

Addis Ababa  
University  
(Since 1950)



FOOD SAFETY KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) AND  
NUTRITIONAL STATUS OF HOUSEHOLD MEMBERS WITH EMPHASIS  
ON YOUNG CHILDREN (6-24 MONTHS): IN TEHULEDERE WOREDA,  
SOUTH WOLLO, ETHIOPIA

BY:

AHMED ENDRIS ASSEN

ATHESIS SUBMITTED TO CENTER FOR FOOD SECURITY STUDIES

JUNE, 2019  
ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY  
COLLEGE OF DEVELOPMENT STUDIES  
CENTER FOR FOOD SECURITY STUDIES

FOOD SAFETY KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) AND  
NUTRITIONAL STATUS OF HOUSEHOLD MEMBERS WITH EMPHASIS  
ON YOUNG CHILDREN (6-24 MONTHS): IN TEHULEDERE WOREDA,  
SOUTH WOLLO, ETHIOPIA

BY:

AHMED ENDRIS ASSEN

ADVISOR: PROF. MOGESSIE ASHENAFI

A MASTER'S THESIS SUBMITTED TO COLLEGE OF DEVELOPMENT  
STUDIES CENTER FOR FOOD SECURITY STUDIES,

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE  
DEGREE OF MASTER OF SCIENCE IN FOOD SECURITY AND  
DEVELOPMENT STUDIES

JUNE, 2019

ADDIS ABABA, ETHIOPIA

## DECLARATION

This thesis is my original work and has not been presented for a Degree in any other University.

Name: Ahmed Endris Assen

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

June, 2019  
Addis Ababa

**APPROVAL SHEET**  
**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF DEVELOPMENT STUDIES**  
**CENTER FOR FOOD SECURITY STUDIES**

As supervisor of the thesis we certify that we have read and evaluate the thesis prepared by Ahmed Endris entitled “food safety knowledge, attitude and practices (KAP) and nutritional status of household members with emphasis on young children (6-24 months): in Tehuledere Woreda, South Wollo, Ethiopia” and recommended for open Defense as fulfilling the requirement for the degree of Master of Science Degree in Food Security and Development Studies

---

Name of Advisor

---

Signature and Date

As members of the examining board of the thesis open defense, we certify that we have read and evaluate the thesis prepared by Ahmed Endris entitled “food safety knowledge, attitude and practices (KAP) and nutritional status of household members with emphasis on young children (6-24 monyhs): in Tehuledere Woreda, South Wollo, Ethiopia” and recommended that it is acceptable as a proposal for the thesis required for the degree of Master of Science Degree in Food Security and Development Studies.

-----  
Name, Chairman

-----  
Signature & Date

-----  
Name, Internal Examiner

-----  
Signature & Date

-----  
Name, External Examiner

-----  
Signature & Date

Final approval and acceptance of this thesis proposal is contingent upon the candidate's submission of the final copy of the proposal, incorporating all the comments by Examining Board, to the Council of Graduate Studies (CGS), through the Center Academic Committee (CAC) of the Center.

---

Chairperson of the Center or Graduate Program Coordinator

ADDIS ABABA UNIVERSITY  
COLLEGE OF DEVELOPMENT STUDIES  
CENTER FOR FOOD SECURITY STUDIES

DEDICATION

I dedicated this thesis to my wife Medina Mohammed and my son Rayan Ahmed.

## **Acknowledgements**

First and foremost, I would like to address my deepest grateful and appreciation to my advisor Prof. Mogessie Ashenafi, for his valuable advices, insightful and constructive comments which made this research successful from title amendment to writing the thesis report.

My special gratitude to Mr. Zelalem Destaw for his supported and comments on the successful completion of this research.

I would like to extend my thanks to the Tehuledere worda administrator and sample kebeles government representatives and sample kebeles' health extension. My special thanks also go to my sample respondents for their willingness, commitment and patience to answer all the questions during the study.

And also I want to thanks Misrak Poly Technic College management and dean, especially Mr. Tsegaye Adugna the college dean and Mr. Tilahun Baye deputy dean of the college for giving me the opportunity to attend the master program. I further want to give my gratitude to the staff members of the Department of Hotel and Hospitality.

Finally, I want to address my appreciation to my friends Mr. Kedir Ali and Mr. Mohammed Yusuf for their inclusive support and encouragement during the study period.

## Tables of Content

|                                                      |      |
|------------------------------------------------------|------|
| Acknowledgements.....                                | i    |
| Tables of Content.....                               | ii   |
| List of Figures .....                                | v    |
| List of Tables .....                                 | vi   |
| Acronyms and Abbreviations .....                     | viii |
| ABSTRACT.....                                        | ix   |
| CHAPTER ONE: INTRODUCTION.....                       | 1    |
| 1.1 Background of the Study.....                     | 1    |
| 1.2 Statement of Problem .....                       | 2    |
| 1.3 Objective .....                                  | 3    |
| 1.3.1 General Objective .....                        | 3    |
| 1.3.2 Specific objective .....                       | 3    |
| 1.4 Research Questions .....                         | 3    |
| 1.5 Significance of the Study .....                  | 3    |
| 1.6 Operational Definition of Terms .....            | 4    |
| CHAPTER TWO: RELATED LITERATURE REVIEW.....          | 6    |
| 2.1 Nutrition .....                                  | 6    |
| 2.2 Nutritional Status.....                          | 6    |
| 2.3. Overview of Anthropometric Indicators .....     | 7    |
| 2.3.1 Weight-for-Height (W/H).....                   | 7    |
| 2.3.2 Height-for-Age (H/A).....                      | 7    |
| 2.2.3 Weight-for-Age (W/A) .....                     | 8    |
| 2.3.4 Mid-Upper Arm Circumference (MUAC) .....       | 8    |
| 2.4 Child Feeding Practices.....                     | 8    |
| 2.4.1 Breast Feeding Initiation .....                | 9    |
| 2.4.2 Complementary Feeding.....                     | 10   |
| 2.5 Dietary Diversity and Meal Frequency .....       | 10   |
| 2.6 Household Food Safety and Child Nutrition.....   | 11   |
| 2.7 Malnutrition in Children.....                    | 12   |
| 2.8 Household Food Security and Child Nutrition..... | 14   |
| 2.9 Conceptual Framework .....                       | 14   |
| CHAPTER THREE: METHODOLOGY .....                     | 16   |
| 3.1 Description of the Study Area.....               | 16   |

|                                                                            |    |
|----------------------------------------------------------------------------|----|
| 3.2. Research Design.....                                                  | 18 |
| 3.3. Source population.....                                                | 18 |
| 3.4. Study population .....                                                | 18 |
| 3.5. Eligible Criteria .....                                               | 18 |
| 3.6. Study Variable.....                                                   | 18 |
| 3.7. Sampling Technique and Sample Size .....                              | 18 |
| 3.8. Types and Sources of Data.....                                        | 20 |
| 3.9. Data Collection Technique and Tools.....                              | 20 |
| 3.9. 1 Household Survey.....                                               | 20 |
| 3.9.2. Observation.....                                                    | 21 |
| 3.9.3. Anthropometric Measurements .....                                   | 21 |
| 3.10. Data Quality Control .....                                           | 22 |
| 3.11. Technique of Data Analysis .....                                     | 23 |
| 3.12. Ethical Consideration .....                                          | 24 |
| 3.13. Scope and Limitation of the Study .....                              | 24 |
| CHAPTER 4. RESULT AND DISCUSSION .....                                     | 25 |
| 4.1 Socio-economic and Demographic Characteristics of the Households ..... | 25 |
| 4.2 Households Food Accessibility .....                                    | 27 |
| 4.3 Households KAP Assessment .....                                        | 28 |
| 4.3.1 Food Handling Knowledge.....                                         | 28 |
| 4.3.2 Household’s Food Handling Attitude Assessment.....                   | 31 |
| 4.3.3 Household’s Food Handling Practice Assessment .....                  | 32 |
| 4.3.4 Households Personal Hygiene Knowledge Assessment.....                | 32 |
| 4.3.5 Households Personal Hygiene Attitude .....                           | 34 |
| 4.3.6 Households Personal hygiene practice .....                           | 34 |
| 4.3.7 Households Water sanitation knowledge .....                          | 35 |
| 4.3.8 Households Water Sanitation Attitude .....                           | 36 |
| 4.3.9 Households Water Sanitation Practice .....                           | 37 |
| 4.4. Knowledge, Attitude and Practice in Child Nutrition. ....             | 39 |
| 4.4.1 Households Knowledge on Child Nutrition .....                        | 39 |
| 4.4.2 Households Attitudes on Child Nutrition .....                        | 41 |
| 4.4.3 Households Practice on Child Nutrition.....                          | 42 |
| 4.5 Child Nutritional Status.....                                          | 42 |
| CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS .....                         | 49 |
| 5.1. Conclusion.....                                                       | 49 |
| 5.2. Recommendations .....                                                 | 49 |



|                                                         |    |
|---------------------------------------------------------|----|
| Reference .....                                         | 50 |
| Annex 1. Participant Information Sheet and Consent..... | 57 |
| Annex 2: English Questionnaire Version 1 .....          | 58 |
| Annex 3: Amharic Translation Version 2.....             | 70 |

## List of Figures

Figure 1: Conceptual Framework of Child Nutritional Status (modified from UNICEF, 1991) ..... 15

Figure 2: Map of study area (own construction) ..... 17

## List of Tables

|                                                                                                                                      |    |
|--------------------------------------------------------------------------------------------------------------------------------------|----|
| Table1: Sample size proportionality of the two kebeles in Tehuledere Woreda (2019.....                                               | 20 |
| Table 2. Socio-economic and demographic status of the study population in S.Wollo,<br>Tehuledere Woreda Kebele 01 and 026,2019. .... | 26 |
| Table 3 HFIAS in the past four weeks in S.Wollo ,Tehuledere Woreda Kebele 01 and<br>026,2019.....                                    | 27 |
| Table 4. HFIA prevalence in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.....                                                   | 28 |
| Table 5. Households Food Handling Knowledge Result in S.Wollo ,Tehuledere Woreda<br>Kebele 01 and 026,2019. ....                     | 30 |
| Table 6. Households Food Handling Attitude Result in S.Wollo ,Tehuledere Woreda Kebele<br>01 and 026,2019.....                       | 31 |
| Table 7. Households Food Handling Practice Results in S.Wollo ,Tehuledere Woreda Kebele<br>01 and 026,2019.....                      | 32 |
| Table 8. Households Personal Hygiene Knowledge Result in S.Wollo ,Tehuledere Woreda<br>Kebele 01 and 026,2019. ....                  | 33 |
| Table 9. Households Personal Hygiene Attitude Result in S.Wollo ,Tehuledere Woreda<br>Kebele 01 and 026,2019. ....                   | 34 |
| Table 10. Households Personal hygiene Practice Results in S.Wollo ,Tehuledere Woreda<br>Kebele 01 and 026,2019. ....                 | 35 |
| Table 11. Households Water sanitation Knowledge Result in S.Wollo ,Tehuledere Woreda<br>Kebele 01 and 026,2019. ....                 | 36 |
| Table 12. Households Water sanitation Attitude in S.Wollo ,Tehuledere Woreda Kebele 01<br>and 026,2019.....                          | 37 |
| Table 13 Households Water sanitation Practice Result in S.Wollo ,Tehuledere Woreda<br>Kebele 01 and 026,2019. ....                   | 38 |
| Table 14 Households nutritional Knowledge in S.Wollo ,Tehuledere Woreda Kebele 01 and<br>026,2019.....                               | 40 |
| Table 15 Households Nutritional Attitudes in S.Wollo ,Tehuledere Woreda Kebele 01 and<br>026,2019.....                               | 41 |

|                                                                                                                                              |    |
|----------------------------------------------------------------------------------------------------------------------------------------------|----|
| Table 16 Households nutritional Practice in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.....                                           | 44 |
| Table 17a Nutritional status of children for underweight and wasting in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.....               | 45 |
| Table 17b Nutritional status of children for Chronic energy deficiency and stunted in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019..... | 46 |
| Table 18 a. Chi-square distribution of variables for nutritional status of children in Tehuledere Woreda , kebele 01 .....                   | 47 |
| Table 18 b. Chi-square distribution of variables for nutritional status of children in Tehuledere Woreda , kebele 026 .....                  | 48 |

## Acronyms and Abbreviations

|       |                                                        |
|-------|--------------------------------------------------------|
| AAU   | Addis Ababa University                                 |
| CFSS  | Center for Food Security Studies                       |
| CM    | Centimeter                                             |
| CSA   | Ethiopian Central Statistical Authority                |
| EDHS  | Ethiopia Demographic and Health Survey                 |
| FDRE  | Federal Democratic Republic of Ethiopia                |
| HAZ   | Height for Age                                         |
| Ha    | Hectares                                               |
| KAP   | Knowledge, Attitude and Practice                       |
| KG    | Kilo Gram                                              |
| MoH   | Minister of Ethiopia                                   |
| Mm    | Millimeter                                             |
| MUAC  | Mid Upper Arm Circumference                            |
| NCHS  | National Center for Health Statistics                  |
| NRAEF | National Restaurant Association Educational Foundation |
| SD    | Standard Deviation                                     |
| SNNP  | South Nation Nationality Peoples                       |
| SPSS  | Statistical Package for Social Sciences                |
| WAZ   | Weight for Age                                         |
| W H O | World Health Organization                              |
| UNICE | United Nations International Children's Emergency Fun  |

## **ABSTRACT**

*A community based cross-sectional study was carried out in Tehuledere woreda Kebeles 01 and 026 to assess food safety knowledge attitude and practice (KAP), households food insecurity access scale (HFIAS) and nutritional status of household members with emphasis on young children (6-24 months). A total of 245 mother-child pairs were selected randomly from the two kebeles. Households food insecurity access scale (HFIAS) HFIAS was used to assess food security status of households, household food safety KAP were assessed with regards to food handling, personal hygiene and water & sanitation, nutritional KAP were used to assess child feeding practices. Data were collected by using structured questionnaires and anthropometric indices were used to determine the nutritional status of under-two children. The data was entered and analyzed using Statistical Package for Social Sciences (SPSS v22) and children Weight and height was used to calculate weight-for-age, weight-for-height and height-for-age by using Emergency Nutritional Assessment (ENA for SMART 2011) in the scale of WHO standards 2006. Results were presented using descriptive statistics. Chi-square was used to test differences among categorical variables. Respondents, in general, showed low knowledge and poor practice in food handling, personal hygiene and water sanitation. Study households were either food secure (17.9%), or mildly food insecure (54.4%) or moderately food insecure (27.8%). The findings also showed that 9.1% and 16.1% of under-two children were stunted in Kebeles 01 and 026, respectively, similar levels of wasting were observed in both kebeles (6%). There were more under-weight children in Kebele 01 (6.1%) than in Kebele 026 (2.6%). Mid Upper Arm Circumference (MUAC) measurements showed that 20.3% and 15% of the children in Kebele 01 and 026, respectively were chronic energy deficiency. There is a significant association between child dietary diversity and stunting ( $p < 0.01$ ) in both kebeles. Child nutritional status also had significant association with monthly income in Kebele 01 ( $p < 0.05$ ) and with number of children per household in Kebele 026 ( $p < 0.05$ ). Mother's educational status was significantly associated with child nutritional status ( $p < 0.1$ ) in Kebele 01. Generally households showed low level of food safety and nutritional KAP.*

**Key words:** KAP, Food Security, Nutritional Status, Child, Food Safety KAP

# **CHAPTER ONE: INTRODUCTION**

## **1.1 Background of the Study**

Child malnutrition impacts cognitive function and contributes to poverty through impeding individuals' ability to lead productive lives. In addition, it is estimated that more than one-third of under-five deaths are attributable to undernutrition (Liu et al, 2012; Black et al, 2008). Nutrition has increasingly been recognized as a basic pillar for social and economic development. The reduction of infant and young child malnutrition is essential to the achievement of the sustainable development goals. Undernourished infants and children are slow in their physical and mental development and have increased vulnerability to infections and early death.

The first two years of a child's life is considered a critical period for growth and development. In this regard, the World Health Organization recommends feeding behaviors and best practices during the first year of life for maximizing growth, development, and survival (Gillespie and Haddad, 2001; Dewey, 2003). These include initiation of breastfeeding within one hour of birth, feeding the first milk secreted (colostrum) to the infant, exclusive breastfeeding for the first six months of life and introduction of complementary foods at the end of six months (180 days after birth) (Dewey, 2003). Thereafter, to meet their nutritional requirements, infants should receive nutritionally adequate and safe solid or semisolid complementary foods while breastfeeding continues for up to two years of age or beyond (WHO, 2002).

Unsafe food creates a vicious cycle of foodborne illnesses (diarrhea) and malnutrition. Children are highly vulnerable to foodborne illness because their immune systems are still developing and they produce less stomach acid that kills ingested harmful bacteria. Diarrhea, for example, can be fatal to infants and young children because it can quickly deplete the young child's body fluids, washing out vital electrolytes and nutrients. Loss of water and other nutrients due to malabsorption of nutrients and diversion results in malnutrition. Malnutrition, in turn, weakens the immune system and puts infants at substantially higher risk of diarrhea, with both higher incidence and increased severity (Walsona and Berkley, 2018). Foodborne illnesses can also cause loss of appetite and disruption of feeding routines and behaviors, thereby leading to nausea, vomiting, stomach pain and cramps, fever, and chills.

## 1.2 Statement of Problem

Household food insecurity, undernutrition and household food safety remain critical issues in poor households. Poor nutritional status of mothers, infants and children has been a consistent problem in Ethiopia. According to Ethiopia Nutrition Profile, undernutrition is an underlying cause of 53% of infant and child deaths (EDHS, 2016). Rates of stunting and underweight have decreased over the past decade but remain high with 44% of infants and under-five children being stunted and 29% being underweight. Lack of dietary diversity, low food safety knowledge and inappropriate infant feeding practices contribute to the high rates of infant's under-nutrition. Only half of infants are exclusively breastfed with introduction of complementary foods at the appropriate time, and only 4% of young children are receiving a minimal acceptable diet (EDHS, 2011). According to EDHS (2016) Children in rural areas are more stunted (46%) than those in urban areas (36%), and great regional variations persist with Amhara (46%), Benishangul-Gumuz(43%), Affar (41%), Dire Dawa (40%), Tigray (39%); SNNPR,( 39%), Oromiya (37%), Harari, (32%), Somali ( 27%) and Addis Ababa and Gambela (15%) and (24%) respectively.

Infants and children have a higher risk than adults for foodborne illness due to their underdeveloped immune system, lower body weight and lack of control over meal preparation. Foodborne illness can result in long term health consequences such as stunting, underweight and even death, especially in young children (6-24 months). Usually, nutritional status of infants and children is discussed based on anthropometric measurements without considering the other component of the diarrhea-malnutrition vicious cycle, basically caused by lack of food safety knowledge as influenced by practices and attitudes of household food handling .Therefore, this study intends to show the status of food safety knowledge, attitude and practice (KAP) among rural households and the nutritional status of under-two year old children.



## **1.3 Objective**

### **1.3.1 General Objective**

The main objective of this study was to investigate the status of food safety knowledge, attitude and practices (KAP) and nutritional status of food insecure households with emphasis on young children 6-24 months in Tehuledere Woreda, South Wollo, Ethiopia, 2019.

### **1.3.2 Specific objective**

The specific objectives of the study were to:

- Assess food security status of households in the study area.
- Evaluate the young child feeding practices in the study area.
- Assess the level of KAP on food safety in the households with respect to food handling during food preparation and storage, personal hygiene and water sanitation.
- Identify the nutritional status of children (6-24 months) by using anthropometric measurements.

## **1.4 Research Questions**

1. What is the mother's level of knowledge, attitude and practice of household food safety in terms of food handling, personal hygiene and water sanitation?
2. What is the nutritional status of 6-24 months old children and other household members?
3. Does mother's socio-demographic characteristics affect food safety KAP?
4. Does child feeding practices influence the nutritional status of children 6-24 months?

## **1.5 Significance of the Study**

The significance of the study lies in that it shows the prevailing food safety and nutrition KAP of rural households and nutritional status of children (6-24 months old) in those households. This will help to come up with better intervention methods by way of giving adequate training to improve the knowledge and practice of nutritional and food safety issues that will eventually help to improve the nutritional and health status of rural households.

## 1.6 Operational Definition of Terms

**Attitudes:** Attitudes are emotional, motivational, perceptive and cognitive beliefs that positively or negatively influence the behaviour or practice of an individual. An individual's feeding or eating behavior is influenced by his/her emotions, motivations, perceptions and thoughts. Attitudes influence future behavior no matter the individual's knowledge and help explain why an individual adopts one practice and not other alternatives (Macías and Glasauer, 2014).

**Food safety:** Food safety refers to the conditions and practices that preserve the quality of food to prevent contamination and foodborne illnesses. It includes the production, processing, preparation and handling of food to ensure it is safe to eat (Griffith, 2000)

**Food security** -When all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2001).

**Knowledge:** Refers to an individual's understanding of nutrition, including the intellectual ability to remember and recall food- and nutrition-related terminology, specific pieces of information and facts (Macías and Glasauer, 2014).

**Malnutrition**-A deviation from the norm in a child's growth and development. It can manifest as either under or over nutrition (WHO, 1995).

**Minimum Dietary Diversity.** It is proportion of children with 6–23 months of age who received foods from four or more food groups of the seven food groups (EDHS, 2016).

**Minimum Meal Frequency.** Proportion of breastfed and no breastfed children aged 6–23 months who received solid, semisolid, or soft foods (but also including milk feeds for non-breastfed children) with the minimum number of 2 and 3 times for those breastfed infants and children aged 6–23 months and 4 times for no breastfed infants and children aged 6–23 months, respectively (EDHS, 2016).

**Practices:** Is defined as the observable actions of an individual that could affect his/her or others' nutrition, such as eating, feeding, washing hands, cooking and selecting foods (Macías and Glasauer, 2014).

**Stunting** –being short for age measured as height for age were defined by Z-score less than two standard deviation(SD) below the median of reference population and a sign of chronic undernutrition that reflects failure to receive adequate nutrition over a long period (EDHS,2016)

**Wasting** -Refers to thinness and it is measured as weight-for-height at least 2SD below the median of a reference population. A measure of acute undernutrition that represents the failure to receive adequate nutrition (EDHS, 2016)

**Underweight** – having low weight for age, defined by Z-score defined by Z-score less than - 2 standard deviation (SD) below median of the population. It may indicate wasting or stunting (EDHS, 2016)

## **CHAPTER TWO: RELATED LITERATURE REVIEW**

### **2.1 Nutrition**

Nutrition is a fundamental pillar of life, health and development across the entire life span, from the earliest to infancy, childhood, adolescence and old age (WHO, 1998). Proper food and good nutrition are essential for survival, physical growth, mental development, performance and productivity, health and well being. According to Wardlaw, (2004) nutrition entails a systematic, reliable, rigorous and methodical enterprise of gaining knowledge of food in terms of its elements or componential parts, interaction and functions. These elements are nutrients and substances, as they balance in association with health and disease, and the process by which an organism takes food, digests, assimilates, uses and excretes. Health, is freedom from physical illnesses, mental nuances, spiritual disturbances as well as social discord, and disease is an abnormal or dysfunctional condition, partly or wholly, of the body (DeBruyne, 2007).

### **2.2 Nutritional Status**

Nutritional status is the description of information obtained from the method of nutritional assessment. The information obtained is used to determine the health and nutritional status of individuals or groups of population as these are influenced by their intake and utilization of nutrients by the body. Body needs three major classes of nutrients, i.e. carbohydrates, proteins and fats. These supply the energy and the building blocks that are needed to synthesize cellular components. The body also needs micronutrients, especially vitamins and minerals, because they are necessary for optimum cellular metabolism. Nutritional status can be assessed by direct or indirect methods. Indirect methods use clinical, biochemical or dietary assessment. The direct method involves anthropometric assessment (King and Burgess, 1998).

The anthropometric assessment is the most common method used in assessing parameters e.g. weight, height, age and mid upper arm circumference (MUAC). In anthropometric assessment the raw measurements are obtained to form guides, and then the indices are used to interpret and classify the measurements. The guides are weight-for-age (W/A), height-for-age (H/A), and weight-for-height (W/H). These are compared with the recommended reference by National Center for Health Statistics (NCHS) or WHO standards.

## 2.3. Overview of Anthropometric Indicators

Survey data often contain measures of weight and height, in particular for children. These measures have limited value as indicators of malnutrition by their own because weight and height depend on both age and gender. Genetic variation, among others, also affects physical characteristics. However, even in the presence of such natural variation, it is possible to use physical measurements to assess the adequacy of diet and growth, in particular in infants and children. This is done by comparing indicators with the distribution of the same indicator for a healthy reference group, and identifying extreme or abnormal departures from this distribution. For example, the three of the most commonly used anthropometric indicators for infants and children - weight-for-height, height for-age, and weight-for-age - can be constructed by comparing indicators based on weight, height, age, and gender with reference data for “healthy” children (WHO.1995).

### 2.3.1 Weight-for-Height (W/H)

Weight-for-height (W/H) measures body weight relative to height, and has the advantage of not requiring age data. Weight-for-height is normally used as an indicator of current nutritional status, and can be useful for screening children at risk and for measuring short-term changes in nutritional status. Low W/H relative to a child of the same sex and age in a reference population is referred to as “*thinness*”. Extreme cases of low W/H are commonly referred to as “*wasting*”. Wasting may be the consequence of starvation or severe disease (in particular diarrhea), but it can also be due to chronic conditions (WHO, 2006). It is important to note that a lack of evidence of wasting in a population does not imply the absence of current nutritional problems such as low height-for-age.

### 2.3.2 Height-for-Age (H/A)

Height-for-age (H/A) reflects cumulative linear growth. H/A deficits indicate past or chronic inadequacies in nutrition and/or chronic or frequent illness, but cannot measure short-term changes in malnutrition. Low H/A relative to a child of the same sex and age in the reference population is referred to as “*shortness*”. Extreme cases of low H/A, where shortness is interpreted as pathological, is referred to as “*stunting*”. H/A is primarily used as a population indicator rather than for individual growth monitoring (WHO, 2006)

### **2.2.3 Weight-for-Age (W/A)**

Weight-for-age (W/A) reflects body mass relative to age. W/A is, in effect, a composite measure of height-for-age and weight-for-height, making interpretation difficult. Low W/A relative to a child of the same sex and age in the reference population is referred to as “*lightness*”, while the term “*underweight*” is commonly used to refer to severe or pathological deficits in W/A. W/A is commonly used for monitoring growth and to assess changes in the magnitude of malnutrition over time. However, W/A can show the effects of short- and long-term health and nutrition problems (WHO, (2006)

Anthropometric indices are constructed by comparing relevant measures with those of comparable individuals (in terms of age and sex) in the reference data. There are three ways of expressing these comparisons (WHO, 2006)

Z-score (standard deviation score): the difference between the value for an individual and the median value of the reference population for the same age or height, divided by the standard deviation of the reference population.

Percent of median: ratio of a measured or observed value in the individual to the median value of the reference data for the same sex and age or height.

Percentile: rank position of an individual on a given reference distribution, stated in terms of what percentage of the group the individual equals or exceeds.

### **2.3.4 Mid-Upper Arm Circumference (MUAC)**

MUAC is a measure of the diameter of the upper arm, and gauges both fat reserves and muscle mass. It is primarily used for children, but can also be applied to pregnant women to assess nutritional status. Measurement is simple and requires minimal equipment. MUAC has therefore been proposed as an alternative index of nutritional status, in particular in situation where data on height, weight, and age are difficult to collect. For children, a fixed (age-independent) cut-off point has sometimes been used to determine malnutrition (WHO, 2006).

## **2.4 Child Feeding Practices**

Adequate nutrition in early years is a basic importance for determining growth and development of children as well as for prevention of diseases in adulthood. Breastfeeding is considered as a necessary and sufficient for an infant until 6 months, and should continue

throughout the complementary feeding. It is, however, associated with many factors such as nutrition knowledge, attitude and practice of the household (Sedigheh *et al.* 2016). Breastfeeding provides infants with significant protection against a variety of infectious diseases, particularly in areas with poor sanitation and contaminated water and food supplies. Furthermore, they assert that cows' milk is inadequate for any baby because it contains little iron and vitamin E, but it is rich in sodium, potassium and protein (Giovannini *et al.* 2004). Poor infant feeding practices coupled with high rates of infectious diseases are the major causes of malnutrition during the first two years of life. Appropriate breast feeding and complementary feeding practices and access to adequate amounts of appropriate foods are essential for optimal infant nutrition.

Infant feeding entails six months of exclusive breastfeeding, and continued breastfeeding with complementary feeding from 6 months onwards. The first 1000 days are the most critical for growth, breastfeeding, and complementary feeding practices. Inadequate dietary intake increases susceptibility to diseases by denying the child the nutrients it needs for effective immune function. Many lives of children could be saved with improvement of exclusive breastfeeding practices, adequate and timely complementary feeding, along with continued breastfeeding for up to 2 years or beyond WHO (2013).

#### **2.4.1 Breast Feeding Initiation**

Breast milk is the natural food for infants during the first months of life. It contains all the nutrients a baby needs for the first six months of life. Breast milk contains antibodies to protect the baby against infections, there is less gastroenteritis, fewer respiratory and ear infections among breastfed babies (Penny *et al.*, 2005).

Exclusive breastfeeding (EBF) takes place when an infant receives only breast milk without any additional food or drink, not even water with the exception of necessary micronutrient supplements or medicines (WHO, 2003). As a global public health recommendation, infants should be exclusively breast fed for the first six months of life to achieve optimal growth, development and health (WHO, 2002). Introducing breast milk substitutes to infants before 6 months can contribute to evidence demonstrates that mothers and other caregivers sustain appropriate breastfeeding practices as it prevents infant illness and mortality (Jimenez and Stone, 2014). Factors like maternal education, socioeconomic class and infants first feed are

important maternal predictors of EBF practice. Decreased likelihood of EBF practice is found among mothers of lower educational attainment (Onahet *et al.*, 2014).

### **2.4.2 Complementary Feeding**

Complementary feeding is the process of introducing other liquid and solid foods in addition to breastmilk when the energy demand of growing children does not maintain by breastmilk alone (WHO, 2008). Complementary feeding, covers a child from 6-23 months of age, and is a very vulnerable period. It is the time when malnutrition starts in many children, contributing to the high prevalence of malnutrition in children under two years of age. During the complementary feeding period (6–24 months), breastfeeding continues to significantly contribute to food and fluid security. This period is characterized by an increase in the prevalence of malnutrition because of poor feeding practices and infections. Growth faltering is most evident during this time period, particularly between 6 and 12 months when foods of low nutrient density begin to replace breast milk and rates of diarrhea are at their highest WHO (2013).

### **2.5 Dietary Diversity and Meal Frequency**

Dietary diversity is a quantitative number of food items or groups used as a method of determining variety and nutrient adequacy of diets for an individual of infants and children. Appropriate diverse diet feeding during the first two years of life is key to improve child survival, healthy growth and development (WHO 2017) Even with optimum breastfeeding, children will become stunted if they do not receive sufficient dietary diversity and meal frequency after 6 months of age (MelkamAemro, *et al.*, 2013). Appropriate child feeding practice is vital in the first two years of life because malnutrition is common, especially in this age group. In addition, children become vulnerable to growth retardation, delayed mental development, micronutrient deficiencies, and common childhood illnesses and death (MoH, FDRE, 2010).

The quality of a child's food is dependent on meal frequency and food groups contained in the diet. However in most of developing countries, infants and young children are directly introduced to regular household diets made of cereal or starchy foods (UNCF, 2013) which are poor in quality. The indicators of complementary feeding include; time of initiation of complementary foods; frequency of feeding of complementary feeding and minimum acceptable diet – a composite indicator that includes appropriate frequency of feeding and



minimum dietary diversity (WHO, 2007). For the minimum dietary diversity, it is recommended that children aged 6–23 months be fed foods from four or more food groups out of seven groups daily. In addition, it is recommended that children should receive solid, semi-solid or soft food the minimum number of times or more; two times for breastfed children 6–8 months old, three times for those aged 9–23 months and four times for non-breastfed children aged 6–23 months (WHO, 2007)

## **2.6 Household Food Safety and Child Nutrition**

Food safety is a science that protects humans from being infected with chronic and acute food- and water-borne diseases. Cross-contamination, disregarding hand washing, improper food storage and inadequate cooking have an important role in food-borne diseases.

The food safety knowledge, attitudes and practices of food-handlers have been reported in different countries around the world (WHO, 2007). This is because a combination the three factors - knowledge, attitude and practice of food handlers - play dominant role in food safety with regards to food service processing (Sharif and Al-Malki, 2010).

Safe food handling is any measure or condition during food preparation, processing and storage to ensuring food is free from food borne pathogens (FBP). Recent statistics indicate that nearly 1 in every 10 persons falls ill due to consumption of foods contaminated with food borne pathogens while 420 million people die annually due to more than 200 million illnesses associated with unsafe foods (WHO 2016). Children below the age of five years are the most affected since they contribute to over 40% of global mortality (WHO 2016). This age group has the highest incidence rates of infections from dangerous bacterial pathogens found in food. The most common disease associated with unsafe food consumption is diarrhea, which claims about 92,000 child and 220,000 adult lives annually (WHO, 2016). Many countries continue to bear the impact of food borne diseases with increased budgetary expenditures on health (Subbulakshmi *et al.* 2012) yet most food borne diseases are caused due lack of basic food hygiene principles (Mendagudali *et al.* 2016; Tolulope *et al.* 2015).

According WHO (2010) identified five food handling factors associated with food-borne disease outbreaks: improper cooking, temperature abuse during food storage, cross contamination between raw and cooked foods, poor sanitation and hygiene, and using unsafe water and raw materials. Most of these factors are directly linked to food handlers. Food handlers have been directly linked to a number of food-borne disease outbreaks (Barrabeig *et*

*al.* 2010; Beatty *et al.* 2009). Food handlers are integral to the improvement of food safety. Unsafe food creates a vicious cycle of diarrhea and malnutrition which, significantly, impedes public health and socioeconomic development. Unfortunately, a large proportion of food borne diseases are caused by improperly prepared and mishandled food by food handlers at home. The challenge in food safety is that food handlers lack the understanding of their roles in ensuring proper personal and environmental hygiene accompanied by the basic food hygienic practices when they buy, prepare and sell food (WHO 2015)

Studies on socio-demographic factors associated with knowledge, attitude and food handling practices have been conducted extensively (Patil *et al.* 2005). The most significant socio-demographic characteristics are age, gender, educational status and occupation of the household.

A study by Mohd *et al.* (2015) showed that the level of knowledge and practices on food safety increased with increase in age, indicating that young food handlers were more at risk of causing food borne disease compared to older respondents.

A meta-analysis on consumer awareness on food safety in Middle East countries showed that gender influenced the knowledge, attitudes and food safety practices (Patil *et al.* 2005). The study found that majority of males did not observe hygiene as compared to females. A similar study on food safety showed that females exhibited appropriate food handling practices compared to males (Fein *et al.* 2011). However Gul (2012) found insignificant association between gender and knowledge/practices on food handling.

A study by Subbulakshmi *et al.* (2012) showed rural households who could read and write obtained higher mean knowledge scores on food safety compare to those who could not read or write. Higher educational status has been frequently associated with increased awareness on knowledge and practices on food handling (Seaman 2011; Gnanasumathi *et al.* 2014; Sudershan *et al.* 2008); nevertheless, (George *et al.* (2011) and Subbulakshmi *et al.* (2012) found insignificant differences between education level and appropriate knowledge on food handling practices.

## **2.7 Malnutrition in Children**

Malnutrition is one of the most serious health problems affecting infants, children and women of reproductive age in developing countries. According to UNICEF (2008) malnutrition is a

disorder resulting from an inadequate (under nutrition) or excessive diet (over nutrition) or from failure to absorb or assimilate nutrients. Malnutrition in all its forms is closely linked, either directly or indirectly, to major causes of death and disability worldwide. The causes of malnutrition, as documented by WHO (2013), are directly related to inadequate dietary intake as well as disease but, indirectly, to many factors such as household food security, maternal and child care, health services and the environment. Malnutrition occurs during the first two years of life as, among many, children have high demand for nutrients to support rapid growth and development. So, the first two years of life are considered as a critical window of opportunity to address malnutrition. Ethiopia is one of the developing countries where malnutrition remains a major public health problem. Infants malnutrition continues to be a major public health problem in developing countries. Nutritional status is primarily determined by a child's growth in height and weight and is directly influenced by food intake and the occurrence of infections. Stunting (chronic malnutrition), wasting (acute malnutrition), and underweight (a general measure of health and nutritional status) are the major manifestations of malnutrition (EDHS, 2011).

Optimal nutritional status results when children have access to affordable, diverse, nutrient-rich food; appropriate maternal and child-care practices; adequate health services; and a healthy environment including safe water, sanitation and good hygiene practices (UNICEF, 2013). These factors directly influence nutrient intake and the presence of disease. The interaction between under nutrition and infection creates a potentially lethal cycle of worsening illness and deteriorating nutritional status (UNICEF, 2013).

Child malnutrition impacts cognitive function and contributes to poverty through impending individual's ability to lead productive life. In addition, it is estimated that more than one-third of under-five deaths are attributable to under nutrition (UNICEF, 2012).

Malnourished children have a delayed motor development and lower cognitive function and school performance. In adulthood, individuals who were malnourished, as children, have impaired work capacity and worse reproductive performance. Malnutrition can have negative effects not only on those afflicted but also on their offspring (Schroeder, 2008).

Malnutrition also slows economic growth and perpetuates poverty (World Bank 2006). Mortality and morbidity associated with malnutrition represent a direct loss in human capital and productivity for the economy. Poor anthropometric outcomes, especially stunting, may result in reduced productivity in labour intense jobs resulting in reduced earnings later in

adulthood (Victora *et al.*, 2008). If a high proportion of children fail to achieve their maximum developmental potential and are undernourished (anthropometrically, especially stunted) the loss in human capital can adversely affect the national economic development seriously (Victora *et al.*, 2008). Other indirect losses for the country's economy are caused by poor cognitive function and reduced school attainment that originate in early childhood undernutrition. In fact, the education gap and consequent lower skill-level of workforce substantially delays the development of countries affected by malnutrition. Undernutrition in early childhood also makes an individual more prone to non-communicable diseases later in life, including diabetes and heart disease, significantly increasing health costs in resource constrained health systems.

## **2.8 Household Food Security and Child Nutrition**

According to the World Food Summit organized in Rome in 1996, food security exists when people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life (FAO, 2001). whereas food insecurity exists when people do not have adequate physiological and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.

The effect of nutrition and food security on human health, particularly during the early years of childhood, is clear. Food insecurity, particularly during the initial two years, is the source of many chronic diseases during adulthood (CSA 2011). Feeding after the initial six months of life is termed complementary feeding (WHO and UNICEF 2003) and is associated with many factors such as knowledge and attitude of a mother. Mothers play an important role since they are generally responsible for providing and allocating food to the family.

## **2.9 Conceptual Framework**

The conceptual framework shows that household's demographic and socio-economic factors such as age, occupation, education level, child's age and sex may influence the child feeding practice, and food safety KAP at house hold level. In addition, household food security status, child feeding practice and household food safety KAP are associated with a child's nutritional status

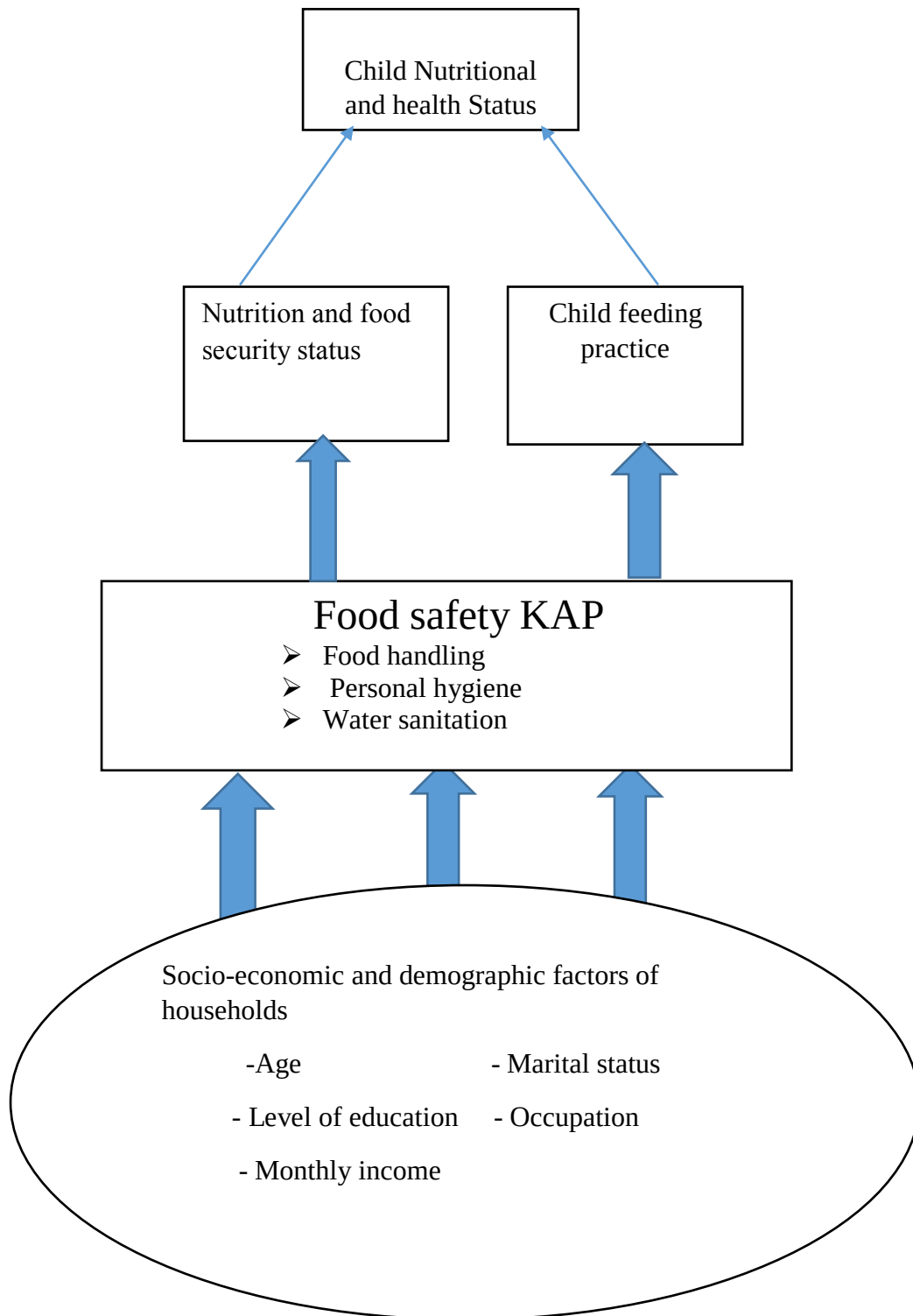


Figure 1: Conceptual Framework of Child Nutritional Status (modified from UNICEF, 1991)

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Description of the Study Area**

This study was carried out in two kebeles 01 (peri-urban) and 026 (rural) in Tehuledere woreda of the South wollo Zone in Amhara National Regional State. The woreda is located towards the west at a distance of 430 km from Addis Ababa on the main road to Mekele. Its location is 11°, 10' 3"- 11°, 28' 30" N latitude and 39°, 35' 45"- 39°, 46' 15" E longitude. The woreda has a total area of 44,030 hectares. It shares borders in the north with Ambassel, in the south with Dessie zuria, in the east with Worebabo and in the west with Kutaber and Ambassel woredas. The place is subdivided into nineteen rural and two small urban kebeles. The capital of the woreda, called Haik (now a town administration) is located at a distance of 30km from Dessie. The woreda's different Agro-ecological Zone) vary from Dega to Kolla. Dega (masl, above 2440) covers 2,979 ha (13%) of land, woyinadega (masl, 1830 – 2440) covers 32,651 ha (72%) and kola (below 1830) covers 8,380 ha (15%). In terms of topography, about 5,853.33 ha (13.3%) constitutes flat, 17,322.336 ha (39.36%) rolling hills, 5,413.23 ha (12.3%) gorge, and 11,618.64 ha (26.4%) mountainous. Bush and grasses cover 3,802.464 ha (8.64%). The soil is mostly black (25%) and clay (10%) sandy loam (65%) in texture. Its average annual rain fall is 1030 mm and has average temperature of 9 °c - 21 °c per annum (TWOA, 2016).

According to the recent report (TWAQ, 2016), the total population of the woreda was 143,445 consisting of 53% males and 47% females. The study kebeles, Kebele 01 and Kebele 026, each had a population of 7,103 and 4,571, respectively. The total numbers of children in the woreda was 72494. The number of children (6-24 months) in the study kebeles was 339 and 286 for Kebele 01 and Kebele 026, respectively. The total number of agricultural households in the woreda was 25,380, consisting of 82.3% male and 17.7% female headed households. The total woreda rural population was 104,842 out of which 54%, were male and 46% were female. Out of the total woreda land coverage of 35,317 ha, 45.7% was used for crop production and 1.6% for grazing. Forests and bushland covered 39.1%, water bodies 10.7% and wasteland 2.7% of the total land. The average land holding per household was estimated at 0.5 ha. Altitude of the wereda ranges from 1,400 to 2,900 m.a.s.l (TWOA, 2011, 2015). Tehuledere has two rainy seasons, the short rainy season (known as “belg”) from February to end of May and the main rainy season or long rainy season (known as “Meher”) from July to end of September. Based on this Agro-ecology and soil situation, farmers grew a

variety of crops such as teff, sorghum, wheat, maize, barely beans etc. The most important crop in the district was sorghum followed by teff and maize. The main pulses were chick peas, grass peas and haricot beans, sometimes inter cropped with sorghum and maize. Vegetables and fruits were produced where farmers had access to small-scale irrigation, especially around Haik and Ardibo lakes. They also used rivers and water ponds for the same purpose. Another feature of the farming system in Tehuledere area was the increasing production of cash crops such as khat as one of the main source of income for households.

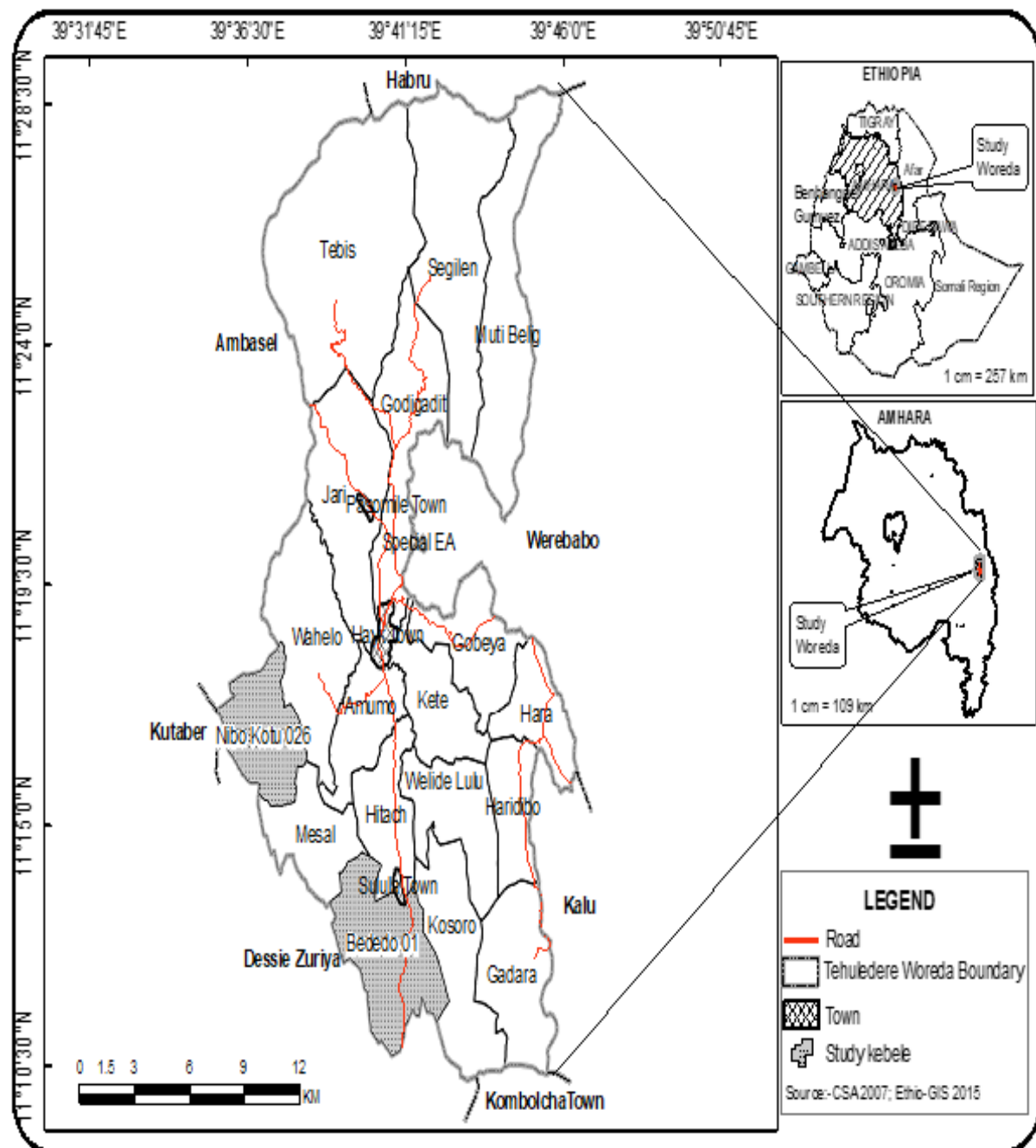


Figure 2: Map of study area (own construction)

Source: CSA 2007, Ethio-GIS, 2015.

### **3.2. Research Design**

A community based cross sectional study design was used in this study to take anthropometric measurements for 6 to 24 month children, and investigate the knowledge, attitude and practice level of food safety and undernutrition of mothers in study households from January 24-February 23, 2019.

### **3.3. Source population**

The source of population was households those had child in both kebeles.

### **3.4. Study population**

The study population was composed of households with children aged 6-24 months, residing in both rural (K026) and peri-urban (K01) kebele in Tehuledere woreda.

### **3.5. Eligible Criteria**

All the children aged 6-24 months living in studied households were included in the sample and anthropometric measurements were taken from them. If two eligible children were found in a household, for example twins, both were included. This was extremely important as it ensured that every child had the same chance of being selected, which was a basic principle of the survey design. Children over two years of age, households that declined request to participate, and households that had seriously ill children were not included in this study.

### **3.6. Study Variable**

The dependent variables in this study were household food insecurity, food safety KAP and nutritional status.

Independent variables consisted of household socio-economic and demographic factors such as age, sex, educational level, monthly income, occupation.

### **3.7. Sampling Technique and Sample Size**

The sampling technique consisted of two sampling stages, purposive and random sampling. The woreda was selected purposively due to high prevalence rate of food insecurity reported in literature and for logistic reasons. Study households, that satisfied the inclusion and exclusion criteria, were selected randomly. The two kebeles was selected based on the



Woreda's report about the agricultural products shift to cash crops (khat) its affect the household's food security status and child nutritional status (TWOA, 2016).

For populations that are large, Cochran (1963) developed the Equation 1 to yield a representative sample for proportions

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where:  $n_0$  is the sample size,  $Z^2$  is the abscissa of the normal curve that cuts off an area  $\alpha$  at the tails ( $1 - \alpha$  equals the desired confidence level, e.g., 95%),  $e$  is the desired level of precision (0.05),  $p$  is the estimated proportion of an attribute that is present in the population, and  $q$  is  $1-p$ . The value for  $Z$  is found in statistical tables which contain the area under the normal curve ( $Z$  statistics: 1.96) (Cochran, 1963).

$$n_0 = (1.96 \times 1.96 \times 0.46 \times 0.54) / (0.05 \times 0.05) = 382.$$

The population is small then the sample size can be reduced slightly. Because a given sample size provides proportionately more information for a small population than for a large population. The sample size ( $n_0$ ) can be adjusted using the following equation 2 (Cochran, 1963).

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where

$n_0$  – the initial sample size

$n$  -adjusted sample size

$N$  -the population size.

$$n = 382 / 1 + ((382-1)/625) = 237$$

Finally, with 5% non-response rate, the size is 249 households each with mother – child pair (6-24 months). However, since more respondents than the plan were found, 245 households were considered for the study.

Table1: Sample size proportionality of the two kebeles in Tehuledere Woreda (2019)

| Sample Kebeles  | Number of households with children | Sample households          |
|-----------------|------------------------------------|----------------------------|
| 01 (peri-urban) | 339                                | $(339 \times 245)/625=133$ |
| 026             | 286                                | $(286 \times 245)/625=112$ |
| Total           | 625                                | 245                        |

Source: Own survey result (2019)

### 3.8. Types and Sources of Data

All relevant primary and secondary data sources were considered in the study. Primary data was collected from direct observation and structured interview. Secondary data was collected from published and unpublished work on child nutrition related materials like those from WHO (2006), UNICEF (2008) and EDHS (2016) and from books and journals.

### 3.9. Data Collection Technique and Tools

#### 3.9. 1 Household Survey

Household face-to-face interviews using structured questionnaires were used to collect data on household socio-demographic characteristics, household food security status (Coates et al 2007), KAP on child nutrition, and food safety (Macías and Glasauer, 2014). The data was collected from January 24-February 23, 2019.

For HFIA assessment, each of the nine questions was asked with a recall period of 4 weeks to address the three domains with the answers ranging from never having experienced conditions related to food insecurity, experiencing them rarely, sometimes or often. Households that experienced none of the food insecurity condition or just rarely experienced worry was defined as food secure. Mildly food insecure households worried about not having enough food sometimes or often, and/or was unable to eat preferred foods, and/or eat a more boring diet than desired and/or some foods considered undesirable, but only rarely. Moderately food insecure households sacrificed quality more frequently, by eating monotonous diets or undesirable foods sometimes or often, and/or had started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. Severely food insecure households were those that resorted to cutting back on meal size or number of

meals often, and/or experienced any of the three most severe conditions. Any household that experienced one of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating) was considered as severely food (Coates et al. ,2007 ).

The questionnaire was translated in to Amharic for the purpose of simplicity of communication between enumerator (health extension) and respondent. The health extension workers were oriented on issues related to data collection procedures and ethics. In order to determine the validity and reliability of the questionnaire and also to identify less important questions, there was a pilot (pre-test) at 5% study. The pretest questionnaires were administered to some individuals from the sample kebeles. Based on the results of the pilot study the reliability and validity of the questionnaire was determined and less important questions were avoided or reformulated.

### **3.9.2. Observation**

In addition to the above data collection methods, the field observation was carried out to validate the information provided through primary data collection tools.

### **3.9.3. Anthropometric Measurements**

Anthropometric measurements used in the study were weight, height and Mid–Upper Arm Circumference (MUAC).These were presented according to cut–off points in terms of z-scores based on the standard deviation SDs from a reference median value( z-score) being above or below the cut –off points.

Weights of the child were measured and recorded to the nearest 0.1 kg (accuracy of 100 g) using salter scale with a capacity of 25 kg adjusted to zero point before starting the reading.

The child was hung on the scale and the measurement was recorded as soon as the pointer on the scale had stabilized. Height was measured by using horizontal length (for those who could not stand erect) or standing height (for all above 13 months of age). Measurement was reported to the nearest 0.1 cm. A health extension worker used height board to measure height/length of children. The measurement was recorded while the subject was standing without shoes on a horizontal flat with heels together, back straight and eyes looking straight ahead, and the board was pressed firmly horizontally against the board then the measurement was recorded. The MUAC was measured by using the tape at the midpoint between the

shoulder and elbow of the child by halving the distance between the shoulder and the tip of elbow. The child's arm was uncovered as far as the shoulder and hanged straight. During the measurement process, the tape was placed comfortably around the arm at the marked mid-way point, and measurement were taken and recorded Children were classified according to nutritional classification.

Age determination- Information on age was obtained from a written birth card or similar document, with verbal information on date of birth from the mother and age was calculated in months.

Child's nutritional status was assessed using child's weight, height, and age. by using Emergency Nutritional Assessment (ENA for SMART 2011) in the scale of WHO standards 2006 in the evaluation of nutritional status; height-for-age (HAZ below -2SD) which measures stunting; weight-for-height (WHZ below -2SD) which reflects wasting; and weight-for-age (WAZ below -2SD) that reflects underweight.

### **3.10. Data Quality Control**

All the questionnaires was checked for completeness before releasing the interviewees at the end of the interview. A daily review meeting was made with health extension workers, who took anthropometric measurements, to deal with any issues arising. Also good quality data was obtained by pre-testing the tools before actually administering the tool to the target population. The health extension workers were adequately informed to ensure quality data collection and the scales was checked and calibrated every morning using standard known weight. Each day before leaving the study area, health extension workers reviewed and signed all forms to ensure that no pieces of data were left out. The health extension workers recorded all additional important points in a notebook as soon as possible (e.g. during breaks or at the base in the evening), including observations, ideas, problems, actions taken and the rationale for such action. Each note contained the date, location, and names of relevant people.

### 3.11. Technique of Data Analysis

The data was entered and analyzed using Statistical Package for Social Sciences (SPSS v22) and children weight and height was used to calculate weight-for-age, weight-for-height and height-for-age by using Emergency Nutritional Assessment (ENA for SMART 2011) in the scale of WHO standards 2006. Children were classified as stunted, wasted or underweight if the respective z-scores fell below -2SD of the reference population for the age and sex (WHO, 2009).

Descriptive analysis such as means, median and frequencies were used to analyse variables of household socio-demographic status. Inferential statistics such as Pearson's chi-square test was used by cross tabulation for associations between categorical variables.

The Household Food Insecurity Access was measured using a set nine questions related to three different domains of food insecurity access: (i) anxiety and uncertainty about the household food supply; (ii) insufficient quality in terms of variety and preferences of the type of food and (iii) insufficient food intake in terms of reducing quantity of food. Food security status of households as food secure, mildly food insecure and moderately food insecure was determined according to (Coates, 2007) using the formula:

Number of households with HFIA category

----- X 100

Total number of households with a HFIA category

Qualitative data such as knowledge, attitude and practices on food handling, personal hygiene and water and sanitation assessment were converted to percentages and used as indicators for knowledge, attitude and practice on safe food handling. The assessment was based on the FAOs guidelines on food safety and nutrition related KAP assessments (Macías and Glasauer, 2014) .A three point Likert's scale with a positive, negative and neutral response was used to measure the knowledge, attitude and practices of food handling. The knowledge, attitude or practice of the population is calculated for each question by dividing the total number of correct responses by the number of respondents who answered the particular question (Macías and Glasauer, 2014). Respondents who did not answer the question, or for whom information is incomplete were excluded.

% of population knowledge/attitude/practice =

$$\frac{\text{Sum of correct responses given by all respondents}}{\text{Total number of respondents}} \times 100$$

### **3.12. Ethical Consideration**

As measurement was taken from human subjects, research ethical issues were duly addressed. I was taken ethical clearance from Addis Ababa University College of development studies, department of food security. Tehuledere woreda administration and the health office were informed about the purpose of the research and permission to conduct the study in kebeles 01 and 026 was granted. The following were explained to each respondent: purpose of the study and its objectives, confidentiality of information obtained from respondent, right not to answer any question that a respondent would not be comfortable with, and the importance of answering all the questions. Participants were also informed that the study did not offer any incentives to them. In the presentation of the study results, name of respondent was not used. Finally informed oral consent was obtained from respondents.

### **3.13. Scope and Limitation of the Study**

This study was carried out to assess knowledge, attitude and practices (KAP) of food safety and child under-nutrition (6-24 months), food security and nutritional status of 6-24 month children in the study households in the woreda. Nutritional assessments were done using anthropometric measurements which subsequently were compared to WHO criterion (SD classification) using summary indices of nutritional status: weight-for-age, height-for-age and weight-for-height and MUAC. Due to time and resource constraints the study did not assess the dietary diversity of the households.

## **CHAPTER 4. RESULT AND DISCUSSION**

### **4.1 Socio-economic and Demographic Characteristics of the Households**

In this study, only mothers with 6 to 24-month children were considered as they were the closest to their children and could properly answer questions regarding food safety and nutrition KAP at household level. In such studies, it is useful to consider socio-demographic factors as they help to see the underlying causes of poor nutritional status of children (Adeladza, 2009). Age of mothers ranged from 22 years to 42 years. The median age was 32 years and over 90% of the mothers were young adults between 20 to 40 years. Over 90% were married and Muslim in religion. More than half of the households had between four to five children and over 10% had more than six children. Higher number of dependent children per household could expose families to, at least, mild or moderate levels of food insecurity as depicted in Table 4. Only 13% of respondents from both kebeles had never attained any level of education while the majority (80%) of the respondents attended primary and secondary school education. Thus, the community in both kebeles seemed appropriate for training intervention on food safety and nutrition by health extension workers. According to Miller and Rodgers (2009), mother's education contributes to new skills, beliefs and choices about sound health and nutritional practices. In this study, education status of mothers was more likely to be inversely associated with child under-nutrition ( $p<0.1$ ).

The majority of the mothers in both kebeles were farmers. Though higher proportion of farmers were found in Kebele 026 (70%). Over 95% of respondents from Kebele 026 had monthly income of less than ETB 3000, while this proportion was only 77% for respondents from Kebele 01. The general low income combined with larger family size per household would put the community in a marginal situation. According to Miller and Rodgers (2009) household income directly increased the ability to get sufficient quantities of nutritious foods. Alom et al (2009) also showed that mother's education and family income were among the contributing factors for child malnutrition. The survey included 6 to 24-month children from each household and in total 245 children were considered in this study. Although number of children per household from the various age groups had varying proportions, the highest proportion ( $>40\%$ ) was for children of 18-24 months. In general, it was observed that there is a significant inverse association between number of children and under-nutrition. The socioeconomic and demographic status of households is shown in Table 2.

Table 2. Socio-economic and demographic status of the study population in S.Wollo, Tehuledere Woreda Kebele 01 and 026,2019.

| Variables                                 | Category       | Kebele 01   | Kebele 026  |
|-------------------------------------------|----------------|-------------|-------------|
|                                           |                | No. (%)     | No. (%)     |
| Age group (mother)                        | 20-30          | 72 (54.1 %) | 51 (45.9%)  |
|                                           | 31-40          | 61 (45.8%)  | 55 (48.5%)  |
|                                           | 41-50          | 0           | 5 (4.5%)    |
|                                           | Total          | 133 (100%)  | 111 100%)   |
| Marital status                            | Married        | 119 (89.5%) | 103 (91.9%) |
|                                           | Divorced       | 11 (8.3 %)  | 8 (7.2%)    |
|                                           | Widowed        | 3 (2.2%)    | 0           |
|                                           | Widower        | 0           | 1 (0.9%)    |
| Number of children <2 years per household | Two            | 3 (2.3%)    | 9 (8%)      |
|                                           | Three          | 22 (16.5%)  | 18 (16.1%)  |
|                                           | Four           | 35 (26.3%)  | 30 (26.8%)  |
|                                           | Five           | 39 (29.3%)  | 30 (26.8%)  |
|                                           | Six            | 20 (15%)    | 12 (10.7%)  |
|                                           | >Six           | 14 (10.5%)  | 13 (11.6%)  |
| Age of infant (months)                    | 0-6            | 4 (3%)      | 5 (4.5%)    |
|                                           | 6-12           | 21 (15.8%)  | 29 (25.9%)  |
|                                           | 12-18          | 52 (39.1%)  | 26 (23.2%)  |
|                                           | 18-24          | 56 (42.1%)  | 52 (46.4%)  |
| Religion                                  | Muslim         | 124 (93.2%) | 106 (94.6%) |
|                                           | Orthodox       | 9 (6.8%)    | 6 (5.4%)    |
|                                           | Total          | 133         | 112         |
| Education (mothers)                       | Illiterate     | 24 (18%)    | 8 (7.2%)    |
|                                           | Read and write | 36 (27.1%)  | 31 (27.9%)  |
|                                           | Grades 1-5     | 12 (9 %)    | 28 (25.2%)  |
|                                           | Grades 6-8     | 50 (37.6%)  | 38 (34.2%)  |
|                                           | Grades 9-12    | 10 (7.5%)   | 6 (5.4%)    |
|                                           | College        | 1 (0.8%)    | 0           |
| Occupation                                | House wife     | 43 (32.3%)  | 28 (25.2%)  |
|                                           | Farmer         | 75 (56.4%)  | 78(70.3%)   |
|                                           | Gov't employee | 1 (0.8%)    | 0 (%)       |
|                                           | Merchant       | 11 (8.3%)   | 5 (4.5%)    |
|                                           | Daily laborer  | 3 (2.3%)    | 0 (%)       |
| Monthly household income (ETB)            | 500-1000       | 33 (24.8%)  | 41 (36.6%)  |
|                                           | 1001-2000      | 43 (32.3%)  | 43 (38.4%)  |
|                                           | 2001-3000      | 27 (20.3%)  | 24 (21.4%)  |
|                                           | 3001-4000      | 14 (10.5%)  | 4 (3.6%)    |
|                                           | >4000          | 16 (12%)    | 0           |



## 4.2 Households Food Accessibility

Household food security status was measured by using Household Food Insecurity Access Scale (HFIAS) according to (Coates et al., 2007) (Table 3). Based on this, the findings our study showed that 17.9%, of the households in both kebeles were food secure, 54.4% were mildly food insecure and 27.8%, moderately food insecure. There was, however, no severely food insecure household in both kebeles. (Table 4). This showed that over 80% of the study population was in a state of some degree of food insecurity. Considering the fact that the survey was made immediately after harvest (November, December and January), when food was relatively abundant, the level of food insecurity was telling of what could happen in the slim months (July, August and September).

Table 3 HFIAS in the past four weeks in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| HFIAS                                                                                                                                                                               | Location   | Occurrence |     | Frequency  |                |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|-----|------------|----------------|-----------|
|                                                                                                                                                                                     |            | Yes        | No  | Rarely (1) | Some times (2) | Often (3) |
| 1. In the past four weeks, did you worry that your household would not have enough food?                                                                                            | Kebele 01  | 103        | 30  | 49         | 54             | 0         |
|                                                                                                                                                                                     | Kebele 026 | 85         | 27  | 47         | 38             | 0         |
| 2. 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?                                        | Kebele 01  | 102        | 31  | 46         | 56             | 0         |
|                                                                                                                                                                                     | Kebele 026 | 85         | 27  | 46/85      | 39/85          | 0         |
| 3. 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?                                                       | Kebele 01  | 101        | 32  | 47         | 54             | 0         |
|                                                                                                                                                                                     | Kebele 026 | 85         | 27  | 46         | 39             | 0         |
| 4. 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? | Kebele 01  | 96         | 37  | 49         | 47             | 0         |
|                                                                                                                                                                                     | Kebele 026 | 85         | 27  | 46         | 39             | 0         |
| 5. 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?                                   | Kebele 01  | 13         | 120 | 13         | 0              | 0         |
|                                                                                                                                                                                     | Kebele 026 | 44         | 68  | 29         | 15             | 0         |
| 6. 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?                                                | Kebele 01  | 0          | 133 | 0          | 0              | 0         |
|                                                                                                                                                                                     | Kebele 026 | 1          | 111 | 1          | 0              | 0         |

|                                                                                                                                                |            |   |     |   |   |   |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------|---|-----|---|---|---|
| 7. In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?               | Kebele 01  | - | 133 | 0 | 0 | 0 |
|                                                                                                                                                | Kebele 026 | - | 112 | 0 | 0 | 0 |
| 8. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?                      | Kebele 01  | - | 133 | 0 | 0 | 0 |
|                                                                                                                                                | Kebele 026 | - | 112 | 0 | 0 | 0 |
| 9. 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? | Kebele 01  | - | 133 | 0 | 0 | 0 |
|                                                                                                                                                | Kebele 026 | - | 112 | 0 | 0 | 0 |

The Household Food Insecurity Access was measured using a set nine questions related to three different domains of food insecurity access: (i) anxiety and uncertainty about the household food supply; (ii) insufficient quality in terms of variety and preferences of the type of food and (iii) insufficient food intake in terms of reducing quantity of food.

Table 4. HFIA prevalence in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Category                 | K01   | K026  | Total |
|--------------------------|-------|-------|-------|
| Food secure              | 17.8% | 18%   | 17.9% |
| Mildly food insecure     | 56.5% | 52.2% | 54.4% |
| Moderately food insecure | 25.7% | 29.9% | 27.8% |
| Severely food insecure   | 0     | 0     | 0     |

### 4.3 Households KAP Assessment

KAP assessments are usually used to assess and understand various health related issues in Africa since the 1960s (Schopper et al., 1993). Although KAP methodologies are used to plan and manage programs or assess the impact of interventions in different rural communities (Annika, 2009), in this study they were intended to assess the current status of food safety situations in the study area and to identify gaps which could be filled up by health extension work. A KAP survey is not a stand-alone methodology but should be viewed as a pathway or guideline for clarifying human behavior (Rahman et al., 2012). Thus, food safety assessment in the two kebeles was made in terms of knowledge, attitude and practice of food handling personal hygiene and water sanitation among the study population, as these are the most important parameters that help to avoid food borne infections at household level.

#### 4.3.1 Food Handling Knowledge

Methods of food handling are those that help to prevent contamination of food and multiplication of disease-causing organisms during storage of food. Cooking food to the right temperature, avoiding contact of cooked food with raw food and heating left overs before

consumption are some of the methods of food handling. Table 5 shows the household food handling knowledge status as measured by using a questionnaire. Total household food handling knowledge was 42.2% and 39.6 % in kebeles 01 and 026, respectively. This level of food safety knowledge is much lower than the 62% knowledge reported from Malaysia (Lee et al 2017) but much higher than the 8.9% in Pakistan (Naeem et al. 2018).. Some of the respondents gave some erroneous explanations, for example, for separating raw food from cooked food such as “because raw food imparts foul odor on cooked food” or thorough cooking is identified by its taste, aroma or appearance or cleaning raw fruits and vegetables by vigorously shaking off particulate things from them. Fruits and fresh vegetables should be washed before eating. Also, kitchen utensils such as cutting boards, knives, dishes, counter surfaces should be cleaned with hot water and soap after preparing each food item to prevent cross contamination (Medeiros et al. 2001). Of the given list of correct choices, less than 5% of the respondents could choose three or more correct answers regarding cold storage of food.

Table 5. Households Food Handling Knowledge Result in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

|                                                                                              | Know                    |                         | Number of correct answers |          |            |          |             |             |
|----------------------------------------------------------------------------------------------|-------------------------|-------------------------|---------------------------|----------|------------|----------|-------------|-------------|
|                                                                                              |                         |                         | Three or more             |          | Two        |          | One         |             |
|                                                                                              | K01                     | K026                    | K01                       | K026     | K01        | K026     | K01         | K026        |
| <b>1: Reason for Separation of raw and cooked foods</b>                                      |                         |                         |                           |          |            |          |             |             |
| “Raw animal foods often contain germs                                                        | 131(98.5%)              | 102 (91.1%)             |                           |          |            |          | 133 (100 %) | 112 (100 %) |
| “ Other                                                                                      | 2 (1.5 %) <sup>1</sup>  | 8(7.1%) <sup>1</sup>    |                           |          |            |          |             |             |
| - Don’t know                                                                                 | 0                       | 2 (1.8%)                |                           |          |            |          |             |             |
| <b>2: Signs of thorough cooking of soups and stews for safety and readiness to be served</b> |                         |                         |                           |          |            |          |             |             |
| “                                                                                            |                         |                         |                           |          | 23 (17.3%) | 37 (33%) | 110 (82.7%) | 75 (67 %)   |
| They are boiling/ well cooked                                                                | 110 (82.7%)             | 75 (67 %)               |                           |          |            |          |             |             |
| “ Other                                                                                      | 23 (17.3%) <sup>2</sup> | 37 (33 %) <sup>2</sup>  |                           |          |            |          |             |             |
| <b>3: Kinds of perishable foods to be stored in refrigerator or in a cool place</b>          |                         |                         |                           |          |            |          |             |             |
|                                                                                              |                         |                         | 3 (2.3%)                  | 5 (4.5%) | 16(12%)    | 4 (3.6%) | 112 (84.2%) | 104 (92.9%) |
| “ Meat, offal                                                                                | 48 (36.1%)              | 23 (20.5%)              |                           |          |            |          |             |             |
| “ Poultry                                                                                    | 1 (0.8%)                | 10 (8.9%)               |                           |          |            |          |             |             |
| “ Fish                                                                                       | 3 (2.3%)                | 2 (1.8%)                |                           |          |            |          |             |             |
| “ Milk/dairy products                                                                        | 0                       | 0                       |                           |          |            |          |             |             |
| - Cooked foods                                                                               | 80 (60.2%)              | 72 (64.3%)              |                           |          |            |          |             |             |
| “ Don’t know                                                                                 | 1 (0.8%)                | 5 (4.5%)                |                           |          |            |          |             |             |
| <b>4: Reasons for avoiding eating leftovers that were not kept in a cool place</b>           |                         |                         |                           |          |            |          |             |             |
|                                                                                              |                         |                         | 6(4.5 %)                  |          |            |          | 127 (95.5%) | 112 (100%)  |
| “ Because food is not safe anymore                                                           | 123 (92.5)              | 112 (100%)              |                           |          |            |          |             |             |
| germs multiply very quickly and can cause illness                                            | 4 (3 %)                 | 0                       |                           |          |            |          |             |             |
| “ Higher temperatures make germs grow faster                                                 | 0                       | 0                       |                           |          |            |          |             |             |
| Any of the three first response options is correct)                                          | 6 (4.5 %)               | 0                       |                           |          |            |          |             |             |
| <b>5: Washing raw fruits and vegetables before eating</b>                                    |                         |                         |                           |          |            |          |             |             |
|                                                                                              |                         |                         |                           |          |            |          | 133 (100%)  | 112 (100%)  |
| “ Wash them with clean water                                                                 | 118 (88.7%)             | 92 (82.1)               |                           |          |            |          |             |             |
| “ Other -                                                                                    | 15 (11.3%) <sup>3</sup> | 20 (17.9%) <sup>3</sup> |                           |          |            |          |             |             |

### 4.3.2 Household's Food Handling Attitude Assessment

Respondents in the study area showed positive attitude towards need for safe food handling in terms of their perceptions towards susceptibility, severity, benefits, and barriers arising from food handling methods. When compare with the knowledge they had on proper food handling, their attitude was quite positive with values as high as 96.7 % and 87 % for kebele 01 and Kebele 026, respectively (Table 6). As observed by Akabanda et al in Ghana (2017). Generally , the respondents in both kebeles had very positive perception (about 90%) in food safety but this did not translate into strict hygienic practices (<30%) during handling products.

Those who had negative attitude had different erroneous explanations. Some considered sickness from contaminated food not to be serious; others did not store food in cold places because “keeping foods in cold places would change the aroma of food”; others, did not wash vegetables because “water washes the nutrients out from vegetables and fruits” or some declared “We spend time working and, thus, don’t have time to reheat leftovers”

Table 6. HouseholdsFood Handling Attitude Result in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Food Handling Attitude                                                   |      | It is                  | It is not                | Not sure    |
|--------------------------------------------------------------------------|------|------------------------|--------------------------|-------------|
| Perceived susceptibility                                                 |      |                        |                          |             |
| Likelihood of getting sick from eating contaminated food?                | K01  | 133 (100 %)            | 0                        | 0           |
|                                                                          | K026 | 112 (100 %)            | 0                        | 0           |
| Perceived severity                                                       |      |                        |                          |             |
| Seriousness of getting sick from eating contaminated food.               | K01  | 133 (100 %)            | 0                        | 0           |
|                                                                          | K026 | 92 (82.1 %)            | 15 (13.3 %) <sup>1</sup> | 5 (4.5 %)   |
| Perceived benefits                                                       |      |                        |                          |             |
| Goodness of keeping meat, poultry, fish, or cooked food in a cool place. | K01  | 120 (90.2 %)           | 2 (1.5 %) <sup>2</sup>   | 11 (8.3 %)  |
|                                                                          | K026 | 81 (72.3 %)            | 4 (3.6 %) <sup>2</sup>   | 27 (24.1%)  |
| Goodness of re-heating left-overs before eating or serving them          | K01  | 130 (97.7%)            | 3 (2.3 %) <sup>3</sup>   | 0           |
|                                                                          | K026 | 87 (77.7 %)            | 0                        | 25 (22.3 %) |
| Goodness of washing fruits and vegetables with clean water               | K01  | 132 (99.2%)            | 1 (0.8 %)                | 0           |
|                                                                          | K026 | 98 (87.5 %)            | 5 (4.5 %) <sup>4</sup>   | 9 (8 %)     |
| Perceived barriers                                                       |      |                        |                          |             |
| Difficulty of re-heating leftovers before eating or serving them         | K01  | 3 (2.2 %) <sup>5</sup> | 130 (97.7%)              | 0           |
|                                                                          | K026 |                        | 106 (94.6%)              | 6 (5.4 %)   |
| Difficulty of washing fruits and vegetables with clean water             | K01  | 2 (1.5 %) <sup>6</sup> | 122 (91.7 %)             | 9 (6.8 %)   |
|                                                                          | K026 |                        | 106 (94.6 %)             | 6 (5.4 %)   |

<sup>1</sup> We don’t consider sickness from contaminated food to be serious.

<sup>2</sup> We believe keeping these foods in cold place changes their aroma and taste.

<sup>3</sup> I find cold food good for my gastritis.

<sup>4</sup> We think water washes the nutrients out from vegetables and fruits

<sup>5</sup> We spend time working and, thus, we don’t have time to reheat leftovers, and

<sup>6</sup> We eat fruits and vegetables while harvesting them. We can’t find water on the farm.

### 4.3.3 Household's Food Handling Practice Assessment

The proportion of respondents who had appropriate practice in cleaning utensils after feeding and storing perishable fresh foods in cool places was only 28% and 21% in kebeles 01 and 026, respectively (Table 7). Although the level of hygienic practice is low, it is still higher than 0.3% observed by Naeem, et al (2018) in Lahore, Pakistan. Some reported other traditional methods such as slicing meat into thin longer pieces and leaving it to dry on rope. They rubbed salt into chicken, and kept it until it is cooked.

Table 7. Households Food Handling Practice Results in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Food handling Practice                                                 |            |            |
|------------------------------------------------------------------------|------------|------------|
|                                                                        | K01        | K026       |
| Usual cleaning of kitchen surfaces and utensils after preparing dinner | 133(100%)  | 112 (100%) |
| “ Scrape excess food into rubbish bin                                  |            |            |
| “ Wash with hot water                                                  | 84 (63.2%) | 85(75.9%)  |
| “ Wash with detergent                                                  | 49 (36.8%) | 27(24.1%)  |
| Storing perishable fresh foods such as raw meat, poultry and seafood   | 133(100%)  | 112 (100%) |
| “ In the refrigerator (below 5 °C)/cool box                            | 22 (16.5%) |            |
| “ Covered (protected from insects, rodents, pests and dust)            | 49 (36.8%) | 41 (36.6%) |
| “ Separated from cooked or ready-to-eat foods                          | 28 (21.1%) | 3 (2.8%)   |
| “ Other <sup>1</sup>                                                   | 34 (25.6%) | 68 (60.7%) |

<sup>1</sup> If it is raw beef, mutton or goat meat, it is sliced into thin longer pieces and left to dry on rope. In the case of chicken, salt is rubbed into it and kept until it is cooked.

### 4.3.4 Households Personal Hygiene Knowledge Assessment

Personal hygiene was assessed with regards to preventing food borne diseases from germs from feces hand washing (Table 8). Total knowledge on these two aspects was very low in kebeles 01 and 026 (24% and 22%, respectively). Of the six correct key moments of food hygiene, the majority knew only one (76% and 88% in kebeles 01 and 026, respectively)

Table 8. Households Personal Hygiene Knowledge Result in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Personal Hygiene Knowledge                                            |                |                |                           |             |               |              |                |               |
|-----------------------------------------------------------------------|----------------|----------------|---------------------------|-------------|---------------|--------------|----------------|---------------|
|                                                                       | Know           |                | Number of correct answers |             |               |              |                |               |
|                                                                       |                |                | Three                     |             | Two           |              | One            |               |
|                                                                       | K01            | K026           | K01                       | K026        | K01           | K026         | K01            | K026          |
| 1. Actions for preventing food poisoning from germs from feces        |                |                |                           |             |               |              |                |               |
|                                                                       |                |                |                           |             | 5<br>(3.8%)   | 9<br>(8%)    | 128<br>(96.2%) | 103<br>(92%)  |
| Wash hands (after going to the toilet and cleaning the baby’s bottom) | 108<br>(81.2%) | 49<br>(43.8 %) |                           |             |               |              |                |               |
| “ Remove feces from the home and surroundings                         | 13<br>(9.8 %)  | 32<br>(28.8 %) |                           |             |               |              |                |               |
| - Other                                                               | 12<br>(9 %)    | 31<br>(27.7 %) |                           |             |               |              |                |               |
| - No answer                                                           | 0              | 0              |                           |             |               |              |                |               |
| 2. Key moments for hand washing                                       |                |                |                           |             |               |              |                |               |
|                                                                       |                |                | 13<br>(9.8%)              | 3<br>(2.7%) | 19<br>(14.3%) | 10<br>(8.9%) | 101<br>(76.9%) | 99<br>(88.4%) |
| After going to the toilet/latrine                                     | 79 (59.4%)     | 52<br>(46.4%)  |                           |             |               |              |                |               |
| After cleaning the baby’s bottom/ changing a baby’s nappy             | 0              | 12<br>(10.7%)  |                           |             |               |              |                |               |
| “ Before preparing/handling food                                      | 46 (34.6%)     | 43<br>(38.4%)  |                           |             |               |              |                |               |
| “ Before feeding a child/eating                                       | 0              | 2<br>(1.8%)    |                           |             |               |              |                |               |
| After handling raw food                                               | 0              | 0              |                           |             |               |              |                |               |
| After handling garbage                                                | 8<br>(6.0%)    | 3<br>(2.7%)    |                           |             |               |              |                |               |
| Other                                                                 | 0              | 0              |                           |             |               |              |                |               |
| No answer                                                             | 0              | 0              |                           |             |               |              |                |               |

### 4.3.5 Households Personal Hygiene Attitude

Respondents from both kebeles had a high level of positive perception (over 80%) about personal hygiene when assessed in terms of importance of hand washing to avoid disease and its goodness before preparing food or feeding child (Table 9). Some undermined importance of hand washing to avoid diarrhea because they believed diarrhea will come due to other reasons even if hands are washed. Others argued “we work in our farms. Even if we wash our hands, we soon go back to handling soil again”.

Table 9. Households Personal Hygiene Attitude Result in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Personal Hygiene Attitude                                                                    |      | It is       | It is not             | Not sure  |
|----------------------------------------------------------------------------------------------|------|-------------|-----------------------|-----------|
| Perceived susceptibility                                                                     |      |             |                       |           |
| Likelihood of oneself or child having stomach ache or diarrhea, from not washing your hands. | K01  | 133(100 %)  |                       |           |
|                                                                                              | K026 | 112(100 %)  |                       |           |
| Perceived severity                                                                           |      |             |                       |           |
| Seriousness if one or child gets diarrhea from oneself not washing one's hands.              | K01  | 125(94 %)   | 8 (6 %) <sup>1</sup>  | 0         |
|                                                                                              | K026 | 62 (55.4 %) | 47(42 %) <sup>1</sup> | 3 (2.6 %) |
| Perceived benefits                                                                           |      |             |                       |           |
| Goodness of washing ones hands before preparing food or before feeding a child/eating.       | K01  | 133(100 %)  |                       |           |
|                                                                                              | K026 | 112 (100%)  |                       |           |
| Perceived barriers                                                                           |      |             |                       |           |
| Difficulty to wash ones hands before preparing food or before feeding a child/eating?        | K01  |             | 133(100 %)            |           |
|                                                                                              | K026 |             | 109 (97.3 %)          | 3(2.7 %)  |
| Perceived self-efficacy                                                                      |      |             |                       |           |
| Confidence in washing ones hands properly?                                                   | K01  | 133(100%)   |                       |           |
|                                                                                              | K026 | 91(81.3%)   | 5(4.5%) <sup>2</sup>  | 16(14.3%) |

<sup>1</sup> We think diarrhea comes by things other than washing hands.

<sup>2</sup> As farmers we work in our farms. Even if we wash our hands, we soon go back to handling soil again.

### 4.3.6 Households Personal hygiene practice

Personal hygiene practice was evaluated in terms of step-by-step description of hand washing. The findings showed that respondents from Kebele 01 and 026 had total appropriate practice level of 24% and 29%, respectively (Table 10). Some explained that they wash by pouring water with a jug, but they did it by themselves. According Weinstein, (1991) poor



personal hygiene causes more than 90% of foodborne diseases. Improper hand washing alone accounts for more than 25% of all foodborne diseases

Table 10. Households Personal hygiene Practice Results in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Personal hygiene Practice                                                                       | Know           |               | Do not know               |                            |
|-------------------------------------------------------------------------------------------------|----------------|---------------|---------------------------|----------------------------|
|                                                                                                 | K01            | K026          | K01                       | K026                       |
| Could you please describe step by step how you wash your hands?                                 |                |               | 9<br>(6.8 %) <sup>1</sup> | 11<br>(9.8 %) <sup>1</sup> |
| a. Washes hands in a bowl of water (sharing with other people) — poor practice                  | 1<br>(0.8 %)   | 5<br>(4.5 %)  |                           |                            |
| b. With someone pouring a little clean water from a jug onto one's hands - appropriate practice | 4<br>(3 %)     | 34<br>(30.4%) |                           |                            |
| c. Under running water — appropriate practice                                                   | 3<br>(2.6 %)   | 0             |                           |                            |
| d. Washes hands with soap or ashes— appropriate practice                                        | 116<br>(87.2%) | 62<br>(55.4%) |                           |                            |

<sup>1</sup> We wash by pouring water from a jug by ourselves.

#### 4.3.7 Households Water sanitation knowledge

Household water sanitation knowledge was measured in terms of methods to disinfect water from harmful foodborne organisms. Accordingly, the households had low knowledge in water sanitation, i.e. 6 % and 13.8 % in Kebele 01 and 026, respectively. About 76% of respondents from both kebeles knew only one method of water sanitation (Table 11). Over 75% of respondents from kebele 01 erroneously believed that straining water through cloth or letting it stand to settle made water safe for drinking. But the correct way to make water safe is to boil, add bleach/chlorine, use solar disinfection, or discard if turbid

Table 11. Households Water sanitation Knowledge Result in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Water sanitation Knowledge                                                                                                                   | Know          |               | Number of correct answers |              |             |               |              |               |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------------------|--------------|-------------|---------------|--------------|---------------|
|                                                                                                                                              |               |               | Three                     |              | Two         |               | One          |               |
| Treating unsafe water                                                                                                                        | K01           | K026          | K01                       | K026         | K01         | K026          | K01          | K026          |
| If you know that the water you are going to use for cooking or drinking is not safe or does not come from a safe source, what should you do? |               |               |                           |              |             |               |              |               |
|                                                                                                                                              |               |               | 12<br>(9%)                | 10<br>(8.9%) | 20<br>(15%) | 17<br>(15.2%) | 101<br>(76%) | 85<br>(75.9%) |
| “ Boil it                                                                                                                                    | 18<br>(13.5%) | 0             |                           |              |             |               |              |               |
| Add bleach/chlorine                                                                                                                          | 0             | 0             |                           |              |             |               |              |               |
| Strain it through a cloth                                                                                                                    | 91<br>(68.4%) | 27<br>(24.1%) |                           |              |             |               |              |               |
| “ Use a water filter (ceramic, sand, composite, etc.)                                                                                        | 0             | 0             |                           |              |             |               |              |               |
| Use solar disinfection                                                                                                                       | 0             | 0             |                           |              |             |               |              |               |
| Let it stand and settle                                                                                                                      | 10<br>(7.5%)  | 23<br>(20.5%) |                           |              |             |               |              |               |
| Discard it and get water from a safe source                                                                                                  | 14<br>(10.5%) | 62<br>(55.4%) |                           |              |             |               |              |               |
| - Other                                                                                                                                      | 0             | 0             |                           |              |             |               |              |               |
| - Do not know                                                                                                                                | 0             | 0             |                           |              |             |               |              |               |

#### 4.3.8 Households Water Sanitation Attitude

Household attitude on water sanitation consisted of perceptions regarding susceptibility to get diarrhea from unsafe water, severity of the illness, and goodness or difficulty of boiling water to make it safe. Majority of the respondents had positive attitude towards need for water sanitation as seen in 71% and 72 % respondents in kebele 01 and kebele 026, respectively. (Table12)

Table 12. Households Water sanitation Attitude in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Water sanitation Attitude                                                     |      | It is                    | It is not                | Not sure    |
|-------------------------------------------------------------------------------|------|--------------------------|--------------------------|-------------|
| Perceived susceptibility                                                      |      |                          |                          |             |
| Likelihood of oneself or one's child to get diarrhea from using unsafe water? | K01  | 133(100 %)               |                          |             |
|                                                                               | K026 | 101(90.2 %)              | 4 (3.6 %) <sup>1</sup>   | 7(6.2 %)    |
| Perceived severity                                                            |      |                          |                          |             |
| Seriousness of getting sick from using unsafe water?                          | K01  | 128(96.2 %)              | 5 (3.8 %) <sup>2</sup>   | 0           |
|                                                                               | K026 | 98(87.5 %)               | 14 (12.5 %) <sup>2</sup> | 0           |
| Perceived benefits                                                            |      |                          |                          |             |
| Goodness of boiling water before drinking or using it?                        | K01  | 131(98.5 %)              | 0                        | 2 (1.5 %)   |
|                                                                               | K026 | 92(81.1 %)               | 0                        | 20 (17.9 %) |
| Perceived barriers                                                            |      |                          |                          |             |
| Difficulty of boiling water before drinking or using it                       | K01  | 67(50.4 %) <sup>3</sup>  | 15(11.3 %)               | 51 (38.3 %) |
|                                                                               | K026 | 111(99.1 %) <sup>3</sup> | 0                        | 1 (0.9 %)   |
| Perceived self-efficacy                                                       |      |                          |                          |             |
| Confidence in boiling water before drinking or using it?                      | K01  | 67(50.4 %)               | 15(11.3 %) <sup>4</sup>  | 51 (38.3 %) |
|                                                                               | K026 | 111(99.1 %)              | 0                        | 1 (0.9 %)   |

<sup>1</sup>We don't pay attention to it.

<sup>2</sup> We have never been sick so far. We don't know how serious it is.

<sup>3</sup> Rural life requires us to use fire wood. The smoke from it makes the water dark.

<sup>4</sup> Not confident because boiled water tastes bland.

### 4.3.9 Households Water Sanitation Practice

Practices of water sanitation was measured in terms of main sources of safe water, safe collection and storage of water, and treatment of water to make it safe. The households used different types of activities for safe collection and storage of water and treat it to make it safe for their consumption (Table 13). Over 99% of the households in both kebeles got water from public tap/stand pipe and different types of material were used to make the collecting materials clean. Respondents used soap, water, sand and different types of leaves. Appropriate practice of treating water to make it safe was very low (4.5% and 0% in kebeles 01 and 026, respectively). However, majority (87%) of the households strained it through a cloth to make it safe to drink. About 60% of respondents from both kebeles acknowledged advice support from health extension workers regarding food safety.

Table 13 Households Water sanitation Practice Result in S.Wollo ,Tehuledere Woreda  
Kebele 01 and 026,2019.

| Water sanitation Practice                                            |             |             | Other                  |                         |
|----------------------------------------------------------------------|-------------|-------------|------------------------|-------------------------|
|                                                                      | K01         | K026        | K01                    | K026                    |
| 1: Main source of water for drinking, cooking and hand washing       |             |             |                        |                         |
| " Piped water                                                        | 35 (26.3 %) |             |                        |                         |
| " Public tap/standpipe                                               | 55 (41.4 %) | 112(100 %)  |                        |                         |
| " Piped into yard or plot                                            | 42 (31.6%)  |             |                        |                         |
| " Surface water                                                      | 1 (0.8 %)   |             |                        |                         |
| 2: Collection of water for domestic use                              |             |             | All Jerry can          |                         |
| Yes                                                                  | 133 (100%)  | 112 (100%)  |                        |                         |
| - No                                                                 |             |             |                        |                         |
| Treating collection item to make it clean                            |             |             |                        |                         |
| " Yes                                                                | 133(100%)   | 112(100%)   |                        |                         |
| " No                                                                 |             |             |                        |                         |
| " Use of water and soap (clean container)                            | 120(90.2 %) | 81 (72.3%)  | 13 (9.8%) <sup>1</sup> | 31(27.7 %) <sup>1</sup> |
| 3: Description of how water is stored                                |             |             |                        |                         |
| Could you describe how you store water?                              |             |             | 3(23.3%) <sup>2</sup>  | 49(43.8%) <sup>2</sup>  |
| " Clean container or jar                                             | 24(18 %)    | 20(17.9%)   |                        |                         |
| " Covered container or jar                                           | 22 (16.5 %) | 19(17 %)    |                        |                         |
| " Clean and covered container or jar                                 | 56(42.1 %)  | 24(21.4 %)  |                        |                         |
| " Don't know/no answer                                               |             |             |                        |                         |
| 4. Treatment of water to make it safe to drink                       |             |             |                        |                         |
| " Yes                                                                | 133(100 %)  | 96(85.7 %)  |                        |                         |
| " No                                                                 | 0           | 16 (14.3 %) |                        |                         |
| Actions usually done to the water to make it safer to drink          |             |             |                        |                         |
| " Boil it                                                            | 10 (7.5 %)  | 0           |                        |                         |
| " Add bleach/chlorine                                                | 2 (1.5 %)   | 0           |                        |                         |
| " Strain it through a cloth                                          | 114(85.7 %) | 89 (79.5 %) |                        |                         |
| Use a water filter (ceramic, sand, composite, etc.)                  | 0           | 0           |                        |                         |
| " Let it stand and settle                                            | 7 (5.3 %)   | 23 (20.5 %) |                        |                         |
| " Don't know/no answer                                               | 0           | 0           |                        |                         |
| Any lessons or advice from health extension worker about food safety |             |             |                        |                         |
| -yes                                                                 | 83(62.4%)   | 65(58.0%)   |                        |                         |
| -no                                                                  | 23(17.3%)   | 27(24.1%)   |                        |                         |

## **4.4. Knowledge, Attitude and Practice in Child Nutrition.**

### **4.4.1 Households Knowledge on Child Nutrition**

It is useful to understand that different types of food nourish the body and influence health. It also affects food choices and preparation. When women get adequate knowledge in nutrition, they will be empowered to fight against malnutrition. Increased knowledge and skills enable women to earn higher incomes and thus enhance household food security and improve the quality of day to day care women give themselves and all members of their household, especially children (Ongosi, 2010). Maternal nutrition knowledge has frequently been identified as an important target for nutrition promotion interventions (Laurens, et al., 2012).

In this study, the data was collected in the period immediately after households harvested (November, December and January) their agricultural products and, thus, was the period of relative abundance of agricultural product. Total knowledge among respondents in Kebele 01 and Kebele 026 was 56% and 43%, respectively (Table 14). About 62% and 72% of respondents in Kebele 01 and 026, respectively knew how long breastfeeding should be continued. Over 97% in both kebeles had knowledge about at what age complementary feeding should start and reasons for giving complementary food. Breast milk alone is no longer sufficient to meet all the nutritional requirements of infants, putting them at increased risk of malnutrition starting from six months (Dewey and Brown, 2003). Children living in most developing countries are introduced directly to the regular household diet made of cereal or starchy root crops which is a major cause for the high incidence of child malnutrition, morbidity and mortality (Krebs and Westcott 2002). However, 71% of respondents in Kebele 026 thought supplementary meals should be watery in consistency. They thought the children needed thin/watery porridge because it was easy for drinking. Of the various alternatives to enrich supplementary meals, almost all respondents from both kebeles knew about use of legume flours only as enriching supplement. All respondents knew different ways of encouraging young children to eat.

Table 14 Households nutritional Knowledge in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| KNOWLEDGE                                                                                                                                                   |                       |                        |            |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|------------|------|
|                                                                                                                                                             | Know                  |                        | Don't know |      |
|                                                                                                                                                             | K01                   | K026                   | K01        | K026 |
| 1: Continued breastfeeding                                                                                                                                  |                       |                        | 0          | 0    |
| " Six months or less                                                                                                                                        | 0                     | 0                      |            |      |
| " 12–23 months                                                                                                                                              | 52                    | 28                     |            |      |
| " 24 months and more (correct response)                                                                                                                     | 81 (60.9%)            | 84 (75.5%)             |            |      |
| 2: Age of start of complementary foods                                                                                                                      |                       |                        | 0          | 0    |
| " At six months                                                                                                                                             | 130 (97.7%)           | 112 (100%)             |            |      |
| " Other                                                                                                                                                     | 3                     | 0                      |            |      |
| 3: Reason for giving complementary foods at six months                                                                                                      |                       |                        | 0          | 0    |
| " Breastmilk alone is not sufficient                                                                                                                        | 133 (100%)            | 112 (100%)             |            |      |
| " <i>Other</i>                                                                                                                                              | 0                     | 0                      |            |      |
| 4: Appropriate consistency of meals                                                                                                                         |                       |                        | 0          | 0    |
| - thick porridge                                                                                                                                            | 133 (100%)            | 33 (29.5%)             |            |      |
| - watery                                                                                                                                                    | 0                     | 79 (70.5%)             |            |      |
| 5: Reason for consistency of meals                                                                                                                          |                       |                        |            |      |
| " Because it is thicker .Because the thick porridge is more nutritious/because it is prepared with different types of foods or ingredients (food diversity) | 133 (100%)            | 33 (29.5%)             | 0          | 0    |
| - <i>other</i>                                                                                                                                              |                       | 79(70.5%) <sup>1</sup> |            |      |
| 6: Dietary diversity and ways of enriching porridge by adding:                                                                                              |                       |                        | 0          | 0    |
| " Animal-source foods (meat, poultry, fish, liver/organ meat, eggs, etc.)                                                                                   |                       |                        |            |      |
| " Pulses and nuts: flours of groundnut and other legumes (peas, beans, lentils, etc.), sunflower seed, peanuts, soybeans                                    | 128 (96.2%)           | 112(100%)              |            |      |
| " Vitamin-A-rich fruits and vegetables (carrot, orange-fleshed sweet potato, yellow pumpkin, mango, papaya, etc.)                                           |                       |                        |            |      |
| " Green leafy vegetables (e.g. spinach)                                                                                                                     |                       |                        |            |      |
| " Energy-rich foods (e.g. oil, butter/ghee)                                                                                                                 |                       |                        |            |      |
| " Other                                                                                                                                                     | 5(3.8/%) <sup>2</sup> | 0                      |            |      |
| 7: Responsive feeding: ways to encourage young children to eat                                                                                              |                       |                        | 0          | 0    |
| " Giving them attention during meals, talk to them, make meal times happy times                                                                             | 28 (21%)              | 16 (14.3%)             |            |      |
| " clap hands                                                                                                                                                | 5 (3.6%)              | 10 (8.9%)              |            |      |
| " make funny faces/play/laugh                                                                                                                               | 43 (32.3%)            | 31 (27.7%)             |            |      |
| " demonstrate opening your own mouth very wide/modelling how to eat                                                                                         | 21 (15.8%)            | 23 (20.5%)             |            |      |
| " say encouraging words                                                                                                                                     | 36 (27.1%)            | 22 (19.6%)             |            |      |
| " draw the child's attention                                                                                                                                | 0                     | 10 (8.9%)              |            |      |

<sup>1</sup>Not only thick porridge, they need thin/watery/ porridge because it is easy for drinking

<sup>2</sup>They said that they used different types of cereals.

#### 4.4.2 Households Attitudes on Child Nutrition

Between 75% and 80% of respondents in both kebeles showed general positive attitude towards giving diverse food to supplement child feeding, feeding frequently, and continuous breastfeeding beyond 6 months (Table15). Negative perceptions towards feeding diverse foods to children and feeding frequency arose from lack of economic capacity.

Table 15 Households Nutritional Attitudes in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| ATTITUDES                                                                                           |                         |                       |
|-----------------------------------------------------------------------------------------------------|-------------------------|-----------------------|
|                                                                                                     | K01                     | K0266                 |
| 1 Self-confidence in preparing food for the child?                                                  |                         |                       |
| 1. Not confident                                                                                    | 1 (0.8%) <sup>1</sup>   | 0                     |
| 2. Ok/so-so                                                                                         | 0                       | 3 (2.7%)              |
| 3. Confident                                                                                        | 132 (99.2%)             | 109 (97.3%)           |
| 2. Giving a diversity of food (foods from many food groups)                                         |                         |                       |
| <i>Perceived benefits.</i> Goodness of giving different types of food to one's child each day?      |                         |                       |
| 1. Not good                                                                                         | 0                       | 9 (8.0%) <sup>2</sup> |
| 2. You're not sure                                                                                  | 1 (0.8%)                | 0                     |
| 3. Good                                                                                             | 132 (99.2%)             | 103 (92.0%)           |
| <i>Perceived barriers.</i> Difficulty of giving different types of food to one's child each day?    |                         |                       |
| 1. Not difficult                                                                                    | 33 (24.8%)              | 49 (43.8%)            |
| 2. So-so                                                                                            | 39 (29.3%)              | 30 (26.8%)            |
| 3. Difficult                                                                                        | 61 (45.9%) <sup>3</sup> | 33 (29.4%)            |
| 3. Feeding frequently                                                                               |                         |                       |
| <i>Perceived benefits</i> How good do you think it is to feed your child several times each day?    |                         |                       |
| 1. Not good                                                                                         | 8 (6.0%) <sup>4</sup>   | 26 (23.2%)            |
| 2. You're not sure                                                                                  | 0                       | 0                     |
| 3. Good                                                                                             | 125 (94.0%)             | 86 (76.8%)            |
| <i>Perceived barriers</i>                                                                           |                         |                       |
| How difficult is it for you to feed your child several times each day?                              |                         |                       |
| 1. Not difficult                                                                                    | 58 (43.6%)              | 25 (22.3%)            |
| 2. So-so                                                                                            | 18 (13.5%)              | 26 (23.2%)            |
| 3. Difficult                                                                                        | 57 (42.9%) <sup>5</sup> | 61 (54.5%)            |
| 4. Continuing breastfeeding beyond six months                                                       |                         |                       |
| <i>Perceived benefits;</i> How good do you think it is to continue breastfeeding beyond six months? |                         |                       |
| 1. Not good                                                                                         | 3 (2.3%) <sup>6</sup>   | 0                     |
| 2. You're not sure                                                                                  | 0                       | 0                     |
| 3. Good                                                                                             | 130 (97.7%)             | 112 (100%)            |
| <i>Perceived barriers</i> How difficult is it for you to continue breastfeeding beyond six months?  |                         |                       |
| 1. Not difficult                                                                                    | 130 (97.7%)             | 103 (91.9%)           |
| 2. So-so                                                                                            | 3 (2.3%)                | 5 (4.5%)              |
| 3. Difficult                                                                                        | 0                       | 4 (3.6%) <sup>7</sup> |
| Any extension support on child feeding                                                              |                         |                       |
| - Yes                                                                                               | 70 (52.6%)              | 61 (54.5%)            |
| - No                                                                                                | 27 (20.3%)              | 31 (27.7%)            |
| No answer                                                                                           | 0                       | 0                     |

<sup>1,3,4,5</sup> not confident because of low income. <sup>2</sup> economically incapable and lack of attention. <sup>6</sup> have animals milk to substitute, preparation to go to gulf countries to work <sup>7</sup> because of mother illness or in case of mother's death.

#### **4.4.3 Households Practice on Child Nutrition**

Almost all respondents in both kebeles fed breast milk to their children. However, practice in feeding children diverse meals was very poor. Supplementary meals were dominated by grains and legumes (>95%) followed by eggs (70-80%) animal milk (60-80%) and flesh foods (around 30%) (Table 16). Consumption of food groups such as vitamin A-rich fruits and vegetables, as well as any fruits and vegetables was very low. Dietary diversity scores have been positively associated with increased, macro- and micronutrient adequacy of complementary foods (Swindale and Bilinsky 2006). Dietary diversification is one of the main strategies promoted internationally for the improvement of micronutrient intake and status, especially in undernourished individuals (Maunder et al. 2001).

Over 50% of children in both kebeles were fed three times per day. The proportion of children decreased with increasing frequency in feeding. As nutritional requirements of infants is continuously evolving, infants should be fed with nutritionally adequate complementary foods while breastfeeding continues for up to two years of age or beyond (WHO, 2002).

#### **4.5 Child Nutritional Status**

A total of 133 and 112 under 24-month children from kebeles 01 and 026 were considered in this study. Findings showed that 9.1% and 16.1% of the children were found to be stunted in Kebele 01 and 026, respectively. According to CSA (2016) stunting of children under five years was higher nationally. Stunting reflects failure to receive adequate nutrition over a long period of time and is also affected by recurrent and chronic illness. Height-for-age, therefore, represents the long-term effects of malnutrition in a population and is not sensitive to recent, short-term changes in dietary intake (CSA, 2016). There were around 6% of children, who suffered from wasting, in both kebeles. Only 4.5% of children in both kebeles were underweight. And also the MUAC results showed that 20.3% and 15% of the children suffered from chronic energy deficiency in Kebele 01 and kebele 026, respectively.

The prevalence of wasting, stunting and underweight among young children in Somali region was 17.5 %, 22.9 % and 19.5 %, respectively (YirguFekadu *et al*, 2015) and this was much higher than that observed in our study. Our study was much lower than that observed. Stunting in both kebeles in this study was much lower than the figure reported for Amhara 46%, Benishangul-Gumuz 43%, Afar 41%, Dire Dawa 40%, Tigray 39%, SNNPR 39%, Oromiya 37%, Harari 32%, Somali 27%; and Addis Ababa and Gambela had 15% and 24%,



respectively (CSA 2016). Our value is also lower, in Kebele 01, and higher, in Kebele 026, than infant stunting reported from Brazil (Oliveira et al 2013). Nutritional status of children by using three indices and MUAC results is shown in tables 17 a and b. The nutritional status of the children could be the consequence of a range of factors that were often related to poor food diversity, insufficient food intake, and severe and repeated infectious diseases caused by unsafe food and water and poor personal hygiene knowledge and practice.

Table 16 Households nutritional Practice in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| PRACTICE                                                                                          |     | K01         | K026        |
|---------------------------------------------------------------------------------------------------|-----|-------------|-------------|
| <b>1. Continued breastfeeding</b>                                                                 |     |             |             |
|                                                                                                   | Yes | 130 (97.7%) | 111 (99.1%) |
| Was the child breastfed or did he or she consume breastmilk yesterday during the day or at night? | No  | 3 (2.3%)    | 1 (0.9%)    |
| <b>2. Dietary diversity – foods the child ate yesterday</b>                                       |     |             |             |
| Group 1: Grains, roots and tubers                                                                 | Yes | 132 (99.2%) | 112 (100%)  |
| Porridge, bread, rice, noodles or other foods made from grains, White potatoes,                   | No  | 1 (0.8%)    | 0           |
| Group 2: Legumes and nuts Any foods made from beans, peas, lentils, nuts or Seeds                 | Yes | 129 (97.0%) | 101 (90.2%) |
|                                                                                                   | No  | 4 (3.0%)    | 11 (9.8%)   |
| Group 3: Dairy products Infant formula(4x)                                                        | Yes | 1 (0.8%)    | 0           |
|                                                                                                   | No  | 132 (99.2%) | 112 (100%)  |
| Milk, such as tinned, powdered or fresh animal milk (3x)                                          | Yes | 80 (60.2%)  | 87 (77.7%)  |
|                                                                                                   | No  | 53 (39.8%)  | 25 (22.3%)  |
| Yogurt or drinking yogurt (1x)                                                                    | Yes | 2 (1.5%)    | 0           |
|                                                                                                   | No  | 131 (98.5%) | 112 (100%)  |
| Cheese or other dairy products (1x)                                                               | Yes | 6 (4.5%)    | 0           |
|                                                                                                   | No  | 127 (95.5%) | 39 (34.8%)  |
| Group 4: Flesh foods                                                                              | Yes | 41 (30.8%)  | 39 (34.8%)  |
| Any meat, such as beef, lamb, goat, or chicken                                                    | No  | 92 (69.2%)  | 73 (65.2%)  |
| Fresh or dried fish                                                                               | Yes | 0           | 0           |
|                                                                                                   | No  | 133 (100%)  | 112 (100%)  |
| Group 5: Eggs                                                                                     | Yes | 106 (79.7%) | 81 (72.3%)  |
|                                                                                                   | No  | 27 (20.3%)  | 31 (27.7%)  |
| Group 6: Vitamin A, fruits and vegetables                                                         | Yes | 2 (1.5%)    | 5 (4.5%)    |
| Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside                       | No  | 131 (98.5%) | 107 (95.5%) |
| Any dark green vegetables (kale)                                                                  | Yes | 2 (1.5%)    | 5 (4.5%)1   |
|                                                                                                   | No  | 31 (98.5%)  | 107 (95.5%) |
| Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried), musk melon              | Yes | (6.8%)      | 0           |
|                                                                                                   | No  | 124 (93.2%) | 112 (100%)  |
| Group 7: Other fruits and vegetables                                                              | Yes | 107 (80.5%) | 63 (56.3%)  |
| Any other fruits or vegetables                                                                    | No  | 26 (19.5%)  | 49 (43.8%)  |
| Any oil, fats, or butter or foods made with any of these                                          | Yes | 15 (11.3%)  | 92 (82.1%)  |
|                                                                                                   | No  | 118 (88.7%) | 20 (17.9%)  |
| Any sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits                | Yes | 0           | 0           |
|                                                                                                   | No  | 133 (100%)  | 112 (100%)  |
| Condiments for flavor, such as chilies, spices, herbs or fish powder                              | Yes | 56 (42.1%)  | 54 (48.2%)  |
|                                                                                                   | No  | 77 (57.9%)  | 58 (51.8%)  |
| <b>3. Minimum meal frequency</b>                                                                  |     |             |             |
| Number of times the child ate foods the previous day during the day or at night?                  | 2x  | 2 (1.5%)    | 0           |
|                                                                                                   | 3x  | 73 (54.9%)  | 57 (50.9%)  |
|                                                                                                   | 4x  | 48 (36.1%)  | 38 (33.9%)  |
|                                                                                                   | 5x  | 10 (7.5%)   | 17 (15.2%)  |

Table 17a Nutritional status of children for underweight and wasting in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Age group | Sex  | Number    |           | Median Weight (kg) |      | Nutritional status of children |          |           |             |                   |          |           |             |
|-----------|------|-----------|-----------|--------------------|------|--------------------------------|----------|-----------|-------------|-------------------|----------|-----------|-------------|
|           |      |           |           |                    |      | Weight-for-age                 |          |           |             | Weight-for-height |          |           |             |
|           |      |           |           |                    |      | Underweight                    |          | Normal    |             | Wasted            |          | Normal    |             |
|           |      | K01       | K026      | K01                | K026 | K01                            | K026     | K01       | K026        | K01               | K026     | K01       | K026        |
| 0-6       | F    | 2(1.5%)   | 4 (3.6%)  | 6.7                | 7    | -                              | -        | 2 (1.5%)  | 4(3.6%)     | -                 | -        | 2 (1.5%)  | 4(3.6%)     |
|           | M    | 2 (1.5%)  | 1 (0.9%)  | 7.75               | 6    | -                              | 1(0.9%)  | 2(1.5%)   | -           | -                 | 1(0.9%)  | 2 (1.5%)  |             |
|           | Both | 4 (3.6%)  | 5 (4.5%)  |                    |      | -                              | 1(0.9%)  | 4 (3.6%)  | 4(3.6%)     | -                 | 1(0.9%)  | 4 (3 %)   | 4 (3.6%)    |
| 7-11      | F    | 11 (8.3%) | 13(11.6%) | 7.5                | 7.5  | 1(0.8%)                        |          | 10 (7.5%) | 13(11.6%)   | 1(0.75%)          | 1 (0.9%) | 10 (7.5%) | 12 (10.7%)  |
|           | M    | 10(7.5%)  | 16(14.3%) | 7.75               | 8    | 3(2.3%)                        | 1(0.9%)  | 7(5.3%)   | 15(13.4%)   | 2(1.5%)           | 1(0.9%)  | 8 (6%)    | 15(13.4%)   |
|           | Both | 21(15.8%) | 29(25.9%) |                    |      | 4 (3%)                         | 1 (0.9%) | 17(12.8%) | 28 (25%)    | 3(2.2%)           | 2 (1.8%) | 18(13.5%) | 27 (22.1%)  |
| 12-17     | F    | 30(22.6%) | 13(11.6%) | 10                 | 9    | 2 (1.5%)                       | 1 (0.9%) | 28 (21%)  | 12(10.7%)   | 3 (2.3%)          | 1(0.9%)  | 27(20.3%) | 12 (10.7%)  |
|           | M    | 22(16.5%) | 13(11.6%) | 9.5                | 9    | -                              | -        | 22(16.5%) | 13(11.6%)   | -                 | -        | 22(16.5%) | 13 (11.6%)  |
|           | Both | 52(39.1%) | 26(23.2%) |                    |      | 2 (1.5%)                       | 1 (0.9%) | 50(37.5%) | 25(22.3%)   | 3 (2.3%)          | 1 (0.9%) | 49(36.8%) | 25 (22.3%)  |
| 18-24     | F    | 24 (18%)  | 23(20.5%) | 11.3               | 12.5 | -                              | -        | 24 (18%)  | 23(20.5%)   | -                 | -        | 24 (18%)  | 23(20.5%)   |
|           | M    | 32(24%)   | 29(25.9%) | 12                 | 12   | 2(1.5%)                        |          | 30(22.5%) | 29(25.9%)   | 2(1.5%)           | 3(2.2%)  | 30(22.5%) | 26(23.2%)   |
|           | Both | 56 (42%)  | 52(46.4%) |                    |      | 2(1.5%)                        | -        | 54(40.5%) | 52(46.4%)   | 2 (1.5%)          | 3(2.2%)  | 54(40.5%) | 49(43.7%)   |
| The whole |      | 133       | 112       |                    |      | 8(6.1%)                        | 3(2.6%)  | 125(94%)  | 109(97.3 %) | 8 (6%)            | 7(6.3%)  | 125 (94%) | 105(93.7% ) |

Table 17b Nutritional status of children for Chronic energy deficiency and stunted in S.Wollo ,Tehuledere Woreda Kebele 01 and 026,2019.

| Age Group | Sex  | Number     |            | Median height/length (kg) |      | Nutritional status of children |          |            |            |                           |          |             |            |
|-----------|------|------------|------------|---------------------------|------|--------------------------------|----------|------------|------------|---------------------------|----------|-------------|------------|
|           |      |            |            |                           |      | Length/height for age          |          |            |            | MUAC (cm)                 |          |             |            |
|           |      |            |            |                           |      | Stunted                        |          | Normal     |            | Chronic energy deficiency |          | Normal      |            |
|           |      | K01        | K026       | K01                       | K026 | K01                            | K026     | K01        | K026       | K01                       | K026     | K01         | K026       |
| 0-6       | F    | 2 (1.5%)   | 4 (3.6%)   | 62.5                      | 62   | -                              | -        | 2 (1.5%)   | 4 (3.6%)   | 1 (0.75%)                 | 3 (2.2%) | 1 (0.75%)   | 1 (0.8%)   |
|           | M    | 2 (1.5%)   | 1 (0.9%)   | 63.7                      | 63   | -                              | -        | 2 (1.5%)   | 1 (0.9%)   | -                         | 1 (0.9%) | 2 (1.5%)    | -          |
|           | Both | 4 (3%)     | 5 (4.5%)   |                           |      | -                              | -        | 4 (3%)     | 5 (4.5%)   | 1 (0.7%)                  | 4 (3.1%) | 3 (2.2%)    | 1 (0.8%)   |
| 7-11      | F    | 11 (8.3%)  | 13 (11.6%) | 67                        | 69   | 1 (0.75%)                      | 1 (0.9%) | 10 (7.5%)  | 12 (10.7%) | 2 (1.5%)                  | 6 (5.4%) | 9 (6.8%)    | 7 (6.2%)   |
|           | M    | 10 (7.5%)  | 16 (14.3%) | 68.5                      | 68   | 1 (0.7%)                       | 4 (3.6%) | 9 (6.8%)   | 12 (10.7%) | 3 (2.3%)                  | 2 (1.8%) | 7 (5.3%)    | 14 (12.5%) |
|           | Both | 21 (15.8%) | 29 (25.9%) |                           |      | 2 (1.5%)                       | 5 (4.5%) | 19 (14.3%) | 14 (21.4%) | 5 (3.8%)                  | 8 (7.2%) | 16 (12.1%)  | 21 (18.7%) |
| 12-17     | F    | 30 (22.6%) | 13 (11.6%) | 75                        | 73   | 3 (2.3%)                       | 2 (1.8%) | 27 (20.3%) | 11 (9.8%)  | 8 (6%)                    | -        | 22 (16.5%)  | 13 (11.6%) |
|           | M    | 22 (16.5%) | 13 (11.6%) | 75                        | 73   | 5 (3.8%)                       | 4 (3.6%) | 17 (12.8%) | 9 (8%)     | 6 (4.5%)                  | 1 (0.8%) | 16 (12%)    | 12 (10.7%) |
|           | Both | 52 (39.1%) | 26 (23.2%) |                           |      | 8 (6.1%)                       | 6 (5.4%) | 44 (33.1%) | 20 (17.8%) | 14 (10.5%)                | 1 (0.8%) | 38 (28.5%)  | 25 (22.3%) |
| 18-24     | F    | 24 (18%)   | 23 (20.5%) | 82                        | 81   | 1 (0.8%)                       | 1 (0.8%) | 23 (17.3%) | 22 (19.6%) | 3 (2.3%)                  | -        | 21 (15.8%)  | 23 (20.5%) |
|           | M    | 32 (24%)   | 29 (25.9%) | 83                        | 82   | 1 (0.8%)                       | 6 (5.4%) | 31 (23.3%) | 23 (20.5%) | 4 (3%)                    | 4 (3.6%) | 28 (21%)    | 25 (22.3%) |
|           | Both | 56 (42%)   | 52 (46.4%) |                           |      | 2 (1.5%)                       | 7 (6.2%) | 54 (40.6%) | 45 (40.2%) | 7 (5.3%)                  | 4 (3.6%) | 49 (36.8%)  | 48 (42.8%) |
| The whole |      | 133        | 112        |                           |      | 12 (9 %)                       | 18 (16%) | 121 (91%)  | 94 (84%)   | 27 (20.3%)                | 17 (15%) | 106 (79.6%) | 95 (85%)   |

Table 18 a. Chi-square distribution of variables for nutritional status of children in Tehuledere Woreda , kebele 01

| Variable            | Category     | weight-for-age |        |           | weight-for height |        |     | Length/height for age |        |           | MUAC (cm)                 |        |             |
|---------------------|--------------|----------------|--------|-----------|-------------------|--------|-----|-----------------------|--------|-----------|---------------------------|--------|-------------|
|                     |              | Under weight   | normal | P         | wasting           | normal | P   | stunting              | normal | P         | Chronic energy deficiency | normal | p           |
| Sex of child        | Female       | 5(62.5%)       | 59     | ns        | 4(50%)            | 60     | ns  | 6(50%)                | 58     | ns        | 15(55.5%)                 | 49     | ns          |
|                     | Male         | 3(37.5%)       | 66     |           | 4(50%)            | 65     |     | 6(50%)                | 63     |           | 12(44.4%)                 | 57     |             |
|                     | total        | 8              | 125    |           | 8                 | 125    |     | 12                    | 121    |           | 27                        | 106    |             |
| Household income    | 500-1000     | 2(25%)         | 31     | ns        | 4(50%)            | 29     | ns  | 5(41.6%)              | 28     | ns        | 15(55.5%)                 | 20     | .021<br>**  |
|                     | 1001-1500    | 2(25%)         | 21     |           | 2(25%)            | 21     |     | 2(16.6%)              | 21     |           | 5(18.5%)                  | 18     |             |
|                     | 1501-2000    | 1(12.5%)       | 18     |           | 1(12.5%)          | 18     |     | 3(25%)                | 16     |           | 1(3.7%)                   | 18     |             |
|                     | 2001-2500    | 1(12.5%)       | 10     |           | 0                 | 11     |     | 1(8.3%)               | 10     |           | 2(7.4%)                   | 9      |             |
|                     | 2501-3000    | 0              | 16     |           | 0                 | 16     |     | 0                     | 16     |           | 4(14.8%)                  | 12     |             |
|                     | 3001-4000    | 1(12.5%)       | 14     |           | 1(12.5%)          | 14     |     | 1(8.3%)               | 4      |           | 2(7.4%)                   | 13     |             |
|                     | >4000        | 1(12.5%)       | 15     |           | 0                 | 16     |     | 0                     | 16     |           | 0                         | 16     |             |
|                     | total        | 8              | 125    |           | 8                 | 125    |     | 12                    | 121    |           | 27                        | 106    |             |
| Education (mothers) | Illiterate   | 1(12.5%)       | 23     | ns        | 0                 | 24     | ns  | 2(16.6%)              | 22     | ns        | 10(37%)                   | 14     | .087<br>*** |
|                     | Read & write | 3(37.5%)       | 33     |           | 3(37.5%)          | 33     |     | 3(25%)                | 33     |           | 6(22.2%)                  | 30     |             |
|                     | Grades 1-5   | 1(12.5%)       | 11     |           | 1(12.5%)          | 11     |     | 1(8.3%)               | 11     |           | 3(11.1%)                  | 9      |             |
|                     | Grades 6-8   | 3(37.5%)       | 47     |           | 4(50%)            | 46     |     | 6(50%)                | 44     |           | 6(22.2%)                  | 44     |             |
|                     | Grades 9-12  | 0              | 10     |           | 0                 | 10     |     | 0                     | 10     |           | 2(7.4%)                   | 8      |             |
|                     | College/univ | 0              | 1      |           | 0                 | 1      |     | 0                     | 1      |           | 0                         | 1      |             |
|                     | Total        | 8              | 125    |           | 8                 | 125    |     | 12                    | 121    |           |                           |        |             |
| Number of children  | Two          | 0              | 3      | ns        | 0                 | 3      | .ns | 0                     | 3      | ns        | 0                         | 3      | ns          |
|                     | Three        | 1(12.5%)       | 21     |           | 2(25%)            | 20     |     | 2(16.6%)              | 20     |           | 5(18.5%)                  | 17     |             |
|                     | Four         | 3(37.5%)       | 32     |           | 3(37.5%)          | 32     |     | 3(25%)                | 32     |           | 12(44.4%)                 | 23     |             |
|                     | Five         | 2(25%)         | 37     |           | 2(25%)            | 37     |     | 2(16.6%)              | 37     |           | 7(25.9%)                  | 32     |             |
|                     | Six          | 2(25%)         | 18     |           | 19(12.5%)         | 19     |     | 1(8.3%)               | 19     |           | 2(7.4%)                   | 18     |             |
|                     | >six         | 0              | 14     |           | 0                 | 14     |     | 0                     | 14     |           | 1(3.7%)                   | 13     |             |
|                     | Total        | 8              | 125    |           | 8                 |        |     | 12                    | 121    |           | 27                        |        |             |
| DD                  | <4 food item | 4(50%)         | 4      | .000<br>* | 1(12.5%)          | 7      | ns  | 4(33.3%)              | 4      | .000<br>* | 2(7.4%)                   | 6      | ns          |
|                     | >= food item | 4(50%)         | 121    |           | 7(87.5%)          | 118    |     | 8(66.7%)              | 117    |           | 25(92.6%)                 | 100    |             |
|                     | Total        | 8              | 125    |           | 8                 |        |     |                       |        |           |                           |        |             |

Chi-square significance: \* = p &lt; 0.01, \*\* = p &lt; 0.05; \*\*\* = p &lt; 0.1; n. s. not significant

Table 18 b. Chi-square distribution of variables for nutritional status of children in Tehuledere Woreda , kebele 026

| Variable            | Category     | Nutritional status of children |        |     |                   |        |           |                        |        |            |                                         |        |                |
|---------------------|--------------|--------------------------------|--------|-----|-------------------|--------|-----------|------------------------|--------|------------|-----------------------------------------|--------|----------------|
|                     |              | weight-for-age                 |        |     | weight-for-height |        |           | Length/height for age/ |        |            | MUAC (cm) Chronic energy deficiency (%) |        |                |
|                     |              | Under nutrition                | normal | P   | Wasting           | Normal | P         | Stunting               | normal | P          | Yes                                     | Normal | p              |
| Sex                 | Female       | 1(33.3%)                       | 57     | ns  | 3(42.9%)          | 55     | n.s       | 4(22.2%)               | 54     | .006<br>** | 9(52.9%)                                | 49     | n.s            |
|                     | Male         | 2(66.7%)                       | 52     |     | 4(57.1%)          | 50     |           | 14(77.8%)              | 40     |            | 8(47.1%)                                | 46     |                |
|                     | Total        | 3                              | 109    |     | 7                 | 105    |           | 18                     | 94     |            | 17                                      | 95     |                |
| Household income    | 500-1000     | 3(100%)                        | 38     | n.s | 4(57.1%)          | 32     | n.s       | 5(27.8%)               | 36     | n.s        | 9(52.9%)                                | 32     | n.s            |
|                     | 1001-1500    | 0                              | 26     |     | 2(28.6%)          | 24     |           | 5(27.8%)               | 21     |            | 4(23.5%)                                | 22     |                |
|                     | 1501-2000    | 0                              | 18     |     | 1(14.3%)          | 12     |           | 5(27.85)               | 13     |            | 3(17.6%)                                | 15     |                |
|                     | 2001-2500    | 0                              | 13     |     | 0                 | 13     |           | 1(5.6%)                | 12     |            | 0                                       | 9      |                |
|                     | 2501-3000    | 0                              | 11     |     | 0                 | 11     |           | 2(11.1%)               | 9      |            | 1(5.9%)                                 | 13     |                |
|                     | 3001-4000    | 0                              | 3      |     | 0                 | 3      |           | 0                      | 3      |            | 0                                       | 10     |                |
|                     | Total        | 3                              | 109    |     | 7                 | 105    |           | 18                     | 94     |            | 17                                      | 95     |                |
| Education (mothers) | Illiterate   | 0                              | 8      | n.s | 0                 | 8      | n.s       | 2(11.1%)               | 6      | n.s        | 1(5.9%)                                 | 7      | n.s            |
|                     | Read & write | 1(33.3%)                       | 30     |     | 1(14.3%)          | 30     |           | 5(27.8%)               | 26     |            | 7(41.2%)                                | 24     |                |
|                     | Grades 1-5   | 1(33.3%)                       | 27     |     | 2(28.6%)          | 27     |           | 5(27.8%)               | 23     |            | 5(29.4%)                                | 23     |                |
|                     | Grades 6-8   | 1(33.3%)                       | 37     |     | 4(57.1%)          | 37     |           | 5(27.8%)               | 33     |            | 3(17.6%)                                | 35     |                |
|                     | Grades 9-12  | 0                              | 6      |     | 0                 | 6      |           | 1(5.6%)                | 5      |            | 1(5.9%)                                 | 5      |                |
|                     | Total        | 3                              | 109    |     | 7                 | 105    |           | 18                     | 94     |            | 17                                      | 95     |                |
| Number of children  | Two          | 0                              | 9      | n.s | 0                 | 9      | n.s       | 1(5.6%)                | 8      | n.s        | 4(23.5%)                                | 5      | .02<br>6<br>** |
|                     | Three        | 2(66.7%)                       | 16     |     | 0                 | 18     |           | 1(5.6%)                | 17     |            | 4(23.5%)                                | 14     |                |
|                     | Four         | 0                              | 30     |     | 4(57.1%)          | 26     |           | 7(38.9%)               | 23     |            | 1(5.9%)                                 | 29     |                |
|                     | Five         | 0                              | 30     |     | 1(14.3%)          | 29     |           | 5(27.8%)               | 25     |            | 5(29.4%)                                | 25     |                |
|                     | Six          | 0                              | 12     |     | 0                 | 12     |           | 2(11.1%)               | 10     |            | 0                                       | 12     |                |
|                     | >six         | 1(33.3%)                       | 12     |     | 2(28.6%)          | 11     |           | 2(11.1%)               | 11     |            | 3(17.6%)                                | 10     |                |
|                     | Total        | 3                              | 109    |     | 7                 | 105    |           | 18                     | 94     |            | 17                                      | 95     |                |
| DD                  | <4 food item | 0                              | 10     | n.s | 4(57%).           | 4      | .00<br>0* | 4(5.6%)                | 4      | .000<br>*  | 9(23.5%)                                | 5      | n.s            |
|                     | >= 4fooditem | 3(100%)                        | 99     |     | 3(42.9%)          | 99     |           | 8(94.4%)               | 96     |            | 85(76.5%)                               | 84     |                |
|                     | Total        | 3                              | 109    |     | 7                 | 103    |           | 12                     | 100    |            | 17                                      | 89     |                |

Chi-square significance: \* = p &lt; 0.01, \*\* =p &lt; 0.05; \*\*\* = p &lt; 0.1; n. s. not significant

## **CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS**

### **5.1. Conclusion**

The study showed that the socio-economic and demography of the households, especially the mothers' educational status was relatively of good standards. But it did not translate much in terms of food safety or nutrition KAP. In the study population, although mild or moderate food insecurity was experienced by respondents in both *kebeles*, there were no severely food insecure households. It indicated no hunger but there was worrying about not having enough food or eating monotonous diets or undesirable foods or reducing the size or number of meals in most households.

This study has shown that there were food safety gaps in terms knowledge, attitude and practice of food handling, personal hygiene and water sanitation. When we see the child dietary diversity most of the households gave to their children one or two types of food groups. There was no diet diversity in the study area, thus, leading to poor nutritional status of children. However, the nutritional status of the children was relatively lower according to Ethiopia Demographic Health Survey report. (EDHS, 2016)

### **5.2. Recommendations**

1. Households should be educated on basic hygiene principles such as critical moments to wash hands, methods of appropriate hand washing, methods to store left over foods, separation of raw and cooked foods, proper personal hygiene during food handling and practice of treating unsafe water.
2. A communication strategy on proper food handling practice to households and communities in urban and rural regions can be developed through collaborated efforts by relevant stakeholders especially health extension to provide information on food safety.
3. The households should feed their children at least four types of food group to develop their mental and physical growth which means minimize child underweight, stunting and wasting rate.
4. There is need for further research to study the effect of food safety practice on nutritional status of children.

## Reference

- ACC/SCN (2000). Administrative Committee on Coordination Sub Committee on Nutrition Fourth Report on the World Nutrition Situation. United Nation, Geneva. pp. 20 - 34.
- Adeladza, T. A., (2009). The Influence of Socio-economic and Nutritional Characteristics on Child Growth in Kwale District of Kenya. *African Agriculture Nutrition and Development*. 9, 1584-5374.
- Akabanda, F., Hlortsi, E.H. and Owusu-Kwarteng, J. (2017). Food safety knowledge, attitudes and practices of institutional food-handlers in Ghana. *BMC Public Health*, 17:40-46
- Alom, J., Islam, M., and Quddus, A. .(2009). Socioeconomic factors influencing nutritional status of under-five children of agrarian families in bangladesh: a multilevel analysis. *Bangladesh Journal of Agricultural Economics*. 32, 63-74.
- Annika, I. (2009). How much can a KAP survey tell us about peoples Knowledge, Attitudes and Practices? *Anthropology matters Journal*, 11, 5-13.
- Barrabeig, I., Rovira, A., Buesa, J., Bartolome, R., Pinto, R., Pallezo, H., and Dominguez, A (2010). Foodborne norovirus outbreak: The role of an asymptomatic food handler.
- Beatty, M., Chevy G., Shupe-RickSecker, K., Bannister, E., Toyota, A., Lancaster, K. and Braden, C. (2009). Large salmonella enteritis outbreak with prolonged transmission attributed to an infected food handler, Texas, 2002. *Epidemiological Infection*, 137, 417-427.
- Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, Mathers C, and Rivera J, (2008). For the Maternal and Child Undernutrition Study Group. *Maternal and child undernutrition: global and regional exposures and health consequences*, 371:243–60.
- Coates, J., Swindale, A. and Bilinsky, P. (2007). Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator guide (v.3). Washington DC. Food and Nutrition Technical Assistance (FANTA) project.
- Cochran, W. G. (1963). *Sampling Techniques*, 2nd Ed., New York: John Wiley and Sons, Inc.



- CSA (Ethiopia) and ICE, (2011). Ethiopia Demographic and Health Survey 2011, Addis Ababa, Ethiopia, and International, Calverton, MD
- EDHS (Ethiopia) and ICE, (2016). Ethiopia Demographic and Health Survey (2016), Addis Ababa, Ethiopia, and Rockville, Maryland, USA.
- Deonis, M., Garza, C., Victora, C.G., Onyango, A.W., Frongillo, E.A. and Martines, J. (2008) The WHO multicenter reference study: Planning, study design, and methodology. *Food and nutrition bulletin*, 25:15-26.
- DeBruyne, K.L., Whitney, E., Pinna, K. and Rolfes, R.S. (2007). *Nutrition for Health and Health Care* (third Edition). USA: Thomson Higher Education, pp 4-5.
- Dewey K.G, and Brown K.H. (2003). Update on technical issues concerning complementary feeding of young children in developing countries and implications for intervention programs. *Food and Nutrition Bulletin*. 24(1):5–28.
- Dewey, K.G. (2003). Guiding Principles for Complementary Feeding of Breastfed Child: PAHO and WHO. Washington DC
- FAO (2001), Handbook for Defining and Setting up a Food Security Information and Early Warning System (FSIEWS), Rome, Italy, pp.128
- Fein,S.B.,Lando,A.M.,Levy,A.S.,Tesil,M.F., andNoblet,C. (2011) . Trends in US consumer's safe handling and consumption of food and their risk perception .*Journal of food Protection*. 74 (9), 1513-1523.
- George, A., and Ekua, A. (2011). Evaluation of Food Hygiene Knowledge Attitudes and Practices of Food Handlers in Food Businesses in Accra, Ghana. *Food and Nutrition Sciences*, 830-836.
- Gillespie, S. and Haddad, L. (2001). Attacking the double burden malnutrition in Asia and Pacific. *European Journal of Clinical Nutrition* 59, (9):1049-58.
- Banderali,G.,Scaglioni, S., Veehof, S., Sala,M., Radaelli, G. and Agosttoni (2004). Feeding practices of infants through the first year of life in Italy. Department of pediatrics and Unit of Medical Statistics Italy.SauloPauloHospital.University of Milan.

- Gnanasumathi, S., and Ramesh, K. S. (2014). Food Safety Knowledge and Practices of Consumers in Tamil Nadu. *Reaserch Journal of commerce and behavioral science*, 3, 19-24.
- Griffith, C. J. (2000). Food safety: Where from and where to? *British Food Journal*, 108(1), 6-16
- King, F. and Burgess, A. (1998). Nutrition for Developing Countries, 2nd ed. Oxford University Press, New York. pp. 462.
- Krebs, N. and Westcott, J. (2002). Zinc and breastfed infants: if and when is there a risk of deficiency? *Advances in Experimental Medicine and Biology*, 503:69–75.
- Laurens, W. (2012). Is maternal nutrition knowledge more strongly associated with the diets of mothers or their children school-aged? *Public Health Nutrition*. 15(8): 1396-1401.
- Lee, H.K., Abdul Halim, H. Thong, K.L. and Chai, L.C. (2017). Assessment of Food Safety Knowledge, Attitude, Self-Reported Practices, and Microbiological Hand Hygiene of Food Handlers *International Journal of Environmental Research and Public Health*, 14, 55-69.
- Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, Rudan I, Campbell H, Cibulskis R, Li M, Mathers C, and Black RE,(2012), for the Child Health Epidemiology Reference Group of WHO and UNICEF. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet*. 2012; 379:2151–61.
- Macías, Y. and Glasauer, P. 2014. Guidelines for assessing nutrition-related Knowledge, Attitudes and Practices. Guidelines for assessing nutrition-related Knowledge, Attitudes and Practices. Food and Agriculture Organization of the United Nations, Rome
- Maunder E., Matji J, and Hlatshwayo-Molea T. 2001. Enjoy a variety of foods-Difficult but necessary in developing countries. *Journal of Clinical Nutrition* 14 (3) Supplement.
- Medeiros, L., Hillers, V., Kendall, P., and Mason, A. 2001. Evaluation of food safety education for consumers. *Journal of Nutritional Education*, 33(1), 27-34.

- Melkam Aemro, MollaMesele, Zelalem Birhanu<sup>3</sup> and Azeb Atenafu **(2013)**; Dietary Diversity and Meal Frequency Practices among Infant and Young Children Aged 6–23 Months in Ethiopia.
- Mendagudali, R., Akka, K., Swati, I., Shedole , D., and Bendigeri , N. (2016). Knowledge, attitude, and practices of food safety among women of Khaza bazar, the urban field practice area of KBN Institute of Medical Sciences, Kalaburagi, Karnataka. *International Journal of Medical Science and Public Health*, 5, 516-520.
- Miller, J. E. and Rodgers, Y. V., (2009). Mother's Education and Children's Nutritional Status: New Evidence from Cambodia. *Asian Development Review*. 26(1): 131-165.
- Ministry of Health (MoH), Federal Democratic Republic of Ethiopia (FDRE). Infant & Young Child Feeding Quick Reference Book (0–24 months), 2010
- Mohd , F. S., Son, R., Mohhiddin , O., Toh, P. S., and Chai, L. C. (2015). Food court hygiene assessment and food safety knowledge, attitudes and practices of food handlers in Putrajaya. *International Food Research Journal*, 22(5); 1843-1854.
- Naeem, N., Raza, S., Mubeen, H., Siddiqui, S. and Khokhar, R. (2018). *Journal of Food Safety*. DOI: 10.1111/jfs.12513
- OliveiraI, J. de LiraII, P. , de Carvalho, A., Barros, M. , LimaI, M. 2013. Factors associated with nutritional status in infants attending public daycare centers in the municipality of Recife, PE, Brazil. *Brazilian Journal of Epidemiology* 16(2): 502-512
- Onah, S., Osuorah<sup>1</sup>, D., Ebenebe, J., Ezechukwu, C. Ekwochi, U. and Ndukwu,I. (2014). Infant feeding practices and maternal socio-demographic factors that influence practice of exclusive breastfeeding among mothers in Nnewi South-East Nigeria: a cross-sectional and analytical study. *International Breastfeeding Journal* 9(6): 1-10.
- Ongosi, A. N., 2010. Nutrient Intake and Nutrition Knowledge of Lactating Women (0-6 months postpartum) in a Low Socio-Economic Area in Nairobi, Kenya, Pretoria: University of Pretoria.

- Patil, S., Cates, S., & Morales, R. (2005). Consumer Food Safety Knowledge, Practices, and Demographic Differences: Findings from a Meta-Analysis. *Journal of Food Protection*, 9(11); 1884-1894.
- Penny, T., Kate, B., and Harriet, E. (2005). *Child Care and Education*. 2nd ed. Heinemann.
- Rahman, M., Arif, M., Bakar, K., & Tambi, Z. (2012). Food safety knowledge, attitude and hygiene practices among the street food vendors in Northern Kuching city, Sarawak. *Borneo Sci*, 95–103.
- Schopper, D., Doussantousse, S., and Orav, J. (1993). Sexual behaviors relevant to HIV transmission in a rural African population: How much can a KAP survey tell us? *Social Science & Medicine*, 37(3), 401-412.
- Seaman, P. and Eves A. (2010). Perceptions of hygiene training amongst food handlers, managers and training providers—A qualitative study. *Food Control*. 21(7); 1037–41.
- Sharif, L, and Al-Malki T. (2010) Knowledge, attitude and practice of Taif University students on food poisoning. *Food Control*. 21(1):55–60.
- Subbulakshmi, G., Rameshkumar, S., & Padma, P. P. (2012). Awareness and Attitudes of Food Safety Knowledge and Practices: It's Impact on Practical execution of Food Safety. *Research Journal of Economics and Business Studies*, 2(2), 42-46.
- Sudershan, R., Rao, G., Rao, P., Rao, M., & Polasa, K. (2008). Food safety related perceptions and practices of mothers: a case study in Hyderabad, India. *Food Control*, 19(5), 506–13.
- Swindale A, and Bilinsky P (2006). Household Dietary Diversity Score (HDDS) for measurement of household food access: Indicator guide (v.2). Washington DC. Food and Nutrition Technical Assistance (FANTA) project. Academy for educational Development, pp. 1-9.
- TWOA, 2011. Tehuledere Woreda Office of Agriculture. Annually report.
- TWOA, 2015. Tehuledere Woreda Office of Agriculture. Annually report.
- TWOA, 2016. Tehuledere Woreda Office of Agriculture. Annually report.

- Tolulope, O., Zuwaira , I., Danjuma , A., Yetunde , O., Chundung , A., and Ayuba, I. (2015). Training: a vital tool for improving the knowledge and practice of food safety and hygiene among food handlers in boarding schools in Plateau state. *Journal of Medicine in the Tropics*, 16(2): 87-92.
- UNICEF, 2008. State of the World's Children.UNICEF, New York.
- UNICEF, 2012. Programming Guide, Infant and Young Child Feeding. International Food Policy
- UNICEF, 2012. The World Bank, UNICEF-WHO-World Bank Joint Child Malnutrition Estimates (UNICEF, New York; WHO, Geneva; the World Bank, Washington, DC
- UNICEF, 2013. Improving Child Nutrition: The achievable imperative for progress, New York: United Nations
- Walsona and Berkley (2018) .The impact of malnutrition on childhood infections. Paediatric and neonatal infections.31 (3): 231-236.
- Wardlaw, M.G, Hampl, S.J. and Disilvestro, A.R. (2004). Perspectives in Nutrition: McGraw Hill Companies Inc. New York
- Weinstein, J. (1991). The clean restaurant II: Employee hygiene. *Restaurants and Institutions*, 101; 138-139.
- WHO. (1995). *Physical status: The use and Interpretation of Anthropometry*. Geneva: World Health Organization
- WHO (1998). The World Health Report. Life in the 21 Century; A Vision for all. World Health Organization, Geneva. p. 27.
- WHO. 2001). Iron deficiency anemia: assessment, prevention and control, a guide for programme managers. Geneva: World Health Organization.
- WHO 2002. Complementary feeding Report of the global consultation. Summary of guiding principlesfor complementaryfeeding of breastfed *child*. World Health Organization Geneva, Switzerland.
- WHO. (2007) Indicators for assessing infant and young child feeding practices: conclusions of a consensus meeting held 6–8 November 2007

- WHO. (2008). Strengthening action to improve feeding of infants and young children 6–23 months of age in nutrition and child health programme: report of proceedings, Geneva, 6–9 October 2008.
- WHO. (2010). Indicators for assessing infant and young child feeding practices: part 3: country profile. Geneva
- WHO. (2013). Essential Nutrition Actions: improving maternal, newborn, infant and young child health and nutrition. World Health Organization 20, Avenue Appia - 1211 Geneva 27 – Switzerland.
- WHO. (2014). Comprehensive implementation plan on maternal, infant and young child nutrition. Geneva.
- WHO. (2006). *WHO Child Growth Standards: Length/Height-for-Age, Weight-for-Age, Weight-for-Length, Weight-for-Height and Body Mass Index-for-Age: Methods and Development*, WHO, Geneva, Switzerland, 2006
- WHO (2015) Food Safety Fact Sheet No. 399. Retrieved 25, 4, 2019 from WHO.  
<http://www.who.int/mediacentre/factsheets/fs399/en/>
- World Health Organization (WHO, 2017). Hygiene. Retrieved on 27/04/2019
- WHO. Infant and young child feeding. In: WHO fact sheet; 2017
- WHO. (2016, 2 3). *Food safety*. Retrieved 25, 4, 2019 from World Health Organization:  
[http://www.who.int/topics/food\\_safety/factsheets/en/](http://www.who.int/topics/food_safety/factsheets/en/)
- WHO 2010. Food safety. World Health Organization Retrieved on 27/4/2019 from  
<http://www.who.int/foodsafety/consumer/5keys/en/>
- Yirgu Fekadu, Addisalem Mesfin, Demewoz Haile and Stoecker, B. 2015. Factors associated with nutritional status of infants and young children in Somali Region, Ethiopia: a cross-sectional study. *BMC Public Health* 15:846-855

## Annex 1. Participant Information Sheet and Consent

Hello. My name is Ahmed Endris and I am a student at Addis Ababa University. I am conducting a study on investigate food safety knowledge, attitude and practices (KAP) and nutritional status of household members with emphasis on child nutrition in Tehuledere Woreda, South Wollo, Ethiopia from January –February ,2019. I and health extension will ask you questions about your food safety, personal hygiene & sanitation , infants feeding and will also measure your infants Mid Upper Arm Circumference, weight and height.

Your participation in this study will not involve any known risks or minimal risk to you. By participating in this study and answering the question you will not receive any direct benefit. However, this will help to improve the child nutritional status by understanding food safety. Personal hygiene and child feeding practice based on information obtained from you. Whatever information you shall provide will be kept strictly confidential and will not be shown to any other persons. Participation in the study is voluntary and you can choose not to answer any individual question or all of the questions.

|                    |                          |       |
|--------------------|--------------------------|-------|
| .....              | .....                    | ..... |
| Name of respondent | Signature of respondent: | Date  |
| .....              | .....                    | ..... |
| Name of researcher | Signature of researcher  | Date  |

## Annex 2: English Questionnaire Version 1

This is a study on the food safety knowledge, attitude and practices (KAP) in rural households and assessment of Wollo, Ethiopia

Part 1; Demographic and socio-economic data

| No  | Question (variable)          | Response option                                                                                                                                                                        | Response |
|-----|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1.1 | Age of mother                | -----                                                                                                                                                                                  |          |
|     | Age of father /              | -----                                                                                                                                                                                  |          |
| 1.2 | Marital status               | 01. Single                      04. Widowed<br>02. Married                      05. Widower<br>03. Divorced                                                                            |          |
| 1.3 | Religion                     | 01. Muslim                      03. Catholic<br>02. Orthodox                      04. protestant                                                                                       |          |
| 1.4 | Mother's Level of Education  | 01. can't read & write<br>02. can read & write<br>03. Grade 1-5/h1-5                      04. Grade 6-8/h 6-8<br>05. Grade 9-12/h 9-12                      06. College /university    |          |
|     | Father's Level of Education  | 01. can't read & write<br>02. can read & write<br>03. Grade 1-5/ h 1-5                      04. Grade 6-8/h 6-8<br>05. Grade 9-12/ h 9-12                      06. College /university |          |
| 1.5 | Mothre's Occupation          | 01. Housewife                      04. Merchant<br>02. Farmer                      05. Daily labor<br>03. Govt. employee                                                               |          |
|     | Father's Occupation          | 01. Farmer<br>03. Govt. employee                      04. Merchant                      05. Daily labor                                                                                |          |
| 1.6 | Monthly income (Birr)        | -----                                                                                                                                                                                  |          |
| 1.7 | Number of children/househods | -----                                                                                                                                                                                  |          |
| 1.8 | Age of infant /              | -----                                                                                                                                                                                  |          |
| 1.9 | Sex of infant                | 01. female                                                                                                                                                                             |          |
|     |                              | 02. male                                                                                                                                                                               |          |



## Part 2. Household Food Insecurity Access Scale (HFIAS) Measurement Tool

| No | Question                                                                                                                                                                         | Response options                                                                                                                                                         | Code |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1  | . In the past four weeks, did you worry that your household would not have enough food?                                                                                          | 0 = No (skip to Q2)<br>1=Yes                                                                                                                                             | . _  |
| 1a | How often did this happen?                                                                                                                                                       | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _  |
| 2  | 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 Q3)<br>1=Yes                                                                                                                                             | . _  |
| 2a | How often did this happen?                                                                                                                                                       | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _  |
| 3  | 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 Q4)<br>1 = Yes                                                                                                                                           | . _  |
| 3a | How often did this happen?                                                                                                                                                       | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _  |
| 4  | 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 Q5)<br>1 = Yes                                                                                                                                           | . _  |
| 4a | How often did this happen?                                                                                                                                                       | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _  |
| 5  | 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 Q6)<br>1 = Yes                                                                                                                                           | _    |
| 5a | How often did this happen?                                                                                                                                                       | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times                                                                                   | . _  |

|    |                                                                                                                                             |                                                                                                                                                                          |     |
|----|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|    |                                                                                                                                             | in the past four weeks)<br>3 = Often (more than ten times in the past four weeks)                                                                                        |     |
| 6  | 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 Q7)<br>1 = Yes                                                                                                                                           | . _ |
| 6a | How often did this happen?                                                                                                                  | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _ |
| 7  | In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?               | 0 = No (skip to Q8)<br>1 = Yes                                                                                                                                           | . _ |
| 7a | How often did this happen?                                                                                                                  | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _ |
| 8  | 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 Q9)<br>1 = Yes                                                                                                                                           | . _ |
| 8a | How often did this happen?                                                                                                                  | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _ |
| 9  | 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)<br>1 = Yes /                                                                                                                          | . _ |
| 9a | How often did this happen?                                                                                                                  | 1 = Rarely (once or twice in the past four weeks)<br>2 = Sometimes (three to ten times in the past four weeks)<br>3 = Often (more than ten times in the past four weeks) | . _ |

### Part 3: Food handling

I am going to ask you some questions about food handling. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

#### 3.1 Food handling attitude

| No | Questions                                                                                                                                          | Response option                                                                                                                           | Answer |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | How likely do you think you are to get sick from eating contaminated food?                                                                         | 1=. Not likely - 2= You're not sure –<br>3= Likely - <i>If Not likely:</i><br><u>Can you tell me the reason why it is not likely?</u>     |        |
| 2  | How serious do you think it is to be sick from eating contaminated food?<br>..                                                                     | 1=. Not serious –<br>2=. You're not sure -<br>3= Serious -<br><i>If Not Serious Can you tell me the reason why it is not serious?</i>     |        |
| 3  | How good do you think it is to keep meat, poultry, fish, seafood or cooked food in a cool place, for example in a cool box or in the refrigerator? | 1=. Not good –<br>2=. You're not sure –<br>3=. Good -<br><i>If Not good: Can you tell me the reasons why it is not good? _____</i>        |        |
| 4  | How good do you think it is to reheat leftovers before eating or serving them?                                                                     | 1=. Not good -<br>2=. You're not sure -<br>3=. Good -<br><i>If Not good: Can you tell me the reasons why it is not good? _____</i>        |        |
| 5  | How difficult is it for you to reheat leftovers before eating or serving them?                                                                     | 1= Not difficult -<br>2=. So-so -<br>3= Difficult -<br><i>If Difficult: Can you tell me the reasons why it is difficult? _____</i>        |        |
| 6  | How good do you think it is to wash fruits and vegetables with clean water?                                                                        | 1=. Not good -<br>2=. You're not sure -<br>3= Good -<br><i>If Not good: Can you tell me the reasons why it is not good? _____</i>         |        |
| 7  | How difficult is it for you to wash fruits and vegetables with clean water?<br>..                                                                  | 1=. Not difficult<br>2=. So-so -<br>3=. Difficult - <i>If Difficult:</i><br><u>Can you tell me the reasons why it is difficult? _____</u> |        |

### 3.2 Food handling Knowledge

| No | Questions                                                                                                                            | Response option                                                                                                                                                                                                                                             | Answer |
|----|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | Why should you prevent raw meat, offal, poultry and seafood from touching other foods such as those that are cooked or ready to eat? | 1=Raw animal foods often contain germs (which may be transferred to cooked and ready-to-eat foods) -<br>2=Other -<br>3=Don't know                                                                                                                           |        |
| 2  | When cooking soups and stews, what sign shows that these are ready and safe to be served?                                            | 1=They are boiling/ well cooked -<br>2=Other -<br>3=Don't know -                                                                                                                                                                                            |        |
| 3  | What kinds of food should be placed in the refrigerator or in a cool place, such as an icebox or cool box?                           | Perishable foods<br>1=Meat, offal -<br>2=Poultry -<br>3=Fish -<br>4=Milk/dairy products -<br>5= Cooked foods -<br>6=Other -<br>7=Don't know -                                                                                                               |        |
| 4  | Why should someone avoid eating leftovers that were not kept in a cool place?                                                        | 1=Because food is not safe anymore -<br>2=Foods get spoiled (germs multiply very quickly and can cause illness) -<br>3= Higher temperatures make germs grow faster -<br>4=Other -<br>5=Don't know<br>6=(Any of the three first response options is correct) |        |
| 5  | What should you do before eating raw fruits and vegetables?                                                                          | 1=Wash them with clean water -<br>2= Other -<br>3= Don't know -                                                                                                                                                                                             |        |

### 3.3 Food handling Practices

| No | Questions                                                                                                                                 | Response option                                                                                                                                                                                     | Answer |
|----|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | After you have prepared dinner, kitchen surfaces, pots, pans, plates and utensils are dirty. Can you describe how you clean them usually? | 1=Scrape excess food into rubbish bin<br>2=Wash with hot water -<br>3=Wash with detergent -<br>4=Don't know/no answer -                                                                             |        |
| 2  | How do you store perishable fresh foods such as raw meat, poultry and seafood?                                                            | 1= In the refrigerator (below 5 °C)/cool box<br>2=Covered (protected from insects, rodents, pests and dust)<br>3=Separated from cooked or ready-to-eat foods<br>4=Other<br>5=Don't know/no answer - |        |

#### Part 4: Personal hygiene Attitudes

| No | Questions                                                                                                                                                                                                                                                                  | Response option                                                                                                                                | Answer |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | How likely do you think you are to become sick, such as having stomach ache or diarrhoea, from not washing your hands? <i>OR</i> How likely do you think it is that your child will become sick, such as having stomach ache or diarrhea, from you not washing your hands? | 1=. Not likely -<br>2=. You're not sure -<br>3= Likely - If Not likely: Can you tell me the reason why it is not likely? _____                 |        |
| 2  | How serious do you think it is if you or your child gets sick from you not washing your hands? <i>OR</i> How serious do you think diarrhea is for your health? <i>OR</i> How serious do you think is diarrhea for a baby's health?                                         | 1=.Not really serious<br>2=. Neutral/unsure<br>3=. Serious<br>If Not Serious:<br>Can you tell me the reason why it is not serious? _____       |        |
| 3  | How good do you think it is to wash your hands before preparing food? <i>OR</i> How good do you think it is to wash your hands before feeding a child/eating?                                                                                                              | 1=Not good -<br>2=. You're not sure -<br>3=Good -<br><i>If Not good:</i> Can you tell me the reasons why it is not good? _____                 |        |
| 4  | How difficult is it for you to wash your hands before preparing food? <i>OR</i> How difficult is it for you to wash your hands before feeding a child/eating?                                                                                                              | 1=. Not difficult -<br>2=. So-so -<br>3= Difficult -<br><i>If Difficult:</i> Can you tell me the reasons why it is difficult? _____            |        |
| 5  | How confident do you feel in washing your hands properly?                                                                                                                                                                                                                  | 1=. Not confident -<br>2= Ok/so-so -<br>3=. Confident - <i>If Not confident:</i><br>Can you tell me the reasons why you do not feel confident? |        |

#### 4.2 Personal hygiene Knowledge

| No | Questions                                                                                                                                   | Response option                                                                                                                                                                                                                                                       | Answer |
|----|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | Food poisoning often results from contact with germs from faeces. What can you do to avoid sickness from germs from human or animal faeces? | 1=Wash hands (after going to the toilet and cleaning the baby's bottom)<br>2=Remove faeces from the home and surroundings (use a latrine, teach small children to use a potty and put children's faeces in the latrine, and clean up faeces from animals)<br>3= Other |        |

|   |                                                                                                                         |                                                                                                                                                                                                                                                                               |  |
|---|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|   |                                                                                                                         | 4=Don't know                                                                                                                                                                                                                                                                  |  |
| 2 | There are key moments when you need to wash your hands to prevent germs from reaching food. What are these key moments? | 1=After going to the toilet/latrine -<br>2=After cleaning the baby's bottom/changing a baby's nappy -<br>3=Before preparing/handling food -<br>4= Before feeding a child/eating -<br>5=After handling raw food<br>6= After handling garbage -<br>7= Other -<br>8=Don't know - |  |

#### 4.3 Personal hygiene Practices

| No | Questions                                                       | Response option                                                                                                                                                                                                                                                                                                 | Answer |
|----|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | Could you please describe step by step how you wash your hands? | 1= Washes hands in a bowl of water (sharing with other people) — poor practice<br>2=. With someone pouring a little clean water from a jug onto one's hands — appropriate practice<br>3= Under running water — appropriate practice<br>4= Washes hands with soap or ashes<br>5= Other<br>6=Don't know/no answer |        |

#### Part 5: Water and sanitation Attitudes

| No | Questions                                                                                                                                                        | Response option                                                                                                                                | Answer |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | How likely do you think you are to get diarrhoea from using unsafe water?<br>OR -How likely do you think your child is to get diarrhoea from using unsafe water? | 1= Not likely -<br>2= You're not sure<br>3= Likely<br><i>If Not likely:</i> Can you tell me the reason why it is not likely? -                 |        |
| 2  | How serious do you think it is to get sick from using unsafe water?                                                                                              | 1=. Not really serious -<br>2=. Neutral/serious<br>3=. Serious -<br><i>If Not serious:</i> Can you tell me the reason why it is not serious? - |        |
| 3  | How good do you think it is to boil water before drinking or using it?                                                                                           | 1=. Not good -<br>2=. You're not sure -<br>3=. Good -<br><i>If Not good:</i> Can you tell me the reasons why it is not good?                   |        |
| 4  | How difficult is it for you to boil water before drinking or using it?                                                                                           | 1=. Not difficult -<br>2= So-so –<br>3= Difficult - <i>If Difficult:</i> - Why it is difficult? _____                                          |        |
| 5  | How confident do you feel in boiling water before drinking or using it?                                                                                          | 1= Not confident<br>2=. Ok/so-so<br>3= Confident -<br><i>If Not confident:</i> Can you tell me the reasons why you do not feel confident?      |        |

## 5.2 Water and sanitation Knowledge

| No | Questions                                                                                                                                    | Response option                                                                                                                                                                                                                                                                  | Answer |
|----|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | If you know that the water you are going to use for cooking or drinking is not safe or does not come from a safe source, what should you do? | 1=, Boil it -<br>2=Add bleach/chlorine<br>3=Strain it through a cloth -<br>4=Use a water filter (ceramic, sand, composite, etc.) –<br>5=Use solar disinfection<br>6=Let it stand and settle -<br>7=Discard it and get water from a safe source -<br>8=Other -<br>9= Don't know - |        |

## 5.2 Water and sanitation Practices

| No/ | Questions                                                                                       | Response option                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Answer |
|-----|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1   | What is the main source of water used by your household for drinking, cooking and hand washing? | 1=Piped water<br>2=Piped into dwelling<br>3= Piped into yard or plot -<br>4= Public tap/standpipe<br>5= Tube well/borehole<br>6=Dug well<br>7= Protected well<br>8= Unprotected well<br>9=Water from spring -<br>10= Protected spring<br>11= Unprotected spring<br>13=Tanker-truck<br>14=Cart with small tank/drum -<br>15=Surface water (river, stream, dam, lake, pond, canal, irrigation channel)<br>16=Bottled water<br>17= Other (specify) _____<br>18=Don't know |        |
| 2 A | Do you collect water for domestic use?                                                          | 1=Yes.....Go to <i>question P.2B</i> .<br>2= No..... Go to <i>question P.3</i> .                                                                                                                                                                                                                                                                                                                                                                                       |        |
| 2.B | B. What item do you use to collect water?                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |
| 2.C | To know if the item is clean probe: Did you treat this item in any way to make it clean?        | 1=Yes<br>2= No<br>3= Don't know<br>If Yes: How?<br>4=Use of water and soap (clean container) -<br>5=Other -<br>6= Don't know/no answer                                                                                                                                                                                                                                                                                                                                 |        |

|     |                                                                |                                                                                                                                                                                                                                                                                            |  |
|-----|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 3   | Could you describe how you store water?                        | 1=Clean container or jar<br>2= Covered container or jar<br>3=Clean and covered container or jar<br>4=Other<br>5= Don't know/no answer                                                                                                                                                      |  |
| 4.A | Do you treat your water in any way to make it safe to drink?   | 1=Yes<br>2=No<br>3= Don't know/no answer go to 4.B<br><i>If Yes:</i>                                                                                                                                                                                                                       |  |
| 4.B | What do you usually do to the water to make it safer to drink? | 1= <i>Boil it</i><br>2= <i>Add bleach/chlorine</i><br>3= <i>Strain it through a cloth</i><br>4= <i>Use a water filter (ceramic, sand, composite, etc.)</i><br>5= <i>Use solar disinfection</i><br>6= <i>Let it stand and settle</i><br>7= <i>Other -</i><br>8= <i>Don't know/no answer</i> |  |

## Part 6. Feeding young children (6–23 months)

### 6.1 Households child feeding Practice

6. 1. 1 Was (name of the baby) breastfed or did he or she consume breastmilk yesterday during the day or at night?    0 .No        1. Yes

### 6.2: Dietary diversity

Now I would like to ask you about (other) liquids or foods that (*name of the baby*) ate yesterday during the day or at night. I am interested in whether your child had the item even if it was combined with other foods. For example, if (*name of the baby*) ate a millet porridge made with a mixed vegetable sauce, you should reply yes to any food I ask about that was an ingredient in the porridge or sauce. Please do not include any food used in a small amount for seasoning or condiments (like chillies, spices, herbs or fish powder); I will ask you about those foods separately. Yesterday during the day or at night, did (*name of the baby*) eat:

| 6.2Food categories                      | Food lists                                                           | No | yes |
|-----------------------------------------|----------------------------------------------------------------------|----|-----|
| 6.2.1 Group 1: Grains, roots and tubers | Porridge, bread, rice, pasta/noodles or other foods made from grains |    |     |
| 6.2.2 Group 2: Legumes and nuts         | Any foods made from beans, peas, lentils, nuts or seeds              |    |     |
| 6.2.3 Group 3: Dairy products           | Infant formula, such as [insert local examples]                      |    |     |
|                                         | Milk, such as tinned, powdered or fresh animal milk                  |    |     |
|                                         | Yogurt or drinking yogurt                                            |    |     |
|                                         | Cheese or other dairy products                                       |    |     |
| 6.2.4 Group 4:Flesh foods               | Any meat, such as beef, lamb, goat, chicken or other meat            |    |     |



|                                                      |                                                                                                                                 |  |  |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--|--|
|                                                      | Fresh or dried fish, shellfish or seafood                                                                                       |  |  |
| 6.2.5 Group 5:Eggs                                   | Eggs from poultry                                                                                                               |  |  |
| 6.2.6 Group 6:<br>Vitamin A fruits and<br>vegetables | Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside                                                     |  |  |
|                                                      | Any dark green vegetables [insert local examples]                                                                               |  |  |
|                                                      | Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried), musk melon [insert other local vitamin-A-rich fruits] |  |  |
| 6.2.7 Group 7: Other fruits and vegetables           | Any other vegetables and fruits                                                                                                 |  |  |
| Other oils and fats                                  | Any oil, fats, or butter or foods made with any of these                                                                        |  |  |
|                                                      | Any sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits                                              |  |  |
|                                                      | Condiments for flavour, such as chillies, spices, herbs or fish powder                                                          |  |  |

6.3. How many times did (name of the baby) eat foods, that is meals and snacks other than liquids yesterday during the day or at night?

-----times

#### 6.4 Households nutritional knowledge

| No    | Question                                                                                                                                                       | Response option                                                                                                                                                                               | Code |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 6.4.1 | Continued breastfeeding How long is it recommended that a woman breastfeeds her child? Until what age is it recommended that a mother continues breastfeeding? | 1. Six months or less<br>2. 6–11 months<br>3. 12–23 months<br>4. 24 months and more (correct response)<br>5. Other<br>6. Don't know                                                           | __   |
| 6.4.2 | Age of start of complementary foods .At what age should babies start eating foods in addition to breastmilk?                                                   | 1. At six months<br>2. Other<br>3. . Don't know                                                                                                                                               | __   |
| 6.4.3 | Reason for giving complementary foods at six monthsWhy is it important to give foods in addition to breastmilk to babies from the age of six months?           | 1. Breastmilk alone is not sufficient (enough)/cannot supply all the nutrients needed for growth/from six months, baby needs more food in addition to breastmilk<br>2. Other<br>3. Don't know | __   |
| 6.4.4 | Consistency of meals how much thick and watery/thin porridges given to a young child?                                                                          | 1. It must be thick porridge<br>2. It must be watery/thin porridges<br>3. "Does not know                                                                                                      | __   |

|       |                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 6.4.5 | Reason for consistency of meals?                                                                                                                                                            | 1 .Because the thick porridge is more nutritious/because it is prepared with different types of foods or ingredients (food diversity)<br>2. Other<br>3. Don't know                                                                                                                                                                                                                                                                                 | __ |
| 6.4.6 | Please tell me some ways to make rice porridge more nutritious or better for your baby's health.<br><br>Which foods or types of food can be added to rice porridge make it more nutritious? | 1. Animal-source foods (meat,poultry, fish, liver/organ meat, eggs, etc.)<br>2.Pulses and nuts: flours of groundnut and other legumes (peas, beans, lentils, etc.), sunflower seed, peanuts, soybeans<br>3 Vitamin-A-rich fruits and vegetables (carrot, orange-fleshed sweet potato, yellow pumpkin, mango, papaya, etc.)<br>4 .Green leafy vegetables (e.g. spinach)<br>5 Energy-rich foods (e.g. oil, butter/ghee)<br>6. Other<br>7. Don't know | __ |
| 6.4.7 | Responsive feeding<br>Do you know any ways to encourage young children to eat?                                                                                                              | 1.=Giving them attention during meals, talk to them, make meal times happy times<br>2.=clap hands<br>3=make funny faces/play/laugh<br>4.=demonstrate opening your own mouth very wide/modelling how to eat<br>5.=say encouraging words<br>6.=draw the child's attention<br>7. Other<br>8.Don't know                                                                                                                                                | __ |

## 6.5 Households nutritional attitude

|       |                                                                                                                                                  |                                                |         |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------|
| 6.5.1 | Self-confidence<br>How confident do you feel in preparing food for your child?                                                                   | 1.=Not confident                               | ... __  |
|       |                                                                                                                                                  | 2.=Ok/so-so                                    |         |
|       |                                                                                                                                                  | 3.=Confident                                   |         |
| 6.5.2 | Giving a diversity of food (foods from many food groups)<br>Perceived benefits<br>How good do you think it is to give different types of food to | 1.=Not good<br>2.= You're not sure<br>3=. Good | .... __ |

|        |                                                                                                                                         |                                                |                                |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------|
|        | your child each day?                                                                                                                    |                                                |                                |
| 6.5.2a | Perceived barriers How difficult is it for you to give different types of food to your child each day?                                  | 1.=Not difficult<br>2.= So-so<br>3. =Difficult |                                |
| 6.5.3  | Feeding frequently, Perceived benefits. How good do you think it is to feed your child several times each day?                          | 1.=Not good<br>2.=You're not sure<br>3.=Good   | ....  <input type="checkbox"/> |
| 6.5.3a | Perceived barriers How difficult is it for you to feed your child several times each day?                                               | 1.=Not difficult<br>2.=So-so<br>3.=Difficult   | ....  <input type="checkbox"/> |
| 6.5.4  | Continuing breastfeeding beyond six months Perceived benefits; How good do you think it is to continue breastfeeding beyond six months? | 1.=Not goo<br>2.=You're not sure<br>3. =Good   | ....  <input type="checkbox"/> |
| 6.5.4a | Perceived barriers; How difficult is it for you to continue breastfeeding beyond six months?                                            | 1.=Not difficult<br>2.=So-so<br>3. =Difficult  | ....  <input type="checkbox"/> |

## Annex 3: Amharic Translation Version 2

ጥናቱ በደቡብ ወሎ ዞን በተሁለደሬ ወረዳ በ 026 እና 01 ቀበሌ የቤተሰብን የምግብ ደህንነት እውቀት፣ አመለካከትና ተግባራት እንድሁመ የቤተሰብን የምግብ ሁኔታ የሚገመግም በተለይ የህጻናትን እድሜያቸው ከ6 እስከ 23 ወራት ለሆኑት የአመጋገብ ሁኔታቸውን ጥቂት ጥያቄዎችን ልጠይቅሁነው። አንዳንድ ጥያቄዎችን እንዳብራራልሁ ከፈለጉ ነገሩኝ። የፈለጉትን ጥያቄ ከመጠየቅ ወደኋላ አትበሉ።

### Part 1; ስነ ህዝብና ማህበራዊ ጉዳዮች

| ተ.ቁ | ጥያቄ             | የመልስ አማራጭ                                                                                                | መልስ |
|-----|-----------------|----------------------------------------------------------------------------------------------------------|-----|
| 1.1 | የእናት ዕድሜ        | -----                                                                                                    |     |
|     | የአባት ዕድሜ        | -----                                                                                                    |     |
| 1.2 | የጋብቻ ሁኔታ        | 01. ያላገባች 02. ባሏ የሞተባት 03. ያገባች 04. ሚስቱ የሞተችበት 05. የተፋታ/ች                                                |     |
| 1.3 | ሀይማኖት           | 01. ሙስሊም 02. ካቶሊክ 03. ኦርቶዶክስ 04. ፕሮቴስታንት                                                                 |     |
| 1.4 | የእናት የትምህርት ደረጃ | 01. ማንበብና መጻፍ የማትችል 04. ከ 6-8 ክፍል<br>02. ማንበብና መጻፍ የምትችል 05. ከ 9-12 ክፍል<br>03. ከ 1-5 ክፍል 06. ኮሌጅ/ዩኒቨርሲቲ  |     |
|     | የአባት የትምህርት ደረጃ | 01. ማንበብና መጻፍ የማይችል 04. ከ 6-8 ክፍል<br>02. ማንበብና መጻፍ የሚችል 05. ከ 9-12 ክፍል<br>03. የመንግስት ሰራተኛ 06. ኮሌጅ/ዩኒቨርሲቲ |     |
| 1.5 | የእናት ስራ         | 01. የቤት እመቤት 04. ነጋዴ<br>02. ግብርና 05. የቀን ሰራተኛ<br>03. የመንግስት ሰራተኛ                                         |     |
|     | የአባት ስራ         | 01. ግብርና 02. ነጋዴ 03. የመንግስት ሰራተኛ 04. የቀን ሰራተኛ 05. ሌላ ካለ--                                                |     |
| 1.6 | የወር ገቢ መጠን-     | -----                                                                                                    |     |
| 1.7 | የልጆች ብዛት/በቤተሰብ  | -----                                                                                                    |     |
| 1.8 | የህጻናቱ/ቷ እድሜ     | -----                                                                                                    |     |
| 1.9 | ህጻናቱ/ቷ ጾታ       | 01. ሴት 02. ወንድ                                                                                           |     |

## Part 2. Household Food Insecurity Access Scale (HFIAS) Measurement Tool

ምግብ ዋስትናቸውን ያላረጋገጡ ቤተሰብ መለኪያ

| ተ.ቁ | ጥያቄ                                                                                                   | የመልስ ማራጭ/                                                                     | ከድ     |
|-----|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------|
| 1   | 1. ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ አይኖረኝም ይሆናል ብለው ሰግተው ያውቃሉ;                                            | 0 = አይደለም(ወደ ጥያቄ 2)<br>1=አዎ                                                   | . _    |
| 1a  | ባለፉት አራት ሳምንታት ውስጥ ይሄ ስጋት ስንት ጊዜ ደርሶብዎታል                                                              | 1 = አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 = ሁለጊዜ(ከ 10 ጊዜ በላይ) | . _    |
| 2   | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል የወደዱትን ምግብ ሳይበሉ ቀርተው ያውቀሉ?  | 0 = አይደለም(ወደ ጥያቄ 3)<br>1=አዎ                                                   | . _    |
| 2a  | ባለፉት አራት ሳምንታት ውስጥ ይህ ስጋት ጊዜ አጋጥሞዎታል?                                                                 | 1 = አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 = ሁለጊዜ(ከ 10 ጊዜ በላይ) | .... _ |
| 3   | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል የተወሰኑ የምግብ አይነቶች ብቻ በልታችኋል? | 0 = አይደለም(ወደ ጥያቄ 4)<br>1 = አዎ                                                 | . _    |
| 3a  | ባለፉት አራት ሳምንታት ውስጥ ይህ ስጋት ጊዜ አጋጥሞዎታል?                                                                 | 1 = /አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = /አንዳንድ ጊዜ(3-10 ጊዜ)3 =) ሁለጊዜ(ከ 10 ጊዜ በላይ)  | . _    |
| 4   | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል መብላት የማትፈልጉትን ምግብ በልታችኋል?   | 0 = አይደለም(ወደ ጥያቄ 5)<br>1 = አዎ                                                 | . _    |
| 4a  | ባለፉት አራት ሳምንታት ውስጥ ይህ ስጋት ጊዜ አጋጥሞዎታል?                                                                 | 1 = አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 = ሁለጊዜ(ከ 10 ጊዜ በላይ) | . _    |
| 5   | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ሳትጠግቡ ለመነሳት ተገዳችኋል?                  | 0 = አይደለም(ወደ ጥያቄ 6)<br>1 = አዎ                                                 | . _    |
| 5a  | ባለፉት አራት ሳምንታት ውስጥ ይህ ስጋት ጊዜ አጋጥሞዎታል?                                                                 | 1 አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = /አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 ,ሁለጊዜ(ከ 10 ጊዜ በላይ)   | . _    |
| 6   | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ቁርስ፤ ምሳ ወይም ራት መብላት ሳትችሉ ቀርታችኋል?     | 0 = አይደለም(ወደ ጥያቄ 7)<br>1 = /አዎ                                                | . _    |
| 6a  | ባለፉት አራት ሳምንታት ውስጥ ይህ ስጋት ጊዜ አጋጥሞዎታል?                                                                 | 1 = አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 = ሁለጊዜ(ከ 10 ጊዜ በላይ) | . _    |
| 7   | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት በቤተሰቡ ውስጥ የሚላስ የሚቀመስ ያልነበረበት ጊዜ ነበር?                | 0 =አይደለም(ወደ ጥያቄ 8)<br>1 = አዎ                                                  | . _    |

|    |                                                                                                             |                                                                                 |       |
|----|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------|
| 7a | ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?                                                                       | 1 = አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = /አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 = ሁለጊዜ(ከ 10 ጊዜ በላይ)  | . _ _ |
| 8  | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል እየራበው ወደ መጎታ የሄደበት ጊዜ ነበር?        | 0 = አይደለም(ወደ ጥያቄ 9<br>1 = አዎ                                                    | . _ _ |
| 8a | ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?                                                                       | 1 = አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 = ሁለጊዜ(ከ 10 ጊዜ በላይ)   | . _ _ |
| 9  | ባለፉት አራት ሳምንታት ቤት ውስጥ በቂ ምግብ ወይም ገንዘብ ባለመኖሩ ምክንያት ርስዎ ወይም ማንኛውም የቤተሰብ አባል ቀኑን ሙሉ ሳይበላ ውሎ ሳይበላ ያደረገበት ጊዜ አለ? | 0 = የለም<br>1 = አዎ                                                               | . _ _ |
| 9a | ባለፉት አራት ሳምንታት ውስጥ ይህ ስንት ጊዜ አጋጥሞዎታል?                                                                       | 1 = /አልፎ አልፎ(አንድ ወይም ሁለት ጊዜ)<br>2 = /አንዳንድ ጊዜ(3-10 ጊዜ)<br>3 = ሁለጊዜ(ከ 10 ጊዜ በላይ) | . _ _ |

Part 3: Food handling (ምግብ አያያዝ )

ስለ ምግብ አያያዝ አስመልካከት/

| ተ.ቁ | ጥያቄ                                                                                       | የመልስ አማራጭ/                                                                                        | መልስ |
|-----|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----|
| 1   | የተበከለ ምግብ መብላት ለበሽታ ሊያጋልጥ ይችላል ብለው ያስባሉ?                                                  | 1= . - አላስብም 2=እርግጠኛ አይደለሁም<br>3=አዎ አስባለሁ(መልሱ አላስብም ከሆነ)<br>አላስብምያሉበትን ምክንያት ሊነግሩኝ ይችላሉ;          |     |
| 2   | የተበከለ ምግብ በመብላት የሚመጣ በሽታ ምንያህል ከባድነው ብለው ያስባሉ?                                            | 1=.- ከባድ አይደለም<br>2=. እርግጠኛ አይደለሁም 3=ከባድ ነው (መልሱ ከባድ አይደለም ከሆነ) ከባድ አይደለም ያሉበትን ምክንያት ሊነግሩኝ ይችላሉ? |     |
| 3   | ስጋን፣የዶሮስጋን፣አሳን፣ወይም የበሰለ ምግብን ቀዝቃዛ ቦታ (ማቀዝቀዣ ሳጥንወይምፍሪጅውስጥ) ማስቀመጥ ምንያህል ጥሩነው ብለው ያስባሉ?      | 1=. ጥሩ አይደለም<br>2=. እርግጠኛ አይደለሁም<br>3=. ጥሩነው(መልሱ ጥሩ አይደለም ከሆነ) ጥሩ ያልሆነበትን ምክንያት ሊነግሩኝ ይችላሉ?       |     |
| 4   | ሳይበሉ የተረፉ ምግቦችን (እንደ ወጥ ያሉ) ከመብላት ወይም ለምግብነት ትከማቅረብ በፊት እንደገና ማንተክተኩ ምንያህል ጥሩነው ብለው ያስባሉ? | 1=. ጥሩአይደለም<br>2=. - እርግጠኛ አይደለሁም<br>3=. - ጥሩነው (መልሱ ጥሩ አይደለም ከሆነ)ጥሩ ያልሆነበትን ምክንያት ሊነግሩኝ ይችላሉ?    |     |
| 5   | ሳይበሉ የተረፉ ምግቦችን (እንደ ወጥ ያሉ) ከመብላት ወይም ለምግብነት ከማቅረብ በፊትእንደገና ማንተክተኩ ምንያህል አስቸጋሪ ይሆንበዎታል?   | 1=ከባድ አይደለም<br>2=. እንደገና<br>3=ከባድነው መልሱ ከባድ ነው ከሆነ ከባድ የሆነበትን ምክንያት ሊነግሩኝ ይችላሉ?                   |     |
| 6   | ፍራፍሬዎችን እና አትክልቶችን በንጹህ ውሃ ማጠብ ምን ያህል ጥሩ ነው ብለው                                           | 1=. ጥሩ አይደለም<br>2=. እርግጠኛ አይደለሁም<br>3=ጥሩ ነው (መልሱ ጥሩ አይደለም ከሆነ) ጥሩ                                 |     |

|   |                                                     |                                                                                           |  |
|---|-----------------------------------------------------|-------------------------------------------------------------------------------------------|--|
|   | ያስባሉ?                                               | ያልሆነበትን ምክንያት ሊነግሩኝ ይችላሉ? _____                                                           |  |
| 7 | ፍራፍሬዎችን እና አትክልቶችን በንጹህ ውሃ ማጠብ ምንያህል ይከብድዎታል?<br>.. | 1=. ከባድ አይደለም<br>2=. - እንደነገሩ 3=.ከባድ ነው መልሱ ከባድ ነው ከሆነ ከባድ የሆነበትን ምክንያት ሊነግሩኝ ይችላሉ? _____ |  |

### Food handling Knowledge (የ ምግብ አያያዝ እውቀት)

| ተ.ቁ | ጥያቄ/                                                                                                      | የመልስ አማራጭ/                                                                                                                                                              | መልስ |
|-----|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1   | ጥሬስጋ፣የሆድእቃስጋዎች (እንደጨጓራ፣ወተት አንጀት፣ ጉበት፣ኩላሊት፣ልብ አይነት) ከበሰሉ ወይም ለምግብነት ከተዘጋጁ ምግቦች ጋር እንዳይነካኩ ማድረግ ለምን ያስፈልጋል? | 1= ከእንስሳት የሚገኙ ያልበሰሉ ምግቦች ብዙጊዜ ጀርምች ይገኙባቸዋል፤እነዚህ ጀርምች ወደ በሰሉ ወይም ለምግብነት ወደ ተዘጋጁ ምግቦች ሊተላለፉ ይችላሉ<br>2=ሌላ 3=መልስ የለም                                                       |     |
| 2   | ወጥ ወይም ሾርባ በሚሰሩበት ጊዜ መብሰሉን (ለምግብነት ለመቅረብ ዝግጁ መሆኑን) እና ጤናማ መሆኑን እንዴት ያውቃሉ?                                 | 1= ይንተከተካል /በደንብ ይበሰላል<br>2=ሌላ<br>3=መልስ የለም                                                                                                                             |     |
| 3   | ፍሪጅ ወስጥ ማቀዝቀዣ ሳጥን ውስጥ ወይም ቀዝቀዝ ያለበታ መቀመጥ ያለባቸው ምግቦች ምንምን አይነቶቹ ናቸው?                                       | 1=ሲጋ፣የሆድእቃ ስጋዎች 2=የዶሮ ስጋ<br>3=አሳ<br>4= ወተት/የወተት አስተዋጽኦዎች<br>5= የበሰሉምግቦች 6=ሌላ 7=መልስ የለም                                                                                  |     |
| 4   | ተዘጋጅቶ ከቀረበ በኋላ ሳይበላ የተረፈ ምግብቀዝቃዛ ቦታ ውስጥ ካልቆየ በስተቀር እንደገና ለምግብነት መቅረብ የሌለበት ለምንድን ው?                       | 1=በሽታ ሊያስከትል ስለሚችል<br>2=በምግቡ ውስጥ ጀርምች በፍጥነት ተባዝተው ምግቡ ለበሽታ ስለሚያጋልጥ<br>3= ምቅ ያለ መጠኑ መቀት ጀርምች ፈጥነው እንዲረቡ ስለሚረዳ<br>4=ሌላ 5=መልስ የለም<br>6=( ከመጀመሪያዎቹ ሶስት አማራጮች ማንኛውም ትክክልነው ) |     |
| 5   | ፍራፍሬዎችን ወይም ጥሬ አትክልቶችን (እንደ ጎመን፣ ሰላጣ፣ቆስጣ፣ቃርያ፣ቲማቲም ያሉትን) ከመመገባችሁ በፊት ምን ማድረግ አለባችሁ?                        | 1=በንጹህ ውሃ ማጠብ<br>2= ሌላ<br>3= መልስ የለም                                                                                                                                    |     |

### Food handling Practices (ምግብ አያያዝ ልምድ)

| ተ.ቁ | /ጥያቄ/                                                                                                     | /የመልስ አማራጭ/                                                                                             | መልስ |
|-----|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----|
| 1   | ምግብ ካዘጋጁ በኋላ የማብሰያ አካባቢው፣ድስቶች፣መጥበሻዎች፣ሰሃኖች እና ሌሎች መገልገያዎች መጽዳት ይኖርባቸዋል።አብዛኛውን ጊዜ እንዴት እንደሚጸጹቸው ሊነግሩኝ ይችላሉ? | 1=ጠራርጌ ጥራጊውን ወደ ቆሻሻ ማጠራቀሚያው እደፈዋለሁ።<br>2=በሞቀ ውሃ አጥበቀለሁ።3=በሳሙና (አጃክስ) ወይም በፈሳሽ ሳሙና አጥበቀለሁ 4=መልስ የለም      |     |
| 2   | ቶሎ ሊበላሹ የሚችሉ ምግቦችን (እንደስጋ፣ያልተሰራ ዶሮ ወይም አሳ) እስኪሰሩ ድረስ እንዴት ያቆዩዋቸዋል?                                        | 1= ፍሪጅ ውስጥ<br>2= ዝንብ፣አቧራወይም አይጥ እንዳይደርስበት ተሸፍኖ<br>3=ለምግብነት ከተዘጋጁ ምግቦች ጋር እንዳይነካካ ተለይቶ<br>4=ሌላ 5=መልስ የለም |     |

Part 4 :Personal hygiene (የግል ሃይጅንን በተመለከተ) Attitudes (አመለካከት ወይም አስተሳሰብ)

| ተ.ቁ | Questions /ጥያቄ                                                                                                                                           | የመልስ አማራጭ                                                                                                                     | መልስ |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----|
| 1   | እጅዎን ባለመታጠብዎ የተነሳ ለሆድ ህመም ወይም ለተቆማጥ የመጋለጥዎ አጋጣሚ ምን ያህል ነው ብለው ያስባሉ? ወይም እርስዎ እጅዎን ባለመታጠብዎ ምክንያት ልጅዎ በሆድ ህመም ወይም በተቆማጥ ለመታመም ያለው አጋጣሚ ምን ያህል ነው ብለው ያምናሉ? | 1=. የሚታመም አይመስለኝም<br>2=. እርግጠኛ አይደለሁም<br>3=ሊታመም ይችላል:: (መልስ የሚታመም አይመስለኝም ከሆነ) የሚታመም የማይመስልዎ ምክንያት ምን እንደሆነ ሊነግሩኝ ይችላሉ? _____ |     |
| 2   | እርስዎ እጅዎን ባለመታጠብዎ ምክንያት እርስዎ ወይም ልጅዎ ብትታመሙ ምን ያህል ከባድ የሚሆን ይመስልዎታል? ወይም ተቆማጥ ለጤንነትዎ ምን ያህል ከባድ ነው ብለው ያስባሉ? ወይም ተቆማጥ ለልጅዎ ጤንነት ምን ያህል ከባድ ነው ብለው ያስባሉ?   | 1=. ከባድ አይመስለኝም<br>2=. እርግጠኛ አይደለሁም<br>3=. ከባድ ነው መልሱ ከባድ አይደለም ከሆነ ከባድ የማይሆንበት ምክንያት ምን እንደሆነ ሊነግሩኝ ይችላሉ? _____              |     |
| 3   | ምግብ ማዘጋጀት ከመጀመርዎ በፊት እጅዎን መታጠብ ምን ያህል ጥሩ ነው ብለው ያስባሉ? ወይም ህጻን ከመመገብዎ ወይም ራስዎ ከመመገብዎ በፊት እጅዎን መታጠብ ምን ያህል ጥሩ ነው ብለው ያስባሉ?                                 | 1=ጥሩ አይደለም<br>2=. እርግጠኛ አይደለሁም<br>3=ጥሩ ነው መልሱ ጥሩ አይደለም ከሆነ ምክንያቱን ሊነግሩኝ ይችላሉ? _____                                           |     |
| 4   | ምግብ ማዘጋጀት ከመጀመርዎ በፊት እጅዎን መታጠብ ምን ያህል ያስቸግርዎታል? ወይም ልጅዎን ከመመገብዎ በፊት ወይም ራስዎ ከመብላትዎ በፊት እጅዎን መታጠብ ምን ያህል ያስቸግርዎታል?                                        | 1=. አያስቸግረኝም<br>2=. እንደነገሩ<br>3=ያስቸግረኛል የሚያስቸግር ከሆነ ለምን እንደሚያስቸግርዎት ምክንያቱን ሊነግሩኝ ይችላሉ? _____                                  |     |
| 5   | እጅዎን በአግባቡ መታጠብዎ ምን ያህል በራስዎ መተማመን ይፈጥርልዎታል?                                                                                                             | 1=. አልተማመንም<br>2=በመጠኑ/እንደነገሩ 3=. እተማመናለሁ:: አልተማመንም ካሉ በራስዎ የማይተማመኑበትን ምክንያቶች ሊነግሩኝ ይችላሉ?-----                                 |     |

Personal hygiene (የግል ሃይጅንን በተመለከተ) Knowledge (እውቀት)

| No | ጥያቄ                                                                                                                                  | Response option/የመልስ አማራጭ                                                                                                                                                                                            | የመልስ |
|----|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1  | አብዛኛውን ጊዜ የምግብ መመረዝ የሚፈጠረው ከዓይነ-ምድር ከሚወጡ ጀርሞች ጋር ነክኪ በመፍጠር ነው፤ ከሰው ወይም እንስሳት ዓይነ-ምድር በሚመጡ ጀርሞች ምክንያት የሚፈጠር በሽታን ለመከላከል ምን ማድረግ ይችላሉ? | 1= መጽዳጃቤት ከተጠቀሙ ወይም የህጻንታፋ (ቂጥ) ካጠቡ በኋላ እጅን መታጠብ<br>2= ከቤት ውስጥ እና ከአካባቢው ዓይነ-ምድርን ማስወገድ (መጽዳጃቤትን መጠቀም፣ ልጆች ፖፖ ውስጥ እንዲጸዱ ማስተማር እና የህጻናቱን ዓይነ-ምድር መጽዳጃቤት ጉድጓድ ውስጥ መድፋት፣ እንስሳት ላይያለ ዓይነ-ምድርን ማጽዳት)<br>3= ሌሎች 4= መልስ የለም |      |
| 2  | ጀርሞች ምግብ ውስጥ እንዳይገቡ ለማድረግ እጅ መታጠብ የሚያስፈልግባቸው ወሳኝ ጊዜያት አሉ፤ እነዚህ ወሳኝ ጊዜያት መቼ መቼ ናቸው?                                                   | 1= መፀዳ ጃቤት ከተጠቀሙ በኋላ<br>2= የልጅንታፋ (ቂጥ) ካጠቡ በኋላ/ የልጅን የሽንት ጨርቅ ከቀየሩ በኋላ 3= ምግብ ማዘጋጀት ከመጀመር በፊት 4= ህጻንን ከመመገብ በፊት 5= ጥሬ (ያልበሰል) ምግብ ከነኩ በኋላ 6= ቆሻሻ ከሰበሰቡ እና ከጣሉ በኋላ<br>7= ሌሎች 8= መልስ የለም                               |      |



Personal hygiene (የግልሃይጅንነትመለከተ) Practices (ልምድ)

| ተ.ቁ | ጥያቄ/                                  | Response option/የመልስ አማራጭ                                                                                                                                                                       | መልስ |
|-----|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1   | እጆችዎን እንዴት እንደሚታጠቡበት ደምተከተልሊነግሩኝይችላሉ? | 1=-<br>እጆችን ሰሃን ውስጥ ባለው ሃውስ ጥጥሩ ከሌሎች ሰዎች ጋር አብሮ መታጠብ (መጥፎልምድ)<br>2=. ሌላ ሰው ትንሽ ጽህፈት ላይ ያጋለጥላችሁ መታጠብ (ትክክለኛልምድ)<br>3= ከቧንቧ በሚወርድ ውሃ መታጠብ (ትክክለኛልምድ)<br>4= እጆችን በሳሙና እና ውሃ መታጠብ 5= ሌሎች 6= መልስ የለም |     |

Part 5: Water and sanitation (ውሃ እና ሳንቲቴሽን) Attitudes (አመለካከት ወይም አስተሳሰብ)

| ተ.ቁ | /ጥያቄ/                                                                                                   | /የመልስ አማራጭ                                                                                                      | መልስ |
|-----|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----|
| 1   | ጤናማ ያልሆነ ውሃ መጠቀም ተቅማጥሊ ያመጣ እንደሚችል ምን ያህል ያስባሉ? ወይም ጤናማ ያልሆነ ውሃ በመጠጣት ልጅዎ በተቅማጥሊ ታመም እንደሚችል ምን ያህል ያስባሉ? | 1= አላስብም<br>2= እርግጠኛ አይደለሁም<br>3= አስብላለሁ::<br>የሚያስቡት ከሆኑ ተቅማጥሊ ያመጣ ምን ያህል ውሃ የሚያስቡበት ምክንያት ምን እንደሆነ ሊነግሩኝ ይችላሉ? |     |
| 2   | ጤናማ ያልሆነ ውሃ መጠጣት የሚያስከትለው በሽታ ምን ያህል ከባድ ነው ብለው ያስባሉ?                                                   | 1=. ከባድ አይደለም<br>2=. ቀለል ያለ ነው 3=. ከባድ ነው::<br>ከባድ ካልሆነ ባድ የሚሆንበት ምክንያት ምን እንደሆነ ሊነግሩኝ ይችላሉ?                    |     |
| 3   | ውሃን ለመጠጥ ወይም ለሌላ ስራ ከመዋሉ በፊት ማፍላቱ ምን ያህል ጥሩ ነው ብለው ያስባሉ?                                                | 1=. ጥሩ አይደለም<br>2=. እርግጠኛ አይደለሁም<br>3=. ጥሩ ነው::<br>ጥሩ አይደለም ከተባለ ጥሩ ያልሆነበት ምክንያት ምን እንደሆነ ሊነግሩኝ ይችላሉ?           |     |
| 4   | ውሃን ለመጠጥ ከተወጣበት ወይም ለሌላ ስራ ከመጠቀም በፊት ማፍላቱ ምን ያህል ያስቸግርዎታል?                                              | 1=. አያስቸግረኝም<br>2= እንደ ነገሩ 3= ያስቸግራል የሚያስቸግር ከሆነ ለምን እስከ ጋሪ እንደሆነ ምክንያቱን ሊነግሩኝ ይችላሉ? _____                      |     |
| 5   | ለመጠጥ ከተወጣበት ወይም ለሌላ ስራ ከመዋሉ በፊት ውሃን ማፍላቱ ምን ያህል መተማመን ይፈጥርዎታል?                                          | 1= አልተማመንም<br>2=.<br>እንደ ነገሩ 3= አተማመናለሁ ካልተማመን ለምን እንደሚመኑ ምክንያቱን ሊነግሩኝ ይችላሉ                                     |     |

Water and sanitation (ውሃ እና ሳንቲቴሽን) Knowledge (እውቀት)

| ተ.ቁ | ጥያቄ/                                                                                   | የመልስ አማራጭ                                                                                                                                                                                                      | መልስ |
|-----|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1   | ምግብ ለመስራት ወይም ለመጠጣት የሚጠቀሙበት ውሃ ጤናማ አለመሆኑን ወይም የተቀዳበት ቦታ ጤናማ አለመሆኑን ሊያውቁ ምን ማድረግ አለባቸው? | 1=, አፈላግለሁ 2= በረከ ና እጨምር በታልሁ<br>3= በጨርቅ አጠለዋለሁ<br>4= በውሃ ማጣርያ (ሴራ ሚክ፣ አሸዋ፣ የተቀላቀለ ጠጠር) አጠቀማለሁ<br>5= ለጸሃይ በማጋለ ጥጅ ሞች እንዲሞቱ አደርጋለሁ<br>6= እስከ ዘቅት አቆየዋለሁ<br>7= እደፋው ናከ ጤናማ ቦታ ላይ ውሃ አመጣለሁ<br>8= ሌላ<br>9= መልስ የለም |     |

Water and sanitation (ውሃናሳኒቴሽን) Practices (ልምድ)

| ተ.ቁ | /ጥያቄ                                                         | የመልስ አማራጭ                                                                                                                                                                                                                                                                                                                                                   | መልስ |
|-----|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1   | በቤትዎውስጥለመጠጥ፣<br>ለማብሰያእናእጅንለመታጠቢያየሚሆን<br>ውሃየሚያገኙትበዋነኛነትከዬትነው? | 1= የቧንቧውሃ2= ቤትውስጥካለየቧንቧውሃ<br>3= ግቢውስጥካለየቧንቧውሃ<br>4= ከቦኖውሃ5= ከጉድጓድበቧንቧውሃ<br>6= ጉድጓድከሚጠለቅውሃ<br>7= - ከአካባቢውቆሻሻእንዲገባበትመከላከያካለውጉድጓድ<br>8= ከከፍትጉድጓድ9= የምንጭውሃ<br>10= መከላከያካለውምንጭ11= መከላከያከሌለውምንጭ<br>12= የዝናብውሃበማጠራቀም13= ውሃከሚያድልየመኪናቦቴ<br>14= የውሃበርሜልካለውጋሪ<br>15= የገጽ-ምድርውሃ (ውንዝ፣ምንጭ፣ግድብ፣ሃይቅ፣ኩሬ፣በይ፣<br>የመስኖባይ<br>16= (የታሸገውሃ) 17= ሌሎች<br>(ዘርዘር) _____<br>18= መልስየለም |     |
| 2 A | ለቤትውስጥአገልግሎትውሃይቀዳለ?                                          | 1=. መልሱአዎከሆነወደሚቀጥለውምርጫይሂዱ<br>2=. መልሱአልቀዳምከሆነወደጥያቄ 3 ይሂዱ                                                                                                                                                                                                                                                                                                     |     |
| 2.B | ውሃለለመቅዳትምንአይነትመቅጃይጠቀስ<br>ማለት?                                | -----                                                                                                                                                                                                                                                                                                                                                       |     |
| 2.C | መቅጃውንጽህካህምስመቅጃውንንጽህካህ<br>ማድረግየሚጠቀሙትነገርአለ?                    | 1=አዎ2= ምንምአልጠቀምም<br>3= መልስየለኝም::መልሱአዎከሆነእንዴት? -----<br>4= መቅጃውንበሳሙናእናበውሃአጥበቃለሁ<br>5= ሌላ6= አላውቅም/መልስየለም                                                                                                                                                                                                                                                      |     |
| 3   | ውሃውንእንዴትእንደሚያጠራቅሙሊያ<br>ብራሩልኝይችላለ?                            | 1= ገጽህውሃማጠራቀሚያውስጥ<br>2= የተከደነውሃማጠራቀሚያውስጥ<br>3= ገጽህእናየተከደነውሃማጠራቀሚያውስጥ<br>4= ሌላ5= አላውቅም/መልስየለም                                                                                                                                                                                                                                                                |     |
| 4.A | የቀዱትውሃለመጠጣትጤናማእንዲሆን<br>የሚያከሙበትመንገድአለ?                        | 1= - አዎ<br>2=አይ3= አላውቅም/መልስየለም መልሱአዎከሆነ ወደ 4ለ<br>ይሂዱ                                                                                                                                                                                                                                                                                                        |     |
| 4.B | የቀዱትውሃለመጠጣትጤናማእንዲሆንበ<br>ዙውንጊዜምንያደርጋለ?                        | 1= ማፍላት2= በረኪናመጨመር3= በጨርቅማጥለል<br>4= የውሃማጣርያመጠቀም (ሴራሚክ፣አሽዋ፣ቅልቅልጠጠር)<br>5= በጸሃይ6= ቆሻሻውእስኪዘቅጥማስቀመጥ7= ሌላ<br>8= አላውቅም/መልስየለም                                                                                                                                                                                                                                     |     |

6. ህጻናትንአመጋገብ (ከ6 እስከ 23 ወራትእድሜያላቸው)

የህጻናት የአመጋገብ ልምዶች/practice/

1. ለጣቂጡትማጥባትህጻኗ/ኑ(ስምበመጥራት)ጡትጡብታለች/ቷወይምትላንትቀንምሌትምጡትጡብታለች/ቷል?
2. አዎ 2.አልጠባችም
3. የተመገበችው/የተመገበውምግብአይነቶችስብጥር

የምግብዘርዘሮችንለተጠያቂውአንብብላቸውበበምግብነትየተወሰዱምግቦችንከስርአስምርባቸውእናከተዘረዘሩትምግቦችመካከልአንዱለምግብነትተወሰደወይምአልተወሰደከሆነበአምዱላይአዎወይምአይደለምበሚለውስርቲክአድርግ።

አስፈላጊበሆነበትቦታስንትጊዜእንደተወሰደመዝግብ።ህጻኗ/ኑ(ስምበመጥራት)

ትላንትቀንወይምሌሊትየተመገበችው/የተመገበውምግብየሚከተሉትነበሩበት?

| አይነት                             | የምግብ ዝርዝር                                                | አይደለም | አዎ |
|----------------------------------|----------------------------------------------------------|-------|----|
| አይነት 1 እህሎች፡ ስራ-ስር እና ድንች አይነት   | አጥሚት (ገንፎ)፣ ዳቦ፣ ሩዝ፣ ፓስታ ወይም ከእህል የተሰሩ ሌሎች ምግቦች           |       |    |
| አይነት 2 ጥራ-ጥሬዎች                   | ከባቄላ፣ ከአተር፣ ከምስር፣ እና ከሌሎች ጥራ-ጥሬዎች የተሰሩ ማንኛውም ምግቦች        |       |    |
| አይነት 3 የወተት አስተዋጽኦዎች             | ለህጻናት ተብሎ የተዘጋጀ የታሸገ ምግብ (ምሳሌ ስጥ)                        |       |    |
|                                  | የታሸገ ፈሳሽ ወተት፣ ዱቄት ወተት ወይም የላም ወተት                        |       |    |
|                                  | እርጎ ወይም ቀጭን እርጎ                                          |       |    |
|                                  | አይብ ወይም ሌሎች የወተት ተዋጽኦ                                    |       |    |
| አይነት 4 የስጋ ምግቦች                  | የበሬ፣ የበግ፣ የፍየል፣ የዶሮ የመሳሰለ ማንኛውም ስጋ                       |       |    |
|                                  | የደረቀ ወይም ትኩስ አሳ                                          |       |    |
| አይነት 5 እንቁላሎች                    | እንቁላሎች                                                   |       |    |
| አይነት 6 ባለቪታ ሚንኤ ፍራፍሬዎች እና አትክልቶች | ውስጣቸው ቀይ ወይም ብርቱካና ማየሆኑ ዱባ፣ ካሮት፣ ወይም ስኳር ድንች             |       |    |
|                                  | ጥቁር አረንጓዴ የሆኑ አትክልቶች (ያካባቢ ስም እንደ ምሳሌ ስጥ)                |       |    |
|                                  | የበሰል ማንኛውም የበሰል ፓፓያ፣ (በቪታ ሚንኤ የበለጸጉ የአካባቢ ፍራፍሬዎችን ጥቀስ)   |       |    |
|                                  | ማንኛውም ሌሎች ፍራፍሬዎችና አትክልቶች                                 |       |    |
| አይነት 7 ሌሎች ፍራፍሬዎችና አትክልቶች        | ማንኛውም ዘይት፣ ቅባት፣ ወይም ቅቤ ወይም በነዚህ የተሰሩ ምግቦች                |       |    |
| ሌሎች                              | እንድቼኮሌት፣ ጣፋጮች፣ ከረሜላዎች ኬኮች እና በስኩቶች የመሳሰሉ ማንኛውም ስኳር ማምግቦች |       |    |
|                                  | እንደ በርበሬ እና ቅመሞች ያሉ ሊቃና የሚጨመሩ ማጣፈጫዎች                     |       |    |

#### 4. አነስተኛው የአመጋገብ ምጥነት (frequency)

(የህጻኑን ስም በመጥቀስ) ትላንት ቀን ምሆነህ ሌሊት ከፈሳሽ ምግብ ሌላ ስንት ጊዜ ሌሎች ምግቦችን ተመግባለች/ተመግቧል የጊዜ ብዛት ..... አላውቅም/መልስ የለኝም

#### የህጻናት የአመጋገብ እውቀት/knowledge/

| ተ.ቁ | ጥያቄ                                                                                                            | የመልስ ማራጭ/                                                                                                         | ኮድ       |
|-----|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------|
| 1   | ለጣቂጡት ማጥባት እና ትህጻኗን ሽሽከመቼ ድረስ ጡት ማጥባት አለባት ተብሎ ይመከራል? ወይም እናት ማጥባት ያለባት ህጻኗ/ኑስን ትከስት እስኪሞላት/ውድረ ስነው ተብሎ ይመከራል? | 1. ለስድስት ወራት ወይም ከዛያነሰ<br>2. ከ6 እስከ 11 ወራት 3 ከ12 እስከ 23 ወራት<br>3. 24 ወራት እና ከዚያ በላይ (ትክክለኛው መልስ)<br>4. ሌላ 5=አላውቅም | . _ _    |
| 2   | ተጨማሪ ምግብ የሚጀመርበት እድሜ ህጻናት በየትኛው እድሜ ያቸው ነው ከጡት ሌላ ተጨማሪ ምግብ መጀመር ያለባቸው?                                         | 4. በስድስትኛው ወራቸው 2 ሌላ አላውቅም                                                                                        | 3. . _ _ |

|   |                                                                                                                                                                        |                                                                                                                                                                                                                                                                                 |       |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 3 | በስድስተኛው ወር ተጨማሪ ምግብ መስጠት የሚጀመርበት ምክንያት ህጻናት ስድስት ወር ከሞላቸው ጀምሮ ከጡት በተጨማሪ ሌሎች ምግቦችን መስጠት ለምን አስፈላጊ ይሆናል?                                                                 | 1. ጡት በቻውን በቂ አይደለም (አያጠግብም፤ ለእድገት የሚያስፈለጋቸውን ንጥረ ምግብ ሊጠግባቸው አይችልም ከስድስት ወር በኋላ ህጻኑ ከጡት ሌላ ተጨማሪ ምግብ ያስፈልገዋል)<br>2. ሌላ 3. አላውቅም                                                                                                                                                  | . _ _ |
| 4 | የምግቡ ውፍረት/ቅጥነት ለህጻኑ ሊሰጥ የሚገባው ገንፎ (አጥሚት) ምን ያህል መደር/መቅጠን አለበት?                                                                                                         | 1. ወፍራም መሆን አለበት<br>2. ቀጭን መሆን አለበት<br>3. አላውቅም                                                                                                                                                                                                                                 | . _ _ |
| 5 | ለመወፈሩ ወይም ለመቅጠኑ ምክንያት ይህን ያሉበት ምክንያት ምን ድንኳን ነው?                                                                                                                       | 1.= በምክንያቱም ወፍራም ገንፎ (አጥሚት) የተሻለ ንጥረ-ምግብ ነት አለው (ምክንያቱም ከተለያዩ ምግቦች የተዘጋጀ በመሆኑ) 2.= ሌላ 3. አላውቅም                                                                                                                                                                                  | . _ _ |
| 6 | የሚበሉ ምግቦች ስብጥር እና ገንፎን (አጥሚትን) የማበልጽጊያ መንገዶች ገንፎ (አጥሚት) ለልጅ ሁጤንነት ይበልጥ ገንቢ ወይም የተሻለ ማድረጊያ ዘዴዎችን ገንጥሎ፤ ወይም ገንፎ (አጥሚት) ገንቢ እንዲሆን ምን አይነት ምግቦች ሊጨመሩ በትይችላል፤ የሚከተሉትን በመጨመር | 1. ስጋ፣ ዶሮ፣ አሳ፣ ጉበት/የውስጥ አካላት፣ እንቁላል፣ የመሳሰሉት<br>2. ጥራጥሬ ዎቶ፣ (የተፈጨ አተር፣ ባቁላ፣ ምስር፣ ወዘተ)፣ ሱፍ፣ አኩሪ አተር<br>3. ሺታሚን እና ሌሎች ውፍራም ፍሬዎች እና አትክልቶች (ካሮት፣ ብርቱካን፣ ስኳር ድንች፣ ቢጫ ዱባ፣ ማንጎ፣ ፓፓያ፣ ወዘተ)<br>4. አረንጓዴ ቅጠላ ማህተክልቶች (ለምሳሌ ቆሰጣ)<br>5. ሃይል ሰጪ ምግቦች (ለምሳሌ ዘይት፣ ቅቤ/ንጥርቅቤ)<br>6. ሌላ 7. አላውቅም | . _ _ |
| 7 | አበራታችን አመጋገብ ህጻናት እንዲመገቡ ማበረታቻ መንገዶችን ያውቃሉ?                                                                                                                            | 1.= በሚመገቡበት ጊዜ ለነሱት ኩረት መስጠት፣ ማዋራት፣ የመመገቢያ ጊዜያቸው የሚያስደስታቸው እንዲሆን ማድረግ<br>2.= ማጨብጨብ 3.= አስቂኝ ፊት ማሳየት/መጫወት/መሳቅ<br>4.= የራስን እፍ በጣም በመክፈት እንዴት እንደሚበላ ማሳየት<br>5.= አበራታችን ቃላትን መናገር 6.= የልጁን ኩረት መሳብ 7.= ሌላ 8.= አላውቅም                                                                | . _ _ |

የህጻናት የአመጋገብ አመለካከት /Attitude/

| ተ.ቁ | ጥያቄ                                                                                                   | የመልስ አማራጭ                                                                                 | መልስ   |
|-----|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------|
| 1   | በራስ መተማመን ለልጅ ሁምግብ ሲያዘጋጁ ምን ያህል መተማመን ይሰማኋል?                                                          | 1.= በራሴ አልተማመንም<br>2.= እንደነገሩ 3.= በራሴ እተማመናለሁ የማይተማመኑ ከሆነ ለምን በራስዎ እንደማይተማመኑ ልትነግሩኝ ትችላሉ? | . _ _ |
| 2   | ከተለያዩ የምግብ አይነቶች የተዘጋጀ ምግብ ስለመስጠት የሚገመቱ ጥቅሞች ለልጅ ሁ በየቀኑ የተለያዩ የምግብ አይነቶችን መስጠት ምን ያህል ጥሩ ነው ብለሁታምናለሁ? | 1.= ጥሩ አይደለም<br>2.= እርግጠኛ ሽይደለሁም 3.= ጥሩ ነው ጥሩ ካልሆነ ለምን ጥሩ እንዳልሆነ ምክንያቱን ትነግሩኛለሁ?          | . _ _ |

|    |                                                                                                            |                                                                                            |     |
|----|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----|
| 2a | የሚገመቱ መሰናከሎች ለልጅሁ በየቀኑ የተለያዩ የየምግብ አይነቶችን መስጠት ምን ያህል አስቸጋሪ ነው?                                            | 1.= አስቸጋሪ አይደለም 2.= እንደነገሩ 3.= አስቸጋሪ ነው።<br>አስቸጋሪ ከሆነ አስቸጋሪ የሆነበትን ምክንያት ልትነግሩኝ ትችላላሁ?     |     |
| 3  | <b>ቶሎቶሎ አመጋገብ</b><br>የሚገመት ጥቅም፤<br>ህጻኑን በየቀኑ በርካታ ጊዜ መመገብ ምን ያህል ጥሩ ነው፡፡ በለውጥ ምን ያህል ሊሆን?                  | 1.= ጥሩ አይደለም 2.= እርግጠኛ አይደለሁም<br>3.= ጥሩ ነው።<br>ጥሩ ካልሆነ ጥሩ ያልሆነበትን ምክንያት ልትነግሩኝ ትችላላሁ?      | . _ |
| 3a | የሚገመት መሰናከል<br>ህጻኑን በየቀኑ ለበርካታ ጊዜ መመገብ ምን ያህል ያስቸግራል?                                                      | 1.= አያስቸግረኝም<br>2.= እንደነገሩ 3.= ያስቸግረኛል ።<br>አስቸጋሪ ከሆነ ለምን አስቸጋሪ እንደሆነ ምክንያቱን ልትነግሩኝ ትችላላሁ? | . _ |
| 4  | <b>ከስድስት ወር በኋላ ጡት ማጥባት ስለመቀጠል የሚገመቱ ጥቅሞች</b><br>ጡት ማጥባት ከስድስት ወር በላይ መቀጠሉ ምን ያህል ጥሩ ነው፡፡ በለውጥ ምን ያህል ሊሆን? | 1.= ጥሩ አይደለም<br>2.= እርግጠኛ አይደለሁም 3.= ጥሩ ነው።<br>ጥሩ ካልሆነ ጥሩ ያልሆነበትን ምክንያት ልትነግሩኝ ትችላላሁ?      | . _ |
| 4a | የሚገመት መሰናከል<br>ከስድስት ወር በላይ ጡት ማጥባት ምን ያህል ያስቸግራል?                                                         | 1.= አያስቸግርም 2.= እንደነገሩ 3.= ያስቸግራል<br>ካስቸገረ የሚያስቸግርበትን ምክንያት ልትነግሩኝ ትችላላሁ?                  | . _ |