# OPTIMAL FEEDING PRACTICE AND ASSOCIATED FACTORS AMONG MOTHERS OF CHILDREN AGED 6-23 MONTHS IN RURAL HARAMAYA DISTRICT, EASTERN ETHIOPIA

**MPH THESIS**

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**HARAMAYA UNIVERSITY, HARAR**

# Optimal Feeding Practice and Associated Factors Among Mothers of Children Aged 6-23 Months in Rural Haramaya District, Eastern Ethiopia

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**Mahdi Ebroshe**

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## APPROVAL SHEET

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## ABBREVATIONS AND ACRONYMS

| | |
|---|---|
| AIDS | Acquired Immune Deficiency Syndrome |
| ANC | Antenatal Care |
| AOR | Adjusted Odds Ratio |
| EDHS | Ethiopian Demographic and Health Survey |
| ENA | Essential Nutrition Actions |
| FANC | Focused Antenatal Care |
| FANTA | Food AND Nutrition Technical Assistance |
| FAO | Food AND Agricultural Organization |
| FMOH | Federal Ministry of Health |
| GMP | Growth Monitoring and Promotion |
| HIV/AIDS | Human Immune Virus/Acquired Immune Deficiency Syndrome |
| IYCF | Infant and Young Child Feeding |
| MAD | Minimum Acceptable Diet |
| MDD | Minimum Dietary Diversity |
| MMF | Minimum Meal Frequency |
| NNP | National Nutrition Program |
| NNS | National Nutrition Strategy |
| PNC | Post Natal Care |
| SSA | Sub-Saharan Africa |
| UN | United Nation |
| UNICEF | United Nation International Children's Emergency Fund |
| WHO | World Health Organization |

# ABSTRACT

**Background:** Optimal feeding practice is defined interms of appropriate initiation timing, dietary/food quantity and quality given to children aged 6-23 months and will determine their lifetime nutritional status. This age group is critical window period for optimal growth and development of the child. However, little was said so far on optimal feeding practice and its associated factors among mothers of children aged 6-23 months in Ethiopia in general and the study area in particular.

**Objective:** To assess optimal feeding feeding practice and associated factors among mothers of children aged 6-23 months in rural Haramaya district, eastern Ethiopia.

**Method:** Community based cross sectional study was conducted 554 mothers-child (6-23 months) pairs in rural Haramaya district from February 08-30, 2018. Multistage sampling technique was used to select study participants. Pretested-structured questionnaires and validated standard checklist were used to collect data from mothers-child pairs through face-to-face-interview. Data were entered into Epidata version 3.1 and analyzed by SPSS version 22. Descriptive statistics were conducted to describe characteristics of participants. Bivariate and multivariable analysis was used to identify factors associated with optimal feeding practice. A $P<0.05$ and AOR with its 95% CI were used to report presence and strength of associations, respectively.

**Results:** The Prevalence of optimal feeding practice among mothers of children aged 6-23 months was 53.5% (95% CI; 0.49, 0.58). Optimal feeding practice among mothers of children aged 6-23 months were significantly associated with family monthly income of 1500-3000 ETB [(AOR=0.52, 95% CI: (0.28, 0.98)], institutional delivery [(AOR=1.61, 95% CI: (1.06, 2.46)], visiting PNC at least three times [(AOR=2.53, 95% CI: (1.67, 3.82)], everheard information [(AOR=3.05, 95% CI: (1.85, 5.02)], access to healthcare [(AOR=2.61, 95% CI: (1.65, 4.09)], presence of separate (child's) feeding plate [(AOR=1.75, 95% CI: (1.16, 2.64)] and participating/attending on optimal feeding practice/demonstrations at kebele/community level [(AOR=2.02, 95% CI: (1.33, 3.07)].

**Conclusion:** The Prevalence of optimal feeding practice of participants was found to be low in the district. Optimal feeding practice among mothers of children aged 6-23 months were significantly associated with average monthly income, institutional delivery, visited PNC at least three times, access to healthcare and child dietary related factors. This study recommended strengthening existing healthcare services for mothers and their children to prevent suboptimal feeding practices.

**Keywords:** Optimal feeding practice, children aged 6-23 months, associated factors, Rural Haramaya district.

# 1. INTRODUCTION

## 1.1. Background

There are about 10.9 million annual deaths of underfive children. Over one third of under five mortality is caused by malnutrition related to inadequate complementary feeding, initiate complementary foods at 6months is crucial to achieve optimal growth, development and health (UNICEF, 2013).

Optimal feeding practices are vital for children under two years of age. WHO and UNICEF's global recommendations for optimal infant feeding, as set out in the Global Strategy, are initiation of breastfeeding within one hour of birth, EBF for the first six months of life and continued breast feeding up to the age of two years and beyond together with safe, age appropriate feeding of solid, semi-solid and soft foods starting at six months of age (WHO and UNICEF, 2013). UNICEF, 2013. Explain that ensuring optimal feeding practices have profound impact on a child's survival, health, development and prevents almost one fifth of deaths of children under five years age.

Malnutrition is wide spread in most of the developing countries and it's particularly prevalent among children as they are the most vulnerable group of the society. Ethiopia is one the poor countries in SSA and the poor nutritional status of children have been a serious problem (Kimani-Murage, E., et al., 2011).

The WHO has defined feeding practices after 6 months as during which other foods or liquids are provided along with breast milk and others foods given to young children (IBFAN-GIFA, 2012). The period of transition from exclusive breastfeeding to family foods typically covers the period from 6 to 23 months of age. It is the time when malnutrition starts in many infants, contributing significantly to the high prevalence of malnutrition in children less than five years of age in the world. During this time, complementary foods should be added to the diet of the child (WHO, 2002). It is needed to fill the gap in energy and iron and other essential nutrients, between what is provided by exclusive breastfeeding and the total nutritional requirements of the infant.

The WHO recommends introduction of complementary foods when an infant reaches 6 months of age. After sixth months of age, breast milk alone is no longer sufficient to meet the nutritional requirements of 6-23 months of age children (WHO, 2003). Optimal infant and young child feeding have single greatest potential impact on child survival. Complementary feeding starting at 6months was third among 15 top ranked child survival interventions. Complementary feeding interventions alone were estimated to prevent almost one fifth of under five children mortality in developing countries (UNICEF, 2013).

The period during pregnancy and children's first two years of life are considered a critical window of opportunity for prevention of growth retardation and under nutrition (UNICEF, 2011).The period from

birth to age two is important for optimal growth, health and development of children who need appropriate, safe and adequate amount of complementary feeding practices (Dwyer JT, et al., 2010). Whereas suboptimal infant feeding results under nutrition. Out of 10.9 million under five year deaths that occur worldwide annually, malnutrition is, directly or indirectly, responsible for 60% death of them. Over 3.4 million children less than five die each year due to inappropriate feeding practices (UNICEF, 2013). Over 67% of these deaths associated with suboptimal feeding practices in Sub-Saharan Africa and occur during the first year of life(WHO, 2009)

Complementary feeding practices are important predictors of infant and child nutrition, health and survival and there by contribute to the well being of the children from generation to generation through optimal feeding practices (Yonas F; et al., 2015). Thereafter, to meet evolving nutritional requirement infants should receive nutritionally adequate and safe complementary foods with continued breast feeding up to two years/above and complementary feeding practices are fundamental to child's survival and development (Gizaw Gemechu.D; et al., 2015).

Although the challenges to improve nutrition are significant and may appear overwhelming, there are a number of Essential Nutrition Actions that when taken together can make a difference to the well-being and survival of young children and women of reproductive age (FMOH, 2004).

## 1.2. Statement of the problem

Feeding practices for infant and young children worldwide are not optimal. Globally, about 40% of under two years deaths are associated with suboptimal feeding practices (WHO, 2002). Optimal breastfeeding and appropriate complementary feeding could prevent 13% and 6% under five mortality respectively (Kimani-Murage, E., et al., 2011). Over two third of malnutrition is associated with suboptimal feeding practices during first year of life (India, New Delhi, 2004)

Poor nutrition results not only from a lack of food but also from suboptimal feeding practices where the timing, quality and quantity of foods given to infants and young children are often inadequate (FMOH, 2004). It is estimated that sub-optimal complementary feeding in the first six months of life results in 1.4 million deaths and 10 percent of the disease burden in children younger than five years (Ali D et al., 2011 &FMOH, 2004).

In 2008, Ethiopia launched its first ever National Nutrition Strategy (NNS) and National Nutrition Program (NNP) to curb malnutrition (save the children-UK, 2009). However, recent studies show that the prevalence of stunting in <5 children is still at its unacceptable rate and hence to accelerate malnutrition reduction efforts, Ethiopia has revised its NNP in 2013(Save the children-UK, 2009)

In 2011, globally 165 million children were affected by stunting (Black. E et.al., 2013). Report show that poor nutrition causes nearly half (45%) of death in children under five(3.1million children each year) (WFP andFAO, 2014).Some of the challenges experienced in implementing national nutrition programs are high prevalence of suboptimal child feeding practice and high level of illiteracy among mothers and caretakers which causes many mothers to be unaware of information related to child's feeding practices (FMOH, 2004).

Delayed initiation of complementary feeding may result in low energy and nutrient intakes and consequent malnutrition, while premature introduction of these foods is often accompanied by increased morbidity and mortality from infections. Because of the considerable increased risk of infection associated with consumption of these foods, a two-month difference in the timing of their introduction could have important implications for global rate of diarrhea and other illnesses (Majid.Y and Majid A. 2013). Lack of appropriate complementary feeding practices remain as major public health problem in many developing countries where many children are victim of the malpractice (Chessa et al., 2011).

In most of the cases the time of initiation of complementary feeding is reported as the only important indicator of complementary feeding. However, other suboptimal infant feeding practices; minimum dietary

diversity, minimum meal frequency and minimum acceptable diet are also major reasons for childhood under nutrition in developing countries (Khanal et al., 2013).

Minimum dietary diversity said to be attained when children 6–23 months old receives foods from 4 or more food groups out of the 7 recommended food groups namely: grains, roots and tubers; legumes and nuts; dairy products; flesh foods (meat, fish, poultry and organ meats); eggs; vitamin-A rich fruits and vegetables; other fruits and vegetables.

Minimum meal frequency is defined as the proportion of children 6-23 months old who receive solid, semi-solid or soft foods (but also including milk feeds for non-breastfed children) the minimum recommended number of times or more. The number of meals should be: 2 times for breastfed infants 6–8 months; 3 times for breastfed children 9–23 months and 4 times for non-breastfed children 6–23 months. Meals" include both meals and snacks (other than trivial amounts1), and frequency is based on mothers report. If a child meets the minimum meal frequency and minimum dietary diversity for his or her age group and breastfeeding status, the child is considered to be receiving minimum acceptable diet (WHO, 2010). Children's feeding practice will be considered appropriate if all of above three indicators as recommended and suboptimal feeding practice if at least one indicator will not be fulfilled (WHO, 2010).

Evidence shows the problem of malnutrition beginning early in life, primarily during the first 12 months, when growth faltering takes hold due to sub optimal infant feeding practices. Once this growth faltering occurs, there is little opportunity for catch-up growth. Stunted infants grow to be stunted children and stunted adults. Thus, it is imperative to address issues of children's feeding during the first year of life, particularly promoting proven optimal breastfeeding practices and complementary feeding practices, both in healthy as well as sick infants. Optimum breast feeding and complementary feeding is among the high impact key interventions stated in the child survival strategy of Ethiopia (FMOH, 2004). Ethiopia is one of the countries with highest infant and child mortality rates in the world(EDHS, 2016). According to 2016 EDHS, the infant mortality and under five mortality rates are 67/1,000 and 48/1,000 live births (CSA and ICF International, 2016).

When a child is undernourished, he or she will have an increased chance of experiencing specific health problems. The health cost of under nutrition related pathologies in under five children was estimated to be ETB 1.8 billion per year. Total losses associated with under-nutrition are estimated at USD 4.7 billion for the year 2009. These losses are equivalent to 16.5% of GDP of that year (FMOH and EHNRI, 2014).

In Ethiopia, suboptimal complementary feeding practices are a major contributor to poor nutrition status among children under two years of age (Ali D et al., 2011). A rate of under nutrition shows 38% stunting, 24% underweight, and 10% wasting (EDHS, 2016). However, this decline still falls short of the MDG

2015 target 34% malnutrition prevalence. Proportion of Timely introduction of solid, semi-solid or soft foods, minimum dietary diversity, minimum meal frequency among all children aged 6-23 months was 60%, 14%, 45%respectively. Over all, only 7% of children 6-23 months are fed appropriately, based on the recommended Infant and Young child feeding (IYCF) practices (EDHS, 2016). There is about a risk factors stated in many studies done that are contributing to inappropriate optimal feeding practices, these are Sociodemographic factors, child dietary factors, maternal reproductive factors, healthcare and sanitation factors, these factor affects the magnitude of optimal feeding practices in infants and childrens.

Child feeding practice focused research studies in Ethiopia are very limited, especially as one go down to zonal and district levels.This study will be undertaken at district level and will contribute to increased availability of children's feeding practice information at district levels.. Therefore, this study will fill the gap by conducting study on optimal feeding practices and its associated factors among children of aged 6-23 months in Haramaya district of Oromia region at rural eastern Ethiopia in 2018.

## 1.3. Significances of the study

In Ethiopia, optimal feeding practice related data that shows the nature of the problem at district level is very limited. This study has generated an additional data to Haramaya district and initiates other district to undertake further studies. The finding of this study might guides healthcare workers and different local non-governmental organizations (NGOs) working at national, regional, zonal and district levels. It might also help in designing, monitoring, evaluation and implementing intervention measures on existing problems through providing feasible recommendations.

This will ultimately benefit the mothers on how to properly feed their children with diversified diets to overcome the burdens of malnutrition. In addition, findings of this study will provide magnitude of optimal feeding practice and its associated factors associated among children aged 6-23 months in Ethiopia in general and study area in particular. It might used by for other researchers who want to conduct further study on it.

## 1.4. Objectives of the study

### 1.4.1. General objective

✓ To assess optimal feeding practice and its associated factors among mothers of children aged 6-23 months in rural Haramaya district, Eastern Ethiopia, from February 08–28, 2018.

### 1.4.2. Specific objectives

✓ To determine prevalence of optimal feeding practice among mothers of children aged 6-23 months.

✓ To identify factors associated with optimal feeding practice among mothers of children aged 6-23 months.

# 2. LITERATURE REVIEW

## 2.1. Prevalence of optimal feeding practice

The WHO recommends that breastfed children 6-8 months old be feed 2 times per day and those 9-23 months old be feed 2-3 times per a day while the non-breastfed ones be fed 4 times per day (WHO, 2010).

According to a study in Pakistan on optimal feeding practices showed that only 47.3% of mothers know the appropriate age of initiating complementary food (which is 6 months). In the surveyed community, nearly 69.2% of the children were given with timely introduction of solid, semisolid or soft foods at 6-8 months of age. The same study also showed that 21.3%, 68.1% and 18.4% of the study population had received MDD, MMF and MAD respectively. The proportion of study population that consumed on Legumes, flesh foods and eggs were 6%, 25% and 19% respectively. But that of grains, roots and tubers was 87% only. In the surveyed community only half (50%) of children aged 6–23 months, had consumed vitamin A rich fruits and vegetables the day preceding the study (Habtamu W, 2013). There is limited knowledge of the advantages of consuming vegetables rich in Vitamin A (ACDI and VOCA, 2013).

A community based cross-sectional study in India showed that 42.1 % of rural mothers initiated complementary feeds to their children at recommended appropriate age of 6 months. Introduction of solid, semi-solid and soft foods rate which indicates proportion of infants aged 6 to 8 months who receive solid, semi-solid and soft food was 67.3% in rural area. The MDD, MMF and MAD of participants were 19.47%, 41.05% and 15.78% respectively (Ashwini S et al., 2014).

A study in India in 2012 showed that only 54.5% of children between the ages of 6-8 months had received any complementary foods in the previous day, and only 7% of breastfed children between ages of 6-23 months met the MAD criteria. In Nigeria, only 21% of breastfed children receive the MAD (UNICEF, 2012). A cross-sectional study in Nepal showed that 54.3, 14.2, 50% and 8.3% of 6-23 months children from households were provided with complementary feeding practices like, timely introduction of complementary foods, MDD, MMF and MAD respectively (Osei A et al., 2010). Similar study in rural area of Kenya shows, MMF and MDD was 88.3% and 17.9% respectively (Jackob K, 2015). In Kenya, MMF is low as per WHO recommendations, the Kenya DHS of 2008-09 revealed that of all the children 6-23 months, only two thirds were fed MMF (KNBS and ICF Macro, 2010).

A study conducted in southern Ethiopia shows that 23.3% fed their child ≥4 food items and the rest 76.7% fed ≤3 food items within 24 hours preceding the survey based on WHO young child feeding guide line indictors on dietary diversity (Gatahun EA et al., 2015). The dominant food items were grain and legumes. Low feeding practice was observed on animal source food like eggs and meat which is 17.3% and 2% respectively. Among mothers who fed their child MMD (≥ 3food groups) 33.59% were in age group 9-12 months (FMOH, 2004).

According to recent local studies in Tigray Region, Debre Berhan district of Amhara Region, Oromia Regional State Jima Arejo Area and Goba district revealed that the prevalence of early initiation of complementary feeding was 37.2%, 31.4%, 42.9% and 28.7% respectively (Asfaw, M.M et al., 2015). Another study conducted in SNNPR, in Kamba district by Agedew et al. found higher prevalence of early started complementary feeding practice; 59.6% (Agedew et al., 2014).

A nutrition survey conducted in Marsabit County (MOHandUNICEF, 2011), found out that children 6-8 months who were fed at least 2 times or more were 3\A7.3%, and those 9-23 months old who were fed 3 times or more per day were 27.6%. This was low noting that WHO recommends that breast fed children 6-8 months are fed at least 2 times, and those 9-23 months old be fed 3 times per day. In other countries, child feeding frequencies are higher compared to Kenya. A study done in rural Utter Pradesh (Kumudha et al, 2010) on the frequency of feeding showed higher number of children (63%) aged 6-23 months who were given the minimum recommended number of feeds.

The study conducted in rural area of Ethiopia Arsi Negele district shows that timely introduction of complementary feeding, MMF and MDD of participants was 72.5, 67.3 and 18.8 % respectively ( Kassa et al., 2016). The same study also showed that about 79.7%, 17.8%, 40% and 11.9% of participants introduced complementary feeding at 6 month of age, fulfilled MDD, MMF and MAD to their children respectively (Mekbib.E et al., 2014).

A baseline survey by Alive and Thrive in South and Tigray regions of Ethiopia showed that 67.9% of children 6-8 months consumed grains, roots and tubers. The consumption of Flesh, legumes and Vitamin A-rich fruits and vegetables was 2.3, 8.4 and 7.4% respectively (Ali D et al., 2011). Alive and Thrives education strategy recommended that MMF for breast fed 6-11 and 12-24 month old children to be 3 and 4 times respectively.

Undernourished children have lower resistance to infection and are more likely to die from common childhood ailments as diarrheal diseases and respiratory infections (USAID: IYC Nutrion Ethiopia, 2012).

Under normal condition, WHO recommends that a woman without complications should have at least ANC services. However, 32% of women with a live birth in the one year before the survey made four or more ANC visits during the length of their pregnancy. The great majority of women 81% with a live birth in the preceding one year's did not receive a PNC checkup (EDHS, 2016). This shows that most women in Ethiopia missed two important service delivery contact points which could have help them to acquire knowledge and skills related to child feeding practices related services.Meeting minimum standards of dietary quality is a challenge in Ethiopia, especially in food insecure areas. Children may not feed frequently enough, or the quality of the food may be inadequate where food security is poor (Dewey, G and Adu-Afarwuha S, 2008). Long birth intervals serve to reduce child MMD (Headey D et al., 2014).

## 2.2. Factors associated with Optimal feeding practice

Factors associated with optimal feeding practices, Ethiopia, 2016. Age of child in month was found to be important predictor for MDD and MMF. Mothers with primary education and secondary and above were 51% and 31% less likely to meet meal frequency inadequately compared with mothers with no education (3.24 and 3.21 times more likely)respectively(Kassa T, 2016). Exposure to media was significantly associated meal frequency. Mothers with satisfactory exposure to media had 29% less risk to practice inadequate meal frequency compared to mothers with unsatisfactory exposure to media.(Disha AD, 2012) . Number of ANC visits were significantly associated with optimal feeding practice, mothers with >=4 ANC visits had 3.95 times more likely to practice adequate MMF compared to mothers with no ANC visit (Nuramo A, 2017).

Economic status, educational status and exposure to behavior change communications on children's of households as well as the age a child were some of the risk factors for not meeting criteria for complementary feeding practices. MAD of children from household with no education and younger aged (12-23 months) children were 3.84 and 2.27 respectively which was low in both cases. However, the MDD of younger age children was 6.36 which were better than 1.92 and 1.76 for children from no education and poor households respectively. The same study showed that the MDD, MMF and MAD of 12-23 months old children were 80.3, 47.7 and 51.7 and that of 6-11 month old children were 47.7, 62.3 and 35.4 respectively (Fahmida U, 2014).

According to a study in Ghana, less than 10 % of children were fed on vitamin A rich fruits and vegetables. Overall, consumption of flesh meat and eggs was reported in less than 12 % whereas that of Legumes was 45.7 %. Timely complementary feeding rate among children aged 6-8 months was only 41.5 %. Among children aged 6–23 months; 57.3 % met the MMF, 61.8 % received the MDD (≥ 4 food

groups). While children aged 9–23 months were 4.2 times more likely to meet MAD compared to children aged 6–8 months.

The study showed that children not breastfeeding were 7 times more likely to meet minimum acceptable diet compared to children who were breastfeeding (Mahama S and Solfo M, 2016).

Education of fathers and attendance in ANC by mothers had a significant association with feeding practices. DHS study in Nepal showed that 76.6% of children received the MMF 30.4% children received the MDD, and 26.5% received MAD. Children of older mothers (>35 years); educated mothers were more likely to have been provided with the recommended dietary diversity. Children of mothers who had attended ≥4 ANC visits were more likely to provide their child with the recommended MMF and MAD (Khanal V et al., 2013).

A cross-sectional study in rural area of Harari region showed that the complementary feeding practice was 54.4% and was associated with a monthly income of less than ETB 1000 (p=0.003) and ETB 1000-1999 (p=0.007). Mothers who attend ANC service were 2.8 times more likely to practice timely complementary feeding than those who did not follow the ANC service, but was not associated with PNC attendance (Abera K, 2012). A child who delivered at health facility had 1.8 more likely to have practice of feeding than those delivered at home. Being female had 1.5 times more likely to have a better practice of IYCF recommendation than male child's did. Mothers who had culturally acceptable times of six month and above were 4 times more likely to practice the recommendation than below six months(Sasie et al., 2017)

According to a study conducted in eastern Ethiopian shows that children achieving MDD was 22.2% and half of the children 50.5% received the MMF, but only 12% of them received the MAD. From this study only 6.2% of the non-breastfed children and 13% of their counterparts were provided with the MAD (Kedir Teji Roba., 2016). Another study conducted in Northern Ethiopia shows that three variables were found to be significantly associated with appropriate complementary feeding practice. These were child's age 18-23 months 4.21times, mothers who had PNC 2.8 times and secondary and above educated mothers 3.8 times were more likely to give appropriate complementary feeding to their children(Ergib M, 2013)

In summary, the literature review findings show a variety of factors associated with feeding practices in different ways in diverse set-ups. Therefore, results from the studies so far conducted cannot be generalized. In Ethiopia, findings show that appropriate feeding practices and its associated better than MDD and MAD. In recent days, researchers have focused towards assessing of child feeding practices in Ethiopia. However, most of those studies focused on urban areas and lack explicit description of the status

of feeding practices in rural areas relation to various factors. This shows that there are significant children's feeding practices of maternal awareness and practices gap.

## 2.3. Conceptual framework

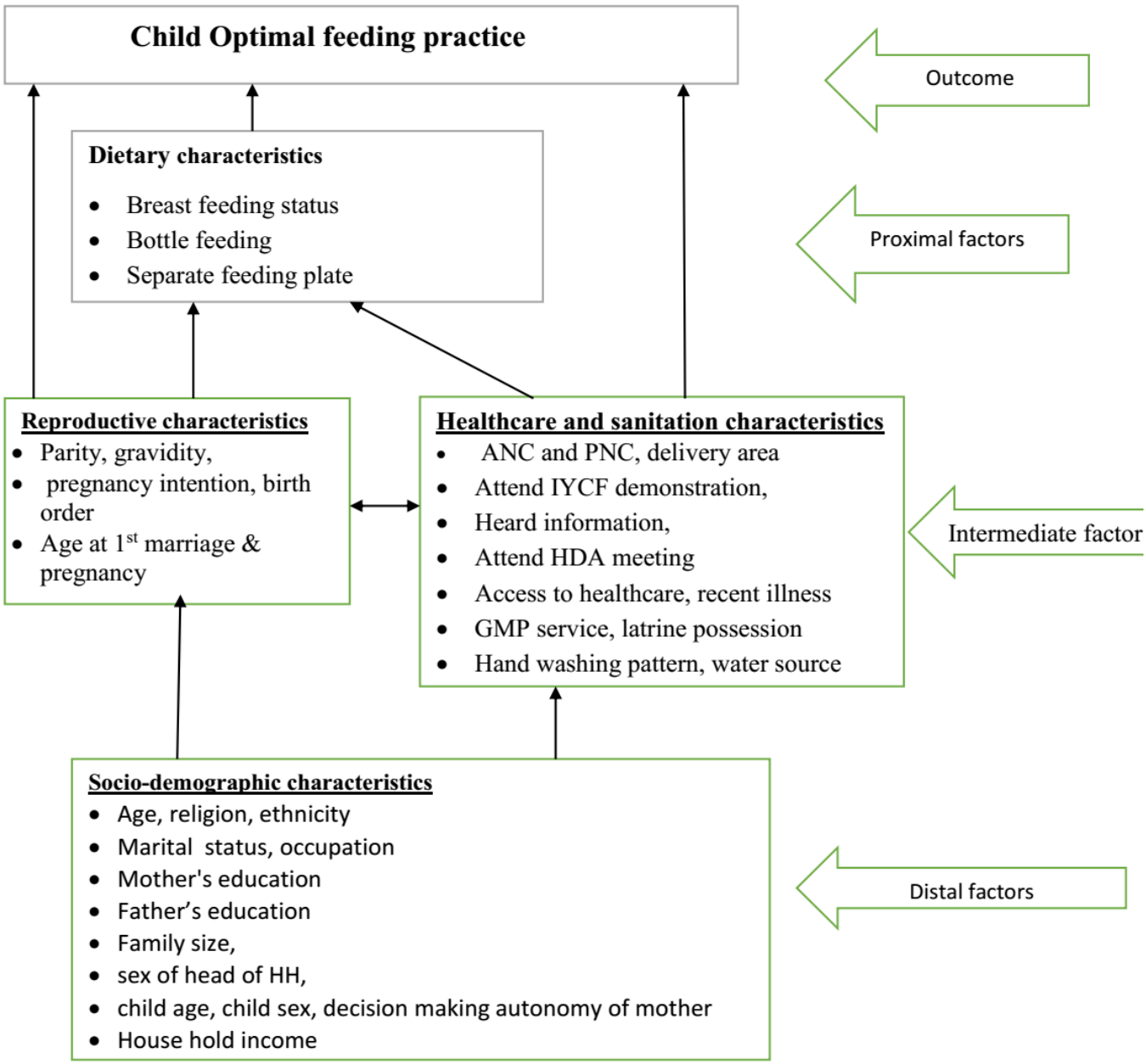



**Figure 1**: Conceptual framework for the study on optimal feeding practice and its associated factors of children aged 6-23 months in Rular Haramaya district, Eastern Ethiopia, 2018. **( Sources: Modified Black et al.,2008; and UNICEF, 2008)**

# 3. METHODS AND MATERIALS

## 3.1. Study area and period

The study was conducted in rural Haramaya district of East Hararghe Zone in Oromia Region, Eastern Ethiopia, from February 08-30, 2018. Haramaya is one of 24 districts in East Hararghe Zone; located at 506 Kilo'meters (KM) from Addis Ababa; capital city of Ethiopia, and 20 KM from Harar Town; capital of Harari region, with a total land area of 525.64 sq km. It is bordered by Kurfachelle district in north, Dire-Dawa administration in south, Kersa and Kombolcha districts in west and East direction respectively. Administratively, the district has 33 rural kebeles, 8 health centers, 33 health posts and 12 private clinics in 2017 (Haramaya district health office, 2017).

In 2017, the district has 297,953 total populations, of whom, 149,162 are males and 148,791 are females. Women in reproductive age and pregnant women are 65, 550 and 10338 respectively while children aged <1 year and children from 6-23 months are 9594 and 16,984 respectively. Potential health service coverage of the district is about 85%. Antenatal care (early), institutional delivery and post natal care reported was 46%, 85% and 38% respectively (Haramaya district health office, 2017)

## 3.2. Study design

Community based cross-sectional study was conducted.

## 3.3. Population

3.3.1. Source population

All mothers of children aged 6-23 months who reside in Rural Haramaya district.

3.3.2. Study population

All mothers of children 6-23 months of age living in randomly selected kebeles of the district.

### 3.4. Eligibility criteria

#### 3.4.1. Inclusion criteria

All mothers of children aged 6-23 months who are permanent residents of a district were included in the study.

#### 3.4.2. Exclusion criteria

Children aged 6-23 months without mothers, critically sick and mentally ill study participants (mother-child pairs) who could not respond to interview during data collection were excluded.

## 3.5. Sample size and Sampling procedure

### 3.5.1. Sample size determination

Sample sizes for this study was estimated by **Stat-calc** module of Epi-Info 7.1.3 using single population proportion formula for 1st objective and two population proportion formula for 2nd objective and finally the largest sample size was selected and used.

For 1st objective, proportion of optimal feeding practice among study participants in the district was assumed from similar previous study done elsewhere in Ethiopia as 56.5% (Molla M, 2017) with 5% margin of error, 95% CI, 10% non-response and 1.5 design effect and source population of **16,984** that lead to a minimum of **554** sample size.

For 2nd objective, two predictors of optimal feeding practice and factor associated among children from 6-23months of age are considered to determine its minimum samples and some parameters were assumed from similar previous studies conducted elsewhere in Ethiopia . Lastly, predictor with largest sample were used to estimate samples for this objective (Table **1**).

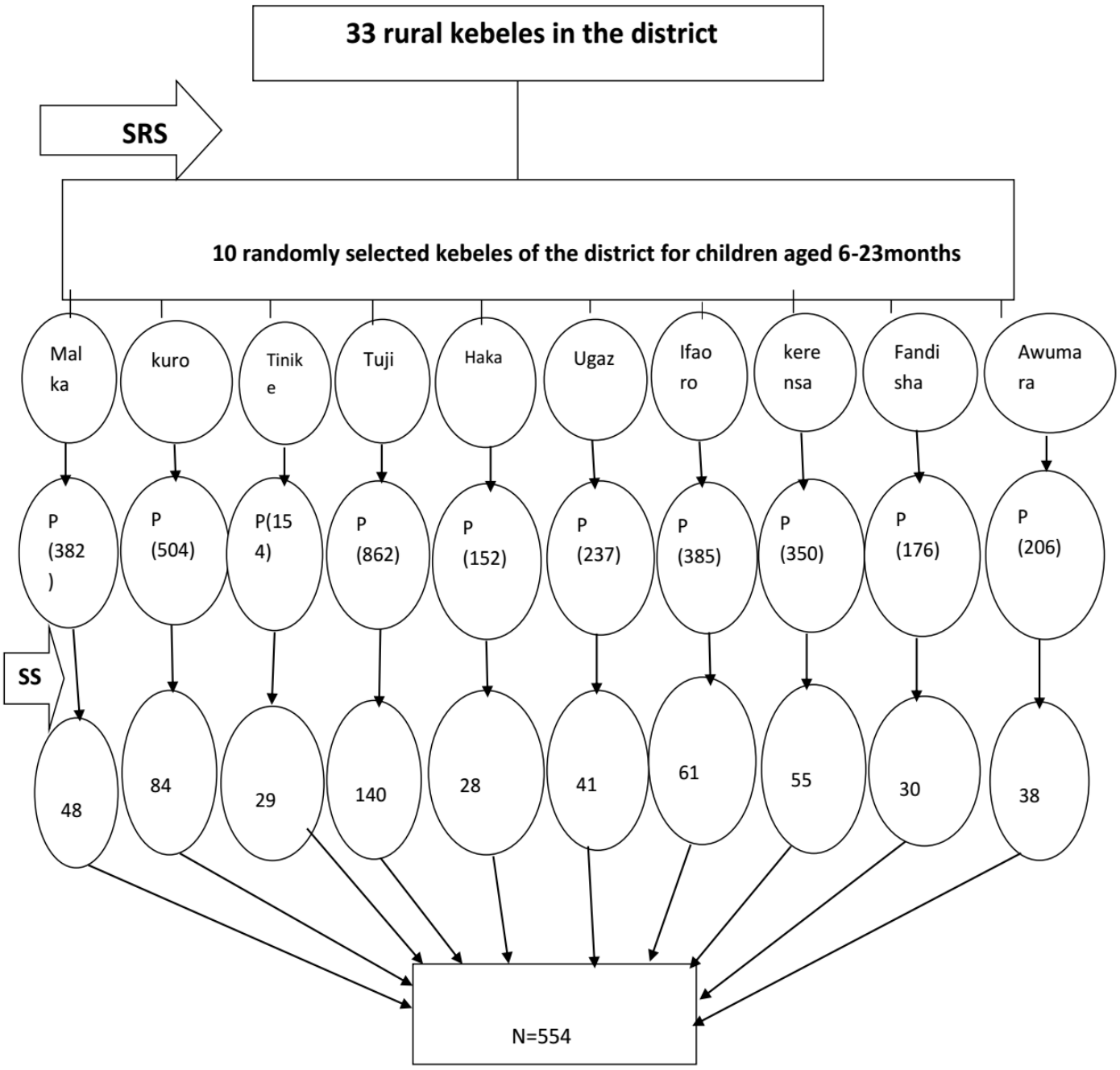
Table 1: Sample size determination for the study on optimal feeding practices and its associated factors among children aged 6-23 months in Rular Haramaya district, Eastern Ethiopia, 2018.

| Predictors | P2 | AOR | 1-β (%) | Initial samples | | | Non-response | Final samples | | | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Exposed | Unexposed | total | | Exposed | Unexposed | Total | |
| ANC visit | 54 | 2.05 | 80 | 144 | 144 | 288 | 10% | 158 | 158 | 316 | Abera , 2012 |
| PNC Visit | 19.8 | 5.98 | 80 | 28 | 28 | 56 | 10% | 31 | 31 | 62 | Molla M, 2017 |
| Age 6-11m | 18 | 4.21 | 80 | 44 | 44 | 88 | 10% | 53 | 53 | 106 | Melkamu,2013 |
| literate mothers | 38.8 | 2.96 | 80 | 67 | 67 | 134 | 10% | 74 | 74 | 148 | Kassa T, 2016 |

N.B:P2=% of outcome in unexposed, AOR=adjusted Odds Ration, 1-β =Power=80%, 95% CI and 5% α= significance level with equal ratio of exposed to unexposed group. After computing two sample sizes the largest samples were selected. Thus, finally 554 subjects were minimum sample size needed in this study.

### 3.5.1. Sampling procedure

A multi stage sampling technique was used to recruit study participants. From 33 rural kebeles of the district, 10 rural kebeles were randomly selected using lottery method. Total households having children aged 6-23 months in randomly selected kebeles of the district was obtained from district's current CHIS register available at health post. Then, samples was allocated proportionally to each selected kebeles and study participants was recruited from selected households using systematic sampling technique. A child was recruited from each sampled HH of randomly selected kebeles using systematic sampling techniques and their mothers were interviewed. When above one eligible child was observed in one HH during data collection, only one child was randomly selected (Figure 2).




Where: SS=Systematic sampling, SRS=Simple random sampling, P=Population (HH<2yrs) and S=sample and n=Total sample size

**Figure 2:** Sampling procedure for the study on optimal feeding practices and its associated factors among children aged 6-23 months in Rular Haramaya district, Eastern Ethiopia, 2018.

### 3.6. Study Variables

### 3.6.1. Dependent variable

- Optimal feeding practice

### 3.6.2. Independent variables

- **Sociodemographic characteristics**
  - Age of mothers, religion, ethnicity
  - Marital status, mother's occupation
  - Mother's education
  - Father's education, Family size
  - Sex of head of HH, child age, child sex
  - Mother's decision making autonomy
  - HH income
- **Reproductive characteristics**
  - Parity, gravidity, pregnancy intention,
  - Birth order, Age at 1st marriage, Age at 1st pregnancy
- **Healthcare and sanitation characteristics**
  - ANC and PNC,delivery area
  - Attend IYCF demonstration
  - Ever heard information, attend HDA meeting
  - Access to healthcare, recent illness of child
  - GMP service, latrine possession
  - Hand washing pattern, water source
- **Dietary characteristics**
  - Breast feeding status
  - Bottle feeding
  - Separate feeding plate

### 3.7. Operational definitions

- ✓ **Optimal feeding practice (Yes/No):** "Yes" when child initiated complementary feeding at 6 months , fed minimum dietary diversity and adequate minimum meal frequency during previous 24 hours fulfilled for child aged 6-23 months and "No“ otherwise (WHO & FANTA, 2010; Nuramo A, 2017).

✓ **Timely introduction of complementary feeding**: **"Yes"** for child aged 6–23 months who started complementary feeding (solid or semi-solid or soft foods without breast milks) at 6 months of age and "**No**" unless otherwise (WHO & FANTA, 2010; Nuramo A, 2017).

✓ **Minimum dietary diversity (Yes/No):** children aged 6-23 months who received foods at least four or more food groups in past 24 hours/day in day and night (from their houses or outside) before interview from seven food groups listed by FAO and FANTA in 2010 [grains, roots and tubers, legumes, dairy products (milk, yogurt): flesh foods (meat, fish, poultry and liver/organ meats); eggs; vitamins A–rich fruits and vegetables and other fruits and vegetables] are said to consumed diversified diet and not consumed diversified diet unless otherwise (WHO and FANTA, 2010; Nuramo A,2017).

✓ **Minimum meal frequency (Yes/No): "Yes"** for non-breastfed children aged 6-23 months who consumed either solid or semi-solid or soft foods or including breast milk feeds for at least four times during previous 24 hours before survey and **"No"** unless otherwise and "**Yes'** for breastfed children aged 6-8 months who consumed either solid or semi-solid or soft foods for at least two times during previous 24 hours before survey and **"No"** unless otherwise and finally "**Yes'** for breastfed children aged 9-23 months who consumed either solid or semi-solid or soft foods for at least three times during previous 24 hours before survey and **"No"** unless otherwise. Meals" include both meals and snacks (non-trivial amounts) (WHO and FANTA, 2010; Nuramo A, 2017).

✓ **Adequate meal frequency:** Infant and children with 6-23 months of age got MMF.

✓ **Household monthly income:** Monthly income below 1205ETB was considered as poor and above 1205 ETB was considered as rich based on World Bank International poverty line 2015(World Bank, 2015).

✓ **Permanent resident:** Residents living in district for previous 6 months before study(Kassaa T, 2016).

✓ **Hand washing pattern**: Frequent hand washing if washed hands (with/without soap) in all procedures (after toilet, before prepare food and before child feed) and unless less frequently (Ayana et al., 2015).

✓ **Decision making autonomy**: Four "Yes=1/No=0" items were asked to mothers on her own autonomy on health seeking care for about sick child, major household purchases, major household expenditures and visiting friends/relatives or participation on meetings and responses on four items were combined to define degree (0-4) of decision making autonomy. For simplicity of interpretation, the combined scores was reduced to three level (0-2); new score of 0 implies score of '0'and '1' while scores 2 and 3 were combined to new score of '1' and new score of 2 implies to score of '4' and lastly, decision making autonomy from new score was "low=0" "medium=1" and "high=2" (H.Kedir et al, 2016; Gebremedhin et al, 2017)

### 3.8. Data collection tools and procedure

The data were collected from mothers of children by ten trained diploma clinical nurses through face to face interviewer administered questionnaire from WHO and Food and Nutrition Technical Assistance(FANTA) adapted to the context of the study area using 24 hour dietary intake recall method for dietary diversity(WHO and FANTA, 2010). In addition to this, the data collection tool was adapted from EDHS, 2016 and other different literatures. The data collectors were ten diploma clinical Nurses and they were supervised by two trained BSc in public health officers and Principal investigators were supervise and monitor field works, supervisor to supervise and check quality of collected data. The data collectors were organized into five pairs to minimize bias and errors during data collection. The respondents were contacted going through home to home visit using the unique identification number. In the case of two or more children in a single household, one child was selected randomly. Closed houses were visited three times. Then the data were collected from each mothers' child pairs in a period of 22 days.

### 3.9. Data quality control

Data collectors and supervisors were trained for three days on how to fill questionaires and use tool. Questionaires was pre-tested on 5% of samples (28 children) in one separate kebele of the district within a week prior to actual study and its findings was used to modify tool. The questionaires was prepared in English and then translated to Afaan Oromo (local language) and then retranslated back into English by two independent translators. Collected data were checked manually on daily basis to check its completeness and consistency at onsite using EpiData version 3.1 was carried out double data entry.

### 3.10. Data processing and analysis

After manual checking of data completeness and consistency, data were first coded, entered and cleaned using EpiData version 3.1 and then, exported to SPSS version 22 for analysis. Descriptive statistical analysis such as simple frequencies, measures of central tendency and measures of variability were used to describe the characteristics of study participants. Statistical association between each predictors and outcome variable was observed using 2x2 tables' findings and bivariable logistic regression. During bivariate analysis, predictors with P-value <0.25 was a candidate variable for Multiple Logistic Regression (MLR) to control for possible confounders using backward stepwise method. Model adequacy was assessed by Hosmer-Lemeshow goodness-of-fit-test.P-value $\leq$0.05 and AOR with its 95%CI was used to report presence and strength of associations, respectively.

### 3.11. Ethical considerations

Prior to data collection appropriate data collection was approved by Institutional Health Research Ethical Review Committee (IHRERC) College of Health and Medical sciences of Haramaya University (HU). Official letter was written from School of Public Health to Administrative body of Zone and Permission was obtained from East Hararghae zonal Health Department and Haramaya district. In addition, an informed, voluntary, written and signed consent was obtained from every study subject before the interview by explaining the objective of the research purpose. All the information collected from the study subjects were handled confidentially through omitting their personal identification, conducting the interview in private place and the data was used for the research purpose only.

### 3.12. Information dissemination

This study's findings will be communicated to Haramaya University, Advisors and Program Coordinator through written and Oral Presentations. It will also be communicated to East Hararghe Zone Department and District Health Office in addition to district's healthcare facilities and at large communities. Last not the least; efforts will be made to prepare a manuscript for publication on peer reviewed journal.

# 4. RESULTS

## 4.1. Socio-demographic characteristics

About 531 Mothers-child pairs were participated in the study with the response rate of 96%. More than half of 310(58.4%) of participants were children aged beween 12-23 months and their median age and IQR were 12 and 9 months respectively. Two hundred twenty seven (42.7%) of children were Female participants. The majority of of children's mothers were in the age group of 20-34 years and their median age and IQR were 26 years and 6 years respectively. About two third; 364(68.5%) of children's mothers can not read/write. More than half of 291(54.8%) of participants had <1500ETB monthly income. Only 212 (39.9%) mothers had made decision making autonomy on child feeding. (Table 2).

Table 2: Socio-demographic characteristics of participants in Rural Haramaya district of East Hararghe Zone, Eastern Ethiopia, 2018 (n=531)

| Characteristics | | Frequency (No) | Percentage (%) |
|---|---|---|---|
| Child's age(months) | 12-23 | 310 | 58.4 |
| | 9-11 | 110 | 20.7 |
| | 6-8 | 111 | 20.9 |
| Sex of HH's head | Male | 476 | 89.6 |
| | Female | 55 | 10.4 |
| Mothers' age | <20 | 25 | 4.7 |
| | 20-34 | 448 | 84.4 |
| | >34 | 58 | 10.9 |
| Marital status | Married | 494 | 93.0 |
| | Others*[a] | 37 | 7.0 |
| Religion | Muslim | 524 | 98.7 |
| | Orthodox | 7 | 1.3 |
| Ethnicity | Oromo | 529 | 99.6 |
| | Amhara | 2 | 0.4 |
| Mothers' occupation | Housewife | 489 | 92.1 |
| | Employee (any) | 12 | 2.3 |
| | Merchant | 24 | 4.5 |
| Fathers' occupation | Farmer | 473 | 89.1 |
| | Employee (any) | 21 | 4.0 |
| | Merchant | 33 | 6.2 |
| | Others*[b] | 4 | 8.0 |
| Mothers' educational status | Secondary/above | 15 | 2.8 |
| | Primary | 152 | 28.6 |
| | Not Read/Write | 364 | 68.5 |
| Fathers' educational status | Secondary/above | 29 | 5.5 |
| | Primary | 179 | 33.7 |
| | Not Read/Write | 323 | 60.8 |
| Average monthly income of family (ETB) | <1500ETB | 291 | 54.8 |
| | 1500-3000ETB | 165 | 31.0 |
| | >=3000ETB | 75 | 14.1 |
| Mother's decision making autonomy | High | 212 | 39.9 |
| | Medium | 77 | 14.5 |
| | Low | 242 | 45.6 |

## 4.2. Reproductive characteristics

More than three fourth, 429(80.8%) and about 438(82.5%) of mothers were multiparous and multigravida mothers respectively. About 211(39.7%) of them had planned pregnancy and 332(62.5%) of them had the birth interval of more than three years. About 157 (29.6%) of participants had history of recent illness in past two weeks (Table 3)

Table 3: Reproductive characteristics of participants in Rural Haramaya district of East Hararghe Zone, Eastern Ethiopia, 2018 (n=531)

| Characteristics | | Frequency (No) | Percentage (%) |
|---|---|---|---|
| Parity | Primiparous | 102 | 19.2 |
| | Multiparous | 429 | 80.8 |
| Gravidity | Primigravida | 93 | 17.5 |
| | Multigravida | 438 | 82.5 |
| Age at first marriage | >=18 | 361 | 68.0 |
| | <18 | 170 | 32.0 |
| Age at first pregnancy | >=20years | 269 | 50.7 |
| | <20years | 262 | 49.3 |
| Pregnancy intention | Planned | 211 | 39.7 |
| | Unplanned | 320 | 60.3 |
| Birth order of this child | >3 | 332 | 62.5 |
| | =<3 | 199 | 37.5 |

### 4.3. Healthcare and sanitation characteristics

The majority, 394 (74.2%) of mothers had ANC follow up less than four visits when they were pregnant and of those about 137(25%) of them had four or more ANC visits. About two third of 358(67.5%) and 220(41.4%) of mothers gave birth at health institution and had PNC visit respectively.

About 465(87.6%) mothers ever heard information about optimal feeding practices. Source of information were health workers 426(86.9%), 40(8.1%) from HDA, 19(3.9%) from friends/family and others 6(1.2%). About 328(61.8%) mothers had ever attended IYCF feeding demonstration.practices conducted in their living kebele/village. About 339(64%) of participants in this studies have their own latrine. Protected water was the major source of drinking water among the majority of the study participants 397(74.8%) (Table 4).

Table 4: Healthcare and sanitation characteristics of participants in Rural Haramaya district of East Hararghe Zone, Eastern Ethiopia, 2018 (n=531)

| Characteristics | | Frequency (Yes) | Percentage (%) |
|---|---|---|---|
| ANC Attendance | >=4 | 137 | 25.8 |
| | <4 | 394 | 74.2 |
| Delivery area | Health facility | 358 | 67.5 |
| | Home | 173 | 32.5 |
| PNC follow up | >=3 | 220 | 41.4 |
| | <3 | 311 | 58.6 |
| Ever counselled during your PNC visit | Yes | 408 | 76.8 |
| | No | 123 | 23.2 |
| Heard information | Yes | 398 | 75.0 |
| | No | 133 | 25.0 |
| Source of information (n=465) | HW/HEWs | 426 | 86.8 |
| | HAD | 40 | 8.1 |
| | Others | 25 | 5.1 |
| Attended IYCF demonstration | Yes | 328 | 61.8 |
| | No | 203 | 38.2 |
| Attended HDA meeting | Yes | 224 | 42.2 |
| | No | 307 | 57.8 |
| Access to healthcare | <=30min | 173 | 32.6 |
| | >30min | 358 | 67.4 |
| Drinking water source | Protected | 397 | 74.8 |
| | Unprotected | 134 | 25.2 |
| Hand washing patterns/frequency | Frequently | 235 | 44.3 |
| | Less frequently | 296 | 55.7 |
| Latrine possession | Yes | 339 | 63.8 |
| | No | 192 | 36.2 |
| Attended GMP services | Yes | 372 | 70.2 |
| | No | 157 | 29.8 |

### 4.4. Dietary feeding characteristics

Magnitude of optimal feeding practice was (53.5%). The majority; 434(81.7%) of partciapants were breast fed in previous 24 hrs prior to study. More than three fourth; 430(81%) of them started complementary feeding at 6months. About 472(88.9%) and 386(72.7%) of partciapants were fed the recommended MMF and MDD in past 24 hours respectively. More than two third; 366(68.9%) of them had no bottle-feeding (Table 5).

Table 5: Dietary characteristics of participants in Rural Haramaya district of East Hararghe Zone, Eastern Ethiopia, 2018 (n=531)

| Characteristics | | Frequency (No) | Percentage (%) |
|---|---|---|---|
| Optimal feeding practices | Yes | 284 | 53.5 |
| | No | 247 | 46.5 |
| Complementary feeding initiation time | Timely | 430 | 81.0 |
| | Not timely | 101 | 19.0 |
| Minimum meal frequency | Adequate | 472 | 88.9 |
| | Inadequate | 59 | 11.1 |
| Minimum dietary diversity | <4 | 145 | 27.3 |
| | >=4 | 386 | 72.7 |
| Currently breast feeding | Yes | 434 | 81.7 |
| | No | 97 | 18.3 |
| Child feeding plate | Separate | 286 | 53.9 |
| | Not separate | 245 | 46.1 |
| Bottle feeding | Yes | 165 | 31.1 |
| | No | 366 | 68.9 |

## 4.2. Factors associated with Optimal feeding practice

In bivariate logistic regression indicates that there is association between optimal feeding practice of children's and some of the explanatory variables under the study such as; high decision making autonomy[COR=2.17,95%CI(1.48,3.16)], attending post natal care[COR=2.47,95%CI(1.73,3.54)], heard information about optimal feeding practices[COR=4.05,95%CI(2.64,6.20)], attending/participating on IYCF practice/demonstration[COR=1.50, 95%CI(1.40,2.80)], access to healthcare[COR=2.22, 95% CI(1.52,3.25)], having separate feeding plate[COR= 2.03, 95%CI(1.43,2.88)], bottle feeding[COR=0.45, 95%CI(0.31,0.66)] and latrine possession[COR=1.91, 95%CI(1.34,2.74)] were significantly associated with optimal feeding practice at P<0.001; this delivery area[COR=1.65, 95%CI(1.15,2.37)] are significantly associated with optimal feeding practice at P<0.01 and child's age(12-23months)[COR=0.63,95%CI(0.41,0.98)], maternal primary education[COR=1.55, 95%CI(1.06,2.28)], monthly income[COR=0.59, 95% CI(0.35,0.98)] and this pregnancy intention[COR=1.47, 95%CI(1.04, 2.09)] were significantly associated with optimal feeding practice at P<0.05 and sex of child[COR=1.31,95%CI(0.92, 1.85)], parity[COR=1.31, 95%CI(0.84,2.03)] and number.of ANC visit[COR=1.36, 95%CI(0.92, 2.02)]were significantly associated with optimal feeding practice at P<0.25 (Table 6).

Table 6: Bivariable analysis of factors associated with Optimal feeding practice of participants in Rural Haramaya District, Eastern Ethiopia, 2018 (n=531)

| Variables | | Optimal Feeding Practice | | COR (95%CI) | P-Value |
|---|---|---|---|---|---|
| | | Yes | No | | |
| Sex | Female | 130 | 97 | 1.31(0.92, 1.85) | 0.131 |
| | Male | 154 | 150 | 1.00 | |
| Age of child (in month) | 12-23 | 158 | 152 | 0.63(0.41,0.98)* | 0.043 |
| | 9-11 | 57 | 53 | 0.66(0.38, 1.12) | 0.121 |
| | 6-8 | 69 | 42 | 1.00 | |
| Educational status of mother | Secondary/Above | 11 | 4 | 2.78(0.87, 8.89) | 0.085 |
| | Primary | 92 | 90 | 1.55(1.06,2.28)* | 0.026 |
| | Not read/write | 181 | 182 | 1.00 | |
| Average monthly income | <1500ETB | 140 | 151 | 0.59(0.35,0.98)* | 0.046 |
| | 1500-3000ETB | 98 | 67 | 0.92(0.53, 1.61) | 0.780 |
| | >=3000ETB | 46 | 29 | 1.00 | |
| Parity | Primiparous | 60 | 42 | 1.31(0.84,2.03) | 0.229 |
| | Multiparous | 224 | 205 | 1.00 | |
| Decision making Autonomy | High | 138 | 74 | 2.17(1.48,3.16)*** | 0.001 |
| | Medium | 34 | 43 | 0.92 (0.55, 3.16) | 0.78 |
| | Poor | 112 | 130 | 1.00 | |
| Pregnancy intention | Planned | 125 | 86 | 1.47(1.04, 2.09)* | 0.031 |
| | UnPlanned | 159 | 161 | 1.00 | |

| | | | | | |
|---|---|---|---|---|---|
| No.of ANC visit | ≥4 | 81 | 56 | 1.36(0.92, 2.02) | 0.124 |
| | <4 | 203 | 191 | 1.00 | |
| Delivery area | Health Facility | 203 | 149 | 1.65(1.15,2.37)** | 0.007 |
| | Home | 81 | 98 | 1.00 | |
| PNC | ≥3 | 146 | 74 | 2.47(1.73,3.54)*** | 0.001 |
| | <3 | 138 | 173 | 1.00 | |
| Heard information | Yes | 246 | 152 | 4.05(2.64,6.20)*** | 0.001 |
| | No | 38 | 95 | 1.00 | |
| Attend IYCF demonstration | Yes | 178 | 150 | 1.50(1.40,2.80)*** | 0.001 |
| | No | 105 | 133 | 1.00 | |
| Acess to healthcare | (<=30min) | 115 | 58 | 2.22(1.52,3.25)*** | 0.001 |
| | (>30min) | 169 | 189 | 1.00 | |
| Separate feeding plate | Separate | 154 | 91 | 2.03(1.43,2.88)*** | 0.001 |
| | Not separate | 130 | 156 | 1.00 | |
| Bottle feeding | Yes | 66 | 99 | 0.45 (0.31,0.66)*** | 0.001 |
| | No | 218 | 148 | 1.00 | |
| Latrine possession | Yes | 201 | 138 | 1.91(1.34,2.74)*** | 0.001 |
| | No | 83 | 109 | 1.00 | |

**Statistically significant at P<0.001=***, at P<0.01=** and at P<0.05=*, COR=Crude OR**

In multiple logistic regression analysis, seven variables were found to be significantly associated with optimal feeding practice. Of these variables mothers with a monthly income between ETB<1500 and those mothers whose average monthly income was between ETB1500-3000 were more likely to practice optimal feeding practices when compared with those who earned more than or equal to ETB3000 per month [(AOR= 0.59, 95% CI: (0.35, 0.98)] and [(AOR=0.92, 95% CI: (0.53,1.61)]. Compared to children who born at home, those children mothers who born at health facilities were significantly associated with higher odds of Optimal feeding practice [(AOR=1.61, 95% CI: (1.06, 2.46)]. Odds of Optimal feeding practice was significantly higher among children whose mothers take PNC at three times more likely to meet recommended PNC attendence [AOR=2.53 (1.67, 3.82)]. Mothers who had ever heard information about feeding practice were 3.05 times higher than those mothers had never heard about it [AOR=3.05 (1.85, 5.02)]. Attending/participating IYCF demonstrations/practices [(AOR=2.02, 95% CI: (1.33, 3.07)], access to healthcare services [(AOR=2.61(1.65, 4.09)] and having separate feeding plate [(AOR=1.75, 95% CI: (1.16, 2.64)] were significantly associated (Table 7).

Table 7: Multivariable logistic regression of factors associated with Optimal feeding practice of participants in Rural Haramaya District, Eastern Ethiopia, 2018 (n=531)

| Variables | | Optimal Feeding Practice | | COR (95%CI) | AOR (95%CI) |
|---|---|---|---|---|---|
| | | Yes | No | | |
| Sex | Female | 130 | 97 | 1.31(0.92, 1.85) | 1.44(0.93,2.21) |
| | Male | 154 | 150 | 1.00 | 1.00 |
| Age of child (in month) | 12-23 | 158 | 152 | 0.63(0.41,0.98)* | 0.78(0.45,1.34) |
| | 9-11 | 57 | 53 | 0.66(0.38, 1.12) | 0.58(0.31,1.09) |
| | 6-8 | 69 | 42 | 1.00 | 1.00 |
| Educational status of mother | Secondary/Above | 11 | 4 | 2.78(0.87, 8.89) | 1.63(0.41,6.44) |
| | Primary | 92 | 90 | 1.55(1.06,2.28)* | 1.55(0.97,2.47) |
| | Not read/write | 181 | 182 | 1.00 | 0.78(0.45,1.34) |
| Average monthly income | <1500ETB | 140 | 151 | 0.59(0.35,0.98)* | 0.94(0.50, 1.78) |
| | 1500-3000ETB | 98 | 67 | 0.92(0.53, 1.61) | 0.52(0.28, 0.98)* |
| | >3000ETB | 46 | 29 | 1.00 | 1.00 |
| Parity | Primiparous | 60 | 42 | 1.31(0.84,2.03) | 0.81(0.47,1.39) |
| | Multiparous | 224 | 205 | 1.00 | 1.00 |
| Decision making autonomy | High | 138 | 74 | 2.17(1.48,3.16)*** | 0.91(0.51,1.62) |
| | Medium | 34 | 43 | 0.92 (0.55, 3.16) | 0.74(0.39,1.42) |
| | Poor | 112 | 130 | 1.00 | 1.00 |
| Pregnancy Intention | Planned | 125 | 86 | 1.47(1.04, 2.09)* | 1.09(0.67,1.82) |
| | Unplanned | 159 | 161 | 1.00 | 1.00 |
| No.of ANC visit | ≥4 | 81 | 56 | 1.36(0.92, 2.02) | 0.82(6.47,1.45) |
| | <4 | 203 | 191 | 1.00 | 1.00 |
| Delivery area | Health facility | 203 | 149 | 1.65(1.15,2.37)** | 1.61(1.06, 2.46)* |
| | Home | 81 | 98 | 1.00 | 1.00 |
| PNC visits | ≥3 | 146 | 74 | 2.47(1.73,3.54)*** | 2.53(1.67, 3.82)*** |
| | <3 | 138 | 173 | 1.00 | 1.00 |
| Heard information | Yes | 246 | 152 | 4.05(2.64,6.20)*** | 3.05 (1.85, 5.02)*** |
| | No | 38 | 95 | 1.00 | 1.00 |
| Attend IYCF demonstration | Yes | 178 | 150 | 1.50(1.40,2.80)*** | 2.02(1.33, 3.07)*** |
| | No | 105 | 133 | 1.00 | 1.00 |
| Access to healthcare | (<=30min) | 115 | 58 | 2.22(1.52,3.25)*** | 2.61(1.65, 4.09)*** |
| | (>30min) | 169 | 189 | 1.00 | 1.00 |
| Child feeding plate | Separate | 154 | 91 | 2.03(1.43,2.88)*** | 1.75(1.16, 2.64)** |
| | Not separate | 130 | 156 | 1.00 | 1.00 |
| Bottle feeding | Yes | 66 | 99 | 0.45 (0.31,0.66)*** | 0.78(0.490,1.244) |
| | No | 218 | 148 | 1.00 | 1.00 |
| Latrine possession | Yes | 201 | 138 | 1.91(1.34,2.74)*** | 1.71(0.730,1.890) |
| | No | 83 | 109 | 1.00 | 1.00 |

**Statistically significant at P<0.001=***, at P<0.01=** and at P<0.05=*, AOR=Adjusted OR**

# 5. DISCUSSION

The overall prevalence of optimal feeding practices as 53.5% (95% CI; 0.49, 0.58) were significantly associated with optimal feeding practice.

Timely initiation of complementary feeding in this study at six months is 430(81%), adequate MMF 472 (88.9%) and acceptable MDD 386(72.7%) of participants. Average family monthly income, mothers who gave birth at health facility, PNC attendance, ever heard information about child feeding, attend IYCF demonstration at kebele level, walking time to healthcare facility and child separate feeding plates were the factors identified for optimal child feeding practices among children aged 6–23months.

The prevalence of optimal feeding practice in this study was consistent with the study done in rural area of Harari Regional state in eastern Ethiopia with 54.4% (Kebele A. 2012), Lasta district of Amhara region in Northern Ethiopia with 56.6% (Menberu Molla , 2017) and this finding was much higher than study conducted in Gombora district southern ethiopia 13.5%(Nuramo A. 2017), Abyi Adi, Tigray, 10.75%(Ergib et al., 2014), Enemay district of Amhara Region in ethiopia with 40.5% (Amanuel .A; 2013), Kamba district of Amhara(Agedew et al; 2014), Arsi Negalle district of Oromia Region in ethiopia with 19.5% (kassa et al., 2016) and Northern Ghana with 14.3% (Saaka et al., 2016), but much less than study conducted in Derashe special district,southern ethiopia 78%(Wondafrash et al., 2012) and This difference could be explained by introduction of initiation time, measuring MDD (saaka et al in 2016), sample size (Majid Y and Majid A; 2013) study design and enrolled study and availability of growth monitoring and promotion services and attend IYCF demonstration.

This is the first study assessed optimal feeding practices among mothers of children aged 6–23 months using a three combined indicators in the study area. Therefore, this findings has an implication for improving the practices of optimal child feeding as per recommendation by WHO that influencing optimal feeding practices is as critical as influencing availability and use of adequate foods (Lassi et al;2013). In addition to as, the Ethiopian National strategy for IYCF and WHO recommends an accurate information and skilled support from the family, community and health system to scale up the optimal complementary feeding practices to children age 6–23 months (FMOH, 2004;Lassi et al;2013).

The majority ;( 81%) of the participants had timely introductionof complementary feeding at 6 months of age of their child which is similar with Nigeria and Nepal studies reported 73.5% and 62 % (Udoh and Amodu, 2016; Osei et al, 2010). However, in the current findings, the magnitude we detected is higher than the national prevalence (60 %) (EDHS, 2016). This figure is similar to WHO recommendation of more than 80 % of 6–8 months children should initiate complementary feeding at 6 months of age (WHO, 2010). However, in the current findings, the correct time of introduction of complementary feeding is better than other similar studies conducted in Tigray (37.2%), Amhara (31.4%), Oromia and southern Kamba district ethiopia revealed that the magnitude of timely initiation of complementary feeding was 42.9%, 28.7% and 59.6% respectively (Asfaw, M.M et al., 2015; Agedew et al., 2014) . Healthcare access such as institutional delivery and postnatal care were better in the current study area so that better awareness/information and practices on correct time of inrtoducing complementary feeding introduction compared with other studies could be the reasons for the discrepancy.

In this study, the prevalence of adequate MMF was achieved by 88.9% of participants. This finding was higher than a cross-sectional study done in Nepal that showed about (50%) of children aged 6-23 months had adequate MMF in the study area (Osei A et al., 2010), Benin (71%) and India (41%). It was also higher than national average EDHS 2016 for Ethiopia (45%) and a study in Tigray region (40%) and similar with study conducted in rural area of Kenya shows, MMF was 88.3% (Jackob K, 2015).This could be due to availability of resources in study area, family have high income can afford food easly and health care providers may educate mothers during their delivery and Post natal care services.

The current study determined the MMD was 72.7% of 6-23 months old children. This finding is higher than Nepal (30.4%), Pakistan (21.3%), CARE Ethiopia (17.2%) and Ghana (61.8%), Benin (60%) (Mitchodigni et al; 2017). This indicated that children who had primary educated mothers were 1.55 times more likely to have fulfilled MDD as compared to children of mothers with low educational level(Mahama S and Solfo M, 2013).This is due to the fact that the current study conducted in rural area where there is better access to healthcare services than other studies and better maternal information than other studies in the current study area.

After statistical adjustments were made using a logistical regression model, mothers whose income was <1500ETB and 1500-3000ETB were 0.52 times more likely to practice optimal feeding when compared with those with incomes of ETB3000 and greater respectively. In this study, mothers who had a monthly family income of more than ETB 3000 did not practice complementary feeding.This findings is consistent with cross-sectional study in rural area of Harari region showed that the complementary feeding practice was 54.4% and was associated with a monthly income <1000ETB (p=0.003) and ETB 1000-1999 (p=0.007) (Kebebew A, 2012). It is also consistent with other evidenece; family income status on child's family were associated with optimal feeding practices (Fahmida U, 2014).

Mothers who delivered their babies in a health facility were 1.61 times more likely to optimal feeding practice than those who delivered at home. The findings of this study was consistent with finding of cross sectional study done in Northern Ghana that reported; a child who delivered at health facility had 1.8 more likely to have practice of feeding than those delivered at home. Being female had 1.5 times more likely to have a better practice of feeding recommendation than male child's did (Sasie et al., 2017). Another study conducted in Dejene District, Northwest, Ethiopia, 2015 was consistent about 382(68.5%) of mothers gave birth at health institutions, 438(78.5%) of participants had attended PNC services and 427(76.5%) have everheard information about Optimal feeding practices. (Bezie WW, Aredo KK; 2017).

In this study, mothers who had attend postnatal care visits was found be a significant association with optimal feeding practice of participants and this finding was consistent with findings of study done in southern Ethiopia that reported; Mothers who attended Postnatal care with in first weeks of birth had 2.53 times more likely to have practice of feeding than mothers who had no postnatal care visit 149(39.3%)(Aberham Nuramo Chaimiso et al; 2017) and Northern ethiopia 79.0%(Ayana et al; 2017).This might be due to the maternal accessibility to healthcare facility and maternal information about child feeding practices.

In this study, Mothers who have enough information on optimal feeding practice were 3.05 times more likely to practice than whose mothers did not information. This finding was higher than study conducted in southern Ethiopia 43(19.6%) of participants had information about optimal feeding practice (Aberham Nuramo Chaimiso et al; 2017) and consistent with study conducted in Northern Ethiopia 452(83.2%)(Amanuel .A, 2016).This could be due to information helps mothers to have a good awareness of prevention and attending

routine screening of acute malnutrition during infancy and early child hood and the effort of health professional counseling of mothers during ANC, delivery and PNC services.

Mothers who took part in IYCF demonstration practices were 2.02 times more likely to apply optimal feeding practice when compared with those not attended cooking at kebele/villages. This study was higher than a study conducted in Gorche district in southern ethipia.This might be due to everheard information usually a credible source of health and nutrition information((Dangura and Gebremedhin, 2017), in my study majority of mothers can be aggravated to attend IYCF cooking demonstration was the effort of health proffessionals during provision of services.

This study showed that accessisibilty to healthcare were 2.61 times more likely to associate with optimal feeding practices of childrens than mothers who had walk time greater than 30minute from health care facility.This finding was higher than study conducted in the same zone in different districts(kassa T, 2016). This discrepancy could be age group, sample size and methods and design of the study was different due limited literatures.

More than half of study participants had separate feeding plates were 1.75 times more likely to fed their child than mothers not having to made separate feeding plates. But this study findings was much lower than study conducted in southern Ethiopia 95.9% and Nigeria 84.3 %(Egata et al;2014; Olatona et al; 2017) respectively. This difference might be due to feeding habits, family income and maternal awareness/information on dietary practices.

Generally, the study tried to assess the magnitude and factors associated with optimal feeding practices of mothers and it can be an input for the national nutrition program together with other pocket studies from different corners of the country(Ethiopia).But the study might have faced some limitations; In this study; the cross sectional design of the study might not reflect the usual feeding practices of the study participants and hence the relation could be different if data is taken at other times. We assumed that the optimal feeding practices of the children was measured to represent the usual feeding practices of the study participants.

# 6. CONCLUSION AND RECOMMENDATION

## 6. 1. Conclusion

Prevalence of optimal feeding practice among children aged 6-23 months was found to be low in the study area. In this study, optimal feeding practice of children aged 6-23 months were significantly associated with low average monthly income of famiy, place of child delivery PNC follow up, awareness/information about optimal feeding practice, distance to healthcare services, having separate (child's) feeding plate and participating/attending on optimal feeding practice/demonstrations at kebele/community level.

## 6. 2. Recomendations

**For participants (Mothers/family)**

- ✓ Mothers/family should prepare separate feeding plate for their child and attend IYCF demonstration conducted at their living village/kebele.

**For Healthcare workers/professional**

- ✓ Health professionals should aware/teach mothers on optimal feeding practices
- ✓ Healthcare workers should focus on providing and strenghthening skilled delivery and postnatal services for mothers of children aged 6-23 months.

**For Haramaya district health office**

- ✓ Strenghthen existing maternal and child healthcare services such as skilled delivery and postnatal follow up services with IYCF feeding practice demonstration/implementation at should be done at kebele level to raise this feeding practices among children aged 6-23 months.

**For Researcher**

- ✓ Further research is recommended on optimal feeding practice of IYCF recommendation using the actual feeding practices to overcome the limitation of the study.

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# 8. APPENDICES

## Appendix I. Participant Information Sheet and Informed Voluntary Consent Form (English Version)

My name is----------. I am working as a data collector for the study being conducted in this kebele by **Mahdi Ebroshe** who is studying for his master degree at Haramaya University, the College of Medicine and Health science. I kindly request you to give me your attention to explain you about the study and being selected as study participant.

### The study title

Optimal feeding practices and its associated factors among children's aged 6-23 months in Haramaya district, Eastern Ethiopia, From February 08-30, 2018.

### Purpose of the study

The principal aim of this study is to write a thesis as a partial fulfillment for a Master's program in General Public health for the principal investigator. Moreover, the findings of this study will be used as an input for the district health managers and other stakeholders to identify factors that affect optimal feeding practices among study participants in Haramaya district in 2018

### Procedure and duration

I will be interviewing you using a questionnaire to provide me with pertinent data that is helpful for the study. There are 52 questions to answer where I will fill the questionnaire by interviewing you. The interview will take around 25-30 minutes.

### Risk and Benefit

The risks of being participating in this study are very minimal except taking few minutes from your time. There would not be any direct payment for participation in this study. However, the findings from this research may reveal important information for the local health planners.

### Confidentiality

The information you will provide us will be kept confidential. There will be no any particular information that will identify your personality.

**Right**

Participation for the study is a volunteer. You have the right to participate or not. If you decide to participate, you have the full right to stop interview and this responses will not prevent you from seeking entitled services/benefits.

**Contact address**

If there are any questions or enquires any time about the study or the procedures, you can contact by using the following addresses.

Principal investigator Mahdi Ebroshe

E-mail: ebrosh9@gmail.com

Mobile phone: +251-921-845-066, +251-911-742-523

Haramaya University College of Health and Medical Science Institutional Research Ethical review Committee:

Office phone: 0254662011 P.O.Box: 235, Harar

**Declaration of informed voluntary consent**

The participant information sheet was read for me. I have clearly understood the purpose of the study, the procedure, the risk and the benefit, issues of confidentiality, the right of the participating and contact address for any queries. I have been given the opportunity to ask the questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my signature as indicated below.

Participant: Name and Signature_____Date_____

Interviewer: Name and Signature_____Date_____

Supervisor: Name and Signature_____Date_____

This is to be signed face to face in the presence of the data collector.

**Thank you!!**

## Appendix II. English Version Questionnaire

**Section I. Questionnaires identification data**

000. Date of Interview in E.C (DD/MM/YYYY) _____

001. Questioner identification number_____

002. Name of kebele_____

003. Household number_____

| **I: Socio-Demographic and Economic Information of Participants** | | | | |
|---|---|---|---|---|
| **No** | **Questions** | **Responses** | **Choices** | **Skip to** |
| 101 | Sex of child | Male<br>Female | 1<br>2 | |
| 102 | Age of child in complete months | _____ | | |
| 103 | Sex of head of household | Male<br>Female | 1<br>2 | |
| 104 | Age of child's mother (in complete years) | _____ | | |
| 105 | Current marital status (of biological mothers) | Unmarried<br>Married<br>Divorced/separated<br>Widowed | 1<br>2<br>3<br>4 | |
| 106 | Religion of mother? | Muslim<br>Orthodox Christian<br>Others (specify_____ | 1<br>2<br>3 | |
| 107 | Ethnicity of mother | Oromo<br>Amhara<br>Others(specify____ | 1<br>2<br>3 | |
| 108 | Current main occupation of mother | Housewife<br>Employee (gov't/private )<br>Merchant/Traders<br>Others (specify)_____ | 1<br>2<br>3<br>4 | |
| 109 | Current main occupation of husband | Farmer<br>Employee (gov't/private )<br>Merchants/Traders<br>Others(specify)_____ | 1<br>2<br>3<br>4 | |

| | | | | |
|---|---|---|---|---|
| 110 | Highest educational level of the mother | No any formal education<br>Read and/ write only<br>Primary school (1-8)<br>Secondary school and above | 1<br>2<br>3<br>4 | |
| 111 | Educational level of the husband | No any formal education<br>Read and/ write only<br>Primary school (1-8)<br>Secondary school and above | 1<br>2<br>3<br>4 | |
| 112 | Family size | _____ | | |
| 113 | Number of children aged <2 years in HH | _____ | | |
| 114 | Average monthly income of family (ETB) | _____ETB | | |
| 115 | Do you have autonomy (of your own) on health care seeking for your sick child? | Yes<br>No | 1<br>2 | |
| 116 | Do you have autonomy (of your own) on the major household purchases? | Yes<br>No | 1<br>2 | |
| 117 | Do you have an autonomy on (your own) on the major household's expenditures? | Yes<br>No | 1<br>2 | |
| 118 | Do you have an autonomy on (your own) visiting of friends/relatives or meetings? | Yes<br>No | 1<br>2 | |

| | **II: Dietary feeding and related characteristics** | | | **Skip to** |
|---|---|---|---|---|
| 201 | Have you ever breast fed your child? | Yes<br>No | 1<br>2 | To 205 |
| 202 | How soon after birth,did you try to breast feed this child? | | | |
| 203 | Did your child feed breast milk during previous 24 hours or Yesterday during day and night? | Yes<br>No | 1<br>2 | to Q 207 |
| 204 | If yes for Q 201, How many times? | _____ | | |
| 205 | If yes for Q 201, Did your child feed solid, semisolid or liquid foods (meals and snacks) excluding breast milks during previous 24 hours/yesterday during day and night? | Yes<br>No | 1<br>2 | |
| 206 | If yes for Q 203, How many times? | _____ | | |
| 207 | If no for Q 201, did your child feed solid, semisolid or liquid foods (meals and snacks) during previous 24 hours or yesterday during day and night? | Yes<br>No | 1<br>2 | |
| 208 | If yes 205, How many times? | _____ | | |
| 209 | At what age do you first gave solid or semisolid food or Soft foods other than breast milk to your child? | _____Month | | |
| 210 | Do you think starting complementary feeding for the child after 6 months of age can cause the child's malnutrition? | Yes<br>No | 1<br>2 | |

| | | | | |
|---|---|---|---|---|
| 211 | Do your child have a separate feeding plate for the diet? | Yes<br>No | 1<br>2 | |
| 212 | Did your child use the bottle for feeding any solid or semisolid or soft foods or breast milk during previous 24 hours/yesterday during day and night? | Yes<br>No | 1<br>2 | |

213. Please describe everything your child ate yesterday during the day and night, whether at home or outside.(24 hours dietary recall methods)

INSTRUCTIONS FOR RECORDING RESPONSES

As the respondent recalls each food, underline the food in the food group below. [Keep probing 'Anything else?' until the respondent says 'nothing else. [If respondent mentions mixed dishes like a sauce or stew, probe: What ingredients were in that [MIXED DISH]? Probe: 'Anything else?' Until respondent says 'nothing else']. If foods are used in small amounts for seasoning or as a condiment, include them under the condiments food group. [If a food recalled by respondent is not listed in any of the food groups below, write the food in the box labelled 'other foods' at the end of this section.] Probe: Since this time yesterday how many times did the childconsume any of the listed food groups and record frequency?

| **Breakfast (Hr:_____)** | **Snack (Hr:__ )** | **Lunch (Hr:_____)** | **Snack (Hr:__** | **Dinners (Hr:__** | **Snack(Hr:__** |
|---|---|---|---|---|---|
| | | | | | |

| Food group | Coding categories | |
|---|---|---|
| | Yes | No |
| A. Any food thin porridge, bread, *enjera*, kita…etc. made from grain such as millet, wheat, barley, sorghum, rice, *teff*, maize. | 1 | 2 |
| B. Tinned, powdered, infant formula such as [INSERT LOCAL EXAMPLES] or milk (excluding breast milk. | 1 | 2 |
| C. Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside. | 1 | 2 |
| D. White potatoes, white yams, manioc, cassava, or any other foods made from roots. | 1 | 2 |
| E. Any dark green leafy vegetables. | 1 | 2 |
| F. Ripe mangoes, ripe papayas, or (insert other local vitamin A-rich fruits. | 1 | 2 |
| G. Any other fruits or vegetables. | 1 | 2 |
| H. Liver, kidney, heart, or other organ meats. | 1 | 2 |

| | | |
|---|---|---|
| I. Any meat such as beef, sheep, goat, chicken, or duck. | 1 | 2 |
| J. Egg. | 1 | 2 |
| K. Fresh or dried fish, shellfish, or seafood. | 1 | 2 |
| L. Any foods made from beans, peas, lentils, nuts, or seeds. | 1 | 2 |
| M. Cheese, yogurt, or other milk products | 1 | 2 |
| N. Any oil, fats, or butter, or foods made with ny of these | 1 | 2 |
| O. Any sugary foods :chocolates, sweets, candies, pastries, cakes, or Biscuits | 1 | 2 |

| **Part III: Maternal reproductive and Medical characteristics** | | | **choices** | **Skip to** |
|---|---|---|---|---|
| 301 | Parity (Number of previous births) | _____ | | |
| 302 | Gravidity (Number of previous pregnancies) | _____ | | |
| 303 | Age at first marriage (in complete years)? | _____ | | |
| 304 | Age at first pregnancy? | (in complete yrs____ | | |
| 305 | Intention of this last pregnancy? | Unplanned<br>Planned | 1<br>2 | |
| 306 | Birth order of this child | _____th child | | |
| 307 | Do your child ever faced any recent/acute illness during previous 2 weeks? | Yes<br>No | 1<br>2 | |

| **Part IV: Health care and Environmental characteristics** | | | | **Skip to** |
|---|---|---|---|---|
| 401 | Where did you gave your last birth? | Health Institution<br>Home<br>Others(specify___ | 1<br>2<br>3 | |
| 402 | How many times did you take ANC follow up visit during your last pregnancy (0 and above is possible)? | _____ | | |
| 403 | How many times did you take PNC follow up visit for your last birth (>=0 is possible)? | _____ | | |
| 404 | Do you ever counselled during your PNC visit? | Yes<br>No | 1<br>2 | |
| 405 | Do you ever heard information about child dietary feeding? | Yes<br>No | 1<br>2 | to Q 406 |
| 406 | If yes for Q 405, from who did you heard information for the first time? | Health worker/HEWs<br>HDA leaders<br>Family/Friend<br>Other (specify) | 1<br>2<br>3<br>4 | |

| | | | | |
|---|---|---|---|---|
| 407 | Have you ever participated on optimal child feeding demonstration (IYCF) at community/level? | Yes<br>No | 1<br>2 | |
| 408 | Do you attended meeting of women development army's conducted in your kebele/village in previous one month? | Yes<br>No | 1<br>2 | |
| 409 | How long it takes you to reach your nearby public health facility? (round trips) | _____(in minute) | | |
| 410 | What is the main source of drinking water for your home/family? | River<br>Tap water<br>protected well<br>Unprotected well<br>Protected well<br>protected spring<br>Unprotected spring<br>Other (Specify)_____ | | 1<br>2<br>3<br>4<br>5<br>6<br>7<br>8 |
| 411 | What is your hand washing practices with/without soaps and or ashes in usual? (Multiple response is possible) | Before eating<br>after toilet use<br>Before feeding child<br>after dropping child feces<br>Before preparing food<br>others(specify)____ | 1<br>2<br>3<br>4<br>5<br>6 | |
| 412 | Do you have latrine in your compound? | Yes<br>No | 1<br>2 | |
| 413 | Did your child ever weighted for growth monitoring and promotion in previous one month? | Yes<br>No | 1<br>2 | |
| 414 | Do your child ever screened for acute malnutrition (By this MUAC tape) in previous one month? | Yes<br>No | 1<br>2 | |
| 415 | Did you have national family health guideline/book at home now?(for this child) | Yes<br>No | 1<br>2 | |

## Appendix III. Uunkaa waligattee fi Iccitii Hirmatoota (Afaan Oromo version)

Unka walii galtee gafatamtootaa

Maqaan Koo_____ jedhama. Yunivarsitii Hramaayaatti damee fayyaa hawaasaa waliigalteedhaan qorannoo barreeffamaan, **Obbo Mahdi Ebroshe** waliin hojjechaan jira. Gaaffannon kunkan fayyaduu harcaatii fi rakkoolee tajaajjilaa sirna nyaataa ykn shakallii nyaata kan daa'imanii ji'a 6 - 23 irratti hojjaamaa jiruu irrattii kan xiyyeefatee fi rakkolee addaan baafachuuf kan gargaaruudha. Kanaaf caraadhaan qoranoo kana keessatti akka hirmaataniif filatamtaniru.

**Mata duree qorannoo**

Harcaatii fi wantoota tajaajia (raawwannaa) shakaallii nyaataagahaa daa'iman umriin ji'a 6-23 irrati haadhooleen raawwatamu, Aanaa Haramaayaa keessatti, Bahaa Itoophiyaa.Gurandhala 08-30, 2018 tti gaggeeffamaa.

**Dhimmii qorannoo kanaa**

Kan qo'aachuuf barbaadnee waa'ee haala sadarkaa hawaasummaa keessanii fi haala naanno keessanii kan wantoota raawwannaa Shakallii sirna nyaata daa'iman ji'a 6 - 23 irratti haadholee isaanitiin raawwatamu goosisuuf sababa ta'uu danda'aan beekuuf garagaara. Kana malees digrii lammaffaa kan fayyaa hawaasummaa waligalaa barataa jiruuf xumuruuf kan gargaaruudha.

**Yeroo qoranichii itti gaggeeffamuu**

Gurandhala 1/2/208 -30/2/2018 tahuu.

**Tartiiba (adeemsa) Qorannichaa**

Kan nuti qo'aachaa jiruu waa'ee haala sadarkaa hawaasumaa keessanii, haala naanno keessanii, haala haawaasumaa daa'ima keessanii fi raawwannaa shaakallii nyaata daa'ima keessanii ta'a. Baayini gaafii gaafatamuu 52 yoo tahuu , Unka gaafannoo kun daqiiqaa 25-30 keessatti dhuuma. Tarrii gaaffiilee miira namaa tuqaan gaafaamuu dandeessuu. Odeeffanoon isiin irraa argamee yeroo kamittilee icittin isa ni eegama eenyuutti illee dabarfamee hin agarsiifamuu. Waantii hundinuu iccitiin isa kan sirritti eegamuu ni ta'aa. Maqaan keessan unka gaafannoo irratti hin barreefamuu. Qo'ataa qorrannoo kanaafi gaaataa gaaffii kana qofaatuu odeeffannoo kan arga.

**Fayyidaa fi Miidhaa**

Qo'aannaa kana irratti hirmachuu keessaniin fi odeeffanoo nu kennuu keessaniif kallattiin fayidaan argatan hin jiru. Haata'uu malee odeeffanoon isin irra argamuu qo'aana kanaf wantoota rakkoolee nyaata dabalataa daa'imanii sirii hintaanee fiduu danda'aan aanaa kanaa hubannoon akka argamuu ni

gargaara, akkasumas bu'aan qo'aanaa kanaa gara fulduratti sagantaa tajaajila kunuunsa shakaallii sirna nyaatafi fayyaa daa'imanii fayeessuuf hojjatuu keessatti nu gargara. Qo'annoo kana keessatti hirmaachuu keessaniin miidhaan isin irraa ga'uu yeroo keessan qabachuu ala miidhaan biraa isin irra ga'uu tokkolee hin jiru.

**Iccittii**

Sirritti kan isiin hubachiisuu barbaannu maqaa keessan unkaa gaafannoo kana irratti hin barreefamu. Akasumas odeffanoon nu kennitan sababa qo'anna kanaaf malee waan biraaf akka hin ollee fi hubachiisa iccittin isa sirritti ni eegama. Qo'ataa fi gaafata unka gaafannoo irraa kan hafee odeeffannoon keessan eenyumaafuu hin agarsifamuu.

**Mirga**

Qo'aanaa kana irratti hirmaachuun keessan fedhii keessan irratti kan hunda'ee dha. Yeroo kamitti illee isiin itti yoo hin tolee addaan kutanii deemu ni dandeessuu. Addaan kutuu keessaniif miidhaa tokko illeen gama tajaajila wal'dhaansaa argachaa jirtaanii fi fayidaa keessan kam illee kan isiin jalaa hin miinee ta'uu isaa isiin hubachifna.

**Teessoo qo'ataa qoranichaa fi koree naamusaa Yunivarsitti Haramaayaa**

Yeroo kamitti illee yoo odeeffannoo barbadaan teessoo armaan gadittin odeefanno argachuu ni dandeessuu.

**Tessoo qo'ataa qoranichaa**

Maqaa :-Mahdi Ebroshe

Lakk. Bil.0921845066/0911742523, E-mail: ebrosh9@gmail.com

**Teessoo koree naamusaa Yunivarsitti Haramaayaa**

Lakk. Bil: 0254662011 P.O.Box: 235, Harar

**Labsii walii galtee**

Akkan hubadheetti kaayyoon qo'annaa kanaa odeeffannoo harcaatii fi wantoota tajaajila (raawwannaa) shaakalli sirna nyaata daa'iman umriin ji'a 6 -23 irratti haadhooleen raawwatamu. Odeeffanoo armaan olitti naaf dubbifamee sirritti hubadheera. Carraa gaffii kam illee gaafachuu fi deebi argachuu qabaa.

Qo'annaa kana irratti feedhii koon kan hirmaadhuufi dhiibbaan tokkolee kan na irraa hin genyee ta'uu isaa hubadheera akkasumas yeroo kamitti illee addaan kutee deemu kan danda'uu fi sababa addan kutuu kootiif miidhaan na irra ga'uu akka hin jiree sirritti hubadheera. Qorannoo kana keessatti hirmaachuu kootiif kallattidhaan akka fayidaa hin arganee hubadheera garuu odeeffannoon anii kennuu hubannaa shaakallii sirna nyaataa daa'iman ji'a 6 - 23 cimsuuf ni gargaara. Yeroo koo gubuun ala irraa kan hafee miidhaan biraa na irraa hin ga'uu. Akkan hubadheetti maqaan koo fi sadarkaa maalummaa koo kan ibsaan akka gaafanoo irratti hin caqaffamne hubadheera. Iccitiin odeeffannoo ani kennuu qorannoo kana alaatti dhimmaa biraaf akka hin olee hubadheera. Yoo naaf hintollee illee yeroon jaaladhee addaan kutuuf mirga qabaachuu koo hubachuun waligalee mallateesseera.

Maqaa fi Mallattoo gaafatamaa_____Guyyaa_____

Maqaa fi Mallattoo Sassabaa_____ Guyyaa_____

Maqaa fi Mallattoo Supervizara_____ Guyyaa_____

Ragaa kun kan guutamuu ragaa kennaa fi sassabaa fuldurattii kan tahuu dha.

Galatoomaa!!

## Appendix IV. Afan Oromo Questionnaire

Deebii fi ragaan isaan nuuf kennitan iccitiin akka qabaman isinif ibsina.Gaafii fi deebiin jiran hundi haadha daa'imaan ta'u qaba.Gaaffiiwwaan hundi gaaffii afaanicharrattii hundaa'amee gaafatamuu qaba.Namni gaafatamuu gaafichii yoo isaaf hin galiin irraa caalaa sirritti akka hubataniif ykn ibsamuuf gaafachu ni danda'u.

**Hubachiisaa**

Gaaffiiwwaniin alaa ajajnii barreffaman nama gaaffii afaanii taasisuuf waan ta'aniif nama gaafatamuuf dubbifamuu hin qabu. Gaaffileen irraa caalaan filannoo tarreefaman ni qabu. Haata'u malee filannoota tarreessuurraan gaafatamtuun yoo dubbattu mallattoo godhaa.

Maqaa gaafataa_____Guyyaa_____Gandaa_____
Garee_____Lakk.Eenyummaa daa'imaa_____Umrii daa'imaa(Ji'an)_____

**Gaaffii Afaan Oromo**

**Qaamaa Ragaa Funaanun kan guutamuu**

000. Guyyaa gaafiin itti gaafatamee A.L.I_____

001. Lakkoofsa gaafii (Questionier) _____

002. Maqaa Araddaa_____

003. Lakk manaa_____

**Kutaa 1$^{ffaa}$: Odeeffannoo waligalaa**

| Lakk | Gaaffii | Deebii | Filanno | Garaa gafii darbi |
|---|---|---|---|---|
| 101 | Saala daa'imaa | dhiiraa<br>dhalaa | 1<br>2 | |
| 102 | Umrii daa'imaa ji'a guutudhan | _____ | | |
| 103 | Saalaa abba warraa | dhiiraa<br>dhalaa | 1<br>2 | |
| 104 | Umrii haadhaa daa'ima waggaa guutudhaan | _____ | | |
| 105 | Haalaa heerumaa haadha | Hin Heerumne<br>Heerumtee<br>Kan irraa du'e<br>Kan walhikan | 1<br>2<br>3<br>4 | |
| 106 | Amantaa haadhaa | Muslima<br>Orthodox Kiristaana<br>Kan biro yoo jiraate ibsi_____ | 1<br>2<br>3. | |

| | | | | |
|---|---|---|---|---|
| 107 | Sabaa haadha | Oromo<br>Amhara<br>Kan biro yoo jiraate ibsi_____ | 1<br>2<br>3 | |
| 108 | Hojii haadhaa amma hojjatu maali? | Haadhaa mana<br>Hojjetuu(mootumma/dhunfaa)<br>Daldaltuu<br>Kan biro yoo jirate ibsa? ____ | 1<br>2<br>3<br>4 | |
| 109 | Hojii dhirsa (abbaa mana) maali? | Qonnan bulaa<br>Hojjetaa(mootumma/dhunfaa)<br>Daldalaa<br>Kan biro yoo jiraate ibsa? _____ | 1<br>2<br>3<br>4 | |
| 110 | Sadarkaa barnoota haadhaa hangami? | Hin barannee<br>Dubbisuu fi ykn barreessuu<br>Sadarka 1$^{ffaa}$( 1-8)<br>Sadarkaa 2ffaa fi isaa ol | 1<br>2<br>3<br>4 | |
| 111 | Sadarkaa barnoota dhirsa (abbaa mana) maali? | Hin barannee<br>Dubbisuu fi ykn barreessuu<br>Sadarka 1$^{ffaa}$( 1-8)<br>Sadarkaa 2ffaa fi isaa ol | 1<br>2<br>3<br>4 | |
| 112 | Baayinaa maatii | _____ | | |
| 113 | Baayina daa'iman umrin isaani waggaa <2 gadi mana keessaa jiru meeqa? | _____ | | |
| 114 | Gidduu galeessaa galii maatii ji'an argatan(ETB) | _____(ETB) | | |
| 115 | Mana yaalaa deemuuf yeroo atii ykn daa'imni kee dhukkubsate osoo nama gaafannee ofii keetin murteesitee ni deemta? | Eeyee<br>Lakki | 1<br>2 | |
| 116 | Rashina ykn mi'a mana keessaa barbaachisoo ta'an bituuf ofii keetin ni murteessitaa? | Eeyee<br>Lakki | 1<br>2 | |
| 117 | Baasii mana keessaa murteessoo ta'an ofii keetin ni murteessite ni bastaa? | Eeyee<br>Lakki | 1<br>2 | |
| 118 | Sahibban ykn firaa kee biraa deemuuf ykn walgahii dhaquuf ofii keetin ni murteessitee ni deemta? | Eeyee<br>Lakki | 1<br>2 | |

| **Kutaa II: Odeeffanno gaafii waa'ee tajaajila soorata daa'imani** | | | **Filanno** | **Garaa gaafi darbi** |
|---|---|---|---|---|
| 201 | Daa’ima kana harma luugsifte beektaa? | Eeyyee<br>Lakkii | 1<br>2 | Gara G 205 |
| 202 | Ergaa deessee booda hangam turteeti harma hoosifte? | _____ | | |
| 203 | Daa'imnii kee sa'a 24(digdami afur) ykn guyyaa kaleessaa hangaa ammaa guyyaa fi halkan keessaa harmaa haadhaa luugee jira? | Eeyyee<br>Lakkii | 1<br>2 | Garaa G 207 |
| 204 | Yoo gaafii lakk. 201 eeyyee tahee, yeroo meeqa harmaa lugee? | _____ | | |
| 205 | Yoo gaaffii 201 eeyyee tahee, Daa'imnii nyaata kamiyyuu jajjaboo, jiddugaleessa ykn dhangala’a (dhiyana fi maksasii) harmaa haadha alattii sa’a 24 dabree keessaa guyyaa fi galgalas nyaatee jira? | Eeyyee<br>Lakkii | 1<br>2 | |
| 206 | Yoo gaaffii lakk. 203 eeyyee tahee, yeroo meeqaa nyaatee? | _____ | | |
| 207 | Yoo lakki tahee gaaffii 201, Daa'imnii nyaata kamiyyuu jajjaboo, jiddugaleessa ykn dhangala’a (dhiyana fi maksasii) sa’a 24 dabree keessaa guyyaa fi galgala nyaatee jira? | Eeyyee<br>Lakkii | 1<br>2 | |
| 208 | Yoo Eyyee tahee gaafii 205, yeroo meeqaa nyaatee? | _____ | | |
| 209 | Da’imni kee umrii meeqatti nyaata jajjaboo, jiddugaleessaa fi lalafaa harma haadhaa alatti eegalee? | _____ | | |
| 210 | Akka yaada keetitti daa'imni ergaa ji'a jaha guutee booda nyaata jalqabsisuun hanqina nyaata ni qabsisa jattee ni yaadaa? | Eeyyee<br>Lakkii | 1<br>2 | |
| 211 | Daa’imni kee nyaata yeroo nyaatuu Saanaa nyaata qophatii ni qaba? | Eeyyee<br>Lakkii | 1<br>2 | |
| 212 | Daa’imni kee sa’a digdami afur keessatti nyaata jajjaboo, jiddugaleessaa ykn nyaata lallafaa ykn harma haadhaa guyyaa fi galgala nyaata ykn dhugaatii xuxxoodhan fudhatee jira? | Eeyyee<br>Lakkii | 1<br>2 | |

**213. Kaleessaa guyyaas ta’ee galgala nyaata hunda manattis ta’e manan alatti nyaataa daa’imni Kun nyaatee ibsi.**

## Ibsaa Haalaa gaafii fi deebii

Gaafatamtuun yeroo nyaata yaadattee deebistuu, nyaata isheen maqaa dhoofte walin kan walqabatuu jala sarari.akkasumas fulee garee nyaatatiin jiruu lakkofsa tokko irratti gengoo itti marsii. Maqaa nyaata waamamee gareewwan nyaata tarreefaman kana keessaa yoo hin jiraannee, iddoo nyaataa biro jadhuu jalatti barreessii.Yeroo haati nyaata daa’imni nyaate himnee xumurtee, iddoo maqaan hinwaamamiin dubbisiif, Haala deebii ishii irratti hundaa’un lakkofsa “1” ykn “2”irratti geengoo marii. Kaleessa guyyaas tahee galgala daa’imni Kun nyaata ykn dhugaatii armaan gaditti tarreeffaman argatee?

**Nyaata biro:** nyaata maqaa waamte garuu kan gareewwaan tarreefaman kana keessa hinjirree barreessii?----------
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| **Ciree (sa’a:_____)** | **Maksasii (Hr:__** | **Laaqana (Sa’a:_____)** | **Maksasii (Sa’a:__** | **Hirata (Sa’a:___** | **Maksasii(Sa’a:__** |
|---|---|---|---|---|---|
| | | | | | |

| Gaaffi fi filannoo | Koodii | |
|---|---|---|
| | Eyyee | lakki |
| A. Marqaa ykn bulbulaa, daabo,qixxaa bideena,ruza,pasta ykn nyaata midhaan garagaraa(kan akka bishinga,boqollo,ruuza,garbu,qamadi,xaafii,kkf)irraa qophaa'an. | 1 | 2 |
| B. Wantoota hiddii, isaani keelloo dukana'aa ykn burtukana fakkaatuu qaban (dubbaa, karoota, ykn mixaxisa kan keessi isaa keellooykn burtukaana fakaatu tahee). | 1 | 2 |
| C. Nyaata hiddii, nyaatamuu (dinnicha adii, mixaxis adii, godaree adii, kaasavaa (cassava), inisata (bulla, kocho) ykn nyaata biroo kan hiddii isaani nyaatamuu. | 1 | 2 |
| D. Muduralee baalii isaani magarisaa dukana'aa tahee (dubbaa magarisaa,raafuu,,qostaa, kkf). | 1 | 2 |
| E. Kuduralee(keello dukkana'aa ykn burtukana fakkatuu) Mangoo bilchatee,papaya bilchaatee,(kudralee biro kan vitamin A tin badhaadhan). | 1 | 2 |
| F. Kudraa fi muduraa biro kamiyyuu(fkn kudralee:muza.appilii,avocado,akkasumas mudraa:loomii,qircaa,suufii,raafuu,angudaay,timatimaa(diima,keelloo, magarisa,burtukana kan hin fakanee)fi kkf. | 1 | 2 |
| G. Tiruu, kale,onnee ykn foon qamoota(organ). | 1 | 2 |
| H. Foon kamiyoo,fkk kan horii,re'ee,hoolaa,gaalaa,lukkuu,kkf | 1 | 2 |
| I. Killee | 1 | 2 |
| J. Soorataa garbaa keessaa argaman fkn qurxumii (qurxumii xaasan cufamani qopha'an). | 1 | 2 |
| K. Nyata kamiyyuu Kan akka buqula, atara, misira, loozii, suufii, gaayyaa, kkf. | 1 | 2 |
| L. Nyaataa aannan irraa qopha'an (Ayibee, Ititu, isi kireemi fi oomisha aanani Kan biro). | 1 | 2 |
| M. Soorata zeeyta qabu, choomaa,margariin ykn dhadhaa ykn nyaata kannen irraa qophaa'ee | 1 | 2 |
| N. Soorata shukkaraa of keessaa qaban kamiyyuu fkn biskuta,chekoleeta,karameellaa,keekii,baqlaba,kukisii,halawa,dayma,marmalaata, fi nyaata biro mimi'awa) | 1 | 2 |
| O. Nyaataa biro dhangala'oo ykn cicimoo (kan akka serifami,faafaa,miluppaa,beebiilakii,maazar chooyizi ykn nyaatten daa'imani magaalaf badhaadhefami oomishawwan biro) | 1 | 2 |
| Gareewwan A-O jiran jiraachu isaani mirkaneessii | | |

| **Kutaa III: Gaafii tajaajila walhormata haadha fi yaalii keessaa walqabatuu** | | | | |
|---|---|---|---|---|
| 301 | Yeroo meeqa deessee? | _____ | | |
| 302 | Yeroo meeqa ulfooftee(Baayinaa ulfooftee) | _____ | | |
| 303 | Umrii haadhaa yeroo heerumtu waggaa guutudhan meeqaa? | _____ | | |
| 304 | Yeroo jalqabaa ulfooyitee Umrii kee meeqaa ture? | waggaa_____ | | |
| 305 | Yeroo daa'imaa kana Ulfooyitu fedhii keetin itti yaadee ulfooyitee? | Osoo itti Karoorfatin<br>Itti karoorfadheetii | 1<br>2 | |

| | | | | |
|---|---|---|---|---|
| 306 | Marsaa daa'imni kun itti dhalatee | Ilmoo_____ffaa | | |
| 307 | Torban laman dabaree keessaa daa'imni kee dhibee kaminiyyuu dhukkubsatee/dhukkubsattee beekaa? | Eeyyee<br>Lakkii | 1<br>2 | |
| **Kutaa IV: keeninsa tajaajilaa fayyaa fi qulqulina naannoo walqabatee** | | | | |
| 401 | Daa'imaa kee kan booda dhaltee eessatti deessee? | Mana yaalaa<br>Mana<br>Kan biro yoo jirate ibsi? _____ | 1<br>2<br>3 | |
| 402 | Yeroo daa'imaa kana deessee hordoffi kununsaa da'umsaa duraa yeroo meeqa taasiftee? (>=0 ni danda'ama) | _____ | | |
| 403 | Ergaa daa'imaa kana deessee booda yeroo meeqa hordoffii kununsa da'umsaa booda taasiftee? (>=0 ni danda'ama) | _____ | | |
| 404 | Kununsaa da'umsaa boodaaf mana yaala yeroo dhaqtee waa'ee shakallii gorsaa nyaata daa'immani irraatti hubannoo argatee beektaa? | Eeyyee<br>Lakkii | 1<br>2 | |
| 405 | Shakaallii nyaata Daa'imani irratti hubannoo argatee beektaa? | Eeyyee<br>Lakkii | 1<br>2 | Garaa G 406 |
| 406 | Deebii G405 tiif eeyyee yoo tahee, eenyurraa yeroo duraatiif odeeffannoo argatee? | Ogeessaa fayyaa/HEF<br>Haadhaa garee<br>Maatii/hiriyootara<br>Kan biro ibsii_____ | 1<br>2<br>3<br>4 | |
| 407 | Haalaa shaakallii sirna nyaata daa'imani qopheessuu fi dalagani agarsisuu irratti sadarkaa hawaasa ykn araddaattii irratti hirmaate beekta? | Eeyyee<br>Mitii | 1<br>2 | |
| 408 | Sadarkaa araddatti dhimma fayya irratti raayyaa misooma damee dubartootata walin ji'a darbee kana keessaa walgahii hirmaate beekta? | Eeyyee<br>Mitii | 1<br>2 | |
| 409 | Mana yaala deemte deebi'uf amnaa milaa hangam sitti | ____(daqiqaan) | | |

| | | | | |
|---|---|---|---|---|
| | fudhataa? (dhaqaa fi gala) | | | |
| 410 | Bishaan dhugaatii eessaa argatan? | Lagaa<br>Bishan bombaa<br>Bishaan bollaa eegame<br>Bishan bolla hin eegamne<br>Eelaa eegamee<br>Eelaa hin eegamnee<br>Kan biro ibsi_____ | 1<br>2<br>3<br>4<br>5<br>6<br>7 | |
| 411 | Yeroo kamfaadhaa harkaa kan kee samunan fi ykn daaran dhiqataa?(deebi tokko fi isaa ol yoo ta'e irratti haa maramu) | Nyaata duraa<br>Mana fincani booda<br>Daa'ima nyaachisu duraa<br>Daa'ima ergaa teessisan booda(udaansisan)<br>Nyaata qopheessuu duraa<br>Kan biro ibsi_____ | 1<br>2<br>3<br>4<br>5<br>6 | |
| 412 | Mana fincani gosaa kamiyyuu ni qabdani? | Eeyyee<br>Lakkii | 1<br>2 | |
| 413 | Ji'aa darbee keessaa hordoffi dagagina guddinaa daa'imaniif daa'imaa keessan ulfaatina isaa madaalchiftanii jirtu? | Eeyyee<br>Lakkii | 1<br>2 | |
| 414 | Ji'a dabree kana keessaa daa'imaa keessaan hanqinaa nyaatatiif Caalaltani jirtu?(MUAC kana itti agarsisii) | Eeyyee<br>Lakkii | 1<br>2 | |
| 415 | Kitaaba qajeelfama fayyaa maatii mana ni qabdani?(daa'imaa kanaaf | Eeyyee<br>Lakkii | 1<br>2 | |

## Appendix V. Curriculum vitae

### 1. Personal identification

| | |
|---|---|
| Full name | Mahdi Ebroshe Ousman |
| Date of birth | 8/2/1988 G.C |
| Sex | Male |
| Place of birth | Hirna district, West Hararghae, Ethiopia |
| Marital Status | Married |
| Nationality | Ethiopian |
| Address | Phone no. +251-921-845-066, E-mail= ebrosh9@gmail.com |

### 2. Educational Background

| | |
|---|---|
| University | Haramaya University, 2008 G.C BSc, Degree in Nursing |
| Currently | Since Oct.2017-Completed Masters of General Public Health Course and Research fellow at Haramaya University, Ethiopia |
| Preparatory | Hirna Secondary and Preparatory School |
| High Schoc | Hirna Secondary and Preparatory School |
| Elementary | Hirna 01 Primary School |

### 3. Professional Development /Training Courses

Family Planning and Reproductive Health (March 16–27, 2012)

EPI Mid-Level Management for two weeks

TOT on supportive Supervision (Feb. 11-17, 2010)

Community Based Health Care (Nov.21-25, 2010)

Health Management and Supervision (April 4-16, 2011)

TOT on community case management ICCM for HEWs (May 03-10, 2011)

Training on new TB treatment (May 26-30, 2011)

Training on planning for Health service organization (June 01-10,2011)

Integrated Disease Surveillance and Response (June 22-29, 2009)

TOT HIV/AIDS Counseling training (PIHCT) (July 16-20, 2011)

TOT on integrated refreshment training for HEWs (CMNCH) (Nov.13-25, 2011)

TOT integrated pharmathiecal logistic supply management for HEWS (Oct. 05-09, 2011)

TOT Severe Acute malnutrition(Jan.25-31, 2010)

Integrated maternal and Neonatal child health

Comprehensive Adult ART Training (Dec.4-16, 2012)

Comprehensive Long Active Family planning (Nov.20-30, 2013)

**4. Language Skills**

| Language | Listening | Speaking | Reading | Writing | Remark |
|---|---|---|---|---|---|
| Afaan Oromo | X | X | X | X | Mother tongue |
| English | X | X | X | X | V.good |
| Amharic | X | X | x | x | Excellent |

5. Work Experience……..Nine (9) years

6. Hobbies……Reading books, Serving community

7. Computer skill….. Excellent in basic computer skills like Microsoft, SPSS, Epi-info application

8. References

1. Dr. Dereje Dhuguma, Head of Oromia Regional Health Bearue

   Phone number: +251-912670560

2. Lemessa Oljira (PhD) , Associate professor of Public Health and Adolescent Health,Head, School of Public Health, Haramaya University, Ethiopia

   Phone number: +251-915321144

3. S/r Hangatu Mohammed, FMOH Health care Program and Special Support Directorate Director

   Phone number.+251-923331334