diversity of children
- Household food insecurity

-Primary Source of food

#### **4.8. Data collection methods and measurements**

Mothers who fed their children in the previous 24 hours were asked to respond to the socio-demographic characteristics and 24 hours dietary recall of their own and their children. Household food insecurity status and wealth index of their family was also asked.

**Socio-demographic characteristics of mothers and children:** A semi structured questionnaire was used to collect data on variables pertaining to socio-demographic characteristics as well as dietary, health care practices and other related variables of mothers and their children (6-23 months old). The questionnaire was developed in English, translated to Amharic and Gamotho languages, then back-translated to English by independent translator for consistency, then was pretested and revised before it was ready for the actual data collection.

**Child Dietary Diversity** - 24 hours qualitative dietary recall data of the child were collected from the mothers who were responsible for feeding during the previous day of the study. The mother was asked to recall all foods and beverages the child fed during the past 24 hours, both within and outside the home.

Minimum dietary diversity score (the number of food groups the child consumed during the 24-hours preceding the survey) was used as a proxy for quality of diet consumed. It was calculated and divided into two categories of meeting the minimum dietary diversity or not, based on the WHO guidelines ( i.e., consumption of < 4 food groups did not meet the minimum dietary diversity while consumption of  $\geq 4$  food groups from the seven food groups in a 24 hrs time period are considered as, met the minimum dietary diversity of children (13) .

**Maternal Dietary Diversity** - 24 hours qualitative dietary recall data of the mother were collected from mothers. The Minimum dietary diversity of women (MDD-W) was measured according to FANTA/FAO 2016, MDD-W guideline. MDD-W indicator, like MDD indicator of infants and young children, is a dichotomous indicator of whether or not women 15–49 years of age have consumed at least five out of ten food groups the previous day and night. Woman with

a dietary diversity score of five or more ( $\geq 5$ ) was classified as having higher dietary diversity, while  $<5$  was classified as low dietary diversity (8). The proportion of mothers who reach this minimum in a population is used as a proxy indicator for higher micro-nutrient adequacy, one important dimension of diet quality (8, 18).

**Household food insecurity measure:** To assess the household food security level four levels of household food insecurity status (Food secured, mild, moderate, and severely food insecure) was used and it was assessed using the Household Food Insecurity Access Scale (HFIAS) Measurement Tool. The HFIAS is a measure of food insecurity developed by FANTA. It records household reactions and response to food access problems faced during a recall period of four weeks. It aims to capture the severity of food insecurity faced by households due to lack of or limited resources to access food. The respondent is first asked an occurrence question – that is, whether the condition in the question happened at all in the past four weeks (yes or no). If the respondent answers “yes” to an occurrence question, a frequency-of-occurrence question is asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks (34).

**wealth index:** To measure the wealth index a wealth index measurement tool adapted from EDHS was used (34). It was assessed using terciles (low, medium, high).

#### **4.9. Data quality control**

Ten nurses were recruited as data collectors and supervised by two BSc nurses. The questionnaire was pretested and revised before it was ready for the actual data collection. Two day training was given on the aim of the research, content of the questionnaire, and how to carry out interview for data collectors and supervisors to increase their performance in the activities. Data was collected on all days of the week since people may eat differently on different days of the week.

The Collected data was checked every day by supervisors and principal investigator for its completeness and consistency. All the interviews were conducted at the residences of the study participants. Vacant or closed houses during the day of visit were revisited two times to maintain the required sample size. Probing technique was used in 24 hours dietary data to minimize recall bias.

#### **4.10. Data analysis**

After checking the data for completeness and missing values, it was coded and entered using Epi data version 3.1 cleaned and analyzed using SPSS statistical software version 20.0. After checking data for completeness, entered using Epi data version 3.1, and then exported to SPSS, version 20.0 for analysis, then data were cleaned and checked for outliers. Descriptive statistics for categorical variables was presented as frequency percent and continuous variables were presented using mean  $\pm$  SD and percentage and to examine the differences among low and high dietary diversity of mothers and children.

Principal component analysis was done for household wealth score; then ranked into tertiles (low, middle and high). HFIAS Score was calculated for each household food insecurity status by summing the codes for each frequency of occurrence of the condition questionnaire. The score for a household ranges from 0-27, with a maximum score of 27 indicating most food-insecure **households** and ranked into secure, mildly insecure, moderately insecure and severely insecure then was categorized as secure and insecure (mild, moderate, and severe).

Bivariate analysis was done to examine the associations between concordance of maternal- child dietary diversity and each of the independent variables independently. To identify the predictors of maternal –child dietary diversity concordance, variables that were significantly associated at p-value ( $< 0.25$ ) in the bivariate analysis were entered in to multivariable logistic regression models. Those variables with p-value  $< 0.05$  in multivariable analysis were declared as significant. Adjusted Odds Ratios (AOR) with 95% confidence level showed the strength of association between the predictors and the dependent variable. The Hosmer & Lemeshow test was checked for model fitness. Cohen's Kappa value was calculated to measure the strength of concordance between the dietary diversity score categories calculated for mothers and children.

#### **4.11. Ethical Consideration**

Ethical clearance was obtained from Institutional Research Review Board, Institute of Health, Jimma University. Written permission was obtained from Gamo Gofa zone health desk and Kucha district health office. During data collection all respondents were asked for their

informed consent. Confidentiality of mothers' and children's information was maintained during data collection, analysis and interpretation.

#### **4.12. Dissemination plan**

The result and finding of this study will be communicated and presented to concerned bodies. First it will be presented in an open public Master Thesis defense program in June, 2017. And also the result will be communicated to Gamo Gofa zone health desk and Kucha district health office. Finally all efforts will be made to publish the findings in international journals.

#### **4.13. Operational and standard definition of terms**

##### **Operational definitions**

**Concordance:** agreement of dietary diversity in mother child dyads. If the mothers eat  $\geq 5$  food groups from the ten food groups and her child eats  $\geq 4$  foods from the seven food groups (high concordants who achieved the recommended minimum dietary diversity) or when the mothers eat  $< 5$  food types from the ten food groups and her child eats  $< 4$  foods groups from the seven food groups (low concordants who didn't achieve minimum dietary diversity) in the previous day (24 hours) of the survey termed as mother child dietary diversity concordance.

**Discordance:** disagreement on dietary diversity consumption between mothers and children. Mothers  $> 5$  and children  $< 4$  food groups or mothers  $< 5$  food groups and children  $> 4$  food groups.

**Negative deviant-** among the discordant mothers, who ate  $\geq 5$  food groups from ten food groups of MDD-W ( meeting high dietary diversity criteria of FANTA & FAO) but who fed their children  $< 4$  food groups ( not meeting minimum dietary diversity, WHO criteria).

**Positive deviant** – among the discordant mothers who eat  $< 5$  food groups from ten food groups of MDD-W ( low dietary diversity) but who fed their children  $\geq 4$  food groups ( meeting WHO criteria of minimum dietary diversity of children

**High concordant-** those mothers/ children who achieved the minimum dietary diversity and being concordant each other



**Low concordant**- those mothers/ children who didn't achieve the minimum dietary diversity and being concordant each other.

**Dietary diversity level** – considered high if the DDS is  $\geq 4$  in children and also high if the DDS is  $\geq 5$  in mothers, otherwise considered as low.

### **Standard definitions**

**Diarrhea**: a symptom which increases the frequency of bowel movement compared to the usual, watery or loose stool affecting consistency or volume.

**Minimum dietary diversity of children**: Proportion of children 6-23 months of age who receive foods from  $\geq 4$  food groups during the previous day considered as adequate and  $< 4$  food groups is considered as inadequate (low) from the seven defined food groups the previous day and night. A cutoff point of 4 was used to assess the adequacy of a child's DDS; hence, a child with  $DDS \geq 4$  was considered to have a high diet diversity (adequate diet) and otherwise  $DDS < 4$  considered as a child with low diet diversity (inadequate diet).

**Minimum dietary diversity of women (MDD-W)**– A cutoff point of 5 food groups was used to assess the adequacy of a mother's DDS ; hence, a mother with  $DDS \geq 5$  was considered to have a high dietary diversity (adequate diet) and otherwise  $DDS < 5$  considered as a mother with low diet diversity (inadequate diet).

## Chapter 5

### Result

#### 5.1. Description of the study population

##### *A- Socio-Demographic and economic characteristics of the mothers*

The final analysis included 791 mothers (15-49 yrs) and children (6-23 months) pairs from which a complete data were obtained, making the response rate 99.4%. About half 389 (49.2%) of mothers were between the age of 25-34 and the mean age was 27.38 years  $\pm$  5.36 (SD). Moreover, vast majority 720 (91%) of mothers reported that they were married. In regard to education less than half 362 (45.9%) reported that they had no formal education. Majority 718 (90.8%) of mother-child pairs were rural dwellers and about half 406 (51.3%) had four or more family members in their households. In respect to maternal status in the household, majority 709 (89.6%) were from male headed households and about three fourth 589 (74.5%) obtain food for consumption from their own production (farming), and only 96 (12.1%) of mothers grow vegetables in their backyards. About one quarter 278 (35.1%) of mothers have cows currently giving milk in their households and less than half 364 (46%) rear chickens which currently lay eggs during study time. Among mothers who took part in the study, most 557(70.4%) attended ANC programs during their last pregnancy and a similar number of mothers had PNC service to their last child. More than half 471 (59.5%) of the mothers gave birth at health facility to their last child. Regarding diversified diet consumption most 554 (70%) had received dietary advice / information either from health professionals, mass media or their families. About 100 (12.6%) of the mothers had febrile illness/ infections which prohibited them from taking foods as usual in the previous 24 hours during study time. About one quarter 195 (24.7 %) of the mothers and one third 272 (34.4 %) of the children consumed the recommended minimum dietary diversity. Based on FANTA's household food insecurity access scale, slightly more than one-third of the households 312 (39.4%) were food secure; and regarding the household wealth of the mothers about one third 257(32.5%) were fall at high levels (rich family).

**Table 1: Socio-demographic and economic characteristics of mothers in Kucha District, Gamo Gofa Zone, Southern Ethiopia, 2017**

Characteristics	Category	number	(%)
Age in years	15-19	39	4.9
	20-24	273	34.5
	25-34	389	49.2
	35-49	90	11.4
Ethnicity	Gamo	685	86.6
	Gofa	48	6.1
	Wolayta	25	3.2
	Amara	31	3.9
	Others	2	0.3
Educational status	No formal education	362	45.8
	Primary education	237	30
	Secondary & above	192	21.5
Religion	Orthodox	240	30.3
	Protestant	548	69.3
	Others	3	0.4
Residence	Rural	718	90.8
	Urban	73	9.2
Marital status	married	720	91
	single	26	3.3
	Divorced	18	2.3
	Widowed	27	3.4
Main occupation	House wife	546	69
	student	91	11.5
	employee	25	3.2
	Daily laborer	31	3.9
	merchant	65	8.2
	others	33	4.2
Family size	1-3	385	48.7
	> 4	406	51.3

**Table continued---**

<b>Head of house hold (mothers)</b>	<b>Yes</b>	<b>82</b>	<b>10.4</b>
	No	709	89.6
<b>Main source of food</b>	Own production (farming)	589	74.5
	purchasing	163	20.6
	Others	39	4.9
<b>Planting vegetables in backyard</b>	Yes	96	12.1
	No	695	87.9
<b>Presence of milking cow</b>	Yes	278	35.1
	No	513	64.9
<b>Presence of chickens laying eggs</b>	Yes	364	46
	No	427	54
<b>Food security status</b>	Mildly food insecure	83	10.5
	Moderately food insecure	385	48.7
	Severely food insecure	11	1.4
	Food secure	312	39.4
<b>Socio economic status</b>	Poor (low)	297	37.5
	medium	237	30
	High ( rich)	257	32.5
<b>ANC</b>	Yes	557	70.4
	No	234	29.6
<b>Delivery site</b>	Health facility	471	59.5
	Home	320	40.5
<b>PNC</b>	Yes	557	70.4
	No	234	29.6
<b>Diversified diet advice</b>	Yes	554	70
	No	237	30
<b>Maternal febrile illness in the previous 24 hours</b>	Yes	100	12.6
	No	691	87.4
<b>Maternal DDS</b>	≥5 food groups	195	24.7
	<5 food groups	596	75.3
<b>Child DDS</b>	≥4 food groups	272	34.4
	<4 food groups	519	65.6

### ***B- Child characteristics***

As depicted in table 2 about half 405 (51.2%) of the children who took part in the study were males. Regarding the age distribution less than half 342 (43.2%) were 6-11 months old and the mean age was 13.16 months  $\pm$  4.75 SD. Most (66.9%) were vaccinated for their age and slightly less than three quarter 577(72.9%) had follow up visit for growth monitoring and promotion programs in health facility. As mothers reported, 131 (16.6%) of the children had febrile illness / infections that prohibited them from eating as usual and about one quarter 218 (27.6%) of the children refused to feed some food groups in the previous 24 hours of the study.

**Table 2: Child characteristics and care related factors in Kucha district, Gamo Gofa zone, South Ethiopia, 2017**

<b>Child characteristics</b>	<b>Category</b>	<b>number</b>	<b>%</b>
Child's gender	Male	405	51.2
	Female	386	48.8
Age in months	6-11	342	43.2
	12-17	279	35.3
	18-23	170	21.5
Vaccinated for the age?	Yes	529	66.9
	No	262	33.1
GMP program in health facility?	Yes	577	72.9
	No	214	27.1
Any febrile illness prohibited from eating?	Yes	131	16.6
	No	660	83.4
Food refusal	Yes	218	27.6
	No	573	72.4

## 5.2. Proportion of dietary consumption of mothers and children

Table 3 revealed that, the proportion of mothers who consumed from the 10 food groups correspond to their children's (6-23 months) 7 food groups consumption in the preceding 24 hours of the study. As is common in developing countries, grains, roots and tubers were almost universally consumed by both mothers and children. Almost all mothers 786(99.4%) and vast majority of children 758(95.8%) consumed these foods in the preceding day of the study. Some food groups tended to be consumed almost equally by mothers and children, while others were more likely to be consumed by children. For example a very small percentage 36(4.6%) of mothers and similarly 36(4.6%) of children consumed flesh foods. Only 70 (8.8%) of mothers and 148(18.7%) of children consumed eggs. More than two third 568 (71.8 %) of children and less than one quarter 159 (20.1%) of mothers consumed milk and other dairy products.

The proportion of mothers and children who consumed vitamin A rich fruits and vegetables were 176 (22.3%) and 173 (21.9%), respectively. Besides this, the proportion of other fruits and vegetables consumption in children was 279 (35.3%) and mothers' consumption of other fruit was 245 (31%) and other vegetables consumption was 309 (39.1%).

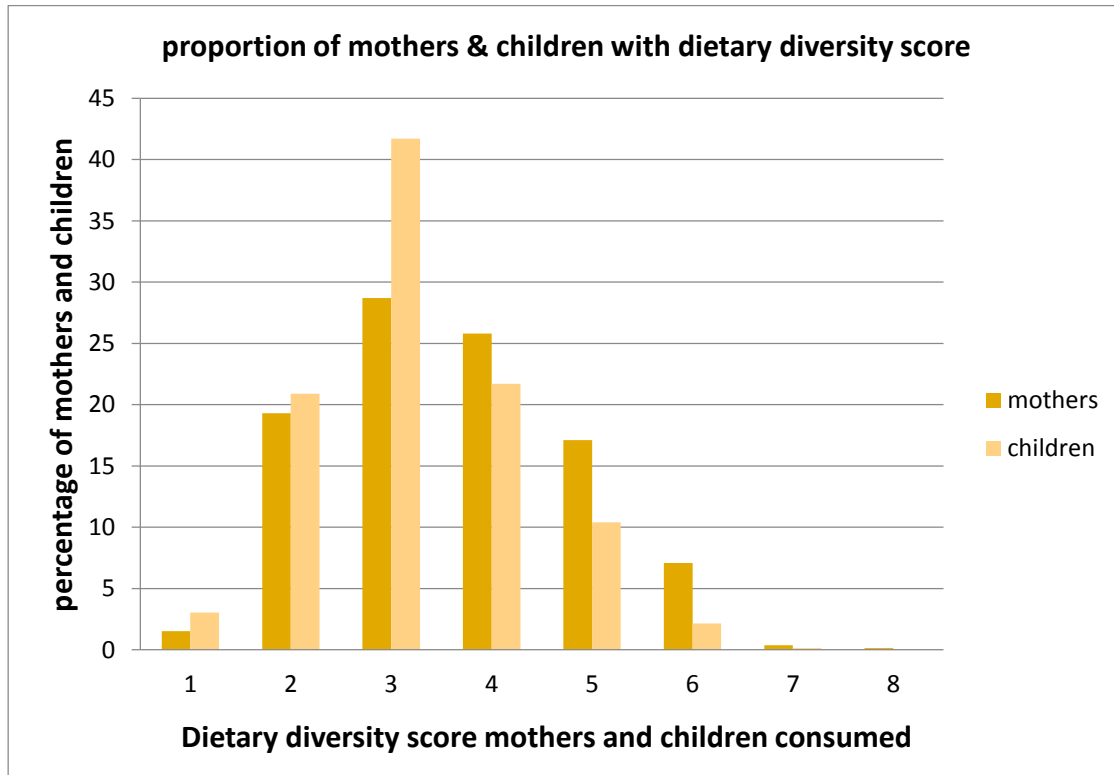
**Table 3: Proportion of food groups consumption of mothers & children in the previous 24 hrs in Kucha district, Gamo Gofa zone, South Ethiopia, 2017.**

10 food groups in MDD-W	n (%)	7 food groups in IYCF MDD	n(%)
1. Grains, white roots and tubers, and plantains	786 (99.4)	1. Grains, roots and tubers	758 (95.8)
2. Pulses (beans, peas and lentils)	558(70.5)	2. Legumes and nuts	536(67.8)
3. Nuts and seeds	163 (20.6)		
4. Dairy	159 (20.1)	3. Dairy products	568 (71.8)
5. Meat, poultry and fish	36(4.6)	4. Flesh foods (meat, fish, poultry and liver/ organ meats)	36 (4.6)
6. Eggs	70 (8.8)	5. Eggs	148(18.7)
7. Dark green leafy vegetables	353(44.6)	6. Vitamin A-rich fruits and vegetables	173(21.9)
8. Other vitamin A-rich fruits and vegetables	176 (22.3)		
9. Other vegetables	309 (39.1)	7. Other fruits and vegetables	279 (35.3)
10. Other fruits	245 (31)		

### 5.3. Proportion of dietary diversity score

As depicted in figure 4 only one quarter 195 (24.7%) of mothers consumed  $\geq 5$  food groups and also one third 272(34.4%) of the children consumed  $\geq 4$  food groups, who met the optimum dietary diversity score. The highest proportion of mothers 227(28.7%) and children 330 (41.7%) consumed only 3 food groups in the previous 24 hours.

The median dietary diversity score of mothers is 4, that is less than the optimum minimum dietary diversity score recommended by FANTA/ FAO-MDD-W which is  $\geq 5$  food groups and the median dietary diversity of the children is 3, which is also below the optimum minimum dietary diversity score recommended by WHO-IYCF i.e.  $\geq 4$  food groups.



**Figure 4: Shows proportion of mothers and children (6-23 months) in consuming each dietary diversity score in Kucha district, Gamo Gofa zone, South Ethiopia, 2017**

#### 5.4. Positive or negative deviant mothers in dietary diversity consumption

The study showed that 189(23.9 %) of mother –child (6-23 months) pairs were discordants. Of these 133 (16.8%) mothers were **positive deviants** (those mothers who consumed less than the minimum dietary diversity (< 5 food groups) for themselves but fed their children  $\geq 4$  food groups and met the minimum dietary diversity score of children) who buffer their children and 56 (7.1%) of the mothers were **negative deviants** (who consumed  $\geq 5$  food groups for themselves but failed to meet their children’s WHO’s minimum dietary diversity score). The remaining 463 (58.5%) and 272 (34.4%) were concordant with low dietary diversity and with higher dietary diversity score respectively, according to MDD-W criteria of FANTA/ FAO for mothers and WHO criteria of mean dietary diversity criteria (IYCF) for children.

**Table 4: The proportion of positive and negative deviant mothers among the discordants in DDS in Kucha district, Gamo Gofa Zone, South Ethiopia March, 2017**

		DDS of children		Total
		Low ( $\leq 3$ )	High ( $\geq 4$ )	
DDS of mothers	Low ( $\leq 4$ )	463 (58.5%)	133 (16.8%)	596 (75.3%)
	High ( $\geq 5$ )	56 (7.1%)	139 (24.7%)	195 (24.7%)
Total		519 (65.6%)	272 (34.4%)	791 (100%)

#### 5.5. Predictors of maternal and child dietary diversity concordance

##### *A- Bivariate analysis*

Bivariate analysis was performed for the following variables: maternal age, residence, educational status, being head of the household, main occupation, family size, primary source of food, production of vegetable, rearing milking cow, chicken rearing, fasting animal source foods, meal frequency of mothers and children, ANC follow up, PNC, receiving dietary advice for the last child, maternal infection, age of the child, sex of the child, place of delivery, child vaccination, growth monitoring and promotion, food refusal of children, child infection, food security status of the household, wealth status, dietary diversity score of mothers and dietary diversity score of children and then those with p- value <0.25 were entered in to multivariable logistic regression.



**Table 5:** A bivariate logistic regression output for predictors of maternal- child dietary diversity in Kucha District, South Ethiopia, 2017

Variables		DDS (n =791)		COR	CI	p-value
		Concordant	Discordant			
<b>Maternal age</b>	15-19	28 (3.5)	11 (1.4)	1		
	20-24	204 (25.8)	69 (8.7)	1.210	.530-2.763	0.651
	25-34	309 (39.1)	80 (10.1)	1.406	0.836-2.363	0.199*
	35-49	61 (7.7)	29 (3.7)	1.836	1.107-3.045	0.019*
<b>Residence</b>	Rural	560 (70.8)	158 (28)	2.616	1.592-4.298	0.001*
	Urban	42 (5.3)	31(3.9)	1		
<b>Educational status</b>	No formal education	291(36.8)	71 (9)	1.863	1.248-2.781	0.002*
	Primary education (1-8)	179 (22.6)	58 (7.3)	1.403	0.917-2.146	0.119*
	Secondary and above	132 (17.6)	60 (7.7)	1		
<b>Head of household</b>	Yes	67 (8.5)	15(1.9)	1		
	No	535 (67.6)	174 (22)	0.688	0.383-1.236	0.211*
<b>Main occupation</b>	House wife	458 (57.9)	152(19.2)	0.262	0.061-1.124	0.071*
	student	69 (8.7)	22 (2.8)	0.273	0.059-1.250	0.094*
	merchant	52 (6.6)	13 (1.6)	1.439	1.035-2.003	0.031*
	Employee	23 (2.9)	2 (0.3)	1		
<b>Family size</b>	1-3	306 (38.7)	79 (10)	1		
	4 and above	296 (37.4)	110 (13.9)	1.439	1.035-2.003	0.031*
<b>Primary source of food</b>	Own farm	459 (58)	130 (16.4)	1		
	Purchasing	117 (14.8)	46 (5.8)	1.765	0.882-3.533	0.108*
	Others	26( 3.3)	13 (1.6)	1.272	0.602-2.687	0.529
<b>Vegetable gardening</b>	Yes	67 (8.5)	29 (3.7)	1		
	No	535 (67.6)	160 (20.2)	1.142	0.743-1.756	0.545
<b>Milking cow</b>	Yes	167 (21.1)	111 (14)	1		
	No	435(55)	78 (9.9)	3.707	2.638-5.209	0.001*
<b>Chicken production</b>	Yes	263(33.8)	101(12.8)	1		
	No	339 (42.9)	88 (11.1)	1.479	1.066-2.054	0.019*
<b>Antenatal care</b>	Yes	403 (50.9)	154 (19.5)	1		
	No	199 (25.2)	35 (4.4)	2.173	1.450-3.256	0.001*

Table continued---

<b>Postnatal care</b>	<b>Yes</b>	<b>403 (50.9)</b>	<b>154 (19.5)</b>	<b>1</b>		
	No	199 (25.2)	35 (4.4)	2.173	1.450-3.256	0.001*
<b>Dietary advice</b>	Yes	411 (52)	143 (18.1)	1		
	No	191 (24.1)	46 (5.8)	1.445	0.994-2.100	0.054*
<b>Maternal infection</b>	Yes	85 (10.7)	15 (1.9)	1.907	1.073-3.390	0.028*
	No	517 (65.4)	174 (22)	1		
<b>Fasting ASF</b>	Yes	166 (21)	72 (9.1)	0.619	0.439-0.872	0.006*
	No	436 (55.1)	117 (14.8)	1		
<b>Age of the child</b>	6-11	272 (34.4)	70 (8.8)	1		
	12-17	194 (24.5)	85 (10.7)	0.971	0.614-1.537	0.901
	18-23	136 (17.2)	34 (4.3)	0.571	0.362-0.899	0.015*
<b>Sex of the child</b>	Male	302 (38.2)	103 (13)	1	1	
	Female	300 (37.9)	86 (10.9)			
<b>Site of delivery</b>	Home	343 (43.4)	128 (16.2)	0.631	0.447-0.891	0.009*
	Health facility	259 (32.7)	61 (7.7)	1		
<b>Vaccination</b>	Yes	392 (49.6)	137 (17.3)	1	1	
	No	210 (26.5)	52 (6.6)	1.411	0.984-2.024	0.061*
<b>GMP</b>	Yes	416 (52.6)	161 (20.4)	1	1	
	No	186 (23.5)	28 (3.5)	2.571	1.661-3.980	0.001*
<b>Food refusal</b>	Yes	424 (53.6)	149 (18.8)	1	1	
	No	178 (22.5)	40 (5.1)	1.564	1.058-2.311	0.025*
<b>Child infection</b>	Yes	495 (62.6)	165 (20.9)	1	1	
	No	107 (13.5)	24 (3)	1.486	0.923-2.393	0.103*
<b>Food security status</b>	Secure	214 (27.1)	98 (12.4)	1	1	
	Insecure	388 (49.1)	91 (11.5)	1.953	1.403-2.717	0.001*
<b>Wealth status</b>	Low	223(28.2)	74(9.4)	0.878	0.593-1.302	0.518
	Medium	180(22.8)	57(7.2)	0.920	0.606-1.397	0.697
	High	199(25.2)	58(7.3)	1	1	
<b>DDS of mothers</b>	Low	463(58.5)	133 (16.8)	1.402	0.973-2.021	0.070*
	High	139 (17.6)	56 (7.1)	1	1	
<b>DDS of children</b>	Low	463(58.5)	56 (7.1)	7.911	5.490-11.399	0.001*
	High	139 (17.6)	133 (16.8)	1	1	

All P- \* value < 0.25 considered as significant

### ***B- Multivariable logistic regression***

Multivariable logistic regression was performed for variables identified in bivariate regression with  $p < 0.25$  as significant, by adjusting for confounders through step wise backward multivariable logistic regression method.

After adjusting for explanatory variables in logistic regression, mothers and children who reside in rural area, mothers who had no formal education, households without milking cow and children with low dietary diversity were found to be positively associated and low maternal dietary diversity was negatively associated with mother- child dietary diversity concordance and were the independent predictors of concordance of mother - child dietary diversity.

It was found that rural dweller mothers were 3.5 times more likely to be concordant (low) in dietary diversity score with their children as compared to their urban counterparts (AOR = 3.49; 95% CI: 1.91-6.41). This concordance is due to high proportion of rurals and those who consumed below the recommended dietary diversity. However in achieving the minimum dietary diversity, the proportion of urbans is higher than the rural concordants.

Mothers who have no formal education were 1.8 times more likely to be concordant (low) with their children compared to those who attained secondary and above level education (AOR= 1.8 ; 95% CI: 1.08-3.05). Similarly this concordance is due to high proportion of mothers with no schooling and the concordance is below the acceptable level of minimum dietary diversity.

Besides this, mothers who had no milking cow in the HH were significantly associated with the maternal and child dietary diversity agreement. Those mothers who do not own milking cow in their households were 1.7 times more likely to be concordant as compared to those who own milking cow in their households (AOR= 1.7; 95% CI: 1.10-2.56). These were mainly low concordant (< 4 food groups of children with < 5 groups of mothers) who didn't achieve the minimum DDS.

And also those children who fed low diversity foods were more than 8 times (AOR= 8.23; 95% CI: 5.17-13.08) more likely to be low concordant to their mothers as compared to those mothers who consumed high diversity diets. But mothers who consumed low dietary diversity were 53% (AOR= 0.46; 95% CI: 0.29-0.74) less likely to be concordant to their children as compared to those mothers who consumed high dietary diversity.

**Table 6: A multivariable logistic regression output showing the predictors of maternal-child dietary diversity concordance in Kucha District, South Ethiopia, 2017.**

Variables	category	COR	AOR	CI (95%)	P- value
<b>Residence</b>	Urban	1	1	1	
	Rural	2.616	3.495	1.905-6.412	0.001**
<b>Education</b>	No formal education	1.863	1.818	1.083-3.052	0.024**
	Primary education	1.403	1.592	0.951-2.666	0.077
	Secondary and above	1	1	1	
<b>Antenatal follow up</b>	Yes	1	1	1	
	No	2.173	1.494	0.936-2.386	0.092
<b>Presence of milking cow</b>	Yes	1	1	1	
	No	3.707	1.680	1.103-2.559	0.016**
<b>Dietary diversity of mothers</b>	High	1	1	1	
	Low	1.402	0.464	0.291-0.740	0.001**
<b>Dietary diversity of children</b>	High	1	1	1	
	Low	7.911	8.228	5.174-13.083	0.001**

\*\* P-value significant at 0.05

**Table 7: Summary of regression results, Predictors of concordance and level concordance/discordance in respect to minimum dietary diversity score in Kucha District, South Ethiopia, 2017.**

variables		Level of concordance /discordance	Concordance status		% of concordants
			Concordant No (%)	Discordant No (%)	
<b>Residence</b>	Rural mothers	Low level	431(54.5)	114 (14.4)	77
		High level	129 (16.3)	44 (5.6)	23
	Urban mothers	Low	10 (1.3)	12 (1.5)	23.8
		High	32 (4)	19 (2.4)	76.2
	Rural children	Low	431(54.5)	44 (5.6)	77
		High	129 (16.3)	114 (14.4)	23
	Urban children	Low	10 (1.3)	12 (1.5)	23.8
		High	32 (4)	19 (2.4)	76.2
<b>Presence of milking cow</b>	No	Low	384 (48.5)	40 (5)	88.3
		High	51(6.4)	38 (4.8)	11.7
	Yes	Low	79 (10)	93(11.7)	47.3
		high	88 (11)	18 (2.3)	52.7
<b>Educational status</b>	No formal	Low	249 (31.5)	53 (6.7)	85.6
		High	42 (5.3)	18 (2.3)	14.4
	1-8	Low	136 (17.2)	4(0.5)	76
		High	43 (5.4)	17 (2.1)	24
	Secondary	Low	78 (9.9)	39 (4.9)	59
		High	54 (6.8)	21 (2.7)	41
<b>Dietary diversity score</b>	Mothers	Low	463 (58.5)	133 (16.8)	77
		High	139 (17.6)	56 (7.1)	23
	Children	Low	463 (58.5)	56 (7.1)	77
		High	139 (17.5)	133 (16.8)	23

Table 7 showed the predictors and proportion of high concordants (achieved minimum DDS) and low concordants (didn't achieve the recommended DDS). The study showed that only 139 (17.6%) of the total were high concordants who achieved the recommended dietary diversity and is too low to see their predictors in logistic regression but majority 463 (58.5%) of the concordants were low concordants the remaining were discordants.

Though majority of the rural mothers/children 560 (78% of the rural) were concordants, 431(77%) were low concordants who didn't achieve the minimum dietary diversity while 42 (57.5%) of urban mothers/children were concordants and of which 32 (76.2%) were high concordants who achieved the minimum dietary diversity. Similarly 88.3% of the concordants with no milking cow didn't achieve the minimum dietary diversity. Regarding educational level, 85.6% of the mothers who had no schooling were low concordants. Mother-Child pair concordants with low DDS were 77% of the concordants.

#### **5.6. Strength of concordance/association**

The strength of agreement between the two output variables (maternal dietary diversity,  $\geq 5 / < 5$  food items from the ten food groups and child dietary diversity  $\geq 4 / < 4$  from the 7 food groups), showed by the Kappa statistics (Cohen's Kappa= 0.43,  $p < 0.001$ ) which indicates that there is **moderate concordance** between mother - child dyads in dietary diversity. This implies that, the more food groups the mothers consumed, the more likely their children achieved their minimum dietary diversity ( $\geq 4$  food groups) since the likely hood of consuming diversified diet of children of whose mothers consumed more diversified diet is high or the low food groups the mothers consumed the more likely their children consumed below their minimum dietary diversity.

## Chapter- 6

### Discussion

This study is one of the few studies that examined the association between maternal and child dietary diversity and their predictors and builds upon these few previous findings. This study focused not only on the concordance but also giving special emphasis on concordance achieving /not achieving the minimum dietary diversity of mothers and children.

The study showed that the proportion of discordant is few, which is 23.9% of the total, 7.1% of mothers and 16.8% of children only. Even though the Ethiopian Government implemented health extension programs to educate the community on different health packages including maternal and child feeding, the achievement of recommended minimum dietary diversity in mothers was 24.7% and children 34.4%, showing low achievements which is higher than the national prevalence which is 10.8% (34) and also relatively higher than the nearby district prevalence at Gamo Gofa zone, Kemba district which is 23.3 % in children 6-23 months (26).

The dominant dietary food groups consumed were grains, roots and tubers 99.4% in mothers and 95.8% in children and legumes, pulses and nuts consumption was 70.5% in mothers and 67.8% in children. But consumption of flesh foods is low, 4.6% both in mothers and children. The possible explanation might be the more accessibility of staple foods and misunderstanding of the mothers in that young children could not be able to digest flesh foods and the low socioeconomic status made the mothers unable to purchase and fed these relatively costly flesh food groups from the local market for their family.

The study also showed that there is agreement between maternal and child dietary diversity. The strength of agreement between the two output variables (maternal and child dietary diversity), is **moderate**. As stated in the Kappa statistics ( $kappa = 0.43, p < 0.001$ ) which indicates that there is **moderate** concordance between mother - child dyads in dietary diversity. This is to mean that the more food groups the mothers consumed, the more likely their children achieved their minimum dietary diversity and viceversa. As the mothers' dietary diversity increased, the percentage of children (6-23 months) meeting this criterion increased dramatically. And an increase in the percentage of children reaching the minimum dietary diversity was greater with each successive

increase in maternal dietary diversity. This association is slightly higher than the previous study in Bangladesh, Vietnam and Ethiopia on maternal and child dietary diversity associations, which showed **fair** association (40). The possible explanation for this variation may be because of differences in methodology (the current study was conducted using the seven food groups for children and the ten food groups for mothers while the previous study used the seven food groups for mothers and children to enable direct comparisons), study settings, study population dynamics, timing of the study and other related factors.

This study also found that rural dweller mothers were 3.5 times more likely to be concordant (low) in dietary diversity score with their children than their counterparts however, of these rural dweller concordants, 77% mother - child pairs did not achieve their minimum dietary diversity score. This showed most rural mothers didn't achieve the recommended minimum dietary diversity and also failed to meet their children's. However, 76.2% of the urban dweller concordants achieved the minimum dietary diversity (high concordant). This result was slightly higher than the study carried out in dietary diversity of Nigerian rural women in which majority of them had low dietary diversity with none being in the high category (28) but some other studies reported that people who reside in rural were more likely to adopt their traditional food and fed more diverse foods (51,52). However the reverse was true in this study area as the diets were not varied enough. This low dietary diversity of the rural women could be a function of low socioeconomic status of rural women. Because most of them earn low income, and this may lead them to inability to afford food varieties. The low dietary diversity score of the rural mothers and children indicates that they may not meet their micronutrient requirements.

The study also revealed that maternal education is a significant predictor of maternal-child dietary diversity concordance. Maternal education is important for both maternal- child dietary diversity concordance, suggesting that the effect of maternal education on maternal dietary diversity enhances child dietary diversity. Though mothers who have no formal education were 1.8 times more likely to be concordant with their children as compared to those who attained secondary and above level education, 85.6 % of these mothers did not achieve their minimum dietary diversity (low concordants). While 41% of mothers who attained secondary and above level in education were at high category of concordance which is relatively higher than 14.4 % who achieved the minimum dietary diversity with no education. This result coincides with the



study conducted in Bangladesh and Vietnam where maternal education was significantly associated with child minimum dietary diversity that children whose mother had a high school education were 1.7 ( in Vietnam) and 3.1 ( in Bangladesh) times more likely to achieve the minimum dietary diversity than those with no schooling(40). This could be due to maternal knowledge that mothers who were educated take much care of their children and may consume for themselves and feed their children diversified diet compared to those who had no schooling. This suggests that education has positive impact on improving maternal and child DD to maximize the benefits for both a mother and a child. Also another study on dietary diversity at six months of age is associated with subsequent growth and effect of maternal education on infant growth in Zambia showed that maternal education was positively associated with dietary diversity score (53).

The study also showed absence of milking cow was positively associated with the maternal and child dietary diversity concordance (low). Those mothers who do not own milking cow in their household were 1.7 times more likely to be concordant compared to those who own milking cow in their households. Of which 88.3 % were low concordant, however 52.7% of mothers who own milking cow fall under high concordance. This shows that the proportion of mothers who own milking cow and achieved minimum dietary diversity, were higher than those mothers who did not own. This result goes in line with a study on dietary diversity, feeding practice and determinants among children 6-23 months in South Ethiopia showed that mothers who had access to cow milk fed diversified diet two times more than those who had no access(28). And also goes in line with other studies in Africa, in an evaluation of livestock donation programs in Rwanda, Rawlins et al. discovered that households who received a dairy cow or milk goat experienced increases in household dietary diversity (53)and in an analysis of household consumption expenditures, Azzari et al. also considered the dietary impacts of animal source foods, these authors concluded that livestock owners in Uganda consume more animal source foods than non-livestock owners which increases their dietary diversity (53). This association may show a few mechanisms at work i.e. increased exposure (through availability inside the home) may influence food intake. Spurrier and colleagues found that increased availability of fruits, vegetables and snack foods in the home was associated with increased intake of each food, respectively, among pre-school age children (5). Similarly availability of milking cow in HH

leads to high consumption of milk in mother and children which may enhance their dietary diversity.

Moreover, compared to those children who consumed high dietary diversity those who consumed low dietary diversity were 8.2 times more likely to be concordant to their respective mothers. Similarly this is due to the high ratio of concordant children who didn't achieve the minimum dietary diversity to discordant than the ratio of high concordant achieved the minimum DDS) to low discordant. The result simply showed that the proportion of children who didn't achieve the minimum dietary diversity but being concordant with their mothers was high.

On the other hand, compared with mothers who consumed high dietary diversity, those mothers who consumed low dietary diversity were 54% less likely to be concordant with their children. The possible reason for this is due to high proportions of high discordant children who achieved the minimum DDS and low number of discordant mothers who achieved the minimum DDS. These both results were consistent with the existing literature showing the association of maternal and child diets among preschools and school aged children and among under 24 month children (5). And is lower than a study conducted in Cambodia, Ghana and Haiti, DHS analysis which showed, compared to mothers consuming low food groups, breastfed children whose mothers consumed more than 5 food groups were estimated to be 4.8 to 9.4 times more likely to achieve minimum dietary diversity across the three countries. Mothers' dietary diversity predicted increases in child diet in some food groups between 1.5 and 7.5 times in the study in these three countries (5). The more food groups the mothers consumed, the more likely their child attained the minimum DD and the more they become high concordant to each other. The study is also consistent with a study compared with children whose mothers consumed less food groups, children whose mothers consumed high food groups were more than twice as likely to achieve the minimum DD in Bangladesh and Vietnam and were 5 times more likely to achieve the minimum DD in Ethiopia which is much higher than the present study (40).

Even though being a rural resident, having no schooling, mothers with no milking cow and children with low dietary diversity were predictors of mother child dietary diversity concordance, this concordance shows low achievements in minimum dietary diversity. We see that these predictors were associated with maternal-child dietary diversity concordance and considering these factors may help in achieving the minimum dietary diversity score.

In this study, 16.8% of mothers were **positive deviants** who buffer their children, and possibly these mothers may have benefited children's diets. These mothers reduced their own consumption to act as a buffer against low food diversity for their children to protect children from low diversity or imbalance of micronutrient deficiency. Community health education programs on dietary diversity may be most successful when all participants are valued and especially affirmed when the positive deviant mothers' behaviors are practiced and their children regain their health.

In general this study showed that mothers with higher DD have children with higher DD and mothers with lower dietary diversity have children with lower dietary diversity. This suggests that irrespective of children's breastfeeding status, they consume the same food groups as their mothers. Because maternal DD is strongly associated with child DD, diverse diet should be promoted for both mothers and children during the entire span of the first 1000 days of mothers and children.

### **Strengths**

This study used primary data that should be considered as strength and was conducted as community based research and believed to be representative for similar settings. It was also undertaken by employing free recall ways of interviewing methods and probing techniques to increase their recall or avoid recall bias and in all kebeles data were collected in all days of the week since people may eat differently on different days of the week. Due to low proportion of concordant to see the predictors of concordances in logistic regression, the study tried to show their proportion ( low dependent to variable ratio to see in logistic regression).

### **Limitations**

Though DDS has been validated as a useful tool to assess the likelihood of meeting micronutrient requirements, the maternal and children's diet was analyzed only qualitatively as quantity was not taken in to account. And the other limitation is the study did not show the strength of association for each food group but the general food group concordance only and did not consider seasonal variation in DDS. Even though probing technique was used recall bias may be happened. The low number/ proportion of high concordant, who achieved the minimum dietary diversity to see their predictors independently in logistic regression is the other limitation.

## **Chapter- 7**

### **Conclusions**

This study showed interesting similarities between mothers and children feeding practice in food groups. Though there was moderate concordance of maternal and child dietary diversity, majority of mothers, 75.3% and children 65.6% did not meet the minimum dietary diversity in the study area.

Until recently, the focus has been primarily on micronutrient supplementation, which is essential for high risk population and emergencies, but cannot provide the long term nutrition, social and economic benefits that agriculture can by producing different food groups and focusing typically on educating rural mothers to high school and above level and educating about the importance and ways of improving child dietary diversity and their own at health facility and in community level especially the rural women using health extension workers may improve their dietary diversity score.

Another important factor in this study was increasing accessibility of milking cow to increase the dietary diversity of mother child dyads which may improve the DDS and animal source food consumption of them.

In general the moderate agreement between maternal-child dietary diversity in this study implies that promoting maternal consumption of a variety of foods could improve the DD of their children's too.

## **Recommendations**

### **For governmental public health sectors and health professionals**

- Health education should focus on improving both maternal and child DD, rather than child dietary diversity only, to maximize benefits for both mothers and children.
- Use media to advertise on importance of dietary diversity for mothers and children.
- Mobilize the community to ensure people have better access to dietary diversification.

### **For education sectors**

- Promoting and facilitating women's access to high school education and enhancing higher education especially in rural women is a fundamental foundation for women's empowerment which may help in achieving the minimum dietary diversity.

### **For agricultural sectors**

- Nutrition - sensitive agriculture (an approach that seeks to ensure the production of a variety of affordable, nutritious, culturally appropriate and safe foods in adequate quantity and quality) to meet the dietary requirements of mothers and children in a sustainable manner to improve health outcomes, through production of diverse, safe and nutrient-rich foods to overcome malnutrition and micronutrient deficiency.

### **For livestock sector**

- Support to home based milking cow rearing in the context of integrated farming system is needed which have great potential to improve availability and access to diverse and nutrient rich foods especially if accompanied with nutrition education.
- In the study area animal rearing and cow milking are traditional activities for women therefore targeting women can help increase the control over the productive and economic resources and ultimately increase the likelihood of improved maternal, child and household nutrition.

### **For researchers**

- Further research is recommended since not much research is conducted on similar topic.

## Reference

- 1- Sonko A. (2016) Assessment of Dietary Practice and Anthropometric Status of Pregnant Women in Aleta Chuko Woreda Southern Nations, Nationalities and People's Region /SNNPR/, Ethiopia: Descriptive Cross-Sectional Study. *J Epidemiol Public Health Rev* 1(1): doi <http://dx.doi.org/10.16966/2471-8211.102>
- 2 Christensen M. (2006) Dietary diversity as a measure of nutritional adequacy throughout childhood A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Nutrition.
- 3- Steyn NP, NelJH, NantelG, Kennedy G and Labadarios D. (2005) Food variety and dietary diversity scores in children: are they good indicators of dietary adequacy?
- 4- Willy K, Judith K, Peter C. (2016) Dietary diversity, nutrient intake and nutritional status among pregnant women in Laikipia county, Kenya. *Int J Health Sci Res.*; 6(4):378-385.
- 5- USAID's Infant & Young Child Nutrition Project (2012) Maternal dietary diversity and the implications for children's diets in the context of food security
- 6- Lee, S., Hoerr, S. L. & Schiffman, R. F. (2005) Screening for infants' and toddlers' dietary quality through maternal diet. *The American Journal of Maternal Child Nursing*, 30, 60–66.
- 7- Hart C. N., Raynor H. A., Jelalian E. and Drotar D. (2009) The association of maternal food intake and infants' and toddlers' food intake. doi:10.1111/j.1365-2214.2010.01072.x\_1072396.403
- 8-- Rah JH., Akhter N., Semba RD., de Pee S., Bloem MW., Campbell AA. & et al (2010) Low dietary diversity is a predictor of child stunting in rural Bangladesh. *European Journal of Clinical Nutrition* 64,1393–1398
- 9- Arimond M. and T. Ruel M. (2006) Dietary Diversity Is Associated with Child Nutritional Status: Evidence from 11 Demographic and Health Surveys Food Consumption and Nutrition Division, International Food Policy Research Institute (IFPRI), Washington, DC

- 10-Mirmiran P, Azadbakht L, Esmailzadeh A, Azizi F (2004) Dietary diversity score in adolescents-a good indicator of the nutritional adequacy of diets: Tehran Lipid and Glucose Study. *Asia Pacific Journal of Clinical Nutrition* 13: 56-60.
- 11-[No authors listed] (1998) Preparation and use of food-based dietary guidelines. Report of a joint FAO/WHO consultation. FAO/WHO. *World Health Organ Tech Rep Ser* 880: i-vi, 1-108.
- 12 -Indicators for assessing infant and young child feeding practices part 3: country profiles. 2010. Geneva. World Health Organization. Google Scholar search
13. WHO (2007) Indicators for assessing infant and young child feeding practice, part 1
14. WHO (2010) Indicators for assessing infant and young child feeding practices Part 2.
- 15- Custodio E., Kayitakire F. and Thomas A.C.; Exploring the new indicator minimum dietary diversitywomen. Results from Burkina Faso; EUR 27717; doi:10.2788/860238
- 16- Arimond M., TorheimL. E., Wiesmann D.,M. Joseph, and CarriquiryA. (2008) Dietary Diversity as a Measure of Women's Diet Quality in Resource-Poor Areas: Results from rural Bangladesh site. Washington, DC: Food and Nutrition Technical Assistance (FANTA) Project/Academy for Educational Development (AED),
- 17- FAO and FHI 360. (2016) Minimum Dietary Diversity for Women: A Guide for Measurement. Rome: FAO.
- 18-UNICEF ( 2009) Tracking progress on child and maternal nutrition: Survival and development priority. New York, NY 10017 . PubMed | Google Scholar
- 19-WHO and UNICEF (2003) Global strategy for infant and young child feeding. . Geneva, World Health Organization. PubMed | Google Scholar
- 20-Melaku U, Clive EW, Hans V, Jemal H and Joseph H. (2003) Factors associated with stunting in infants aged 5-11 months in the Dodota- Sire district. *J Nutr.*; 133: 1064-1069. PubMed | Google Scholar

21-Gupta N, Mario G and Nicolas S. (2007) Early introduction of water and complementary feeding and nutritional status of children in northern Senegal. *Public Health Nutrition*.; 10(11): 1299-1304. PubMed | Google Scholar

22-Urwhatueat, WE. (2011) Dietary diversity plays an important role in child undernutrition and food security in Bangladesh. *Food and Nutrition Bulletin*.; 10(7). PubMed | Google Scholar

23-Federal Ministry of Health (2004) National strategy for Infant and Young Child Feeding (IYCF). Ethiopia: Federal Ministry of Health, Family Health Department.

24-24.Fact Sheet No.23, Seqota Declarations google search <https://www.nutritionintl.org/2015/07/mi-welcomes-government-of-ethiopias-seqota-declaration-reaffirming-its-commitment-to-end-malnutrition/>

25- Ruel MT (2003) Operationalizing dietary diversity: a review of measurement issues and research priorities. *J Nutr* 133: 3911S-3926S.

26-Gatahun EA, Abyu DM (2015) Dietary Diversity Feeding Practice and Determinants among Children Aged 6-23 Months in Kemba Woreda, Southern Ethiopia Implication for Public Health Intervention. *J Nutr Food Sci* S13: S13003. doi: 10.4172/2155-9600.1000S13003

27- Daniel, M. C., Adair, L. S., Popkin, B. M. and Truong, Y. K. (2009a). Dietary diversity scores can be improved through the use of portion requirements: an analysis in young Filipino children. *European Journal of Clinical Nutrition* 63:199–208.

28- Ukegbu and Ekebisi, et al. (2016) Assessing Dietary Diversity Score and Nutritional Status of Rural Adult Women in Abia State, Nigeria. *Food Sci Nutr Technol* , 1(1): 000106

29-TorheimLE, Ouattara F, Diarra MM, Thiam FD, Barikmo I, et al. (2004) Nutrient adequacy and dietary diversity in rural Mali: association and determinants. *Eur J Clin Nutr* 58: 594-604.

30-DishaA, Rawat R, Subandoro A (2012) Infant and Young Child Feeding(IYCF) Practices in Ethiopia and Zambia and their Association With Child Nutrition. *African Scholarly Science Communication Trust* April,12: 5899-5900



- 31- Papas, M. A., Hurley, K. M., Quigg, A. M., Oberlander, S. E. & Black, M. M. (2009) Low-income, African American adolescent mothers and their toddlers exhibit similar dietary variety patterns. *Journal of Nutrition Education and Behavior*, 41, 87–94.
- 32- Cooke, L. J., Wardle, J., Gibson, E. L., Sapochnik, M., Sheiham, A. & Lawson, M. (2003) Demographic, familial and trait predictors of fruit and vegetable consumption by pre-school children. *Public Health Nutrition*, 7, 295–302.
- 33- Fisher, J. O., Mitchell, D. C., Smiciklas-Wright, H. & Birch, L. L. (2002) Parental influences on young girls' fruit and vegetable, micronutrient, and fat intakes. *Journal of the American Dietetic Association*, 102, 58–64
- 34- Longbottom, P. J., Wrieden, W. L. & Pine, C. M. (2002) Is there a relationship between the food intakes of Scottish 5 1/2–8 1/2-year-olds and those of their mothers? *Journal of Human Nutrition and Dietetics*, 15, 271–279
- 35- Arcan, C., Neumark-Sztainer, D., Hannan, P., Berg, P., Story, M. & Larson, N. (2007) Parental eating behaviours, home food environment and adolescent intakes of fruits, vegetables and dairy foods: longitudinal findings from project EAT. *Public Health Nutrition*, 10, 1257–1265.
- 36- Hanson, N. I., Neumark-Sztainer, D., Eisenber, M. E., Sotry, M. & Wall, M. (2005) Associations between parental report of the home food environment and adolescent intakes of fruits, vegetables and dairy foods. *Public Health Nutrition*, 8, 77–85.
- 37- Campbell, K. J., Crawford, D. A., Salmon, J., Carver, A., Garnett, S. P. & Baur, L. A. (2007) Associations between the home food environment and obesity-promoting eating behaviors in adolescence. *Obesity*, 15, 719–730.
- 38- Hart, C. N. & Drotar, D. (2006) Maternal knowledge of nutrition, problem-solving abilities, and the introduction of complementary foods into infants' diets. *Early Child Development and Care*, 176, 693–705.
- 39- Amugsi DA, Mittelmark MB, Oduro A (2015) Association between Maternal and Child Dietary Diversity: An Analysis of the Ghana Demographic and Health Survey. *PLoS ONE* 10(8): e0136748. doi:10.1371/journal.pone.0136748

- 40- Phuong H. Nguyen, Rasmi Avula, Marie T. Ruel, Kuntal K. Saha, Disha Ali, Lan Mai Tran, & et al (2013 ) Maternal and Child Dietary Diversity Are Associated in Bangladesh, Vietnam, and Ethiopia
- 41- Kassa et al (2016) Appropriate complementary feeding practices and associated factors among mothers of children age 6–23 months in Southern Ethiopia,. *BMC Pediatrics* 16:131 DOI 10.1186/s12887-016-0675-x
- 42- Herrador Z, Perez-Formigo J, Sordo L, Gadisa E, Moreno J, Benito A, et al. (2015) Low Dietary Diversity and Intake of Animal Source Foods among School Aged Children in Libo Kemkem and Fogera Districts, Ethiopia. *PLoS ONE* 10(7): e0133435. doi:10.1371/journal.pone.0133435
- 43- Fentahun N., Carl L. and Belachew T. (2016) Concordance of poor child feeding and preventive behavior and its predictors in southwest rural Ethiopia, food & nutrition research
- 44- Beyene M., Gebeyehu A. and Mesele M. Dietary diversity, meal frequency and associated factors among infant and young children in Northwest Ethiopia: a cross- sectional study
- 45- Berhe N., Haile K., Gebremedhin M. Yosef W. Gebregiorgis S., Hailu B., & et al Dietary diversity and related factors among lactating women visiting public health facilities in Aksum town, Tigray, Northern Ethiopia
- 46- Ruel MT (2003) Operationalizing dietary diversity: a review of measurement issues and research priorities. *J Nutr* 133: 3911S-3926S.
- 47- Gina L, Kennedy, Pedro MR, Seghieri C, Nantel G, et al. (2007) Dietary Diversity Score Is a Useful Indicator of Micronutrient Intake in NonBreast-Feeding Filipino Children. *J Nutr* 137: 472-477.
- 48-Black RE, Allen LH, Bhuttaetal ZA (2008) “Maternaland child undernutrition: global and regional exposures and health consequences” *The Lancet* 371: 243-260.
- 49-FAO and WFP (2010) Crop and food security Assessment Mission to Ethiopia. . Google Scholar

50-Coates, Jennifer, Anne Swindale and Paula Bilinsky (2007) Household Food Insecurity Access Scale (HFIAS) for Measurement of Household Food Access: Indicator Guide (v. 3). Washington, D.C.: FHI 360/FANTA.

51- Roche E, Hillbrunner C, Egan R (2008) Seasonality, Household food Security and nutritional Status in Dinajpur, Bangladesh. Food and Nutrition Bulletin 29(3): 221-231.

52- Wahlquist ML (2005) Diversification in indigenous and ethnic food culture. Forum J Nutr 52-61

53-Simonette R. Mallard, Lisa A. Houghton, Suzanne Filteau, Anne Mullen, Johanna Nieuwelink, Molly Chisenga, (2014) Dietary Diversity at 6 Months of Age Is Associated with Subsequent Growth and Mediates the Effect of Maternal Education on Infant Growth in Urban Zambia. The Journal of Nutrition Community and International Nutrition,

## **Annexes**

### **Annex I: The Information Sheet**

English Version

**Title:** Concordance of mother-child (6-23month) dietary diversity and associated factors in kucha district, Gamo Gofa Zone, Ethiopia

Principal Investigator: Tesfaye Guja

**Name of Organization:** Jimma University, Institute of Health, Department of Population and Family Health.

**Description and Purpose of the study:** This study measured dietary diversity, minimum dietary diversity of children (6-23 month) and their mothers, and the association of maternal child dietary diversity and associated factors. Therefore, the results of this study provide updated information about the concordance / discordance of dietary practice of mothers and children 6-23 month and associated factors in Kucha district.

**Duration:** The duration of this study had taken about three months.

**Confidentiality:** All the personal information collected for the purpose of this study was kept confidential. .Disclosure of any of the data to third parties other than those allowed in the informed consent was not permitted. To maintain confidentiality, the records kept in locked cabinets and the results of the data were coded to prevent identification of the volunteers.

**Approval:** This research had got ethical clearance from Institutional research review board (IRB), institute of health, Jimma university.

**Whom to contact:** If you have any question or need description about this study, you can communicate on the following addresses at any time:

Mr. Tesfaye Guja (BSc), Tel: +251-911000355, E-mail: [tesfayeguja@yahoo.com](mailto:tesfayeguja@yahoo.com)

Mr. Alemayehu Argaw (PhD candidate), Tel: +251946644424, E-mail: [yemariamwork@gmail.com](mailto:yemariamwork@gmail.com)

Mr. Yabsira Melaku (MSc), Tel: +251-932092440, E-mail: [melakuyabsra@gmail.com](mailto:melakuyabsra@gmail.com)

## **Annex II-The Consent Form**

### **English Version**

Name of study participant: \_\_\_\_\_

I am informed fully in the language I understand about the aim of the above mentioned research. I understood the purpose of the study, which aims to assess concordance of dietary diversity of mothers with children (6-23 months) in kucha district, Gamo-Gofa zone, Southern Ethiopia. I have been informed that there will be interview of questionnaire. In addition I have been told all the information collected throughout the research process will be kept confidential. I understood my current and future medical services will not be affected if I refused to participate or with draw from the study. I was also told that results would be reported timely to the requesting responsible bodies.

I agree that I am contributing to improve maternal and child diet by participating in this study. I have asked some questions and clarification has been given to me. I have given my informed consent freely to participate in the study, and I \_\_\_\_\_ hereby to approve my agreement with my signature.

Name of participant: \_\_\_\_\_ Signature: \_\_\_\_\_ Date \_\_\_\_\_

Name of principal investigator : \_\_\_\_\_ signature: \_\_\_\_\_ Date \_\_\_\_\_

## **Annex III: Questionnaire**

### **English version**

JIMMA UNIVERSITY

Jimma University Institute of Health

Department of Population and Family Health

An interviewer guided questionnaire for determining concordance of dietary diversity of mothers with children (6-23 months) in kucha district, Gamo-Gofa zone, Southern Ethiopia

Interview

I am grateful for your agreement to participate in this study. All of the answers you provide in this study will be kept confidential. The information you give me is very essential for this study. Therefore, I politely ask you to give me the right response.

Date of data collection \_\_\_\_\_

For data collectors:

**Instruction 1: Fill all the following questions accordingly. Before you starting asking the questionnaire, be sure that:**

- 1- The mother was responsible to feed her child yesterday.
- 2- The child started complementary feeding.
- 3- The child and mother lived in the Keble for at least 6 month.
- 4- Two or more children in the specified age range in one HH choose the last child with his mother.
- 5- Don't include those mothers who had mental illnesses, interfering with the interviewer who are seriously ill (fail to communicate) during study time.

## Questionnaire

**Table 1: Socio-demographic characteristics and other maternal factors questionnaire.**

S. no	Questionnaire	Response Options
101	Participant ID number	_____
102	Age in years of the mother	_____
103	Address / Kebele	_____
104	Ethnicity	i) Gamo ii) Gofa iii) wolaita iv) Amhara v) others (specify) _____
105	Religion	i) Orthodox ii) Protestant iii) Muslim iv) Catholic v) others (specify) _____
106	Marital status	i) Single ii) Married iii) Divorced/Separated iv) Widowed
107	What is your main occupation?	i) Housewife ii) Student iii) Civil servant/NGO iv) Daily laborer v) Merchant (Business women)

		vi) Other (specify): ____
108	Educational level	i) Unable to read and write ii) Only read and write iii) Had formal education: the maximum class attended _____
109	Number of family members in household regardless of age limit.	_____
110	Are you the head of your house hold?	i) Yes ii) No
111	What is your primary source of obtaining food?	i) Farming ii) Buying from market iii) Other (specify)_____
112	Do you plant vegetables in your backyard/ irrigation?	i) Yes ii) No
113	Do you have currently milking cows in your household?	i) Yes ii) No
114	Do you have chickens currently laying eggs?	i) Yes ii) No
115	Did you suffer any illness in two weeks that prohibited you from eating as usual yesterday?	i) Yes ii) No
116	Have you attended ANC during this last child's pregnancy?	i) Yes ii) No
117	Site of delivery for this last child.	i) Health facility ii) Home iii) Other( specify)_____
118	Have you attended PNC after delivery of this	i) Yes



	child?	ii) No
119	Have you been given advice/ information on taking for yourself /giving a child different diets for you & your child from someone?	i) Yes ii) No
120	If “yes” for Q.119 where did you get information to take diversified foods other than breastfeeding for your child and for yourself than usual?	I) HEW/ health professionals II) Mass media III) Family/neighbor IV) Other(specify)_____
121	Do you eat meat, poultry, eggs, milk & milk products during these fasting days?	i) Yes ii) No
122	How many times did you eat yesterday in home and outside home?	_____

**Table 2: questionnaire related to the child characteristics & maternal child care.**

201	Name of the child	_____
202	Sex of the child	i) Male ii) Female
203	Child's date of birth ( date/ month/ year)	_____/_____/_____
204	Age of the child in complete months	_____months
205	Did (name of the baby) consume breast milk yesterday during the day or at night?	i) Yes ii) No
206	If “No” for question 205, how many times did you feed cow milk or other milk yesterday during the day or at night?	i) No ii) Once iii) Twice iv) Trice v) Four or more
207	Have you started additional food other than breastfeeding (semi-solid, solid or soft foods) to your baby? ( <b>only for non breastfeeding babies</b> )	i) Yes ii) No (if “No” stop! don’t continue asking the mother).
208	If “yes” “for Q.207” How many times did you feed (your baby) additional food (solid/ semisolid) yesterday during the day or at night (meals and snacks)? ( including milk) ( <b>only for non breastfeeding babies</b> )	i) Once ii) Twice iii) Trice or more iv) Four or more times
209	Have you started additional food (semi-solid or solid) to your baby? ( <b>only for breastfeeding children</b> )	i) Yes ii) No (If “no” stop, don’t continue asking the mother).

210	If “yes for Q. 209” how many times did ( <i>baby/ name</i> ) eat solid, semisolid, or soft foods other than liquids yesterday during the day or at night? ( <b>don’t include milk</b> ) ( <b>only for breastfeeding children</b> )	<ul style="list-style-type: none"> <li>i) Once</li> <li>ii) Twice</li> <li>iii) Trice or more</li> <li>iv) Four or more times</li> </ul>
211	When did you start additional food (semi-solid, solid or soft foods)?	_____months (age of the child)
212	Did the child refuse some food groups to eat breakfast, lunch, snack or dinner yesterday?	<ul style="list-style-type: none"> <li>i) Yes</li> <li>ii) No</li> </ul>
213	Is the child vaccinated for his/her age?	<ul style="list-style-type: none"> <li>i) Yes</li> <li>ii) No</li> </ul>
214	Do the baby have GMP program in health facility?	<ul style="list-style-type: none"> <li>i) Yes</li> <li>ii) No</li> </ul>
215	Did the child suffer any infection in two weeks, prohibited him/her from eating as usual yesterday? (diarrhea, acute respiratory infections/ fever)	<ul style="list-style-type: none"> <li>i) Yes</li> <li>ii) No</li> </ul>
216	How many times did yourbaby eat yesterday in home and outside home?	_____

The following guiding text will be provided to enumerators as a job aid/guidance sheet when asking 24 hrs dietary recall method (the recall period covers from when the respondent awoke the previous day, through the day and night for a 24-hour period).

For each eating episode, after the respondent mentions foods and drinks, probe if she ate or drank anything else. Ask a series of the following **standard probing questions** to help the respondent recall all foods and beverages consumed the previous day and night until she says “**no, nothing else**”. If the respondent mentions a mixed dish like a soup or stew, ask for all the ingredients in the mixed dish. Once the respondent finishes recalling foods eaten, read each food group where ‘1’ was notcircled.

Did you have anything to eat or drink when you woke? If yes, what? Anything else?  
Did you have anything to eat or drink later in the morning? If yes, what? Anything else?  
Did you eat or drink anything at mid-day? If yes, what? Anything else?  
Did you have anything to eat or drink during the afternoon? If yes, what? Anything else?  
Did you have anything to eat in the evening? If yes, what? Anything else?  
Did you have anything else to eat or drink in the evening before going to bed or during the night?  
If yes, what? Anything else?

#### **\*INSTRUCTIONS FOR RECORDING INFORMATION**

This recall is “open”, please you **do not** read predefined foods/ groups to the respondent.  
*[Optionally: If the food is not listed in any of the rows on the questionnaire, write the food in the bottom row labeled “**Other beverages and foods**”.]*

\*As the respondent recalls foods and drinks, mark (“1” or “0”) to the corresponding item.

**Say to he mother:** I am going to ask you some questions about your diets. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

**Table 3: A qualitative open 24-hour recall for mothers. Yesterday during the day or at night, what did you eat, whether you ate it at home or anywhere else? Morning, mid-morning, noon, afternoon, evening, late evening.**

S. No	Food categories	Description	Yes= 1	No= 0
401	Grains, white roots and tubers, and plantains	Porridge, bread, rice, pasta or other foods made from grains		
		White potatoes, white yams,/cassava/or made from roots or tubers, or plantains		
402	Pulses (beans, peas and lentils)	Mature beans or peas (fresh or dried seed), lentils or bean/pea products		
403	Nuts and seeds	Any tree nut, groundnut/peanut or certain seeds, or nut/seed “butters” or pastes		
404	Dairy	Milk, cheese, yoghurt or other milk products but not including butter,		
405	Meat, poultry and fish	Liver, kidney, heart or other organ meats, including from wild game		
		Beef, lamb, goat, wild game meat, chicken, or other bird		
		Fresh or dried fish		
406	Eggs	Eggs from poultry or any other bird		
407	Dark green leafy vegetables	List examples of any medium-to-dark green leafy vegetables, including wild/foraged leaves		
408	Other vitamin A-rich fruits & vegetables	Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside		
		Ripe mango, ripe papaya		
409	Other vegetables	Vegetables ( tomato, kale, salad, sugar beet,---)		
410	Other fruits	Fruits ( avocado, banana, orange, lemon--		

**B- Other food categories. If not listed on the above table, record on the following space.**

**Optional:** 1-Other oils and fats \_\_\_\_\_

2-chips \_\_\_\_\_

3- Sweets& sugar-sweetened beverages (specify) \_\_\_\_\_

**Required:** 1-- Condiments & seasonings :Ingredients used in small quantities for flavour, such as chilies, spices, herbs, fish powder, tomato paste, flavour cubes or seeds \_\_\_\_\_

2-Other beverages and foods, (optionally, specify if not listed): Tea or coffee if not sweetened, clear broth, alcohol Pickles, olives and similar \_\_\_\_\_

*\*\* Adapted from MDD-W FANTA/FAO guide line (8)*

**Also say to the mother:**

\*I am going to ask you some questions about nutrition of your baby (name)ate yesterday during the day or at night. Feel free to ask any question you may have to be clarified.

**Instruction:** Classify foods not already included on the predefined list into an existing **predefined food group**. If more than one item in a row is mentioned, mark each item. If the same food or drink is mentioned more than once, you do not need to mark it again after the first time. [*Optionally: If the food is not listed in any of the rows on the questionnaire, write the food in the bottom row labeled “Other beverages and foods”.*] (Questions adapted from WHO infant and young child feeding module taken from: WHO. 2010 and FANTA/FAO (MDD-W) 2016 guide) (8,14).

**Table 4: A qualitative open 24-hour recall for children**

\* Please use the above instructions mentioned for probing and marking. Yesterday during the day or at night, what did your baby (name) eat?

S.N	Group	Food lists	Yes=1	No=0
501	Group1: Grains ,roots and tubers	Porridge, bread, rice, noodles or other foods made from grains		
		White potatoes, white yams, cassava or any other foods made from roots		
502	Group 2: Legumes and nuts	Any foods made from beans, peas, lentils, nuts or seeds		
503	Group3: Dairy products	Infant formula		
		Milk, such as tinned, powdered or fresh animal milk		
		Yogurt or drinking yogurt		
		Cheese or other dairy products		
504	Group 4: Flesh foods	Liver, kidney, heart or other organ meats		
		Any meat, such as beef, lamb, goat, chicken		
		Fresh or dried fish		
505	Group 5: Eggs	Eggs		
506	Group 6: Vitamin A fruits and vegetables	Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside		
		Any dark green vegetables		
		Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried)		
		Foods made with red palm oil, red palm nut or red palm nut pulp sauce		
507	Group 7: Other fruits and vegetables	Any other fruits or vegetables(tomato, kale, salad, sugar beet, avocado, banana, orange, lemon---		
508	Others	Any oil, fats, or butter or foods made with any of these		
		Any sugary foods, such as chocolates, sweets, candies, or biscuits		
		Condiments for flavour, seasoning ,such as chillies, spices, herbs or fish powder		
		Others beverages and foods		

**Table-5: Household Food Insecurity Access Scale (HFIAS) Measurement Tool**

NO	QUESTION	RESPONSE OPTIONS	CODE
601.	In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q 603) 1=Yes	.... __
602	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	.... __
603	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to Q 605) 1=Yes	.... __
604	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	.... __
605	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q 607) 1=Yes	.... __
606	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	.... __
607	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q 609) 1=Yes	.... __



608	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	.... __
609	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q 611) 1=Yes	.... __
610	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	.... __
611	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q 613) 1=Yes	.... __
612	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	.... __
613	In the past four wks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to Q 615) 1=Yes	.... __
614	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	.... __
615	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q 617) 1=Yes	.... __

616	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	....  <input type="text"/>
617	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (questionnaire is finished) 1 = Yes	....  <input type="text"/>
618	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	....  <input type="text"/>

**Table 6:Information pertaining to household wealth**

Now I will ask you some questions and observe about your drinking water source, wealth and condition of sanitary facility		
Household wealth		
701	Does your household have electricity?	i)Yes ii) No
702	A mobile telephone?	i)Yes ii) No
703	A bed with cotton/sponge/spring mattress	i)Yes ii) No
704	Chair	i)Yes ii) No
705	Sofa	i)Yes ii) No
706	Table	i)Yes ii) No
707	Television/ Functioning Flat screen Television	i)Yes ii) No
708	Radio/Functioning CD player/IPod/G-bass	i)Yes ii) No
709	Refrigerator(fridge)	i)Yes ii) No
710	Gas Stove/Cylinder	i)Yes ii) No
711	Electric stove	i)Yes ii) No
712	Washing machine	i)Yes ii) No
713	Chest drawer/ biffe/ comedienno	i)Yes ii) No
714	Bicycle	i)Yes ii) No
715	Motor Cycle/Bajaj	i)Yes ii) No
716	Video camera/ Digital Camera	i)Yes ii) No
717	Cart/Gari	i)Yes ii) No
718	Car	i)Yes ii) No
719	Does any member of this household have a bank or microfinance saving account?	i)Yes ii) No
720	Do you share this toilet facility with other households?	i)Yes ii) No
721	Does the household own any Livestock, herds, other farm animals, or poultry?	i)yes ii) No
722	Does your household have farming land ?	i)Yes ii)No

Name of the data collector \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Name of principal investigator \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

**Thank you !**

ቀን-----

ከንሰንት ፎርም / የፈቃደኝነት ማረጋገጫ ቅፅ

የተጠያቂ እናት ስም-----

እኔ መረዳት በሚችለው ቋንቋ የዚህ ጥናት ዓላማ ተገልጾልኛል፤፤ ይኼውም የእናቶች አመጋገብ ከህፃናት ጋር ምን ያህል ቁርኝት እንዳለው ለመለየት ጥያቄዎችን እንደሚጠየቅ ተነግሮኛል።

በተጨማሪም ይህ ሚስጢር በምንም ዓይነት ሁኔታ ልገዳኝ በሚችል መልኩ ከፈቃዴ ውጭ ለማንም ታልፎ እንደማይሰጥ ተገልጾልኛል። አንዳንድ ግልፅ ያልሆኑልኝን ጥያቄዎች ጠይቄ መልስ ተሰጥቶኛል።

ስለዚህ የጥናቱን ዓላማና ጥቅም ስለተረዳሁ እኔና ልጄ መሳተፍ እንዳለብን በፈቃደኝነት ተስማምቻለሁ።

የተሳታፊ ፊርማ-----ቀን-----

የተመራማሪው ፊርማ-----ቀን-----

እኔም በመጠይቁ ለመሳተፍ ስለተስማማኝ አመሰግናለሁ። ሚስጥሩ ሁሉ የተጠበቀ ይሆናል። ከዚህ ቀጥሎ ለምጠይቀው ጥያቄ መልስ እንድትሰጩ በትህትና እጠይቃለሁ።

**ለመረጃ ሰበሰቢው ብቻ የሚያገለግል ማስታወሻ**

**ማሳሰቢያ፡ መጠይቁን ከመሙላትህ በፊት የሚከተሉት ነጥቦች መሟላታቸውን አረጋግጥ!**

- 1- ትናንትና ልጁን የመገበኛው እናቱ መሆኗን አረጋግጥ።
- 2- ልጁ ከእናት ጡት ወተት ሌላ ተጨማሪ ምግብ መጀመሩን አረጋግጥ( ካልጀመረ አትጠይቅ)።
- 3- እናትና ልጅ በቀበሌው ወይም በወረዳው ውስጥ ቢያንስ ለ6ወር መኖራቸውን አረጋግጥ።
- 4- ሁለትና ከዚያ በላይ ህፃናት(6-23 ወር) በአንድ ቤት ካሉ የመጨረሻውን ልጅና እናት ተጠቀም።
- 5- የአዕምሮ በሽተኛና በጣም ታመው ጥያቄውን በደንብ መመለስ የማይችሉ እናቶችን በመጠይቁ አታካትት።

**ሠንጠረዥ 1፡ የእናት ማንነትና ሌሎች ተያያዥ መጠይቆች**

ተ.ቁ.	ጥያቄ	አማራጭ መልሶች
101	የእናት መለያ ቁጥር	_____
102	የእናት ዕድሜ / በዓመት/	_____
103	አድራሻ/ ቀበሌ	- _____
104	ብሔር	i) <b>ጋሞ</b> ii) <b>ጎፋ</b> iii) <b>ወላይታ</b> iv) <b>አማራ</b> v) <b>ሌላ (ይጠቀስ) _____</b>
105	ሀይማኖት	i) <b>ኦርቶዶክስ</b> ii) <b>ፕሮቲስታንት</b> iii) <b>ሙስልም/ እስላም</b>

		iv) ካቶሊክ v) ሌላ (ይጠቀስ) _____
106	የጋብቻ ሁኔታ	i) ያገባች ii) ያላገባች iii) የፈታች iv) ባል የሞተባት
107	መደበኛ ሥራዎች ምንድን ነው?	i) የቤት እመቤት ii) ተማሪ iii) _____ ሠራተኛ/የመንግሥት/መንግሥታዊ ያልሆነ/ iv) የቀን ሠራተኛ v) ነጋዴ vi) ሌላ (ይጠቀስ) _____
108	የትምህርት ደረጃ	i) ማንበብና መፃፍ የማይችል ii) ማንበብና መፃፍ ብቻ የሚችል iii) መደበኛ ትምህርት የተማረ ( የደረሰብት ከፍተኛ የክፍል ደረጃ ይጠቀስ -----
109	አብረውት የሚኖሩ የቤተሰብ ቁጥር ስንት ነው?	_____
110	በቤተሰብዎ ውስጥ የቤተሰብ ሀላፊ / አስተዳዳሪ/ ነዎት?	i) አዎን ii) አይደለም
111	በዋናነት እቤትዎ የሚመገቡትን ምግብ የሚያገኙት ከምንድን ነው?	i) ከማሳ ( እርሻ) ii) ከገቢያ

		iii) ሌላ (ይጠቀስ) _____
112	በጓሮዎ የጓሮ አትክልት ያመርታሉ	i) አዎን ii) አይደለም
113	አቤትዎ የምትታሉብ ላም አለዎት( አሁን ወተት የሚትሰጥ) አለች?	i) አዎን ii) አይደለም
114	እቤትዎ ዕንቁላል የምትጥል ዶሮ አለዎት (እየጣለች ያለች)?	i) አዎን ii) አይደለም
115	በሁለት ሳምንት ጊዜ ትናንትና ከወትሮው በተለየ ሁኔታ ምግብ እንዳይመገቡ የሚያደርግ ህመም አጋጥሞት ነበር?	i) አዎን ii) አይደለም
116	ለዚህ ህጻን በርግዝና ጊዜ የቅድመ - ወሊድ ክትትል አድርገዋል?	i) አዎን ii) አይደለም
117	ይህን ህፃን የወለዱት የት ነው?	i) በጤና ደርጅት ii) እቤት iii) ሌላ (ይጠቀስ) _____
118	የድህረ - ወሊድ ክትትል አድርገዋል?	i) አዎን ii) አይደለም
119	የተለያዩ የምግብ ዓይነት ለራስሽና ለልጅሽ ስለመመገብ ምክር/ ትምህርት አግኝተሽ ታውቅያለሽ?	i) አዎን ii) አይደለም
120	ለጥያቄ 119 መልስዎት አዎን ከሆነ መረጃውን ከማን አገኙ?	i) ከጤና ባለሙያ/የጤና ኤክስተንሽን ii) ከብዙሃን መገናኛ



		iii) ከሁለቱም iv) ከቤተሰብ/ ጎረቤት v) ሌላ (ይጠቀስ)-----
121	በነዚህ የጾም ቀናት ሥጋ (የደሮ፣ የከብት)፣ ወተት ወይም የወተት ተዋፅኦዎች፣ እንቁላል ይመገባሉ?	i) አዎን ii) አይደለም
122	እቤት ውስጥም ሆነ ከቤት ውጭ (ሌላ ቤት) ትናንትና ስንት ጊዜ ምግብ በልተዋል?	_____

**ሠንጠረዥ 2: የህፃኑ ማንነትና እናት ስለልጅዋ ያላት ጥንቃቄ**

201	የህፃኑ ስም	_____
202	የህፃኑ ያታ	i)ወንድ

		ii) ሴት
203	የህፃኑ የልደት ቀን ( ቀን / ወር / ዓመተ-ምህረት)	_____/_____/_____
204	የህፃኑ ዕድሜ ሙሉ ወር	_____ወራት
205	ህፃኑ ትናንትና ጡት ጠብቷል ወይ ( ቀን ወይም ማታ)? መልስዎ አዎን ከሆነ ወደ ጥያቄ 209 ይለፉ!	i) አዎን ii) አይደለም
206	ለጥያቄ 205 መልስዎ “ አይደለም ” ከሆነ፤ ትናንትና ለህፃኑ የላም ወይም ሌላ ወተት ስንት ጊዜ ሰጡ?	i) ምንም ii) አንድ ጊዜ iii) ሁለት ጊዜ iv) ሦስት v) አራትና ከዚያ በላይ
207	ለህፃኑ ከጡት ወተት ሌላ ተጨማሪ ምግብ (ጠንካራ ወይም ለስለስ ያለ) ጀምረዋል? (ለማያጠቡ ብቻ ይሞላ!)	i) አዎን ii) አይደለም ፤ መልሱ-“አይደለም” ከሆነ ሌላ አይጠይቁ፤ ያቁሙ ፤
208	ለጥያቄ 207 መልሱ አዎን ከሆነ ትናንትና ህፃኑን (ጠንካራ ወይም ለስለስ ያለ ምግብ) ስንት ጊዜ መገቡት (ወተትን ጨምሮ) (ለማያጠቡ ብቻ ይሞላ!)	i) አንድ ጊዜ ii) ሁለት ጊዜ iii) ሦስት iv) አራትና ከዚያ በላይ
209	ለህፃኑ ከጡት ወተት ሌላ ተጨማሪ ምግብ (ጠንካራ ወይም ለስለስ ያለ) ጀምረዋል? (ለሚያጠቡ ብቻ ይሞላ!)	i) አዎን ii) አይደለም ፤ መልሱ-“አይደለም” ከሆነ ሌላ አይጠይቁ፤ ያቁሙ
210	ለ 209 መልሱ-አዎን ከሆነ ወተት ሳይቆጠር ስንት ጊዜ መግባዎል?	i) አንድ ii) ሁለት iii) ሦስት

		iv) አራትና ከዚያ በላይ
211	ተጨማሪ ምግብ (ጠንካራ ወይም ለስለስ ያለ ምግብ) የጀመሩለት በስንት ወሩ ነው?	_____ ወር (የህፃኑ ዕድሜ ይጠቀስ)
212	ልጅሽ ትናንትና ቁርስ፤ ምሳ እራት ወይም ሌላ መብላት እምቢ ብሎ (አስቸግሮሽ) ነበር?	i) አዎን ii) አይደለም
213	ህፃኑ ለዕሜው የሚገባውን ክትባት ተከትብዋል?	i) አዎን ii) አይደለም
214	ልጅሽ በጤና ድርጅት የዕድገት ክትትል ያደርጋል ወይ?	i) አዎን ii) አይደለም
215	በሁለት ሳምንት ጊዜ ትናንትና ከወትሮው በተለየ ሁኔታ ምግብ እንዳይመገብ የሚያደርግ ህመም አጋጥሞት ነበር? (ተቅማጥ፣ ሳንባ ምች ወይም ሌሎች ትኩሳት ያላቸው በሽታ)	i) አዎን ii) አይደለም
216	እቤት ውስጥም ሆነ ከቤት ውጭ ( ሌላ ቤት) ትናንት ልጅዎ ስንት ጊዜ ምግብ በልቷል?	_____

**ማሳሰቢያ -2: ከዚህ ቀጥሎ የ24 ሰዓት የምግብ መጠይቅ ስትሞላ የሚከተሉትን ማንቂያ/ማሰታወሻ ጥያቄዎችን ተጠቀም ::**

እነዚህ ከተራ ቁጥር 1-6 ከላይ የተዘረዘሩት እናቶችና ሕጻናት የበሏቸውን ምግብ እንዲያስታውሱ/እንዳይረሱ የሚረዱ የአጠያየቅ ዜዴዎች ናቸው::

- በጠዋት ከእንቅልፍህ ስተነቃ የበላሄው ወይም የጠጣሄው አለ? አዎን ከሆነ ምን? ሌላ ተጨማሪስ?
- ጠዋት ረፋድ ላይ የበላሄው ወይም የጠጣሄው አለ? አዎን ከሆነ ምን? ሌላ ተጨማሪስ?
- ምሳ ሰዓት የበላሄው ወይም የጠጣሄው አለ? አዎን ከሆነ ምን? ሌላ ተጨማሪስ?
- በመክሰስ ሰዓት የበላሄው ወይም የጠጣሄው አለ? አዎን ከሆነ ምን? ሌላ ተጨማሪስ?
- ወደ ማምሻው አካባቢ የበላሄው ወይም የጠጣሄው አለ? አዎን ከሆነ ምን? ሌላ ተጨማሪስ?
- ማታ ራት ሰዓት የበላሄው ወይም የጠጣሄው አለ? አዎን ከሆነ ምን? ሌላ ተጨማሪስ?

**\*\*በሠንጠረዥ የተዘረዘሩ ምግቦችን ለእናት እንዳያነቡ! ስትናገር ብቻይሙሉ!**

**ሠንጠረዥ 3: ትናንት በ24 ሠዓት ውስጥ እናት የበላችውን አስታውሳ ስትናገር ይሙሉ።**

ሁ- ትናንትና እቤትም ሆነ ከቤት ውጭ ቀንና ማታ ምን በሉ? ቁርስ፣ ምሳ፣ መክሰስ፣ ራትና ሌላም ካሉ ሁሉም ይጻፍ።

ተ.ቁ	የምግቡ ምድብ	ዝርዝር	አዎን= 1	አይደለም = 0
401	1-የእህል ዘሮች፣ ነጭ ሥራ ሥሮች፣ ነጭ ፍራፍሬዎች	ገንፎ፣ ዳቦ፣ ፍጥጥ፣ ፓስታ ወይም ሌሎች ከእህል ዘሮች የተሰሩ ምግቦች( ስንዴ፣ በቆሎ፣ ማሽላ፣ ጤፍ፣ ገብስ . . .		
		ነጭ ስኳር ድንች፣ ጎደሬ፣ እንጨት ቦዩ፣ ሀረግ ቦዩ፣ እንሰት፣ ነጭ ደንች፣ ወይም ሌሎች የመሳሰሉ ሥራ ሥሮች፣ ግሽጣ		
402	2-የጥራጥሬ ዓይነቶች (ባቄላ፣ አተር፣ ምሥር ፣ ሽንብራ፣ አደንገሬ	ባቄላ፣ አተር፣ ሽንብራ፣ አኩሪ አተር፣ ምሥር፣ የተለያዩ አደንገሬ ወይም ከነዚህ የተሰሩ ምግቦች		
403	3-ለውዝ እና የቅባት ዘር	ለውዝ፣ የለውዝ ቅቤ፣ የዱባ ፍሬ፣ ሱፍ እና የመሳሰሉት		
404	4-ወተትና የወተት ተዋፅኦዎች	ወተት፣ አይብ፣ እርጎ፣ የታሸገ ወተት፣ የዱቄት ወተት ወይም ሌሎች የወተት ምርቶች (ቅቤን አያካትትም)		
405	5-ሥጋ፣ ዓሣ እና ዶሮ	ጉበት፣ ኩላሊት፣ ልብ ወይም ሌሎች የውስጥ ብልት ሥጋዎች ( ከአደን የተገኘ ጭምር)		
		ቀይ ሥግ፣ የበግ፣ የፍየል፣ (ከአደን የተገኘ ሥጋ ጭምር)፣ ዶሮ እና ሌሎች የሚበሉ ወፎች ሥጋ		
		ትኩስ ወይም ደረቅ ዓሣ (ቋንጣ)		

406	6-ዕንቁላሎች	ዕንቁላል (የዶሮ ወይም ሌሎች የምበሉ ወፎች ዕንቁላል )		
407	7-አረንጋይ ቅጠላቅጠሎች (በቫይታሚን ሕ የበለፀጉ)	ብሮኮሊ( አበባ ጎመን)፣ ቆስጣ እና ሌሎች ቅጠላቅጠሎች ( ሽፈራ/ ሞሪንጋ)		
408	8-ሌሎች በቫይታሚን ኤ የበለፀጉ ፍራፍሬዎች፣ አትክልቶችና ሥራሥሮች	ዱባ፣ካሮት፣ ብጫ ስኳር ድንች፣ ብጫ ድንች፣የበሰለ ቃሪያ፣ (ውስጣቸው ብጫ የሆነ)		
		የበሰለሰ ማንጎ፣የበሰለ ፓፓያ (ውስጣቸው ብጫ የሆነ)		
409	9-ሌሎች አትክልቶች	አትክልቶች (ቲማቲም፣ጎመን፣ ሰላጣ፣ ቀይ ሥር፣ ቃሪያ፣ ሽንኩርት፣ የባቄላ፣ የአተር... . እሽት፣ እንጉዳይ		
410	10-ሌሎች ፍራፍሬዎች	ፍራፍሬዎች( አቦካዶ፣ሙዝ፣ብርቱካን፣ሎሚ፣ አፕል...)		

**ሀ-እንዳስፈላጊነቱ፡**

1- ሌሎች ዘይትና ቅባት፡ \_\_\_\_\_

2-የተጠበሱ ምግቦች(ች፣ፕስ፣ሳንቡሳ) \_\_\_\_\_

3-ጣፋጭ ምግቦች (ቸኮሌት፣ክረሜላ፣ብስኩት፣ለስላሳ መጠጦች፣ ሰኳር ያለበት ሻይ፣ቡና) \_\_\_\_\_

ለ-የሚፈለጉ፡-1-ቅመማቅመም፡ \_\_\_\_\_

2-አልኮሆል፣ ሰኳር ያልተጨመረበት ሻይ፣ቡና \_\_\_\_\_

**ሠንጠረዥ 4: ትናንት በ24 ሠዓት ውስጥ እናት ልጅዋ የበላውን/ችውን አስታውሳ ስትናገር ይሙሉ።**

**ሀ- ትናንትና እቤትም ሆነ ከቤት ውጭ ቀንና ማታ ልጅሽ ምን በላ/ች? ቁርስ፣ ምሳ፣ መክሰስ፣ ራትና ሌላም ካለ ይጻፍ።**

ተ. ቁ.	የምግቡ ምድብ	የምግቡ ዝርዝር	አዎን= 1	አይደለም
501	ምድብ1: የአህል ዘሮች፣ ሥራ ሥሮች እና ክብ ሥሮች	ገንፎ፣ ዳቦ፣ ፍጥ፣ ፓስታ፣ መኮሮኒ እና ሌሎች ከአህል ዘር የሚዘጋጁ ምግቦች		
		ነጭ ስኳር ድንች፣ ጎደሬ፣ የእንጨት ቦዩ፣ ሀረግ ቦዩ ወይም ሌሎች የመሳሰሉ ሥራ ሥሮች		
502	ምድብ 2: ጥራጥሬ እና ለውዝ	ከባቁላ፣ ከአተር፣ ከምሥር፣ ሽንብራ፣ አኩሪ አተር፣ የተለያዩ አደንጓሬ፣ ከለውዝ፣ የተሰሩ ምግቦች ወይም ዘሮች		
503	ምድብ3: የወተት ተዋዕኦዎች	ከአንድ ዓመት በታች ለሆኑ ህፃናት የሚሰጥ የዱቄት ወተት		
		ወተት፣ የታሸገ ወተት፣ ሌሎች የዱቄት ወተቶች፣ ትኩስ የከብት ወተት		
		እርጎ		
		አይብ ወይም ሌሎች የወተት ምርቶች		
504	ምድብ 4: ሥጋዎች	ጉበት፣ ኩላሊት፣ ልብ ሌሎች የውስጥ ብልት ሥጋዎች		
		ቀይ ሥግ፣ የበግ፣ የፍየል፣ ደሮ		
		ዓሣ (ትኩስ ወይም ቋንጣ)		
505	ምድብ5: ዕንቁላሎች	ዕንቁላሎች		
506	ምድብ6: በቫይታሚን ኤ የበለፀጉ ፍራፍሬዎች፣ አትክልቶች	ዱባ፣ ካሮት፣ ብጫ ስኳር ድንች		
		ጥቁር አረንገዴ ቅጠላቅጠሎች ፣ ብሮኮሊ (አበባ ጎመን)፣ ቆስጣ እና ሌሎች ቅጠላቅጠሎች		
		የበሰለሰ ማንጎ፣ የበሰለ ፓፓያ		
		በፓልም ዘይት የተሰሩ ምግቦች		
507	ምድብ 7: ሌሎች ፍራፍሬዎችና አትክልቶች	ሌሎች ፍራፍሬዎችና አትክልቶች (ቲማቲም፣ ጎመን፣ ሰላጣ፣ ቀይ ሥር፣ አቦካዶ፣ ሙዝ፣ ብርቱካን፣ ሎሚ)		
508	ሌሎች	ማንኛውም ዘይት፣ ቅባት፣ ቅቤና በነዚህ ቅባቶች የተሰሩ ምግቦች		

	ማንኛውም ጣፋጭ ምግቦች (ቸኮሌት፣ ከረሜል፣ ብስኩት)		
	ለሎች ቅመማ ቅመሞች ለማጣፈጫ የገቡ		
	ሌሎች ጣፋጭ መጠጦችና ምግቦች		

**ሠንጠረዥ-5: የቤት ውስጥ የምግብ ደህንነት ሁኔታ መገኘት መለኪያ ጥያቄ**

ተ.ቁ	ጥያቄ	አማራጭ መልሶች	መለያ
601.	ባለፉት አራት ሳምንታት ለቤተሰባችሁ የሚበቃ ምግብ አይኖርም ይሆናል ብለሽ ተጨንቀሽ ታውቅደላሽ?	0 = አይደለም (ወደ 603 እለፍ) 1= አዎን	.... __
602	ለምን ያህል ጊዜ ነው የተጨንቀሽው (ይህ የሆነው)?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... __
603	ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል ለመብላት የምትፈልጉትን ምግብ ከማጣት (መግዛት ካለመቻል . .) የተነሳ ያልበላቸሁበት ጊዜ አለ?	0 = አይደለም (ወደ 605 እለፍ) 1= አዎን	.... __
604	ለምን ያህል ጊዜ ነው ይህ የሆነው?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... __
605	ባለፉት አራት ሳምንታት ውስጥ	0 = አይደለም (ወደ 607 እለፍ)	.... __



	እርስዎ ወይም ሌላ የቤተሰብዎ አባል ከማጣት (ገንዘብ፣ ምግብ) የተነሳ የተወሰኑ ምግብ ዓይነቶች ብቻ ተመግበዋል?	1= አዎን	
606	ለምን ያህል ጊዜ ነው ይህ የሆነው ?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... ___
607	ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል ሌሎች የምግብ ዓይነቶችን ለማግኘት ከማጣት ((ገንዘብ፣ ምግብ . . . ) የተነሳ አንዳንድ መብላት የማትፈልጉትን ምግብ ተመግባችኋል ?	0 = አይደለም (ወደ 609 እለፍ) 1= አዎን	.... ___
608	ለምን ያህል ጊዜ ነው ይህ የሆነው ?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... ___
609	ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል ከማጣት ((ገንዘብ፣ ምግብ . . . ) የተነሳ መብላት ከምትፈልጉት በታች(ትንሽ፣ የማያጠግብ)	0 = አይደለም (ወደ 611 እለፍ) 1= አዎን	.... ___

	ተመግባችኋል?		
610	ለምን ያህል ጊዜ ነው ይህ የሆነው ?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... __
611	ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል በቂ ምግብ ካለመኖሩ የተነሳ ሳትበሉ ያሳለፉችሁት (ምሳ፤ ቁርስ፤ ወይም ራት) ጊዜ አለ?	0 = አይደለም (ወደ 613 እለፍ) 1= አዎን	.... __
612	ለምን ያህል ጊዜ ነው ይህ የሆነው ?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... __
613	ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል ከማጣት( ገንዘብ፤ ምግብ. . ) የተነሳ አንድም ምግብ ያጣችሁበት ጊዜ አለ?	0 = አይደለም (ወደ 615 እለፍ) 1= አዎን	.... __
614	ለምን ያህል ጊዜ ነው ይህ የሆነው ?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት	.... __

		ከ10 ጊዜ በላይ)	
615	ባለፉት አራት ሳምንታት ውስጥ እርስዎ ወይም ሌላ የቤተሰብዎ አባል በቂ ምግብ ከማጣት( ለመግዛት ገንዘብ፤ ምግብ) የተነሳ እየራባችሁ ሳትበሉ እንቅልፍ የተኛችሁበት ጊዜ አለ?	0 = አይደለም (ወደ 617 እለፍ) 1= አዎን	.... __
616	ለምን ያህል ጊዜ ነው ይህ የሆነው ?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... __
617	ባለፉት አራት ሳምንታት እርስዎ ወይም ሌላ የቤተሰብዎ አባል በቂ ምግብ ካለመኖሩ የተነሳ ሙሉ ቀንና ማታ ምንም ሳትበሉ ያሳለፈችሁበት ጊዜ አለ?	0 = አይደለም (ጥያቄው አልቻል) 1= አዎን	.... __
618	ለምን ያህል ጊዜ ነው ይህ የሆነው ?	1 ==አልፎ አልፎ (አንዴ ወይም ሁለቴ ባለፉት 4 ሳምንታት) 2 አንዳንዴ (ከ3-10 ጊዜ ያህል ባለፉት አራት ሳምንታት) 3 = ብዙ ጊዜ (ባለፉት አራት ሳምንታት ከ10 ጊዜ በላይ)	.... __

**ሠንጠረዥ 6፣ የቤት ውስጥ ሀብት/ ጥሪት መለኪያ**

ከዚህ ቀጥሎ ስለቤት ውስጥ ንብረት እጠይቆታለሁ።፤ የመጠጥ ውሃ፣ የሽንት ቤት ሌሎች የንፅህና ሁኔታና እንዳንድ ንብረቶች እንዳስፈላጊነታቸው ይታያሉ።፤			
701	ቤትዎ እሌክትሪክ አለው?	i)አዎን	ii) አይደለም
702	ሞባይል?	i)አዎን	ii) አይደለም
703	የስፖንጅ/ጥጥ/ስፕሪንግ ፍራሽ ና አልጋ	i)አዎን	ii) አይደለም
704	ወንበር	i)አዎን	ii) አይደለም
705	ሶፋ	i)አዎን	ii) አይደለም
706	ጠረጴዛ	i)አዎን	ii) አይደለም
707	ቴሌቪዥን	i)አዎን	ii) አይደለም
708	ሬድዮን	i)አዎን	ii) አይደለም
709	ፍርጅ	i)አዎን	ii) አይደለም
710	የጋዝ ምድጃ	i)አዎን	ii) አይደለም
711	የእሌክትሪክ ምድጃ	i)አዎን	ii) አይደለም
712	የልብስ ማጠቢያ ማሽን	i)አዎን	ii) አይደለም
713	ቁም ሳጥን፣ ብሬ፣ኮሚዲኖ	i)አዎን	ii) አይደለም
714	ብስክሌት	i)አዎን	ii) አይደለም
715	ሞተር ሳይክል/ባጃጅ	i)አዎን	ii) አይደለም
716	ካሜራ/ቪዲዮ	i)አዎን	ii) አይደለም
717	ጋሪ	i)አዎን	ii) አይደለም
718	መኪና	i)አዎን	ii) አይደለም
719	ቤታችሁ ውስጥ የባንክ ደብተር ወይም የማይክሮፋይናንስ ቁጠባ ደብተር ያለው አለ?	i)አዎን	ii) አይደለም

720	ሽንት ቤታችሁ የግላችሁ ነው ?	አዎን	ii) አይደለም
721	እቤትዎ የቤት እንስሳትና ዶሮ ታረባላችሁ?	አዎን	ii) አይደለም
722	ከቤተሰባችሁ አባላት የእርሻ ማሳ ያለው አለ?	i)አዎን	ii) አይደለም

የመረጃ ብሳቢው ስም \_\_\_\_\_ ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_

የተመራማሪው ( ዋና ተቆጣጣሪው) ስም \_\_\_\_\_ ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_

# አመሰግናለሁ!

Gallassa -----

**Enno guussa erissiya qixxe.**

Oyshettiya aayo sunththa -----

Taw gelliya qaalaa/ doonan ha xinaatiya huuphe qofay tas odeththis.hegeekka aayeti miyo qumay qeeri yiiratagara ay keena waxeettiyaakkoshakkanas dumma dumma oyshshata oyshetanaga ta yiira kiloy/deexoy,exaynne kushe yuusho likkey ta kushe yuusho likkeykka ekettanaage taw yootettis.

Haraykka ha xuuray ay gaasonkka tana qohiya qommon ta shene baynna ooyyonne aathi emettenage taw yootettis. Issi issi taw gelibeennabata oychchin zaaroy taw emettis.

Hega gishshaw ha xinaatiya go7anne huuphe qofa erido gishshaw taanne ta na7ay ha xinaatiyaan gelanaw ta sheniyan giigas/ eeno gas.

Aayee pirmma-----gallassa-----

Xanna7iyaaga pirmma-----gallassa-----

Taanikka ha oyshaw ne eeno giido gishshaw wozanappe anjjays. Xuura ubbay qosan naagettees. Hagappe kaallada ta oychchiyo oyshshaw zaaro immana mala bonchchuwan oycchayis

## Marajja shiishshiyaaga xallaw go7iya akeekiso

**Akeekisso** - □ Oyshaa kunththanaappe sinttaw kaallidi de7ia qofati kumeththa gidooga shaakka.

- 1- Zino peeshshan na7a qumaa miziday ayyiyo gidanaw bessees
- 2- Yiiray aaye xanttappe hara gujo quma dommanaw bessees (doommena ixkikko oychchoppa)
- 3- Aaiyanne na7ay he qabaliyan guuxxis gishin 6 agina de7idageta gidanaw bessees.
- 4- > 2 nayiti (6-23 agine) issi keethan de7ikko wursseththa na7anne aayo ekka.
- 5- Huuphee boshettiyonne keehi sakettidi oysha zaaranaw dandda7enna aayeta oychchoppa

## Zara 1 □ aayee oonateethanne hara gaythethida oyshata

Pm	Oysha	Dooro zaarota
101	Aayo erissia paydo	_____
102	Aaye Laytha	_____
103	Qabale	_____
104	Biheere / sheesha	i) Gammo ii) Goofa iii) Wolaytha iv) amaara v) hara (yoota) _____

105	Haymanoote/ Ammano	<ul style="list-style-type: none"> <li>i) Orttodoogise</li> <li>ii) Pirootestantte</li> <li>iii) Eslaama</li> <li>iv) kaatoolikke v) hara (yoota) _____</li> </ul>
106	Gelo hanotha	<ul style="list-style-type: none"> <li>i) gelaaws</li> <li>ii) gelabeekku</li> <li>iii) birshshettaws iv) azini hayqqidaaro</li> </ul>
107	Wanna oosoy aybbee?	<ul style="list-style-type: none"> <li>i) Keetha aayo</li> <li>ii) Tamaare</li> <li>iii) Kawe oosanchcha</li> <li>iv) wolqqa oosanchcha</li> <li>v) zal77anchcha vi)haraa(yoota) _____</li> </ul>
108	Timirtte detho	<ul style="list-style-type: none"> <li>i) nabbabonne tsaafu erenna</li> <li>ii) nabbabonne tsaafu xalla erees</li> <li>iii) tamaridaba ( gakkido wurssetha kifilee yoota) -----</li> </ul>
109	Son de7iya so asay aappunee?	_____
110	Keetha ayisiyay neene?	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay</li> </ul>
111	Son enthe miyo katha awuppe ekkeethi?	<ul style="list-style-type: none"> <li>i) Gadeppe</li> <li>ii) giyaappe iii) hara (yoota) _____</li> </ul>
112	Eremeen gooro atakiltte tokkeeti?	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay</li> </ul>
113	Ha7i maatha emmiya miizi entesoon de7i?	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay</li> </ul>
114	Ha7i phuuphulle yeliya kuthoy entesoon	<ul style="list-style-type: none"> <li>i) Ee</li> </ul>



	de7i?	ii) Akkay
115	Zino kaseppe dummathidi quma menna mala diggiya hargee nena sakidee na77u samintta giddon?	i) Ee ii) Akkay
116	Shahaara wode hakimesson shaara be7ethadi?	i) Ee ii) Akkay
117	Haga na7a awan yeladi?	i) Aakime keetha ii) Soon iii) hara (yoota) _____
118	Yela simmada marammaretanaw hakime keetha baadi?	i) Ee ii) Akkay
119	Dumma dumma katha neeyonne ne na7ayo manaw bessiyoga timirtte emiday de7ii?	i) Ee ii) Akkay
120	Oysha 119 zaaroy “ee” gidiko oonee tamarissiday?	i) Aakimeppe/xeena ekisttenshine ii) Eraadoope/telebizhineppe iii) Na77appe iv) So asappe/ shooroppe v) Hara (yoota)-----
121	Haga tsooma wontatan asho (miizza, kutho) maatha woyko maathape ke7yaysata , phuphuullenne maadi / toomay ?	i) Ee ii) Akkay
122	Zino soon gidin Karen quma aappuntho maadi?	_____

**zara 2 □ na7a oonathethanne ayyiya na7ayo nagethiyo naagiya**

201	na7a sunttay	_____
202	Na7a mattumay	i) attuma ii) macca
203	Yelethe galassa (gallassa/ agine/ marothetha layha)	_____/_____/_____
204	Na7ay wurssido kumetha aginee	_____aginetha
205	Zino na7ay xantha xammidee ( gallassi/qammi)? Zaarooy"ee" gidikko oysha 209 ko ba!	i) Ee ii) Akkay
206	Oysha 205 zaaroy " <b>akkay</b> " gidikko zino na7a mizza woy hara maaththa ushshadii? Aappunththo?	i) Ushshabeykke ii) Issitho iii) na77utho iv) heezzutho v) oyddanne hegappe bolla
207	Na7ayyo xanttappe hara gujo quma (mino gidin shugo) doommadi? ( <b>xammenagetu xallas!</b> )	i) Ee ii) Akkay □ zaaroy" <b>Akkay</b> " gidikoo essa hara oychchoppa

208	oysha 207 zaaroy”ee” gidikko zino na7a quma apuntho mizadi? ( <b>maathara gujjin xammenagetu xallas!</b> )	<ul style="list-style-type: none"> <li>i) Issitho</li> <li>ii) na77utho</li> <li>iii) heezzutho</li> <li>iv) oyddane appeka bolla</li> </ul>
209	Na7ayyo xanttappe hara gujo quma (mino gidin shugo) doommadi? ( <b>xammiyagetu xalla!</b> )	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay, zaaroy “<b>Akkay</b> ”gidikko hara oychchoppa essa.</li> </ul>
210	Qommo oysha zaaroy (209) “ ee” gidiko na7a mino gidin shugo katha haathi athin aappuntho mizadi? ( maatha qoodoppa) ( <b>xammiya na7a xallas kuntha</b> )	<ul style="list-style-type: none"> <li>i) Issitho</li> <li>ii) na77utho</li> <li>iii) heezzutho</li> <li>iv) oyddane appeka bolla</li> </ul>
211	Na7ayyo xanttappe hara gujo quma (mino gidin shugo) aappun aginen doommadi?	_____ agine ( na7ay doommiyo agina yoota)
212	Na7ay zino qan77e, laaxa, kawo woy hara miikke giidi wayisside?	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay</li> </ul>
213	Na7a ba laythaw koshshiya kithibaatiya wurssidee?	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay</li> </ul>
214	Na7a dichcha kaalos haakime ketha bi erii?	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay</li> </ul>
215	Zino kaseppe dummathidi quma menna mala diggiya hargee na77u saminttan na7a sakidee? (uthisoy,qufee woyko hara misha qoxoy)	<ul style="list-style-type: none"> <li>i) Ee</li> <li>ii) Akkay</li> </ul>
216	Zino soon gidin Karen na77ay quma aappuntho miide?	_____

**Akeekisso -2 24 saate gidon midoba oychchaydde qofissoyoyo hagappe garssan de7iyageeta go7tha**

Mallado xiskkoppe dendo mala midobaynne uyobay de7ii? “ee” giikko, aybee? Haraychch ?

Guuththiyo poo7ishin ne mobaynne uyobay De7ii? “ee” giikko, aybee? Haraychch ?

Laaxa saaten mobaynne uyobay de7ii? “ee” giikko, aybee? Haraychch ?

SHuushe zaro( makssase) saaten mobaynne uyobay De7i? “ee” giikko, aybee? Haraychch ?

Lade mobaynne uyobay De7i? “ee” giikko, aybee? Haraychch ?

Omarss kawo saaten mobaynne uyobay De7i? “ee” giikko, aybee? Haraychch ?

**Hagappe bollan paydo1-6 gakkanaw patheththageeti aayetinne yiirati miidoba oychchidd qofissoyo go7ittiyo akeekissia hiilla.**

Quma suntha nababoppa aya yotiyoodde kuntha.

**Zara 3: 24 saate gidдон аауууа ба мидоога гууе qoppada yootiyoode xaafa.**

Zino son /Karen gallanne omarssi ay maadi? qan77e, laaxa, kawo haraykka dikko ubbakka xaafa.

pm	Qummaa citaa	paaththa	Ee= 1	Akkay` = 0
401	1-kaththa ayfeta, booththa unkkoththa/ maskkotha/, booththa ayfafeththa	Shenddera, daabbo, ruze, pasta, woykko hara kaththa ayfeppe giigiya qumata		
		Booththa shukkaare, boyna, miththa boye, tura boye, uuththa, dono, hageta mala unkkota, gishxxa		
402	2-tiratire	ba77ela, atara, misira, shumbbura, lokome, akure ataranne etapee ooseththiya kaththatha.		
403	3-ochcholoonne hara a zaretha	Ochcholoone, ochchoolone oyssa, leehe ayffe, paranjja shuqonne a malatiyaageta		
404	4-maaththanne maaththaappe ke7iyaageeta	Maaththa, pila, meqa maaththa, papirkkan giigida xiille maatha---( oyssi gelenna)		
405	5-asho, mole kuuththo	Tire, kilaho,wozana, hara gidдо ashshota ( shankka do7a gujjin)		
		Zo7o asho, dorssa, deeshsha ( shankkatido do7a assho) kuththo woy hara meetheththiya kafota		
		Molenne mole xuqa		
406	6-phuuphulle	phuuphulle (kuththo woy hara meetheththiya kafota)		
407	7-cililo bonccota	Ciishsha sanththa, qosxxanne Hara bonccota		

	(vitamine” A” diyoogeta)	(halakko )		
408	8 – hara vitamine” A” diyoo ayfafeta, atakiltetanne maskkota	Leehe, kaarrote, agriiserbise shukkaare ( hara giddoy galal770 meri de7iyo qumata)		
		Kaxxida manggonne paappaye (giddoy galal770 meri de7iyo ayfaafe)		
409	9-hara atakiltteta	atakiltteta ( timaatime, sanththa, salaaxa, qaysire, qaare,shunkkuruto, baaqqela, atara tiya, embbaamo		
410	10-hara ayfafeta	Ayfaafeta( abukaado,muuze, burttukaane, lome, aappile- - )		

-**koshshiyaagaththo**:1-hara zaytenne shica;\_\_\_\_\_

2-caacido qumata (chibsse, sanbussa)\_\_\_\_\_

3- laqillaqiya qumata (chokolete, karmmeella, buskkuute, laslaassa, sukkaare diyo shaye, tukke)-

\_\_\_\_\_

-**koyyettiyaageeta** -1-qimamta\_\_\_\_\_

2- Mattoyiya ushshata, sukkaaree bayinna shaye, tukke\_\_\_\_\_

**Zara 4: 24 saate gidдон аауууа ба ууураау мидоба гууе qoppada yootiyooде xaafa.**

A- zino son gidin Karen galas/omarssi ne ууурай ау миидее? Qan77e, laaxa, kawo woy hara xaafa.

PM	Qummaa citaa	Paaththa	Ee= 1	Akkay`= 0
501	citaa 1: kaththa ayfeta, unkkota( maskkota)	Shenddera, daabbo, ruze, pasta, woykko hara kaththa ayfe qumata		
		Booththa shukkaare, boyna, miththa boye, tura boye, uuththa, dono, hageta mala unkkota		
502	citaa2: tiratiretanne ochcholoone	ba77ela, atara, misira, shumbbura, lokome, akure atara, ochcholoonenne etapee ooseththiya kaththatha		
503	citaa 3: maaththape beettiyaageta	Issi layththappe garssara de7iya nayttaw imettiya mashine maaththa		
		Maaththa, maashine maaththa, hara xille maaththa, yeso maaththa		
		Meqa maaththa		
		Pila woy hara maaththappe ke7iyageeta		
504	citaa 4: ashota	Tire, kilaho,wozana, hara gidдо ashshota		
		Zo7o asho, dorssa, deeshsha, kuththo		
		Molle ( ho7o woy xuqa)		
505	citaa5: Phuuphulle	phuuphuulleta		
506	Citaa 6: baytaamine”A” de7iyoo ayfaafeta, atakilteta	Leehe, kaarootе, agriserbbise shukkaare		
		Karexxida cililo bonccota, ciishsha sanththa, qosxxanne hara bonccota		
		Kaxxida mango woy paappaye		
		Palmme zaytteppe ooseththida qumatha		
507	citaa 7: hara ayfaafe	Hara ayfaafetanне atakilteta (timatime, santha, salaxa, qaysire,		

	nne atakilteta	abukaato, muuze, burttukkaane loome		
508	harata	Dumma dumma zayte,shica, oyssanne ha shicatan ooseththiya qumata		
		Laqlaiya qumata (chokkoleete, karmeella, buskkuute)		
		Quma mal77inttanaw geliya qimaameta		
		Laqlaqqiya ushshatanne qumata		

**Zara-5: so gidдон qumma hanotha eranaw koshshiyo oyshsha**

Pm	oyshsha	Dooro zaarotha	shaaho
601.	Aadhdhida 4 saaminttan so asaas gidiya kaththi deenna gada cennaqetta eray?	0 = Akkay ( 603 kko aadhdha) 1= Ee	....  <input type="text"/>
602	Aappunththo hegee hanidoy ( canaqqettadii)?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho (3-10 keena aadhdhida 4 saammintthathan) 3 = daroto (aadhdhida 4 saammintththan 10pe bolla)	....  <input type="text"/>
603	Aadhdhida 4 saaminttan ne/haray so asi mana koyiyo quma xayidi meenna wode di?	0 = Akkay (605 kko aadhdha) 1= Ee	....  <input type="text"/>
604	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho (3-10 keena aadhdhida 4 saammintthathan) 3 = daroto(aadhdhida4 saammintththan 10pe bolla)	....  <input type="text"/>
605	Aadhdhida 4 saaminttan ne/haray so asi doori manaw xayidi amarathida qommo quma xalla midetii?	0 = Akkay ( 607 kko aadhdha) 1= Ee	....  <input type="text"/>
606	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan)	....  <input type="text"/>



		2= issi issitho (3-10 keena aadhdhida 4 saamminththathan) 3 = daroto (aadhdhida 4 saamminththan 10pe bolla)	
607	Aadhdhida 4 saaminttan ne/haray so asi hara qommo qumata xayidi issi issi manaw dosenna quata mideti?	0 = Akkay (609 kko aadhdha) 1= Ee	.... __
608	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho (3-10 keena aadhdhida 4 saamminththathan) 3 = daroto (aadhdhida 4 saamminththan 10pe bolla)	.... __
609	Aadhdhida 4 saaminttan ne/haray so asi quma xayidi kallenna miidethii?	0 = Akkay (611 kko aadhdha) 1= Ee	.... __
610	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho (3-10 keena aadhdhida 4 saamminththathan) 3 = daroto (aadhdhida 4 saamminththan 10pe bolla)	.... __
611	Aadhdhida 4 saaminttan ne/haray so asi gidiya quma xayidi meenna aathhido wode(qan77e,laaxa, kawo) de7ii?	0 = Akkay (613 kko aadhdha) 1= Ee	.... __
612	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho (3-10 keena aadhdhida 4 saamminththathan) 3 = daroto (aadhdhida 4 saamminththan 10pe bolla)	.... __
613	Aadhdhida 4 saaminttan ne/haray so asi mule quma xayo wode de7ii?	0 = □□□□□ (615 kko aadhdha) 1= Ee	.... __
614	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho (3-10 keena aadhdhida 4 saamminththathan) 3 = daroto (aadhdhida 4 saamminththan 10pe bolla)	.... __

615	Aadhdhida 4 saaminttan ne/haray so asi quma xayidi namsishin kawo menna xiskko wode de7ii?	0 = Akkay (617 kko aadhdha) 1= Ee	....  <input type="checkbox"/>
616	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho ( <b>3-10</b> keena) 3 = daroto (aadhdhida 4 saammintththan 10pe bolla)	....  <input type="checkbox"/>
617	Aadhdhida 4 saaminttan ne/haray so asi qamminne galas meenna aaththo wode de7ii?	0 = Akkay (oyshshay wuriis) 1= Ee	....  <input type="checkbox"/>
618	Aappunththo hegee hanidoy?	1 = Aadhdhi aadhdhi (issuwa woy naa77a aadhdhida 4 saamminttathan) 2= issi issitho ( <b>3-10</b> keena aadhdhida 4 saammintthathan) 3 = daroto (aadhdhida 4 saammintththan 10pe bolla)	....  <input type="checkbox"/>

## Zara 6. So aqoba oysha

Hagaappe kaallada so de70ttaaba oychchan.ushsha haaththa, sheeshsha keeththa, hara geeshshaththeththaabanne, issiissi de7othi koshshiyooqaaththo xeeleththana.		
701	Soon elektrikke mabraate de7i?	i)Ee ii) Akkay
702	Mobayle de7i?	i)Ee ii) Akkay
703	Espponjje/puutho/shupo piraashenne algga	i)Ee ii) Akkay
704	oydde	i)Ee ii) Akkay
705	soofa	i)Ee ii) Akkay
706	xarapheeza	i)Ee ii) Akkay
707	telebiizhine	i)Ee ii) Akkay
708	eraddoone	i)Ee ii) Akkay
709	piriijje	i)Ee ii) Akkay
710	Lanbba cooce	i)Ee ii) Akkay
711	Elektriie cooce	i)Ee ii) Akkay
712	Mayo lawonddere	i)Ee ii) Akkay

713	Qum saaxine, bippe, komodino	i)Ee	ii) Akkay
714	Bishkkilito	i)Ee	ii) Akkay
715	Baajaajje/ motore	i)Ee	ii) Akkay
716	Poto kaamera/ viido	i)Ee	ii) Akkay
717	gaare	i)Ee	ii) Akkay
718	makiina	i)Ee	ii) Akkay
719	<input type="checkbox"/> bankke woy mayikkiro dawtari de7iyo asi son de7i?	i)Ee	ii) Akkay
720	Sheeshsha keethay enthiyo buzoo ?	i)Ee	ii) Akkay
721	Miizza woy kuththo haaridetii?	i)Ee	ii) Akkay
722	So asaappe goshsha gadee de7iyoy de7ii?	i)Ee	ii) Akkay

Marajja shiishiyaga suntha \_\_\_\_\_ pirma \_\_\_\_\_ gallasa \_\_\_\_\_

Wanna xeelliyaga suntha \_\_\_\_\_ pirma \_\_\_\_\_ gallasa \_\_\_\_\_

# Galatayssi!

### **Assurance of principal Investigator**

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of health Institute in effect at the time of grant is forwarded as the result of this application.

Name of the student: \_\_\_\_\_

Date. \_\_\_\_\_ Signature \_\_\_\_\_

### **APPROVAL OF THE ADVISORS**

Name of the first advisor: \_\_\_\_\_

Date. \_\_\_\_\_ Signature \_\_\_\_\_

Name of the second advisor: \_\_\_\_\_

Date. \_\_\_\_\_

Signature \_\_\_\_\_