

MINIMUM DIETARY DIVERSITY AND ASSOCIATED FACTORS
AMONG CHILDREN AGED 6-23 MONTHS IN URBAN AND RURAL
SETTING OF BENCH SHEKO ZONE, SOUTH WEST ETHIOPIA:
COMPARATIVE CROSS SECTIONAL STUDY



BY: TESFAYE BEKELE (BSc)

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BY: TEFAYE BEKELE (BSc)

ADVISORS:

1. Mr. MELESE SINAGA (MSc, Asst. professor, PhD candidate)
2. Mrs. REDIET KIDANE (BSc, MSc)

Abstract

Background: A diet lacking in diversity can increase the risk of micronutrient deficiencies and other forms of malnutrition. There are minimal studies showing minimum dietary practice in urban and rural settings comparably. Hence, the present study intended to assess and compare differences in the level of dietary diversity and its contributing factors in urban and rural settings of the Bench sheko zone.

Objective: The main objective of the study was to assess minimum dietary diversity and association factors among child aged 6-23 month on rural and urban setting of Bench Sheko zone, Ethiopia, 2022.

Methods: A community based cross sectional study was conducted among children aged 6-23 months old residing at rural and urban setting of Bench Sheko zone from June 5 to July 20/2022. Multi-stage sampling technique was employed. Data were obtained by using interviewer administered structured questionnaire and entered into epi data v.3.1 and then analyzed by SPSS v. 26. Bi-variable analysis was used to identify factors of MDDS at p-value ≤ 0.25 then entered into multivariable logistic regression used to identify factors associated with minimum dietary diversity where, p- value of 0.05 was used statically significant.

Results: A total of 736(368 urban and 368 rural subjects) were participated in the study making the response rate of 93%. The proportion of children aged 6-23 months who meet minimum dietary diversity score (MDDS) was 36.8%. From this 29.9 95% CI (25.3, 34.9) in rural and 43.8%, 95% CI (38.6, 49.0) in urban setting met the MDDS. Anti natal care follow up status of the mother (AOR=4.403(95% CI (1.943-9.977), meal frequency of a child (AOR= 4.55, 95% CI (1.725, 11.998)) were found to be significantly associated with MDDS of children in rural settings. Maternal knowledge on MDDS and infant and young child feeding (IYCF) (AOR=3.93, 95% CI (2.198, 7.027)) and (AOR=2.115, 95% CI (1.200-3.729)) were found to be significantly associated with achieved MDDS of children aged 6-23 months in both rural and urban setting respectively. Household food security status (AOR=2.057, 95% CI (1.165, 3.634)) & (AOR=3.085, 95% CI (1.748-3.5.477)) were found to be significantly associated with MDDS in rural and urban settings respectively.

Conclusion: The prevalence of minimum dietary diversity score among children aged 6-23 months residing in rural settings were lower than children living in urban settings. having ANC follow up history, and child having meal frequency ≥ 4 times per day were associated with MDDS at rural areas whereas maternal nutritional knowledge and being food secure household had also found to be an independent predictor of MDDS score at both rural and urban setting. Interventions should focus on the significant predictors at both settings to increase proportion of children who consumed diversified food. **Key words:** Associated factors, Bench Sheko zone, Children aged 6-23 years old, Dietary diversity.

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Acronym/Abbreviation

ANC:	Antenatal care
DDS:	Dietary diversity scores
EBF:	Exclusive breast feeding
EDHS	Ethiopian demographic health survey
FAO:	Food and agriculture organization
GMP	Growth monitoring program
IYCF:	Infant and young child feeding
MDD:	Minimum dietary diversity
MMF:	Minimum meal frequency
PNC:	Post natal care
SSA:	Sub Saharans Africa
WHO:	World health organization
UNICEF	United nations children's emergency fund

CHAPTER –ONE: INTRODUCTION

1.1 Background

Minimum dietary diversity (MDD) is a proxy indicator for mean micronutrient density adequacy of the diet and is measured by counting the number of food groups a child received in the last day or night(1)and also it is one of the eight core indicators of infant and young child feeding (IYCF) practices(2) . After 6 months of age, children’s energy and nutrient needs become greater than what breast milk alone can provide, introducing solid, semi-solid or soft foods at 6 months of age helps to ensure that children are consuming adequate nutrients and helps to prevent deficiencies that could result in under nutrition(3). Adequate and diversified nutrients are essential in the first thousand days (conception to 24 months) for healthy growth, proper organ formation and function, a strong immune system, neurological and cognitive development(2).

A diet lacking in diversity can increase the risk of micronutrient deficiencies, which may have a damaging effect on children’s physical and cognitive development(1). Monotonous diets of staple grains may full children and infant and young children’s stomach but their bodies are still hungry for the nutrition that only a diverse range of foods can provide(3).

Millions of children across the world do not consume enough essential vitamins and minerals those micronutrients are crucial for immunity, cellular growth and protection, and different of other functions critical for human health, particularly child growth and development(4). Globally, two in three children are not fed the minimum diet they need to grow healthy hence one in three children in the world is not growing well because of malnutrition(5). Evidences obtained from sub-Saharan Africa indicated that only 25.1% of children consumed diversified food(6). Ethiopian Demographic and Health survey conducted in 2016 indicates that only 14% of children aged 6-23 months old consumed diversified diet(7).

Improving infant and young child feeding practices is critical to improved nutrition, health and development of children(8). Hence to increase the diversity of children diet, World Health Organization(WHO) developed guiding principle for minimum dietary diversity among children aged 6-23 months which recommends children to consume foods and beverages from at least five out of eight defined food groups; within 24hours)(1). MDD is an important technique to assess whether a child is consumed diverse and quality diet and it is an

important indicator of healthy eating habits among infants and young children(9).Therefore this study was intended to assess the minimum dietary diversity, and associated factors among children aged 6-23 months in urban and rural setting of bench sheko zone, south west Ethiopia.

1.2 Statement of the problem

Globally, the burden of malnutrition remains unsolved(5). Due to nutritional problems, globally in 2020, 149 million children less than five age groups are affected by stunting and wasting, within this around 45% of children were dead (10). Due to poor nutrition and other related factors 57.6 million under five children lived in Africa are stunted in 2019 and in the same year, an estimated 12.7 million of children under five were acutely malnourished or wasted, from those 3.5 million were severely wasted(11). Due to poor child feeding practice and other related factors in Ethiopia, child under nutrition continues to be major public health problem, even if there is decrement in the past decades still, it remains high. According to the mini Ethiopian demographic health survey (EDHS) 2019, the prevalence of stunting, wasting and underweight at a national level was 37%, 7, and 21% respectively(12).

Worldwide, 71% of children aged 6–23 months were not fed according to WHO recommendations and far too many were not fed at the right time or with the right frequency and dietary diversity needed to grow and develop to their full potential(13). Children living in rural areas, poorer households and disadvantaged regions within countries have the least diverse diets. For example, the percentage of children fed a minimally diverse diet is almost double in urban areas (39 per cent) than in rural areas (23 per cent)(13).According to the national family health survey conducted in India from 2015-2016 showed that only 8.4% of children met MDD(14). In most part of western, eastern and central sub Saharan Africa, four out of five (79.9%) of children did not meet adequate MDD (15) and also a child from a rural family is more likely to have inadequate MDD(15). In Ethiopia Children in urban areas (16%) are more likely to be fed according to the minimum dietary diversity standards than those in rural areas (12%)(12).Aleta Wondo district (12%), Chila district (17%), East Gojjam zone (18.2%), Wolyta zone (43.2%) to Debrebirhan town (58.4%) and Addi Ababa(59.9%) (16–21).

Without adequate diversity and meal frequency, infants and young children would be vulnerable to under nutrition, especially stunting and micronutrient deficiencies, and to increased morbidity and mortality(22). Child who is undernourished is at risk of suffering

from cognitive and physical impairment, which impacts the quality of life as a child and an adult within the society(11).

The multiple burdens on health created today for low and middle income countries by food-related nutrition problems include not only persistent under nutrition and stunting, but also widespread vitamin and mineral deficiencies which limit people's opportunity to live healthy and productive lives, and impede the growth of economies and whole societies (23).The estimated impact of malnutrition on the global economy could be as high as US\$3.5 trillion per year, or US\$500 per individual(23). The total losses in productivity are estimated at approximately USD 26.8 billion in Africa, with in this number the largest share of productivity loss is as a result of reduced productivity due to under nutrition-related mortality which represents 62 %of the total cost(11). Ethiopia spend 155 million USD(0.55percent) GDP of health cost every year for rehabilitate underweight child, which often therapeutic feeding(11).

Long term impacts on health and socio economic development of the nation have been due to high rate of stunting, and about half of infant and child death, and 16 % of all primary school repetition are attributable to stunting. Children who suffered from under nutrition are more likely to achieve lower educational levels than healthy children(24). Different studies showed that intervening on MDD has influence on the reduction of the burden of nutritional problems like, stunting, wasting and underweight(6,25,26). Ethiopia declare "Seqota" declaration to make zero stunting for children less than two in 2030, as one of the strategy to achieve this declaration was increasing children consuming diversified food(27). Ethiopia also set a strategic objective to increase the proportion of children 6-23 months with a minimum dietary diversity score from 5% to 40% (28). Despite the strategies implemented to increase dietary diversity the problem is still worse in Ethiopia which is evidenced by EDHS 2016 which indicated only 14% of children consumed diversified food which showed the problem is still stagnant(7)

There are many studies that investigated the prevalence of MDDS and factors associated with it among children aged 6-23 month in Ethiopia. Most of them document the presence of institutional delivery, postnatal care follow-up service, antenatal care service, mother involvement in decision making, mothers being exposed to media, maternal education status were found to be the factors of minimum dietary diversity feeding practice among children aged 6–23 months(19–21,29–36). For the best of my knowledge, there is limited study

conducted to comparative MDDs across residence particularly in the proposed study area. In addition to this, market related factors which will have an effect on minimum dietary diversity were not assessed by studies done previously for similar issue. Therefore it was imperative to assess dietary diversity and its associated factors among children aged 6-23 months old at urban and rural setting of Bench sheko zone, 2022.

1.3 Significance of the study

The findings of this study will benefit the community in the study area by identifying minimum dietary diversity status and associated factors of infant and young children. That will play a greater role in future by being a baseline for planning nutrition interventions for the community, by district health offices and zonal health department and non-governmental organizations who worked on improving child nutrition for planning and designing child malnutrition reducing strategies and activities. It would also provide baseline information to formulate programs for accelerating malnutrition intervention activities during the first two years of children. The findings of this study would also be used as a reference and base line information for other researchers who are interested to conduct further study at Bench Sheko zone and at different parts of the country on similar topics.

CHAPTER-TWO: LITERATURE REVIEW

2.1 Minimum dietary diversity

Minimum dietary diversity (MDD) is a technique which measures diversified food consumption status of children in 24 hour by counting the number of food groups a child received in the last day or night and it is recommended that children should consume foods and beverages from at least five out of eight defined food groups; within 24hours which are (1) breast milk, (2) grains, roots, tubers, and plantains; (3) pulses= beans, peas, lentils, nuts and seeds; (4) dairy products =milk, infant formula, yogurt, cheese; (5) flesh foods = meat, fish, poultry, organ meats; (6) eggs; (7) Vitamin-A rich fruits and vegetables (8) other fruits and vegetables (1).

The child feeding crisis affects all regions, but young children in poorer countries and regions are in greater crisis than others and almost two thirds (62 %) of children aged 6–23 months in Latin America and the Caribbean are fed a minimally diverse diet compared with less than one in four of young children in Eastern and Southern Africa (24 %), South Asia (19 %) and West and Central Africa (21 %) (13).

Children living in rural areas, poorer households and disadvantaged regions within countries have the least diverse diets, the percentage of children fed a minimally diverse diet is almost double in urban areas (39 %) than in rural areas (23 %), and stile the gap is not narrowed during the last decade, the equity gaps in meal frequency and dietary diversity between children living in poorer and wealthier household (13).

Study conducted by Pakistan demographic health survey in six region indicated the prevalence of dietary diversity among children 6-23 month is 21% with significant urban-rural disparity (19% in rural vs. 25% in urban areas)(37).

National Family Health Survey conducted in India showed the prevalence of dietary diversity among children aged 6-23 month consuming five and more food groups are 19.4%,within this 84.4% had feed breast milk , 68.7% had feed grains, roots and tubers , 13.3% had feed legumes and nut. 58.6% had feed dairy products, 10% feed flesh food , 14.4% had feed eggs, 39.4% had vitamin reach fruits and vegetables, 23.4%other fruits and vegetables(38).

A statewide survey conducted in 34 Indonesian provinces children aged 6 to 23 months 60.02 %fulfilled the necessary dietary diversity(39).

According to another study in Malawi, 27.7% of newborns and young children met the minimum dietary diversification standards(40).

Qualitative study conducted in Senegal, the minimum dietary diversity was obtained by 55.1% of children aged 6 to 23 months ,with in this 67.3 % of children were feed iron-rich or iron-fortified foods , 65.3 % consumed fish, 9.2 % of eggs, 4.1 % were consumed meat, and 2.0 % were consumed liver/organ meal in the previous 24 hours (41). According to a community-based cross-sectional study conducted in pastoral settlements on Borena, 82% of children aged 6-23 months do not meet the MDD (42). A cross-sectional survey followed by a qualitative analysis conducted in bena Tsemay districts showed 65.6 % IYC consume less than the minimum dietary diversity requirement(43).

2.2 Factors associated with minimum dietary diversity

2.2.1 Socio-demographic and economic factors

Research conducted in Indonesia explained children's lived in urban areas are compared to children of rural areas were 1.6 times more likely to meet minimum dietary diversity(39). The study in Indonesia showed mother who had one to two children would be 1.23 times less likely to feed a minimum dietary diversity compared to mothers those had three or more children(39).

The study conducted in Malawi showed the house hold of more than one under five children were less likely to provide minimum dietary diversity to their children(40). Research were done in North West Ethiopia, enbesie sar midre district showed 86.1% of children from their family size is >4 were less likely to get diversified food compared to those have <4 family size(18)

Cross sectional study conducted in chelia showed children from <4 family sizes more likely to practiced minimum dietary diversity compared to children from ≥ 6 family sizes(17). The study conducted in the southern part of Ethiopia kucha districts showed 77% of rural children were not achieving the recommended minimum dietary diversity compared to urban children. 76.2 % of urban children achieve the recommended minimum dietary diversity scores(44)

Study conducted in Bale town explained mothers aged 30 and above years those have a child aged 6-23 months were 56 % less likely to meet minimum dietary diversity score than mothers aged 15-24 those have a child aged 6-23 months (30). Another similar study

conducted in Adea woreda those mothers who belong to the age group of 25–34 years were 1.82 times more likely to meet good dietary diversity for their 6–23-month-old children as compared with those who belong to the age group of 15–24 years(45).

Cross sectional study in Debre Brian Town showed the odds of minimum dietary diversity among IYC having mothers learned informal education were 79% less odds of consuming from 4 or more food groups than those whose mothers attended formal education (20).

A study conducted in gedio zone showed children born to mothers with a formal education were 2.8 times more likely than those born to mothers who couldn't read or write to consume the recommended minimum dietary diversity (46). Evidence from Ethiopian Demographic and Health Survey the odds of fulfilling the minimum dietary diversity among children whose mother's occupation was agricultural activity were 1.89 times higher than children whose mothers had no work(47).

Research conducted in wolayita zone, children whose mother or caregivers had other occupation were 84% less likely to practice inadequate dietary diversity when compared to children whose mother or caregiver was housewife (19). A community-based cross-sectional study conducted in Amhara region Addis zemen district showed the practice of minimum dietary diversity among children whose fathers were governmental employed was 58% less likely than self-employed(48).

Another study conducted in wolayita showed the odds of meeting minimum dietary diversity among children of a father government workers were almost four times higher than the odds of minimum dietary diversity among children from families headed by private workers [AOR = 3.7; 95% CI (2.3–5.9)](33).

The study conducted in the southern Ethiopia kucha districts showed 52.7 children from households had their own livestock of milking cow were achieved minimum dietary diversity(44). The study in kemba district, southern Ethiopia showed households had access to milking cow achieved to their children two times more likely than households those are no accesses for milking cow(49).

Having home gardening is significantly associated with meeting minimum dietary diversity standards. According to across sectional study conducted in birbir district those households

had home gardening is 2.34 times more likely to meet minimum dietary diversity compared to those households not had home gardening(29).

2.2.2 Obstetrics and Health service related factors

Research conducted in Goba town showed a child who attending growth monitoring service were 1.5 times more likely to achieve minimum dietary diversity compared to a child who were not attend to growth monitoring service(32). Cross sectional study conducted in sinan districts showed children from their mother had received PNC service for their last child were 2.07times more likely than meeting minimum dietary diversity compared to children those mother were not received PNC service(50).

Mothers had delivered their last children in the health institution 2.4times more likely to achieve minimum dietary diversity for their child compared to mothers were delivered their child in home(50). Research conducted in bale showed children from mothers received dietary counseling from health institution were 1.28 times more likely to achieve minimum dietary diversity compared to children from mothers would not receive dietary counseling(36).

2.2.3 Maternal, Child and Child nutrition related factors

A study conducted in Nepal showed children aged 6-11months and 12-17 months had higher odd of not meeting the minimum dietary diversity compared to children aged 18-23 months(51). Study in South East Asia shows 30% of girls in Myanmar was decreased odds of meeting minimum dietary diversity compared to boys(52). Another study showed in Ghana female children's were of lower odd for meeting minimum dietary diversity compared to male children's(53).

A community based cross sectional study conducted in chelia district showed Minimum dietary diversity were significantly associated and higher among children aged 18-23months, and 12-17months, with an adjusted odds ratio of and respectively, as compared to children aged 6-11month(17). Another similar study in Dabat suggest, children in the 12-17 and 18-23 month age groups were 2.4 and 8 times more likely to receive the recommended minimum dietary diversity, respectively, compared to children aged between 6 and 11 months(54).

A community based cross-sectional study was conducted in rural community of Kacha Beira district, describes a mothers who had 6-11 months age group children were 2 times more likely to give minimum dietary diversity to their children than mothers of children with age of 18-23 months old (31). The study conducted in bale showed children from mothers have good knowledge about MDD were 8 times more to meet diversified diet to their children than mothers with not have enough knowledge(30).

Study in west shewa described mothers made decisions individually were by 0.77 reduced the level of meeting MDD for their children compared to couples are made decisions together(55). Study conducted in alemata showed children had ≥ 3 meals had better to achieve MDD compared to children those had ≤ 2 meals(56). Similar studies in sinan districts also showed children had ≥ 4 meal frequency were more than 3.11 times achieved MDD compared to children those had ≤ 3 meal frequency.

2.2.4 Conceptual frame work

This conceptual frame work was constructed by reviewing different literatures which shows the relationship between socio demographic and economic factors, obstetrics and health related factors, maternal, child and child nutrition related factors with the dependent variable. Market related factors which were not addressed in previous studies were also included in this conceptual frame work.(fig.1).

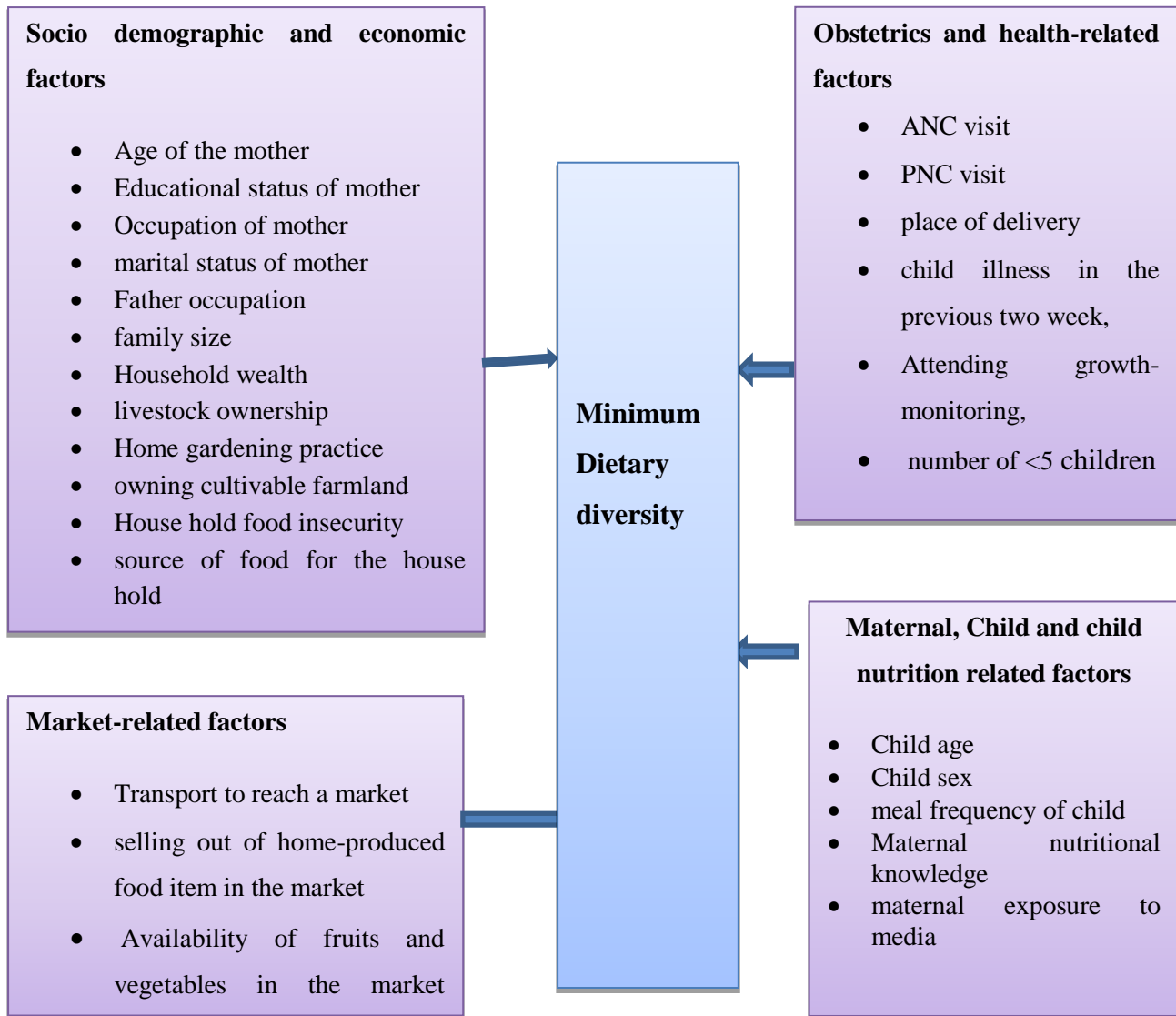


Figure 1-Conceptual frame work developed from different literature for a study done on dietary diversity and associated factors among children aged 6-23 months old in urban and rural communities of Bench Sheko zone, 2022(16–18,20,21,46,54,57).

CHAPTER-THREE: OBJECTIVES

3.1 General objective

- ❖ To assess minimum dietary diversity and association factors among children aged 6-23 month in rural and urban setting of bench sheko zone, Ethiopia, 2022 G.C.

3.2 Specific objectives

- ❖ To compare minimum dietary diversity among children aged 6-23 month in rural and urban setting Bench Sheko zone, 2022 G.C.
- ❖ To identify factors associated with minimum dietary diversity among children aged 6-23 months in rural setting of Bench Sheko zone, 2022 G.C.
- ❖ To identify factors associated with minimum dietary diversity among children aged 6-23 months in urban setting of Bench Sheko zone, 2022 G.C.

CHAPTER-FOUR: METHODS

4.1 Study area and period

The study was conducted from June 5 to July 20/2022 at Bench Sheko Zone, Southwest Ethiopia. The administrative center of Bench Sheko Zone is Mizan-Aman town which is found at a distance of about 585 km away from Addis Ababa. It is bordered by Keffa Zone in North, West Omo in North East direction, Sheka Zone in South West. This zone administration has 6 districts and two administration towns.

There are 2 hospitals in the zone (one teaching hospital & one primary hospital). The total numbers of health centers found in the zone are 26(of which 25 are government health centers and one health center for private companies). There are 127 Kebele in the zone of which 115kebeles are rural & 12 kebeles are urban). There are also 256 health extension workers providing basic primary health care services at the household level. In 2021/22, the total population of the study area was 635,191. Of these, 314419(49.5%) were men and 320772 (50.5%) women. Under 3 years children were estimated to be 52721 (8.3%) women child bearing age 15-49 years are 148000(23.3%). Children aged 6-23 months are 22,231(3.51%). Catchment area has 19965.8 sq. /km which are (52% Qola 43% Weynadega and 5% Dega) air conditions. The mean temperature in the study area ranges from 15 to 27 °C, and has total annual rainfall of 400–2008 mm. Mostly produced agricultural products are cash crops like maize, eniset, coffee, spices and fruits and vegetables. Godre, maize, and eniset are common staple food of the rural communities of bench sheko zone.

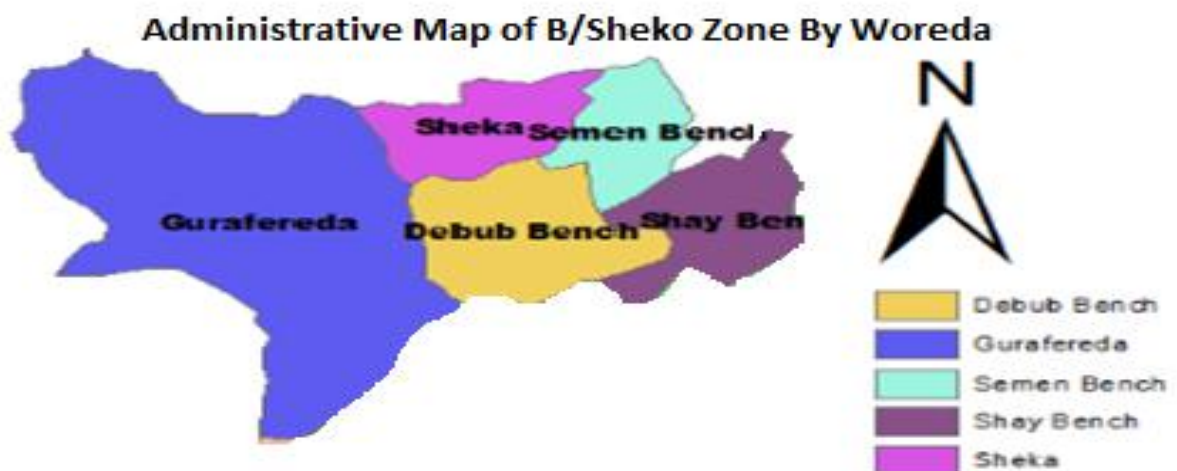


Figure 2-map of bench sheko zone, 2022.

4.2 Study design

- Community based comparative cross-sectional study was employed.

4.3 Population

4.3.1 Source population

- All mothers or care givers who have children of age 6-23 months, in the Bench - Sheko zone

4.3.2 Study population

- The study populations were all mothers/care givers those who have children aged 6-23 months and live in randomly selected Kebele's of bench sheko zone.

4.4 Eligibility criteria

4.4.1 Inclusion criteria

- Mothers/care givers who have children aged 6-23 month and who lived for at least 6 months in the study area.

4.4.2 Exclusion criteria:

- Mothers/care givers who had mental illnesses or who were seriously ill during study time were excluded from the study.
- Those children who were sick before 1week of commencement of the study were excluded

4.5 Sample size determination and Sampling technique

4.5.1 Sample size for specific objective one

Calculating sample size for objective one used G*power version 3.1.9.4 sample calculating software of Z test family calculating difference between two independent proportions and an input parameters of (Two tail, Proportion p1 of 0.431(19), Proportion p2of 0.584(20) ,precision of 0.05, power (1-β) of 80% and allocation ratio of 1:1). And it gave an output of (sample size 1=167, sample size 2=167 and a total sample size of 334.

A priori: Compute required sample size

Input: Tail(s) = Two
Proportion p2 = 0.584
Proportion p1 = 0.431

	α err prob	=	0.05
	Power (1- β err prob)	=	0.8
	Allocation ratio N2/N1	=	1
Output:	Critical z	=	1.9599640
	Sample size group 1	=	167
	Sample size group 2	=	167
	Total sample size	=	334
	Actual power	=	0.8013628

4.5.2 Sample size for the specific objective two

The sample size required was calculated using two-population proportion formula and it was computed using STATCALC application of EPI- INFO version 7 software with the assumption of: power 80%, confidence level 95%, p_1 = Prevalence of MDD score practiced at child aged 6-11 month age =35.4%, p_2 = Prevalence of MDD score practiced at child aged 18-23 month age=53%; for mother educational status p_1 = Prevalence of MDD among mothers not had formal education=18%, p_2 = Prevalence of MDD among mothers had primary education=38.4%; for father occupational status p_1 = Prevalence of MDD among father occupation is daily labor =14%, p_2 = Prevalence of MDD among father occupation is merchant =26%; for home gardening p_1 = Prevalence of MDD among households had no home gardening =9.9%, p_2 = Prevalence of MDD among households had home gardening=19.6.

Table 1-Sample size calculated for factors associated with MDD for a study done on children aged 6-23 at Bench Sheko zone, 2022.

Variable	MDD p_1 (%)	MDD p_2 (%)	CI	Powe r	Allocatio n ratio	OR	Total sample seize
Child age(19)	35.4	53	95%	80%	1:1	2.06	270
Having media exposure(54)	12.2	27.9	95%	80%	1:1	2.79	226
Father occupation(30)	14	26	95%	80%	1:1	2.2	360
Household with backyard gardening(29)	19.6	36.3	95%	80%	1:1	2.34	248

From the above calculated sample sizes, the largest sample size (360) was used to perform this study. By considering design effect of 2 and non-response rate of 10% the final sample size becomes 792 (396 for rural and 396 for urban settings).

4.6 Sampling technique and procedure

A multistage sampling technique was employed in this study. First, two woreda and one administrative town are selected from the six woreda and two administrative town found in Bench-sheko zone, by using simple random sampling (SRS) method. Second, by using SRS method again, 13 rural Kebele from the two woreda and 2 urban kebeles from the administrative town were selected. Then, the total sample size was allocated proportionally to the number of households which have a child aged 6-23 month for the selected kebeles by using the following formula

$n_i = (N_i/N) * n$ where n_i = sample size allocated for each selected kebele

n = total sample size

N_i = total number of children in each selected kebele

N = total number of children in all selected kebeles.

Then using a sampling frame obtained from Community Health Information System/CHIS (health extension worker's family folder) which contains the list of the households which have a child aged 6-23 month in rural setting a simple random sampling technique (computer generated random number) was used to select study participants. In urban setting by using a sampling frame of children aged 6-23 months old from growth and monitoring program (GMP) registration book, again simple random sampling technique (computer generated random number) was used to select the study participants. In the case where more than one eligible respondent was found in the same household, only one respondent was chosen by the lottery method(fig.3)

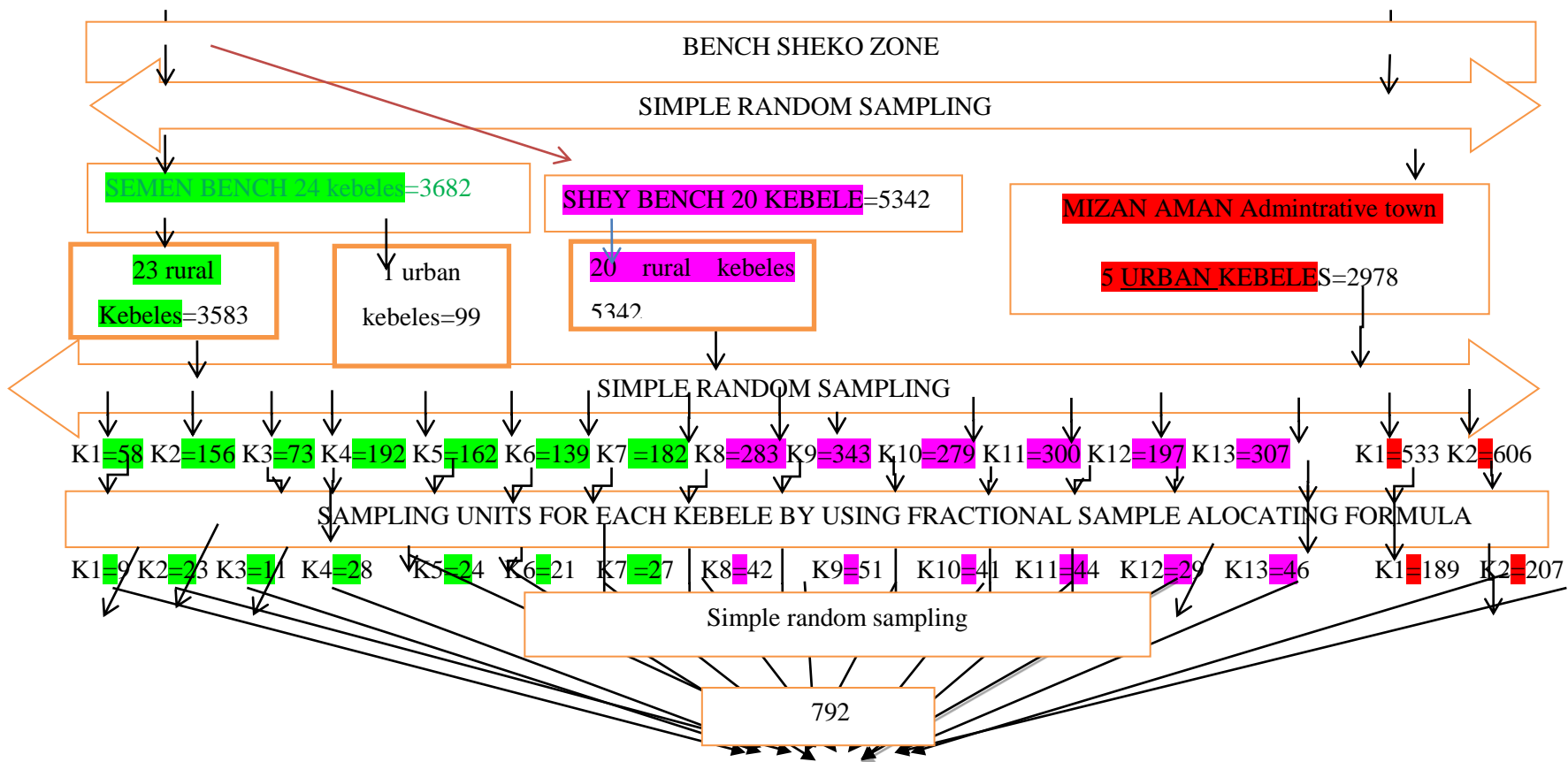


Figure 3-Showing schematic presentation of sampling procedure for a study done on dietary diversity and associated factors among children aged 6-23 months old at urban and rural communities of Bench Sheko zone.

4.7 Study variable

4.7.1 Dependent variable

- Minimum dietary diversity

4.7.2 Independent variables:

- **Socio demographic and economic factors:** Age of the mother, Educational status of mother, Occupation of mother, marital status of mother, Father Occupation, family size , household wealth, house hold have milking cow , Exposure to media, Home gardening practice, owning cultivable farmland, House hold food security.
- **Obstetrics and health-related factors:** ANC visit for the last child, PNC for the last child, place of delivery for the last child, child illness in the previous two week, Attending growth-monitoring, number of <5 children.
- **Maternal, child and child nutrition related factors:** Child age, Child sex, and maternal nutrition knowledge and children meal frequency, maternal exposure to media.
- **Market-related factors:** Transport to reach a market, selling out of home-produced food item in the market, Availability of fruits and vegetables in the market every time.

4.8 Operational definition of terms

- **Minimum dietary diversity score:** -The number of food groups the child consumed during the 24-hours preceding the survey) was used as a proxy for quality of diet consumed. It was calculated and divided into two categories of meeting the minimum dietary diversity or not, based on the WHO guidelines (i.e. Consumption of < 5 food groups did not meet the minimum dietary diversity while consumption of ≥ 5 food groups from the eight food groups in a 24 hrs. time period are considered as, met the minimum dietary diversity of children(8).
- **Maternal nutritional knowledge:** - this is the knowledge of mother/care givers about infant and young children feeding. Will be measured by 12 items then those who score above the average (mean) in knowledge assessing questions were categorized as knowledgeable and those who score below the average (mean) were categorized as not knowledgeable(45).
- **Satisfactory media exposure:** - Mothers/caregivers of children exposed to media at least once within a week by reading newspapers or magazines or listening to the radio or watching TV(58).
- **Food secure:** Exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life(59).
- **Food insecure:** Is a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life(59).

- **Wealth index:** - Households are given scores based on the number and kinds of consumer goods they own, ranging from a television to a bicycle or car, in addition to housing characteristics such as source of drinking water, toilet facilities, and flooring materials. These scores are derived using principal component analysis(12).
- **Rural:** Residents economic activities were mainly based on agriculture and domestic animals as well as limited access of public facility like telephone, high school, health center, road, the pure water, etc(60).
- **Urban:** in this study urban mean residents economic activities were mainly based on non-agriculture and which have minimum public services and facility like telephone, high school, and health center and all seasonal road, pure water, etc(60).

4.9 Data collection tool and method

Data were collected by using semi-structured interviewer administered questionnaire which is adapted from related literature and standard questioners like infant and young children MDD score and house hold food insecurity access scale from WHO and FANTAIIII was used to collect data on minimum dietary diversity practice of mothers who have children age 6-23 month(16–18,20,21,46,54,57). The questionnaire contains socio demographic and socio economic characteristics questions, obstetrics and health related factor question, maternal, child and child nutrition related factors, and market related factor questions. The questionnaire was translated to Amharic language and then back to English by independent translator for consistency.

4.10 Data quality control

Ten level 4 health extensions workers were recruited as data collectors and supervised by three BSc nurses. The questionnaire was pretested and revised before it was ready for the actual data collection. The pretest was conducted at kebeles out of the study setting to check the consistency of the tool. Two days training was given on the aim of the research, content of the questionnaire, and how to carry out interview for data collectors and supervisors to increase their performance in the activities. The Collected data were checked every day by supervisors and principal investigator for its completeness and consistency. All the interviews were conducted at the residences of the study participants. Vacant or closed houses during the day of visit were revisited again for two times to maintain the required sample size. Probing technique was used in 24 hours dietary data to minimize recall bias.

4.11 Data Entry and Analysis

After data were checked for completeness and consistency during data collection and the responses in each questionnaire were coded for simplicity of data entry. Then data were entered into a computer using EPI-data version 3.1, and then analyzed by SPSS version 26 software. Descriptive statistics including proportion, percentage, tables, graphs, frequency distribution was used to describe the data. Wealth index was computed by using Principal component analysis, then ranking into tertiles (low, middle and high). Minimum dietary diversity status of children was assessed by using by using list of eight food items and the dichotomized into two categories. Children who consumed 5 or more food items per 24 hour were considered as “meet minimum dietary diversity” whereas children who consumed less than 5 food items were considered as “un meet minimum dietary diversity”. Descriptive statistics (mean, frequency and cross tabulation) were used to present the result. Binary logistic regression model was used to determine the significant association of dependent and independent variables. Variables which had p-value less than 0.25 were entered into multivariable analysis. In multivariable analyses variables having p-value less than 0.05 were considered as significant predictors of MDDS. Adjusted odds ratios were used for comparisons and to measure the strength of the association between dependent and independent variables respectively at 95% CI. The significant difference between proportion of children who met minimum dietary diversity between urban and rural communities were assessed by using chi-square test. The stepwise backward elimination procedure was used in the multivariable logistic regression. Multi collinearity was checked by Variance Inflation Factors (VIF). Model fitness was assessed using the Hosmer-Lemeshow statistic test (p-value > 0.05) which showed the model was fit. Variables with p- value of <0.05 at confidence level of 95% was used to declare the association in multiple regression.

4.12 Ethical Consideration

Ethical clearance was obtained from Institutional Research Review Board, Institute of Health, and Jimma University. Letter of support was obtaining from Bench Sheko Zone health department and the selected district health office. Full verbal consent was obtained from the mothers/caretakers of the child after clear explanation was given about the aim of the study. Confidentiality and privacy was maintained during data collection, analysis and reporting in which the information obtained from the respondents were not shared to anyone other than data collectors, supervisors and a principal investigator. The overall data collection procedures were conducted as per covid-19 prevention protocol.

4.13 Dissemination plan

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

CHAPTER-FIVE: RESULT

5.1 Socio-demographic and economic characteristics of study participants

A total of 736 mother-child pair participated in the study, making the response rate of 93%. Out of the total, majority 249 (67.7%) of urban and 299(81.3%) of rural mother/caregiver them were in the age category of 25-34 year age group. Mean age of the mothers/caregiver was 27.50 (SD \pm 4.110) years at urban setting and 28.65(SD \pm 3.933) rural. Among total of respondents, 307 (83.5%) of in the urban and 318(86.4%) of in the rural mother/caregiver were married.

With regard to education status, 97 (26.6%) of the mothers in the urban and 181 (49.2) of rural mothers/caregiver were unable to read and write. One hundred fifteen (36.2%) of fathers in urban and 30(9.3) of fathers in rural were secondary and above. More than half (55%) mothers/caregivers were housewife (from which 42.8% were urban and 67.7 % were rural residents). And Around three-quarters (33.6%) of fathers were government employee (of which 44.6 % were urban and 16.5% were rural residents). Regarding to religion, 420 (57.9%) mother/caregiver were protestant (from which 47% were urban and 67 % were rural residents). Three hundred eighty nine (53%) mother/caregiver were from a family size of five and above (of which 54.1 % were urban and 51.6 were rural residents) (Table 2).

Table 2: -Socio-demographic and economic characteristics of mothers and children aged 6–23 months at rural and urban areas of Bench Sheko Zone, South West Ethiopia 2022.

Variable	Categories	Residence		Total N =736 N(%)
		Urban, n= 368	Rural, n= 368	
		N(%)	N(%)	
Age of mother/caregiver in years	15-24	113(30.7%)	48(13.0%)	161(21.9%)
	25-34	249(67.7%)	299(81.3%)	548(74.5%)
	35-44	6(1.6%)	21(5.7%)	27(3.7%)
marital status of mother/caregiver	Single	35(9.5%)	20(5.4%)	55(7.5%)
	Married	307(83.4%)	318(86.4%)	625(84.9%)
	Separated	18(4.9%)	20(5.4%)	38(5.2%)
	Windowed	8(2.2%)	10(2.7%)	18(2.4%)
Educational status of mother or caregiver	can't read and write	97(26.4%)	181(49.2%)	278(37.8%)
	primary (0-8)	108(29.3%)	131(35.6%)	239(32.5%)
	secondary(9-12)	90(24.5%)	27(7.3%)	117(15.9%)
	above secondary(>12)	73(19.8%)	29(7.9%)	102(13.9%)
Educational status of father or caregiver	can't read and write	50(15.7%)	135(42.1%)	185(29.0%)
	primary(0-8)	79(24.8%)	123(38.3%)	202(31.6%)
	secondary(9-12)	74(23.3%)	33(10.3%)	107(16.7%)
	above secondary(>12)	115(36.2%)	30(9.3%)	145(22.7%)
Occupation of mother or caregiver	Housewife	156(42.8%)	249(67.7%)	405(55%)
	Merchant	96(26.1%)	68(18.5%)	164(22.3%)
	gov't employee	84(22.8%)	51(13.9%)	135(18.3%)
	self-employee	8.7%	0	32(4.3%)
Occupation of father	Farmer	0(0%)	222(60.9%)	222(35%)
	Merchant	87(28.3%)	51(15.6%)	138(21.8%)
	gov't employee	137(44.6%)	54(16.5%)	191(30.1%)
	private employee	83(27%)	0(0%)	83(13.1%)
Ethnicity	bench	122(33.2%)	242(65.8%)	364(49.5)
	Keffa	77(20.9%)	64(17.4%)	141(19.2)
	menit		25(6.8%)	25(3.4)
	other specify	169(45.9%)	37(10.1%)	206(28%)
Religion of The mother or care giver	Muslim	28(7.6%)	15(4.1%)	43(5.8%)
	Orthodox	151(41.0%)	106(28.8%)	257(34.9%)
	Protestant	173(47.0%)	247(67.1%)	420(57.1%)
Family size	<5	169(45.9%)	178(48.4%)	347(47.1%)
	≥5	199(54.1%)	190(51.6%)	389(52.9%)
Owning cultivable farm land	No	345(93.8%)	82(22.3%)	427(58.0%)
	Yes	23(6.3%)	286(77.7%)	309(42.0%)
Home gardening practice	No	302(82.1%)	116(31.5%)	418(56.8%)
	Yes	66(17.9%)	252(68.5%)	318(43.2%)
The household have milking cow	No	295(80.2%)	190(51.6%)	485(65.9%)
	Yes	73(19.8%)	178(48.4%)	251(34.1%)
Source of food for the household	Purchasing	288(78.3%)	149(40.5%)	437(59.4%)
	From farmland	0(0%)	6(1.6%)	6(.8%)
	Both from farmland purchasing	80(21.7%)	213(57.9%)	293(39.8%)
Household food security status	Food insecure	200(54.3%)	193(52.4%)	393(53.4%)
	Food secured	168(45.7%)	175(47.6%)	343(46.6%)
Household wealth status	Poor	117(31.8%)	140(38.0%)	257(34.9%)
	Medium	81(22.0%)	96(26.1%)	177(24.0%)
	Rich	170(46.2%)	132(35.9%)	302(41.0%)

5.2 Obstetrics and health related factors of the study participants

Almost two-third of the mothers (75% of urban and 258(70.1%) of rural) had ANC service, while 272 (73.9%) of mothers under urban and 250 (67.9%) out of rural had PNC services. Two hundred seventy two (73.9%) of children under urban and 314 (85.3%) out of rural had no child illness in the previous 2 weeks. Out of study participants (66.3% of urban and 67.1 of rural) were attended growth monitoring. 211 (57.3%) children under urban and 251 (68.2%) out of rural had one and more than two numbered of children respectively (Table 3) .

Table 3-Obstetrics' and health related characteristics children aged 6–23 months at rural and urban areas of Bench Sheko Zone, South West Ethiopia 2022.

Variable	Categories	Residence		
		Urban, n= 368 N (%)	Rural, n= 368 N (%)	Total = 736 N(%)
ANC visit for the current child	No	92(25.0%)	110(29.9%)	202(27.4%)
	Yes	276(75.0%)	258(70.1%)	534(72.6%)
PNC for the current child	No	96(26.1%)	118(32.1%)	214(29.1%)
	Yes	272(73.9%)	250(67.9%)	522(70.9%)
place of delivery of the current child	Home	65(17.7%)	81(22.0%)	146(19.8%)
	Health institution	303(82.3%)	287(78.0%)	590(80.2%)
child illness in the previous 2 weeks	No	272(73.9%)	314(85.3%)	586(79.6%)
	Yes	96(26.1%)	54(14.7%)	150(20.4%)
Attending growth monitoring	No	124(33.7%)	114(31.0%)	238(32.3%)
	Yes	244(66.3%)	254(69.0%)	498(67.7%)
Number of <5 children	One	211(57.3%)	117(31.8%)	328(44.6%)
	two or more	157(42.7%)	251(68.2%)	408(55.4%)

5.3 Maternal, child and child nutrition related factors of the study participants

The proportion children aged 6-23 years old who met minimum dietary diversity was 29.9%, 95% CI (25.3%, 34.9%) at rural setting and 43.8%, 95% CI (38.6, 49.0%) at urban setting. This study indicated that there is a significant difference between proportion of acceptable dietary diversity among children aged 6-23 months old living in rural and urban settings of Bench Sheko zone ($\chi^2=15.19$, p -value < 0.001). Of the mothers, 182 (49.5%) in urban and 141 (38.3%) in the rural setting were knowledgeable about nutrition. With regarding to maternal exposure to media, 117 (31.8%) of maternal under in urban and 111(30.2%) out of rural mother were unsatisfactory and satisfactory media exposure respectively. Among total of respondents, 142 (38.6%) child in urban and 172(46.7%) children in rural were in the age category of 12-17 months age group. More than half of (51.1%) children in urban and 196 (53.3%) of children in rural were female. Two hundred thirty four (63.6%) in urban and rural of children had meal frequency of 3 times per day. Among all study participants, 259 (70.4%) and 304 (82.6%) consume breast milk at urban and rural settings respectively. On the other hand only 74 (20.1%) in urban and 65 (17.7%) in rural areas consumed flesh foods (table 4).

Table 4-Maternal, child and nutrition related characteristics children aged 6–23 months at rural and urban areas of Bench Sheko Zone, South West Ethiopia 2022.

Variable	Categories	Residence		Total =736 N (%)
		Urban, n 368 N (%)	Rural, n 368 N (%)	
Maternal Nutrition knowledge on dietary diversity and IYCFP	Not knowledgeable	186(50.5%)	227(61.7%)	413(56.1%)
	Knowledgeable	182(49.5%)	141(38.3%)	323(43.9%)
Maternal exposure to media	Unsatisfactory media exposure	117(31.8%)	257(69.8%)	377(51.2%)
	Satisfactory media exposure	251(68.2%)	111(30.2%)	359(48.8%)
child age	6-11	116(31.5%)	64(17.4%)	180(24.5%)
	12-17	142(38.6%)	172(46.7%)	314(42.7%)
	18-23	110(29.9%)	132(35.9%)	242(32.9%)
child sex	Male	180(48.9%)	172(46.7%)	352(47.8%)
	Female	188(51.1%)	196(53.3%)	384(52.2%)
child meal frequency	1 to 2 times per day	75(20.4%)	56(15.2%)	131(17.8%)
	3 times per day	234(63.6%)	235(63.9%)	469(63.7%)
	4 times per day	59(16.0%)	77(20.9%)	136(18.5%)
Minimum dietary diversity score	Met MDDS	161(43.8%)	110(29.9)	271(36.8%)
	Un met MDDS	207(56.2%)	258(70.1%)	465(63.2%)

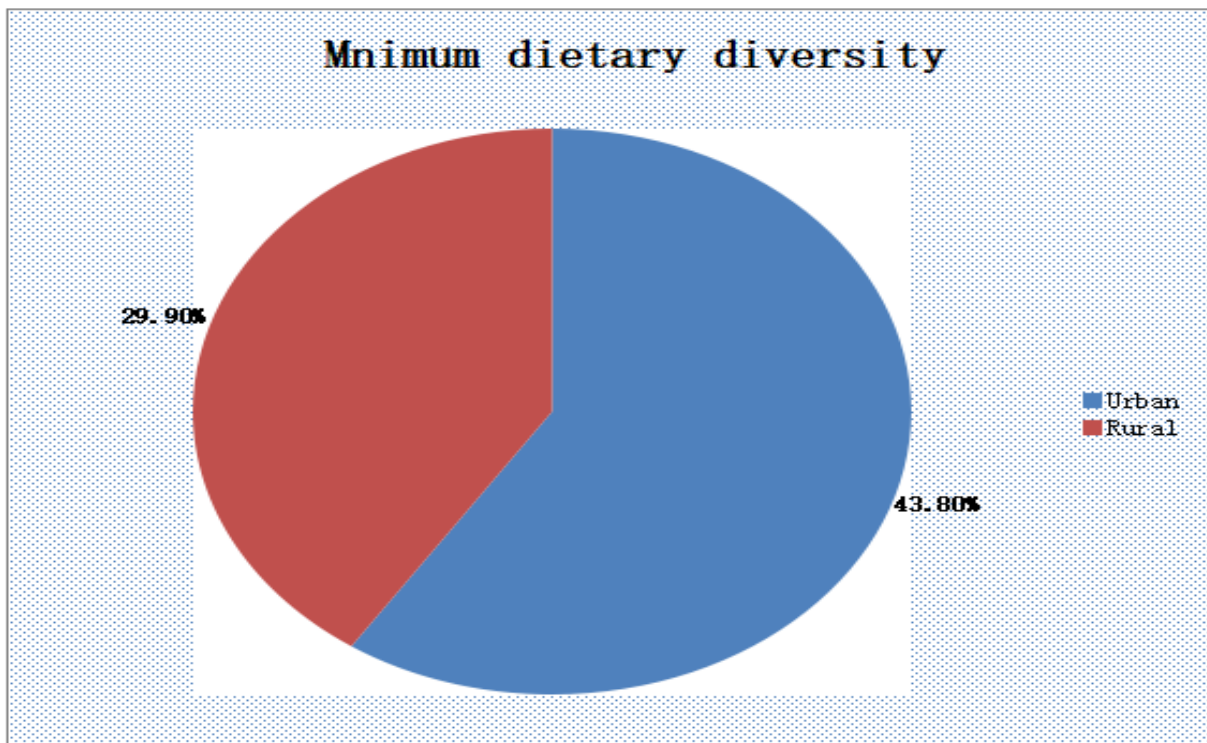


Figure 4:- Proportion of meeting minimum dietary diversity among children aged 6-23 months in the previous 24 hrs. Urban and rural setting, Bench sheko zone, 2022

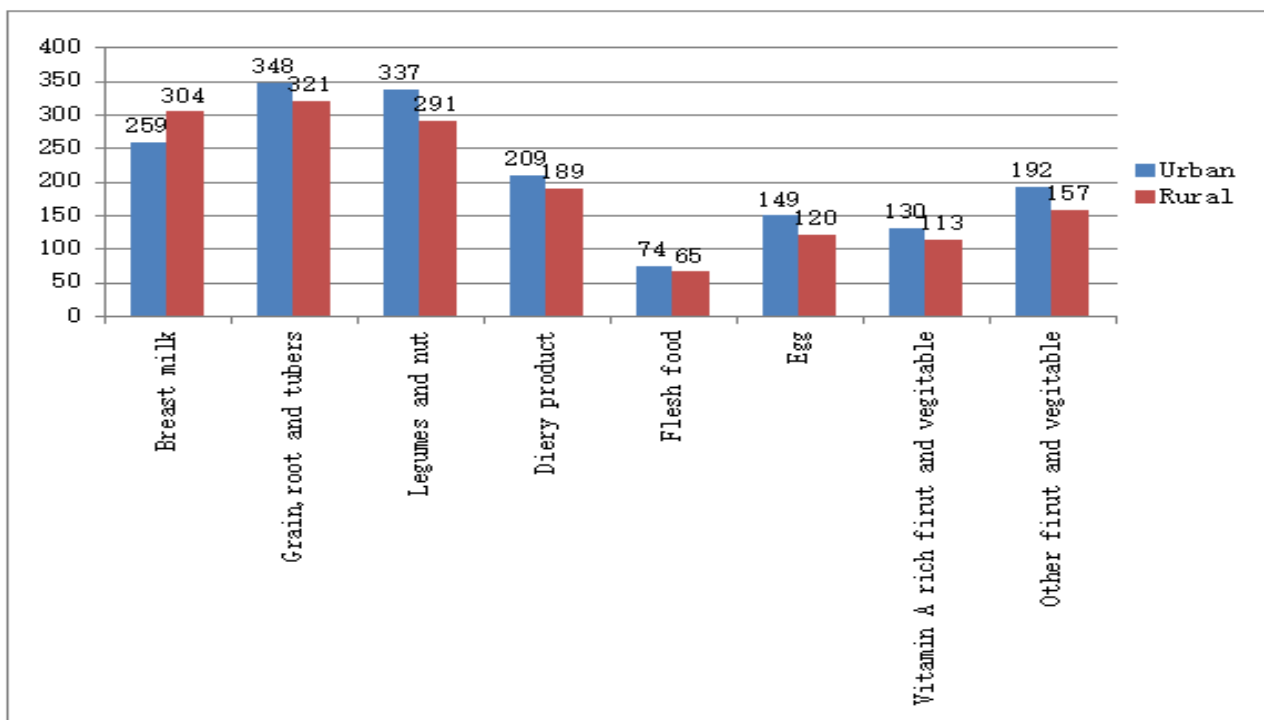


Figure 5:- Food groups consumed by children aged 6–23 months old in the previous 24 hrs. Urban and rural settings, Bench sheko zone, south west, Ethiopia, 2022

5.4 Market related factors of the study participants

Regarding their mode of transport, 291 (79.1%) under in urban and 258 (70.1%) out of rural mother were used foot as the mode of transportation. Of the total participants, majority (94.3%) in the urban and 202

(54.9%) under rural had no seller out of home produced item in the market. With regarding to fruit and vegetable, 239(64.9%) participants under urban and 230 (62.5%) out of rural obtain fruits and vegetables in the market (Table 5).

Table 5-Market related factors children aged 6–23 months at rural and urban areas of Bench Sheko Zone, South West Ethiopia 2022.

Variable	Categories	Residence		Total N=736
		Urban, n =368	Rural, n= 368	
		N (%)	N (%)	N (%)
Transport to reach a market	Foot	291(79.1%)	258(70.1%)	549(74.6%)
	Cart	2(.5%)	5(1.4%)	7(1.0%)
	motorcycle or car	75(20.4%)	105(28.5%)	180(24.5%)
Selling out of home produced item in the market	No	347(94.3%)	196(53.3%)	543(73.8%)
	Yes	21(5.7%)	172(46.7%)	193(26.2%)
Availability of fruit and vegetable in the market	No	129(35.1%)	138(37.5%)	267(36.3%)
	Yes	239(64.9%)	230(62.5%)	469(63.7%)

5.5. Binary logistic regression analysis results; candidate for multivariable logistic regression analysis in both rural and urban setting.

Eight variables from rural and nine variables from urban settings were candidate for multivariable logistic regression. (Table 6).

Table 6 – Candidate variables for multiple logistic regression; output from binary regression of children aged 6-23 months old in Bench Sheko Zone both rural and urban settings for minimum dietary diversity score in 2022.

		Rural			
Variable	categories	MDDS		COR(95%CI)	
		Un meet	Meet		
Age of the mother	15-24	29	19	1	
	25-34	214	85	0.606(.323-1.139)*	
	35-44	15	6	0.611(.201-1.852)	
Occupational status of house band	farmer	139	83	1	
	merchant	42	9	0.359(.166-.775)**	
	gov't employee	46	8	0.291(.131-.647)**	
family size	<5	115	63	1	
	>5	143	47	0.6(.382-.941)**	
ANC follow up	no	96	14	1	
	yes	162	96	4.063(2.197-7.516)**	
Maternal media exposure	Unsatisfactory media exposure	186	71	1	
	Satisfactory media exposure	72	39	1.419(0.882-2.284)*	
Child meal frequency	1 to 2 times per day	42	14	1	
	3 times per day	177	58	0.983(0.501-1.928)	
	>4 times per day	39	38	2.923(1.378-6.200)**	
House hold food security status	food insecure	154	39	1	
	food secured	104	71	2.696(1.696-4.284)**	
	Not knowledgeable	188	39	1	
Maternal nutritional knowledge	Knowledgeable	70	71	4.889(3.033-7.881)**	
Urban					
Educational statuses of the mother(care giver)	can't read and write	68	29	1	
	primary(0-8)	64	44	1.612(.903-2.879)*	
	secondary(9-12)	37	53	3.359(1.835-6.147)**	
	above secondary(>12>	38	35	2.160(1.148-4.064)**	
Educational status of husband	can't read and write	35	15	1	
	primary(0-8)	42	37	2.056(.972-4.348)*	
	secondary(9-12)	39	35	2.094(.982-4.467)*	
	above secondary(>12>	61	54	2.066(1.018-4.189)	
	>5	101	68	1	
Family size	>5	106	93	1.303(.861-1.973)*	
Where did you deliver your last child	Home	42	23	1	
	Health institution	165	138	1.52(.876-2.664)*	

PNC	no	60	36	1
	yes	147	125	1.417(.880-2.284)*
Children encounter an illness in the past two weeks?	no	132	140	1
	yes	75	21	0.264(0.154-0.453)*
GMP	no	79	45	1
	yes	128	116	1.591(1.021-2.480)**
House hold food security status	Food insecure	145	55	1
	Food secured	62	106	4.5(2.900-7.006)**
Maternal nutrition knowledge	Not knowledgeable	128	58	1
	knowledgeable	79	103	2.877(1.878-4.409)**
	total	207	161	

Note: *-significant results, 1-reference category **p-value<0.05, *p-value≤0.25

5.5 Independent predictors of Minimum Dietary Diversity (from multivariable logistic regression) in rural and urban settings of Bench Sheko Zone

In rural setting, eight variables were entered into multivariable binary logistic regression analysis. From these variables only four variables (antenatal care follow up status of the mother, meal frequency of a child, household food security status and maternal nutritional knowledge) were found to be significantly associated with achieved minimum diversity score of children aged 6-23 months in Bench Sheko zone. In urban setting, nine variables were entered into multivariable binary logistic regression analysis. From these variables only two variables (household food security status and maternal nutritional knowledge) were found to be significantly associated with achieved minimum dietary diversity score of children aged 6-23 months in Bench Sheko zone.

This study indicated that having ANC follow up history during pregnancy was found to be a significant predictor of acceptable MDDS at rural setting. Those children whose mothers had ANC follow up history had four times (AOR=4.403, 95% CI, (1.943-9.977)) odds of meeting MDDS than those children whose mother didn't attend ANC follow up. Odds of meeting MDDS among children who had meal frequency four or more times per day were more than four times (AOR= 4.55, 95% CI, (1.725, 11.998)) higher than those children who had meal frequency one or two times per day at rural setting. Odds of meeting minimum dietary diversity score among children who were from food secure households were two (AOR=2.057, 95% CI, (1.165-3.634)) times more likely at rural setting and three (AOR=3.085, 95% CI, (1.740-5.477)) times more likely at urban setting to consume diversified food than children born from food insecure households. Odds of meeting MDDS among children whose mother had knowledgeable on MDDS and IYCF were four (AOR = 3.93, 95%CI,(2.198-7.027)) times higher than at rural setting and two (AOR = 2.115, 95%CI,(1.200-3.729)) times higher than at urban setting setting children whose mother had not knowledgeable. (Table 7).

Table 7: Multivariable binary logistic regression analysis result of children aged 6-23 months old in Bench Sheko Zone both rural and urban setting for minimum dietary diversity score in 2022.

Rural						
Variable	categories	MDDS		COR(95%CI)	AOR(95%CI)	P_ Value
		Un meet	Meet			
Occupational status of father	Farmer	139	83	1	1	
	Merchant	42	9	0.359(.166-.775)**	0.465(.199,1.088)	.077
	Government employee	46	8	0.291(.131-.647)**	0.145(0.059,.358)**	<0.001
ANC follow up	no	96	14	1	1	
	yes	162	96	4.06(2.20,7.52)**	4.403(1.943,9.977)*	0.038
Child meal frequency	1 to 2 times per day	42	14	1	1	
	3 times per day	177	58	0.983(.501-1.928)	1.296(0.552-3.045)	0.551
	>4 times per day	39	38	2.92(1.38,6.20)**	4.55(1.725,11.998)**	0.002
House hold food security status	food insecure	154	39	1	1	
	food secured	104	71	2.69(1.69,4.28)**	2.057(1.165,3.634)**	0.013
Maternal nutritional knowledge	Not knowledgeable	188	39	1	1	
	Knowledgeable	70	71	4.88(3.03,7.88)**	3.930(2.198,7.027)**	<0.001
Urban						
House hold food security status	Food insecure	145	55	1	1	
	Food secured	62	106	4.5(2.90,7.01)**	3.085(1.748,5.447)**	<0.001
Maternal nutrition knowledge	Not knowledgeable	128	58	1	1	
	knowledgeable	79	103	2.88(1.88-4.41)**	2.115(1.200,3.729)**	0.01

Hosmer and Lemeshow goodness of fit test, (P=>0.05) i, AOR= Adjusted odds ratio<0.05, COR= Crude odds ratio<0.25.

CHAPTER SIX: DISCUSSION

The overall the prevalence of minimum dietary diversity was 36.8%. Among all children aged 6-23 years old who were included in the study, 29.9%, (95% CI (25.3%, 34.9%)) at rural setting and 43.8%, 95% CI (38.6, 49.0%) at urban setting met the minimum dietary. This study indicated that there is a significant difference between proportion of minimum dietary diversity among children aged 6-23 months old living in rural and urban settings of Bench Sheko zone($\chi^2=15.19$, p-value < 0.001).

In rural settings, this finding was consistent with a study done at Gedio zone(29.8%)(46). But this finding was higher than Agro cultural communities of Afar(21.8%) and Somalia IDP Camps(15%)(57)(61). The possible reason for this difference may be due to the reason that the study done at Afar region was on pastoral communities hence may not have access to plant source foods which limits them to consume diversified foods. The possible inconsistencies for the study done in Somalia IDP Camps may be due to the reason that children living in Camps would entirely dependent on the food given by international aids and didn't produce food by themselves. It is also somewhat higher than a study done at Sub-sahran Africa (20.1%)(6), Chila district(17.3%)(17), Dabat district Northwest Ethiopia (17%)(54), East Gojjam zone Enebesarmidir district (18.2%)(18). This inconsistency may be due to the difference in socio-demographic and socio cultural difference between populations residing in these study areas and the current study area.

The findings obtained from the rural settings of this study was lower than a study done at public hospitals of india (72.5%)(62), East Asian countries (50%)(63), the most productive areas of Adiszemen (North Gonder zone)(46.6%)(48) and Kecha Bira district(Southern Ethiopia)(46.%(31). The possible reason for the lower finding in relation to a study done at Adis Zemen may be due to the difference in study settings(the study in Adiszemen was conducted at the most productive areas, therefore children living in this area may have access to diversified food than children in Bench Sheko zone. The incomparability of this study finding with that of Asian countries may arise from the difference in socio-economic status between the two study settings.

The findings obtained from urban setting of this study was higher than a study done at Birbir town, Gamo Gofa Zone(12.6%) and Wolyta Sodo town (27.3%)(29)(33). This discrepancy may be due to difference in the study time between this two studies and the study done at urban area of Bench Sheko zone (as time goes awareness of the community towards advantage of diversified food may also increase). Proportion of children who meet minimum dietary diversity score at this study area was found to be lower than a study done at public hospitals of India (72.5%), Addis Ababa (59.9%) and Debre birhan town (58.4%) (20,21,62). This in similarity may be resulted from the difference in the socio-demographic and economic component of the population found in these three study areas and communities residing in urban settings of Bench sheko zone.

Antenatal care follow up status of mothers during pregnancy was significantly associated with minimum dietary diversity score in rural setting. Children born from mothers who had ANC follow up during pregnancy had four times (AOR=4.06, 95% CI, (1.943, 9.977)) more likely to feed diversified food to their children than those mothers who had no history of ANC follow up during pregnancy. This association may be due to the reason that during ANC follow up, mothers would be counseled about childhood nutrition. One part of this nutritional counseling would be how to feed diversified food and the advantage of feeding diversified food for their child on growth, development, health and future life of the child. This study is consistent with studies done at Benchi Maji Zone(64), West Gojjam Zone(65) and Dire Dawa(66). This similarity would be due to the similarity of the study settings even though the current study was done both in urban and rural areas separately. But this study is not consistent with a study done at India and Sub-Saharan African countries. But this study is not in line with a study done at North Eastern Ethiopia (Afar), East Gojjam, Gedio Zone and Aleta Wondo District(16, 18, 67).

Meal frequency of the child was also another predictor of dietary diversity score in rural area. Odds of consuming diversified food among children who consumed food four or more times per day were more than five times (AOR=4.55, 95% CI, (1.73, 11.99)) higher probability of consuming diversified food than those children who feed one or two times per day. This relationship might be realized by the reason that as the meal frequency increases, the probability of taking diversified food may be increased. This finding was consistent with a study done at Sinan district(50) and Indian(62). But this study was not in line with a study done at Tanzania(25). This in similarity may be due to the difference in the residence status of the communities between these two studies with the current study.

This also study indicated that occupational status of the husband were found to be an independent predictor of dietary diversity score of children aged 6-23 months olds in rural setting. Children born from government employee father were 0.15 times (AOR=0.145, 95% CI, (0.59, 0.358)) less likely to achieve minimum diversity score than those children born from fathers having occupational status of farmer respectively. This finding may be due to the reason that children born from farmers may have access to different types of plant and animal source foods since farmer may grow up plant source food on their own land and may breed animals on their home. Therefore they may feed their children a diversified food

Food security status was found to be significantly associated with minimum dietary diversity score in both rural and urban setting. It indicated that children born from food secured household had more than two times (AOR=2.057, 95% CI, (1.165, 3.364)) at rural and three times (AOR=3.085, 95% CI, (1.748, 5.447)) at urban settings are higher chance of consuming diversified food than children from food insecure households. This can be realized by the reason that mothers who had food at hand may feed their children a diversified food. The finding in urban setting was consistent with the study done at Kacha Bira district(31). Knowledge status of mothers about nutrition was also found to have an independent predictor of MDDS for both in urban and rural setting. Children born from mothers who had knowledge about nutrition had four (AOR=3.93,

95CI,(2.198,7.027) and two(AOR=2115,95CI,(1.200,3.729) times more likely to consume diversified food than children born from non-knowledgeable mother for rural and urban setting respectively. This can be realized by the reason that mothers who know well about the impact of diversified nutrition for their children growth and development may feed different type of food items for their children. The finding in the rural setting was consistent with a study done at Bench Maji zone, Robe town Addis zemen town ,Addis abeba (30,48,64)(21).

Strength and Limitation of the study

Strength of the study

Community based study.

Large sample size were used in this study, it increase the precision of the data.

It is generalizable to study areas because included both urban and rural study subjects.

Limitation of the study

The tool for measuring minimum dietary diversity for children aged 6-23 months only the past 24 hours dietary intake that didn't reflect the usual dietary habit of the children.

The current study doesn't entertain seasonal variability that has a major effect on dietary diversity.

Recall bias and social desirability bias may affect answering certain questions related to events that happened in the past.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

Conclusion

The prevalence of minimum dietary diversity score among children aged 6-23 months residing in rural settings were lower than children living in urban settings. A child having meal frequency four or more times per day, having ANC follow up history were found to have a positive relationship with met minimum diversity score in rural setting. Children born from food secured household and mothers being knowledgeable about nutrition were positively associated with achieved minimum diversity score among children age 6-23 months in both rural and urban setting.

Recommendation

To Bench Sheko Zone Health Department

Bench Sheko Zone Health Department should made efforts to increase knowledge of mothers on childhood nutrition by using different awareness creation activities including Medias and by giving strong supportive supervision to woreda health office and primary health care unites for both rural and urban settings. This department should also focus on government employee living on rural settings in achieving minimum dietary diversity. Since mothers who had ANC follow up history were better in giving diversified food for their children, Bench Sheko zone health department should do aggressively to make all mothers to have ANC follow up during their pregnancy in rural setting. This department should also made strong attempts in ensuring food security of households in urban setting by collaborating with stallholders like Zonal Agricultural and Farming Department.

To District Health Offices

District health office teams should support and monitor health centers and health posts on ways of increasing nutritional knowledge, increasing meal frequency of children and in increasing ANC follow up attendant rates of pregnant women by applying strong supportive supervision and monitoring activities in rural areas. In urban areas, health offices should also do on making food secured households by collaborating with stalk holders like agricultural offices. In rural areas, special focus should be given to government employees and merchants while doing activities towards increasing children who consumed diversified food.

To Health Centers and Health Posts

Health professionals from health centers and health extension workers in health posts should do eagerly to increase the number of pregnant mothers who attend ANC follow up, to improve mothers knowledge on childhood nutrition and to increase meal frequency of children to four or more times per day by disseminating health information at community level through community discussions, by using learning aids (like posters, leaflets and others) and through house to house visit. Beyond increasing mother's knowledge,

these health professionals should increase skill of mothers by fixing practical demonstrations on how to prepare diversified food for their children.

To Researchers

Dietary diversity related data in this study were collected by using a onetime 24 hour recall method. Hence one time measurement will not show a true dietary diversity status since it would be affected by seasonal variations. It's recommended to conduct such researches with consideration of seasonal variations and study on IYCF.

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ANNEX

Annex I A bivariate logistic regression output for predictors of minimum dietary diversity among children aged 6-23 months in bench sheko zone, South Ethiopia, 2022

Variable	Rural				Urban				
	categories	MDDS		COR(95%CI)	p. value	MDDS		COR(95%CI) ^{l)}	p. value
		Un meet MDDS	Meet MDDS			Un meet MDDS	Meet MDDS		
Age of mother	15-24	29	19	1		77	34	1	
	25-34	214	85	0.606(.323-1.139)	0.120	124	121	2.210(1.374-3.553)	0.001
	35-44	15	6	0.611(.201-1.852)	0.383	6	6	2.265(.681-7.530)	0.182
Marital status of the mother	single	15	5	1		27	8	1	
	married	223	95	1.278(.452-3.617)	0.644	166	141	2.867(.962-6.511)	0.312
	separated	13	7	1.615(.412-6.338)	0.492	9	9	3.375(0.801-11.374)	0.254
	windowed	7	3	1.286(.237-6.963)	0.771	5	3	2.025(.395-10.381)	0.397
Educational statuses of the mother(care giver)	can't read and write	133	48	1		68	29	1	
	primary(0-8)	85	46	1.500(.921-2.441)	0.103	64	44	1.612(.903-2.879)*	0.107
	secondary (9-12)	15	12	2.217(.969-5.072)	0.259	37	53	3.359(1.835-6.147)**	<0.0001
	above secondary (>12>)	25	4	0.443(.147-1.340)	0.149	38	35	2.160(1.148-4.064)**	0.017
Educational status of husband	can't read and write	101	34	1		35	15	1	
	primary(0-8)	71	52	2.176(1.283-3.690)	0.004	42	37	2.056(.972-4.348)*	0.059
	secondary (9-12)	28	5	0.0530(.190-1.483)	.257	39	35	2.094(.982-4.467)*	0.056
	above secondary (>12>)	23	7	0.904(.356-2.294)	.832	61	54	2.066(1.018-4.189)*	0.044
occupational status of mother	housewife	168	81	1		84	72	1	
	merchant	52	16	0.638(.343-1.186)*	0.25	46	50	1.268(.762-2.110)	0.361
	gov't employee	38	13	0.710(358-1.405)	0.325	55	29	0.615(.355-1.065)	0.283
	self-employee					22	10	0.530(.236-1.193)	0.254
Occupational	farmer	139	83	1					

status of house band	merchant	42	9	0.359(.166-.775)**	0.009	40	47	1	
	gov't employee	46	8	0.291(.131-.647)**	0.002	81	56	0.588(.342-1.012)	0.055
	private employee	227	100			45	38	0.7199(.393-1.314)	0.283
family size	<5	115	63	1		101	68	1	
	>5	143	47	0.6(.382-.941)**	0.026	106	93	1.303(.861-1.973)*	0.211
Land owner ship	no	53	29	1		190	155	1	
	yes	205	81	0.722(0.429-1.215)*	0.220	17	6	0.433(.167-1.124)*	0.085
Do you have home gardening practice	no	91	40	1		169	133	1	
	yes	167	70	0.954(.599-1.518)	0.841	38	28	0.936(0.546-1.604)	0.811
Food source of the family	Purchasing	119	29	1		163	125	1	
	From farmland	9	5	2.280(0.710-7.317)	0.366				
	Both from farmland purchasing	130	76	2.399(0.963-3.935)	0.321	44	36	1.067(.648-1.756)	0.799
Do you exchange food item in the market?	no	135	61	1		193	154	1	
	yes	123	49	0.882(.563-1.380)	0.582	14	7	0.627(.247-1.591)	0.325
Transport did you use to reach the market	foot	192	66	1		184	97	1	
	cart	4	1	0.496(.307-1.2800)	0.254	6	6	1.897(.596-6.039)	0.279
	motorcycle or car	62	43	0.360(.039-3.337)	0.369	17	58	6.472(.574-11.720)	0.253
Fresh vegetables and fruits exist in the market	no	100	38	1		75	54	1	
	yes	158	72	1.199(.752-1.911)	0.445	132	107	1.126(.730-1.736)	0.591
have milking cow	no	130	60	1		163	132	1	
	yes	128	50	0.846(.541-1.324)	0.465	44	29	0.814(.483-1.372)	0.439
Number of <5 children	one	58	59	1		116	95	1	
	two or more	200	51	0.251(0.156-0.403)**	<0.0001	91	66	0.886(.584-1.344)	0.568
ANC follow up	no	96	14	1		51	41	1	
	yes	162	96	4.063(2.197-7.516)**	<0.0001	156	120	0.957(.595-1.539)	0.856
Delivery	Home	55	26	1		42	23	1	
	Health institution	203	84	0.875(.515-1.489)	0.623	165	138	1.52(.876-2.664)*	0.136
Received post-natal care after your last delivery	no	90	28	1		60	36	1	
	yes	168	82	1.569(0.952-2.586)	0.077	147	125	1.417(.880-2.284)*	0.152

Children encounter an illness in the past two weeks?	no	221	93	1		132	140	1	
	yes	37	17	1.092(585-2.036)	0.782	75	21	3.78(0.209-6.495)	0.236
GMP	no	77	37	1		79	45	1	
	yes	181	73	0.839(.521-1.352)	0.472	128	116	1.591(1.021-2.480)**	0.04
Maternal media exposure	Unsatisfactory media exposure	186	71	1		86	34	1	
	Satisfactory media exposure	72	39	1.419(0.882-2.284)*	0.150	121	127	3.788(2.209-6.495)	<0.0001
Age of child	6-11 M	49	15	1		69	47	1	
	12-17 M	117	55	1.5369(.793-2.975)	0.254	79	63	1.171(.712-1.924)	0.534
	18-23 M	92	40	1.420(.714-2.824)	0.317	59	51	1.269(.749-2.150)	0.376
sex of child	male	124	48	1		108	72	1	
	female	134	62	1.195(.763-1.873)	0.436	99	89	1.348(.892-2.039)*	0.156
meal frequency of child	1 to 2 times per day	42	14	1		52	23	1	
	3 times per day	177	58	0.983(0.501-1.928)	0.960	141	93	1.491(.855-2.601)	.159
	>4 times per day	39	38	2.923(1.378-6.200)**	0.005	14	45	7.267(3.348-15.774)	<0.0001
House hold food security status	food insecure	154	39	1		145	57	1	
	food secured	104	71	2.696(1.696-4.284)	<0.0001	62	104	4.267(2.751-6.619)**	<0.0001
Maternal nutritional knowledge	Not knowledgeable	188	39	1		128	58	1	
	Knowledgeable	70	71	4.889(3.033-7.881)**	<0.0001	79	103	2.877(1.878-4.409)**	<0.0001
Wealth Index	poor	99	41	1		73	44	1	
	medium	60	36	1.449(0.835-2.513)	0.287	43	38	1.466(.825-2.605)	0.292
	rich	99	33	0.805(.471-1.376)	0.428	91	79	1.440(.891-2.329)	0.257

Annex II: - CONCENT FORM

JIMMA UNIVERSITY

FACULTY OF PUBLIC HEALTH DEPARTMENT OF NUTRITION AND DIETETICS - QUESTIONNAIRE FOR DIETARY DIVERSITY AND ASSOCIATED FACTORS AMONG CHILDREN AGED 6-23 MONTHS, 2022

Hello! My name is _____ I am working as a data collector for the research being conducted about dietary diversity and associated factors among children age 6-23 month by TESFAYE BEKELE who is a BSc in emergency and critical care student in department of nutrition and dietetics, faculty of public health, Jimma University. I kindly request you to give me your attention to explain to you about the study and study participants.

Study Topic: Dietary diversity and associated factors among children aged 6-23 months in Bench sheko Zone, South west, Ethiopia.

Purpose of the study: The main aim of this study is to write a thesis as a partial requirement for the fulfillment of a master's degree in human nutrition for the principal investigator. Moreover, the result of the study will be used as evidence and input for concerned bodies

Risk and /or Discomfort

By participating in this research project, you may not have discomfort but we will take time about 30 minutes for the interview. There are no anticipated risks in participating in this research.

Benefits of being in the study

There may not be direct benefits to you for giving us information for the study but your participation is likely to help us in the assessment of dietary diversity, and factors associated among children age 6-23 months in bench sheko zone, ultimately this will help us to provide information for planners to implement interventions.

Confidentiality and Privacy Protections

You do not need to tell your name to the data collector. All your responses and the results obtained will be kept confidential by using a coding system whereby no one will have access to your responses.

Incentives/Payments for Participating

You will not be provided any incentives or payment to take part in this study.

Right to Refusal or Withdraw

You have the full right to refuse from participating in this research. You have also the full right to withdraw from this study at any time you wish.

Contacts and Questions:

If you have any questions about the study please ask now. If you have questions later, want additional information, or wish to withdraw call the researcher conducting the study

Contact Address: 0982176524

S.no	Variable	Category	Remark
001	Age of mother	----- years	
002	Resident	1.urban 2.rural	
003	What is the marital status of the mother?	1 Single 2 married 3 divorced 4 widowed	
004	What is your educational status?	1. Can't read and write 2. Primary(0-8) 3. Secondary(9-12) 4. Above secondary(> 12)	
005	What is the educational status of your husband?	1. Can't read and write 2. Primary(0-8) 3. Secondary(9-12) 4. Above secondary(> 12)	
006	What is your occupation?	1. Housewife 2. Merchant 3. Gov't employee 4. Self-employee 5. Other (Specify)	
007	What is the occupation of your husband?	1. Farmer 2. Merchant 3. Gov't employee 4. Private employee 5. Other (Specify)	
008	Ethnicity	_____	
009	Religion	1. Muslim 2. Orthodox 3. Protestant 4. Other(specify)	
010	How many people live in your household?	_____ 45	

Declaration of Informed Voluntary Written Consent

I have read/was read for me the information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the right of participation, and the contact address for any queries. I have been allowed to ask any questions about things that may have been unclear. I was informed that I can terminate the study at any time. Therefore, I declare my voluntary consent to permit this study to be conducted in this district with my signature as indicated below.

Would you participate in responding to questions in this questionnaire?

Yes _____ No _____

Signature of interviewer who sought consent _____

Date of interview _____ Starting time _____ completed _____

ANNEX III:- QUESTIONNAIR
Part I Socio demographic characteristic

Part

II socioeconomic characteristic

S.no	Variable	Category	Remark
100	Do you have cultivable land?	1. Yes 0. No	If no, skip to Q# 104
101	Do you use the land for crop production?	1. Yes 0. No	
102	What type of crop is produced majorly?	1. Maize 2. Wheat 3. Teff 4. Pepper 5. Fruits and vegetables 6. Other(specify)_____	Multiple answers are possible
103	What is the purpose of the produced crop?	1. Fully for selling 2. Partially for selling 3. Totally for household consumption	
104	Do you have a practice of home gardening?	1. Yes 0. No	If no, go to Q# 106
105	If yes for Q# 101, What is the purpose of home gardening?	1. Fully for selling 2. Partially for selling 3. Totally for household consumption	
106	What is the source of food for family consumption	1. Purchasing 2. From farmland 3. Both from farmland purchasing 4. Other (food aid...)	
107	Do you exchange food item in the market?	1. Yes 0. No	
108	How long does it take to reach the market?	_____	
109	What type of transport did you use to reach the market?	1. Foot 2. Cart 3. Motorcycle	
110	Do fresh vegetables, fruits and animal products always exist in the market?	1. Yes 0. No	
111	Do you have milking cow?	1.Yes 2.No	

Part III Wealth index

S.no	Variable	Category	
200	Television	0. No 1. Yes	
201	Radio/Tape	1. Yes 0. No	
202	Satellite dish	1. Yes 0. No	
203	Mobile phone	1. Yes 0. No	
204	Electricity	1. Yes 0. No	
205	Table	1. Yes 0. No	
206	Chair	1. Yes 0. No	
207	Bed with sponge mattress	1. Yes 0. No	
208	Bed with grass/spring mattress	1. Yes 0. No	
209	Kerosene lamp	1. Yes 0. No	
210	Solar lamp	1. Yes 0. No	
211	Bicycle	1. Yes 0. No	
212	Motorcycle	1. Yes 0. No	
213	Bagag	1. Yes 0. No	
214	Kerosene stove	1. Yes 0. No	
215	Animal drawn cart/gari	1. Yes 0. No	
216	Oxen	1. Yes 0. No	
217	Cow	1. Yes 0. No	
218	Chicken	1. Yes 0. No	

219	Sheep/goat	1. Yes 0. No	
220	Hoarse/mule	1. Yes 0. No	
221	Donkey	1. Yes 0. No	
222	Do you have a separate room for food preparation?	1. Yes 0. No	
223	Do you have a separate room for cattle?	1. Yes 0. No	
224	Watch(hand/ wall)	1. Yes 0. No	
225	Plough	1. Yes 0. No	
226	Beehives	1. Yes 0. No	
227	Land ownership	1. Yes 1. No	

Part IV Obstetric and health-related factors

S.no	Variable	category	Remark
300	How many <5 children do you have?	1. One child 2. More than one	
301	Have you attended ANC for the last child?	1. Yes 0. No	If no, go to Q# 304
302	If yes, for Q# 202, for how many times did you attend ANC?	_____	
303	Did you receive nutritional education during ANC?	1. Yes 0. No	
304	Where did you deliver your last child?	1. Health center 2. Hospital 3. Home	
305	Have you received post-natal care after your last delivery?	1. Yes 0. No	
306	How many times did you eat per day now?	_____	
307	Do your children encounter an illness in the past two weeks?	1. Yes 0. No	
308	Have you followed growth monitoring secessions monthly for checking nutritional status of your current children?	1. Yes 0. No	

Part V Cultural practice

S.no	Variable	Category	Remark
401	Are there foods that infant and young children should not eat in your community?	2. Yes 0. No	
402	If yes, for Q#403, what are the foods? List them	_____	
403	Why should infant and young children avoid eating these foods?	_____	

PART VI Maternal nutritional Knowledge

S.no	Variable	Category		
500	Do you have ever heard information about infant and young children feeding procedures?	1. Yes 0. No		
501	From where you heard the information?	1. Health facility 2. HEW 3. Media 4. School 5. Other(specify)_____		
502	Do you know the main food staff to infant and young children?	1. Yes 0. No	If no go to Q# 407	
503	If yes for Q#402, can you list the food staff?		Multiple answers allowed	Know, if an answer is given for more than one answer
504	Do you know the use of protein?	1. Yes 0. No		
505	Can you tell me the food groups that are the source of protein?			Know, if an answer is given for more than one answer
506	Do you know the use of carbohydrates?	1. Yes 0. No		
507	Can you tell me the food groups that are a source of carbohydrates?			Know, if an answer is given for more than one answer

508	Do you know the use of vitamins and minerals	1. Yes 0. No		
509	Can you tell me the food groups that are a source of vitamins and minerals?			Know, if an answer is given for more than one answer
510	Do you know the children start solid, semi-solid, soft foods when their age reaches 6 month?	1. Yes 0. No		
511	Do you know the frequency of meals of infant and young children who have currently breast feeding status?	Age 6-8months----- meals Age 9-23 months-----meals		
512	Do you know the frequency of meals of infant and young children who have not currently breast feeding status?	_____ meals		

PARTVII Maternal media exposure states

514	Have you television or radio or chance of reading magazine and news pepper.	1. Yes 0. No		
515	If you say yes for question 1.12 how many times you listen or watch television and reading magazine or newspaper per a week?	-----times		

VIII Women participation in household decision making

S.no	Variable	Category	Remark
600	Who usually makes decisions about health care for yourself and your children?	1. My self 2. My husband 3. Me and my husband jointly 4. someone else	
601	Who usually makes decisions about making major household purchases?	1. My self 2. My husband 3. Me and my husband jointly 4. someone else	
602	Who usually makes decisions about visits to your family or relatives?	1. My self 2. My husband 3. Me and my husband jointly 4. someone else	

Part IX Household Food Insecurity Access Scale (HFIAS) Measurement Tool

NO	QUESTION	RESPONSE OPTIONS
700	In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to Q2) 1=Yes
700A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
701	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to Q3) 1=Yes
701A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
702	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to Q4) 1 = Yes
702A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)

		weeks)
703	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to Q5) 1 = Yes
703A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
704	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to Q6) 1 = Yes
704A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
705	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to Q7) 1 = Yes
705A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)

706	In the past four weeks, was there ever no food to eat of any kind in your household because of a lack of resources to get food?	0 = No (skip to Q8) 1 = Yes
706A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
707	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to Q9) 1 = Yes
707A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)
708	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (questionnaire is finished) 1 = Yes
708A	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)

Part X children factors

800	Age of current children	-----months	
801	Sex of current children	1. male 0.fema	
802	A child currently have breast feeding status	1.yes 0 .no	
803	Meal frequency of current children(breast feeding)	-----meal	

Part XI Measuring minimum dietary diversity among using the following food groups

Now am going to ask you what food and beverage you can feed your current children in your household or out of home starting from yesterday morning when you wake up to night when you go to bed. Try to think for 5 minutes.

Breakfast: _____

From what it was cooked:

Lunch: _____

From what it was cooked:

Dinner: _____

From what it was cooked:

Other remaining:

S.no	Food groups	Food list	Yes=1	No=0
900	Group1: Breast feed	Can your child feed breast milk with in the previous 24 Hrs? Breast feed		
901	Group2: Grains ,roots and tubers	Porridge, bread, rice, noodles or other foods made from grains		
		White potatoes, white yams, cassava or any other foods made from roots		
902	Group 3: Legumes and nuts	Any foods made from beans, peas, lentils, nuts or seeds		
903	Group4: Dairy products	Infant formula		
		Milk, such as tinned, powdered or fresh animal milk		
		Yogurt or drinking yogurt		
		Cheese or other dairy products		
904	Group5 : Flesh foods	Liver, kidney, heart or other organ meats		
		Any meat, such as beef, lamb, goat, chicken		
		Fresh or dried fish		
905	Group 6: Eggs	Eggs		
906	Group 7: Vitamin A fruits and vegetables	Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside		
		Any dark green vegetables		
		Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried)		
		Foods made with red palm oil, red palm nut or red palm nut pulp sauce		
907	Group 8: Other fruits and vegetables	Any other fruits or vegetables(tomato, kale, salad, sugar beet, avocado, banana, orange, lemon---		

ANNEX IV: አሜሪካ ማጠቃለያ

የመረጃና የስምምነት ቅጽ

ጅም ዩኒቨርሲቲ ጤና ኢንሰረት/የት


የሕብረተሰብ ጤና ፋካሊቲ ስነ ምግብ ት/ት ክፍል

እንደምን አደሩ /ዋሉ?

ስሜ _____ እባላለሁ። በጅም ዩኒቨርሲቲ በሕብረተሰብ ጤና ፋካሊቲ ትምህርት ቤት የስነ_ምግብ ት/ት ክፍል ተማሪ ለሆነው ተማሪ ተስፋዬ በቀለ ለሚሰራው ጥናት መረጃ ሰብሳቢ ነኝ። ዕድሜአቸው 6-23 ወር የሆኑ ህጻናት የሚመገቡትን ምግብ ስብጥርነትና ተጓዳኝ ምክንያቶችን በተመለከተ የደሳሰ ጥናት መረጃ እንሰበስባለን። የመጠይቁ አላማም ዕድሜአቸው 6-23 ወር የሆኑ ህጻናት የአመጋገብ ስብጥርነት እና ተጓዳኝ ምክንያቶች ያሉበትን ሁኔታ በተመለከተ መረጃ ለመሰብሰብ ነው። የሚሰበሰበው መረጃ ሙሉ በሙሉ በምስጢር የሚያዝ መሆኑን አረጋግጥለዎታለሁ። የዕርስዎ ስምና መለያ አድራሻ አይመዘገቡም። መረጃ መስጠት ካልፈለጉ መብትዎ ነው። መመለስ ያልፈለጉትንም ጥያቄ መዘለል/ ማለፍ ይችላሉ። ይሁን እንጂ የእርስዎ ትብብርና ትክክለኛ ምላሽ ምርምሩ እንዲሳካ ያደርገዋል። ስለዚህ ለሚቀርብልዎት ጥያቄ ፍቃደኛ ሆነው። በትዕግስት እንዲመልሱልን እንጠይቀዎታለን። መጠይቁ 30 ደቂቃ ሊወስድ ይችላል። ይህ ጥናት በጤናዎት ላይ የሚያመጣብዎት ጉዳት የለም። ከተሳቀቁ ፣ ካልተመቸዎት ወይም ጥሩ ስሜት ካልተሰማዎት በማንኛውም ሰዓት ማቋረጥ ይችላሉ።

የፍቃደኝነት ቅጽ

ፍቃደኛ ነዎት?  አዎ ወደ ሚቀጥለው ገፅ ይለፉ .

አይሉም  አመስግናለው መጠይቁን ያቋርጡ።

የመረጃ ሰብሳቢው መለያ ቁጥር----- ስም----- ፊርማ----- ቀን-----

ያረጋገጠው ተቆጣጣሪ ስም----- ፊርማ ----- ቀን-----

አድራሻ:- ማንኛውም ጥያቄ ካሎት በሚከተለው የመገናኛ መስመር ማግኘት ይችላሉ። ተስፋዬ በቀለ Mobile – 0973936032፣ 0982176524

አጠቃላይ መረጃ

መለያ	አጠቃላይ መረጃ(በክቡ ዉስጥ ምልክት ያድረጉ)	
1	የጥናቱ ተሳታፊ የሚገኝበት ቀበሌ	ዞን-----ወረዳ-----
2	ቀበሌ	-----
3	የጉብኝት ቀን	ቀን-----ወር-----ዓ.ም-----
4	የተሳታፊዎ ስምምነት	<p>ለቃለመጠይቁ ምላሽ ለመስጠት ተሥማምተዋል</p> <p>ለቃለመጠይቁ ምላሽ ለመስጠት አልተስማማም</p> <p>ለቃለ መጠይቁ ምላሽ ለመስጠት ተስማምታል ግን አልጨረስም</p>
5	የመለያ ቁጥር	

ክፍል I) የማኅበራዊ ና ስነ ህዘብ

ተ.ቁ	ጥያቄ	መልስ
000	እድሜሽ ስንት ነው?	_____
001	የትዳር ሁኔታ የቱ ነው?	<ol style="list-style-type: none"> 1. ያላገባች 2. ያገባች 3. የተፋታች 4. የሞተባት
002	የትምህርት ደረጃሽ?	<ol style="list-style-type: none"> 1. ማንበብና መጻፍ የማትችል 2. አንደኛ ደረጃ (0-8) 3. ሁለተኛ ደረጃ (9-12) 4. ከሁለተኛ ደረጃ በላይ(>12)
003	የባለቤትሽ የትምህርት ደረጃ?	<ol style="list-style-type: none"> 1. ማንበብና መጻፍ የማይችል 2. አንደኛ ደረጃ (0-8)

		<p>3. ሁለተኛ ደረጃ (9-12)</p> <p>4. ከሁለተኛ ደረጃ በላይ (>12)</p>
004	ሥራሽ ምንድነው?	<p>1. የቤት አመቤት</p> <p>2. ነጋዴ</p> <p>3. የመንግስት ተቀጣሪ</p> <p>4. የግል ተቀጣሪ</p> <p>5. ሌላ ከሆነ ይጥቀሱ -----</p>
005	የባለቤትሽ ሥራ ምንድነው?	<p>1. ገበሬ</p> <p>2. ነጋዴ</p> <p>3. የመንግስት ተቀጣሪ</p> <p>4. የግል ተቀጣሪ</p> <p>5. ሌላ ከሆነ ይጥቀሱ -----</p>
006	ብሄር	_____
007	ሀይማኖት	<p>1. ሙስሊም</p> <p>2. ኦርቶዶክስ</p> <p>3. ፕሮቴስታንት</p> <p>4. ሌላ ከሆነ ይጥቀሱ -----</p>
008	እዚህ ቤት ውስጥ ስንት ሰዎች ይኖራሉ?	_____

ክፍል 2) ምጣኔ ሀብት መጠይቆች

ተ.ቁ	ጥያቄ	መልስ	ምርመራ
100	የሚታረክ መሬት አላችሁ?	1. አዎ 0. የለም	የለም ከሆነ ወደ ጥ104 ይዘለሉ
101	መሬቱን እህል ታመርቱበታላቸው?	1. አዎ 0. አይመረትበትም	
102	ምን አይነት እህል ታመርቱበታላቸው?	1. በቆሎ 2. ስንዴ 3. ጤፍ 4. በርበሬ 5. አትክልት እና ፍራፍሬ 6. ሌላ ከሆነ ይጥቀሱ-----	ከአንድ በላይ መልስ መስጠት ይቻላል
103	የተመረተውን እህል ምን ታደርጉታላችሁ?	1. በሙሉ ይሸጣል 2. በክፊል ይሸጣል 3. በሙሉ ቤት ለመመገብ ይወላል	
104	በጎሮዎች የሚተክሉት ተክል አለ?	1. አዎ 0. የለም	የለም ከሆነ ወደ ጥ106 ይዘለሉ
105	ለጥያቄ ቁ 104 መልስ 1 ከሆነ የተመረተውን ተክል ምን ታደርጉታላችሁ?	1. በሙሉ ይሸጣል 2. በክፊል ይሸጣል 3. በሙሉ ቤት ለመመገብ ይወላል	
106	ለቤት የሚሆን ምጣብ ከየት ነው የምታገኙት?	1. በግዢ 2. ከምናመርተው	

		3. በግዢ እና ከምናመርተው 4. ሌላ(ይጠቀስ)	
107	ገበያ ላይ ከቤት የምግብ አይነት በመውሰድ የመቀየር ልምድ አላችሁ?	1. አዎ 0. የለም	
108	ገበያ ለመድረስ ምን ያክል ሰዓት ይወስዳል?	-----	
109	በምን አይነት መጠቀሚያ ነው ገበያ የምትገኙት?	1. በአግር 2. ጋሪ 3. መኪና 4. ሌላ ከሆነ ይጠቀሱ-----	
110	ገበያ ላይ ፍራፍሬ እና አትክልት ሁልጊዜም ይገኛል?	1. አዎ 0. የለም	
111	የወትት ከብቶች በቤት ውስጥ አላችሁ?	1. አዎ 0. የለም	

ክፍል 3) የብልጽግና ነክ ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ	ምርመራ
200	የሚሰራ ቲቪ አልዎት	1. አለ 0. የለም	
201	የሚሰራ ሬዲዮ/ቴፕ/ጂ.ፓስ አልዎት	1. አለ 0. የለም	
202	ዲቪ አልዎት	1. አለ 0. የለም	
203	የሚሰራ ስልክ አልዎት	1. አለ 0. የለም	
204	ኤሌክትሪክ አልዎት	1. አለ 0. የለም	
205	ጠረጴዛ አልዎት	1. አለ 0. የለም	
206	ወንበር አልዎት	1. አለ 0. የለም	

207	ስፖንጅ ፍራሽ አልዎት	1. አለ 0. የለም	
208	የሳር ፍራሽ አልዎት	1. አለ 0. የለም	
209	የጋዝ መብራት አልዎት	1. አለ 0. የለም	
210	የሶላር መብራት አልዎት	1. አለ 0. የለም	
211	ሳይክል አልዎት	1. አለ 0. የለም	
212	ሞተር ሳይክል አልዎት	1. አለ 0. የለም	
213	ባጃጅ አልዎት	1. አለ 0. የለም	
214	ቡታጋዝ አልዎት	1. አለ 0. የለም	
215	ጋሪ አልዎት	1. አለ 0. የለም	
216	ቦሬ አልዎት	1. አለ 0. የለም	
217	ሳም አልዎት	1. አለ 0. የለም	
218	ዶሮ አልዎት	1. አለ 0. የለም	
219	በግ/ፍየል አልዎት	1. አለ 0. የለም	
220	ፈረስ/በቅሎ አልዎት	1. አለ 0. የለም	
221	አህያ አልዎት	1. አለ 0. የለም	
222	ለምግብ ማብሰያ የተለየ ክፍል አለ	1. አለ 0. የለም	
223	ለእንስሳት ማደብሰያ የተለየ ክፍል አለ	1. አለ 0. የለም	
224	የእጅ/የግርግዳ ሰዓት በቤት ውስጥ አለ	1. አለ 0. የለም	
225	ማረሻ አልዎት	1. አለ 0. የለም	

226	ንብ ያንባሉ	1. አለ 0. የለም	
227	መሬት አላችሁ	1. አለ 0. የለም	

ክፍል 4) ወሊድ እና ጤና ነክ ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ	ምርመራ
300	ዕድሜአቸው ከ 5 ዓመት በታች የሆኑ ስንት ህጻናት አሉሽ?	1. አንድ 2. ከአንድ በላይ	
301	ለመጨረሻው ልጅሽ ቅድመ ወሊድ ክትትል አርገሻል?	1. አዎ 2. የለም	የለም ከሆነ መልሱ ወደ ጥቁ 304 ይዘለሉ
302	አዎ ከሆነ መልሱ፣ ስንት ጊዜ?	-----	
303	በቅድመ ወሊድ ክትትል ጊዜ፣ የስነ ምግብ ምክር በጤና ባለሞያ ተሰጥቶሻል?	1. አዎ 2. የለም	
304	የመጨረሻው ልጅሽን የት ወለድሽ?	1. ጤና ጣቢያ 2. ሆስፒታል 3. ቤት	
305	ለመጨረሻው ልጅሽ ድህረ ወሊድ ክትትል አርገሻል?	1. አዎ 2. የለም	
306	በቀን ምን ያህል ጊዜ ምግብ ትብያለሽ?	-----	
307	በባለፈው 2 ሳምንት ጊዜ ውስጥ ህጻኑ/ህጻኗ ህመም አሞት/አሟት ነበር?	1. አዎ 2. የለም	የለም ከሆነ መልሱ ወደ ሚቀጥለው ክፍል ይሂዱ
308	ህጻኑ/ህጻኗ በየወሩ ሳይቆራረጥ በጤና ባለሙያ የሚደረግ የእድገት ክትትል ተሳትፎ አለው/አላት?	1. አዎ 2. የለም	

ክፍል 5) ባህል ነክ ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ	ምርመራ
400	በአካባቢያችሁ ህጻናት(6-23 ወር ዕድሜ) ለሙብላት የሚከለከሉት ምግብ አለ?	1. አዎ 2. የለም	የለም ከሆነ መልሱ ወደሚቀጥለው የጥያቄ ክፍል ይሂዱ
401	አዎ ከሆነ መልሱ፣ የትኞቹ የምግብ አይነት ናቸው?		
402	ለምንድ ነው የሚከለከሉት?		

ክፍል 6) የስነ ምግብ እውቀት ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ	ምርመራ
500	ከዚህ በፊት ስለ ህጻናት አመጋገብ ስርአት መረጃ ሰምተሽ ታቂያለሽ?	1. አዎ 2. የለም	
501	ከየት ነው የሰማሽው?	1. ከጤና ተቀም 2. ከጤና ኤክስቴንሽን ባለሙያ 3. ከሚዲያ 4. ከትምህርት ቤት 5. ሌላ(ይጠቀስ)	
502	ዋና ዋና የምግብ ዐይነቶችን የሚባሉትን ታቂያለሽ?	1. አዎ 2. አላውቅም	
503	ለጥያቄ ቁ 502 መልሱ አዎ ከሆነ እነማን ናቸው?		
504	የሰውነት ገንቢ የምግብ ዐይነቶችን	1. አዎ	

	ጥቅም ታቅያለሽ?	2. አላውቅም	
505	የሰውነት ገንቢ የምግብ ዐይነቶችን ጥቀሽ		ከአንድ በላይ መልስ መስጠት ይቻላል
506	የሀይል እና ሙቀት ሰጪ የምግብ ዐይነቶችን ጥቅም ታቅያለሽ?	1. አዎ 2. አላውቅም	
507	የሀይል ሰጪ የምግብ ዐይነቶችን ጥቀሽ		ከአንድ በላይ መልስ መስጠት ይቻላል
508	የበሽታ ተከላካይ ምግብ ዐይነቶችን ጥቅም ታቅያለሽ?	1. አዎ 2. አላውቅም	
509	የበሽታ ተከላካይ ምግብ ዐይነቶችን ጥቀሽ		ከአንድ በላይ መልስ መስጠት ይቻላል
510	ህጻናት 6 ወር ሲሞላቸው ከእናት ጡት ወተት በተጨማሪ ተጨማሪ ምግብ(ጠንካራ ወይንም ለስለስ ያለ) ያስፈልገዋል?	1. አዎ 2. አያስፈልግም	
511	ህጻናት 6 ወር ሲሞላቸው የእናት ጡት ወተትን ጨምሮ 5 እና ከዚያ በላይ ከሚሆኑ የተለያዩ የምግብ ክፍሎች የተሰሩ ምግቦች መጣብ እንዳለባቸው ይታወቃል?	1. አዎ 2. አላውቅም	1)አህል፣ ስራሰር 2)ጥራጥሬ 3)ወተት ተዋጾ 4)ስጋ 5)እንቁላል 6 በሺታሚ ኤ የበለጸጉ አታክልት እና ፍራፍሬ 7)ሌላ አተክልት እና ፍራፍሬ 8 የእናት ጡት ወተት
512	6 ወር እና ከዚያ በላይ የሆነው ህጻን በቀን ምን ያህል ተጨማሪ ምግብ መመገብ አለባት?	6-8 ወር----- 9-23ወር-----	

ክፍል 6) የእናቶች የሚዲያ ተጠቃሚነት ሁኔታ መጠይቅ

ተ.ቁ	ጥያቄ	መልስ
513	በቤት ቴሌቪዥን ወንም እራዲአን አሎት እንዲሁም መጽሔት እና ገዜጣ የማንበብ ልምድ አሎት?	1.አለ 2.የለም
514	መልሶ አለ ከሆነ በሳምንት ለምን ያህል ጊዜ ቴሌቪዥን ይመለከታሉ ወይንም ራዲዮን ይሰማሉ?	-----
515	መጽሔት እና ገዜጣ የማንበብ ልምድ ካሎት በሳምንት ለምን ያህል ጊዜ ያነባሉ?	-----

ክፍል 7) በቤት ውስጥ የእናት ተሳትፎ በውሳኔ ላይ

ተ.ቁ	ጥያቄ	መልስ
600	በቤት ውስጥ ስለ ጤናሽ ማናው የሚወስነው?	1. እኔ 2. ባለቤቱ 3. እኔ ና ባለቤቱ አንድላይ 4. ሌላ ሰው
601	ቤተሰብሽን ለመጠየቅ ስትፈልገህ ማናው የሚወስነው?	1. እኔ 2. ባለቤቱ 3. እኔ ና ባለቤቱ አንድላይ 4. ሌላ ሰው
602	በቤት ውስጥ ትልልቅ እቃ ስለመግዛት ማናው የሚወስነው?	1. እኔ 2. ባለቤቱ

		4. እኔ ና ባለቤቴ አንድላይ
		5. ሌላ ሰው

ክፍል 8)የምግብ ዋስትና ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ	
700	ባለፉት አራት ሳምንታት እርሶ/ በቤተሰብዎ በቂ ምግብ የለም ብለው ተጨንቀው ያውቃሉ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደ ጥቁ 701 ይዝለሉ
700A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት 3 አሥር ጊዜ በላይ ባለፉት አራት ሳምንታት	
701	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ የፈለገውን ምግብ መርጦ መመገብ በአቅም ማጣት ምክንያት ያልተቻለበት ጊዜ አለ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደ ጥቁ 702 ይዝለሉ
701A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት 3 አሥር ጊዜ በላይ ባለፉት አራት ሳምንታት	
702	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ የተለያዩ የምግብ አይነቶችን በአቅም	1. አዎ	አይደለም ከሆነ መልሱ ወደ

	ማጣት ምክንያት ያልተመጠነ አለ?	2. አይደለም	ጥቁ 703 ይዘላሉ
702A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት 3 አሥር ጊዜ በላይ ባለፉት አራት ሳምንታት	
703	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ መመገብ የማይፈልገውን ምግብ በአቅም ማጣት ምክንያት ያልተመጠነ አለ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደ ጥቁ 704 ይዘላሉ
703A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት 3 አሥር ጊዜ በላይ ባለፉት አራት ሳምንታት	
704	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ በቂ ምግብ ባለመኖሩ ምክንያት ሁልጊዜ ከምትምመገቡት ቁጥር በታች የተመጠነ አለ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደ ጥቁ 705 ይዘላሉ
704A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት 3 አሥር ጊዜ በላይ ባለፉት አራት ሳምንታት	

705	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ አነስተኛ መጠን ያለውን ምግብ በቂ ምግብ ባለመኖሩ ምክንያት የተመገበ አለ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደ ጥቁ 706 ይዝለሉ
705A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት 3 አሥር ጊዜ በላይ ባለፉት አራት ሳምንታት	
706	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ ምንም አይነት ምግብ በአቅም ማጣት ምክንያት ያልተመገበ አለ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደ ጥቁ 707 ይዝለሉ
706A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት 3 አሥር ጊዜ በላይ ባለፉት አራት ሳምንታት	
707	ባለፉት አራት ሳምንታት እርሶ/በቤተሰብዎ ውስጥ ምንም አይነት ምግብ በአቅም ማጣት ምክንያት ሳይመገብ ያደረ አለ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደ ጥቁ 708 ይዝለሉ
707A	አዎ ከሆነ ምን ያህል ጊዜ	1 አንዴ/ሁለቴ ባለፉት አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ባለፉት አራት ሳምንታት	

		3 ኦሚኒስቴር ስር ወይንም ሌላ ግለሰብ አራት ሳምንታት	
708	ግለሰብ አራት ሳምንታት እርሱ/በቤተሰብ ውስጥ ምንም ዓይነት ምግብ በአቅም ማጣት ምክንያት ቀንም ማታም ያልተመገበ አለ?	1. አዎ 2. አይደለም	አይደለም ከሆነ መልሱ ወደሚቀጥለው ክፍል ይዝለሉ
708A	አዎ ከሆነ ምን ያህል ጊዜ?	1 አንድ/ሁለት ግለሰብ አራት ሳምንታት 2 ከሦስት - አሥር ጊዜ ግለሰብ አራት ሳምንታት 3 አሥር ጊዜ በላይ ግለሰብ አራት ሳምንታት	

ክፍል 9) ህጻኑን የሚመለከቱ ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ	
800	የህጻኑ/የህጻኗ እድሜ?	-----ወር	
801	የህጻኑ ፆታ?	1. ወንድ 2. ሴት	
802	ህጻኑ የእናት ጡት ወተት እየጠባነዉ?	1. አዎ 2. አቁሟል	
803	እጻኑ በቀን ለስንት ጊዜ ይመገባል?	-----	

ክፍል 10) በአመጋገብ ወቅት የህጻኑ የምግብ ስብጥር ልኬት

ትላንት ከአንቅልፍሽ ከተነሳሽ ጀምሮ ማታ እስክትተኚ ድረስ ለህጻኑ/ ለህጻኗ የምግብ ስብጥር ልኬት ለማድረግ የምግብ አይነቶች፣ አትክልት፣ ፍራፍሬ በቤትም ይሁን ከቤት ውጭ ለ 5 ደቂቃ ያህል አስታውሻል።

ቁርስ:

- የምግብ

አይነት _____

- ከምን ከምን ተሰራ

ምሳ:

- የምግብ

አይነት _____

- ከምን ከምን ተሰራ

እራት:

- የምግብ

አይነት _____

- ከምን ከምን ተሰራ

ሌላ ያልጠቀሽው የቀረ ካለ: _____

ተ.ቁ	የምግብ ምድብ	የምግብ ዝርዝር	አዎ=1	አይደለም=0
900	ምድብ1: የእናት ጡት ወተት	የእናት ጡት ወተት		
901	ምድብ2: የእህል ዘሮች፤ ሥራ ሥሮች እና ከብ ሥሮች	ገንፎ፤ ዳቦ፤ ገደብ፤ ገንብ፤ ገንብ፤ ገንብ፤ እና ሌሎች ከእህል ዘር ከበቆሎ ፤ ስንዴ፤ ማሽላ፤ ገብስ፤ ጤፍ የሚዘጋጁ ምግቦች		
		ኮሎ ስኳር ድንች፤ ጎደሬ፤ የእንጨት ቦዩ፤ ሀረግ ቦዩ ፤ እንሰት፤ ወይም ሌሎች የመሳሰሉ ሥራ ሥሮች		
902	ምድብ 3: ጥራጥሬ እና ለውዝ	ከባቋላ፤ ከአተር፤ ከምሥር፤ ሽንብራ፤ እኩሪ አተር፤ የተለያዩ አደንጓሬ፤ ከሱፍ፤ ከለውዝ፤ የተሰሩ ምግቦች ወይም ዘሮች		
903	ምድብ4: የወተት ተዋፅኦዎች	ከአንድ ዓመት በታች ለሆኑ ህፃናት የሚሰጥ የዱቄት ወተት		
		ወተት፤ የታሸገ ወተት፤ ሌሎች የዱቄት ወተቶች፤ ትኩስ የከብት ወተት		
		እርጎ		
		አይብ ወይም ሌሎች የወተት ምርቶች		
904	ምድብ 5: ሥጋዎች	ጉበት፤ ኩላሊት፤ ልብ ሌሎች የውስጥ ብልት ሥጋዎች		
		ቀይ ሥጋ፤ የበግ፤ የፍየል፤ ዶሮ		
		ዓሣ (ትኩስ ወይም ቋንጣ)		
905	ምድብ6: ዕንቁላሎች	የዶሮ አንቁላል		
906	ምድብ7: በቫይታሚን ኤ የበለፀጉ ፍራፍሬዎች፤ አትክልቶች	ጥቁር አረንጓዴ ቅጠላቅጠሎች ፤ ብሮኮሊ (አበባ ጎመን)፤ ቆስጣ እና ሌሎች ቅጠላቅጠሎች፤ ዱባ ፤ ካሮት፤ ቢጫ ስኳር ድንች፤ ቢጫ ድንች፤		
		የበሰለሰ ማንጎ፤ የበሰለ ፓፓያ		
907	ምድብ 8: ሌሎች ፍራፍሬዎችና አትክልቶች	ሌሎች ፍራፍሬዎችና አትክልቶች (ቲማቲም፤ ጎመን፤ ሰላጣ፤ ቀይ ሥር፤ አበካዶ፤ ሙዝ፤ ብርቱካን፤ ሎሚ)		

Annex: Approval of the thesis

The understandings, Master of Science in Human Nutrition and dietetics student declare that this thesis is original work in partial fulfillment of the requirement for the degree of Master of Science in Human Nutrition.

Name of student: Tesfaye Bekele

Signature_____

Place of submission: Department of Nutrition and Dietetics Faculty of public Health Institute of Health, Jimma University.

Date Submission: _____

APPROVAL OF THE ADVISORS

Name of the first advisor: Mr. Melese Sinaga (MSc, Asst professor, PhD candidate)

Date._____ Signature _____

Name of the second advisor: Mrs. Rediet Kidane (Bsc, MSc)

Date._____ Signature _____